





THE  
**British Medical Journal.**

THE JOURNAL OF THE BRITISH MEDICAL ASSOCIATION.

EDITED BY

SIR DAWSON WILLIAMS, M.D., LL.D., D.LITT., D.Sc.,

AND

NORMAN GERALD HORNER, M.A., M.D.

VOLUME I, 1923.

---

JANUARY TO JUNE.

London :

PRINTED AND PUBLISHED AT THE OFFICE OF THE BRITISH MEDICAL ASSOCIATION,  
429, STRAND, W.C.2.



## KEY TO DATES AND PAGES.

THE following table, giving a key to the dates of issue and the page numbers of the BRITISH MEDICAL JOURNAL and SUPPLEMENT in the first volume for 1923, may prove convenient to readers in search of a reference.

Serial No.	Date of Issue.	Journal Pages.	Supplement Pages.	Serial No.	Date of Issue.	Journal Pages.	Supplement Pages.
3236	Jan. 6th	1 - 46	1 - 12	3249	Apr. 7th	579 - 616	101 - 108
3237	" 13th	47 - 88	13 - 16	3250	" 14th	617 - 666	109 - 116
3238	" 20th	89 - 132	17 - 20	3251	" 21st	667 - 704	117 - 124
3239	" 27th	133 - 174	21 - 24	3252	" 28th	705 - 746	125 - 164
3240	Feb. 3rd	175 - 220	25 - 32	3253	May 5th	747 - 794	165 - 188
3241	" 10th	221 - 266	33 - 48	3254	" 12th	795 - 840	189 - 192
3242	" 17th	267 - 308	49 - 56	3255	" 19th	841 - 886	193 - 208
3243	" 24th	309 - 358	57 - 64	3256	" 26th	887 - 918	209 - 216
3244	Mar. 3rd	359 - 402	65 - 76	3257	June 2nd	919 - 958	217 - 228
3245	" 10th	403 - 450	77 - 84	3258	" 9th	959 - 1004	229 - 244
3246	" 17th	451 - 492	85 - 88	3259	" 16th	1005 - 1042	245 - 268
3247	" 24th	493 - 542	89 - 96	3260	" 23rd	1043 - 1080	269 - 280
3248	" 31st	543 - 578	97 - 100	3261	" 30th	1081 - 1120	281 - 288

## SPECIAL PLATES.

	PAGE
Arterio-sclerosis, the Nature of (Geoffrey Evans) ... facing	456
Breast Diseases, Early and Curable (Sir G. Lenthal Cheatle) facing	927
Cyst of Right Suprarenal Capsule Removed by Operation (Sir Hamilton A. Ballance) ... facing	927
Optic Neuritis of Sphenoidal Sinus Origin (Sir StClair Thomson) facing	926
Trephination in Prehistoric Times (T. Wilson Parry) ... facing	457

## ILLUSTRATIONS IN THE TEXT.

Adrenal Glands, Function of, and its Relation to Concentration of Hydrogen Ions (Lieut.-Col. Robert McCarrison) ...	101
Adrenaline as a Potential Factor in Hyperthyroidism (D. J. Harries) ...	1015
Alsatian Bitch Suckling Six Little Pigs ...	270
Apituitarism and the Anencephalic Syndrome (D. L. Barlow) ...	15
Australian Fauna and Medical Science (William Colin MacKenzie) ...	796
Axis-Traction Lever ...	195
Ballantyne, John William ...	213
Blackbirds ...	271
Blood Transfusion (E. F. Skinner) ...	750
Brain Showing Meningeal Haemorrhage ...	565
Byron, Lord, the Lameness of ...	564
Chiene, John ...	999
Childe, Charles P. ...	935
Conjugal Ligament of a Seal ...	271
Cupping an Arab at Bou-Medfa, Algiers ...	639
Diabetes Mellitus, Treatment of (O. Leyton) ...	708
Diet Table, a Simple (H. S. Pemberton) ...	680
Eels, Various Illustrations of ...	268
Elephant Man in 1889 ...	335
Elevator for First Rib ...	637
Foreign Bodies in the Air and Food Passages (C. A. Scott Ridout) ...	413
Foreign Bodies in the Stomach Removed by Operation (A. George Brand) ...	1018
Gastric Function Modified by Drugs (T. Izod Bennett) ...	367
Herpes Zoster Ophthalmicus (Samuel Lodge and William Oliver Lodge) ...	1085
Horse-hoe Kidney (Clifford Morson) ...	237
Hunter, John ...	269
Neo-colic Intussusception Caused by Meckel's Diverticulum and Simulating Ectopic Gestation (H. H. Greenwood) ...	1016

Insulin, Influence of upon Acidosis and Lipaemia in Diabetes (H. Whitridge Davies, Charles G. Lambie, D. Murray Lyon, Jonathan Meakins, and William Robson) ...	847
Insulin, Effect of on Normal Metabolism (C. H. Kellaway and T. H. Hughes) ...	710
Intussusception Supervening on Congenital Stenosis of the Ileum (W. Turner Warwick) ...	804
Kangaroo ...	273
Laryngeal Intubation in Anaesthetics (Stanley Rowbotham) ...	1090
"Lung Splinting" in the Treatment of Pulmonary Tuberculosis (Samuel Henry Stewart) ...	415
Mnemonic Principle Applied to Biology and Psychology (Sir Frederick Mott) ...	337
Myasthenia Gravis (S. L. Heald and Arthur J. Wilson) ...	853
Nerves on the Nasal Septum ...	267
Optic Neuritis of Sphenoidal Sinus Origin (Sir StClair Thomson) ...	925
Ovariectomy in Women over Seventy Years of Age (Herbert R. Spencer) ...	583
Pasteur Centenary Celebrations: Various Illustrations ...	425 et seq.
Pedicle Forceps for Nephrectomy ...	685
Pelvic Support for Plaster Bandaging (E. Muirhead Little) ...	771
Polythelia (R. Douglas Howat) ...	929
Portsmouth and Neighbourhood, Views of ...	77, 253, 648, 1099
Rabbit's Nose, Section of, Exposing Jacobson's Organ ...	267
Radial Pulse in Intrathoracic Aneurysm (C. O. Hawthorne) ...	893
Radius, Congenital Absence of (A. P. Bertwistle) ...	325
Rectal Papillomata in <i>Schistosoma haematobium</i> Infestations (H. C. Sinderson and E. A. Mills) ...	968
Rickets, Pathogenesis of (Eric Pritchard) ...	887
Ritchie, James ...	263
Roddick, Sir Thomas ...	489
Seal of the Royal College of Surgeons of England ...	273
Splint for Median Paralysis (Walter Mercer) ...	371
Suboccipital Meningocele Successfully Removed (John Livingstone) ...	508
Thorburn, Sir William ...	576
Tibetan Anatomical Chart ...	530
Trephination in Prehistoric Times (T. Wilson Parry) ...	459
Two-button Loop Suture (W. G. Spencer) ...	970
Variations of Normal Temperature (Henry H. Haward) ...	18
Venous Pulsations and Venous Tracings (Harrington Sainsbury) ...	627
Vitamin Content of Certain Proprietary Preparations (Katharine H. Coward and A. J. Clark) ...	14
University College, London: New Institute of Anatomy (G. Elliot Smith) ...	910
Whales ...	272







- ATKINSON, E. Miles: Rupture of renal artery and vein by slight injury; operation; recovery. 534 (O)
- Atmospheric conditions and industrial efficiency. 35—In cotton weaving, 389
- Atmospheric pollution and fog prevention. 571
- Atopban Poisoning (C. Worster-Drought), 148
- Atoxyl as a trypanocidal remedy (Dr. Dorwisch), 150
- Atrophic rhinitis. See Ozaena and Rhinitis
- AYDEN, G. A.: Treatment of general paralysis by malaria, 556
- AYENBERGER, Leopold: *Invenitum Novum ex Percussione Thoracis Humani, ut Signo Abstrusus Interni Pectoris Morbos Detegendi*: facsimile of the original edition, rev., 246
- AYLD, A. G.: The scientific basis for non-specific protein therapy. 327—Peptone treatment of asthma: a disclaimer, 1116
- Auricular fibrillation, the use of quinidine in (Francis R. Fraser), 507 (O)
- Auricular flutter simulating death. 698, 787
- Medical Association, 785—University and Sydney, Victoria
- Australian fauna and medical science (William Colin Mackenzie), 795 (O)
- Autogenous vaccine in purpural fever. 1042
- Autolysis, microbic transmissible (Jules Bordet), 175 (O)—Leading article, 197
- AZER, M.: Treatment of acne vulgaris, 840
- B. . . . . of kala-azar . . . . . of 35 . . . . . Colloidal State in . . . . . Aspects, rev., 193
- The Vasomotor System, rev., 634—Colloidal preparations, 785
- BAYLY, H. Wansley: The venereal disease report, 1076
- BEARN, F. Arnot: Bronchopneumonia in a centenarian, 809
- BEATSON, Sir George Thomas: *The Scottish Voluntary Hospitals: A Financial Reconstruction Scheme*, 552, 610
- BEATTIE, Hamilton: Coroners' inquests; anaesthetic deaths, 720
- BEATTY, James: Instruments for high microscopical magnification, 721
- BEAUMONT, W. M.: Remarks on the value of butyn as a local anesthetic, 57 (O)
- BEDSIDE LIBRARY: Review of books issued, 727
- BEESLY, L. (and T. B. JOHNSON): *A Manual of Surgical Anatomy*, rev., 109
- BEGG, C. E.: Respiratory sounds well heard through an anthropologist's jacket, 220
- BELCHER, H. E.: Herpes zoster and varicella, 358
- Belfast, new cancer hospital for, 1037
- BELL, Albert J.: *Feeding, Diet, and the General Care of Children*, rev., 768
- BELL, John J.: Nephropsis: its causation, symptoms, and radical cure, 889 (O)
- BELL, J. R.: Treatment of gastric and duodenal ulcer, 235
- BELL, Julia: *Anomalies and Disease of the Eye: Retinitis Pigmentosa and Allied Diseases: Congenital Stationary Night-Blindness; Glioma Retinae*, rev., 472
- BELL, W. Blair: Radium in cancer of the urethra, 329—Intrivisc dysmenorrhoea, 722—Catgut or silk? 834
- Bengal, unqualified medical practitioners in, 39
- Retrenchment in, 609—American medical diplomas in, 610
- BENNETT, R. Allan: "Suggestion" and Common Sense, rev., 155
- BENNETT, T. Izod: The modification of gastric function by means of drugs, 356 (O)
- BENNETT, Major William Henry Hender, obituary notice of, 44—Memorial to, 541
- BENSLER, Brigade Surgeon Edwin Clement, obituary notice of, 702
- BENSON, J. A.: A case of smallpox arrested and cured by vaccination, 46
- Bequests to hospitals and medical charities, 307, 357, 431, 531, 535, 578, 615, 703, 718, 785, 880, 1018, 1079
- BERRISLEY, Comyns: Some practical difficulties in obstetrics and gynaecology, 83 (O)
- BERRY, Harry Poole, obituary notice of, 44
- BERRY, James: Cardio-vascular conditions in relation to anaesthesia, 240—Treatment of cancer of the tongue, 417
- BERRY, Richard J. A.: The modern psychology (Stewart Lectures), 255—Psycho-analysis, 656
- BERTWISTLE, A. F.: A catgut holder, 88—Congenital absence of the radius, 325
- Beta-naphthol and thymol in the treatment of ankylostomiasis (Harry G. Philpott), 371 (O)
- BEWLEY, H. T.: Hyperthyroidism, 555
- BETTS, Colonel W. G. O. B. E. conferred upon, 45
- BIDDLE, Cornelius, obituary notice of, 44
- BIGLAND, A. Douglas: Diagnosis and treatment of migraines, 103
- Bilharziasis, a planorbis as the intermediate host of, 551. See also Schistosomiasis
- BILKINGTON, W.: Chronic duodenal ileus, 192—Chronic ulcer of the body of the stomach, 553
- BINET, Léon (and Ch. ACTARD): *Examen fonctionnel du poulmon*, rev., 331
- Biochemistry and clinical medicine (Sir Walter Fletcher), 1051, 1063
- Biochemistry, review of book on, 932
- Biology, the fundamental conceptions of (J. S. Haldane), 359 (O)—Leading article on, 337—Correspondence on, 441, 466
- BIRN, Walter: *Leitfaden der Kinderheilkunde*, rev., 475—*Süuglingskrankheiten*, rev., 763
- BIRMINGHAM, post-graduate work in, 132, 531, 573
- Physiological medicine and research at, 783
- Birth Control Conference, report, 518
- Birth control libel action (Stopes v. Sutherland and another), 445
- BISHOP, K. S.: Vitamins and reproduction, 74
- Björkling, Dr.: Venereal disease in Scandinavia, 1023
- BLACK, Harold: Chronic ulcer of the body of the stomach, 553
- BLACK, Lieut.-Col. J. A.: *The Work of the Chemical Examiner's Department in the Punjab*, 127
- Black tongue. See Tongue
- BLACKER, Dr.: Radium treatment of uterine haemorrhage, 510
- BLACKHALL-MORISON, A.: Musculature of the aorta and cardiac valves, 1054
- BLACKLOCK, Dr.: The etiology of blackwater (Mill Renton), 765
- Prevention of sepsis after, 492. See also Prostatectomy
- BLAND-BURTON, Sir John: Hunterian Oration on John Hunter: his affairs, habits, and opinions, 267 (O)
- BLECHMANN, Germain: *Les péricardites aiguës*, rev., 420
- BLIGH, J. Murray: Unexpected death in children, 659
- Blind children of school age (parliamentary note), 606
- Blind in Edinburgh, legacies in aid of, 889
- Blind, library for the, in Westminster: Appeal, 950
- Blind masseurs, 488
- Blind Persons Act: Schemes submitted (parliamentary note), 572
- Blind, Royal Glasgow Asylum for: General meeting, 170
- Blind, Royal Normal College for, jubilee of, 76
- Blinded Scottish soldiers, after-care of: Annual meeting, 533
- . . . . . ort of ent of
- Bloch, Ivan, death of, 44
- BLONFIELD, Joseph: *Anaesthetics in Practice and Theory*, rev., 63—Cardio-vascular conditions in relation to anaesthesia, 240—Coroners' inquests: anaesthetic deaths, 720
- Blood cells, red, the inheritance of the specific iso-agglutinable substances of the (S. C. Dyke), 376
- Blood, colloidal alkaline reserve of (T. H. Milroy), 853
- Blood detection by the microspectroscope, 124
- Blood and excreta, abnormal findings in (E. Cronin Lowe), 722
- Blood as guide to early diagnosis in lead poisoning (Robert Craik), 103 (O), 210
- Blood, human, infection of in treatment of purpura (Montague Dixon), 16 (O)
- Blood picture in sprue, 743
- Blood pressure, high, and arterio-sclerosis, best locality for a patient suffering from to live at, 449
- Blood pressure after operations, 916
- Blood sugar, the control of, 478
- Blood sugar, estimation of, 777, 1115
- Blood sugar estimations by general practitioners, 1115
- Blood sugar, the nature of (J. A. Hewitt), 592 (O), 921—(L. B. Winter and W. Smith), 894 (O), 1039
- Blood transfusion (E. F. Skinner), 750 (O)
- Blood urea, 266
- Blood vessels, capillary, the activity of (H. H. Dale), 569, 100 (O)
- Blue sclerotics. See Sclerotics
- BLUM, Léon: Insulin in diabetes mellitus, 200
- BLUMER, Percy: Riccup, 450
- BLUMGART, H.: Treatment of diabetes insipidus by intranasal spraying of pituitary extract, 328
- Board, Central Midwives, 33, 208, 395, 616, 793, 998
- Unqualified midwifery practice, 33—Examination Questions and Model Answers, rev., 1072
- Board, Central Midwives (Scotland), 256, 349, 885, 913
- Board of Control (parliamentary note), 741, 780
- Board of Education: Circular re physical training in elementary schools, 76—Report of consultative committee on differentiation of the curriculum for boys and girls respectively in secondary schools, 122—Report of committee on sex and school courses, 232—Circular re schools for mentally and physically defective children, 645—Memorandum on Recent Advances in Medical Education in England, 729, 771—Medical service (parliamentary note), 780—Circular re parents' payments for medical treatment of school children, 866
- Boas, H.: Venereal disease in Scandinavia, 1023
- Bombay, milk supply of, 672
- BOND, Hubert: Psychoneurosis and mental deficiency, 559
- Bone formation in a laparotomy scar (J. Berry Haycraft), 633
- Bone-graft surgery (A. E. Morison), 160
- Bones, long, exostoses of (G. H. Edington), 765
- BONNET, Victor: Treatment of dysmenorrhoea, 1054
- Diurnal incontinence of urine in women, 1054
- Book-keeping in tuberculosis institutions, standard method of, 946
- BORDET, Jules: Microbic transmissible auto-lysis, 175 (O)—Made a Commander of the Legion of Honour, 307—Elected a foreign associate member of the Academy of Sciences of Paris, 639—Presented by the King of Sweden with the Grand Order of the Polar Star, 703
- BORDIER, H.: *Diathermie et Diathermothérapie*, rev., 1097
- BORLAND, Dr., note on, 349
- BORT, Louis: *Les Phénomènes de Destruction Cellulaire*, rev., 290
- BABY clinic, statistics of, 645
- BABY Week, 73, 111. See also Infant
- B. anthracis, isolation of from a shaving brush (A. Neave Kingsbury), 417
- B. diphtheriae, classification of (A. J. Eagleton and Miss Baxter), 151
- B. diphtheriae, the fermentative reactions of (C. C. O'Kell and E. M. Baxter), 376
- BACON, A. L.: Biometric studies in tuberculosis, 1104
- BACON, Arthur, a memorial to, 662
- Bacteria of intestine, influence of upon the thyroid gland (D. J. Harries), 191, 553 (O)—Correspondence on, 659, 854, 856
- Bacteriology, review of books on, 421
- Bacteriophage, review of book on, 901
- Baghdad, antirabic institute at, 824
- Bakers' dermatitis (Oscar de Jong), 65
- BALDING, Daniel B., obituary notice of, 663
- BALFOUR, Andrew: The new trypanocidal remedies, 153
- BALT, James Moors, presents his collection of ophthalmic specimens to the Army Medical Museum, Washington, 1107
- BALLANCE, Sir Hamilton A.: Cryst of the right suprarenal capsule removed by operation, 926 (O)
- BALLANTYNE, John William, death of, 169—Obituary notice of, 215—The new midwifery, preventive and reparative obstetrics, 617 (O)
- Bandages, "B. P. O." 46
- BANKART, A. S. Blundell: Spastic paralysis, 463
- BANTING, F. G. (W. R. CAMPBELL and A. A. FLETCHER): Further clinical experience with insulin (pancreatic extracts) in the treatment of diabetes mellitus, 8 (O)
- Bar, calls to the, 219, 833, 1079
- BARBIER, H.: *Oreillons, Coqueluche, Grippe, Myxiose Aiguë*, rev., 474
- BARCLAY, A. E.: The housing of an x-ray department, 71
- BARCROFT, J.: Physiological effect of high altitudes, 200
- BARRENT, Frank H.: Dermatitis in bakers, 65
- BARHAM, G. F.: Lunacy law and the treatment of the insane, 657
- B. . . . . Junior . . . . . and its . . . . . all stones, 705 (O)
- BARLING, Seymour: Chronic duodenal ileus, 192—Chronic ulcer of the body of the stomach, 553
- BARLOW, D. L.: A pituitary and the anencephalic syndrome, 115 (O)
- BARLOW, R. A.: Some surgical complications of influenza, 308
- BARLOW, Sir Thomas: Appreciation of Arthur Erdwick Broster, 731
- BARLOW, T. W. Naylor, elected President of the Society of Medical Officers of Health, 1079
- BARNARD, J. E.: New dark-ground illuminator, 514
- BARNES, Eleanor O.: *Alfred Tarrow: His Life and Work*, rev., 1053
- BARNARD, Ed.: *Le cancer et son traitement médical rationnel*, rev., 333
- BARR, Sir James: Appreciation of John Irving, 540
- BARR, W.: *Passing Songs*, rev., 23
- BARNETT, James W.: The white man in the tropics, 250
- BARNES, J. D.: Technique of Caesarean section, 235—Sarcoma of the uterus, 510
- BASHFORD, H. H.: *Half-Past Bedtime*, rev., 553
- Basophilus, punctate, turpentine or lead poisoning a cause of, 103, 170, 210
- BATE, Geoffrey: Androgynoid pseudo-hermaphroditism, 330—Pseudo-coxalgia, 331
- Bath waters, scientific research on the therapeutic properties of, 1079
- BATT, Bernard E. A.: Hospital policy, 123, 783
- BAUDOUIN, Charles: *Anatomie Médico-chirurgicale de l'Abdomen. La Région sus-thoracique de l'Abdomen*, rev., 975
- BAUD, Erwin (and others): *Menschliche Erblichkeitslehre*, rev., 155
- BAXTER, Miss E. M. (and A. J. EAGLETON): Classification of *B. diphtheriae*, 151—(and C. C. O'Kell): The fermentative reactions of . . . . . of kala-azar . . . . . s of, 35 . . . . . Colloidal State in . . . . . Aspects, rev., 193
- The Vasomotor System, rev., 634—Colloidal preparations, 785
- BAYLY, H. Wansley: The venereal disease report, 1076
- BEARN, F. Arnot: Bronchopneumonia in a centenarian, 809
- BEATSON, Sir George Thomas: *The Scottish Voluntary Hospitals: A Financial Reconstruction Scheme*, 552, 610
- BEATTIE, Hamilton: Coroners' inquests; anaesthetic deaths, 720
- BEATTY, James: Instruments for high microscopical magnification, 721
- BEAUMONT, W. M.: Remarks on the value of butyn as a local anesthetic, 57 (O)
- BEDSIDE LIBRARY: Review of books issued, 727
- BEESLY, L. (and T. B. JOHNSON): *A Manual of Surgical Anatomy*, rev., 109
- BEGG, C. E.: Respiratory sounds well heard through an anthropologist's jacket, 220
- BELCHER, H. E.: Herpes zoster and varicella, 358
- Belfast, new cancer hospital for, 1037
- BELL, Albert J.: *Feeding, Diet, and the General Care of Children*, rev., 768
- BELL, John J.: Nephropsis: its causation, symptoms, and radical cure, 889 (O)
- BELL, J. R.: Treatment of gastric and duodenal ulcer, 235
- BELL, Julia: *Anomalies and Disease of the Eye: Retinitis Pigmentosa and Allied Diseases: Congenital Stationary Night-Blindness; Glioma Retinae*, rev., 472
- BELL, W. Blair: Radium in cancer of the urethra, 329—Intrivisc dysmenorrhoea, 722—Catgut or silk? 834
- Bengal, unqualified medical practitioners in, 39
- Retrenchment in, 609—American medical diplomas in, 610
- BENNETT, R. Allan: "Suggestion" and Common Sense, rev., 155
- BENNETT, T. Izod: The modification of gastric function by means of drugs, 356 (O)
- BENNETT, Major William Henry Hender, obituary notice of, 44—Memorial to, 541
- BENSLER, Brigade Surgeon Edwin Clement, obituary notice of, 702
- BENSON, J. A.: A case of smallpox arrested and cured by vaccination, 46
- Bequests to hospitals and medical charities, 307, 357, 431, 531, 535, 578, 615, 703, 718, 785, 880, 1018, 1079
- BERRISLEY, Comyns: Some practical difficulties in obstetrics and gynaecology, 83 (O)
- BERRY, Harry Poole, obituary notice of, 44
- BERRY, James: Cardio-vascular conditions in relation to anaesthesia, 240—Treatment of cancer of the tongue, 417
- BERRY, Richard J. A.: The modern psychology (Stewart Lectures), 255—Psycho-analysis, 656
- BERTWISTLE, A. F.: A catgut holder, 88—Congenital absence of the radius, 325
- Beta-naphthol and thymol in the treatment of ankylostomiasis (Harry G. Philpott), 371 (O)
- BEWLEY, H. T.: Hyperthyroidism, 555
- BETTS, Colonel W. G. O. B. E. conferred upon, 45
- BIDDLE, Cornelius, obituary notice of, 44
- BIGLAND, A. Douglas: Diagnosis and treatment of migraines, 103
- Bilharziasis, a planorbis as the intermediate host of, 551. See also Schistosomiasis
- BILKINGTON, W.: Chronic duodenal ileus, 192—Chronic ulcer of the body of the stomach, 553
- BINET, Léon (and Ch. ACTARD): *Examen fonctionnel du poulmon*, rev., 331
- Biochemistry and clinical medicine (Sir Walter Fletcher), 1051, 1063
- Biochemistry, review of book on, 932
- Biology, the fundamental conceptions of (J. S. Haldane), 359 (O)—Leading article on, 337—Correspondence on, 441, 466
- BIRN, Walter: *Leitfaden der Kinderheilkunde*, rev., 475—*Süuglingskrankheiten*, rev., 763
- BIRMINGHAM, post-graduate work in, 132, 531, 573
- Physiological medicine and research at, 783
- Birth Control Conference, report, 518
- Birth control libel action (Stopes v. Sutherland and another), 445
- BISHOP, K. S.: Vitamins and reproduction, 74
- Björkling, Dr.: Venereal disease in Scandinavia, 1023
- BLACK, Harold: Chronic ulcer of the body of the stomach, 553
- BLACK, Lieut.-Col. J. A.: *The Work of the Chemical Examiner's Department in the Punjab*, 127



anencephalic syndrome and apituitarism (D. L. Barlow), 15 (O)—Correspondence on, 81, 171  
 aneurysms, intrathoracic, the radial pulse in (C. O. Hawthorne), 892 (O)  
 "Angels and Ministers" (leading article), 71.  
 —Correspondence on, 130. *See also* Health Ministry  
 angioma, cavernous, of the face (D. J. Harries), 930  
 Angus, H. Brunton: Appreciation of George Haliburton Hume, 883  
 animal nutrition, researches on at the Rowett Institute, report, 429  
 animal Pathology, Institute of, 198. *See also* Pathology  
 animals, experiments on, opposition to in Scotland, 653  
 inkylotomies (Lieut.-Col. Clayton Lane), 551 (O)  
 inkylotomiasis treated with beta-naphthol and thymol (Harry G. Phippen), 371 (O)  
 ante-natal diagnosis (Francis Huxley), 514  
 ante-natal work (B. P. Watson), 1037  
 anthrax bacillus isolated from a shaving brush (A. Neave Kingsbury), 417  
 anthrax control: International Advisory Committee, composition and work of, 162  
 anthropology, prehistoric, prize for best work in, 939, 971  
 antimony as a trypanocidal remedy, 150  
 antirabic institute in Baghdad, 824  
 antivaccination myth, 481  
 Antoine, P. (and Th. de Martel): *Les Fausses Appendicites: Etude clinique, radiologique et thérapeutique des syndromes douloureux du caecum et du colon proximal*, rev., 1096  
 atrium of Highmore, upper canine tooth in (John H. Pegg), 897  
 ats, white, 492  
 aorta and cardiac valves, musculature of (A. Blackhall-Morison), 1054  
 aphasia, venesection in a case of (R. Galway Murray), 238  
 apituitarism and the anencephalic syndrome (D. L. Barlow), 15 (O)—Correspondence on, 81, 171  
 apollonia, St., 173. *See also* Ivory Cross  
 apothecaries' Society of London: degrees and pass lists, 45, 218, 444, 615, 793, 998  
 appendectomy, unsatisfactory (W. Doolin), 66  
 appendicitis (Robert Kennon), 469  
 appendicitis, acute, and peritonitis, followed by intestinal obstruction (P. F. McFarlan), 61 (O)  
 appendicitis operations followed by septicæmic infections (Herbert H. Brown), 591 (O)—Correspondence on, 835  
 appendicitis simulated by strangulation of an appendix epiploica (George Robertson), 325  
 appendicitis simulated by acute obstruction by Meckel's diverticulum (John W. Heekes), 719  
 appendicitis statistics (G. H. Colt), 470  
 appendicitis, suppurative, primary union after operation for (Robert G. Riddell), 322 (O)—Correspondence on, 397, 442  
 appendicitis and trauma (Charles Joseph Gordon Taylor), 17 (O)—(T. F. Hugh Smith), 283—(H. W. Wild), 467—(B. P. Sabawala), 630—Correspondence on, 82, 352  
 appendix, adeno-carcinoma of (A. O'Dwyer Thomas), 680  
 appendix epiploica, strangulation of simulating appendicitis (George Robertson), 325  
 appendix epiploica, adherent, causing hæmorrhage from the large bowel (R. Eccles Smith), 851 (O)  
 rab medicine, review of book on, 291  
 ROBERT-BROWN, E.: Epidemic hiccup, 704  
 ROXBALD, Major R. G. (and Lieut.-Col. W. BYAM): *The Practice of Medicine in the Tropics*, rev., 859  
*Archivo de Medicina Legal*, 335  
*Archivos de medicina, cirugía y especialidades* offers a prize for the best unpublished work on natural science or medicine, 117  
 Argentine: new organization formed, Sindicato de Médicos, 357  
 ngo, Captain Galvin A. E.: O.B.E. conferred upon, 665  
 arm, minor traumatic disabilities of (P. Jenner Verrall), 97 (O)  
 armagh, county, tuberculosis in, 573  
 ARMSTRONG-JONES, Sir Robert, appointed a Deputy-Lieutenant of the County of London, 219  
 ARMY, BRITISH:  
 Army Dental Corps, 606  
 Auxiliary R.A.M.C. Funds, 306, 702  
 Commissions, R.A.M.C., 264  
 Director-General, the new, 388, 401  
 Estimates, 482  
 Medical Services, 528  
 Parliamentary notes, 482, 528, 606, 741, 877  
 Royal Army Medical Corps, 606, 702, 877  
 Science in, 388  
 Small pox in, 483  
 Territorial decoration, 87, 449, 732  
 Venereal disease in, 741  
 Army Medical Service: Irish Free State, 609, 914  
 ARYOZAN, Dr., retires from the chair of medicine at Bordeaux, 62  
 arsenic, detection and estimation of small quantities of (A. Chaston Chapman), 265  
 Arterio-sclerosis, the nature of (Geoffrey Evans), 454, 502, 543 (O)—Correspondence on, 783

Artery, right brachial, embolism of, as a complication of lobar pneumonia (A. H. D. Smith), 103 (O)  
 Artery, right middle cerebral, fatal thrombo-arteritis of (F. Parkes Weber), 324 (O)  
 Artery, renal, and renal vein, rupture of by slight injury: operation; recovery (E. Miles Atkinson), 324 (O)  
 Artery of the retina, embolism of the central (J. W. Tudor Thomas), 633  
 Arthritis, rheumatoid, and osteo-arthritis (Sir Archibald Garrod), 760—Discussion, 761. *See also* Rheumatoid  
 ARTHUR, Conrad J., obituary notice of, 400  
 Artificial legs, 700  
 Artificial limb fitting (Middleton Cannon), 287  
 Artificial limb fitting: new rules for the guidance of medical superintendents at limb fitting centres, 491, 525, 700  
 Artificial limbs (parliamentary note), 345, 606  
 Artificial limbs, supply of, 525  
 Artificial pneumothorax. *See* Pneumothorax  
 Asclepius, special issue of, 335  
 ASHBY, Dr.: Specimens from a case of chloroma, 331  
 ASHBY, Hugh T.: The outlook of nephritis in children, 408 (O)—Croupous pneumonia in children, 631  
 ASHE, E. Oliver: Treatment of Malta fever, 43  
 ASHEHOV, I. N. (J. M. MITCHELL and G. P. N. RICHARDSON): *Typhus Fever, with Special Reference to the Russian Epidemics*, rev., 67  
 ASHFORTH, T. L.: Miners' nystagmus, 358  
 ASHURAST, Astley P. C. (and others): *Tuberculosis in Infancy and Childhood*, rev., 291  
 ASKINS, R. A.: Standards of vision in Council schools, 354  
 Assam, the recrudescence of epidemic kala-azar in (leading article), 430  
 Association, American Medical Women's, 665  
 Association, Automobile, and the illumination of number plates, 703  
 Association, Birmingham District Medical Women's: The psychological conditions found in criminals, 342  
 Association, British: Annual meeting, Liverpool (1923), 132  
 Association of British Chemical Manufacturers, activity of, 1003  
 Association, British Hospitals: Annual Conference, 783, 989  
 Association, British Medical (leading article), 940  
 Association, British Medical: Annual Meeting, 1923, at Portsmouth, 77, 253, 391, 482, 524, 647, 934, 1099—Section of Medical Sociology chooses its subject for discussion, 482—Pathological Museum, 524—Old and new hospitals in Portsmouth and neighbourhood, 647—Southsea and Portsmouth, 935, 1099  
 Association, British Medical: Australasian Congress, 831  
 ASSOCIATION, BRITISH MEDICAL:  
 Bath and Bristol Branch.—Remarks on the value of butyn as a local anaesthetic, 57  
 Birmingham Branch.—The diagnosis and treatment of chronic ulcer of the body of the stomach, 558—Pancreatitis and its association with cholecystitis and gall stones, 705  
 Border Counties Branch.—The industrial colony in the treatment of tuberculosis, 826  
 Bournemouth Division.—The investigation of dyspepsias, 5  
 Bromsgrove and Dudley Divisions.—Psychology and medicine, 403  
 Buckinghamshire Division.—Cardiac problems in adolescent life, 496  
 Cape of Good Hope (Western Province) Branch.—The etiology, symptomatology, and treatment of infective tonsillar disease, 559—Medical and surgical demonstrations, 855, 1018  
 —In the days of Van Riebeeck, 1018—Some surgical complications of influenza, 1018—Caesarean section, 1093—Care of pregnant women, 1093—Treatment of genital prolapse, 1093  
 Chesterfield Division.—Blood transfusion, 750  
 Dorset and West Hants Branch.—Sleep and sleeplessness, 226  
 Dorset (West) Branch.—Congenital hypertrophy of the pylorus, 573  
 Dundee Branch.—The cause and treatment of dyspnoea in cardio-vascular disease, 1043  
 Edinburgh Branch.—Clinical meeting, 653—Demonstrations and exhibition of cases, 653  
 Essex Division.—Minor traumatic difficulties of the upper limb, 97  
 Essex (South) Division.—Certain diseases of the cow and their interest to the physician, 313  
 Glasgow and West of Scotland Branch.—Clinical meeting, 784—Dinner, 784—Presentation of the Association prize, 784  
 Guildford Division.—Some considerations on disorders of growth, 841  
 Harrogate Branch.—Some clinical manifestations of tabes dorsalis, 47  
 Kent Branch.—On limitation of effort in heart diseases, 962  
 Madras Branch.—Optic atrophy, 806  
 Marylebone Division.—Religion and some medico-sociological problems, 437  
 Middlesex (North) Division.—The treatment of pneumonia, 576  
 Northamptonshire Division.—Some practical difficulties in obstetrics and gynaecology, 89

ASSOCIATION, BRITISH MEDICAL (continued):  
 Nuneaton and Tamworth Division.—The Swedish laws relating to venereal disease, 650  
 Oxford and Reading Branch.—Treatment by diathermy, 143  
 Oxford Division.—The pathogenesis of rickets, 887  
 Sierra Leone Branch.—Scientific meeting, 593—Dental cyst, 593—General anasarca, 593—Two cases of beri-beri, 593—Anaesthetic leprosy, 593—Rash resembling a macular syphilide, 593—Ulceration of cheek, 593—Tangled mass of ascarides, 593—Periosteal sarcoma of the tibia, 593  
 South Australia Branch.—Note on, 785—Listerian oration, 785—President, 785  
 Sunderland Division.—Endocrines, vitamins, and subtleties, 1010  
 Sussex Branch.—Sinuses and swellings in the necks of children, 621  
 Ulster Branch.—Aches and pains of renal origin, 309—Tetanus, 326—Rare abdominal tumour, 326—Two cases of dropped foot due to pressure on the external popliteal nerve, 326—Renal colic due to an abnormal renal artery, 326—Case of enlarged spleen, 326—Spontaneous reduction of intussusception, 326—Cyst of the neck, 326—Child with hæmophilia and arthritic symptoms, 326—Clinical meeting and exhibition of cases and specimens, 1019  
 Victorian Branch.—War memorial, 831  
 Wales, South-West, Division.—Notes from practice, 1081  
 Westminster and Holborn Division.—Sterilization of the unfit, 754, 760—The group clinic, 868, 876  
 York (East) Division.—The drug habit, 543  
 Association, British Medical, and Canada (leading article), 982  
 Association, British Medical, the house of the, 1061  
 Association, British Medical: War memorial to members who gave their lives in the war, 125, 257—(Roll of Honour), 125, 257  
 Association, British Orthopaedic: Meeting in Holland, 1028  
 Association, Canadian Medical: Annual meeting, 87, 697  
 Association, City of Limerick Medical, 485  
 Association, Fife County Nursing: Half-yearly meeting, 953  
 Association, French, for the Advancement of Science, 967  
 Association, Irish Medical: Annual meeting, 1037  
 Association, Irish Medical Schools' and Graduates': Annual meeting, 527  
 Association, London, of the Medical Women's Federation: Rickets in infants, 21—Psychology of Freud and its application, 154—X rays in gynaecology, 379—Ante-natal diagnosis, 514—Congenital defects of the eye, 681—Intracranial tumour, 681—Annual meeting, 870—Personal hygiene and its place in school teaching, 930  
 Association of Medical Museums, International, 343  
 Association, Medical Officers of Schools: Diphtheria carriers among children of school age, 378  
 Association, Medico-Psychological, of Great Britain and Ireland: Report on criminal responsibility, 520—Maudsley lecture: Psychiatry in Canada, 972  
 Association, Mental After-Care: Annual meeting, 326  
 Association, Metropolitan Police Surgeons': Annual meeting and dinner, 793  
 Association, National, for the Prevention of Tuberculosis. *See* Tuberculosis prevention  
 Association of Physicians of Edinburgh: Annual meeting, 912  
 Association of Public Vaccinators: Annual meeting, 825  
 Association, St. Andrew's Ambulance, and the V.A.D. Council, 913  
 Association, Scottish Poor Law Medical Officers', report, 169  
 Association of Surgeons of Great Britain and Ireland, meeting of, 827  
 Association, West Riding, 307  
 Association, Women's National Health: Annual meeting, 832  
 ASTEN, Walter, presentation to, 449  
 Asthma and adrenal inadequacy (T. Drummond), 320 (O)  
 Asthma, mechanism of (leading article), 523  
 Asthma, peptone treatment of: a disclaimer, 1116  
 Asthma, thymic: A protest, 662  
 Asylum, City of London Mental: Report, 573—Question of nomenclature, 573  
 Asylum, Glasgow Royal: Annual report, 349  
 Asylum, Glasgow Royal, for the Blind: Annual meeting, 170  
 "Asylum" or "mental hospital," 573  
 Asylum, Royal Edinburgh: 110th report, 440  
 480. *See also* Hospital, Royal Morningside  
 Asylums, ex-service men in (parliamentary note), 345. *See also* Ex-service  
 Asylums, service men in (parliamentary note), 605  
 Athletic heart. *See* Heart  
 ATEIN, Lord Justice: The problem of drug addiction, 565



Boston Psychopathic Hospital, 1031  
 BOSWELL, Dudley W.: Treatment of puerperal infections, 743  
 BOTHAM, R. H.: Early human ova, 308  
 Botulism in Scotland in 1922 (T. K. Monro and William W. N. Knox), 273 (O)  
 Botulism, review of book on, 932  
 BOULTON, W. S., appointed a member of the Safety in Mines Research Board, 745  
 BOURNE, Eleanor E.: Hiccup, 450  
 BOUSFIELD, Leonard, receives permission to wear the decoration of the Order of the Nile, 173  
 BOWER, E. Dykes: A plea for manual training, 352—The education of myopes, 955  
 BOWLEY, Sir Anthony A., Hon. D.C.L. Durham conferred upon, 1079  
 Boxer indemnity to be devoted to purposes beneficial to Great Britain and China, 401  
 BOXWELL, Professor: Brain sarcoma, 811  
 Brachial neuritis. *See* Neuritis  
 Brain: *A Journal of Neurology*, rev., 518, 1022  
 Brain, sarcoma of (Professor Boxwell), 811  
 Brain workers, proposed international association of, 690  
 BRAINARD, Annie: *The Evolution of Public Health Nursing*, rev., 475  
 BRAMWELL, Byrom, presentation to, 742, 912  
 BRAMWELL, J. C.: Heart-block, 513  
 BRAMWELL, William: Hiccup, 402  
 BRAND, A. George: Foreign bodies in the stomach removed by operation, 1018—A protest, 1077  
 BRAND, Alex. Theodore: *Cancer: its Cause, Treatment, and Prevention*, rev., 383  
 BRAULT, M. (and others): *Reins et Organes Génito-urinaires*, rev., 245  
 Bread and Food Reform League: Deputation to Minister of Health, 885  
 Breast disease, early and curable (Sir G. Lenthal Cheatle), 928 (O), 1062  
 Breast, diagnosis of indefinite masses in the (Duncan C. L. Fitzwilliams), 94 (O)—Correspondence, 211  
 Breast, hyperplasia of epithelial and connective tissue of (Sir G. Lenthal Cheatle), 1062  
 Breast, malignant diseases of (Charles A. Morton), 178 (O). *See also* Cancer  
 BREASTED, J. H., to prepare for publication an ancient Egyptian medical papyrus, 645  
 BRENNAN, J. M.: Notifications of convictions of medical practitioners to the General Medical Council, 835  
 Bretonneau, Pierre-Fidèle: *Traité de la dothinérité et de la spécificité de*, rev., 22  
 BRIDE, J. W.: *A Short History of the St. Mary's Hospitals, Manchester, and the Honorary Medical Staff, from the Foundation in 1790 to 1922*, rev., 769—Obstructed labour due to carcinoma of the bladder, 1095  
 BRIDE, T. M.: Sarcoma of the choroid, 191  
 BRIGGS, Henry: Fibroid emphasizing the value of Péan's work, 470—Angioma of the vaginal wall, 510  
 BRISCOE, Sir Charlton: Elevation of diaphragm due to unilateral phrenic paralysis, 472  
 BRISCOE, John Frederick: Appreciation of William Prior Purvis, 400  
 BRISTOW, Mr.: Spastic paralysis, 469  
*British Journal Photographic Almanac*, 1923, rev., 110  
 British Empire Cancer Campaign. *See* Cancer research  
 British Empire Exhibition, 357  
 British Hospitals Association. *See* Association  
 British Medical Association. *See* Association  
*British Pharmaceutical Codex*: Bandages, 46  
 British Spas. *See* Spas  
 BROADBENT, Walter: Pneumonia and its complications, 471  
 BROCK, Arthur John: "Occupation cure" in neurasthenia, 190—*Galen on the Natural Faculties*, 198, 258  
 BROCKBANK, E. M.: *The Diagnosis and Treatment of Heart Disease: Practical Points for Students and Practitioners*, rev., 596  
 BRODERICK, F. W.: Diet, dental disease, and caries, 594  
 Bronchiectasis and damaged lungs (Clive Riviere), 141 (O)  
 Bronchiectasis with unusual complications (Ivor J. Davies), 374 (O)  
 Bronchopneumonia in a centenarian (F. Arnot Bearn), 809  
 Bronchopneumonia in a stillborn foetus (J. St. George Wilson), 859  
 Bronchoscopy, review of book on, 421  
 BROOKS, L. (and W. H. BARKER): *Junior Regional Geographies*, rev., 1058  
 BROSTER, Arthur Erdswick, obituary notice of, 791  
 BROWDER, M. W.: Intravenous acriflavine for gonorrhoea, 1030  
 BROWN, A. Crum, bequests of, 357  
 BROWN, A. Samler: *Brown's Madeira, Canary Islands, and Azores*, rev., 598  
 BROWN, Sir Charles: Gift to Harris Orphanage, 703  
 BROWN, Herbert H.: On septicæmic infection following operations for appendicitis, 591 (O)  
 BROWN, John: Internal use of liquid paraffin, 152  
 BROWN, William: Psychotherapeutics, 327  
 BROWN, W. Langdon: The present position of organotherapy, 107—The scientific basis for non-specific protein therapy, 327—*The Sympathetic Nervous System in Disease*, rev., 381—The value of laboratory tests in diseases of the liver and pancreas, 461 (O)—Endocrines and psychoneuroses, 514

BROWNE, F. J.: Apituitarism and the anencephalic syndrome, 81—Appreciation of John William Ballantyne, 216—Some problems of latent syphilis, 767—Acardiac foetus, 898  
 BROWNE, Sir Thomas, early editions of, 908  
 BRUCE, Sir David, nominated President of the British Association, 616—Awarded the Albert Medal of the Royal Society of Arts, 1119  
 BRUMWELL, John: Primary union after operation for appendicitis, 442  
 BRYDENE, J. M.: Treatment of dysmenorrhoea, 1054  
 BUCHANAN, Sir George, 823  
 BUCHANAN, R. J. M.: Non-obstructive jaundice, 764  
 Budget, the (leading article), 689—(Parliamentary notes), 694, 740  
 BUIST, H. Massac: Motor notes for medical men, 207  
 BUIST, R. C.: The correction of malpositions; the rationale of the padded binder, 62  
 BULKLEY, L. Duncan: *Cancer and its Non-Surgical Treatment*, rev., 516  
 BULKLEY, M. E.: *Bibliographical Survey of Contemporary Sources for the Economic and Social History of the War*, rev., 634  
*Burdett's Hospitals and Charities, 1922-23*, rev., 245  
 BURFORD, George: A sea-water dispensary in London, 917  
 BURGESS, Dr.: A coroner's attack on the panel system, 876  
 BURNARD, R.: *La Guérison de la Tuberculose Pulmonaire*, rev., 244  
 BURNETT, Sir Napier: Need for public education in the control of cancer, 510—Voluntary hospital finance, 989  
 BURRIDGE, Dr.: The problem of drug addiction, 565  
 BURROUGHS, A. E.: Night-blindness, 107  
 BURROW, Le Fleming: Spheno-occipital chordoma, 150  
 Burrow Hill Colony, Frimley, Surrey, note on, 357  
 BURROWS, A.: Methods of the application of radium, 1095  
 BURROWS, Harold: A disclaimer, 88—*The Mistakes and Accidents of Surgery*, rev., 561  
 BURT, J. B.: *Sciatica*, 379  
 BURTON, A. H. G.: Called to the Bar, 1079  
 BURTON, J. A. G.: Etiology of tumours, 765  
 BURY, Judson: Appreciation of Sir William Thorburn, 576  
 BUTCHER, H. H.: Tropical abscess of liver, 561  
 BUTLER, E. N.: Meningitis due to Pfeiffer's bacillus, 719  
 BUTLER, T. Harrison: Refraction, 843 (O)—The education of myopes, 955  
 BUTLER, William: Oxygen content of the water of the Thames estuary, 601  
 BUTTERS, George: Erysipelas of the mouth, 190  
 Button suture, a two-loop (W. G. Spencer), 969 (O)  
 Butyn, 492  
 Butyn as a local anaesthetic, value of (W. M. Beaumont), 57 (O)  
 BUZZARD, E. Farquhar: Psychotherapeutics, 326  
 BYAM, Lieut.-Col. W. (and Major R. G. Archibald): *The Practice of Medicine in the Tropics*, rev., 859  
 BYRON, Lord: The lameness of (H. C. Cameron), 564—Leading article on, 568  
 BYWATER, H. Haward: Night-blindness, 107

## C.

CABANES and WITKOWSKI: *Joyeux Propos d'Esculape*, rev., 517  
 Cadet organization and preventive medicine, 172  
 Caecum, fixation of in chronic intussusception (J. B. Alexander), 508  
 Caesarean section (Sir Edmond S. Stevenson), 1093  
 Caesarean section, conservative, in treatment of concealed accidental haemorrhage (R. A. Lennie), 898  
 Caesarean section, technique of (S. J. Cameron), 285—Discussion, 285  
 CAIGER, F. Foord: Diphtheria antitoxin on suspicion, 996, 1076  
 CAMMS, Ronald McD.: A case of Ritter's disease, 186 (O)  
 Calcium excess, effects of on the skeleton (V. Korenchevsky), 802 (O)  
 Calculi, renal, surgical treatment of (W. Sampson Handley), 63  
 Calcutta, child wives in, 351. *See also* India  
 Calcutta School of Tropical Medicine. *See* Tropical  
 CALVERT, E. G. B.: Estimation of sugar in blood, 777  
 CALWELL, Dr.: Mentally defective children, 512  
 Cambridge Schools of Pharmacology, Biochemistry, and Physiology: Visit of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine to, 819  
 CAMERON, Hector Charles (and A. A. OSMAN): Late results of meningeal haemorrhage in the newly born, 363 (O)  
 CAMERON, H. C.: The lameness of Lord Byron, 564

CAMERON, Lieut.-Col. John Philip, C.I.E. conferred upon, 30  
 CAMERON, R.: Renal inefficiency and its clinical detection, 930  
 CAMERON, S. J.: Technique of Caesarean section, 285  
 CAMMIDGE, P. J.: Insulin and diabetes, 787  
 CAMPBELL, Hon. Alexander, appointed a member of the Legislative Council of the colony of Newfoundland, 1079  
 CAMPBELL, Boyd: Enlarged spleen, 326  
 CAMPBELL, David: Ionic medication, 409 (O)  
 CAMPBELL, J. Argyll (and Leonard HILL): The composition of the gases in artificial pneumothorax, 752 (O)  
 CAMPBELL, W. F.: *A Textbook of Surgical Anatomy*, rev., 727  
 CAMPBELL, W. R. (F. G. BANTING, and A. A. FLETCHER): Further clinical experience with insulin (pancreatic extracts) in the treatment of diabetes mellitus, 8 (O)  
 Campbelltown, typhoid fever outbreak at, 953  
 CANADA:  
 And the British Medical Association (leading article), 982  
 Canadian cattle, tuberculosis in (parliamentary note), 878  
 Canadian Medical Association, 697  
 Honorary degrees, 697  
 Industrial medicine, 697  
 McGill University, 484, 697  
 Medical Council of Canada, 484  
 Ontario legislature establishes a research chair for Dr. Banting, the originator of the "insulin" idea, 873  
 Psychiatry in (C. K. Clarke), 972  
 Roddick, Sir Thomas, death of, 484  
 Toronto University, 484  
 Cancer of bladder obstructing labour (J. W. Bride), 1095  
 Cancer of the breast (Charles A. Morton), 178 (O)—(Cecil Rowntree), 747 (O)—Correspondence on, 882, 994  
 Cancer campaign inaugurated in France, 449  
 Cancer of cervix, radium treatment of; exhibition of cases, 151  
 Cancer control, urgent need for public education in (J. E. Adams), 491, 509—Discussion, 509—Correspondence on, 612  
 Cancer, freedom of negro races from, 1116  
 Cancer, cure of: number of claims received for the offered prize, 212  
 Cancer, defective lipolysis in, 1075  
 Cancer, French Association for the Study of, 686  
 Cancer, inoperable, x rays in (Herbert Spencer), 766  
 Cancer Hospital Research Institute, 948  
 Cancer mortality (parliamentary note), 605  
 Cancer of oesophagus, radium in, 297, 301  
 Cancer, prize for the best work on, 370  
 Cancer, radiotherapy for, 261  
 Cancer of rectum, radium in, 297, 301  
 Cancer research (parliamentary note), 991, 1035  
 Cancer research (British Empire Cancer Campaign), an appeal for (leading article), 944—Text of the appeal, 947—Names of committee, 947—The problem to be solved, 979—Donation from the King, 1003—Royal Society and Medical Research Council to receive delegates to discuss the campaign, 1103  
 Cancer research, bequests for, 533, 615  
 Cancer Research Fund, the Imperial, 947  
 Cancer research now in progress: list of institutions, 947, 980  
 Cancer, review of books on, 382, 516, 1096  
 Cancer of the scrotum, 46  
 Cancer of the skin in rabbits (J. A. Murray), 376  
 Cancer and smoking, pipe or cigarette? 1004  
 Cancer of the stomach, with unusual secondary developments (Sir John Moore), 812  
 Cancer of the tongue, radium in, 297, 301  
 Cancer of the tongue, treatment of (James Berry), 417—Discussion, 417  
 Cancer of the urethra, radium in (Fletcher Shaw), 329  
 Cancer of the vagina, primary (Eardley Holland), 151  
 Cancer week in America, 45  
 CANNEY, Arthur E.: Vitamin content of certain proprietary preparations, 131, 212  
 Cape Town M.O.H., 778  
 Capillary blood vessels. *See* Blood  
 CAPON, Norman B.: Apituitarism and the anencephalic syndrome, 171—General oedema of the foetus, 539  
 Carbon tetrachloride and oil of chenopodium in helminthiasis (J. G. Reed), 1048 (O)  
 Carcinoma. *See* Cancer  
 Cardiac dilatation and hypertrophy, 1042  
 Cardiac problems in adolescent life (G. A. Sutherland), 496 (O)  
 Cardiac valves and aorta, musculature of (A. Blackhall-Morison), 1054  
 Cardiac. *See also* Heart  
 Cardigan Hospital War Memorial, 1079  
 Cardio-vascular conditions in relation to anaesthesia (J. Strickland Goodall), 239  
 Cardio-vascular disease, the cause and treatment of dyspnoea in (Jonathan Meakins), 1043 (O)  
 Cardio-vascular system, the history of (G. A. Allan), 1052  
 "Carence, maladies par," 123  
 CARLILL, Hildred: Encephalitis lethargica and syphilis of the nervous system, 242—Tubes dorsalis with Charcot's disease of the tarsus, 242—Boy who flexed his neck and spine whenever he spoke, 242



- Carnegie Trust, annual meeting, 348
- CARONIA, Giuseppe, appointed professor of clinical pediatrics in the University of Rome, 541
- Carriers of disease, review of book on, 684
- CARRION, H. (and others): Endocrine Glands and the Sympathetic System, rev., 292
- CARRUTHERS, N. Stuart: What is a "diseased" tonsil? 995
- CARRUTHERS, Thos.: Environment and diet in the causation of rickets, 358—Whooping-cough, 666, 839
- CARSON, H. W.: Treatment of gastric and duodenal ulcer, 238
- CARSWELL, John: Notes on Robert Burns, 560
- CARTER, F. Bolton: Trauma and appendicitis, 82
- CASSIDY, L.: Pelvic pain from a gynaecological standpoint, 242—Deep x-ray therapy in gynaecology, 418—Rare case of maldevelopment of the female genital organs, 419—Fibroma of ovary, 765
- CASSTY, M.: Osteo arthritis and rheumatoid arthritis, 761
- CASSELL, S. P.: The unpleasant taste of potassium bromide, 840
- CATELLANI, Aldo: Treatment of Oriental sore by phosphorated oil, 283 (O)
- CASTLE, Walter F.: Dermatitis from dyed fur, 535
- CASTIGLIONI, A.: Benvenuto Cellini, 435
- Casualties, war. See War losses
- Cataract extraction followed by symptoms suggestive of sympathetic ophthalmia (Freeland Fergus), 182 (O)
- Cataract extraction, intracapsular, 612, 699
- CATTARH, bituites (Sir Percival Horton-Smith Bartley and Ivor J. Davies), 1052 (O)
- Catgut holder, 83
- Catgut or silver as suture for vesico-vaginal fistula, 834, 881
- CATHCART, E. P. (D. Noel Paton and M. S. Pembrey): *Practical Physiology*, rev., 331
- CATTELL, H. W. (editor): *International Clinics*, rev., 770
- CAVE, Viscount: State hospitals, 303
- CAYENAG, J. B.: What is a "diseased" tonsil? 1075
- CAWSTON, F. G.: Sodium or potassium salts, 1080
- CELLINI, Benvenuto, 435
- Cells, living, changes in during growth and division (T. S. P. Strangeways), 479
- Census of London, 348
- Census of Scotland, 1921 (counties), 209, 350
- Central Midwives Board. See Board
- Cervical ectosion. See Glands
- Cervical rib. See Rib
- Cervical spine. See Spine
- Cervix, congenital deformity of the posterior lip of (Herbert Spencer), 767
- Cervix, dilatation of, 704
- Cervix, acute oedema of (W. F. T. Haultain), 18—(J. A. McKinnon), 190
- CESTAN, R.: *Les Epsilesies*, rev., 243
- CHALDECOTT, J. H.: Coroners' inquests: anaesthetic deaths, 719
- CHALMERS, Archibald, obituary notice of, 306
- CHALMERS, J. (and A. S. M. Macgregor): The irritative type of lethargic encephalitis, 521
- CHAMBERLAIN, E. Noble: A small epidemic of plague, 896
- CHAMBERLAIN, Neville: On the Ministry of Health, 1003
- CHAMBERS, Surgeon Rear-Admiral Joseph, C.B., conferred upon, 987
- CHANCE, A.: Treatment of venereal diseases, 613
- CHANCE, Mr.: Unsatisfactory appendicectomy, 66
- Chancres redux (P. C. P. Ingram), 1091 (O)
- CHAPMAN, A. Chaston: Detection and estimation of small quantities of arsenic, 255
- Character, acquired, inheritance of (leading article), 867
- Charity in medicine an anachronism (J. S. Fraser), 532
- CHARLES, Sir Richard Havelock, K.C.S.I. conferred upon, 30—His retirement as medical adviser to the India Office postponed, 435—Hon. LL.D. Belfast conferred upon, 1079
- Charterhouse School, medical officership of, 356
- CHAUDHURI, Captain S. K.: Rat-bite fever, 542
- CHATEL, Sir G. Lenthal: "Angels and Ministers," 130—Early and curable disease of the breast, 923 (O)—Appreciation of Walter d'Este Emery, 1110
- Chemical examinations in the Punjab, 127
- Chemistry, review of books on, 155, 193, 814, 932
- Chemotherapy, manganese in (J. E. R. McDonagh), 810
- Chenopodium oil in helminthiasis (J. G. Reed), 1048 (O)
- Chest, review of books on, 421
- CHESTERMAN, O. C.: Trypanamide, 149
- CHEVRS, Martin J.: Hiccup, 744
- CHICK, Harriette (and others): Report on the etiology and prevention of rickets, 987
- CHENE, John, death of, 910—Obituary notice of, 999
- Child-bearing, number of deaths attributed to (parliamentary note), 1110
- Child welfare in India, 38, 351. See also Maternity
- Child wives in Calcutta, 351
- CHILDE, C. P.: Need for public education in the control of cancer, 509
- Children, mentally defective, care and education of (W. R. Dawson), 512
- Children, physically defective, 251
- Children's diseases, review of books on, 22, 768
- China, medicine in, 115—Boxer indemnity to be devoted to purposes beneficial to Great Britain and China, 401
- CHISHOLM, Dr.: Radium in cancer of the urethra, 329
- CHISHOLM, Sir Samuel: Small-pox in Glasgow in 1900, 879
- Chlorine in influenza. See Influenza
- Chloroform versus ether, 996, 1076, 1114
- Chloroform, report on, 83
- Cholecystitis, gall stones, and pancreatitis (Sir Gilbert Barling), 705 (O)
- Cholera in Japan, 45—In Russian Europe, 971
- CHOPPIN, Colonel Arthur, Order of the Crown of Italy conferred upon, 449
- Chordoma, sphenoc-occipital (Le Fleming Burrow), 150
- Chorion-angioma (Gilbert Strachan), 766—(R. V. Johnston), 765
- Chorion-epithelioma of the Fallopian tube (Bethel Holomons and E. C. Smith), 765
- Christian, Princess, death of, 1041
- CHRISTMAS, R. W. B.: Hiccup, 512
- Chrysois, development of ion la, 82
- Cinchonine and quinine idiosyncrasy (William Fletcher and E. A. O. Travers), 629 (O)
- Circular offer, 666
- Circulatory disorders, review of book on, 109
- City of London Truss Society. See Society
- Civil profession and the medical services, 202
- Civilians in future wars, the fate of, 480
- CLARE, T. C.: Treatment of full-term ectopic gestation, 379—Adenomyoma of the recto-vaginal septum, 379
- CLARK, A. J. (and Katharine H. Coward): The vitamin content of certain proprietary preparations, 13 (O), 171—The properties of certain "colloidal" preparations of metals, 273 (O), 731, 834—The scientific basis for non-specific protein therapy, 315, 327 (O)—*Applied Pharmacology*, rev., 514
- CLARK, C. E.: A misquotation, 308
- CLARKE, C. K.: The Maudsley lecture on psychiatry in Canada, 972
- CLARKE, Sir Ernest, obituary notice of, 577
- CLARKE, J. Jackson: *Proctitis and Disease*, rev., 475
- CLARKE, Sidney: Phthisis: complete and permanent recovery, 744
- CLARKSON, R. D.: Care of the feeble-minded in Scotland, 832
- CLAUDE, Henri: *Précis de Pathologie Interne, Maladies du Système Nerveux*, rev., 156
- CLATON, W.: *The Theory of Emulsions and Emulsification*, rev., 381
- CLAYTON-GREENE, Mr.: Treatment of cancer of the tongue, 417
- CLEGG, S. J.: presentation to, 1120
- CLIFFORD, A. B.: *The Rescue Man's Manual*, rev., 563
- CLIFFORD, H.: The history of abdominal surgery, 329
- Climate of the tropics, effect of on efficiency (Squadron-Leader T. F. Rippon), 642
- Clinic, the group, 868, 876
- Clinic, the private, in Great Britain, 876
- Clinical Laboratories, first number, 598
- CLOGG, H. S.: Treatment of cancer of the tongue, 418
- Club, Glasgow Medical Lunch, 742, 879
- Club, Glasgow Royal Infirmary, 484
- Club, Royal Navy Medical, 615
- Clubbed fingers. See Fingers
- CLUCKIE, A. B.: Differential diagnosis of acute conjunctivitis, acuteritis, and acute glaucoma, 287—Orbital tumour, 287
- CLUTTERBUCK, L. A.: A sea-water dispensary in London, 917
- Coal miners. See Miners
- Coal-tar dyes. See Dyes
- COATES, V.: Sella turcica in a case of acromegaly, 193—Early rheumatoid arthritis with enlarged glands and achlorhydria gastrica, 287—Pernicious anaemia with foci of infection in the alimentary tract, 677 (O)
- Cocaine Substitutes Committee, names of members of, 471
- COCK, Reginald: A cause of lifelong headache, 840
- COHEN, Henry: Oxycephaly, 469
- COHEN, H. M.: Small-pox and vaccination in the Philippines, 210
- Cohen, J. L.: *Workmen's Compensation in Great Britain*, rev., 1021
- COLBERT, C.: *Le Traitement de la Tuberculose Pulmonaire en clientèle*, rev., 1097
- Cold, common, the cause of a, 355
- COLE, Estelle: *The psychology of Freud*, 154
- COLEBERG T. COLLIER, 218
- COLEMAN, F.: *Notes on Materia Medica, Pharmacology, and Therapeutics for Dental Students and Practitioners*, rev., 598
- COLES, Alfred C.: Acute amoebic dysentery in a man who had never been out of England, 809
- Colitis, ulcerative, discussion at the Royal Society of Medicine, 855
- College, Anderson, Glasgow, end of winter session, 533
- College for the Blind, Royal Normal, Norwood, jubilee of, 76
- College, Epsom: "France" pensions, 308, 1079
- College, Livingstone: Commemoration day, 1079
- College, Peking Union Medical, formal opening of, 745
- College, Royal (Dick) Veterinary, centenary of, 441, 993
- College, Royal, of Physicians of Edinburgh: Autograph letter of Edward Jenner, 837—Request to, 306—Fellows admitted, 306, 837—Freeland Harbour Fellowship, 837—Members admitted, 306, 837—Quarterly meeting, 306—Representative on General Medical Council, 837
- College, Royal, of Physicians of Ireland: Address of welcome to the Governor-General, 651—Degrees and pass lists, 664, 837, 1041
- COLLEGE, ROYAL, OF PHYSICIANS OF LONDON: Appointments, 218, 792, 884
- Councils, 217, 575, 792, 884
- Council and committees, 218
- Degrees and pass lists, 217, 444, 792
- D.P.H. regulations, 218
- Diplomas, 217, 792
- Fellowship, 792, 884
- Gift to, 792
- Lecturers, 218
- Licentiate, 217, 444, 792
- Members, 217, 792
- Membership examination, change in regulations for, 345
- President re-elected, 575
- Prince of Wales, presentation of illuminated address to, 575, 884
- Resignations, 792, 884
- Wren bicentenary, 884
- College, Royal, of Surgeons of Edinburgh: Bathgate Memorial Prize, 917—Degrees and pass lists, 917
- COLLEGE, ROYAL, OF SURGEONS OF ENGLAND: Council, constitution of, 575
- Council election, 306, 488, 539
- Council meeting, 131, 702, 884
- Court of examiners, 306, 702, 885
- Degrees and pass lists, 131, 702, 1078, 1119
- Diplomas, 131, 306, 837, 884, 1078
- Election of examiners, 702
- Examiners, 1078
- Fellows admitted, 1078
- Fellowship elections, 702
- Hunterian Festival, 339, 346
- Jacksonian prize, 702
- Lectures, 131, 306, 702
- Resignation from Court of Examiners, 1078
- Vicary lecture, 885
- College, Royal, of Surgeons, in Ireland: Appointments, 539—Address to the Governor-General of the Irish Free State, 880—Honorary Fellow, 1064, 1107—Charter Day dinner, 1107
- College of Surgeons of America: Cruise to South America to promote professional and social relations, 599
- College, Trinity, Dublin: Degrees and pass lists, 45, 356, 483, 664, 1119. See also University of Dublin
- College, University, London: The Rockefeller buildings, 691—New buildings opened by the King, 980, 982—The new anatomy buildings (G. Elliot Smith), 778, 910—Sharpey physiological scholarship, 917
- COLLIER, Surgeon Lieut.-Col. Hopetoun Currie, obituary notice of, 1002
- COLLIER, William: Oxford contributory hospital scheme, 522
- COLMAN, E. L.: The mortality of coal and metalliferous miners, 792—Industrial diseases and injurious processes, 1109
- Colloidal alkaline reserve of the blood (T. H. Milroy), 858
- Colloid argentine in ruptured perineum (D. Montague B. Snell), 809
- Colloidal chemistry, review of books on, 193
- Colloidal gold for the Lange test: A correction, 88
- "Colloidal" preparations of metals, properties of (J. A. Clark), 275 (O), 731 (Sir William J. Pope), 731—Correspondence on, 785, 833
- COLMER, P. A.: Unsuccessful action against, 218
- Colon, malignant annular stricture of (Robert Sanderson), 108
- Colon, non-malignant affections of (intestinal stasis), 82, 258
- Colonial medical practice (parliamentary note), 878
- Colonial medical services (parliamentary note), 779—Correspondence on, 785
- Colour blindness, some recent work on (R. A. Houston), 255
- COLT, G. H.: Statistics of appendicitis, 470—Hospital staffs and income tax, 1077
- COLYER, Sir Frank: Infection of teeth and gums, 63
- COMRIE-SHARP, C. W.: Care of pregnant women, 1023
- Confédération des Travailleurs Intellectuels Français, 541
- Conference of Panel Committees. See Insurance Congress, Air, International, 163
- Congress on Alcoholism, International, 1035
- Congress, Australasian Medical (1923), 340
- Congress of Bacteriology, Epidemiology, and Public Health, All-Russian, 839
- Congress of Comparative Pathology, International, 375
- Congress of the French Association for the Study of Cancer, 686
- Congress, French, of Medicine, 1019
- Congress, French Medical-Legal, 375, 885
- Congress, French, of Orthopaedics, 950
- Congress, French Oto-rhino-laryngology, 740



- Boston Psychopathic Hospital, 1031  
 BOSWELL, Dudley W.: Treatment of puerperal infections, 743  
 BOTHAM, R. H.: Early human ova, 308  
 Botulism in Scotland in 1922 (T. K. Munro and William W. N. Knox), 275 (O)  
 Botulism, review of book on, 932  
 BOULTON, W. S., appointed a member of the Safety in Mines Research Board, 745  
 BOURNE, Eleanor E.: Hiccup, 450  
 BOUSFIELD, Leonard, receives permission to wear the decoration of the Order of the Nile, 173  
 BOWER, E. Dykes: A plea for manual training, 352—The education of myopes, 955  
 BOWLEY, Sir Anthony A., Hon. D.C.L. Durham conferred upon, 1079  
 Boxer indemnity to be devoted to purposes beneficial to Great Britain and China, 401  
 BOXWELL, Professor: Brain sarcoma, 811  
 Brachial neuritis. *See* Neuritis  
 Brain: *A Journal of Neurology*, rev., 518, 1022  
 Brain, sarcoma of (Professor Boxwell), 811  
 Brain workers, proposed international association of, 690  
 BRAINARD, Annie: *The Evolution of Public Health Nursing*, rev., 475  
 BRAMWELL, Byrom, presentation to, 742, 912  
 BRAMWELL, J. C.: Heart-block, 513  
 BRAMWELL, William: Hiccup, 402  
 BRAND, A. George: Foreign bodies in the stomach removed by operation, 1018—A protest, 1077  
 BRAND, Alex. Theodore: *Cancer: its Cause, Treatment, and Prevention*, rev., 383  
 BRAULT, M. (and others): *Reins et Organes Génito-urinaires*, rev., 245  
 Bread and Food Reform League: Deputation to Minister of Health, 885  
 Breast disease, early and curable (Sir G. Lenthal Cheatle), 928 (O), 1062  
 Breast, diagnosis of indefinite masses in the (Duncan G. L. Fitzwilliams), 94 (O)—Correspondence, 211  
 Breast, hyperplasia of epithelial and connective tissue of (Sir G. Lenthal Cheatle), 1062  
 Breast, malignant diseases of (Charles A. Morton), 178 (O). *See also* Cancer  
 BREASTED, J. H., to prepare for publication an ancient Egyptian medical papyrus, 645  
 BRENNAN, J. M.: Notifications of convictions of medical practitioners to the General Medical Council, 835  
 Bretonneau, Pierre-Fidèle: *Traité de la dothinéritie et de la spécificité de*, rev., 22  
 BRIDE, J. W.: *A Short History of the St. Mary's Hospitals, Manchester, and the Honorary Medical Staff, from the Foundation in 1790 to 1922*, rev., 769—Obstructed labour due to carcinoma of the bladder, 1095  
 BRIDE, T. M.: Sarcoma of the choroid, 191  
 BRIGGS, Henry: Fibroid emphasizing the value of Péan's work, 470—Angioma of the vaginal wall, 510  
 BRISCOE, Sir Charlton: Elevation of diaphragm due to unilateral phrenic paralysis, 472  
 BRISCOE, John Frederick: Appreciation of William Prior Purvis, 400  
 BRISTOW, Mr.: Spastic paralysis, 469  
*British Journal Photographic Almanac*, 1923, rev., 110  
 British Empire Cancer Campaign. *See* Cancer research  
 British Empire Exhibition, 357  
 British Hospitals Association. *See* Association  
 British Medical Association. *See* Association  
*British Pharmaceutical Codex*: Bandages, 46  
 British Spas. *See* Spas  
 BROADBENT, Walter: Pneumonia and its complications, 471  
 BROCK, Arthur John: "Occupation cure" in neurasthenia, 190—*Galen on the Natural Faculties*, 198, 258  
 BROCKBANK, E. M.: *The Diagnosis and Treatment of Heart Disease: Practical Points for Students and Practitioners*, rev., 596  
 BRODERICK, F. W.: Diet, dental disease, and caries, 594  
 Bronchiectasis and damaged lungs (Clive Riviero), 141 (O)  
 Bronchiectasis with unusual complications (Ivor J. Davies), 374 (O)  
 Bronchopneumonia in a centenarian (F. Arnot Bearn), 809  
 Bronchopneumonia in a stillborn foetus (J. St. George Wilson), 859  
 Bronchoscopy, review of book on, 421  
 BROOKS, L. (and W. H. BARKER): *Junior Regional Geography*, rev., 1058  
 BROSTER, Arthur Erdswick, obituary notice of, 791  
 BROWDY, M. W.: Intravenous acriflavine for gonorrhoea, 1080  
 BROWN, A. Crum, bequests of, 357  
 BROWN, A. Samler: *Brown's Madeira, Canary Islands, and Azores*, rev., 593  
 BROWN, Sir Charles: Gift to Harris Orphanage, 703  
 BROWN, Herbert H.: On septicæmic infection following operations for appendicitis, 591 (O)  
 BROWN, John: Internal use of liquid paraffin, 132  
 BROWN, William: Psychotherapeutics, 327  
 BROWN, W. Langdon: The present position of organotherapy, 107—The scientific basis for non-specific protein therapy, 327—*The Sympathetic Nervous System in Disease*, rev., 381—The value of laboratory tests in diseases of the liver and pancreas, 461 (O)—Endocrines and psychoneuroses, 514  
 BROWNE, F. J.: Apituitarism and the anencephalic syndrome, 81—Appreciation of John William Ballantyne, 216—Some problems of latent syphilis, 767—Acardiac foetus, 898  
 BROWNE, Sir Thomas, early editions of, 908  
 BRUCE, Sir David, nominated President of the British Association, 616—Awarded the Albert Medal of the Royal Society of Arts, 1119  
 BRUMWELL, John: Primary union after operation for appendicitis, 442  
 BRYDENE, J. M.: Treatment of dysmenorrhoea, 1054  
 BUCHANAN, Sir George, 823  
 BUCHANAN, R. J. M.: Non-obstructive jaundice, 764  
 Budget, the (leading article), 689—(Parliamentary notes), 694, 740  
 BUIST, H. Massac: Motor notes for medical men, 207  
 BUIST, R. C.: The correction of malpositions; the rationale of the padded binder, 62  
 BULKLEY, L. Duncan: *Cancer and its Non-Surgical Treatment*, rev., 516  
 BULKLEY, M. E.: *Bibliographical Survey of Contemporary Sources for the Economic and Social History of the War*, rev., 684  
*Burdett's Hospitals and Charities, 1922-23*, rev., 245  
 BURFORD, George: A sea-water dispensary in London, 917  
 BURGESS, Dr.: A coroner's attack on the panel system, 876  
 BURNAND, R.: *La Guérison de la Tuberculose Pulmonaire*, rev., 244  
 BURNETT, Sir Napier: Need for public education in the control of cancer, 510—Voluntary hospital finance, 989  
 BURRIDGE, Dr.: The problem of drug addiction, 565  
 BURROUGHS, A. E.: Night-blindness, 107  
 BURROW, Le Fleming: Spheno-occipital chordoma, 150  
 Burrow Hill Colony, Frimley, Surrey, note on, 357  
 BURROWS, A.: Methods of the application of radium, 1095  
 BURROWS, Harold: A disclaimer, 88—*The Mistakes and Accidents of Surgery*, rev., 561  
 BURT, J. B.: Sciatica, 379  
 BURTON, A. H. G.: Called to the Bar, 1079  
 BURTON, J. A. G.: Etiology of tumours, 765  
 BURY, Judson: Appreciation of Sir William Thorburn, 576  
 BUTCHER, H. H.: Tropical abscess of liver, 561  
 BUTLER, E. N.: Meningitis due to Pfeiffer's bacillus, 719  
 BUTLER, T. Harrison: Refraction, 843 (O)—The education of myopes, 955  
 BUTLER, William: Oxygen content of the water of the Thames estuary, 601  
 BUTTERS, George: Erysipelas of the mouth, 190  
 Button suture, a two-loop (W. G. Spencer), 959 (O)  
 Butyn, 492  
 Butyn as a local anaesthetic, value of (W. M. Beaumont), 57 (O)  
 BUZZARD, E. Farquhar: Psychotherapeutics, 326  
 BYAM, Lieut.-Col. W. (and Major R. G. Archibald): *The Practice of Medicine in the Tropics*, rev., 859  
 BYRON, Lord: The lameness of (H. C. Cameron), 564—Leading article on, 568  
 BYWATER, H. Haward: Night-blindness, 107
- C.
- CABANES and WITKOWSKI: *Joyeux Propos d'Esculape*, rev., 517  
 Cadet organization and preventive medicine, 172  
 Caecum, fixation of in chronic intussusception (J. B. Alexander), 508  
 Caesarean section (Sir Edmond S. Stevenson), 1093  
 Caesarean section, conservative, in treatment of concealed accidental haemorrhage (R. A. Lennie), 898  
 Caesarean section, technique of (S. J. Cameron), 285—Discussion, 285  
 CAIGER, F. Foord: Diphtheria antitoxin on suspicion, 996, 1076  
 CAIRNS, Ronald McD.: A case of Ritter's disease, 186 (O)  
 Calcium excess, effects of on the skeleton (V. Korenchewsky), 802 (O)  
 Calcull, renal, surgical treatment of (W. Sampson Handley), 63  
 Calcutta, child wives in, 351. *See also* India  
 Calcutta School of Tropical Medicine. *See* Tropical  
 CALVERT, E. G. B.: Estimation of sugar in blood, 777  
 CALWELL, Dr.: Mentally defective children, 512  
 Cambridge Schools of Pharmacology, Biochemistry, and Physiology: Visit of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine to, 819  
 CAMERON, Hector Charles (and A. A. OSMAN): Late results of meningeal haemorrhage in the newly born, 363 (O)  
 CAMERON, H. C.: The lameness of Lord Byron, 564  
 CAMERON, Lieut.-Col. John Philip, C.I.E. conferred upon, 30  
 CAMERON, R.: Renal inefficiency and its clinical detection, 930  
 CAMERON, S. J.: Technique of Caesarean section, 285  
 CAMMIDGE, P. J.: Insulin and diabetes, 787  
 CAMPBELL, Hon. Alexander, appointed a member of the Legislative Council of the colony of Newfoundland, 1079  
 CAMPBELL, Boyd: Enlarged spleen, 326  
 CAMPBELL, David: Ionic medication, 409 (O)  
 CAMPBELL, J. Argyll (and Leonard Hill): The composition of the gases in artificial pneumothorax, 752 (O)  
 CAMPBELL, W. F.: *A Textbook of Surgical Anatomy*, rev., 727  
 CAMPBELL, W. R. (F. G. BANTING, and A. A. FLETCHER): Further clinical experience with insulin (pancreatic extracts) in the treatment of diabetes mellitus, 8 (O)  
 Campbelltown, typhoid fever outbreak at, 953  
 CANADA:  
 And the British Medical Association (leading article), 982  
 Canadian cattle, tuberculosis in (parliamentary note), 878  
 Canadian Medical Association, 697  
 Honorary degrees, 697  
 Industrial medicine, 697  
 McGill University, 484, 697  
 Medical Council of Canada, 484  
 Ontario legislature establishes a research chair for Dr. Banting, the originator of the "insulin" idea, 873  
 Psychiatry in (C. K. Clarke), 972  
 Roddick, Sir Thomas, death of, 484  
 Toronto University, 484  
 Cancer of bladder obstructing labour (J. W. Bride), 1095  
 Cancer of the breast (Charles A. Morton), 178 (O)  
 —(Cecil Rowntree), 747 (O)—Correspondence on, 882, 994  
 Cancer campaign inaugurated in France, 449  
 Cancer of cervix, radium treatment of; exhibition of cases, 151  
 Cancer control, urgent need for public education in (J. E. Adams), 491, 509—Discussion, 509—Correspondence on, 612  
 Cancer, freedom of negro races from, 1116  
 Cancer, cure of: number of claims received for the offered prize, 212  
 Cancer, defective lipolysis in, 1075  
 Cancer, French Association for the Study of, 686  
 Cancer, inoperable, x rays in (Herbert Spencer), 766  
 Cancer Hospital Research Institute, 948  
 Cancer mortality (parliamentary note), 605  
 Cancer of oesophagus, radium in, 297, 301  
 Cancer, prize for the best work on, 370  
 Cancer, radiotherapy for, 261  
 Cancer of rectum, radium in, 297, 301  
 Cancer research (parliamentary note), 991, 1035  
 Cancer research (British Empire Cancer Campaign), an appeal for (leading article), 944—Text of the appeal, 947—Names of committee, 947—The problem to be solved, 979—Donation from the King, 1003—Royal Society and Medical Research Council to receive delegates to discuss the campaign, 1103  
 Cancer research, bequests for, 533, 615  
 Cancer Research Fund, the Imperial, 947  
 Cancer research now in progress: list of institutions, 947, 980  
 Cancer, review of books on, 382, 516, 1096  
 Cancer of the scrotum, 46  
 Cancer of the skin in rabbits (J. A. Murray), 376  
 Cancer and smoking, pipe or cigarette? 1004  
 Cancer of the stomach, with unusual secondary developments (Sir John Moore), 812  
 Cancer of the tongue, radium in, 297, 301  
 Cancer of the tongue, treatment of (James Berry), 417—Discussion, 417  
 Cancer of the urethra, radium in (Fletcher Shaw), 329  
 Cancer of the vagina, primary (Eardley Holland), 151  
 Cancer week in America, 45  
 CANNEX, Arthur E.: Vitamin content of certain proprietary preparations, 131, 212  
 Cape Town M.O.H., 778  
 Capillary blood vessels. *See* Blood  
 CAPON, Norman B.: Apituitarism and the anencephalic syndrome, 171—General oedema of the foetus, 539  
 Carbon tetrachloride and oil of chenopodium in helminthiasis (J. G. Reed), 1048 (O)  
 Carcinoma. *See* Cancer  
 Cardiac dilatation and hypertrophy, 1012  
 Cardiac problems in adolescent life (G. A. Sutherland), 496 (O)  
 Cardiac valves and aorta, musculature of (A. Blackhall-Morison), 1054  
 Cardiac. *See also* Heart  
 Cardigan Hospital War Memorial, 1073  
 Cardio-vascular conditions in relation to anaesthesia (J. Strickland Goodall), 239  
 Cardio-vascular disease, the cause and treatment of dyspnoea in (Jonathan Meakins), 1043 (O)  
 Cardio-vascular system, the history of (G. A. Allan), 1052  
 "Carence, maladies par," 123  
 CARLILL, Hilfred: Encephalitis lethargica and syphilis of the nervous system, 242—*Tabes dorsalis* with Charcot's disease of the tarsus, 242—Boy who flexed his neck and spine whenever he spoke, 242



- Carnegie Trust, annual meeting, 348  
 CARONIA, Giuseppe, appointed professor of clinical pediatrics in the University of Rome, 541  
 Carriers of disease, review of book on, 684  
 CARRION, H. (and others): *Endocrine Glands and the Sympathetic System*, rev., 292  
 CARRUTHERS, N. Stuart: What is a "diseased" tonsil? 955  
 CARRUTHERS, Thos.: Environment and diet in the causation of rickets, 358—Whooping-cough, 666, 839  
 CARSON, H. W.: Treatment of gastric and duodenal ulcer, 238  
 CARSWELL, John: Notes on Robert Burns, 560  
 CARTER, F. Bolton: Trauma and appendicitis, 82  
 CASSIDY, L.: Pelvic pain from a gynaecological standpoint, 242—Deep x-ray therapy in gynaecology, 418—Rare case of maldevelopment of the female genital organs, 419—Fibroma of ovary, 765  
 CASTNEY, M.: Osteo-arthritis and rheumatoid arthritis, 761  
 CASTELL, B. P.: The unpleasant taste of potassium bromide, 640  
 CASTELLANI, Aldo: Treatment of Oriental sore by phosphorated oil, 283 (O)  
 CASTLE, Walter F.: Dermatitis from dyed fur, 535  
 CASTIGLIONI, A.: Benvenuto Cellini, 433  
 Casualties, war. See War losses  
 Cataract extraction followed by symptoms suggestive of sympathetic ophthalmia (Freeland Ferguson), 182 (O)  
 Cataract extraction, intracapsular, 612, 699  
 Catarrh, pituitous (Sir Percival Horton-Smith Hartley and Ivor J. Davies), 1052 (O)  
 Catgut holder, 88  
 Catgut or silver as suture for vesico-vaginal fistula, 834, 881  
 CATHART, E. P. (D. Noel Paton and M. S. Ferguson): *Practical Physiology*, rev., 331  
 CATTELL, H. W. (editor): *International Clinics*, rev., 70  
 CATE, Viscount: State hospitals, 303  
 CAVENAGE, J. B.: What is a "diseased" tonsil? 1075  
 CAYSTON, F. G.: Sodium or potassium salts, 1080  
 CELLINI, Benvenuto, 433  
 Cells, living, changes in during growth and division (T. S. P. Strauways), 479  
 Census of London, 348  
 Census of Scotland, 1921 (counties), 209, 350  
 Central Midwives Board. See Board  
 Cervical glands. See Glands  
 Cervical rib. See Rib  
 Cervical spine. See Spine  
 Cervix, congenital deformity of the posterior lip of (Herbert Spencer), 767  
 Cervix, dilatation of, 704  
 Cervix, acute oedema of (W. F. T. Haultain), 18—(J. A. McKintion), 190  
 CESTAN, R.: *Les Epilepsies*, rev., 243  
 CHALDECOTT, J. H.: Coroners' inquests: anaesthetic deaths, 719  
 CHALMERS, Archibald, obituary notice of, 306  
 CHALMERS, A. K. (and A. S. M. Macgregor): The irritative type of lethargic encephalitis, 521  
 CHAMBERLAIN, E. Noble: A small epidemic of plague, 896  
 CHAMBERLAIN, Neville: On the Ministry of Health, 1003  
 CHAMBERS, Surgeon Rear-Admiral Joseph, C.B. conferred upon, 987  
 CHANCE, A.: Treatment of venereal diseases, 633  
 CHANCE, Mr.: Unsatisfactory appendicectomy, 66  
 Chancere redux (P. C. P. Ingram), 1091 (O)  
 CHAPMAN, A. Chaston: Detection and estimation of small quantities of arsenic, 265  
 Characters, acquired, inheritance of (leading article), 857  
 Charity in medicine an anachronism (J. S. Fraser), 337  
 CHARLES, Sir Richard Havelock, K.C.S.I. conferred upon, 30—His retirement as medical adviser to the India Office postponed, 435—Hon. LL.D. Belfast conferred upon, 1073  
 Charterhouse School, medical officership of, 356  
 CHAUDRON, Captain S. K.: Bat-bite fever, 542  
 CHEATLE, Sir G. Lenthal: "Angels and Ministers," 139—Early and curable disease of the breast, 928 (O)—Appreciation of Walter d'Este Emery, 1116  
 Chemical examinations in the Punjab, 127  
 Chemistry, review of books on, 156, 193, 814, 932  
 Chemotherapy, manganese in (J. E. R. McDonald), 810  
 Chonopodium oil in helminthiasis (J. G. Reed), 1048 (O)  
 Chest, review of books on, 421  
 CHESTERMAN, O. G.: Trypanamide, 149  
 CHEVRE, Martin J.: Riccup, 744  
 CHICK, Harriette (and others): Report on the etiology and prevention of rickets, 937  
 CHENE, John, death of, 940—Obituary notice of, 999  
 Child-bearing, number of deaths attributed to (parliamentary note), 1110  
 Child welfare in India, 33, 351. See also Maternity  
 Child wives in Calcutta, 351  
 CHILDE, C. P.: Need for public education in the control of cancer, 509  
 Children, mentally defective, care and education of (W. R. Dawson), 512  
 Children, physically defective, 251  
 Children's diseases, review of books on, 22, 768  
 China, medicine in, 115—Boxer indemnity to be devoted to purposes beneficial to Great Britain and China, 401  
 CUNNINGHAM, Dr.: Radium in cancer of the urethra, 329  
 CHRISTOPHER, Sir Samuel: Small-pox in Glasgow in 1900, 878  
 Chlorine in influenza. See Influenza  
 Chloroform versus ether, 996, 1076, 1114  
 Chloroform, report on, 83  
 Cholecystitis, gall stones, and pancreatitis (Sir Gilbert Barling), 705 (O)  
 Cholera in Japan, 45—In Russian Europe, 971  
 CHORRING, Colonel Arthur, Order of the Crown of Italy conferred upon, 449  
 Chordoma, spino-occipital (Lo Fleming Burrow), 150  
 Chorion-angioma (Gilbert Strachan), 766—(R. W. Johnston), 765  
 Chorion-epithelioma of the Fallopian tube (Bethel Holomons and E. C. Smith), 765  
 Christian, Princess, death of, 1041  
 CHRISTMAS, R. W. S.: Riccup, 542  
 Chrysops, development of *los los* in, 82  
 Cinchonine and quinine idiosyncrasy (William Fletcher and E. A. O. Travers), 629 (O)  
 Circular offer, 666  
 Circulatory disorders, review of book on, 109  
 City of London Truss Society. See Society  
 Civil profession and the medical services, 202  
 Civilians in future wars, the fate of, 480  
 CLARE, T. C.: Treatment of full-term ectopic gestation, 379—Adenomyoma of the recto-vaginal septum, 379  
 CLARE, A. J. (and Katharine H. Coward): The vitamin content of certain proprietary preparations, 13 (O), 171—The properties of certain "colloidal" preparations of metals, 273 (O), 731, 834—The scientific basis for non-specific protein therapy, 315, 327 (O)—*Applied Pharmacology*, rev., 514  
 CLARE, C. E.: A misquotation, 308  
 CLARE, O. K.: The Maudsley lecture on psychiatry in Canada, 972  
 CLARKE, Sir Ernest, obituary notice of, 577  
 CLARKE, J. Jackson: *Protists and Disease*, rev., 475  
 CLARKE, Sidney: Phthisis: complete and permanent recovery, 744  
 CLARSON, R. D.: Care of the feeble-minded in Scotland, 832  
 CLAUDE, Henri: *Précis de Pathologie Interne*, rev., 70  
 CLAUDE, Henri: *Précis de Pathologie Interne*, rev., 70  
 CLAYTON-GREENE, Mr.: Treatment of cancer of the tongue, 417  
 CLEGG, S. J., presentation to, 1120  
 CLIFFORD, A. B.: *The Rescue Man's Manual*, rev., 563  
 CLIFFORD, H.: The history of abdominal surgery, 323  
 Climate of the tropics, effect of on efficiency (Squadron-Leader T. F. Rippon), 642  
 Clinic, the group, 658, 876  
 Clinic, the private, in Great Britain, 876  
 Clinica y Laboratorio, first number, 598  
 CLOGG, H. S.: Treatment of cancer of the tongue, 418  
 Club, Glasgow Medical Lunch, 742, 879  
 Club, Glasgow Royal Infirmary, 484  
 Club, Royal Navy Medical, 615  
 Clubbed fingers. See Fingers  
 CLUCRIE, A. B.: Differential diagnosis of acute conjunctivitis, acuteritis, and acute glaucoma, 287—Orbital tumour, 287  
 CLUTTERBUCK, L. A.: A sea-water dispensary in London, 917  
 Coal miners. See Miners  
 Coal-tar dyes. See Dyes  
 COATES, V.: Sella turcica in a case of acromegaly, 195—Early rheumatoid arthritis with enlarged glands and achlorhydria gastrica, 287—Pernicious anaemia with foci of infection in the alimentary tract, 677 (O)  
 Cocaine Substitutes Committee, names of members of, 741  
 COCK, Reginald: A cause of lifelong headache, 840  
 COHEN, Henry: Oxycephaly, 469  
 COHEN, H. M.: Small-pox and vaccination in the Philippines, 210  
 COHEN, J. L.: *Workmen's Compensation in Great Britain*, rev., 109  
 COHEN, J. L.: *Workmen's Compensation in Great Britain*, rev., 109  
 COLEMAN, F.: Notes on Materia Medica, Pharmacology and Therapeutics, 100  
 COLEMAN, F.: Notes on Materia Medica, Pharmacology and Therapeutics, 100  
 COLEMAN, F.: Notes on Materia Medica, Pharmacology and Therapeutics, 100  
 COLLEGE, Royal, of Physicians of Edinburgh: Autograph letter of Edward Jenner, 837—Request to, 306—Fellows admitted, 306, 837—Freeland Barbour Fellowship, 837—Members admitted, 306, 837—Quarterly meeting, 306—Representative on General Medical Council, 837  
 COLLEGE, Royal, of Physicians of Ireland: Address of welcome to the Governor-General, 651—Degrees and pass lists, 664, 837, 1041  
 COLLEGE, ROYAL, OF PHYSICIANS OF LONDON: Appointments, 218, 792, 834  
 Comitia, 217, 575, 732, 884  
 Council and committees, 218  
 Lecturers, 218  
 Licentiate, 217, 444, 792  
 Members, 217, 792  
 Membership examination, change in regulations for, 345  
 President re-elected, 575  
 Prince of Wales, presentation of illuminated address to, 575, 884  
 Resignations, 752, 884  
 Wren baccinate, 884  
 COLLEGE, Royal, of Surgeons of Edinburgh: Bathage Memorial Prize, 917—Degrees and pass lists, 917  
 COLLEGE, ROYAL, OF SURGEONS OF ENGLAND: Council, constitution of, 575  
 Council election, 306, 488, 539  
 Council meeting, 131, 702, 884  
 Court of examiners, 306, 702, 885  
 Degrees and pass lists, 131, 702, 1078, 1119  
 Diplomas, 131, 306, 837, 884, 1078  
 Election of examiners, 702  
 Examiners, 1078  
 Fellows admitted, 1078  
 Fellowship elections, 702  
 Hunterian Festival, 339, 346  
 Jacksonian prize, 702  
 Lectures, 131, 306, 702  
 Resignation from Court of Examiners, 1078  
 Vicary lecture, 885  
 COLLEGE, Royal, of Surgeons, in Ireland: Appointments, 539—Address to the Governor-General of the Irish Free State, 680—Honorary Fellow, 1064, 1107—Charter Day dinner, 1107  
 College of Surgeons of America: Cruise to South America to promote professional and social relations, 599  
 College, Trinity, Dublin: Degrees and pass lists, 45, 356, 483, 664, 1119. See also University of Dublin  
 College, University, London: The Rockefeller buildings, 691—New buildings opened by the King, 980, 882—The new anatomy buildings (G. Elliot Smith), 728, 910—Sharpey physiological scholarship, 917  
 COLLIER, Surgeon Lieut.-Col. Hopetoun Currie, obituary notice of, 1002  
 COLLIER, William: Oxford contributory hospital scheme, 522  
 COLLIS, E. L.: The mortality of coal and metalliferous miners, 972—Industrial diseases and injurious processes, 1109  
 Colloidal alkaline reserve of the blood (T. H. Milroy), 853  
 Colloid argentum in ruptured perineum (D. Montague B. Snell), 809  
 Colloidal chemistry, review of books on, 193  
 Colloidal gold for the Lange test: A correction, 88  
 "Colloidal" preparations of metals, properties of (A. J. Clark), 273 (O), 731—(Sir William J. Pope), 751—Correspondence on, 785, 833  
 Colloids, electric charge of (H. R. Krutz), 912  
 COLMAN, P. A., unsuccessful action against, 218  
 Colon, malignant annular stricture of (Robert Sanderson), 108  
 Colon, non-malignant affections of (intestinal stasis), 82, 258  
 Colonial medical practice (parliamentary note), 878  
 Colonial medical services (parliamentary note), 779—Correspondence on, 789  
 Colour blindness, some recent work on (R. A. Houston), 255  
 COLE, G. H.: Statistics of appendicitis, 470—Hospital staffs and income tax, 1077  
 COLEMAN, Sir Frank: Infection of teeth and gums, 63  
 COLEMAN, C. W.: Care of pregnant women, 1093  
 Confédération des Travailleurs Intellectuels Français, 541  
 Conference of Panel Committees. See Insurance  
 Congress, Air, International, 168  
 Congress on Alcoholism, International, 1035  
 Congress, Australasian Medical (1923), 340  
 Congress of Bacteriology, Epidemiology, and Public Health, All-Russian, 839  
 Congress of Comparative Pathology, International, 375  
 Congress of the French Association for the Study of Cancer, 686  
 Congress, French, of Medicine, 1019  
 Congress, French Medico-Legal, 375, 885  
 Congress, French, of Orthopaedics, 960  
 Congress, French Oto-rhino-laryngology, 740



Congress of the French Society of Orthopaedics, 62  
 Congress of French-speaking anatomists and histologists, 375  
 Congress of French-speaking dermatologists and syphilologists, 639  
 Congress of French-speaking gynaecologists and obstetricians, 628  
 Congress of French-speaking neurologists and alienists, 189  
 Congress of French-speaking paediatrists, 918  
 Congress of the German Dermatological Society, 700  
 Congress, German Medical, 261, 491, 574  
 Congress of German oto-rhino-laryngologists, 839  
 Congress of Historical Studies, Fifth International, 541  
 Congress of the History of Medicine, International, next meeting (1925), 87, 778  
 Congress of the History of Science, International, meeting at Brussels, 734  
 Congress of Hydrology and Climatology, International, 87, 971  
 Congress of Industrial Medicine, Italian, 39  
 Congress of Internal Medicine, All-Russian, 237  
 Congress, Irish National Teachers, 653  
 Congress, Italian, of War Tuberculosis, 759  
 Congress, Medical, Brussels (*Les Journées médicales de Bruxelles*), 1019  
 Congress of Medical Practitioners, Japan National, annual meeting, 356  
 Congress of Medicine in Vienna, 491, 574  
 Congress of Mental Hygiene, International, 578  
 Congress of Military Medicine and Pharmacy, International, 279, 958  
 Congress of Municipal Hygiene, International, 559  
 Congress of Natural Science and Medicine, Dutch, 186  
 Congress, Neurological, International, 839  
 Congress of Obstetrics and Gynaecology, British, 435, 646, 722, 736, 766—Intrinsic dysmenorrhoea, 722—Dinner, 725—Note on, 736—X rays in inoperable cancer, 766—Chlorion-epithelioma of the Fallopian tube, 766—Chlorion angioma, 766—Treatment of urinary incontinence in parous women, 766—Contraction ring dystocia, 766—Continuous catgut suture in gynaecology, 766—Developmental intersexuality, 766—Exhibition of specimens and papers read, 767—Tea, 767  
 Congress of the Ophthalmological Society, 693, 776  
 Congress, Oxford Ophthalmological, 252, 344, 1054  
 Congress, Physiological, International, 168, 1072  
 Congress on the Population Question, Roman Catholic, 370  
 Congress of the Royal Institute of Public Health, 265  
 Congress of the Royal Sanitary Institute, 656  
 Congress, Sicilian Medical, 630  
 Congress of Social Hygiene, 220  
 Congress of Thalassotherapy, International, 261  
 Congress of Tuberculosis, International, 541  
 Conjoint Board in England: Revised synopsis of examinations, 615—Recognized hospitals, 615—Egyptian Medical School, 615  
 Conjoint Board in Ireland: Degrees and pass lists, 702  
 Conjoint Board in Scotland: Degrees and pass lists, 218, 702, 917  
 Conjoint Board of Scientific Studies. *See Scientific*  
 CONNOR, Middleton: Artificial limb fitting, 287  
 Constitutional symptoms, acute, due to radiations (Sir Humphry Rolleston), 1 (O)  
 Continuity, review of book on, 244  
 Coolidge x-ray tube, 699, 836  
 COPEMAN, S. Monckton: Need for public education in the control of cancer, 510  
 COPLAND, Joseph M.: Belgian Order of Leopold conferred upon, 172  
 CORE, Donald E.: Appreciation of Sir William Thorburn, 576  
 CORRIER, Major-General T. M.: The medical profession in war 353  
 CORRIAC, H. Dove: The new spirit in psychiatry, 395  
 Coroner's attack on the panel system, 875, 918  
 Coroners' inquests: Anaesthetic deaths (J. H. Chaldecott), 719—Discussion, 720  
 Coroners' law amendment (parliamentary note), 780, 953  
 Corrections, 88, 174, 266, 303, 542, 616, 840, 886, 918, 1120  
 Correlation, notation of, 703

**Correspondence:**

Adder bite, 41, 171  
 Adrenal glands, function of and its relation to concentration of hydrogen ions, 442  
 Alkaline treatment of peptic ulcer followed by toxic symptoms, 1074  
 Anaemia, pernicious, 743, 881, 955, 1039  
 Anaesthetics, effect of on the lungs, 170  
 "Angels and ministers," 130  
 Antitularism and the anencephalic syndrome, 61, 171  
 Appendicitis, suppurative, primary union after operation for, 337, 442  
 Arterio-sclerosis, the nature of, 783  
 Artificial legs, 700  
 "Athletic heart," 660  
 Auricular flutter stimulating death, 693, 787  
 Bacteriologic memorial to, 652  
 Haldane's conceptions of, 441, 485  
 rs, 483

**Correspondence (continued):**

Blood picture in sprue, 743  
 Blood pressure after operations, 916  
 Blood sugar estimations by general practitioners, 1115  
 Blood sugar, nature of, 994, 1039  
 Breast, diagnosis of indefinite masses in, 211, 994  
 British spas: the need of scientific co-ordination, 487  
 Cadet organization and preventive medicine, 172  
 Cancer of the breast, 882, 994  
 Cancer control, public education in, 612  
 Cataract, intracapsular extraction of, 612, 699  
 Catgut or silver as suture for vesico-vaginal fistula, 834, 881  
 Coastal mosquito nuisance, 915, 937  
 Cold, cause of a common, 355  
 Colloidal preparations, 785, 833  
 Colon, non-malignant affections of (intestinal stasis), 82, 258  
 Colonial medical services, 789  
 Congress of Medicine in Vienna, 574  
 Convictions of medical practitioners, notification to the General Medical Council, 836  
 Coolidge x-ray tube, 699, 836  
 Country practitioner, 954, 994  
 Cupping, 743  
 D.P.H., new regulations for, 128, 397  
 Dangerous Drugs Regulations, 171, 260, 304, 485  
 Dermatitis from dyed fur, 534, 574, 613  
 Diabetes and cancer, defective lipolysis in, 1075  
 Diet table, a simple, 789  
 Diphtheria antitoxin on suspicion, 996, 1039, 1076  
 Diphtheria prophylactic and immunity, 43  
 Drug habit, 1076  
 Eating, 1077  
 Edinburgh University War Memorial, 397  
 Endocrine activity and foetal life, 397  
 Ether versus chloroform, 996, 1076, 1114  
 Fees in court cases, 212  
 Fractures treated by operative methods, 43, 130  
 General paralysis treated by malaria, 995  
 General practice, the endowment of, 1039  
 General practitioner and consultant, 997  
 Haemoclastic crisis as a test of hepatic insufficiency, 574  
 Heart beat, restoration of, 882  
 Heart disease, prevention of, 1038, 1074  
 Herpes zoster with localized muscular paralysis, 1075  
 Hiccup, 744  
 Hodgkin's disease, the pyrexia of, 40  
 Hospital "maintenance" system, 610  
 Hospital policy, 82, 128, 211, 261, 303, 353, 398, 442, 486, 537, 574, 610, 661, 700, 788, 835  
 Hospital staffs and income tax, 1077  
 Hospitals, State, 212, 303  
 Hunter's notes, the destruction of, 399  
 Indian Medical Service, 354  
 Infection during incubation, 355, 700  
 Insulin and diabetes, 787, 882  
 Insulin, the "unit" of, 833  
 Intestinal bacteria, influence of upon the thyroid gland, 659, 834  
 Ionic medication, 487, 535, 613, 659, 914  
 L'Entente Hygienne, 656  
 Loa loa in chrysops, development of, 82  
 Lunacy law and the treatment of the insane, 536, 655  
 Malta fever, treatment of, 43  
 Manual training, a plea for, 352  
 Medical axioms and aphorisms, 488  
 Medical officers of health, annual reports of, 700  
 Medical physics in the curriculum, 662  
 Medical profession in war, 353  
 Mental cases, early treatment of, 536, 611, 658  
 Mental Treatment Bill, a new, 915  
 Mnemonic principle, 661  
 Mosquito nuisance, 915  
 Myopes, education of, 915, 955, 1115  
 Naval hygiene, 444  
 Negro races and freedom from cancer, 1116  
 Notification of convictions. *See Convictions*  
 Nurses in cottage hospitals, training of, 699, 744  
 Nurses' registration, 789, 997, 1077  
 Nystagmus, 171, 210, 996  
 Occipito-posterior presentations, 211  
 Oedema of the foetus, general, 539  
 Of eating, 1077  
 Ophthalmia neonatorum in London, treatment of, 538  
 Penal discipline, 212, 305, 399  
 Peptone treatment of asthma: a disclaimer, 1116  
 Phthisis. *See Tuberculosis*  
 Physiology and psychology, 789  
 Pituitary secretions, the origin of, 442  
 Planorbis as the intermediate host of *Schistosoma haematobium*, 351  
 Poliomyelitis and encephalitis lethargica, 259  
 Polythelia, 1039, 1115  
 Prostate, surgery of the, 259, 304, 352  
 Protest, 1077  
 Psychiatric clinics, 42  
 Psycho-analysis, 39  
 Psychology and medicine, 485  
 Psychotherapy, the teaching of, 42  
 Puerperal infections, treatment of, 660, 700, 743, 787, 890  
 Quain's Anatomy, 836  
 Radiotherapy for cancer, 251

**Correspondence (continued):**

Ragging in boys' schools, 261  
 Registrar-General's statistical review (1921), 533  
 Relapsing fever, outbreak of, 698  
 Rights of a registered medical practitioner, 539, 575  
 Rodent ulcer disappears after erysipelas, 82  
 Septicaemic infection following operations for appendicitis, 835  
 Skin rashes. *See Dermatitis*  
 Small-pox and vaccination, 43, 351, 398  
 Small-pox and vaccination in the Philippines, 210  
 Space judgement with one eye, 785  
 Standards of vision. *See Vision*  
 State hospitals. *See Hospitals*  
 Sterilization of the unfit, 835, 883  
 Sugar versus alcohol, 611  
 Testicular grafts, 130  
 Thymic asthma: a protest, 662  
 Tonsil, what is a "diseased"? 995, 1033, 1075  
 Tonsils, diseased, and heart disease, 1038, 1074  
 Trauma and appendicitis, 82, 352  
 Tryparsamide, intrathecal injections of, 883  
 "T.B.," 354  
 Tuberculosis: complete and permanent recovery, 744  
 Tuberculosis of the cervical glands, treatment of, 211, 304  
 Turpentine or lead poisoning as a cause of punctate basophilia, 170, 210  
 Venereal Disease Committee's report, 1039, 1076  
 Venous pulsations and venous tracings, 787  
 Vision, standards of in Council schools, 354  
 Vitamin content of certain proprietary preparations, 151, 171, 212  
 Vomiting after deep x-ray therapy, 699  
 White man in the tropics, 250  
 Women doctors, 129  
 Cost of living index number (parliamentary note), 484  
 COSTE, J. H.: Oxygen content of the water of the Thames estuary, 601  
 COSTER: Element 72, 357  
 COTON, L. (and others): *Pneumococcus et affections pneumococciques*, rev., 683  
 Cottage Hospitals. *See Hospitals*  
 COTTELL, Sir Montagu: The advance of surgery, 1072  
 COTTELL, M. (and others): *Reins et Organes Génito-urinaires*, rev., 245  
 Cotton weaving, atmospheric conditions in, 389  
 COTTON, Thomas F.: Clubbed fingers in sub-acute infective endocarditis, 644  
 Council, General Medical: Notification of convictions of medical practitioners to, 836—New session opens, 994  
 COUNCIL, LONDON COUNTY:  
 Humane slaughtering, 655  
 Index to Minutes, rev., 423  
 Insane, care of, 783  
 Minutes, rev., 423  
 Pathologist to, 255  
 Physically defective children, report on, 251  
 School medical treatment in London, 38  
 Service patients in mental hospitals of the Council, 529  
 Theatres, ventilation of, 655  
 Venereal clinics, the work of, 655  
 Women doctors as examiners of school nurses, 449  
 Council schools, standards of vision in. *See Vision*  
 Country life and country doctors, 776  
 Country practitioners (leading article), 904—Correspondence on, 954, 994  
 COURGE, S.: *Milieux des Misères*, rev., 815  
 COURTNEY, Major Michael, O.B.E. conferred upon, 30  
 COURTS, F. J. H., C.B. conferred upon, 30  
 Cover-slip holder, a non-grip, 246  
 Cow, certain diseases of and their interest to the physician (Frederick Hobday), 313 (O)  
 COWAN, John: The relation of sciatica to the sacro-iliac joint, 372 (O)  
 COWARD, Katharine (and A. J. CLARK): The vitamin content of certain proprietary preparations, 13 (O), 171  
 Cowsheds, condition of in the West Riding (parliamentary note), 437  
 COX, Alfred: Appreciation of David George Thomson, 84  
 COX, Harold: *The Problem of Population*, rev., 384  
 COX, Joshua John, obituary notice of, 217  
 CRAIG, Sir James: Irish hospital finance, 242—Medical inspection of Irish school children, 653  
 CRAIK, Robert: The blood as guide to early diagnosis in lead poisoning, 103 (O)—Turpentine or lead poisoning a cause of punctate basophilia, 210  
 CRAMPTON, H. P.: Coroners' inquests: anaesthetic deaths, 721  
 CRAWFORD, Dobbin: Clean milk, 65  
 CRAWFORD, John Craig, called to the Bar, 219  
 CRAWLEY, Major P. A. B.: A contributory hospital scheme, 423  
 CREAN, Major Thomas Joseph, obituary notice of, 614  
 Cremations in England during 1922, 132—Annual report of the Society, 570  
 CREW, F. A. E.: Endocrine activity and foetal life, 397—Developmental intersexuality, 766  
 Cricket match, a medical, 885



- Crime in Scotland, 349  
 Crimes of violence, statistics, 745  
 Criminal responsibility, Memorandum of evidence submitted to committee on, 514—Report of the Medico-Psychological Association, 520—Leading article on, 569  
 Criminals, the psychological conditions found in, 342  
 CRIPPS, Vital capacity, 1063  
 CROCKET, James: *Physical Examination of the Chest*, rev. 421  
 CROFT, E. O.: Axial rotation of the right Fallopian tube and ovary, 1035—After-history of a multipara aged 38, 1035  
 CROFTON, Dr.: Diabetes insipidus, 418—Treatment of a case of uric acid calculi by therapeutic immunization, 561  
 CROMBIE, D. M. R., awarded the Macdougall-Brisbane medal by the Royal Scottish Society of Arts, 132  
 CROON, Sir Halliday: Appreciation of John William Ballantyne, 214  
 CROSSEN, H. S.: *Diseases of Women*, rev., 862  
 Croupous pneumonia. See Pneumonia  
 CROWE, E. Warren: Intravenous injection of peptone as an aid to vaccine treatment, 1046 (O)  
 CROWTHER, J. A.: *Molecular Physics*, rev., 901  
 CRUZ, Oswaldo, 391  
 CUBBON, E. T.: Diathermy in surgery, 108—Diathermy and medical practice, 897  
 CUMBERBATCH, E. P.: Pigmented mole treated by fulguration, 242—Epithelioma of chest treated by diathermy, 242  
 CUMINGS, J. D.: Hyperplasia of the hypophysis cerebri, 898  
 CUNNINGHAM, J. F.: Kielland's obstetric forceps, 242  
*Cunningham's Textbook of Anatomy*, rev., 899  
 CUPPING, 743, 886, 918  
 CUPPING, dry and wet (Alfred S. Gubb), 639  
 CURRIE, J. R.: *The Mastering of the Medical Service in Scotland, 1914-1919*, 24  
 CURRIE, Henry: Elected a consulting surgeon to the Metropolitan Hospital, London, 918  
 CURTIS, W. G.: *Science and Human Affairs from the Viewpoint of Biology*, rev., 154  
 CURWEN, Henry, C.B.E. conferred upon, 30  
 CUSCADEN, George, knighthood conferred upon, 30  
 CUSSENT, A. R.: *Insomnia*, 329  
 CUTLAX, Edgar F.: Blood pressure after operations, 916  
 CUTLAX, Richard J.: The Swedish laws relating to venereal disease, 650  
 Cyst of the right suprarenal capsule removed by operation (Sir Hamilton A. Ballance), 926 (O)  
 Cyst of the uterine cornu (J. S. Fairbairn), 286  
 Cystoscopy and pyelography (F. Strong Heaney), 858  
 Cysts, hydatid, of liver (Mabel L. Ramsay and H. F. Vellacott), 164 (O)  
 Cysts, "tarry," of ovary (Leith Murray), 470  
 Cryolysis, review of books on, 290
- D.
- D.P.H. See Diploma  
*Daily Mail Year Book*, rev., 69  
 Dairy and cowshed inspection (Ireland), 80  
 DAKIN, H. D.: *Oxidations and Reductions in the Animal Body*, rev., 332  
 Dalby Memorial Prize, 683  
 DALE, H. H.: The scientific basis for non-specific protein therapy, 327—Treatment of diabetes insipidus by intranasal spraying of pituitary extract, 328—Elected to the Atheneum Club under Rule II, 668—Colloid preparations, 786—The "unit" of insulin, 833—Oliver-Sharpers lectures on the activity of the capillary blood vessels, and its relation to certain forms of toxemia 959, 1006  
 DALTON, Norman, obituary notice of, 490  
 DANDY, Edwin Arthur, obituary notice of, 356  
 Dangerous drugs. See Drugs  
 DANIEL, Alfred: Medical physics in the curriculum, 662  
 DANIELS, O. W. (and H. B. NEWHAM): *Laboratory Studies in Tropical Medicine*, rev., 860  
 Danish studies of the influenza bacillus of Pfeiffer, 117  
 DANDY, A. H.: Traumatic subcutaneous emphysema complicating labour, 419  
 DAVIDSON, H. S.: Treatment of puerperal infections, 511—Operations on the round ligaments, 631—Specimen of lipoma, 493  
 DAVIES, Arthur: Polyglandular insufficiency, 242  
 DAVIES, Dr.: Tetany following removal of right lobe of the thyroid gland, 512  
 DAVIES, Ellis Thomas, obituary notice of, 131  
 DAVIES, H. Morrison: Surgical treatment in cases of pulmonary tuberculosis, 138 (O)  
 DAVIES, H. Whitridge (and others): The influence of insulin upon acidosis and lipaemia in diabetes, 847 (O), 857  
 DAVIES, Ivor J.: Bronchiectasis with unusual complications, 374 (O)—Subacute infective endocarditis, 377—White kidney with an associated congenital hydronephrosis, 633—(and Sir Percival Horton-Smith Bartley): A case of pituitary catarrh, 1053 (O)  
 Davis, Baldwin: Increase in chemotherapy, 810  
 Davos, Research Institute for Alpine Physiology and Tuberculosis opened at, 1023
- DAVIS, Lieut.-Col. Gerard Irvine, O.B.E. conferred upon, 957  
 DAWSON, Lieut.-Col. Arthur Willan, obituary notice of, 837  
 DAWSON or PENN, Lord, appointed Physician-in-Ordinary to the Prince of Wales, 45—Infection of teeth and gums, 63—Psychotherapeutics, 327—Need for public education in the control of cancer, 509  
 DAWSON, W. R.: Care and education of mentally defective children, 512
- 787  
82  
81, 483,  
529
- Death rates in mental hospitals (parliamentary note), 483  
 Death rates of mothers from childbirth and puerperal causes in the United States, 237  
 Deaths Registration and Burials Bill, 591  
 Deaths, uncertified, in 1922 (parliamentary note), 829  
 DEBRI, Robert: Prophylaxis of whooping-cough, 829  
 DECE, Edward James: A disclaimer, 402  
 Defective children, mentally (parliamentary note), 780  
 Defective children, schools for. See Schools  
 Deficiency diseases, review of book on, 194, 291  
 DE FOSSER, A. Matthieu: Laboratory tests in diseases of the liver and pancreas, 468  
 DE JONG, Oscar: Dermatitis in bakers, 65  
 DE LEE, Joseph B.: *Obstetrics for Nurses*, rev., 157  
 Delhi boll. See Oriental sore  
 DELMEGE, Deputy Inspector-General Alfred Gideon, obituary notice of, 483  
 Denmark: Society organized to endow Pasteur scholarships for Danish medical men, 189—Prevention of ophthalmia neonatorum in, 1061  
 De Morgan's spots and malignancy, 840  
 DENST, Josephine Letitia, called to the Bar, 219  
 Dental Board of the United Kingdom: Prescribed examinations, 219—Lectures under the auspices of, 307—Minutes, rev., 475—To publish a volume of lectures by eminent medical men, 578—Lectures in Edinburgh, 653—Next examination, 855  
 Dental cases, treatment of (J. James'), 854  
 Dental disease and tooth structure, 388  
 Dental officers' gratuities (parliamentary note), 606  
 Dental practice in Egypt, 201  
 Dentists Act (1921) Amendment Bill, 878  
 Dentists Act, prosecutions under (parliamentary note), 780  
 Dentists Register: Correct addresses for publication, 265—The issue for 1923, rev., 435  
 Dentures and heart treatment (parliamentary note), 780  
 DEPAGE, Professor, elected president of the Brussels Faculty of Medicine, 357  
 Dermal leishmaniasis. See Oriental sore  
 Dermatitis in bakers (Oscar de Jong), 65  
 Dermatitis from dyed fur (Henry C. Semon), 467—Correspondence on, 534, 544, 613  
 Dermatologist as detective (Sir Norman Walker), 513  
 Dermatology, review of books on, 243, 598, 813  
 DERWISH, Dr.: The new trypanocidal remedies, 150  
 DE SCHWEINITZ, G.: Bowman lecture on ocular aspects of pituitary disorders, 816  
 DE SILVA, Charles E.: Ionic medication, 613  
 DE SOUZA ALARCO, H. G.: *A prophylaxia Rural no Estado do Pará*, rev., 1058—*A prophylaxia da Lepra e das Doenças Venereas no Estado do Pará*, rev., 1058  
 D'ERELLE, F.: *The Bacteriophage: its Role in Immunity*, rev., 901  
 Diabetes, defective lipolysis in, 1075  
 Diabetes insipidus (F. C. Purser), 418  
 Diabetes insipidus treated by intranasal spraying of pituitary extract (H. Blumgart), 128  
 Diabetes mellitus, causation of (L. B. Winter and W. Smith), 12 (O)  
 Diabetes mellitus, death rate from in the United States, 185  
 Diabetes mellitus, diastase in blood and urine in (G. A. Harrison and B. D. Lawrence), 317 (O)  
 Diabetes mellitus in young children, five cases of (F. John Foryston), 277 (O)  
 Diabetes, influence of insulin upon acidosis and lipaemia in (H. Whitridge Davies, Charles G. Lambie, D. Murray Lyon, Jonathan Meakins, and William Robson), 847 (O), 857  
 Diabetes mellitus treated by insulin (pancreatic extracts) (F. G. Banting, W. R. Campbell, and A. A. Fletcher), 8 (O)—Leading article on, 32—(Leon Blum), 200—(H. F. Moore), 418—Leading article on, 735—Clinical results of the use of, 737—Correspondence on, 737, 833, 825, 856  
 Diabetes mellitus, some problems of (L. B. Winter and W. Smith), 711 (O)  
 Diabetes mellitus, treatment of (O. Leyton), 707 (O)  
 Diabetes, review of books on, 974  
 Diabetes. See also Insulin  
 Diaphragm, elevation of due to unilateral phrenic paralysis (J. M. Woodburn Morrison), 471  
 Diaphragmatic hernia. See Hernia  
 Diarrhoea, review of books on, 635  
 Diastase in blood and urine in diabetes mellitus (G. A. Harrison and B. D. Lawrence), 317 (O)  
 Diathermic apparatus, Dean's list of, 491  
 Diathermy, review of book on, 1097
- Diathermy and medical practice (H. T. Cabbon), 897  
 Diathermy in surgery (H. T. Cabbon), 108—(W. S. Byrnie), 472  
 Diathermy, treatment by (W. J. Turrell), 143 (O)  
 DICKSON, John Dunbar, obituary notice of, 217  
 DICKSON, Kenneth: Sterilization of the unit, 760  
 DIXON, W. E. Carnegie: Ulcerative colitis, 856  
 Diet, dental structure and caries (Mrs. Mellanby), 593  
 Diet and preventive medicine (E. Mellanby), 192  
 Diet, special (parliamentary note), 345  
 Diet table, a simple (H. B. Pemberton), 679 (O)—A correction, 789  
 DIXON, Kenneth H.: What is a "diseased" tonsil? 1075  
 Distribution, review of books on, 767  
 DRAGLE, F. Holt: *Diseases of the thyroid gland*, 1093  
 DILLING, W. J.: *Ergotism*, 287  
 DIXON, J. D.: Dental cyst, 593—General anaesthesia, 593  
 DINGLEY, M.: Chronic duodenal ileus, 192  
 Diphtheria antitoxin on suspicion, 195, 1039, 1076  
 Diphtheria bacillus, classification of (A. J. reactions, 808 (O) Summer)  
 Diphtheria carriers among children of school age (J. Graham Forbes), 378  
 Diphtheria prophylactic and immunity, 43  
 Diploma in public health, new regulations, 128, 308  
 Disabled men, hospital provision for: an American report, 685, 692  
 Disabled men, the return to industrial work, 87  
 Disinfectants, 88, 402, 616, 746, 1116  
 Disinfectants, choice of (parliamentary note), 780  
 Disinfection of water-closets, 771  
 Dispensary doctors and dispensary midwives (Ireland) superannuation of, 441  
 Dispensary, Paddington Tuberculosis: Annual meeting, 1111  
 Distemper, etiology of, 249—Correspondence on, 308  
 Distemper Research Committee appointed, 391  
 Distributive Workers' annual report, 655  
 DIXON, Montague: Purpura treated by injection of human blood, 16 (O)  
 DIXON, Professor: Sections of an early human embryo, 853  
 DIXON, S. M., appointed a member of the Safety in Mines Research Board, 745  
 DIXON, W. E.: Present position of organotherapy, 106—Reviews a book on pharmacology, 514—The drug habit, 543 (O)  
 DIXON, T. Storie: The treatment of chronic malaria, 1087 (O)  
 DOBLE, F. Carmichael: *The Urethra and the Urethroscope*, rev., 683  
 Doctors, women, 129. See also Medical women  
 Dogs Bill, 345, 436, 909  
 Dogs, distemper in. See Distemper  
 DON VICTOR: Prolapse of the uterus, 681  
 DONALD, Archibald: Pelvic adenomyoma, 810  
 DONALD, Professor: Intrinsic dysmenorrhoea, 724  
 DONALDSON, Dr.: Radium in cancer of cervix, 151  
 DONEIN, Sir H. Bryan: Treatment of early mental cases, 611  
 DOOLIN, W.: Unsatisfactory appendicectomy, 66  
 Cause of death in intestinal obstruction, 513  
 Dosimetric apparatus for intratracheal anaesthesia, 637  
 DOTY, Norman M.: Physiological consequences of gastro-enterostomy, 351  
 DOUGAL, Daniel: Spontaneous separation of one ovary and adhesion to the floor of Douglas's pouch, 329—Six months' foetus with a teratomatous tumour, 329—Adenomyoma of the vermiform appendix, 470—Occipito-posterior position, 765  
 DRAPER, George: Poliomyelitis and encephalitis lethargica, 259  
 Dreams, psychology of (leading article), 775  
 DREYER, Georges: A specific treatment of tuberculosis: a abstract of report, 1065, 1104  
 Drug addiction, the problem of: Debate at the Medico-Legal Society, 555—Sanatorium for, 793  
 Drug habit (W. E. Dixon), 543 (O)—Correspondence on, 1076  
 Drugs Act, 1920, Dangerous: The position of doctors and dentists, 69—The Regulations, 171, 250, 304, 485—Amendment Bill, 345, 435, 571, 605, 646, 779, 877, 909—Amendments in standing committee, 571—Third reading in the Commons, 646—Memorandum as prepared by the Home Secretary, 577—Conviction under, 745—Licences cancelled, 745—Revocation of the regulation that a prescriber may not prescribe for himself, 518—Statement by the Home Office, 939—Factories licensed for the manufacture of heroin and morphine, 1041  
 Drugs, dangerous, imports of (parliamentary note), 605  
 Drugs, dangerous, in medical prescriptions (parliamentary note), 909  
 Drugs, dangerous, the traffic in, 602  
 Drugs, adulteration of, number of convictions for (parliamentary note), 437



- Drugs in modification of the gastric function (T. Izod Bennett), 565 (O)
- Drugs, reports on: Chloroform, 83—Ether, 83
- Drugs, review of books on, 726, 1021
- DRUMMOND, Sir David, knighthood conferred upon, 30—Presentation to, 439
- DRUMMOND, T.: Asthma and adrenal inadequacy, 320 (O)
- Drunkennes amongst young people (parliamentary note), 606
- Drunkennes statistics in New York since prohibition, 557
- DRURY, H. C.: Cases of scleroderma, Ritter's disease, and von Jaksch's disease, 899
- DUBOIS, Dr.: Appointed to the Chair of Physiology at the Lille Faculty of Medicine, 1079
- DUBREUIL-CHAMBARDEL, Louis: *Traité de la dermatite et de la spécificité de Pierre-Fidèle Bretonneau*, rev., 22
- Duchenne of Boulogne, 35
- DUCKWORTH, Sir Dyce: The essential equipments for the best pursuits of modern medicine, 193
- DUFFIELD, Reginald: Registrar-General's Statistical Review (1921), 533—Surface diseases of the eye, 595
- DUDGEON, L. S.: Ulcerative colitis, 856
- DUDLEY, Surgeon Commander Sheldon F.: *Schick Test, Diphtheria, and Scarlet Fever*, 577, 593
- Duff House Papers, vol. i, rev., 474
- DUGGAL, Sardar Bahadur Diwan Singh, M.B.E. conferred upon, 987
- DUKE, H. Lyndhurst: An inquiry into an outbreak of human trypanosomiasis in a *Glossina morsitans* belt to the east of Mwanza, Tanganyika Territory, 384
- DUKES, Clement: Accident or illness? 1004
- DUN, R. C.: Chronic intussusception in children, 107
- DUNDAS, Grace H. Giffen: *Textbook for Fever Nurses*, rev., 933
- DUNDAS-GRANT, Sir James: Expiratory spasm in a child, 402—A feather in the carotid duct, 416—The unpleasant taste of potassium bromide, 746
- DUNLAT, Knight: *The Elements of Scientific Psychology*, rev., 1021
- DUNLOP, B.: Sterilization of the unfit, 760, 883
- DUNN, Shaw: Fish bone in larynx, 191
- Duodenal ileus, chronic (Seymour Barling), 192
- Duodenal ulcer. See Ulcer
- Dupuytren's contraction, treatment of, 746, 794
- Dyes, coal-tar, relation between chemical constitution and antiseptic action in (T. H. Fairbrother and Arnold Renshaw), 265
- DYKES, S. O.: The inheritance of the specific iso-agglutinable substances of the red blood cells, 376
- DYSENTERY, acute amoebic, in a man who had never been out of England (Alfred C. Coles), 809
- Dysentery, flagellate, pathogenicity and treatment of (Wing Commander Harold E. Whittingham), 799 (O)
- Dysmenorrhoea, intrinsic (W. Blair Bell), 722—Discussion, 723
- Dysmenorrhoea, treatment of (L. G. Phillips), 1054
- Dyspeptics, the investigation of (John Ryle), 5 (O)
- Dyspnoea in cardio-vascular disease, the cause and treatment of (Jonathan Mockins), 1043 (O)
- Dystocia, contraction ring (Gibbon Fitzgibbon), 766
- E.
- EAGLETON, A. J. (and Miss BAXTER): Classification of *B. diphtheriae*, 151
- EAMES, Surgeon Rear-Admiral W.: Adder bite, 171
- Ear diseases, review of book on, 563. See also Aural
- Eating, 1077
- Ebonite poisoning (M. W. Geffen), 680
- ECCLES, Herbert Nisbet, obituary notice of, 541
- ECCLES, W. McAdam: War injuries and life assurance, 120—Religion and some medico-social problems, 439—Treatment after abdominal operations, 899
- Economics and public health (R. J. Ewart), 595
- Ectopic gestation. See Gestation
- Eczema, etiology of (J. Ferguson Smith), 380
- EDEN, T. Watts: Radium in carcinoma of the cervix, 151—The legal period of gestation, 691—Intrinsic dysmenorrhoea, 724
- Edinburgh. See Scotland
- EDINBORO, G. H.: Exostoses of the long bones, 765
- EDMONDS, A.: Treatment of cancer of the tongue, 417
- EDMUNGE, Ray: Romance and the Pharmacopoeia, 293
- EDRIDGE-GREEN, F. W.: The theory of vision, 602—The education of myopes, 1115
- Education estimates, 920
- EDWARDS, Major-General Sir William Rice K.C.B. conferred upon 30
- Efficiency, effect of tropical climate on (Squadron-Leader T. F. Epton), 612
- Egypt, dental practice in, 201—An ancient Egyptian medical papyrus, 645—Plague in, 839
- EDINBORO: Biological action of light, 1018
- Elbow, hysterical (A. B. Keith Watkins), 62
- ELDER, William: Psycho-analysis, 40
- Electro-medical apparatus, list of second-hand, 1003
- Element 72, 357
- Element, the new, 252, 357. See also Hafnium
- Elephant Man, rev., 335
- Elevator for the first rib, 637
- ELLIOT, Henry P.: Lilliputian hallucinations, 704
- ELLIOT, Captain Walter E., appointed Parliament Under Secretary for Health for Scotland, 124—Veterinary science and public health, 209
- ELMOTT, T. R.: Apituitarism and the anencephalic syndrome, 81
- ELLI, Carleton (and Annie L. MacLeod): *Vital Factors of Foods, Vitamins, and Nutrition*, rev., 861
- ELLIS, H. Havelock: Sterilization of the unfit, 835
- ELMSLIE, Mr.: Spastic paralysis, 469
- ELMSLIE, R. C.: Report on physically defective children, 251
- ELSWORTH, R. C., memorial to, 348
- ELVY, Frank: The cause of a common cold, 355
- EMANUEL, J. G.: Paroxysmal tachycardia, 66—Treatment of auricular fibrillation by quinine sulphate, 419
- Embolism of the right brachial artery as a complication of lobar pneumonia (A. H. D. Smith), 103 (O)
- EMERSON, Captain Ambrose, Order of the Crown of Italy conferred upon, 449
- EMERY, Walter d'Este, obituary notice of, 1116
- Empyema of the maxillary antrum, after-treatment of (Lindley Sewell), 1094
- Empyema, posterior gravity drainage in (Sir John O'Connor), 758 (O)
- Empyema, treatment of (F. J. Hathaway), 19
- EMMS-ROBERTS, E.: Fibroblasts, 633
- Emulsions, review of books on, 381
- Encephalitis lethargica (B. H. Hicks), 1019
- Encephalitis lethargica in Edinburgh, 533
- Encephalitis lethargica in Glasgow, 608
- Encephalitis lethargica, Ministry of Health to discontinue special forms of inquiry re, 308
- Encephalitis lethargica, the irritative type of (A. K. Chalmers and A. S. Macgregor), 521
- Encephalitis lethargica and poliomyelitis, 259
- Encephalitis lethargica, review of books on, 422
- Encyclopaedia of Veterinary Medicine*, 1057
- Endocarditis, subacute infective (Ivor J. Davies), 377
- Endocarditis, subacute infective, clubbed fingers in (Thomas F. Cotton), 644
- Endocrine activity and foetal life, 397
- Endocrines and psychoneuroses (W. Langdon Brown), 514
- Endocrines, vitamins, and subtleties (Leonard Williams), 1010 (O)
- Endothelioma of orbit (J. W. Tudor Thomas), 192
- England and Wales, vital statistics (1922), 173, 1036
- ENSOR, Brevet-Col. Howard, C.B. conferred upon, 30
- Enteritis, chronic, treated by lactic acid (I. H. Lloyd-Williams), 1053
- Environment and intelligence, 643
- Epidemiology, progress and problems in (R. J. Reece), 240
- Epidemiology, review of books on, 726
- Epilepsy, review of books on, 243
- Epilepsy, treatment of (John McCartney), 16 (O)
- Epithelioma of the vagina (Mr. Stevens), 151
- Epsom College. See College
- Ergotism (R. E. Kelly and W. J. Dilling), 287
- Erysipelas of the mouth (Eustace Thorp), 105—(George Butters), 190
- Erysipelas followed by disappearance of rodent ulcer, 82, 704
- Erythredema or the "pink disease," 123, 201, 419
- Ether, report on, 83
- Ether versus chloroform, 996, 1076, 1114
- Europe, Quaker relief in stricken, 300
- EVANS, Arthur: Fracture dislocation of the fourth cervical vertebra, 764
- EVANS, Geoffrey: Infection of teeth and gums, 63—Goulstonian lectures on the nature of arterio-sclerosis, 454, 502, 548 (O)
- EVANS, Herbert: Subacute infective endocarditis, 378
- EVANS, H. M.: Vitamins and reproduction, 74
- EVANS, I. D., called to the Bar, 838
- EVANS, J. W.: Inversion of the uterus treated by hysterectomy, 854
- EVANS, Laming: Spastic paralysis, 469
- EVATT, E. J.: Camera-microscope, 330—On the growth of normal structures into adjacent tissues, 330
- EVE, F. C.: Turpentine or lead poisoning a cause of punctate basophilic, 170
- Evolution, "prohibition" of, 526
- Evolution and vision (Elliot Smith), 293
- EWAN, J. A., presentation to, 174
- EWART, G. A.: A case of chronic intussusception, 629 (O)
- EWART, Robert John: Economics and public health, 595—Obituary notice of, 956
- EWING, J. A.: Edinburgh University War Memorial, 397
- Exchange professors, 827, 873
- Excreta and blood, abnormal findings in (E. Cronin Lowe), 722
- Exercise, review of book on, 900
- Exophthalmic goitre. See Goitre
- Expiratory spasm in a child, 358, 402
- Ex-service men: In asylums (parliamentary note), 345—Special diet for (parliamentary note), 345—Medical treatment for (parliamentary note), 393—Spahlinger treatment of tuberculosis for (parliamentary note), 393—Receiving residential treatment in institutions for tuberculosis (parliamentary note), 437—Whose insanity has been adjudged not to be due to military service (parliamentary note), 437—Village settlement schemes for tuberculous men (parliamentary note), 780—Number of who have received Government grants to finish their education at universities (parliamentary note), 780—Lip-reading instruction for (parliamentary note), 878
- Eye, congenital defects of (Ida O. Mann), 681
- Eye diseases, review of books on, 815
- Eye, surface diseases of, epidemiology of (N. Bishop Harman), 594
- Eye, one, space judgement with, 786
- Eyes, the movement of the (Elliot Smith), 256, 298
- Eyes. See also Ophthalmology
- F.
- Face and limbs, plastic repair of (J. J. M. Shaw), 511
- FAIRBAIRN, J. S.: Necrotic fibromyoma, 286—Cyst of the uterine cornu, 286—Intrinsic dysmenorrhoea, 724
- FAIRBANK, Mr.: Spastic paralysis, 469
- FAIRBROTHER, T. H.: Relation between chemical constitution and antiseptic action in coal-tar dyes, 265
- FAIRFIELD, Letitia: Colonial medical services, 789
- FALKNER, Ninian M.: Quinine salicylate, 958
- Fallopian tube and ovary, axial rotation of (E. O. Croft), 1095
- Fallopian tube, chorion epithelioma of (Bethel Solomons and E. C. Smith), 766
- Fallopian tube, the radiation of pain in lesions of (Maurice Marcus), 185 (O)
- Fallopian tubes, gonococcal infections of (David Lees), 241
- Far Eastern Association of Tropical Medicine. See Tropical
- FARROW, H. J.: Hiccup, 220
- FARMER, E. W.: An axis-traction lever, 195
- FARMER, Sir Francis, obituary notice of, 86
- Farmer's responsibility for health of workers (Campbeltown), 953
- Fatigue, industrial. See Industrial
- Fauna of Australia and medical science (William Colin Mackenzie), 795 (O)
- FAVETT, Edward: Elected a Fellow of the Royal Society, 391
- FEARON, Dr.: Benzaldehyde test for tryptophane, 858
- Feather in the parotid duct (Sir James Dundas-Grant), 416
- FEATHERSTONE, Henry: Technique of Caesarean section, 285
- Federation of Medical and Allied Services: Annual dinner, 1003
- Fee for milk examination. See Milk
- Feeble-minded, care of in Scotland, 832
- FERN, E. (editor): *Textbook of Pediatrics*, rev., 768
- Fees in court cases, 212
- FELDMAN, W. M.: Racial aspects of alcoholism, 644
- Fellowship of Medicine: Post-graduate lectures, 173, 201, 219, 885, 913, 1003, 1079—Scheme by non-graduate hospitals, 693
- Femur, fractures of, the autogenous peg graft in (Walker Mercer), 1088 (O)
- FENWICK, Clennell: Sterilization of mental defectives, 870
- FERGUS, Fredland: Cataract extraction followed by symptoms suggestive of sympathetic ophthalmia, 182 (O)
- FERGUSON, Haig: Large cervical fibroid, 18—Ruptured pregnancy in a rudimentary horn of a bicornute uterus, 18—Fungal carcinoma in a double uterus, 18—Large uterine fibroid with twisted pedicle, 18—Large gangrenous submucous fibroid, 242—Cystic fibroma, 242—Treatment of puerperal infections, 511—Operations on the round ligaments for retroversion of the uterus, 631—Intrinsic dysmenorrhoea, 725—Uterus fifteen days after Caesarean section, 767—Adenomyoma of the posterior vaginal wall, 767—Large subperitoneal fibroid, 767—Adeno-carcinoma of the cervix, 767—Uterovaginal carcinoma of the cervix, 767
- FERNANDO, Hilarion Marcus, knighthood conferred upon, 30
- Fever, blackwater, etiology of, 1030
- Fever, blackwater, and spirochaetes, 986
- Fever, enteric, outbreak at Campbeltown, 953
- Fever, glandular, and infective mononucleosis (H. Lotheby Tidy), 763
- Fever, Malta, treatment of, 43
- Fever, puerperal. See Puerperal
- Fever, rat-bite, 542, 1004—(J. Odory Symes), 1017 (O)



GAGE, Lieut.-Col. Andrew Thomas, C.I.E. conferred upon, 30  
Galactorrhoea, 578  
Galen (leading article), 198—Correspondence on, 258  
Gall bladder, torsion of (Herbert C. Jonas), 1016 (O)  
The pathological changes in gall-bladder in acute cholecystitis (Sir James Spence), 1016 (O)  
Inflammation of the gall-bladder (C. A. Joubert), 1016 (O)  
ment of (C. A. Joubert), 1016 (O)

GARNNER, H. Willoughby: Congenital hypertrophy of the pylorus, 744  
GARNNER, James: Medicine and medicines, 1120  
GARRETT, G. C.: Hospital policy, 41, 129, 211, 303, 443, 537, 610, 700  
H.: Notes on the treatment of, 419  
in errors of metabolism and rheumatoid arthritis, 419

GARY, F. Gould: Cases of carcinoma with the lymphatic system (J. Campbell), 752 (O)  
position (Campbell), 752 (O)

GAS, poison, experiments on animals (parliamentary note), 909  
Gas-oxygen-ether apparatus (H. Gordon Greaves), 633  
GASK, G. E.: War injuries and life assurance, 633

GASTROSTOMY FOR PRECARIOUS ULCER (Sir William I. de Courcy Wheeler), 812  
Gastric function, modification of by means of drugs (T. Izod Bennett), 366 (O)  
Gastric ulcer. See Ulcer  
Gastro-enterostomy, acute symptoms after, 777  
Gastro-enterostomy, physiological consequences of, 351  
Gastro-enterostomy results, investigation of, 484  
GAUCHER, H. V.: Foreign body removed from the orbit, 281  
GEFFEN, M. W.: A non-grip cover-slip holder, 246

GEMMELL, A. O.: Hospital policy, 537  
GEMMELL, J. E.: Intrinsic dysmenorrhoea, 723  
General Medical Council. See Council  
General paralysis. See Paralysis  
General practice, the endowment of, 1639  
General practitioner and consultant, 997  
Genital prolapse (R. Lance Impey), 1093  
Genito-urinary diseases, review of book on, 245  
Genius and insanity (H. J. Norman), 559  
GENOUD, A. W.: Mackenzie Davidson memorial lecture on x-ray diagnosis of the pathological gall bladder, 902

GEORGE, Lloyd: Country life and country doctors, 776  
GERIGRE, O. M.: In the days of Van Riebeeck, 1018

GERMANY, Afghanistan offers inducements to German physicians to settle in, 638—Cancer research in, 950—Medical officers employed in the army during the war, 45—Typhus fever in, 1092—Vaccination in, 393, 463—Vital statistics of Prussia before and after the war, 166

Gestation, ectopic, case of repeated, with intra-peritoneal rupture (J. H. Willett), 470  
Gestation, ectopic, simulated by ileo-colic intussusception caused by Meckel's diverticulum (H. H. Greenwood), 1016 (O)  
Gestation, ectopic, treatment of full-term (Cecil Marriott), 379  
Gestation, the legal period of (T. W. Eden), 691  
Gestation. See also Pregnancy

GIBBONS, R. A.: Sterilization of the unfit, 754 (O), 883—Sterility in Woman: Its Causes and Treatment, rev., 901

GIFFORD, Major-General Godfray, K.C.I.E. conferred upon, 30  
Gift of Edmunds prize in ophthalmology, 577  
GILLARD, Richard: Psychology and medicine, 492

GIMLETTE, John D.: Malay Poisons and Charm Cures, rev., 243—Hiccup, 450  
GITTINGS, J. Clayton (and others): Tuberculosis in Infancy and Childhood, rev., 291

GIVEN, Surgeon Commander D. H. C.: The Coastal mosquito nuisance, 911  
Gland, thyroid, diseases of (F. Holt Diggle), 1093  
Gland, thyroid, influence of on the response to adrenaline (D. Murray Lyon), 966 (O)  
Gland, thyroid, influence of intestinal bacteria upon (D. J. Harries), 191, 553 (O)—Correspondence on, 659, 834, 886

Glands, abdominal tuberculosis, surgery of (D. E. Simpson), 286  
Gland, thyroid, the function of, and its relation to concentration of hydrogen ions (Lieut.-Col. Robert McCarrison), 101 (O)—Correspondence on, 442

Glands, cervical, tuberculosis of, 211, 304  
Glandular fever and infective mononucleosis (H. Lethaby Tidy), 763  
Glasgow. See Scotland  
Glaucoma, review of book on, 1057  
GLEZ, E.: Physiology of the adrenal secretion, 752 (O)

Gloucester, small-pox in, 1069, 1071, 1109, 1110  
GLOVER, J. A.: Osteo-arthritis and rheumatoid arthritis, 763



GLYNN, Sir Joseph: Irish hospital finance, 242  
GOADBY, Sir Kenneth: *Diseases of the Gums and Oral Mucous Membrane*, rev., 859  
Goat Society's Year Book, 1923, rev., 815  
GODDARD, Henry Herbert: Juvenile delinquency, rev., 68  
GOERZ, C. P., death of, 220  
Goitre in Swiss school children, statistics, 1037  
Goitre, exophthalmic, the effect of heat upon operations for (A. J. Walton), 1045 (O)  
Goitre, exophthalmic, pulse pressure in (I. Harris), 630 (O)  
Golf challenge cup, Llandrindod Wells, open medical, 885  
Golfing Society, Medical, annual summer meeting, 1080  
GOLGI, Professor, hon. M.D. of Paris conferred upon, 401  
GOLLA, Frederick Lucien: Appointed pathologist to the London County Mental Hospitals and director of the pathological laboratory, 745  
Gonococcal infections of the tubes and ovaries (David Lees), 241  
Gonorrhoea, intravenous acriflavine for, 1080  
Gonorrhoea, review of books on, 517, 900  
GOODALL, Alex.: Progressive muscular atrophy in a boy, 191  
GOODALL, Dr.: Case of severe arthritis deformans, 512  
GOODALL, Edwin: Lunacy law and the treatment of the insane, 536  
GOODALL, E. W.: Surface diseases of the eye, 595  
GOODALL, J. Strickland: Cardio-vascular conditions in relation to anaesthesia, 239  
GOODBODY, F. W.: Religion and some medico-sociological problems, 439  
GOODWIN, Aubrey: Radium in cancer of the cervix, 151  
GORDON, A. Knyvett: Diagnosis of indefinite masses in the breast, 211—Pernicious anaemia, 743, 955, 1039  
GORDON, Mary: Penal discipline, 212, 399  
GORDON, R. G.: Malignant disease of right testicle, 193—Nodes in an early case of rheumatoid arthritis, 193—Charcot's hip-joint in a case which was probably haematomyelia, 287—Rheumatoid arthritis with achlorhydria gastrica, 287  
GORDON, William: The treatment of incipient phthisis, 555 (O)  
GOSTLING, Ernest Victor, obituary notice of, 44  
GOTCH, O. H.: Traumatic paraplegia, 849 (O)  
GOUGEROT, H.: *La Dermatologie en Clientèle*, rev., 598  
GOUGH, A.: Fibroid uterus removed by pan-hysterectomy and colporrhaphy, 1095  
GOULDSBROUGH, Claude: Osteo-arthritis of the spine, 763  
GRAHAM, Lieut.-Col. David James, appointed surgeon apothecary to the King's Household at Holyrood Palace, 356  
GRANT, Hope: Disappearance of rodent ulcer after erysipelas, 82  
GRANT, J. W.: Multiple swellings over face, arms, trunk, and buttocks, 633  
GRANT, Leonard, presentation to, 578  
GRANT-WILSON, Wemyss: Penal discipline, 305  
GRANTVILLE, Alexander: Belgian Order of Leopold conferred upon, 172  
GRASSI, Battista, 70th birthday of, 703—Grassi Foundation for the zoological study of parasitic diseases, 703  
GRAY, A. M. H.: Manganese in chemotherapy, 810  
GRAY, Sir Henry M. W.: Appointed chief of the surgical staff of the Royal Victoria Hospital, Montreal, 736—Dinner to, 993  
GRAVES, H. Gordon: Gas-oxygen-ether apparatus, 635  
*Greece and Rome, our Debt to*, rev., 683  
Greek biology and medicine, review of book on, 21 683  
GREENISH, H. G.: *The Microscopical Examination of Food and Drugs*, rev., 1021  
GREENWOOD: Vital capacity, 1063  
GREENWOOD, H. H.: Ileocolic intussusception caused by Meckel's diverticulum and simulating ectopic gestation, 1016 (O)  
GREENWOOD, Major: Surface diseases of the eye, 595—A memorial to Arthur Bacot, 662—Appreciation of Robert John Ewart, 957  
GREER, Charles, called to the Bar, 1079  
GRÉGOIRE, Raymond: *Anatomie Médico-chirurgicale de l'Abdomen: La Région Sous-thoracique de l'Abdomen*, rev., 975  
GREY, Temple: Colloidal gold for the Lange test: A correction, 88  
GRUFFITH, H. K.: Inversion of the uterus, 285—Obstructed labour due to a contraction ring, 285  
GRUFFITH, J. R.: Acute suppurative infections of the fingers and hands, 893  
GRUFFITHS, H. E.: Laboratory tests in diseases of the liver and pancreas, 463  
GRIMBERT, L. (and J. GUIART): *Précis de Diagnostic chimique, microscopique et parasitologique*, rev., 1093  
Grocers' Company scholarships, 132  
GROSS, Louis: *The Blood Supply to the Heart*, rev., 890  
Group clinic. See Clinic  
GROVE, W. R.: Present position of organotherapy, 106  
Growth, disorders of (Hugh Thursfield), 841 (O)  
GRUB, Alfred S.: Adder bite, 41—Cupping, dry and wet, 633

GUIART, J. (and L. GRIMBERT): *Précis de Diagnostic chimique, microscopique et parasitologique*, rev., 1098  
Guild of SS. Luke, Cosmas, and Damian to issue quarterly *The Catholic Medical Guardian*, 117  
GUILLAUME, A. G. (and others): *Endocrine Glands and the Sympathetic System*, rev., 292  
GULLAN, Gordon: Non-obstructive jaundice, 764  
Gullet, large foreign bodies in (D. R. Paterson), 1094  
Gum diseases, review of book on, 859  
Gunshot injuries, disruptive phenomena in (S. G. Shattock), 376  
GUSHUE-TAYLOR, G.: Psoriasis, 558  
GUTHRIE, Douglas: Chronic hyperplasia of the upper jaw, 1093  
GUTTMANN, Walter: *Medizinische Terminologie*, rev., 902  
GUY, E. F.: The fractional test-meal in gastric and duodenal ulcer, 191  
Gynaecological conditions treated by x rays and radium, 81—(Louise Martindale), 379—(G. E. Pepper), 418—Discussion, 418  
Gynaecological and obstetrical difficulties (Comyns Berkeley), 89 (O)

## H.

HAAS, P. (and T. G. HILL): *An Introduction to the Chemistry of Plant Products*, rev., 1098  
HADEN: Acute symptoms after gastro-enterostomy, 777  
HADEN, R. L.: *Clinical Laboratory Methods*, rev., 814  
Haemoclastic crisis as a test of hepatic insufficiency, 461, 574  
Haemorrhage, concealed accidental, treated by conservative Caesarean section (R. A. Lennie), 898  
Haemorrhage, concealed accidental, treated by hysterectomy (William Fordyce and R. W. Johnstone), 241  
Haemorrhage from the large bowel caused by an adherent appendix epiploica (R. Eccles Smith), 853 (O)  
Haemorrhage, meningeal, late results of in the newly born (Hector Charles Cameron and A. A. Osman), 363 (O)  
Haemorrhage, uterine, radium treatment of (Sidney Forsdike), 510  
Hafnium, the new element, 252  
HAIG, R. A.: Cytology of tumours, 192—Subacute infective endocarditis, 378  
HAIR, Colonel Henry Aylmer, obituary notice of, 1002  
Hair, dull, 174  
HALDANE, J. S.: The fundamental conceptions of biology, 359 (O), 496—Appointed a member of the Safety in Mines Research Board, 745  
HALE-WHITE, Sir William: Edward Jenner, 204—Louis Pasteur in relation to medicine, 424  
HALL, Arthur J.: The pyrexia of Hodgkin's disease, 40  
HALL, Edwin Thomas, death of, 745  
HALL, J. S.: Fits in the fourth month of pregnancy with no other signs of toxæmia, 898  
HALLIBURTON, W. D.: *The Essentials of Chemical Physiology*, rev., 69  
HALLINAN, Captain Thomas John, O.B.E. conferred upon, 987  
Hallucinations, Lilliputian, 704  
HAMBLETON, Godfrey W.: Phthisis, complete and permanent recovery, 744  
HAMER, Sir William: Knighthood conferred upon, 30—Surface diseases of the eye, 595—Appreciation of Sir Shirley Forster Murphy, 790—Ultraviolet viruses from an epidemiological point of view, 869  
HAMERTON, Lieut.-Col. A. E.: Appointed Assistant Director of Pathology at the War Office, 306—The antirabic institute in Baghdad, 824  
HANDMOND, T. E.: Surgery of the prostate, 721  
HANDLEY, W. Sampson: Surgical treatment of renal calculi, 63—Pathology of the lymphatic system, 79—X-ray treatment of malignant disease, 152  
Hands, acute suppurative infections of (J. R. Griffith), 893  
Hands, unusual mineral deposit in the soft tissues of (J. R. Logan), 764  
HANNA, W. (and E. W. HOPE): *Industrial Hygiene and Medicine*, rev., 931  
HANSON, Surgeon Captain R. J. E.: Cadet organization and preventive medicine, 172  
HARANCHIPI, Dr. (P. MATHIEU and G. RICHARD): *Traitement des Maladies Cardio-vasculaires par le Massage, le Mouvement et les Agents physiques*, rev., 109  
HARDING-FREELAND, E.: Observations on the cause and cure of chronic rheumatism, 281 (O)  
HARDMAN, Dr.: Gastric and duodenal ulcers, 285  
HARDY, T. L.: Chronic duodenal ileus, 192—Chronic ulcer of the body of the stomach, 558  
HARFORD, C. F.: Religion and some medico-sociological problems, 439—Physiology and psychology, 769  
HARLEY, Vaughan, obituary notice of, 956  
HARMAN, N. Bishop: Standards of vision for scholars and teachers in council schools, 58 (O)—Religion and some medico-sociological problems, 439—Hospital policy, 442, 574, 835—

Epidemiology of surface diseases of the eye, 594—The education of myopes, 915—His *Aids to Ophthalmology* translated into Polish, 958  
HARPER, Robert, Kaisar-i-Hind medal conferred upon, 30  
HARRIES, D. J.: Influence of intestinal bacteria upon the thyroid gland, 191, 553 (O), 834—Cavernous angioma of the face, 930—Adrenaline as a potential factor in hyperthyroidism, 1015 (O)  
HARRIS, Alfred Edwin, obituary notice of, 305  
HARRIS, I.: *Diseases of the Heart*, rev., 518—Pulse pressure in exophthalmic goitre, 630 (O)  
HARRIS, J. Delprat, obituary notice of, 1040  
HARRISON, G. A. (and R. D. LAWRENCE): Diastase in blood and urine in diabetes mellitus, 317 (O)—Laboratory tests in diseases of the liver and pancreas, 468  
HARRISON, Colonel L. W.: Public measures for the control of venereal disease, 328  
HARRISON, W. J.: Thyrotoxicosis for malignant disease in a man of 74, 322 (O)  
HART, Bernard: Genius and insanity, 560  
HART, Lieut.-Col. William Malloch, obituary notice of, 102  
HARTLEY, Sir Percival Horton-Smith (and Ivor J. DAVIES): A case of pituitous catarrh, 1052 (O)  
Harvard Medical School, visit of Sir Harold Stiles, 827  
HARVEY, Eldon, O.B.E. conferred upon, 987  
Harvey, William, as an art critic (Sir D'Arcy Power), 643  
HARTIER, P. (and others): *Endocrine Glands and the Sympathetic System*, rev., 292  
HATHAWAY, F. J.: Treatment of empyema, 19  
HAULTAIN, W. F. T.: Acute oedema of the cervix, 18—Fits in the fourth month of pregnancy with no other signs of toxæmia, 898  
HAWARD, Henry H.: The variations of the normal temperature, 17  
HAWK, P. B.: *Practical Physiological Chemistry*, rev., 1058  
HAWTHORNE, C. O.: Hospital policy, 41—The radial pulse in intrathoracic aneurysms, 892 (O)  
Hay fever treated by sinusoidal current to the spine (Thomas Marlin), 971  
HAY, Matthew, proposed presentation to, 302  
HAYCRAFT, John Berry, obituary notice of, 85  
HAYCRAFT, J. Berry: Bone formation in a laparotomy scar, 633  
HAYES, D.: Gastric and duodenal ulcers, 285  
HAYES, H. W. McCauly, obituary notice of, 577  
HAYWARD, Charles W.: *What is Psychology?* rev., 636  
HAZARD, M. (and others): *Reins et Organes Génito-urinaires*, rev., 245  
HAZEN, H. H.: *Diseases of the Skin*, rev., 244  
HEAD, Henry: The Congress of Medicine in Vienna, 574  
Head Masters' Conference and the teaching of science in preparatory schools, 87  
Headache, cause of lifelong, 840  
Headache, persistent, 174  
HEALD, S. L. (and Arthur J. WILSON): Observations on a case of myasthenia gravis, 852 (O)  
Health Insurance. See Insurance  
HEALTH MINISTRY:  
"Angels and Ministers" (leading article), 71  
Artificial limb fitting, new rules for, 491  
Book-keeping in tuberculosis institutions, standard method of, 946  
Bread and Food Reform League, deputation from, 885  
Condensed milk, labelling and composition of, 307  
Dangerous Drugs Regulations memorandum, 577  
Encephalitis lethargica, forms of inquiry to be discontinued, 308  
Institutions for residential treatment of tuberculosis, list of, 838  
Medical appointments, 1070  
Medical education in England, recent advances in, 723, 771  
Medical officers of, 483  
Medical staff, 1110  
Mental disorder, early treatment of, 343  
New Minister (Mr. Neville Chamberlain), 482  
Obstetrics and gynaecology, report on the teaching of, 692  
Parliamentary notes, 483, 1070, 1110  
Poor Law officers' remuneration, 531  
Smoke, effect of on child life: deputation to Minister, 918  
Venereal diseases treatment centres, revised list, 265  
Health Ministry, Irish Free State, 654  
Health visitors, salaries of (parliamentary note), 780  
Health Visitors, Scottish, National Association of: Annual conference, 1036  
HEANEY, F. Strong: Cystoscopy and pyelography, 858  
Heart, athletic, 660  
Heart beat, restoration of, 882  
Heart-block (J. C. Brewwell), 513  
Heart cases and dentures (parliamentary note), 780  
Heart disease, the economic aspect of (R. O. Moon), 922 (O)  
Heart disease, on limitation of effort in (Claude Wilson), 962 (O)—Correspondence on, 1042  
Heart disease in pregnancy. (A. Leyland Robinson), 18



- Heart disease, the prevention of (F. John Pornton), 919 (O).—Leading article on, 942.—Correspondence on, 1033, 1074
- Heart disease and diseased tonsils, 1033, 1074
- Heart problems in adolescent life (G. A. Sutherland), 438 (O)
- Heart, review of books on, 596, 860
- Heat, effect of upon operations for exophthalmic goitre (A. J. Walton), 1045 (O)
- HEDEN, Karl: Venereal disease in Scandinavia, 1023
- HEDLEY, Dr. and Mrs.: Golden wedding of, 357.—Presentation to, 357
- HEEKES, John W.: Acute obstruction by Meckel's diverticulum with symptoms resembling appendicitis, 719
- HEGGS, Francis Raymond Mitchell, obituary notice of, 1002
- HEIBERG, J. D. (and D. C. Macgregor): *Mathematical and Physical Science in Classical Antiquity*, rev., 334
- HEINEMANN's new plan for introducing medical books to country practitioners, 220
- Heliotherapy, course of, 1079
- Heliotherapy, review of book on, 833
- Helminthiasis treated by carbon tetrachloride and oil of chenopodium (J. G. Reed), 1048 (O).—See also Hookworm
- Helminthology, *Journal of*, 777
- HENDERSON, Agnes, M.B.E. conferred upon, 937
- HENDERSON, Fergus L.: Radiology in the diagnosis of pulmonary tuberculosis, 681
- HENDRY, R. A.: Hydatidiform mole, 1035.—(J. St. George Wilson), 1095
- HENNESSY, T.: Irish hospital finance, 242
- HENRY, A. K.: Jönsson's operation for excising the left cervical thoracic ganglion of the sympathetic, 20.—Note on the interpretation of sulci on certain bones, 330
- HENSHAW, W. H.: Broken needle in perineum, 578
- Hepatic insufficiency, haemoclastic crisis as a test of, 461, 574
- Herbals, old English, 432
- HERBERT, Lieut.-Col. H.: *The Operative Treatment of*
- Hernia, diaphragmatic, of the entire stomach (J. Grant Andrew), 184 (O)
- Hernia, strangulated obturator, treatment of (T. Rendle Short), 718 (O)
- Heroin (parliamentary note), 572, 1071
- HERON, Alexander, obituary notice of, 355
- Herpes zoster with localized muscular paralysis (Oscar Woster-Drought), 570 (O).—Correspondence on, 1075
- Herpes zoster ophthalmicus (Samuel Lodge and William Oliver Lodge), 1034 (O)
- Herpes zoster and varicella, 358
- HERINGTON, Sir W. P.: Registration of nurses, 789
- HEITZER, A. E.: *Diseases of the Thyroid Gland*, rev., 351
- HEITZEL, Miss: Treatment of puerperal infection, 511
- HESS, Julius H.: *Principles and Practice of Infant Feeding*, rev., 768
- HEVEST: Element 72, 357
- HEWAT, Fergus: Mediastinal tumour, 191
- HEWER, C. Langton: *Anaesthesia in Children*, rev., 246
- HEWEN, Evelyn E.: Histological conditions in a case of Addison's disease, 235 (O)
- HEWITT, Sir Stanley, appointed surgeon apothecary to the Prince of Wales and his household, 45
- HEWITT, Sir Frederic W.: *Anaesthetics and their*
- ture of sugar in the
- HEWLETT, R. Tanner: *Pathology, General and Special, for Students of Medicine*, rev., 157
- Hiccup, 75, 220, 338, 402, 450, 542
- Hiccup, epidemic, 603, 701, 744
- HICKS, R. T.: Treatment of full-term ectopic gestation, 379.—Endometrioma of the ovary, 379
- HIGGINS, T. S., elected a Fellow of the Royal Sanitary Institute, 885.—Presentation to, 538
- HIGGS, Ernest W. M., obituary notice of, 264
- Hill attitudes. See Altitudes
- Highbury Pensioners Hospital. See Hospital Highlands, hospitals and nursing in the, 697
- HILL, A. V.: The energetics of muscle, 342.—Appointed Jodrell Professor of Physiology at University College, London, 541
- HILL, Leonard, presented with the "Consolidated Gold Fields of South Africa, Ltd." gold medal, 491.—Description of the katal-thermometer, 515
- Open-air bell The
- pneumoth light, 1018
- HILL, T. Eustace: Pit-head hygiene, 20.—Diet and preventive medicine, 192
- HILL, T. G. (and P. Haas): *An Introduction to the Chemistry of Plant Products*, rev., 1039
- HINDLEY, medical officership for (parliamentary note), 433
- Histamine, action of on the veins (O. Inchley), 679 (O)
- History of the Great War, Based on Official Documents: Medical Services, Surgery of the War, vols. i and ii, rev., 238, 332
- History of Medicine. See Medical History
- secretions, 442
- HOLLAND, C. Thurstan, appointed honorary consulting radiologist to the Liverpool Royal Infirmary, 571.—Delivers the Silvanus Thompson memorial lecture on "rays in diagnosis", 781
- HOLLAND, Eardley: Primary carcinoma of the vagina, 191.—*Leiomyosarcoma of a fibromyoma*, 510
- HOLLAND, W.: Venereal disease in Scandinavia, 1023
- HOLLANDER, Bernard: *The Psychology of Misconduct, Vice, and Crime*, rev., 636
- HOLMES, Gordon: Some clinical manifestations of tabes dorsalis, 47 (O)
- HOLMES, Hilary: Essential haematuria, 191.—Ruptured aneurysm of middle cerebral artery, 191
- HOLT, L. Emmett: *Food, Health, and Growth: a Discussion of the Nutrition of Children*, rev., 194
- Holy Island residents and insurance (parliamentary note), 437
- Home Office: Memorandum re the Dangerous Drugs Act (1920), 69.—Statement re the Dangerous Drugs and Poisons (Amendment) Act (1923), 939
- Hong Kong, rejection of the proposal to amalgamate the naval and military hospitals at, 829
- HONOURS:
- 30, 45, 172, 173, 174, 449, 665, 946, 937, 1002, 1042, 1078
- Order of the Bath:
- K.C.B., 937
- C.B., 30, 937
- Order of the Star of India:
- K.C.S.I., 30
- Order of St. Michael and St. George:
- C.M.G., 30, 937
- Order of the Indian Empire:
- K.C.I.E., 30
- C.I.E., 30, 937
- Royal Victorian Order:
- K.C.V.O., 30
- M.V.O., 937
- Order of the British Empire:
- R.B.E., 30
- C.B.E., 30, 665
- O.B.E., 30, 45, 174, 665, 937
- M.B.E., 665, 937
- Baronetcy, 946
- Knighthoods, 30, 946, 937
- Kaiser-i-Hind Medal, 30
- Birthday, 937
- New Year, 30
- Foreign decorations, 172, 173, 449
- Order of St. John of Jerusalem:
- Promotions, 1042
- Mentioned in dispatches, 1002, 1078
- Promotions, 30
- A correction, 174
- Hookworm disease in India, report on, 76
- Hookworm disease treated by carbon tetrachloride and oil of chenopodium (J. G. Reed), 1048 (O). See also Helminthiasis
- HOORON, Lieut.-Col. Alfred, C.I.E. conferred upon, 30
- HOPE, E. W. (and W. HANNA): *Industrial Hygiene and Medicine*, rev., 931
- HORDEN, Sir Thomas, appointed Physician-in-Ordinary to the Prince of Wales, 45.—Ulcerative colitis, 855.—The private clinic in Great Britain, 876.—Baronetcy conferred upon, 946
- HORN, Sir Andrew: Deep x-ray therapy in gynaecology, 418.—Malignant ovarian tumour, 419.—Fibro-cystic tumour, 419
- Horseshoe kidney. See Kidney
- Horsley lecture. See Lecture
- HORT, F. A.: Artificial legs, 700
- HOSAN, Maude E.: A request for copies of *Brain*, 308
- Hospital almoners, 603
- Hospital, an American psychopathic, 1031
- Hospital, Belfast Cancer, 1037
- Hospital, Belfast Royal Victoria: Annual meeting, 692
- Hospital, Birmingham General: New extern midwifery department, 531.—Report, 655
- Hospital, Birmingham Mental, Hollymoor, 1071. See also Hospital, Hollymoor
- Hospital, the Cancer, London: An appeal, 393.—Research at, 943
- Hospital, Cannock Chase (parliamentary note), 1077
- Hospital, Cardigan: Annual meeting, 1073
- Hospital, the Cassel, for Functional Nervous Disorders, note on, 736
- Hospital, Cheshire County Mental: Report, 395
- Hospital, Deaconess, Edinburgh: Annual meeting, 608
- Hospital, Derby Borough Mental: Report, 169. See also Hospitals, State
- Hospital, Edinburgh Royal Maternity: Statistics, 608
- Hospital, Edinburgh Sick Children's: Annual meeting, 953
- Hospital finance, Irish (Horace Law), 242
- Hospital, Glasgow Royal Cancer, 949
- Hospital grants and public health legislation (Ireland), 933
- Hospital, Guy's: Reports, vol. lxvii, rev., 23; vol. lxxiii, rev., 635, 933
- Hospital, Haslemere and District, opening of the new, 169, 256
- Hospital, Highbury Pensioners, fire at, 1070
- Hospital, Hollymoor Mental: Opening of new pathological laboratories, 1071
- Hospital, Kensington (Wales), for tuberculous children, 1110
- Hospital, King Edward VII, Cardiff, to be known in future as the Cardiff Royal Infirmary, 1041
- Hospital, Krishna Rajendra: Report, 785
- Hospital, Leith, development of, 356
- Hospital, Liverpool. Open-air for Children: Report, 878
- Hospital, Liverpool Royal Southern: Annual meeting, 1072
- Hospital, London: Lectures at the Medical College, 132
- Hospital maintenance "system", 532, 559, 610. See also Hospitals, voluntary
- Hospital, Meath, Dublin: Annual meeting, 993
- Hospital, "mental," or "asylum." See Asylum and Mental
- Hospital, Middlesex, cancer research at, 948
- Hospital, Nottingham Children's: Annual meeting, 1041
- Hospital, Ophthalmic, at Jerusalem: Report, 633
- Hospital patients, payment by, 350
- Hospital policy, 41, 62, 123, 211, 261, 303, 353, 393, 442, 486, 537, 574, 610, 616, 661, 700, 788, 817, 827, 835.—Staff funds, 788. See also Hospitals, voluntary
- Hospital provision for disabled war veterans: an American report, 685, 692
- Hospital, Queen Charlotte's: Annual meeting, 1079
- Hospital, Ranchi European Mental, 351
- Hospital, Royal Free London School of Medicine for Women: Presentation of prizes, 793, 937
- Hospital, Royal Morningside: Report, 440, 480
- Hospital, Royal National Orthopaedic: Foundation stone of New Nurses Home laid, 1105
- Hospital, Royal Northern, Holloway: Neurological section established, 541
- Hospital, Royal Portsmouth: Election of chairman, 741
- Hospital, Royal Prince Alfred: Annual report, 125.—Psychiatry clinic at, 697
- Hospital, Russell Lea Nerve, proposal to close, 697
- Hospital, St. Bartholomew's: Round the Fountain, rev., 23.—Octocentenary of, 36, 478, 694, 792, 793, 906, 985, 1032.—New premises for laboratories, etc., 307.—Reports, vol. lvi, rev., 727.—A Short History of, 1123-1923 (Sir D'Arcy Power and H. J. Waring), 944.—Service at St. Bartholomew-the-Great, 1032.—Solemnity in the Hospital Square, 1032.—The Guildhall ceremony, 1032.—The Tcleaux, 1032.—Exhibits, 1033.—Bartholomew Fair, 1033.—The Conversions, 1034.—Rabers Lodge, 1034.—The Old Students' Dinner, 1034
- Hospital, St. Chad's, Birmingham: Note on, 1112
- Hospital, St. Mark's, for Cancer, Fistula, etc.—New buildings, 307
- Hospital, St. Thomas's: *Pharmacopoeia*, rev., 976.—Almoner's work, 937.—Opening of the new biochemical laboratory, 1061, 1068
- Hospital, St. Ultan's Island, Dublin, 832
- Hospital scheme, a contributory (Sussex scheme), 423.—(The Oxford scheme), 522
- Hospital staffs and income tax, 1077. See also Income tax
- Hospital Sunday Fund. See Fund
- Hospital, Sunderland Pensions (parliamentary note), 693
- Hospital, Taiwan, English Presbyterian Mission, Formosa: Report, 789
- Hospital for Tuberculosis, at Cefr Mably, Wales, 132, 1110
- Hospital for Tuberculosis (surgical) opened near Ascot, 917, 953
- Hospital, Tyrone County: Report, 914
- Hospital, University College, London: The King opens the new buildings, 930.—Leading article on, 932. See also College
- Hospital, United Services, Ascot: Opening of third and last block, 917, 953
- Hospital, Westminster, to be closed for repairs, 1041
- Hospital, Willesden War Memorial: Opening of the extension, 79
- Hospital, Wolverhampton and Staffordshire General: Petition for a charter of incorporation, 491
- Hospitals Commission, Grants by (parliamentary note), 780
- Hospitals, cottage, training of nurses in, 699. See also Nurses



Hospitals of Dublin and the treatment of insured persons, 350  
 Hospitals of Edinburgh: Visit of the Lord High Commissioner, 993  
 Hospitals, L.C.C. Mental: The position of pathologist to, 256  
 Hospitals and legacy duty exemption (parliamentary note), 1071, 1110  
 Hospitals, Mental: Death rates in (parliamentary note), 483  
 Hospitals, mental, of the London County Council, service patients in (parliamentary note), 529  
 Hospitals, mental, visitations to (parliamentary note), 393  
 Hospitals of the Metropolitan Asylums Board (parliamentary note), 1035  
 Hospitals, St. Mary's, Manchester, review of book on, 769  
 Hospitals, Scottish, a "Maintenance System" for, 532. *See also* Hospitals, voluntary  
 Hospitals, State, 169, 212, 303  
 Hospitals, Voluntary: Small consultative committee of members of local committees appointed, 87—Conference of staffs of, 132—Grants for (parliamentary note), 393—Contributory schemes (Sussex), 423—(Oxford), 522—"Maintenance" systems (Scottish), 532, 569, 610—Commission deals with applications for grants, 578—And medical staff funds, 817—Surrey and Croydon voluntary hospitals committee report, 871—Co-operation among, 1027—Sheffield hospitals' penny in the £ scheme, 1027. *See also* Hospital policy  
 Hospitals, voluntary (Sir Richard Luce), 863  
 Houses, State-assisted (parliamentary note), 529  
 Houses unfit for habitation (parliamentary note), 529  
 Housing Bill, 741  
 Housing in Scotland, 302  
 Houston, Dr.: Mentally defective children, 512  
 Houston, R. A.: Some recent work in colour blindness, 255  
 Howarth, W. J.: Diet and preventive medicine, 192—Report on the public health of the City of London, 913  
 Howat, R. Douglas: Polythelia, 928 (O), 1115  
 Hughes, E. E.: Curiously shaped calculi found by chance in the bladder, 191  
 Hughes, T. A. (and C. K. Kellaway): Observations on the influence of insulin on normal metabolism in man, 710 (O)  
 Hulbert, H. H.: *Eurhythm: Thought in Action, the Principles and Practice of Vocal and*  
*of*, 472  
 H., ( ), obituary notice of, 883  
 Humph, W. E.: Erythredema or the "pink disease," 201  
 Humphreys, F. Howard: Sterilization of the unfit, 760  
 Hunt, A. G.: *Orthopaedic Nursing*. Part I, *Joint Tuberculosis*, rev., 23  
 Hunt, G. H.: Diseased tonsils and heart disease, 1038  
 Hunter, John: His affairs, habits, and opinions (Sir John Bland-Sutton), 267 (O)—The destruction of his notes, 399  
 Hunter, Lieut.-Col. Thomas, C.I.E. conferred upon, 987  
 Hunter, William: Infection of teeth and gums, 63  
 Hunterian Festival, 339, 346  
 Hurst, A. F.: Osteoarthritis and rheumatoid arthritis, 762—Ulcerative colitis, 856—Toxic symptoms following the alkaline treatment of peptic ulcer, 1074  
 Hurst, E. Weston: Sinus thrombosis following pneumonia in an adult, 929  
 Hutchinson, Robert: The chronic abdomen, 667 (O)  
 Hutson, John: *Small-pox and Vaccination in Barbados*, rev., 246  
 Huxley, Frances: Ante-natal diagnosis, 514  
 Hydatid cysts of liver associated with gall stones and empyema of gall bladder and pleura; recovery (Mabel L. Ramsay and H. F. Vellacott), 184 (O)  
 Hydatidiform mole (R. A. Hendry), 1095—(J. St. George Wilson), 1095  
 Hydrogen ions and adrenal glands. *See* Adrenal and Glands  
 Hydrology, medical, special course of, 703, 735, 885, 1029  
 Hygiene, 45, 665  
 Hygiene exhibition in Strasbourg, 883  
 Hygiene, industrial, bibliography of, 1022  
 Hygiene, Industrial, Conference on, 1108—Fatigue in industry, 1108—Industrial diseases and injurious processes, 1109—Health of women workers, 1109  
 Hygiene, influence of military service on (Sir William Macpherson), 66  
 Hygiene, personal, and its place in school teaching (Octavia Lewin), 930  
 Hygiene, review of books on, 931, 1022  
 Hygiene, the school of (leading article), 477, 600—Note on, 527—Transitional executive committee appointed, 907  
 Hyperaemia, triangular frontal, in infants (A. F. G. Spinks), 375  
 Hyperemesis gravidarum (Norman Wilson), 592  
 Hyperplasia, case of (D. C. L. Vey, with a commentary by Sir Clifford Allbutt), 872 (O)  
 Hyperplasia of the hypophysis cerebri (J. D. Cui), 838

Hyperplasia of the upper jaw, chronic (Douglas Guthrie), 1093  
 Hyperthyroidism (T. G. Moorhead), 595  
 Hyperthyroidism, adrenaline as a potential factor in (D. J. Harries), 1015 (O)  
 Hypertrophy and cardiac dilatation, 1042. *See also* Heart  
 Hypnotism, review of book on, 815  
 Hypophysis cerebri, hyperplasia of the (J. D. Cummins), 898  
 Hysterectomy in treatment of concealed accidental haemorrhage (William Fordyce and R. W. Johnstone), 241  
 Hysterectomy in treatment of inversion of the uterus (J. J. W. Evans), 854

## I.

ILBERT, Sir Courtenay: *The New Constitution of India*, rev., 1022  
 Ileum, congenital stenosis of, followed by intussusception (W. Turner Warwick), 804 (O)  
 Illness or accident? 958, 1004  
 Illumination of number plates on motor vehicles. *See* Motor  
 Imperial Institute, financial difficulties of, 265  
 Imrey, R. Lance: Treatment of genital prolapse, 1093  
 INCH, Captain Thomas Douglas, Italian Order of St. Maurice and St. Lazarus conferred upon, 449  
 Inchcape Retrenchment Committee's report, 429  
 INCHLEY, O.: The action of histamine on the vessels, 679 (O)  
 Income Tax: 46, 88, 132, 174, 220, 266, 357, 402, 450, 492, 542, 578, 616, 666, 704, 746, 778, 794, 839, 886, 918, 1004, 1042, 1120—Review of books on, 245, 1058, 1077, 1080—Parliamentary notes on, 437—Separate taxation of married persons, 437—Car transactions, 450, 542, 616, 666, 746, 794, 918, 1004—Allowable expenses, 578, 616—Effective rates of, 778—And hospital staffs, 1077  
 Incubation, infection during. *See* Infection  
 Incubable, care of in their homes, 953  
 Indexes, half-yearly, 76

## INDIA:

American medical diplomas in, 610  
 Chemical examinations in the Punjab, 127  
 Child welfare, 38, 351  
 Child wives in, 351  
 Dinner to Sir Temulji B. Nariman, 785  
 Education for medical women in India, 128  
 Hookworm disease in: Report, 76  
 Inchcape Retrenchment Committee's report, 429  
 Leprosy asylums in (parliamentary note), 780  
 Leprosy in, 127  
 Milk supply of Bombay, 652  
 Nursing and child welfare, 38  
 Nursing developments in, 652  
 Payment by hospital patients, 350  
 Plague in, 633, 703  
 Public Health Commissioner's office not to be abolished, 838  
 Public health and medical research in (leading article), 640  
 Ranchi European Mental Hospital, 350  
 Rat repression, 39  
 Retrenchment in Bengal, 609  
 Retrenchment Committee's report to Viceroy, 609, 640, 838  
 Rockefeller Fellowships for India, 39  
 Royal Commission on the services, 652, 1041  
 Surgery at Mysore, 785  
 Universities of (parliamentary note), 695  
 Unqualified medical practitioners in Bengal, 39

Indian Medical Service (parliamentary note), 345—Correspondence on, 354—Annual dinner, 1117  
 Indian Political Department, 338  
 Indian Services, Royal Commission appointed to inquire into the organization and conditions of, 199  
 Indigestion, discussion on, 722  
 Industrial colony in treatment of tuberculosis. *See* Tuberculosis  
 Industrial diseases compensation (parliamentary note), 437  
 Industrial diseases and injurious processes (T. M. Legge), 1109  
 Industrial efficiency and atmospheric conditions, 36  
 Industrial fatigue (D. R. Wilson), 1108  
 Industrial Fatigue Research Board: Reports on atmospheric conditions and industrial efficiency (H. C. Weston and May Smith), 36—Atmospheric conditions in cotton weaving (S. Wyatt), 389—Annual report, 779, 819—Leading article on, 822  
 Industrial hygiene. *See* Hygiene  
 Industrial painting, hygienic methods of, 167  
 Industrial Psychology, National Institute of, 571. *See also* Psychology  
 Industrial research, practical use of the microscope in, 132  
 Inebriety, sanatorium for, 793  
 Infant feeding, review of books on, 515, 768

Infant mortality. *See* Mortality  
 Infant Welfare Conference, 778, 1111. *See also* Baby week  
 Infantile complaints, milk injections in (W. A. Wilson-Smith), 238—(B. P. Sabawala), 238  
 Infants. *See also* Children  
 Infection during incubation, 355, 700  
 Infectious and contagious diseases in schools, code of rules for the prevention of, 251  
 Infectious diseases notification (parliamentary note), 1070  
 Infectious diseases (parliamentary note), 1035, 1070  
 Infectious diseases, review of books on, 474  
 Infirmary, Cardiff Royal, 1041  
 Infirmary, Dundee Royal: Caird bequest, 307  
 Infirmary, Edinburgh Eye, Ear, and Throat, Note on, 533  
 Infirmary, Edinburgh Royal: Annual report, 80—Pageant, 993  
 Infirmary, Glasgow Eye: Annual meeting, 396  
 Infirmary, Glasgow Royal, 80—Report, 343  
 Infirmary, Greenock Eye: Annual meeting, 209  
 Infirmary, Hull Royal, receives a gift to purchase x-ray apparatus for treatment of cancer, 578  
 Infirmary, Leeds General: Visit of the Prince of Wales, 992  
 Infirmary, Leicester Royal: 150th anniversary meeting, 742  
 Infirmary, Liverpool Royal: Annual meeting 608  
 Infirmary, Kilmarnock: The first surgeon to, 349  
 Infirmary, Manchester Royal: Annual report, 208—X-ray department of, 832  
 Infirmary, Royal Albert Edward, Wigan: 50th anniversary, 1036  
 Infirmary, Sunderland Eye: Annual meeting, 395  
 Influenza treated with air containing small amounts of chlorine, 958  
 Influenza bacillus of Pfeiffer, Danish studies of, 117  
 Influenza and the lay press, 249  
 Influenza pandemic, 1918 (J. G. Adami), 560  
 Influenza, surgical complications of (R. A. Barlow), 1018  
 Influenza, virus of (Sir Spencer Lister), 200  
 Inge, William Ralph: *Outspoken Essays*, rev., 383—Religion and some medico-sociological problems, 437  
 INGLIS, Elsie, memorial to, 484  
 INGRAM, P. C. P.: Chancre redux, 1091 (O)  
 Inheritance of acquired characters. *See* Characters  
 Injury and recovery, review of book on, 596  
 Inquests, coroners', anaesthetic deaths (J. H. Chaldecott), 719—Discussion, 720  
 Insane, care of in London, 783  
 Insane, treatment of and the Lunacy Law (leading article), 430—Correspondence on, 536, 657. *See also* Lunacy  
 Insanity in New South Wales, 1073  
 Insomnia (A. R. Cushman), 329—Discussion, 329  
 Institution, Liverpool Medical: Clean milk, 65—Dermatitis in bakers, 65—"Acute abdomen" in the child, 65—Annual meeting 208—Surgical aspects of tuberculosis of the abdominal lymphatic glands 286—Ergotism, 287—Myeloma of the ischium, 287—Menstruation and pregnancy in Hodgkin's disease, 469—Osteitis deformans, 469—Oxycephaly, 469—Appendicitis, 469—Special general meeting to receive report of the Revision of Laws Committee, 531—Croupous pneumonia in children and its complications, 631—Injuries to the cervical spine, 632—Urticaria, 632—Abnormal findings in blood and excreta, 722—Non-obstructive jaundice, 764—An unusual mineral deposit in the soft tissues of the hands, 764—Fracture dislocation of the fourth cervical vertebra, 764—Cystoscopy and pyelography, 858—Bronchopneumonia in a stillborn foetus, 859—Unexpected death in children, 859  
 Instruments for high microscopical magnification (James Beatty), 721  
 Instruments left in the peritoneal cavity (Clifford White), 228 (O)  
 Insulin (Leon Blum), 200  
 Insulin administered by injection (S. V. Telfer), 715 (O)  
 Insulin administration, clinical results of, 737—Leading article, 733  
 Insulin, statement by the Medical Research Council, 341, 690, 695, 737  
 Insulin and diabetes—the present position (H. F. Moore), 418  
 It [ ] in the treatment of [ ] or clinical experience [ ] Campbell, and A. A. article on, 32—(Leon Blum), 200—Correspondence on, 787, 833, 862, 886  
 Insulin, influence of upon acidosis and lipaemia in diabetes (H. Whitridge Davies, Charles G. Lambie, D. Murray Lyon, Jonathan Meakins, and William Robson), 847 (O), 857  
 Insulin, influence of on the normal metabolism in man (C. H. Kellaway and T. A. Hughes), 710 (O)  
 Insulin Manufacture and distribution of in Scandinavia, 1103  
 Insulin for sale, announcement by the Medical Research Council, 341, 690, 695, 787, 833, 908—Removal of special conditions of sale of, 908  
 Insulin supply (parliamentary note), 437  
 Insulin. *See also* Diabetes  
 Insurance, health, problems in America, 986  
 Insurance medical service (leading article), 248



## INSURANCE, NATIONAL:

- Committees, 483
- Control Fund, 829
- Coroner's attack on the panel system, 875, 918
- Dental treatment, 1035
- Dublin hospitals and the treatment of insured persons, 350
- Expenditure, 437
- Finance (leading article), 933
- Holy Island residents and, 477
- Insurance Advisory Committee (Ireland), 742
- Leading article on, 903
- Medical benefits, 393
- Medical Service, 248, 740, 991, 1035, 1069
- Medicine and medicines, 1120
- Medicines for panel patients, 529
- Panel committees, conference of (leading article), 1026
- Panels, maximum size of, 529
- Parliamentary notes, 345, 393, 436, 482, 483, 529, 572, 694, 740, 829, 939, 991, 1035, 1069
- Payment of insurance practitioners, 694
- Reserve value contingency fund, 829
- Review of book on, 1020
- Unemployment and sickness, 393, 436, 482, 780, 829

Intelligence and environment, 643

Intersexuality, developmental (F. A. E. Crew), 766

Intestinal bacteria, influence of upon the thyroid gland (D. J. Harries), 191, 553 (O)—Correspondence on, 659, 834, 885

Intestinal obstruction following acute appendicitis and peritonitis (P. F. McFarlan), 61 (O)

Intestinal obstruction, cause of death in (Seton Fringle), 519

Intestinal stasis, 82—Case of (C. Dundas Maitland), 717 (O). See also Colon, non-malignant affections of

Intestine, subcutaneous rupture of (R. P. Rowlands), 716 (O)

Intestine, large, volvulus of (A. H. Southam), 1050 (O)

Intestine, small, extensive resections of (Pirie Watson), 1055

Intracranial aneurysm (Sir William Wheeler and E. C. Smith), 560

Intrathoracic aneurysms. See Aneurysm

Intussusception, acute, two cases of in children, resection, recovery (W. A. Thompson), 971

Intussusception supervening on congenital stenosis of the ileum (W. Turner Warwick), 804 (O)

Intussusception, chronic, case of (G. A. Ewart), 629 (O)

Intussusception, chronic, in children (R. C. Dan), 107

Intussusception, chronic, fixation of caecum in (J. B. Alexander), 503

Intussusception, ileo-colic, caused by Meckel's diverticulum and stimulating ectopic gestation (H. H. Greenwood), 1016 (O)

Ionic medication (David Campbell), 469 (O)—Correspondence on, 487, 535, 613, 659, 914—leading article, 867

Ionic medication and the constant current, 867

## Ireland:

Belfast: Royal Victoria Hospital, 609—New Cancer Hospital, 1037

Dairy and cowshed inspection, 80

Dispensary doctors and dispensary midwives, superannuation of, 441

Distributive Workers' annual report, 655

DUBLIN:

Associated Dublin hospitals and the treatment of insured persons, 350

Corporation of and the treatment of tuberculosis, 350

Infant Aid Society, 573

Meath Hospital, 993

St. Ultan's Infant Hospital, 832

764

## F

Free State Army Medical Service, 609, 914, 1114

Free State Ministry of Health, 654

Free State Ministry of Local Government and Poor Law medical officers, 80

Governor of Northern Ireland, 395

Hospital grants and public health legislation, 935

Irish internment camps, report of International Red Cross on, 954, 1073

Irish Medical Association, annual meeting, 1037

Irish Medical Committee, 1113

Limerick City Medical Association, 485

Local Government Bill (Irish Free State), 302

Medical inspection of Irish school children, 653

Mullingar medical officers, 350

Poor Law officers' salaries, 485

Poor Law services, reform of, 533

Public health, 395

Royal Academy of Medicine, 784. See also Academy in General Index

Royal College of Physicians of Ireland, 654, 833

Salaries of medical officers, 680, 993

School medical inspection, 693

School medical service, 934

Smith, Professor Elliot, 256

Superannuation allowances, 784

Sweepstakes for charitable purposes, 170

## Ireland (continued):

Tuberculosis in co. Armagh, 573

Tuberculosis scheme for co. Monaghan, 60

Tyrone County Hospital, 914

332

Irish Free State: Ministry of Local Government and Poor Law medical officers, 80—Army Medical Service, 609, 914, 1114—Ministry of Health, 654—School medical inspection, 693—Superannuation allowances, 785

Irish internment camps, report of International Red Cross on, 954, 1073

Irish Medical Committee, 1113—Advisory Committee to the Irish Insurance Commission, 1115—Irish medical services, 1113—Red Cross on motor cars, 1114—Medical attendant to St. Patrick's College, Maynooth, 1114—Medical fees for life holidays, anaesthetist, 1114

Irish Nurses' Union and Irish public health, 395

Irish Union of Distributive Workers and clerks: Report, 655

IRVINE, Assistant Surgeon B. A., M.B.E. conferred upon, 665

IRVINE, John C. D., presentation to, 45

IRVING, John, obituary notice of, 510

IRWIN, S. T.: Tetanus, 326—Dropped foot due to pressure on the external popliteal nerve, 325

Ischium, myeloma of (G. P. Newbott), 287

Italian professors who will reach the age limit of 75 years in 1923, 759

Italian spas, visit to, 665

Italy as a winter resort, 116, 266

Italy, South, as a winter residence for a case of phthisis, 794

ITRYCHANYA, Captain Chakalyit Chandy, obituary notice of, 665

IVENS, Frances: Submucous fibromyoma removed by hysterectomy, 470

Ivory Cross: Dinner in honour of St. Apollonia, 175

## J.

JACKSON, Chevalier: Bronchoscopy and Esophagoscopy: A Manual of Peroral Endoscopy and Laryngeal Surgery, rev., 421

JAMES, J.: The treatment of dental cases, 854

Japan: Cholera in, 45—Commission to visit the United States to study the American and Canadian medical institutions and methods, 266—Annual meeting of the Japan National

364

Jaundice, review of book on, 1095

Jaw, upper, chronic hyperplasia of (Douglas Guthrie), 1093

Jaw, upper, malignant disease of (Musgrave Woodman), 1094

JEFFERSON, Geoffrey: Fractional test-meal in gastric and duodenal ulcer, 191—Reviews vols. I and II of the *History of the Great War*, 283, 332—Injuries to the cervical spine, 632

JEFFERSON, John C.: Lacerated kidney due to indirect violence, 1033 (O)

JENNER, Edward: Centenary of the death of, 33, 73, 163, 203—Leading article on, 163—Académie de Médecine meeting in honour of, 203, 938—Commemoration at the Royal Society of Medicine, 204—Jenner memorial medal, 206—Jenner relics, 206, 249—Mrs. Jenner, 358—The smell of London smoke, 746—French souvenir, 938

JERSLID, O.: Venereal disease in Scandinavia, 1023

Jerusalem: The ophthalmic hospital at, report, 683—Measles poisoning in (G. Sivari), 854

Jews, sanitary conditions among (statistics), 1119

Johns Hopkins Hospital and University: *Collected Papers of William Osler, M.D., F.R.C.S., F.R.S.*, 110

Journal of *Surgical Anatomy*, rev., 109—*Regional Anatomy*, rev., 292

JOHNSTONE, Major David Patrick, C.I.E. conferred upon, 887

JOHNSTONE, Professor: Mentally defective children, 512

JOHNSTONE, R. J.: Intrinsic dysmenorrhoea, 724—Continuous catgut suture in gynaecology, 766

JOHNSTONE, R. W.: Concealed accidental haemorrhage treated by hysterectomy, 241—Operations on the round ligaments, 631—Intrinsic dysmenorrhoea, 723—Ovarian angioma, 766—Endometrioma of the posterior vaginal wall, 767

JOIL, C. A.: Appendicitis six years previously followed by a fistula, 242—Neoplasm of the brain, 242—Diagnosis and treatment of gall stones, 853

JOLT, J. Swift: Surgical treatment of renal calculi, 64

JOLLET, Professor, death of, 66

JONES, Herbert G.: Case of torsion of the gall bladder, 1016 (O)

JONES, Arnold: Cavernous haemangioma of the vocal cord, 191

JONES, Herbert: Pit-head hygiene, 20

JONES, H. E.: Glycosuria, 765

JONES, H. Wallace: Two cases of "knuckle pads," 759

JONES, J. Arnold: The lingual tonsil, 1094—Tuberculosis of nose, pharynx, and larynx, 1094

JONES, J. H. Morris, elected chairman of the Colwyn Bay Urban District Council, 715

JONES, Dickson: Female foetus with numerous abnormalities, 470

JONES, Sir Robert: Blind nascent, 483—(And Robert W. Lovett): Orthopaedic Surgery, rev., 634, 685—Honorary degree, McGill University, conferred upon, 697

JONES, Wallace: Ostiitis deformans, 469

JONES-PHILLIPS, C. E.: Infective tonsillar disease, 559

Jones's operation for excision of the left cervico-thoracic ganglion of the sympathetic (A. K. Henry), 20

JORDAN, Fumaux: Treatment of full-term ectopic gestation, 379

JORDAN, Walter R.: The rights of a registered medical practitioner, 539

Journal of *Neurology and Psychopathology* in future to be published by Messrs. W. Heinemann, 616

Journal of *Helminthology*, first number, 777

JOURNE, M.: *Précis de Pathologie Médicale*, rev., 634

Juvenile delinquency, review of book on, 63

## K.

Kala-Azar in Assam, recrudescence of epidemic (leading article), 433

Kala-azar, treated by "Bayer 2:5" (Warrington Yorke), 370 (O)

KASDIERER, Paul: Inheritance of acquired characters, 867

KANEKO, Renjiro: *Ueber die pathologische Anatomie der Spirochaetosis icterohaemorrhagica* (Inada (Weilsche Krankheit)), rev., 1056

KARN, Mary (and Karl Pearson): Statistics of a baby clinic, 645

Katathermometer, description of (Leonard Hill), 513

Katathermometer, body temperature, and efficiency, 637

KAUFFMANN, O.: Organs from a case of lymphadenoma, 419

KATE, G. W. C.: X-ray measurement and protection, 389

KATE, J. R.: Public health and education, 932

KEBLE, Colonel Alfred E. C.: C.B.E. conferred upon, 665

KEEFER, Surgeon-Major William Napier, obituary notice of, 264

KERN, W.: completes fifty years' service with the Chelsea Board of Guardians, 45

KERN, W. W.: honorary M.D. Paris conferred upon, 431—I believe in God and in Evolution, 526

KEITH, Sir Arthur: Hunterian lectures on man's posture, its evolution and disorders, 451, 499, 545, 587, 624, 669 (O)

KEITH, J. R.: Crippling, 835

KELWAY, C. H. (and T. A. Hughes): Observations on the influence of insulin on normal metabolism in man, 710 (O)

KELLOCK, T. H.: estate and bequests of, 491

KELLY, R. E.: Ergotism, 287

KEMP, Lieut.-Colonel David Claude, obituary notice of, 703

KEMPSTER, Christopher: *Dental Radiology*, rev., 110

KENDALL, A. I.: *Bacteriology: General, Pathological, and Intestinal*, rev., 421

KENNEDY, W. P.: X-ray plate of the cervical spine, 124

KENYON, Robert: Appendicitis, 469

Kenya, medical retrenchments at (parliamentary note), 345—Medical service of (leading article), 687

KER, C. B.: Insomnia, 329

KERR, Isabel: Kaiser-i-Hind medal conferred upon, 30

KIDD, Frank: Surgical treatment of renal calculi, 64

Kidney, horseshoe (Clifford Morson), 235 (O)

Kidney, lacerated, due to indirect violence (John C. Jefferson), 1033 (O)

Kidney, white, with an associated congenital hydronephrosis (Ivor J. Davis), 633

KILLICK, Charles, obituary notice of, 833

KING, Preston: X-ray photograph of a fracture of the body of the fifth cervical vertebra, 287

KINGSBURY, A. Neave: Isolation of *B. anthracis* from a shaving brush, 417

KINGSLEY, Ernest: "Athletic heart," 661—Cardiac dilatation and hypertrophy, 1042

KIRK, Mr.: A rare abdominal tumour, 325

KIRKPATRICK, T. P. C.: Treatment of venereal diseases, 633

KLEIN, C. A.: Hygienic methods of industrial painting, 167



- KLEINE, F. K.: The Rhodesian tests of Bayer "205," 35
- KLOTZ, Oskar, appointed to the chair of pathology in the University of Toronto, 484
- KNOWLES, Frank Crozer (and others): *Tuberculosis in Infancy and Childhood*, rev., 291
- KNOX, Robert: X-ray treatment of malignant disease, 152—Appreciation of Conrad Röntgen, 305—Elevation of the diaphragm due to unilateral phrenic paralysis, 472
- KNOX, William W. N. (and T. K. MONRO): Botulism as seen in Scotland in 1922, 279 (O)
- "Knuckle pads," two cases of (H. Wallace Jones), 759
- KNYVETT, Hugh, obituary notice of, 491
- KORONCHEVSKY, V.: *The Aetiology and Pathology of Rickets from an Experimental Point of View*, 121—Effects of excess of calcium on the skeleton, 802 (O)
- ISTENSEN, Martin: *Investigations into the Occurrence and Classification of the Haemoglobinophilic Bacteria*, 117
- KROGH, Professor: The manufacture and distribution of insulin in Scandinavia, 1103
- KRUYT, H. R.: Electric charge of colloids in the medical chemistry department of the University of Edinburgh, 912
- L.
- Labour Conference, International: Health at (parliamentary note), 877
- Labour, determination of, 886
- Labour obstructed by carcinoma of the bladder (J. W. Bride), 1095
- Labour obstructed by a contraction ring (Drs. White-Cooper and Griffith), 286
- Labour followed by suppression of urine (Ambrose W. Owen), 630
- LACKE, J. Lamond: Treatment of puerperal infections, 511—Intrinsic dysmenorrhoea, 725
- Lactic acid in the treatment of chronic enteritis (I. H. Lloyd-Williams), 1053
- LADELL, R. Macdonald: The teaching of psychotherapy, 42
- LAËNNÉC, R. Théophile, selected passages of the works of, 1104
- LAMBE, Charles G. (and others): The influence of insulin upon acidosis and lipaemia in diabetes, 847 (O), 857
- Lamps, mercury-vapour, 266
- LANCASHIRE, G. H.: Urticaria, 632
- Lancashire: East Lancs (Territorial) War Memorial, 301
- "Lancet," the centenary of the, 34, 527
- LANE, Lieut.-Col. Clayton: On ankylostome infection, 551 (O)
- Lange test, colloidal gold for: a correction, 88
- LANGMEAD, F.: Laboratory tests in diseases of liver and pancreas, 467
- LANGRIDGE, Lieut.-Col. G. T.: Hiccup, 220
- LANGTON, Neville: *The Prince of Beggars*, rev., 157
- Laryngeal intubation in anaesthetics (Stanley Rowbotham), 1090 (O)
- Laryngectomy done under local anaesthesia (James Adam), 472
- LASLETT, E. E.: Restoration of the heart beat, 882
- LATHAM, Arthur, obituary notice of, 701
- LAW, Mr. Bonar, serious illness of, 909
- LAW, Horace: Irish hospital finance, 242
- LAWRENCE, R. D. (and G. A. HARRISON): Diastase in blood and urine in diabetes mellitus, 317 (O)
- LAWS, Rev. Robert, C.M.G. conferred upon, 937
- LAWSON, Sir Arnold: *War Blindness at St. Dunstan's*, rev., 67
- LAWSON, James: Cauterization of pleural adhesions by thoracoscopy, 470
- Lead paint and plumbism, 604
- Lead poisoning (parliamentary note), 1070
- Lead poisoning, the blood as guide to early diagnosis in (Robert Craik), 103 (O)—Correspondence on, 170, 210
- Leading Articles:**
- Acidosis and alkalosis, 295
- Adrenal secretion, the physiology of, 1025
- Ambulance trains, 1060
- "Angels and ministers," 71
- Asthma, the mechanism of, 523
- Biological foundations, 387
- British Medical Association, 940
- Budget, the, 689
- Byron, Lord, lameness of, 568
- Canada and the Association, 932
- Cancer research, appeal for, 944
- Conference of Panel Committees, 1026
- Country practitioner, 904
- Criminal responsibility, 569
- Diabetes and insulin. *See* Insulin
- Galen, 193
- Gastric and duodenal ulcers, treatment of, 247
- Heart disease, prevention of, 942
- Industrial fatigue, 822
- Inheritance of acquired characters, 867
- Insulin in diabetes, 32, 733—Risks of, 733
- Insurance finance, 903
- Insurance Medical Service, 248
- Ionic medication and the constant current, 867
- Jenner, Edward, 163
- Kala-azar in Assam: The recrudescence of epidemic, 430

- Lunacy law and the treatment of the insane, 430
- Man's posture, its evolution and disorders, 687
- Medical education in the melting-pot, 821
- Medical practitioner, the rights of, a 477
- Medical service of Kenya Colony, 687
- Microbial transmissible autolysis, 197
- Mortality in occupations, 339
- National health insurance finance, 903
- "New midwifery," 640
- Nurses' registration, 823
- Nutrition in etiology, 905
- Organizing of the profession for war, 31
- Pasteur, a century of, 72
- Pasteur's influence on medicine, 164
- Pasteur's influence on surgery, 119
- Photosynthesis and sea air, 601
- Physiology of the adrenal secretion, 1025
- Pituitary secretion, 732
- Post-graduate education in London, 567
- Psycho-analysis, 33
- Psychology of dreams, 775
- Public health and medical research in India, 640
- Radium in cancer of the tongue, oesophagus, and rectum, 297
- Registrar-General's annual report, 296
- Rickets, etiology of, 121
- Rights of a medical practitioner. *See* Medical
- Ronald Ross, honour to, 1102
- Scheme of life, 339
- School of hygiene, 477, 600
- Sphenoidal sinus, 943
- Sugar versus alcohol, 523
- Suicide, a statistical study of, 431
- Syphilometry, 774
- Units of a whole, 982
- Vaccine treatment of tuberculosis by a new method (Dreyer), 1059
- Veneral disease report, 1024
- Veterinary literature during the eighteenth century, 722
- Vienna report on rickets, 983
- War injuries and life assurance, 120
- Windward Islands Medical Service, 1102
- Wren, Sir Christopher, and medical science, 386
- League of Nations: International course for medical officers, 87, 656—Return of disabled men to industrial work, 87—International Advisory Committee on Anthrax Control, 162—The traffic in dangerous drugs, 602—Plumbism and lead paint, 604—Sixth session of the Health Committee, 793—Health Committee, sixth session, 945—Conference on industrial hygiene, 1108
- LEATHER, J. B.: Loss of limbs from syphilitic disease of bone, 192
- LE BEC, E.: *Medical Proof of the Miraculous: A Clinical Study*, rev., 423
- LECLERCQ, Arthur: *L'Artériosclérose et son traitement. Les maladies de la cinquantaine*, rev., 292
- Lecture, the Bowman: Ocular aspects of pituitary disorders (G. de Schweinitz), 816
- Lecture, the Cameron: Microbic transmissible autolysis (Jules Bordet), 175
- Lecture, the Chadwick: London's unhealthy areas (Topham Forrest), 347
- Lecture, Gibson Memorial, 1036
- Lecture, Victor Horsley Memorial, 122
- Lecture, Hunterian: Some problems of gastric and duodenal ulcer (Sir Berkeley Moynihan), 221
- Lecture, Mackenzie Davidson Memorial: X-ray diagnosis of the pathological gall bladder (A. W. George), 902—Note on, 906
- Lecture, Maudsley: Psychiatry in Canada (C. K. Clarke), 972
- Lecture, the Middlemore: Refraction (T. Harrison Butler), 843 (O)
- Lecture, the Montgomery: The movement of the eyes (Elliot Smith), 256, 298
- Lecture, the Silvanus Thompson Memorial: X-rays in diagnosis (C. Thurstan Holland), 781
- Lecture, the Vicary: The anatomical delineations of Vesalius (W. G. Spencer), 341
- Lectures, FitzPatrick: The post-Hippocratic schools of medicine (R. O. Moon), 145, 187 (O)
- Lectures, Gifford (1921-22), to be published in volume form, 108
- Lectures, Goulstonian: The nature of arteriosclerosis (Geoffrey Evans), 454, 502, 548 (O)
- Lectures, Hunterian: Man's posture, its evolution and disorders (Sir Arthur Keith), 451, 499, 545, 587, 624, 669 (O)—Leading article on, 687
- Lectures, Oliver-Sharpey: The activity of the capillary blood vessels and its relation to certain forms of toxæmia (H. H. Dale), 959, 1006 (O)
- Lectures, Rhodes: The new constitution of India (Sir Courtenay Ilbert and Lord Meston), 1022
- Lectures, the Stewart: The modern psychology (R. J. A. Barry), 255
- LEE, Dr.: Treatment of congenital syphilis, 512
- LEE, Fraser: Treatment of puerperal infections, 511
- LEECH, Bosdin: Fish bone in larynx, 191
- LEES, C. H., appointed a member of the Safety in Mines Research Board, 745
- LEES, David: Gonococcal infections of tubes and ovaries, 241
- LE FANT, G. E. H. (and A. J. R. O'BRIEN): An outbreak of relapsing fever, 693
- LEFEVRE, Charles: *La Période Pré-opératoire*, rev., 682

- LEGGE, T. M.: Industrial diseases and injurious processes, 1109
- Legs, artificial, 700. *See also* Artificial
- LEHNDORFF, Heinrich: *Kurzes Lehrbuch der Kinderkrankheiten*, rev., 976
- Leicester: New health offices opened, 484
- LEIGHTON, G.: *Botulism and Food Preservation (The Loch Maree Tragedy)*, rev., 932
- LEIPER, R. T., elected a Fellow of the Royal Society, 391
- LEISHMAN, Sir William, appointed Director-General of the Army Medical Service, 388, 401
- LEMAIRE, M. (and others): *Reins et Organes Genito-urinaire*, rev., 245
- LEMATTE, L.: *L'Opothérapie du Praticien*, rev., 515
- LEMPRIÈRE, L. R.: Rupture of the spleen, 681
- LENNIE, R. A.: Concealed accidental haemorrhage treated by conservative Caesarean section, 898
- L'Entente Hygienne, 656. *See also* Public Health Officers
- LENZ, Fritz (and others): *Menschliche Erblichkeitslehre*, rev., 155
- Leper asylums in India, results of treatment and research in (parliamentary note), 780
- Leprosy Conference, International, 987
- Leprosy in India, 127
- Leprosy, recent advances in the treatment of, 524
- LEREBOUTLET, P. (and others): *Endocrine Glands and the Sympathetic System*, rev., 232
- LETULLE, Maurice: *Inspection-Palpation, Percussion, Auscultation: Leur Pratique en clinique médicale*, rev., 195
- LEVINTON, Lieut.-Col. Asber, C.I.E. conferred upon, 987
- LEVIN, Joseph J.: Trauma and appendicitis, 352
- LEVY, Gabrielle: *Contribution à l'Étude des Manifestations Tardives de l'Encéphalite Epidémique*, rev., 422
- LEVY, Goodman: Cardio-vascular conditions in relation to anaesthesia, 210
- Lewbart disinfectant, 771
- LEWIN, Octavia: Personal hygiene and its place in school teaching, 930
- LEWIS, B.: *Medizinisches Vademecum in deutscher und englischer sprache. I. Für Ohrenärzte; II. Für Nasen- und Halsärzte; III. Für Augenärzte*, rev., 685
- LEXTON, O.: The treatment of diabetes mellitus, 707 (O)—Insulin and diabetes mellitus, 882
- LIAN, Camille (editor): *L'Année Médicale pratique*, rev., 976
- LIBBY, Walter: *The History of Medicine in its Salient Features*, rev., 1022
- Life assurance and war injuries (leading article), 120
- Limb fitting, artificial (Middleton Connon), 287
- Limb fitting, artificial: New rules for fitting centres, 491, 525
- Limbs, artificial (parliamentary note), 345, 606
- Limbs, artificial, supply of, 525, 700. *See also* Artificial
- Limerick City Medical Association, 485
- LINDSAY, James Alexander: *Medical Axioms, Aphorisms, and Clinical Memoranda*, rev., 422—Note on, 488
- LINTON, Right Rev. J. H.: *Persian Sketches*, rev., 195
- Lip reading instruction for ex-service men (parliamentary note), 878
- Lipaemia in diabetes, influence of insulin upon (H. Whitridge Davies, Charles G. Lambie, D. Murray Lyon, Jonathan Meakins, and William Robson), 847 (O)
- Lipolysis, defective, in diabetes and cancer, 1075
- Lipoma (H. Sheasby), 378
- Liquor, sale of to young persons (parliamentary note), 393, 482—Note on, 481
- Liquor Traffic Prohibition Bill, 741
- Lister Institute, annual report, 870
- LISTER, Lieut.-Col. A. E. J.: Intracapsular extraction of cataract, 612
- LISTER, Sir Spencer: The virus of influenza, 200
- LITTLE, E. Muirhead: Treatment of Dupuytren's contraction, 746—A pelvic support for plaster bandaging, 771
- LITTLEJOHN, Harvey: The microspectroscope for the detection of blood, 124
- LITTLER, Meredith: "Mixed tumour" of the uterus, 469
- Liver diseases, value of laboratory tests in (W. Langdon Brown), 461 (O)—Discussion on, 467
- Liver, hydatids of. *See* Hydatid
- Liver, review of book on, 813
- Liverpool: City coroner's report, 208—New maternity hospital for, 833—Cancer research in, 949
- LIVINGSTONE, George R.: Puerperal infections, 889
- LIVINGSTONE, John: Suboccipital meningocele successfully removed, 508
- Livingstone College. *See* College
- Llandrindod, spa treatment established at, 485
- LLOYD, John Daniel, obituary notice of, 85
- LLOYD, Major-General Owen Edward Pennock, father, K.O.B. conferred upon, 937
- LLOYD, Inspector-General William Harris, obituary notice of, 665
- LLOYD-WILLIAMS, I. H.: Lactic acid in the treatment of chronic enteritis, 1053
- LLOYD-WILLIAMS, W.: Two necropsies, 578
- Loa loa in chrysops, development of, 82
- Local Government areas, 300
- Local Government Bill (Irish Free State), 302







- MAXWELL, J. Preston: The drug habit, 1076  
 MAY, Chichester Gould, knighthood conferred upon, 946  
 MAYO, W. J.: Hon. degree McGill University conferred upon, 697  
 MAYOU, M. S.: Treatment of ophthalmia neonatorum in London, 538  
 MEACHEN, G. Norman: "T.B.," 402  
 MEAKINS, Professor: Insomnia, 329  
 MEAKINS, Jonathan (and others): The influence of insulin upon acidosis and lipaemia in diabetes, 847 (O), 857—The cause and treatment of dyspnoea in cardio-vascular disease, 1043 (O)  
 Meals, test, in gastric and duodenal ulcer (E. F. Guy), 191  
 Meat inspection in Scotland: new regulations, 879  
 Meat poisoning in Jerusalem (G. Stuart), 854  
 Meckel's diverticulum causing acute obstruction with symptoms resembling appendicitis (John W. Heekes), 719  
 Mediastinal growth with venous thrombosis (J. A. MacLaren), 1092 (O)  
 Medical Annual, 1923, rev., 725  
 Medical Aphorisms, rev., 422—Correspondence on, 488  
 Medical appointments (parliamentary note), 1070  
 Medical appointments in Ulster, 127  
 Medical barristers, 219, 838, 1079. See also Bar  
 Medical books, collected editions of collected by Martinus Nijhoff, 355—Second-hand catalogues of, 357  
 Medical Defence Union, change of address, 665  
 Medical and dietetic preparations: "Secwa," 384  
 Medical dynasty, 698  
 Medical education in England, recent advances in (Sir George Newman), 729, 771—Leading article on, 821  
 Medical education in the melting pot (Leading article), 821  
 Medical Fellowships in the United States, 1106  
 Medical golf. See Golf  
 Medical Herbalists' (Registration) Bill, 741  
 Medical History, *Annals of* (edited by Francis R. Fackard): Vol. iv, No. 3, rev., 383, 423; vol. iv, No. 4, 901  
 Medical hydrology, special course of, 703, 735, 885, 1029  
 Medical jurisprudence, review of books on, 23  
 Medical magistrates, 1011  
 Medical mortality in America, 358  
 Medical museums, 343  
 Medical officers, international course for, 87  
 Medical officers, Ireland, salaries of, 880, 993  
 Medical officers of health, annual reports of, 123, 525, 700  
 Medical officer's salary (parliamentary note), 1035  
 Medical physics in the curriculum, 662  
 Medical practitioners, registered, the rights of (leading article), 477—Correspondence on, 539, 575  
 Medical profession, necessity for co-operation between the different branches of the (J. S. Fraser), 532  
 Medical profession in war, 353  
 Medical radiology, the future of, 906  
 Medical Register for 1923, 435  
 MEDICAL RESEARCH COUNCIL:  
 And cancer research, 949, 1035  
 Annual report, 110  
 Appointments, 1031  
 Clinical results of the use of insulin, 737  
 Distemper Research Committee appointed, 391  
 Environment and intelligence, 643  
 Etiology of distemper, 249  
 Insulin available in this country, conditions of sale and precautions to be observed, 690, 695, 777  
 Report on the importance of early diagnosis in pulmonary tuberculosis (Harold Yallow), 782  
 Report on the Schick test, diphtheria, and scarlet fever (Surgeon Commander Sheldon F. Dudley), 577, 599  
 Report to on the acid-base equilibrium of the blood (acidosis and alkalosis), 295  
 Statement re insulin, 341  
 Structure of teeth in relation to dental disease (report by J. Howard Mummary), 388  
 Studies of rickets in Vienna, 1919-1922 (Harriette Chick and others), 987  
 The keta-thermometer, body temperature, and efficiency, 637  
 Medical research publications (parliamentary note), 345  
 Medical retrenchments at Kenya. See Kenya  
 Medical science and the Australian fauna (William Collin Mackenzie), 755 (O)  
 Medical service in the great war, 1914-1919, 24—Leading article on, 31  
 MEDICAL AND SURGICAL APPLIANCES:  
 Axis-traction lever, 195  
 Disinfection of water-closets, 771  
 Dosimetric apparatus for intratracheal anaesthesia, 637  
 Elevator for the first rib, 637  
 Non-rip cover-slip holder, 245  
 Pedicle forceps for nephrectomy, 685  
 Pelvic support for plaster bandaging, 771  
 Ureteral catheterization and pyelography outfit, 1053  
 Medical Utopia. See Utopia  
 Medical women, 129—Education of in India, 128  
 Medical Women's Federation: Annual meeting, 870. See also Association of Medical Women  
 Medicinal and Dietetic Preparations: Nasal creams in ampoules, 637  
 Medicine in China, 115  
 Medicine, history of, 1022. See also Medical History  
 Medicine and medicines, 1120  
 Medicine, modern, the essential equipment for the best pursuits of (Sir Dyce Duckworth), 193  
 Medicine and physiology (J. A. MacWilliam and W. J. Webster), 51 (O)  
 Medicine, post-Hippocratic schools of (R. O. Moon), 145, 187 (O)  
 Medicine, practical, the service of experiment to, 1061. See also Biochemistry  
 Medicine, review of books on, 290, 684  
 Medicine's debt to art, 344  
 Medicines, proprietary, and vitamins. See Vitamin  
 Medico-Legal: Action for negligence (Coleberd v. Colmer), 218—Birth control libel action (Stopes v. Sutherland and another), 445, 541—Prosecution under the Medical Act, 1118—Tuberculous infection in a house, 1118  
 Medico-Legal Institute, French, 1042  
 Medico-legal necropsies, 358  
 Medico-Sociological problems and religion (Rev. W. Ralph Inge), 437  
 MEEK, A.: *Essentials of Zoology for Students and First Year Students of Science*, rev., 1022  
 MEINE, Felix: Idiocymercy to mercury, 1092  
 MELLANBY, E. Diet and preventive medicine, 192  
 MELLANBY, Mrs.: Diet, dental structure and caries, 593  
 Mellin's food, vitamin content of, 13  
 MELLISH, Maud M.: *The Writing of Medical Papers*, rev., 563  
 MELSON, G. H.: Case of diagnosis, 419  
 MELVILLE, Lieut.-Col. Henry Bruce, obituary notice of, 1002  
 Meningeal haemorrhage. See Haemorrhage  
 Meningitis with osteitis of the temporal bone (H. Lawson Whale), 323 (O)  
 Meningitis due to Pfeiffer's bacillus (Cecil Worster-Drought and S. W. Quarbley), 416—(E. N. Butler), 719  
 Meningitis, pneumococcal (A. R. Parsons), 1019  
 Meningitis, "tetaniform" in (H. Batty Shaw and Cyril Dee Shapland), 183 (O)  
 Meningocele, suboccipital, successfully removed (John Livingstone), 508  
 MENNELL, Zebulon: Coroners' inquests, anaesthetic deaths, 720  
 Menstruation and pregnancy in Hodgkin's disease (Arthur Gemmell), 469  
 Mental defectives in New South Wales, 1073  
 Mental defectives, institutional treatment for (Edinburgh), 879  
 Mental defectives, sterilization of. See Sterilization  
 Mental deficiency and psychoneurosis (C. S. Myers), 559  
 Mental deficiency, review of books on, 291  
 Mental disorder, early, treatment of, 343, 536, 611, 658  
 Mental disorders, treatment of, 480  
 "Mental hospital" or "asylum," 573  
 Mental hospitals, death rates in (parliamentary note), 483  
 Mental hospitals, visitations to (parliamentary note), 393  
 Mental observation of persons under remand in prison (parliamentary note), 780  
 Mental patients as voluntary boarders in registered hospitals (parliamentary note), 437  
 Mental treatment, legislation as to (parliamentary note), 393  
 Mental Treatment Bill, 828, 915, 990, 1035, 1071  
 Mentally defective children (parliamentary note), 780  
 Mentally defective children, the care and education of (W. R. Dawson), 512  
 Mentally and physically defective children, schools for, 645. See also Schools  
 MERCER, Walter: A splint for median paralysis, 371 (O)—The autogenous peg graft in certain fractures of the femur, 1088 (O)  
 Merchant Shipping Amendment Bill, 572  
 MERCK's *Jahresbericht über Neuerungen auf den Gebieten der Pharmakotherapie und Pharmacie*, 1921, rev., 155  
 Mercury, idiocymercy to (Felix Moine), 1092  
 Mercury-vapour lamps, 265  
 MESTON, Lord: *The New Constitution of India*, 1022  
 Metabolism, inborn errors of (Sir Archibald Garrod), 345  
 Metagen, vitamin content of, 13  
 Metals, properties of certain "colloidal" preparations of (A. J. Clark), 273 (O)  
 Methylated spirits, drunkenness from consumption of (parliamentary note), 529, 592—Note on, 1093  
 Metropolitan Asylums Board hospitals (parliamentary note), 1035  
 Metropolitan Police Surgeons' Association. See Association  
 METZGER, John A.: *The Principles and Practice of X-Ray Technique for Diagnosis*, rev., 655  
*Michelin Guide for 1923*, rev., 1022  
 MICRON, M. (and others): *Reins et Organes Génito-urinaires*, rev., 245  
 MICKS, B. H.: Encephalitis lethargica, 1019  
 Microbic transmissible autolysis (Jules Bordet), 175 (O)—Leading article on, 197  
 Microscope in industrial research, practical use of, 132  
 Microscopical magnification, high, instruments for (James Beatty), 721  
 MIDELTON, W. J.: Whooping-cough, 450, 746  
 Midwifery, the new, preventive and reparative obstetrics (J. W. Ballantyne), 617 (O)—Leading article on, 640  
 Midwifery practice, unqualified, 38  
 Midwives Board. See Board  
 Migraine, treatment of (H. D. O'Sullivan), 18—(A. Douglas Bigland), 108  
 Military medicine, the history of, 419  
 Military service, influence of on hygiene (Sir William Macpherson), 66  
 Milk anaphylaxis (T. Gillman Moorhead), 153  
 Milk, clean (Dobbin Crawford), 65  
 Milk, condensed, labelling and composition of, 307, 529  
 Milk Conference, National: Publication of report of proceedings, 265  
 Milk and cream regulations, 75  
 Milk examinations, fee for (parliamentary note), 780  
 Milk, filled: Bill adopted in the United States, 613  
 "Milk industry" advertisement (parliamentary note), 572  
 Milk injections in infantile complaints (W. A. Wilson-Smith), 238—(B. P. Sabawala), 238  
 Milk production, home, 642  
 Milk prosecutions, 985  
 Milk and scarlet fever (parliamentary note), 992  
 Milk under special designations, 433, 483, 1030  
 Milk supply, assisted (parliamentary note), 1070  
 Milk supply, pasteurization of (John Robertson), 65—Parliamentary note on, 437—Of Bombay, 652  
 Milk, query as to tetanus bacillus being found in, 449  
 Milk, tuberculous (parliamentary note), 1035  
 MILLARD, C. Killick: Small-pox and vaccination, 399  
 MILLER, A. G.: Appreciation of John Chiene, 1001  
 MILLER, H. Creighton: Psychiatric clinics, 42—*The New Psychology and the Parent*, rev., 155—*Psychotherapeutics*, 327—Appreciation of Constance Ellen Long, 399—Religion and some medico-sociological problems, 439  
 MILLER, Lieut.-Col. John, Médaille de la Reconnaissance Française on Argent conferred upon, 449  
 MILLIGAN, Sir William: Sarcoma of the left tonsil, 1094—Orbital cellulitis, 1094  
 MILLS, E. A. (and H. C. SINDERSON): Rectal papillomata in *Schistosoma haematobium* infestations, 968 (O)  
 MILLS, G. E. (and A. H. R. W. POSENER): *Practice of the Office of the Masters in Lunacy*, rev., 727  
 MILLS, G. P.: Patient after excision of the upper end of femur, 330—Two children after tendon transplantation, 330  
 MILLS, J.: *Within an Atom*, rev., 598  
 MILNOX, T. H.: The colloidal alkaline reserve of the blood, 858  
 Mine rescue instruction, 349  
 MINER, John Rice: *Suicide and its Relations to Climatic and other Factors*, 431  
 Miners, coal and metalliferous, mortality of (E. L. Collis), 972  
 Miners' cramp (parliamentary note), 1110  
 Miners' nystagmus. See Nystagmus  
 Miners' phthisis. See Tuberculosis  
 Miracle well, the end of an Edinburgh, 913  
 Misquotation, 308  
 MITCHELL, Dr.: Calcareous subpatellar bursa, 287  
 MITCHELL, J. M. (I. N. ASHESHOV and G. P. N. RICHARDSON): *Typhus Fever, with Special Reference to the Russian Epidemics*, rev., 67  
 MITCHELL, T. W.: *Medical Psychology and Psychical Research*, rev., 635  
 Mnemonic principle applied to biology and psychology (Sir Frederick Mott), 335—Correspondence on, 661  
 MODI, Rai Bahadur Jaising P.: *A Textbook of Medical Jurisprudence and Toxicology*, rev., 23  
 Mole, hydatidiform (R. A. Hendry), 1095—(J. St. George Wilson), 1095  
 MOLONY, Fitz-James: Smoking and cancer: pipe or cigarette, 1004  
 MOLONY, J. G. M.: Tennis elbow 83  
 Monaghan countr., tuberculosis scheme for, 80  
 MONOD, Gustave: Louis Pasteur as an artist, 427—Cupping, 743  
 Mononucleosis, infective, and glandular fever (H. Lethaby Tidy), 763  
 MONRO, Professor: Early editions of Sir Thomas Browne, 928  
 MONRO, T. K. (and William W. N. Knox): Botulism as seen in Scotland in 1922, 279 (O)  
 MONSARRAT, Keith: *Poems*, 1920-21, rev., 23  
 MOON, R. O.: FitzPatrick lectures on the post-Hippocratic schools of medicine, 145, 187 (O)—The economic aspect of heart disease, 922 (O)  
 MOORE, Col. G. A.: *The Birth and Early Days of our Ambulance Trains in France, August, 1914*, 1050  
 MOORE, H. F.: Renal efficiency tests, 151—Insulin and diabetes, the present position, 418  
 MOORE, Irwin, demonstrates his method of reducing or destroying diseased or hypertrophied tonsils, 1095



- Sir John W. V.: Milk anaphylaxis, 153—  
 Irish hospital, 212—Gastric and  
 duodenal ulcers, 284—Hyperthyroidism, 595—  
 Pneumonia with untoward sequelae, 812—  
 Carcinoma ventriculi with unusual secondary  
 developments, 812  
 Moore, Milner: Cupping, 743  
 Moore, Sir Norman, estate of, 173  
 Moorhead, T. Gillman: Paroxysmal tachy-  
 cardia, 153—Milk anaphylaxis, 153—Hyper-  
 thyroidism, 595  
 Morgan, George: Sinuses and swellings in the  
 necks of children, 621 (O)—Metastasis in  
 mumps, 764  
 Morgan, Gerald: *Public Relief of Sickness*, 395  
 Morgan, Rees, obituary notice of, 792  
 Morrison, A. E.: Bone-graft surgery, 190  
 Morrison, Dr.: Radiograms illustrating "cardio-  
 spasm," 1095  
 Morison, J. M. Woodburn: Elevation of the  
 diaphragm due to unilateral phrenic paralysis,  
 471  
 Morley, John: Myxoma of appendix vermi-  
 formis, 351—Large hydronephrosis, 331  
 Morocco, how to get there, 266  
 Morrice factories, inspections of (Parliamentary  
 note), 345  
 Morphine manufacture (parliamentary note), 572,  
 1071  
 Morrison, J. T.: Chronic intussusception in  
 children, 107  
 Morson, Clifford: Two cases of horseshoe  
 kidney, 236 (O)  
 Mortality, infantile (parliamentary note), 1109  
 Mortality, medical, in America, 358  
 Mortality in occupations (leading article), 339  
 Morton, Charles A.: Malignant diseases of the  
 breast, 178 (O)  
 Morton, Reginald: X-ray treatment of malignant  
 disease, 152  
 Mosquito bite, severe reaction to, 449  
 Mosquito nuisance, the coastal, 915, 937  
 Moss, K. N.: Water poisoning, 986  
 Motor cars left in the street, 358  
 Motor notes for medical men (H. Massac Buist),  
 207—Scottish majority motor show, 207  
 Motor spirit, offers of, A. warning, 46  
 Motor vehicles, illumination of the number  
 plates on, 703  
 Mott, O. H.: A desmestic apparatus for intra-  
 tracheal anaesthesia, 637  
 Mott, Sir Frederick Walker: The new trypano-  
 cidal remedies, 150—The mnemonic principle  
 applied to biology and psychology, 336—  
 Psychology and medicine, 403 (O)—Retires from  
 the service of the London County Council, 526  
 —Takes up his new duties at Birmingham,  
 783  
 Mouchet, R. (and A. Pearson): *Practical  
 Hygiene of Native Compounds in Tropical  
 Africa. Being notes from the experience of  
 the first eighteen years of European work in  
 the Katanga*, rev., 931  
 Mould, Gilbert E.: The rights of a registered  
 medical practitioner, 539  
 Moxey, Vincent: Acute oedema of the lungs,  
 929  
 Moxonian, Sir Berkeley: Hunterian lecture on  
 some problems of gastric and duodenal ulcers,  
 221 (O), 239—Honorary degree McGill Uni-  
 versity conferred upon, 697  
 Muir, William McEwen, O.B.E. conferred upon,  
 35  
 Muir, Professor: Appreciation of James Ritchie,  
 63  
 Muerbert, S. K.: *Infantile Cirrhosis of the  
 Liver*, rev., 538  
 Muldoon, Patrick, the murder of, 742—Appeal  
 for the widow and children of, 742  
 Muller, Aspreghen, U.: Venereal disease in  
 Scandinavia, 1023  
 Mulligan, W. P.: Infective tonsillar disease,  
 551  
 Mulligan, medical officers, 350  
 Mumford, W. G.: Severe double talipes, 287—  
 Old arthritis of hip, 287  
 Mumford, J. Howard: *The Structure of Teeth  
 in Relation to Dental Disease*, 338—Diet, dental  
 structure, and caries, 594  
 Mumps, metastasis in (George Morgan), 764  
 Munro, D. G. Macleod: Note on the value of  
 symptoms in the early diagnosis of pulmonary  
 tuberculosis, 851 (O)  
 Murders, 169  
 Murray, Sir Shirley Forster, obituary notice of,  
 790  
 Murray, G. R.: Present position of organo-  
 therapy, 105—Appointed to represent the Victoria  
 University of Manchester at Pasteur  
 centenary in Paris, 793  
 Murray, J. A.: Carcinoma of the skin in rabbits,  
 376  
 Murray, Leith: Three specimens of strangula-  
 tion, 329—Two cases of calcification, 329—  
 "Mixed tumour" of uterus, 469—"Tarry cysts"  
 of the ovary, 470  
 Murray, R. Galloway: Venesection in a case of  
 aphasia, 238  
 Murray, Thomas Alexander, obituary notice of,  
 63  
 Murray, W. A.: Salicylate injections for varicose  
 veins, 1080  
 Murrell, George Frederick, obituary notice of,  
 1040  
 Musculature of the aorta and cardiac valves  
 (A. Blackhall-Morison), 1054  
 Muscle, the energetics of (A. V. Hill), 342  
 Muscular paralysis. See Paralysis



## Notes, Letters, Answers, etc. (contd.):

- Sepsis after bladder and prostate operations, prevention of, 492  
Serum by the mouth, 840  
Sex determination, 174, 308, 402  
Small-pox arrested and cured by vaccination, 46  
Small-pox and vaccination in the Philippines, 450  
Smoking and cancer, pipe or cigarette? 1004  
Sodium or potassium salts, 1080  
Stalactites, 46  
"T.R.", 402  
Tennis elbow, 88  
Tetanus bacillus and milk, 449  
Tobacco craving, 492  
Tobacco depression, 918  
Tomatoes, 918  
Traumatism of soft tissues, chronic, 1042  
Tuberculosis, winter residence for case of in Southern Italy, 794  
Vaccines, results of administration of, 542  
"Varsity Moonshine", 578  
Venereal disease prevention, 88  
Venereal disease publicity, 704  
Weather reports by telephone, 794  
"What about ribs," 220  
Whooping-cough, 450, 666, 746, 819  
Winter in Italy, 266

## NOVA ET VETERA:

- Aix en Savoie, 1101  
Cupping, dry and wet, 639  
Fourth of March: a doleful anniversary, 394  
Indian Political Department, 338  
Medicine in China, 115  
Thomas Short, an early medical statistician, 202  
Tibetan anatomical chart, 530

## Nurses, maternity, control of in New South Wales, 127

- Nurses registration (parliamentary note), 393, 529, 780, 1069, 1110—Correspondence on, 789, 997, 1077—Leading article on, 823

## Nurses, training of in cottage hospitals, 699, 744

- Nursing in France, 1064  
Nursing developments in India, 652  
Nursing and Midwifery Exhibition, 608  
Nursing, review of books on, 23

## NUTALL, A. W.: Blue sclerotics and multiple fractures, 66

- Nutrition in etiology (leading article), 905  
Nutrition, review of book on, 194

## Nystagmus, miners', a new theory of (Frederick Hobson), 570

- Nystagmus, miners' (A. S. Percival), 757 (O)  
Nystagmus, miners', a predisposition to (A. S. Percival), 35, 210, 996—Correspondence on, 171, 210, 358, 996—Parliamentary notes on, 1035

## Nystagmus, statistics of (parliamentary note), 606

- NYULAST, Frank A.: The colour of Othello, 88

## O.

## OBERSTEINER, Professor, death of, 86

- O'BRIEN, A. J. R. (and G. E. H. LE FANU): An outbreak of relapsing fever, 698  
O'BRIEN, R. A.: Diphtheria prophylactic and immunity, 43

## Obstetrical and gynaecological difficulties (Comyns Berkeley), 89 (O)

- Obstetrics and gynaecology, Ministry of Health's report on the teaching of, 692  
Obstetrics, preventive and reparative (J. W. Ballantyne), 617 (O). See also Midwifery, the new

## Obstruction, acute, by Merkel's diverticulum with symptoms resembling appendicitis (John W. Heakes), 719

- Obstruction, intestinal, following acute appendicitis and peritonitis (P. F. McFarlan), 61 (O)  
Obstruction, intestinal, cause of death in (Seton Pringle), 512

## Occipito-posterior positions (Daniel Dougal), 765

- Occipito-posterior presentations, 211  
"Occupation cure" in neurasthenia. See Neurasthenia

## Occupations, mortality in (leading article), 339

- O'CONNOR, Sir John: Posterior gravity drainage in empyema, 758 (O)  
Ocular aspects of pituitary disorders (G. de Schweinitz), 816

## O'DONNELL, J.: Chronic nephritis with herpes zoster, 418

- Oedema, acute, of the cervix (W. F. T. Haultain), 18—(J. A. McKinnon), 190  
Oedema, acute, of the lungs (Vincent Moxey), 929  
Oedema, general of the foetus, 470, 539

## Oesophagoscopy, review of book on, 421

- Of eating. See eating  
OGILVIE, Col. Walter Holland, C.B. conferred upon, 837

## OGILVIE, John Gilbert, obituary notice of, 957

- Oil of chenopodium in helminthiasis (J. G. Reed), 1013 (O)  
Oil, phosphorated, in treatment of Oriental sore (Aldo Castellani), 235 (O)

OKELL, C. C.: The fermentative reactions of *B. diphtheriae*, 375

## Old-fashioned surgeon, 349

- O'MALLEY, J. F.: Evolution of the nasal sinuses, 1094  
O'NEILL, Flight-Lieut. Christopher Thomas, O.B.E. conferred upon, 987

## Ontario legislature establishes a research chair for Dr. Banting, the originator of the "insulin" idea, 873

- OPPENSHAW, T. H.: Spastic paralysis, 469  
Operation, preparation of patients for (T. M. Allison), 476—Review of book on, 682

## Ophthalmia neonatorum prevention in Denmark, 1061

- Ophthalmia neonatorum, treatment of in London, 390, 538  
Ophthalmic hospital at Jerusalem, 693

## Ophthalmology, Gifford Edmonds prize in, 577

- Ophthalmology, review of book on, 334, 517, 815.  
See also Eye

## Opium Convention, United States and, 945

- Opium monopoly at Iraq (parliamentary note), 780  
Opium production for medicinal and scientific purposes (parliamentary note), 829

## Opium traffic (parliamentary note), 1070

- Opiotherapy, review of book on, 515  
Optic atrophy (R. E. Wright), 806 (O)  
Optic atrophy, the etiology of (William L. Templeton), 62

## Optic neuritis of sphenoidal sinus origin: operation: cure (Sir St. Clair Thomson), 925 (O)

- Orbit, foreign body removed from (H. V. Gatchell), 283  
Organisms, living, rhythm in (Sir Arthur Shipley), 479

## Organotherapy, present position of (Svale Vincent), 105—Discussion, 105

- Oriental sore treated by phosphorated oil (Aldo Castellani), 283 (O)  
"Officialism," 666

## ORANBY, Oliver S.: A Practical Treatise on Diseases of the Skin, rev., 244

- ORK: Acute symptoms after gastro-enterostomy, 777  
ORTH, Johannes, obituary notice of, 131

## Orthopaedic nursing, review of book on, 23

- Orthopaedics, review of books on, 474, 634  
ORTNER, Norbert: Abdominal Pain, rev., 770

## Osler Memorial Fund, the Oxford, 541, 603

- OSMAN, A. A. (and Hector Charles CAMERON): Late results of meningeal haemorrhage in the newly born, 363 (O)—Diseased tonsils and heart disease, 1038

## Osteitis of the temporal bone with meningitis (H. Lawson Whale), 323 (O)

- Osteitis deformans (Wallace Jones), 469  
Osteo-arthritis and rheumatoid arthritis (Sir Archibald Garrod), 760—Discussion, 761

## Osteo-arthritis of the spine (Claude Goulesbrough), 763

- OSTERHOFF, W. J. V.: Injury, Recovery, and Death in Relation to Conductivity and Permeability, rev., 596  
O'SULLIVAN, A. C.: Primary cancer of the liver, 1019

## O'SULLIVAN, H. D.: Treatment of migraine, 18—Fracture of the neck of the radius, 190

- OSWALD, H. W.: Coroners' inquests, anaesthetic deaths, 720  
Othello, the colour of (Frank A. Nyulast), 88

## Otitis media, acute, with jugular bulb thrombosis (E. Watson-Williams), 1014 (O)

- Ova, early human, 308  
Ovarian transplantation, autoplasmic (J. H. Natrass), 1051 (O)

## Ovaries, gonococcal infections of (David Lees), 241

- Ovariectomy in women over 70 years of age (Herbert R. Spencer), 582 (O)  
OWEN, Ambrose W.: Suppression of urine after labour, 630

## OWEN, Corbet W., obituary notice of, 356

- OWEN, E. A.: X-ray measurement and protection, 389  
OWEN, E. Lloyd: Annual reports of medical officers of health, 700

## Oxford contributory hospital scheme, 522

- Oxidations, review of book on, 332  
OXLEY, W. H. F.: Blood sugar estimations by general practitioners, 115

## Oxycephaly (Henry Cohen), 469

- Ozaena, operation for (James Adam), 1013 (O).  
See also Rhinitis, atrophic

## P.

## PACKARD, Francis R.: Annals of Medical History, rev., 383, 901

- PACKER, Captain Norman Edward, obituary notice of, 45  
Paddington Tuberculosis Dispensary. See Dispensary

## PAGET, Owen F.: A Simple Treatment for Tuberculosis, rev., 562

- PAGET, Stephen, contributes an introduction to Medical Practice in Africa and the East, 577  
Painting, industrial, hygienic methods of, 167

## PAL, Major Satyachar, obituary notice of, 45

- PALMER, A. C.: Secondary leiomyosarcoma, 510

## PALMER, George T. (and others): Epidemiology and Public Health, rev., 726

- Palpitation (John Parkinson), 380  
Pancreas, diseases of, value of laboratory tests in (W. Langdon Brown), 461 (O)—Discussion on, 467

## Pancreatic extracts. See Insulin

- Pancreatitis and its association with cholecystitis and gall stones (Sir Gilbert Barling), 705 (O)

## Panel Committee Conference. See Insurance

- Pan-sinusitis, acute, a severe case (Sir St. Clair Thomson), 924 (O)

## Papillomata of rectum in Schistosoma haematobium infestations (H. C. Sinderson and E. A. Mills), 968 (O)

- Papyrus, ancient Egyptian medical, 645  
Paraffin, liquid, internal use of, 132

## PARAKH, F. R.: Amputation at the shoulder, 467 (O)

- PARAKH, Nasarwanji Nowroji: Kaisar-i-Hind medal conferred upon, 30  
Paralysis, facial, nerve implantation in (H. F. Seymour), 471

## Paralysis, general (of the insane) treated by malaria (W. L. Templeton), 895 (O)—Note on, 908—Correspondence on, 995

- Paralysis, infantile, treatment of, 174  
Paralysis, median, splint for (Walter Mercer), 371 (O)

## Paralysis, muscular localized, with herpes zoster (Cecil Worster Drought), 970 (O)—Correspondence on, 1075

- Paralysis, musculo-spiral, tendon transplantation in (G. H. Stevenson), 472  
Paralysis, phrenic (unilateral), causing elevation of the diaphragm (J. M. Woodburn Morison), 471

## Paralysis, spastic (A. S. Blundell Bankart), 468

- Paraplegia, traumatic (O. H. Gatch), 849 (O)  
Parents' payments for medical treatment of school children, 866. See also School children

## Parham's bands in treatment of fractures (F. K. Smith), 470

- PARIS: Acidosis, 651—Faculty of Medicine receives a gift from Madame de Rothschild, 357—Hard times for scientific workers, 652—Madrid professors visit Paris, 917—Pasteur centenary, 652—Syphilis, 652—Whooping-cough, prophylaxis of, 651

## PARKER, R. A.: Determination of sex, 174

- PARKINSON, John: Cardio-vascular conditions in relation to anaesthesia, 240—Palpitation, 380

## Parliament, Medical Notes in:

- Adulteration of foods and drugs: annual returns, 437  
Alcoholism Congress, 1035

## Ambulance services in London, 606

- Army, British: Small-pox in, 483—Medical services, 528—Royal Army Medical Corps, 606, 877—Venereal disease in, 741  
Army Dental Corps, 606

## Army estimates, 482

- Army medical services, 528  
Artificial limbs, 345, 606  
Blind children of school age, 606

## Blind Persons Act, 1920: schemes under consideration, 572

- Board of Control, 741, 780  
Bristol University, 606

## Budget statement, 694—Debate, 740

- Cancer mortality, 605  
Cancer research, 991, 1035  
Cannock Chase Hospital, 1071

## Colonial medical practice, 878

- Colonial medical services, 779  
Coroners' Law Amendment and Death Certification (Amendment) Bill, 780, 953

## Cost of living index number, 484

- Cowsheds, condition of in the West Riding of Yorkshire, 437  
Death certificates, 483, 529

## Deaths Registration and Burials Bill, 991

- Deaths, uncertified, in 1922, 829  
Dental officers, gratuities for, 606  
Dentists Act (1921) Amendment Bill, 878

## Dentists Act, 1921, prosecutions under, 780

- Disinfectants, choice of, 780  
Dogs Bill, 345, 436, 909

## Drugs, Dangerous: (Amendment) Bill, 345, 435, 528, 571, 605, 646, 779, 877, 909—Amendments in Standing Committee, 571—Third reading in the Commons, 616

- Drugs, dangerous, factories for manufacture of, 1071  
Drugs, dangerous, imports of, 605

## Drugs, dangerous, in medical prescriptions, 909

- Drunkness from consumption of methylated spirits, 529, 992  
Drunkness amongst young people, 606

## Education Department medical service, 780

- Education estimates, 990  
Ex-service men: In asylums, 345—On special diet, 345—Medical treatment for, 393—Receiving residential treatment for tuberculosis, 437—Insanity cases not due to military service, 437—Tuberculous, village settlements for, 780—Number of men who have received a Government grant to finish their education, 780

## Fire at Highbury Pensioners Hospital, 1070

- Health at the International Labour Conference, 877  
Health Minister, the new, 482



**Parliament. Medical Notes in (cont.):**  
Health Ministry, medical officers of, 483—  
Medical appointments, 1070—Medical staff,  
1110  
Health and unemployment insurance, 456, 482,  
780  
Health visitors, salaries of, 780  
Heart cases and dentures, 780  
Heroin, 572, 1071

1 persons, 437  
1  
1  
1  
Hospitals, exemption of from legacy and suc-  
cession duty, 1071, 1110  
Hospitals, mental, visitations to, 393  
Hospitals, voluntary, grants to, 393  
Houses, State-assisted, and the shortage of  
houses, 529  
Houses unfit for habitation, 529  
Housing Bill, 741  
Income tax: separate taxation of married  
persons, 437  
Indian Medical Service, 345  
Indian universities, 695  
Industrial diseases compensation, 437  
Infant mortality, 1109  
Infectious diseases, 1035, 1070—Notification,  
1070  
Insulin, supply of, 437  
INSURANCE, NATIONAL, 345, 999  
Agreement, the new, 572  
Committees, 483  
Control Fund, 829  
Dental treatment, 1035  
Expenditure, 437  
Medical benefits, 393, 829  
Medical service, 740, 991, 1035, 1069  
Medicines for pauper patients, 529  
Panels, maximum size of, 529  
Payment of insurance practitioners, 694  
Reserve Value Contingency Fund, 829  
Unemployed between 65 and 70, medical  
benefits for, 829  
Unemployment and sickness, 393, 436, 482,  
780

Labour Conference, International, health at,  
877  
Law, Mr. Bonar, serious illness of, 909  
Lead poisoning, 1070  
Leper asylums in India, treatment and  
research in, 780  
Lip reading, instruction in, 878  
Liquor, sale of to young persons, 393, 482  
Liquor Traffic Prohibition Bill, 741  
London Housing By-laws (public health), 1109  
Lymph establishments, Government, 606  
Maternity service and child welfare in Scotland,  
393, 606  
Medical appointments, 1070  
Medical boards in Dublin, 606  
Medical Herbalists (Registration) Bill, 741  
Medical officer's salary, 1035  
Medical officership for Hindley, 483  
Medical reassessment, 345  
Medical Research Council and cancer research,  
1035  
Medical research publications, 345  
Medical retrenchments at Kenya, 345  
Medical services for school children, 695  
Mental defectives, institutions for, 392  
Mental hospitals, death rates in, 483  
Mental hospitals, service patients in, 529, 605  
Mental hospitals, visitations to, 393  
Mental observation of persons under remand  
in prison, 780  
Mental patients resident in licensed houses  
and registered hospitals, 437  
Mental Treatment Bill, 828, 990, 1035, 1071  
Mental treatment, legislation as to, 393  
Mentally defective children, 780  
Merchant Shipping Amendment Bill, 572  
Methylated spirits consumption, 529, 992  
Metal limbs. See Artificial  
Metropolitan Asylums Board hospitals, 1035  
Milk, condensed, standards and labelling of,  
529

Milk supply, assisted, 1070  
Milk, tuberculous, 1035  
Miners' cramp, 110  
Morphine factories, inspection of, 345  
Morphine and heroin, 572, 1071  
Nurses' registration, 393, 529, 780, 1069, 1110  
Nystagmus, miners', 1035  
Nystagmus, statistics of, 606  
Opium monopolies at Iraq, 780  
Opium production for medicinal and scientific  
purposes, 829  
Opium traffic, 1070  
Parliamentary Medical Committee, 740  
Patent medicine stamp duty, 780, 1070  
PENSIONS:  
Administration cost, 529  
Appeals, 605  
Assessment of pensions, 605  
Assessment for bronchitis and asthma, 695  
Disability, 829, 1035  
Estimates, 991  
Hospital at Sunderland, 695  
Lip reading, 878  
Medical Boards in Dublin, 606  
Medical men employed on boarding duties,  
484

Medical reassessment, 345  
Medical services, tribute by the Minister of  
Pensions, 391, 991  
Pensions and pensioners, 779  
Pensions services, 345  
Queen Alexandra's Convalescent Centre at  
Saltash, 878  
Reassessment cases, 695

War Pensions Act Amendment Bill, 605  
Pharmacy Bill, 483  
Pneumonoconiosis and compensation for in-  
dustrial diseases, 437  
Poison gas: experiments on animals, 909  
Poor Law institutions: number of persons  
relieved in, 483—Number of patients in, 695  
Poor Law relief, number of persons receiving,  
780  
Pregnancy and child-bearing, deaths from,  
1110  
Prisons and Borstal institutions: women  
commissioners and, 605

Army, British  
Scarlet fever and milk, 992  
School children suffering from physical  
defects, clinics for, 909  
Service patients in asylums, 605  
Service patients in mental hospitals, 529  
Session, the new, 300  
Silicosis, deaths from, 1110  
Smallpox in the British Army, 483—In London,  
529—Deaths from, 780—In the North Mid-  
lands, 829—In England, 909—In Gloucester,  
1069, 1109  
Spaulding treatment of tuberculosis, 393, 572,  
606, 1071  
State relief, cost of, 605  
Telephone monthpieces and disease, 572  
Tuberculosis in Canadian cattle, 878  
Tuberculosis in cattle, 1070  
Tuberculosis in children, 909  
Tuberculosis, claims rejected and admitted,  
1035  
Tuberculosis, Government grants for, 912, 1035  
Tuberculosis schemes (Scotland), 1035  
Tuberculosis settlements, 829  
Tuberculosis in Sheffield, 695  
Tuberculosis treatment, 437  
Tuberculosis treatment, gross expenditure of  
local authorities, 878  
Tuberculosis treatment: amount of grants  
paid to Scottish local authorities, 829, 1035  
Tuberculosis treatment: residential accom-  
modation, 484  
Tuberculous ex-service men, 780  
Tuberculous patients, institutions for, 393  
Unemployment and health insurance, 436, 482  
Unemployment and sickness, 393  
Universities of Oxford and Cambridge Bill,  
1110  
Vaccination: Of army recruits, 393—Deaths,  
393—In Germany, 393, 483—Debate on, 483—  
Illness from, 780—And small-pox statistics,  
877, 991: at St. Lucia, 953—In Leicester in  
1922, 1035  
Vaccinators, public, inspection of, 529  
Venereal disease, 1109  
Venereal disease in the British Army, 741  
Venereal disease, child welfare and mortality,  
606  
Venereal disease statistics, 606  
Venereal Diseases Committee's Report, 1071  
Visitation inspectorate, 1071  
War losses and burials, 433  
War Office, medical officers employed at the,  
572  
War pensions. See Pensions  
Water supplies, 909  
Welfare departments in factories and work-  
shops, 605  
Woolwich Arsenal, accidents at, 780  
Yaws in the West Indies, 878

Parliamentary Medical Committee, 740  
Parotid duct, a feather in (Sir James Dundas-  
Grant), 46  
PARRY, T. Wilson: Trephination of the human  
skull in prehistoric times, 457 (O)  
PARSONS, A. R.: Pneumococcal meningitis, 1019  
PARSONS, Dr.: Case of "pink disease," 419  
PARSONS, Sir John Herbert: Diseases of the Eye,  
rev., 85  
PARSONS, T. R.: Fundamentals of Biochemistry  
in Relation to Human Nutrition, rev., 85  
PASTEUR Louis: One  
the birth of, 37, 38  
The works of (complete edition to be published),  
34—A century of (leading article), 72—His in-  
fluence on surgery (leading article), 119—His  
influence on medicine (leading article), 154  
The artist, 169—Lecture on by Dr. Pasteur  
Vallery-Radot, 250—Addresses on as a bacterio-  
logist, crystallographer, and artist, 424—Meet-  
ing at the Royal Society of Medicine, 424—  
Cambridge University representatives to  
France, 735—Meeting of the Royal Academy of  
Medicine in Ireland, 784—Hygiene exhibition  
in commemoration of, 883—French celebra-  
tions, 946  
Pasteur scholarships for Danish medical men,  
389  
Patent medicine stamp duty (Parliamentary  
note), 780, 1070

PATTERSON, Donald: Ulcerative stomatitis in  
children and its treatment, 104  
PATTERSON, D. R.: Large foreign bodies in the  
gullet, 1091  
P.

PATTERSON, James J.: New regulations for the  
D.P.H., 397  
PATTERSON, Keppie: Treatment of puerperal  
infections, 511  
PATERSON, W.: New regulations for the D.P.H.,  
128  
Pathological specimens sent by post, regulations  
for, 265  
Pathologist to L.C.C. mental hospitals. See  
Hospitals  
Pathology, animal, an institute of, 193  
Pathology, comparative: Annual meeting of the  
French Society, 87  
Pathology, Henry George Plimmer Fellowship  
in, 1003

on, 852  
ologie médicale et de  
Tome xxii: Intoxi-  
-iii: Reins et Organes  
for operation. See  
Operation

PATON, D. Noel (E. P. CATHCART and M. S.  
PEMBERTON):  
PATMER, John  
PAIN, Mrs.  
Illustré, rev., 710

PEACHEY, George C. (editor of a new edition):  
The Gold-headed Cane, rev., 157  
PEACOCK, Pryce, C.B.E., conferred upon, 30  
PEAR, T. H., Remembering and Forgetting, rev.,  
561  
PEARCE, Geoffrey: The Coolidge x-ray tube, 836  
PEARCE, Louise: Intrathecal injections of trypan-  
blue, 835

PEARL, Raymond: The Biology of Death, rev.,  
182—Biometrical studies in tuberculosis, 1104  
PEARSE, J. S.: Cancer of the scrotum, 40  
PEARSON, Arthur, obituary notice of, 916—(and  
R. MOCHEM): Practical Hygiene of Native  
Compounds in Tropical Africa. Being notes  
from the experience of the first eighteen years  
of European work in the Katanga, rev., 931  
PEARSON, Karl (and Mary Noel KARR): Statistics  
of a b. by clinic, 645

PEARSON, William, obituary notice of, 525  
Peg graft in fractures of femur. See Fractures  
PES, John H.: Upper canine tooth in antrum  
of Highmore, 897  
P. King Union Medical College, formal opening  
of, 745

Pelvic pain from a gynaecological standpoint  
(L. Cassidy), 242  
Pelvic support for plaster bandaging (E. Muir-  
head Little), 771

PEMBERTON, H.: Non-obstructive jaundice, 764  
PEMBERTON, H. S.: A simple diet table, 579 (O)—  
A correction, 789

PEMBERTON, M. S. (E. P. CATHCART and D. Noel  
PATON): Practical Physiology, rev., 331  
Penal discipline, 212, 305, 308, 399—A correction,  
308

Penis, constriction of, in an infant, 840

PENNA, Belisario: Osvaldo Cruz, 391

Pensions: Administration costs, 529—Amend-  
ment Bill, 605—Appeals, 605, 1002—Artificial  
legs, supply of, 491, 523—Assessment, 605—  
Assessments for bronchitis and asthma, 695—  
Disability, 990, 1035—Estimates, 991—Ex-  
service Questions Committee, 838—Hospital at  
Sunderland, 695—Lip reading instruction, 878—  
Medical Boards in Dublin, 606—Medical men  
employed, 484—Medical reassessment, 345—  
Medical service of, 391—Parliamentary notes  
on, 345, 391, 483, 529, 605, 695, 773, 878, 909, 991,  
1035—Queen Alexandra's Convalescent Centre,  
Saltash, to be retained for neurasthenic  
patients, 878—Reassessments, 695—Regional  
Headquarters at Nottingham, 483—Services,  
345—Tuberculosis disability, claims, 1035—  
Whole-time medical officers, number of, 878

PEPPER, G. E.: Deep x-ray therapy as used in  
the Schauta Klinik, Vienna, 418

Peptone, intravenous injections of, as an aid to  
vaccine treatment (E. Warren Crowe), 1046 (O)  
Peptone treatment of asthma: a disclaimer,  
1116

PERCIVAL, A. S.: A predisposition to miners'  
nystagmus, 35, 210—Miners' nystagmus, 737 (O),  
995

Perianal skin. See Skin

Pericarditis, review of book on, 420

Perineum, broken needle in, 578

Perineum, ruptured, colloidal argenticum in (D.  
Montagne B. Snell), 803

Peritoneal cavity, instruments left in (Clifford  
White), 228

Peritonitis and acute appendicitis followed by  
intestinal obstruction (P. E. Farlan), 61 (O)

PERITZ, G.: Einführung in die Klinik der  
inneren Sekretion, rev., 1093

PERKINS, Rowland J. (and G. Bruce WHITE):  
Rheumatoid arthritis treated with intravenous  
bacillus coli vaccine, 411 (O)

PEROTSE, Gabriel: La Vie d'Autrefois à Aix-le  
Bains, 1101

PERKINS, Mr.: The problem of drug addiction,  
565

Persian (North) Forces Memorial Medal, 435  
Perthshire, treatment of tuberculosis in, 80



- PESKETT, G. L. (and P. C. RABENT): *A Laboratory Handbook of Biochemistry*, rev., 814
- Peru free from yellow fever, 491
- PETIT, Dr., Spanish Cross of Commander of the Order of Alfonso XII conferred upon, 700
- PETTER, Walter, obituary notice of, 1117
- Pfeiffer's bacillus causing meningitis (Cecil Worster-Drought and S. W. Quartley), 416—(E. N. Butler), 719
- PEISTER, Oscar: *Some Applications of Psycho-Analysis*, rev., 727
- Pharmacology, review of books on, 514, 1056
- Pharmacopoeia, British*, slip showing corrections made in the sixth issue, 793
- Pharmacopoeia of the Royal Northern Group of Hospitals*, rev., 976
- Pharmacopoeia of St. Thomas's Hospital*, rev., 976
- Pharmacy Bill, 483
- PHILIP, Sir Robert: Joins the consulting staff of the Edinburgh Royal Infirmary, 38—Tuberculin in the diagnosis and treatment of tuberculosis, 493 (O)
- Philippines, small-pox and vaccination in (John C. McVail), 158, 166—Correspondence on, 210, 450
- PHILLIPS, Charles H., presentation to, 616
- PHILLIPS, H. H.: Treatment of puerperal infections, 700
- PHILLIPS, James (and W. WRANGHAM): Brachial neuritis due to cervical rib, 319 (O)
- PHILLIPS, L. G.: Treatment of dysmenorrhoea, 1054
- PHILLIPS, Miles: Technique of Caesarean section, 285—Case of chronic incision of uterus which emphasized the value of Aveling's retractor, 470
- PHILLIPS, W. C.: *Diseases of the Ear, Nose, and Throat, Medical and Surgical*, rev., 563
- PHIPPEN, Harry G.: The treatment of ankylostomiasis with beta-naphthol and thymol, 371 (O)
- Phosphorated oil in treatment of Oriental sore (Aldo Castellani), 283 (O)
- Photography, Optics, and Cinematography, International Exhibition of, at Turin, 212
- Photosynthesis and sea air (leading article), 601
- Phrenology, the old and new (G. Elliot Smith), 199
- Phthisis. See Tuberculosis
- Physical training in elementary schools, Board of Education circular re, 76
- Physically defective children, 251
- Physiological effect of high altitudes (J. Barcroft), 200
- Physiology at high altitudes, 1028
- Physiology, some applications of to medicine (J. A. MacWilliam and W. J. Webster), 51 (O)
- Physiology and psychology, 789
- Physiology, review of books on, 331, 932
- PICKERILL, Henry Percy, C.B.E. conferred upon, 30
- PICKERING, Bernard, obituary notice of, 86
- Pigment, a question of, 88
- PILLEY, J. J.: *The Progress Book*, rev., 727
- PINCH, Hayward: Treatment of cancer of the tongue, 417
- Pink disease, 123. See also Erythredema
- PINRO, Captain Joseph S., O.B.E. conferred upon, 665
- Pirquet system of infant feeding, review of book on, 515
- Pirquet's tuberculin test. See Tuberculin
- Pithend hygiene (Colston Williams), 20
- PITTS, A. T.: Diet, dental structure, and caries, 594
- Pituitary disorders, ocular aspects of (G. de Schweinitz), 816
- Pituitary extract in treatment of diabetes insipidus (H. Blumgart), 328
- Pituitary secretions, the origin of, 442—(Leading article), 732
- Pituitous catarrh. See Catarrh
- Plague, a small epidemic of (E. Noble Chamberlain), 896
- Plague in India, 633, 703—In Egypt, 839
- Planorbis as the intermediate host of *Schistosoma haematobium*, 351. See also *Schistosoma*
- Plaster bandaging, pelvic support for (E. Muirhead Little), 771
- Plastic repair of the face and limbs (J. J. M. Shaw), 511
- PLATT, Mr.: Loose bodies in joints, 331
- Pleural adhesions cauterized by thoracoscopy (James Lawson), 470
- Plumbism and lead paint, 604
- Pneumococcal infections, review of book on, 683
- Pneumonia, central, case of, 794
- Pneumonia and its complications (Walter Broadbent), 471
- Pneumonia, croupous, in children (H. T. Ashby), 631
- Pneumonia, lobar, complicated by embolism of the right brachial artery (A. H. D. Smith), 103 (O)
- Pneumonia with untoward sequelae (Sir John Moore), 812
- Pneumonia followed by signs thrombosis, in an adult (E. Weston Hurst), 929
- Pneumonia, treatment of (A. G. Newall, 676 (O)—(John T. MacLachlan), 897
- Pneumococcosis (parliamentary note), 437
- Pneumothorax, artificial, composition of the gases in (Leonard Hill and J. Argyll Campbell), 33 (O)
- Pocock, A. G. C.: Stalactites, 46
- Poison gas. See Gas
- Poisoning, atophan (Cecil Worster-Drought), 148
- Poisoning, ebonite (M. W. Geffen), 680
- Poisoning, lead (parliamentary note), 1070
- Poisoning, lead, the blood as a guide to early diagnosis in (Robert Craik), 103 (O)—Correspondence on, 170, 210
- Poisoning, meat, in Jerusalem (G. Stuart), 854
- Poisoning, turpentine, a cause of punctate basophilic, 170, 210
- Poisoning, water (K. N. Moss), 986
- Poisoning, zinc, 201
- Poisons, review of books on, 243
- Police Surgeons' Association. See Association
- Poliomyelitis and encephalitis lethargica, 259
- Poliomyelitis followed by atrophy of the skin (A. Robert Fox), 930
- POLLACK, J. H.: Unusual case of pneumococcus infection, 561—Pernicious anaemia, 561—Clinical aspects of the Wassermann reaction, 899—Primary cancer of the liver, 1019
- Polythelia (R. Douglas Howat), 928 (O), 1115—Correspondence on, 1039, 1115
- Poor Law institutions, number of persons relieved (parliamentary note), 483—Statistics re inmates, etc. (parliamentary note), 695
- Poor Law medical officers (Irish) salaries, under the Irish Free State, 80, 485, 533, 880, 993
- Poor Law officers' remuneration, Ministry of Health circular, 531
- Poor Law relief, number of persons in receipt of (parliamentary note), 780
- Poor Law Services (Ireland), reform of, 533
- POPE, Sir William J.: The examination of colloidal preparations, 731, 733
- PORTMANN, Georges: *Consultations Oto-Rhino-Laryngologiques du Praticien*, rev., 563
- Portsmouth, Ninety-first Annual Meeting of the British Medical Association at, 77. See also Association, Annual Meeting
- Post-graduate courses: In Birmingham, 132, 531, 573—In Bristol, 440—In Edinburgh, 783—In France, 132, 541, 665, 1003, 1079, 1095—In Glasgow, 573—In London, 87, 173, 201, 219, 265, 401, 567, 616, 665, 793, 838, 913, 957, 1003, 1079—Leading article on, 567—In Manchester, 87—In Vienna, 998
- Post-Hippocratic schools of medicine (R. O. Moon), 145, 187 (O)
- Potassium bromide, the taste of, 616, 746, 840
- FORTENER, F. M.: *Symptoms of Visceral Disease*, rev., 109
- POULSSON, E.: *A Textbook of Pharmacology and Therapeutics*, rev., 1056
- POWER, Sir D'Arcy: Harvey as an art critic, 643—And H. J. Waring: *A Short History of St. Bartholomew's Hospital, 1123-1923*, rev., 944
- POWER, Captain Michael P., O.B.E. conferred upon, 665
- POWER, Sir William Henry, 823
- POYNTON, F. John: Five cases of diabetes mellitus in young children, 277 (O)—Osteoarthritis and rheumatoid arthritis, 761—The prevention of heart disease, 919 (O)
- POYSER, A. H. R. W. (and G. E. MILLS): *Practice of the Office of the Masters in Lunacy*, rev., 727
- Practitioners de-registered (Sydney), 126
- Pregnancy and child-bearing, number of deaths attributed to (parliamentary note), 1110
- Pregnancy in a fibroid uterus (C. M. Rolston), 558
- Pregnancy, fits in the fourth month of with no other signs of toxæmia (W. F. Theodore Haultain and J. S. Hall), 898
- Pregnancy, heart disease in (A. Leyland Robinson), 18
- Pregnancy: malpositions, correction of; the rationale of the padded binder (R. C. Buis), 62
- Pregnant women, the care of (C. W. Comrie-Sharp), 1093
- Preparation of patients for operation. See Operation
- Presentations, 38, 45, 174, 266, 357, 439, 449, 491, 578, 609, 616, 741, 742, 785, 838, 912, 957, 958, 1042, 1120
- Preventive medicine, review of books on, 636
- PRICE, E. E.: *Atomic Form with Special Reference to the Configuration of the Carbon Atom*, rev., 636
- PRICE, Frederick W.: *A Textbook of the Practice of Medicine*, rev., 290
- PRICHARD, R.: Subacute infective endocarditis, 377
- Prince Albert Convalescent Home, Worthing, 665
- Prince of Wales: Presented with the medal of the Honourable Society of Cymmrodorion, 173—Accepts the Honorary Fellowship of the Royal Society of Medicine, 827—His tribute to the general practitioner, 873
- PRINGLE, H.: Difference in appearance in the walls of large and small arteries in cases of aneurysm, 330
- PRINGLE, John James, obituary notice of, 43
- PRINGLE, Professor: Apparent cure of multiple ova in a Graafian follicle, 858
- PRINGLE, Seton: *Gastric and duodenal ulcers*, 285—Cause of death in intestinal obstruction, 512
- Prisoners under remand, mental observation of (parliamentary note), 780
- Prisons and Borstal institutions re appointment of a woman commissioner (parliamentary note), 606
- PRITCHARD, Eric: The pathogenesis of rickets, 887 (O)
- PRIVAT, J.: *L'Orthopédie en Clientèle*, rev., 474
- Prix de Carthage, 401
- Prize offered for the best work on the etiology, prophylaxis, and treatment of cancer, 370
- Prize offered for the best unpublished work on natural science or medicine, 117
- Prize, Sir William Dalby Memorial, 633
- Prize, Savill Memorial, 1079
- Prize, David Syme Research, 1079
- Professional Classes Aid Council, donation from H.M. the Queen, 1079
- Professional slang. See Slang
- Professors exchange of, 608
- Progrès Médical, banquet in honour of the jubilee of, 220
- "Prohibition" of evolution. See Evolution
- Prohibition in America, New York statistics, 557
- Proprietary preparations, vitamin content of. See Vitamin
- Prosecution under the Medical Act (William Lumsden), 1118
- Prostate, surgery of the (T. E. Hammond), 721
- Prostatectomy, some problems of (Sir John Thomson-Walker), 133 (O), 265—Correspondence on, 259, 265, 304, 352, 492—Prevention of sepsis after, 492
- Protein therapy, non-specific, the scientific basis for (A. J. Clark), 315 (O)—Discussion on, 327
- Protest, 1077
- Protists and disease, review of book on, 475
- PROVIS, Mr.: Radium treatment of uterine haemorrhage, 510
- Prussia, vital statistics of, before and after the war, 166
- Pseudo-appendicitis, review of book on, 1095
- Pseudo-coxalgia (Geoffrey Bate), 331
- Pseudo-hermaphroditism (Dr. Richards and Geoffrey Bate), 330
- Psoriasis (G. Gushue-Taylor), 558
- Psychiatric clinics, 42
- Psychiatry in Canada (C. K. Clarke), 972
- Psychiatry clinic in Sydney, 697
- Psychiatry, the new spirit in, 169, 395
- Psycho-analysis (leading article), 33—Correspondence on, 39, 656—Review of book on, 516, 727, 975
- Psychological conditions found in criminals (M. Hamblin Smith), 342
- Psychological medicine, examination for diploma in, 450—A correction, 542
- Psychological medicine and research at Birmingham, 783
- Psychology of dreams (leading article), 775
- Psychology, industrial, 571
- Psychology and medicine (Sir Frederick W. Mott), 403 (O)—Correspondence on, 486, 492
- Psychology, the modern (R. J. A. Berry), 255
- Psychology, review of books on, 155, 635, 1021
- Psychoneuroses and endocrines (W. Langdon Brown), 514
- Psychoneurosis and mental deficiency (C. S. Myers), 559
- Psychotherapy, the teaching of, 42—Discussion on at Medical Society of London, 326
- Public health (Irish), 396
- Public health appointments, combined, 829
- Public Health Commissioner in India, 838
- Public health and education (J. R. Kaye), 992
- Public health legislation (Ireland), 993
- Public health and medical research in India, 609—Leading article, 640
- Public Health Officers, International Exchange of, 656
- Public health, review of books on, 726
- Public health and veterinary science (Walter Elliot), 209—Public Vaccinators' Association. See Association
- Publications, medical, sent on approval, 220, 265
- Publications, new and forthcoming, 87, 117, 219, 307, 357, 577, 885, 916, 1079
- Publications, periodical, of original research, 265
- Puerperal fever, autogenous vaccine in, 1042
- Puerperal infections, treatment of (B. P. Watson), 505 (O)—Discussion, 511—Correspondence on, 616, 660, 700, 743, 787, 880
- Puerperal inversion of the uterus, acute (C. S. Lane Roberts), 557 (O)—(Robert R. Foote), 1092
- Puerperal morbidity and mortality: Committee of inquiry appointed, 1036, 1072
- PUGH, L. P.: Ovarian disease in cows, 811
- Pulse pressure in exophthalmic goitre (I. Harris), 630 (O)
- Pulse, radial, in intrathoracic aneurysms (C. O. Hawthorne), 892 (O)
- Punjab, chemical examinations in the, 127
- PURDON, Major W. Brooke, O.B.E. conferred upon, 30
- PURDY, Dr., silicosis, 514
- Purpura treated by injection of human blood (Montague Dixon), 16 (O)
- PURSEN, F. C.: Diabetes insipidus, 418
- PURVIS, William Prior, obituary notice of, 399, 444
- Praemia, portal, secondary to umbilical infection (G. Bruce White), 373 (O)
- Pretography and cytoscopy (F. Strong Heaney), 853
- Pylorus, congenital hypertrophy of (George F. Still), 579 (O)—Correspondence on, 744



**B.**

Racial effects of alcoholism. See Alcoholism  
RADCLIFFE, Frank, resigns from the visiting staff of Boundary Park Hospital, 1042  
Radiations, acute constitutional symptoms due to (Sir Humphry Rolleston), 1 (O)  
Radiology in practice, 571  
Radiology, review of books on, 597  
Radiology in the diagnosis of pulmonary tuberculosis (Leonard Findlay), 681  
Radiotherapy for cancer, 261  
Radium in carcinoma of the cervix, exhibition at, 451  
Radium in cancer of the tongue, oesophagus, and rectum (leading article), 297  
Radium, dosage of (Dawson Turner), 100 (O)  
Radium Institute, London, note on, 930  
Radium treatment in cancer of the urethra (Fletcher Shaw), 329  
Radium treatment of disease, the use of (Dawson Turner), 464 (O)  
Radium treatment of gynaecological conditions,  
  
Radium treatment of uterine haemorrhage (Sidney Forsdike), 510  
Radium Institut'e (London), report, 297, 301  
Radius, congenital absence of (A. P. Bertwistle), 325  
Radius, fracture of the neck of the (H. D. O'Sullivan), 190  
Ragging in boys' schools, 261. See also Schools  
RAIMENT, P. C. (and G. L. PESKETT), *A Laboratory Handbook of Biochemistry*, rev., 814  
RAINY, HARRY, obituary notice of, 84  
RALPHS, Gerald: Surgery of the prostate, 259, 352  
RAMSAT, Dr.: Treatment of gastric and duodenal ulcer, 239  
RAMSAY, Mabel L. (and H. F. YELLACOTT): Hydatid cysts of liver associated with gall stones and empyema of gall bladder and pleura: recovery, 184 (O)  
RAPHAEL, A. (and others): *Pneumococcus et affectiones Pneumococcicae*, rev., 633  
Rat-bite fever, 542, 1004  
Rat repression in India, 39  
Rates and taxes, petition for inquiry into the growth of, 449  
RAYNOL, Mazzyk P.: Small-pox and vaccination, 351  
RAY, John Howison: Appreciation of Sir William Thornburn, 540  
Raynaud's disease, nettle stings in, 46  
RAYNES, E. J.: Tuberculosis of the cervical glands, 394  
Red Cross, International Committee, report of on Irish internment camps, 953, 1073  
Red Cross societies, Oriental: Conference at Bangkok, 782  
Red Cross Society, British: Appeal for Greek refugees, 265  
REES, R. J.: Progress and problems in epidemiology, 240  
REED, J. G.: Carbon tetrachloride and oil of  
  
[The following entries are partially illegible due to fading and bleed-through:]  
... ..  
Refraction (T. ... ..) ... ..  
Registered med: ... ..  
... ..  
Refract-General's annual report (leading article), 235, 339.—Note on, 299, 527.—Parliamentary note on, 483.—Correspondence on, 533.  
See also Vital statistics  
... ..  
... ..  
... ..  
REN, Inspector-General Walter, awarded a Greenwich Hospital pension, 792  
Relapsing fever, see Fever  
Religion and some medico-sociological problems (Rev. W. Ralph Ince), 437  
REMER, John (and William D. VERNBERG): X-ray Dosage in Treatment and Radiography, rev., 591  
Renal calculi, see Calculi  
Renal diseases, review of books on, 245  
Renal function tests (G. E. Nesbitt), 153  
Renal insufficiency and its clinical detection (R. Cameron), 930  
Renal origin of aches and pains (Andrew Fullerton), 308 (O)

**Reviews of Books:**  
**Abdominal Pain** (Norbert Orther), 770  
**Aberdeen:** Viri Illustres Universitatum Abrodonensium (W. E. McCulloch), 851  
**Anaemia, its Causes and Modern Treatment,** with a Chapter on Neurasthenia (Arthur W. Fuller), 1022  
**Anaesthesia in Children** (C. Langton Hewitt), 246  
**Anaesthetics and their Administration** (Sir Frederic W. Hewitt), 103  
**Anaesthetics in Practice and Theory** (J. Blomfield), 63  
**Anatomy of the Abdomen: Anatomie Médico-chirurgicale de l'Abdomen, la Région Sino-thoracique de l'Abdomen** (Raymond Grégoire), 975  
**Anatomy, Cunningham's Textbook of** (edited by Arthur Robinson), 899  
**Anatomy of the Female Pelvis, Descriptive and Applied** (F. A. Maguire), 902  
**Anatomy of the Horse, a Dissection Guide** (Sir John McFadyean), 335  
**Anatomy, Regional** (T. B. Johnston), 292  
**Anatomy, Surgical, Manual of** (L. Deesly and T. B. Johnston), 109  
**Anatomy, Surgical, Manual of** (C. R. Whitaker), 109  
**Anatomy, Surgical, Textbook of** (W. F. Campbell), 727  
**Annals of Medical History. See Medical History**  
**Appendicitis: Les Fausses Appendicites** (Th. de Martel and Ed. Antoine), 1096  
**Arab Medicine and Surgery, a Study of the Healing Art in Algeria** (M. W. Hilton-Simpson), 291  
**Archives de Médecine Légal**, 335  
**Artrio-sclerose et L'Artriosclérose et son traitement: Les maladies de la cinquantaine, tome III** (Arthur Leclercq), 292  
**Asclepios**, 335  
**Aspects of Death: Des Todes Bild** (Frederick Parkes Weber), 770  
**Atomic Form, with Special Reference to the Configuration of the Carbon Atom** (E. E. Price), 636  
**Aural Surgery for Students and Practitioners, a Handbook of** (William Wilson), 246  
**Bacteriology, General, Pathological, and Intestinal** (A. J. Kendall), 401  
**Bacteriophage, its Role in Immunity** (F. d'Herelle), 991  
**Bedside Library, Life and Death of Socrates, 727—Life and Death of Sir John Falstaff, 727**  
**Beyond the Pleasure Principle** (Sigmund Freud), 814  
**Bibliographical Survey of Contemporary Sources for the Economic and Social History of the War** (M. E. Zalkley), 691  
**Biochemistry in Relation to Human Physiology, Fundamentals of** (T. R. Parsons), 932  
**Biochemistry, a Laboratory Handbook of** (P. C. Raiment and G. L. Peskett), 814  
**Birth Control Conference, International, report**, 518  
**Blindness, War, at St. Dunstan's** (Sir Arnold Lawson), 67  
**Blood Supply to the Heart** (Louis Gross), 850  
**Botulism and Food Preservation** (The Loch Maree Tragedy) (G. Leighton), 932  
**Brain, a Journal of Neurology**, 518, 1022  
**Brettonneau, Two Posthumous Works of: Traité de la dothinéritie et de la Spécificité de Pierre-Fidèle Brettonneau**, 22  
**British Goat Society's Year Book for 1923**, 815  
**British Journal Photographic Almanac** (1923), 110  
**Bronchoscopy and Esophagoscopy, a Manual of Personal Endoscopy and Laryngeal Surgery** (Obevaler Jackson), 421  
**Brown and Macdonald, Canary Islands, and Azores** (A. Samler Brown), 699  
**Burdett's Hospitals and Charities** (1922-23), 245  
**Cancer: its Cause, Treatment and Prevention** (Alex. Theodore Brand), 333  
**Cancer: Essai sur l'origine des cancers et tumeurs** (Joseph Stefani), 352  
**Cancer—Fallacy, Theory, and Fact** (John Shaw), 1095  
**Cancer and New Growths** (Simeon Burt Wolbach), 333  
**Cancer and its Non-surgical Treatment** (L. Duncan Bulkley), 516  
**Cancer: Le cancer et son traitement médical rationnel** (Ed. Baronaki), 333

**C'**

Crockett), 421.  
Children, Feeding, Diet, and Care of (Albert J. Bell), 768  
Children's Diseases: Practical Handbook on (Bernard Myers), 22  
Children's Diseases: Kurzes Lehrbuch der Kinderkrankheiten (Heinrich Lehnndorff), 975  
Children's Diseases: Leitfaden der Kinderheilkunde (Walter Birk), 475  
Circulatory Disorders : Traitement des Maladies Cardio-vasculaires par le Massage, le Mouvement et les Agents physiques (P. Mathieu, G. Richard, and Haranchipy), 109  
Clínica y Laboratorio, 593  
C  
C  
C  
  
Cryptogels: Les Phénomènes de Destruction Cellulaire (Louis Borry), 230  
Daily Mail Year Book, 69  
Death, The Biology of (Maymond Pearl), 382  
Deficiency Diseases, 191  
Dental Board of the United Kingdom, Minutes of, vol. i, 475  
Dental Radiology (Christopher Kempster), 110  
Dermatology. See Skin  
Diagnosis: Précis de Diagnostic, Chimique, Microscopique et Parasitologique (J. Giarrat and L. Grimbert), 1093  
Diarrhoea.—Les Diarrhées Chroniques: Étude Clinique, Coprologique et Thérapeutique (Louis Timbal), 635  
Diathermy, Diathermie et Diathermothérapie H. Bordier, 1097  
Dictionary of Applied Chemistry (Sir E. Thorpe), 156  
Digestive Tract, the Mechanics of the (Walter C. Alvarez), 767  
Drugs, the Story of (Henry C. Fuller), 726  
Duff House Papers, vol. i (E. I. Spriggs), 474  
Ear, Nose, and Throat: Consultations Otorhino-Laryngologiques du Praticien (Georges Fortmann), 563  
Ear, Nose, and Throat Diseases: Medical and Surgical (W. C. Phillips), 553  
Ear. See also Aural  
Elephant Man and other Reminiscences (Sir Frederick Treves), 335  
Emulsions and Emulsification, the Theory of (W. Clayton), 381

1067  
Endocrine Glands and the Sympathetic System  
(P. Lereboullet, P. Harrier, H. Carrión, A. G.  
Guillaume), 292  
Epidemiology and Public Health (Victor C.  
Vaughan, Henry F. Vaughan, and George T.  
Ylmer), 726  
Epilepsy: Les Épilepsies (R. Cestan), 243  
Eurythm: Thought in Action. The Principles  
and Practice of Vocal and Physical  
Therapy (H. H. Hulbert), 194  
Evolution of Continuity in the Natural World  
(David Russell), 24  
Exercise in Education and Medicine (R. Tait  
Mackenzie), 930  
Ere. Diseases of the (Sir John Herbert  
Verdrey), 15. See also Ophthalmology  
Feeding, Diet, and the General Care of  
Children: A Book for Mothers and Trained  
Nurses (Albert J. Bell), 793  
Fever Nurses. Textbook for (Grace H. Giffen  
Dundas), 933  
Flowers and Fancies (C. L. West), 852  
Food, Health, and Growth: A Discussion of  
the Nutrition of Children (L. Emmett Holt),  
194  
Foods and Drugs. Microscopical Examination  
(H. G. Greenish), 1021  
Fracture. Treatment of, with Notes upon a  
Few Common Dislocations (C. L. Scudder),  
769



## Reviews of Books (continued):

- Framboesia tropica* [Parangi of Ceylon] (R. L. Spittel), 860  
 General Medical Council: Minutes and Index to Minutes, 423  
 Genito-urinary Diseases, 245  
 Geographies, Junior Regional (W. H. Barker and L. Brooks), 1058  
 Glaucoma, Operative Treatment of (H. Herbert), 1057  
 Glycosuria and Diabetes: Modern Methods in the Diagnosis and Treatment of (Hugh Maclean), 974  
 Gold-headed Cane (William Macmichael; new edition, edited by George C. Peachey), 157  
 Gonorrhoea, Monograph on (A. Reith Fraser), 900  
 Gonorrhoea and its Complications, Textbook of (G. Luys), 517  
 Greece and Rome, Our Debt to (edited by G. D. Hadzits and D. M. Robinson), 683  
 Greek Biology and Greek Medicine (Charles Singer), 21  
 Greek Biology and Medicine (Henry Osborn Taylor), 683  
 Gums and Oral Mucous Membrane, Diseases of (Sir Kenneth Goadby), 859  
 Guy's Hospital Reports, No. 4, vol. lxxii, 23—vol. lxxiii, 635—No. 2, 933  
 Half-past Bedtime (H. H. Bashford), 598  
 Heart, the Blood Supply to (Louis Gross), 860  
 Heart Disease, Diagnosis and Treatment of: Practical Points for Students and Practitioners (E. M. Brockbank), 596  
 Heart Diseases (I. Harris), 518  
 Heart: Les Nouvelles Méthodes d'Examen du Cœur en Clinique (R. Lutembacher), 815  
 Heliotherapy (A. Rollier, H. J. Schmid, A. Rosset, and E. Ainstead), 933  
 Heredity: Menschliche Erblchkeitslehre (Erwin Baur, Eugen Fischer, and Fritz Lenz), 155  
 History of Medicine. *See* Medical and Medicine  
 History of the Great War, Based on Official Documents: Medical Services, Surgery of the War, vols. i and ii (edited by Major-General Sir W. G. Macpherson, Major-General Sir A. A. Bowlby, Major-General Sir Cuthbert Wallace, and Colonel Sir Crisp English), 288, 332  
 History of the War, Bibliographical Survey of Contemporary Sources for the Economic and Social (M. E. Bulkeley), 684  
 History of Military Medicine (Lieut.-Colonel Fielding H. Garrison), 419  
 Horse, Anatomy of the: A Dissection Guide (Sir John McFadyen), 383  
 Hygiene of Native Compounds in Tropical Africa (A. Pearson and R. Mouchet), 931  
 Hygiene, Personal Applied (J. F. Williams), 246  
 Hypnotism and Suggestion (Louis Satow), 815  
 Income Tax Guide, Nelson's (P. Sulley), 245  
 Income Tax—Tabular View, 1842-1924, 1058  
 Index to General Practice (A. Campbell Stark), 1097  
 India, the New Constitution of (Sir Courtenay Ilbert and Lord Meston), 1022  
 Industrial Hygiene, Bibliography of, 1022  
 Industrial Hygiene and Medicine (E. W. Hope and W. Hanna), 931  
 Infant Feeding, Principles and Practice of (Julius H. Hess), 768  
 Infantile Cirrhosis of the Liver (S. K. Mukherji), 598  
 Infants: Säuglingskrankheiten (Walter Birk), 768  
 Infectious Diseases: Oreillons, Coqueluche, Grippe, Erysipèle Médical (H. Barbier), 474  
 Injury, Recovery, and Death in Relation to Conductivity and Permeability (W. J. V. Osterhout), 596  
 Inspection, Palpation, Percussion, Auscultation: Leur Pratique en Clinique Médicale (Maurice Letulle), 195  
 Internal Secretions: Einführung in die Klinik der inneren Sekretion (G. Peritz), 1098  
 International Clinics, vol. iv (edited by J. W. Cattell), 770  
 Intoxications, 194  
 Inventum Novum ex Percussione Thoracis Humani, ut Signo abstrusos Interni Pectoris Morbos Detegendi (1761) (Leopold Auenbrugger; facsimile by Max Neuburger), 246  
 Jaundice, Haemorrhagic: Ueber die pathologische Anatomie der Spirochaetosis ictero-haemorrhagica Inada (Weilsche Krankheit) (Renjiro Kaneko), 1096  
 Johns Hopkins Hospital and University. Collected Papers of Members of the Gynaecological Department, 1916 to 1922, 110  
 Joyeux Propos d'Esculape (Drs. Cabanès and Witkowski), 517  
 Juvenile Delinquency (Henry Herbert Goddard), 68  
 Kidney Diseases, 245  
 Laboratory Methods, Clinical (R. L. Haden), 814  
 L'Année Médicale pratique (edited by Camille Lian), 976  
 Liver, Infantile Cirrhosis of (S. K. Mukherji), 593  
 Liver: Physiologie normale et pathologique du foie (G. H. Roger), 813  
 Lunacy, Practice of the Office of the Masters in (G. E. Mills and A. H. R. W. Poyser), 727

## Reviews of Books (continued):

- Lungs: Examen fonctionnel du poulmon (Ch. Achard and Léon Bine), 381  
 Madeira, Canary Islands, and Azores (A. Samler Brown), 598  
 Malay Poisons and Charm Cures (John D. Gimlette), 243  
 Malignant Disease: Essai sur l'origine des cancers et tumeurs (Joseph Stefani), 382  
 Materia Medica, Pharmacology, and Therapeutics for Dental Students and Practitioners (F. Coleman), 597  
 Mathematics and Physical Science in Classical Antiquity (J. L. Heiberg and D. C. Macgregor), 384  
 Medical Annual (1923), 725  
 Medical Axioms, Aphorisms, and Clinical Memoranda (James Alexander Lindsay), 422  
 Medical History, Annals of (edited by Francis R. Packard), vol. iv, No. 3, 383, 423—No. 4, 901  
 Medical Jurisprudence and Toxicology, Textbook of (Rai Bahadur Jaising P. Modi), 23  
 Medical Papers, the Writing of (Maud M. Mellish), 563  
 Medical Proofs of the Miraculous: a Clinical Study (E. Le Bec), 423  
 Medical Psychology and Psychical Research (T. W. Mitchell), 635  
 Medical Terminology: Medizinische Terminologie (Walter Guttmann), 902  
 Medicine, the History of in its Salient Features (Walter Libby), 1022  
 Medicine: Précis de Pathologie Médicale (M. Journé), 684  
 Medicine, a Synopsis of (Henry Letheby Tidy), 110  
 Medicine, a Textbook of the Practice of (edited by Frederick W. Price), 290  
 Medicine, Military, History of (Lieut.-Col. Fielding H. Garrison), 419  
 Medizinisches Vademecum in deutscher und englischer Sprache (B. Lewis), I, Für Ohrenärzte; II, Für Nasen- und Halsärzte; III, Für Augenärzte, 685  
 Mental Deficiency [Amentia] (A. F. Tredgold), 291  
 Merck's Jahresbericht über Neuerungen auf den Gebieten der Pharmakotherapie und Pharmazie (1922), 156  
 Michelin Guide to Great Britain (1923), 1022  
 Microscopical Examination of Foods and Drugs (H. G. Greenish), 1021  
 Milieux de Misères (S. Courgey), 815  
 Military Medicine. *See* Medicine  
 Mistakes and Accidents of Surgery (Harold Burrows), 561  
 Molecular Physics (J. A. Crowther), 901  
 More Secret Remedies: What they Cost and What they Contain, 726  
 National Health Policy (Harry Roberts), 1020  
 Native Compounds in Tropical Africa, Practical Hygiene of: Being Notes from the Experience of the First Eighteen Years of European Work in the Katanga (A. Pearson and R. Mouchet), 931  
 Nelson's Income Tax Guide (P. Sulley), 245  
 Neo-Malthusian and Birth Control Conference, Fifth International, report, 518  
 Nervous System, the Sympathetic, in Disease (W. Langdon Brown), 381  
 Neurology: Précis de Pathologie Interne: Maladies du Système Nerveux (Henri Claude), 156  
 New Growths and Cancer (Simeon Burt Wolfbach), 383  
 Nostrums and Quackery, vols. i and ii, 726  
 Nursing, Evolution of Public Health (Annie Brainard), 475  
 Obstetrics for Nurses (Joseph B. De Lee), 157  
 Operation, preparation for: La période pré-opératoire (Charles Lefebvre), 682  
 Ophthalmic surgery (Major V. Nesfield), 334  
 Ophthalmological Society of the United Kingdom, Transactions, vol. lxii, 862  
 Ophthalmology, Textbook of (H. E. Fuchs), 517. *See also* Eye  
 Otophary: L'Otophary du praticien (L. Lemaître), 415  
 Orthopaedic Nursing: Part I, Joint Tuberculosis (A. G. Hunt), 23  
 Orthopaedic Surgery (Sir Robert Jones and Robert W. Lovett), 634, 685  
 Orthopaedics: L'Orthopédie en Clientèle (J. Privat), 474  
 Otolaryngology. *See* Aural and Ear  
 Outspoken Essays (William Ralph Inge), 383  
 Oxidations and Reductions in the Animal Body (H. D. Dakin), 332  
 Paris Public Health Service Reports: A Prophylaxis Rural no Estado do Pará (H. C. de Souza Araujo), 1058—A Prophylaxis da Lepre e das Doenças Venereas no Estado do Pará (H. C. de Souza Araujo), 1058  
 Passing Songs (W. Barr), 23  
 Pathology, General and Special, for Students of Medicine (R. Tanner Hewlett), 157  
 Pathology: Grunderss und atlas der allgemeinen chirurgischen Krankheiten, 862  
 Pathology: Traité pathologie médicale et de thérapeutique appliquée (published under the direction of E. Sargent, L. Ribadeau-Dumas, and L. Babonneix): Tome xxii, Intoxications, 194—Tome xlii, Reins et Organes Génito-urinaires, 245  
 Pediatrics, Textbook of (edited by E. Feer), 768  
 Pericarditis: Les péricardites aiguës (Germain Blechmann), 420

## Reviews of Books (continued):

- Persian Sketches (Right Rev. J. H. Linton), 195  
 Personal Hygiene, Applied (J. F. Williams), 246  
 "P.F.O." *See* Operation  
 Pharmacology, Applied (A. J. Clark), 514  
 Pharmacology and Therapeutics, Textbook of (E. Poulsson), 1056  
 Pharmacopoeia of the Royal Northern Group of Hospitals, 976  
 Pharmacopoeia of St. Thomas's Hospital, 976  
 Physical Diagnosis (W. D. Rose), 335  
 Physical Examination of the Chest (James. Crockett), 421  
 Physical Exercises, the New Era Handbook of (Major F. W. Stevens), 475  
 Physiology, Chemical, Essentials of (W. D. Halliburton), 69  
 Physiology, Practical (E. P. Cathcart, D. Noël Paton, and M. S. Pembrey), 331  
 Physiology of Reproduction (Francis H. A. Marshall), 682  
 Pirquet System of Infant Feeding: Die Ernährung Gesunder und Kranker Kinder (Edmund Nobel), 515  
 Plant Products, Introduction to the Chemistry of (P. Haas and T. G. Hill), 1098  
 Pneumococcal infections: Pneumocoques et affections pneumococciques (L. Coton, C. Truche, and A. Raphael), 683  
 Poems, 1920-21 (Keith Monsarrat), 23  
 Population Problems (Harold Cox), 384  
 Post-operation Treatment: Thérapeutique Post-opératoire à l'usage des chirurgiens, praticiens et infirmières (E. Rochard and W. M. Stern), 68  
 Preventive Medicine and Hygiene (M. J. Rosenau), 636  
 Prince of Beggars (Neville Langton), 157  
 Progress Book (J. J. Pilley), 727  
 Proteins and the Theory of Colloidal Behaviour (J. Loeb), 193  
 Proctitis and Disease (J. Jackson Clarke), 475  
 Pseudo-appendicitis: Les Fausses Appendicites: Étude clinique, radiologique et thérapeutique des syndromes douloureux du caecum et du colon proximal (Th. de Martel and Ed. Antoine), 1095  
 Psycho-analysis, Some Applications of (Oscar Pfister), 727  
 Psycho-analysis, Introductory Lectures on (Sigmund Freud), 516  
 Psycho-analysis: Studies in (Charles Baudouin), 975  
 Psychology of Misconduct, Vice, and Crime (Bernard Hollander), 636  
 Psychology, the New, and the Parent (H. Orichon Miller), 155  
 Psychology, Scientific, the Elements of (Knight Dunlap), 1021  
 Psychology, What is? (Charles W. Hayward), 635  
 Public Health Nursing, the Evolution of (Annie Brainard), 475  
 Puerperal Sepsis and its Prophylaxis (Eustace Thorp), 770  
 Radiology: La Radiothérapie Profonde (Isler Solomon), 597  
 Radiology: Die Röntgendiagnostik der Magen und Darmkrankheiten (E. Schlesinger), 597  
 Radiology. *See also* X Rays  
 Remembering and Forgetting (T. H. Pear), 561  
 Renal Diseases, 245  
 Rescue Man's Manual (A. B. Clifford), 563  
 Ross, Sir Ronald: Memoirs, with a full account of the Great Malaria Problem, and its Solution, 974  
 Round the Fountain, 23  
 St. Bartholomew's Hospital Reports, vol. lvi, 727  
 St. Mary's Hospitals, Manchester, History of, and of the Honorary Medical Staff, from the Foundation in 1790 to 1922 (J. W. Bride), 769  
 Science and Human Affairs from the Viewpoint of Biology (W. C. Curtis), 154  
 Sea Water: Le Dispensaire Marin: Un Organisme Nouveau de Puericulture (J. Jarricot), 334  
 Secret Remedies: More Secret Remedies, 726  
 Skin Diseases (H. H. Hazen), 244  
 Skin Diseases (R. W. MacKenna), 813  
 Skin Diseases: La Dermatologie en Clientèle (H. Gougerot), 593  
 Skin Diseases and Eruptive Fevers (J. F. Schamberg), 244  
 Skin Diseases: A Practical Treatise on (Oliver S. Ormsby), 214  
 Small-pox and Vaccination in Barbados (John Hutson), 246  
 Squint: its Causes, Pathology, and Treatment (Claude Worth), 109  
 Sterility in Woman: its Causes and Treatment (Robert A. Gibbons), 901  
 "Suggestion" and Common Sense (R. Allan Bennett), 155  
 Surgery, the Mistakes and Accidents of (Harold Burrows), 561  
 Surgery: Grundriss und Atlas der Speziellen Chirurgie (G. Sultan), 815  
 Surgery: La Pratique Chirurgicale Illustrée (V. Pauchet), 770  
 Surgery of the War. *See* History of the Great War  
 Surgical Anatomy. *See* Anatomy  
 Surgical Grafts: Les Greffes chirurgicales (Pl. Maucalre), 975  
 Sympathetic Nervous System in Disease (W. Langdon Brown), 381



## Reviews of Books (continued):

- Syphilis of the Innocent: A Study of the Social Effects of Syphilis on the Family and the Community (Harry C. Solomon and Maïda Solomon). 472
- Erkrankungen der Haut, des Kopfes, des Halses, der Brust, des Abdomens, des Beckens, der Genitalien, des Urogenitalsystems, des Respirationstraktes, des Verdauungstraktes, des Kreislaufsystems, des Nervensystems, des Bewegungsapparates, des Ausscheidungsapparates, des Endsystems. 472
- Studierende (Ferd. Zinsser), 195
- Thyroid Gland, Diseases of the (A. E. Hertzler), 331
- Treasury of Human Inheritance. Vol. II. Anomalies and Diseases of the Eye (Nottingham Memorial Volume); Part I. Retinitis (Nottingham Memorial Volume). 472
- Tropical Medicine, Laboratory Studies in (T. J. Ross), 1055
- Tuberculosis in Infancy and Childhood (J. Claxton Gittings, Frank Crozer Knowles, and Astley P. C. Ashburth), 291
- Tuberculosis: La Guérison de la Tuberculose Pulmonaire (R. Burnand), 244
- Tuberculosis, Problems in: Administration, Diagnosis, Employment Settlements (Sir James Kingston Fowler), 1020
- Tuberculosis, Pulmonary (Maurice Fishberg), 562
- Tuberculosis, Pulmonary: Le Traitement de la Tuberculose Pulmonaire en Orléans (C. Collier), 1057
- Tuberculosis, Simple Treatment for (Owen F. Page), 562
- Typhus Fever, with Special Reference to the Russian Epidemics (J. M. Mitchell, I. N. Asheshov, and G. P. N. Richardson), 67
- Urea, the Chemistry of (E. A. Werner), 1023
- Urethra and the Urethroscopy (F. Carminow Dobler), 683
- Vasomotor System (Sir William Bayliss), 634
- Veterinary Medicine, Surgery and Obstetrics, Encyclopedia of (edited by G. H. Woodbridge), 1057
- Viri Illustræ Universitatis Abredonensium (W. E. McCulloch), 861
- Visceral Disease, Symptoms of (F. M. Pottinger), 109
- Vitamins: Vital Factors of Foods, Vitamins, and Nutrition (Carleton Ellis and Annie L. Macleod), 861
- War Blindness at St. Dunstan's (Sir Arnold Lawson), 67
- War History of. See History
- White of Manchester (1728-1813) and the Arrest of Puerperal Fever (J. George Adam), 515
- Willing's Press Guide, 246
- Within an Atom (J. Mills), 593
- Women Doctor and her Future (Louisa Martin-dale), 21
- Crossen), 862
- in Great Britain
- See Medical
- X-Ray Dosage in Treatment and Radiography (William D. Witherbee and John Reimer), 597
- X-Ray Technic for Diagnosis, Principles and Practice of (John A. Metzger), 685
- X Rays. See also Radiology
- Yarrow, Alfred: His Life and Work (Eleanor C. Barnes), 1053
- Yaws (R. L. Spittle), 860
- Year Book, Daily Mail, 69
- Year Book of the Scientific and Learned Societies of Great Britain and Ireland, 69
- Year Book of the Universities of the Empire (1923), 423
- Zoology for Students and First-Year Students of Science, Essentials of (A. Meek), 1022
- REYNOLDS, F. E.: Appreciation of James Ritchie, 261
- REYNOLDS, Russell John, appointed Honorary Adviser in Radiology to the Ministry of Pensions, 838
- See and cure of
- with intravenous
- ad J. Perkins and
- G. Bruce White, 411 (O)
- Rheumatoid arthritis and osteo-arthritis (Sir Archibald Garrod), 769—Discussion, 761. See also Arthritis
- Rhinitis, atrophic, operation for (James Adam), 1013 (O). See also Ozæna
- RNOPES, George Francis, obituary notice of, 791
- Rhodesian tests of Bayer "225," 35
- Rhythm in living organisms (Sir Arthur Shipley), 479
- Rib, cervical, causing brachial neuritis (W. J. Ross), 721
- du le Massage, le Mouvement, et les Agents Physiques, rev. 109
- RICHARDS, Dr. A. Androgynoid pseudo-hermaphroditism, 330
- RICHARDSON, A. H.: Radium in cancer of the cervix, 151
- RICHARDSON, C. (Asheshov): ence to the R

- Rickets, environment and diet in the causation of, 358
- cock, 916
- RIDDELL, John Scott: The Records of the Aberdeen Medico-Chirurgical Society from 1789 to 1923, 75
- RIDDELL, Lord: The problem of drug addiction, 566
- Ri
- Ri
- and food passages, 415 (O)
- RIGNY, Sir Hugh, appointed Surgeon in Ordinary to the Prince of Wales, 45
- Rights of a registered medical practitioner. See Medical
- Ringworm and its treatment (James Robertson), 1017
- RIPRON, Squadron Leader T. F.: The effect of tropical climate on efficiency, 642
- RITCHIE, James, death of, 222—Obituary notice of, 262
- RITCHIE, W. T.: Muscular dystrophy, 191
- Ritter's disease, case of (Ronald McD. Cairns), 185 (O)—(H. C. Drury), 899—Correspondence on, 303
- RIVERS, W. H. R.: Conflict and Dream, 775—Memorial fund to, 873
- Riviera as a winter resort, 116—Tours to, 256
- RIVERSE, Olive: Damaged lungs and bronchitis, 141 (O)
- Road work for Scottish unemployed, 653
- ROBERTS, C. S. Lane: Acute puerperal inversion of the uterus, 557 (O)
- ROBERTS, Harry: A National Health Policy, rev. 1020
- ROBERTS, Harry M.: Skin rashes from dyed fur, 574
- ROBERTS, J. H.: Treatment of gastric and duodenal ulcer, 235
- ROBERTS, Morley: Of eating, 1077
- ROBERTSON, George: Strangulation of an appendix epiploica simulating appendicitis, 325
- ROBERTSON, George M.: Psychoanalysis, 39—Treatment of mental disorders, 480
- ROBERTSON, James: Ringworm and its treatment, 1017
- ROBERTSON, Lieut.-Col. James Currie, obituary notice of, 916
- ROBERTSON, John: Pasteurization of the milk supply, 66
- ROBERTSON, Professor: Insomnia, 329
- ROBINSON, Arthur (editor): Cunningham's Text-book of Anatomy, rev. 899
- ROBINSON, A. Leyland: Heart disease in pregnancy, 18
- ROBINSON, C. A.: Ionic medication, 650
- Roboleine, vitamin content of, 13
- ROBSON, Frederick: Mifners' Nystagmus, 570
- ROBSON, William (and others): The influence of insulin upon acidosis and lipæmia in diabetes, 847 (O), 857
- ROBSON, W. M.: The Coolidge x-ray tube, 699
- ROCHARD, E. (and W. M. STERN): Thérapeutique Post-opératoire à l'usage des chirurgiens, praticiens et infirmières, rev. 68
- Rockefeller Foundation: Rockefeller Fellowships for India, 39—Invites Japanese Commission to visit Canadian and American medical institutions to study the methods of, 255—University College, London, buildings at, 631—Medical fellowships in the United States, 1106
- Rodent ulcer, disappearance of after erysipelas, 82, 704
- RODERICK, Dr.: Grafting of bone, 380
- RODDICK, Sir Thomas George, death of, 449—Obituary notice of, 484, 489
- ROGER, G. H.: Physiologie normale et pathologique du foie, rev. 813
- ROHDE, Eleanor Sinclair: The Old English Herbs, 432
- ROLESTON, Sir Humphry: Acute constitutional symptoms due to radiations, 1 (O)—Elevation of the diaphragm due to unilateral phrenic paralysis, 471—Appointed chairman of the Central Joint Voluntary Aid Detachment Council, 491—Ulcerative colitis, 855
- ROLLIER, A. (and others): Heliotherapy, rev., 933
- ROLSTON, C. M.: Pregnancy in a fibroid uterus, 558—Spontaneous rupture of the uterus, 855
- ROMANIS, W. H.: Elevator for the first rib, 637
- RÖNTGEN, Conrad, obituary notice of, 305, 356—A correction, 356
- ROOD, F. S.: Coroners' inquests, anaesthetic deaths, 721
- ROOKE, A. Basil: Blood urea, 266
- ROSE, Joan: Treatment of puerperal infections, 511
- ROSENBAUM, M. J.: Preventive Medicine and Hygiene, rev. 636
- ROSE, W. D.: Physical Diagnosis, rev. 335
- ROSS, Lieut.-Col. Henry, C.I.E. conferred upon, 30
- ROSS, Colonel Sir Ronald: Memoirs, with a full account of the Great Malaria Problem and its solution, rev. 574—Honour to (leading article), 1102—Awarded the Albert Medal of the Royal Society of Arts, 1119

- Round the Fountain, rev., 23
- Round ligaments, operations on (Haig Ferguson), 631
- ROUSSEL, Paul: La tuberculose conjugale: contagion et mariage, 603
- ROUTH, Amand: Syphilis and marriage, 632
- Row, Dr., receives the Grand Cross of the Royal Order of the Dannebrog, 256—Spanish Cross of Commander of the Order of Alphonso XII conferred upon, 700
- Row, R.: Rat-bite fever, 1004
- ROWNOTIAS, Stanley: Laryngeal intubation in anaesthetics, 1090 (O)
- Rowett Institute, Aberdeen: Report, 429
- ROWLAND, F. M., appointed a J.P. for the City of Lichfield, 1041
- ROWLANDS, R. P.: Subcutaneous rupture of the intestine, 716 (O)
- ROWLETT, R. J.: Irish hospital finance, 242—Gastric and duodenal ulcers, 285
- ROWSE, Cecil: Treatment of cancer of the tongue, 418—Need for public education in the control of cancer, 510—Coroners' inquests: anaesthetic deaths, 721—Cancer of the breast, 747 (O)
- ROXBOROUGH, A. O.: Dermatitis from dyed fur, 534
- Royal Academy. See Academy
- Royal Academy Medical Cases (supplementary note), Surgeons of
- Royal Institute of Public Health, to meet in Bordeaux in 1924, 1120
- Royal Institution: The
- and. See Fund
- Congress, 656—The
- President, 356—Election of Fellows, 885
- ROMEX, Mr.: Skin grafting, 380
- ROSS, Sidney: The differential action of x rays, 1028
- RUSSELL, David: The Evolution of Continuity in the Natural World, rev., 244
- RUSSELL, Dr.: Oedema of the left foot and leg associated with albuminuria, 350
- Russia, malaria in, 219—Starving Russian Doctors, appeal for, 1003
- Russian Europe, cholera in, 971
- Ryle, John: The investigation of dyspeptics, 5 (O)
- S.
- St John of Jerusalem, Order of, promotions, 1042
- St. Lucia, vaccination at (parliamentary note), 953
- SABAWALA, B. P.: Milk injections in infantile complaints, 238—Trauma and appendicitis, 630
- Sacro-iliac joint, relation of sciatica to the (John Cowan), 372 (O)
- Safety in Mines Research Board, additional members appointed, 745
- SAINSBURY, Harrington: Venous pulsations and venous tracings in general, with special reference to the "V" wave of polygraphic tracing, 626 (O)—Auricular flutter simulating death, 787
- Salaries of medical officers (Ireland), 880, 993
- See also Poor Law
- SALDANA, Captain Antonelli Francisco Bartholomeu, M.R.E. conferred upon, 987
- Sallylate of sodium, See Sodium
- Samorav Invalid Kitchen, 66
- SARWAT, D. W.: Venous pulsations and venous tracings, 787—Ether versus chloroform, 1076
- Sanatorium, Norwood, for treatment of inebriety and drug addiction, new address of, 793
- SANDERSON, Robert: Subinvolution of the uterus, 108—Malignant annular stricture of the colon, 108—Psychology and medicine, 486
- SANGUINETTI, Harold H.: The endowment of general practice, 1039
- Sarcoma, case of (G. E. Nesbitt), 1019
- Sarcoma of brain (Professor Boxwell), 811
- SARGENT, Percy: Appreciation of Hunter Tod, 306
- SAROW, Lewis: Hypnotism and Suggestion, rev., 815
- Savill Memorial Prize, 1079
- Scandinavia: The study of venereal disease in, 1022—The manufacture and distribution of insulin in, 1103
- Scarlet fever. See Fever
- SCHAMBERG, J. F.: Diseases of the Skin and the Eruptive Eruptions, rev., 245
- Scheme of life (leading article), 339
- Schick test, diphtheria and scarlet fever, report on, 577, 599
- Schick test and some epidemiological reflections, 599
- Schistosoma haematobium, a planorbis as the intermediate host of, 351
- Schistosoma haematobium infestations, rectal papillomata in (H. C. Sinden and E. A. Mills), 963 (O)
- SCHLESBERG, H. I.: Gonorrhoea in Scandinavia, 1022
- SCHLESINGER, E.: Die Röntgendiagnostik der Magen und Darmkrankheiten, rev., 597
- Scholarships of the Grocers' Company, 132
- School children, Irish, medical inspection of, 653



School children, parents' payments for medical treatment of (Board of Education circular), 866  
 School children physically defective, clinics for medical treatment of (parliamentary note), 909  
 School courses and sex. *See* Sex  
 School of Hygiene (leading article), 477. *See also* Hygiene  
 School medical inspection in Ireland, 698  
 School medical service (Ireland), 954  
 School medical services (parliamentary note), 695  
 School medical treatment in London, 38  
 School nurses, women doctors as examiners for, 449  
 Schools, boys', ragging in, 261  
 Schools, infectious disease in, code of rules for prevention of, 251  
 Schools for mentally and physically defective children, 645  
 Sciatica (J. B. Burt), 379  
 Sciatica, relation of to the sacro-iliac joint (John Cowan), 372 (O)  
 Science in the army, 388  
 Science, Congress of the History of, 734. *See also* Congress  
 Science in preparatory schools, teaching of, 87  
 Scientific Papers, Composition of, rev., 422  
 Scientific Studies, Conjoint Board of, issue of list of periodical publications of original research, 265  
 Scientific workers, hard times for, 652  
 Sclerotics, blue, and multiple fractures (A. W. Nuttall), 66  
**Scotland:**  
 Advance of surgery, 1072  
 Anderson College: End of winter session, 533  
 Blinded Scottish soldiers, after-care of, 533  
 Bramwell, Byrom, presentation to, 742, 912  
 Carnegie Trust, the work of the, 348  
 Census of Scotland, 1921: Counties of Scotland, 209, 350  
 Central Midwives Board, 256, 349, 913  
 Charity in medicine an anachronism, 532  
 Church of Scotland Deaconess Hospital, 608  
 Colour vision, 255  
 Crime in Scotland, 349  
 Dental Board lectures, 653  
**EDINBURGH:**  
 After-care of blinded Scottish soldiers, 533  
 Associations of physicians in, 912  
 Blind, legacies in aid of the, 880  
 Cancer research in, 980  
 Chair of bacteriology, 1112  
 Clinical meeting of the Edinburgh Branch, 653  
 Deaconess Hospital, 608  
 Dutch professor, lecture by, 912  
 Encephalitis lethargica in, 533  
 Exchange of professors, 608  
 Eye, Ear and Throat Infirmary, 533  
 Feeble-minded, care of, 832, 879  
 Health development of, 302  
 Heriot's School memorial, 697  
 Honorary degree of Doctor, 831  
 Hospital buildings, new (Elsie Inglis memorial), 484  
 Institutional treatment for mental defectives, 879  
 Lord High Commissioner at Edinburgh hospitals, 993  
 Miracle well, end of a, 913  
 Post-graduate courses, 783  
 Princes Street, proposed improvement, 742  
 Rectorial address, 440  
 Royal (Dick) Veterinary College centenary, 441, 993  
 Royal Edinburgh Asylum, 440  
 Royal Infirmary, 80, 993  
 Royal Victoria Hospital Tuberculosis Trust, 440  
 Sick Children's Hospital, 953  
 Surgery, the advance of, 1072  
 Surgical Appliance Society, 1036  
 University war memorial, 395  
 Zoology department, 1112  
 Exchange of professors, 608  
 Experiments on animals, opposition to, 653  
 Farmer's responsibility for health of workers, 953  
 Feeble-minded, care of, 832  
 Gastro-antrostomy, investigations on the results of, 484  
 Gibson memorial lecture, 1036  
**GLASGOW:**  
 Cancer research in, 949  
 Encephalitis lethargica in, 608  
 Eye Infirmary, 396  
 Glasgow and West of Scotland Branch:  
 Clinical meeting, 784  
 Medical Lunch Club, 742, 879  
 Post-graduate teaching in, 573  
 Royal Asylum, 349  
 Royal Asylum for the Blind, 170  
 Royal Infirmary, 80, 549  
 Royal Infirmary Club, 484  
 Students' infirmaries day, 209  
 Gray, Sir Henry, 993  
 Greenock Eye Infirmary, 209  
 Hay, Matthew, proposed presentation to, 302  
 Health Visitors, Conference of, 1036  
 Home nursing work in Fifeshire, 953  
 Honorary degree of Doctor, 831  
 Hospitals and nursing in the Highlands, 697  
 Housing in Scotland, 302  
 Incubators, care of in their homes, 953  
 International Physiological Congress, 1072  
 Leith Hospital, development of, 395

**Scotland (continued):**

"Maintenance system" for Scottish hospitals, 532  
 Massage organization in Scotland, 38  
 Maternity and child welfare in (parliamentary note), 393, 606  
 Meat inspection, new regulations, 879  
 Medical dynasty, 698  
 Mental defectives, institutional treatment for, 879  
 Mine rescue instruction, 349  
 Old-fashioned surgeon (Dr. Borland), 349  
 Philip, Sir Robert, 38  
 Puerperal morbidity and mortality, 1036, 1072  
 Queen Victoria Jubilee Institute, 170  
 Road work for Scottish unemployed, 653  
 Royal Medical Society dinner, 395  
 Royal Veterinary College, 441, 993  
 St. Andrew's Ambulance Association and the V.A.D. Council, 913  
 Scottish Board of Health report, 1113  
 Scottish Poor Law Medical Officers' Association, 169  
 Scottish Society of Anaesthetists, 1113  
 Scottish Zoological Society, 993  
 Tuberculosis treatment in Perthshire, 80  
 Veterinary science and public health, 209  
 Walker, Sir Norman, congratulations to, 80  
 Watson, George, bicentenary of, 653  
**SCOTT, Alexander:** The new element, hafnium, 246  
**SCOTT, Gilbert:** X-ray treatment of malignant disease, 152  
 Scottish Board of Health: New regulations for meat inspection, 879—Appoints a Departmental Committee to inquire into puerperal morbidity and mortality, 1036—Fourth annual report, 1113  
 Scottish Poor Law Medical Officers' Association, report, 169  
**SCUDDER, C. L.:** *The Treatment of Fractures, with Notes upon a Few Common Dislocations*, rev., 769  
 Sea air and photosynthesis (leading article), 601  
 Sea water baths, bacteriology of, 666, 704  
 Sea water, review of book on, 334—A sea water dispensary in London, 917  
**Secret Remedies:** *More Secret Remedies*, rev., 726  
 "Secwa," 384  
**SEGAL, Clara:** Persistent headache, 174  
**SELLERS, Dr.:** Specimens from a case of chloroma, 331—Abdominal lymphosarcoma, 331  
**SELLS, C. J.,** presentation of portrait of, 265  
**SEMON, Henry C.:** Dermatitis from dyed fur, 467, 613  
**SEMON, R.:** The mneme, 336  
 Sensation, vibrating, 168  
 Sensory phenomena associated with defective blood supply to working muscles (J. A. MacWilliam and W. J. Webster), 51 (O)  
 Septicæmic infection following operations for appendicitis (Herbert H. Brown), 591 (O)—Correspondence on, 835  
 Serum by the mouth, 840  
 Service of experiment to practical medicine, 1061. *See also* Biochemistry  
 Service patients in asylums (parliamentary note), 605  
 Service patients in the mental hospitals of the London County Council (parliamentary note), 529  
**SEWELL, Lindley:** After-treatment of maxillary antrum empyema, 1094—Epithelioma of the anterior pillar of the fauces and base of tongue, 1095  
 Sex, determination of, 174, 308, 402  
 Sex and school courses: report of Consultative Committee, 232  
**SEYMOUR, H. F.:** Nerve implantation in facial paralysis, 471  
**SHAND, Surgeon Rear-Admiral Jonathan, C.B.** conferred upon, 30  
**SHAPLAND, Cyril Dee (and H. Batty Shaw):** "Tetanism" in meningitis, 183 (O)  
**SHATTUCK, S. G.:** Disruptive phenomena in gunshot injuries, 376  
**SHAW, B. H.:** Treatment of early mental disorder, 343  
**SHAW, Fletcher:** Radium in cancer of the urethra, 329—Fibromyoma of cervix, 470  
**SHAW, H. Batty (and Cyril Dee SHAPLAND):** "Tetanism" in meningitis, 183 (O)  
**SHAW, J. J. M.:** Plastic repair of the face and limbs, 511  
**SHAW, John:** Need for public education in the control of cancer, 510—Cancer: *Fallacy, Theory, Fact*, rev., 1095  
**SHAW, Wm. Fletcher:** The treatment of uterine fibroids—operation or radiation? 1005 (O)  
**SHAW-MACKENZIE, J. A.:** Defective lipolysis in diabetes and cancer, 1075  
**SHEARS, R.:** Lipoma, 378—Syphilis insomium in school children, 809  
 Sheffield, tuberculosis in (parliamentary note), 695—Sheffield hospitals' penny in the £ scheme, 1027  
**SHEPHERD, William,** bequests of, 531  
**SIMPLEY, Sir Arthur:** Rhythm in living organisms, 479  
 Shock, anaphylactic, sudden death from (Lieut.-Col. F. W. Sumner), 465 (O)  
**SHORT, A. Rendle:** Treatment of strangulated obturator hernia, 718 (O)  
**SHORT, Thomas:** An early medical statistician, 202

Shoulder amputations (F. R. Parakh), 467 (O)  
**SICHEL, Gerald:** Diphtheria antitoxin on suspension, 1039  
 Silicosis, deaths from (parliamentary note), 1110  
 Silver or catgut as suture in Vesico-vaginal fistula, 834, 881  
**SIMMONS, Alfred George,** obituary notice of, 614—Appeal for the family of, 696, 976  
**SIMPSON, G. C. E.:** Surgical aspects of tuberculosis of the abdominal lymphatic glands, 286  
**SIMPSON, J. T.:** Two urethral calculi, which had caused dystocia, 242  
**SIMPSON, Professor:** The new trypanocidal remedies, 150  
**SIMPSON, William J. Ritchie,** knighthood conferred upon, 987  
**SINCLAIR, Walter William,** obituary notice of, 400  
**SINDENSON, H. C. (and E. A. MILLS):** Rectal papillomata in *Schistosoma haematobium* infestations, 958 (O)  
**SINGER, Charles:** *Greek Biologu and Greek Medicine*, rev., 21  
 Sinus thrombosis following pneumonia in an adult (E. Weston Hurst), 929  
 Sinuses and swellings in the necks of children (George Morgan), 621 (O)  
 Sinusoidal current to the spine in the treatment of hay fever (Thomas Marlin), 971  
 Skeleton, effects of excess of calcium upon (V. Korenchevsky), 802 (O)  
**SKENE, G. W. R.:** Registration of nurses, 997  
 Skin, atrophy of, after poliomyelitis (A. Robert Fox), 930  
 Skin diseases. *See* Dermatology  
 Skin, perianal, rupture of, caused by a fall upon the feet (E. N. Nason), 930  
**SKINNER, E. F.:** Blood transfusion, 750 (O)  
**SLADE, Ruth May,** obituary notice of, 355  
 Slang, professional, 343. *See also* "T.B."  
 Slaughtering, humane, 655  
 Sleep and sleeplessness (W. Johnson Smyth), 226 (O)  
 Sleeping sickness, some new observations on its transmission and prevention, 384—Reports by C. F. M. Swynnerton and H. Lyndhurst Duke, 384  
**SLESINGER, E. G.:** The influence of intestinal bacteria upon the thyroid gland, 659  
 Small-pox in the British Army (parliamentary note), 483  
 Small-pox, case of arrested and cured by vaccination, 46  
 Small-pox, deaths from (parliamentary note), 780  
 Small-pox outbreak in England, 256, 307, 434, 643, 829, 872, 909, 992, 1059—In London, 529—Parliamentary note on, 829, 909, 1069, 1109—In Gloucester, 1069, 1071, 1109, 1110  
 Small-pox and vaccination, 43, 351, 358, 877—Statistics (parliamentary note), 877  
 Small-pox and vaccination in the Philippines (John C. McVail), 158—Note on, 166—Correspondence on, 210, 450  
 Small-pox. *See also* Vaccination  
**SMITH, A. H. D.:** Embolism of the right brachial artery as a complication of lobar pneumonia, 103 (O)  
**SMITH, A. Laphorn:** The prevention of sepsis after bladder and prostate operations, 492—Need for public education in the control of cancer, 509  
**SMITH, Constance:** Health of women workers, 1109  
**SMITH, E. C.:** Intracranial aneurysm, 560—Chorion epithelioma of the Fallopian tube, 766  
**SMITH, Edwin:** Coroners' inquests, anæsthetic deaths, 720—His attack on the panel system, 875  
**SMITH, F. K.:** Parham's lands, 470  
**SMITH, Major-General Sir Frederick:** Veterinary science during the eighteenth century, 732  
**SMITH, G. Elliot:** The old and new phrenology, 199—The movement of the eyes, 256, 298—The new anatomy building at University College, London, 728, 910  
**SMITH, Lieut.-Col. Henry:** Dangerous drugs regulations, 260, 425  
**SMITH, Heywood:** The determination of labour, 886  
**SMITH, James:** A disclaimer, 616  
**SMITH, J. Anderson:** The prevention of heart disease, 1074  
**SMITH, J. Ferguson:** Etiology of eczema, 380  
**SMITH, J. W.,** presentation portrait of, 38  
**SMITH, Laphorn:** Treatment of cancer of the tongue, 418  
**SMITH, May:** Atmospheric conditions and industrial efficiency, 36  
**SMITH, M. Hamblin:** The psychological conditions found in criminals, 342  
**SMITH, Lieut.-Col. Peter Caldwell,** obituary notice of, 470  
**SMITH, R. Eccles:** Haemorrhage from the large bowel caused by an adherent appendix epiploica, 853 (O)  
**SMITH, Sophia B. J.,** Serbian Order of St. Sava conferred upon, 172  
**SMITH, T. F. Hugh:** Trauma and appendicitis, 233  
**SMITH, W. (and L. B. WINTER):** On a possible mode of causation of diabetes mellitus, 12 (O)—The control of blood sugar, 478—Some problems of diabetes mellitus, 711 (O)—The nature of blood sugar, 894 (O), 1039  
 Smoke, effect of on child life: deputation to Minister of Health, 918







Tumours of the vagina, 151—Radium in carcinoma of the cervix, 151—Technique of Caesarean section, 285—Necrotic fibromyoma simulating cancer of uterus, 286—Cyst of the uterine cornu due to dilatation of the interstitial portion of the tube, 286—Adenomatosis vaginae, 286—Inversion of uterus in the third week of the puerperium, 286—Obstructed labour due to a contraction ring, 286—Radium treatment of uterine haemorrhage, 510—Angioma of vaginal wall, 510—Secondary leiomyo-sarcoma, 510—Leiomyo-sarcoma of a fibromyoma, 510—Sarcoma of uterus, 510—Chorion epithelioma of uterus, 510—Pelvic adenomyomata, 810—Treatment of dysmenorrhoea, 1054—Sarcomatous ovarian dermoid cyst, 1055—Carcinoma of cervix, 1055—Diurnal incontinence of urine in women, 1055

*Section of Odontology.*—Diet, dental structure, and caries, 593

*Section of Ophthalmology.*—Standards of vision for scholars and teachers in council schools, 58

*Section of Orthopaedics.*—Operative treatment of spastic paralysis, 468

*Section of Pathology.*—Spheno-occipital chordoma, 150—Classification of *B. diphtheriae*, 151—Disruptive phenomena in gunshot injuries, 376—Fermentative reactions of *B. diphtheriae*, 376—The inheritance of the specific iso-agglutinable substances of the red blood cells, 376—Carcinoma of the skin in rabbits, 376

*Subsection of Proctology.*—Ulcerative colitis, 855

*Section of Psychiatry.*—Psychoneurosis and mental deficiency, 559—Genius and insanity, 559

*Section of Surgery.*—Surgical treatment of renal calculi, 63

*Section of Therapeutics and Pharmacology.*—The scientific basis for non-specific protein therapy, 315, 327—Treatment of diabetes insipidus by intranasal spraying of pituitary extract, 328—Modification of gastric function by means of drugs, 366—The use of quinine in articular fibrillation, 507—Visit to the Cambridge schools of pharmacology, biochemistry, and physiology, 819

*Section of Tropical Diseases and Parasitology.*—The antirabic institute in Baghdad, 824

*Section of Urology.*—Primary union in suprapubic operations, 376—Case of air embolism occurring in the course of urethroscopy, 377

*War Section.*—The fate of the civilian in future wars, 480—The effect of tropical climate on efficiency, 642

Society, Royal Microscopical: Practical use of the microscope in industrial research, 132—Industrial applications of the microscope section, 541

Society, Royal Scottish, of Arts: Makdougall-Brisbane medals awarded, 132

Society, Royal, of Tropical Medicine: The new trypanocidal remedies, 149—"Bayer 205," 149—Trypanamide, 149—Atoxyl and other treatments, 150—Discussion, 150

Society, Sheffield Medico-Chirurgical: The dermatologist as detective, 513—The influenza pandemic (1918), 560

Society, Stockholm Northern Dermatological: Transactions, 1022—The study of venereal disease in Scandinavia, 1022

Society for the Study of Inebriety: Racial aspects of alcoholism, 644

Society of Surgery, International: 1923 meeting, 906

Society, Ulster Medical: Medical appointments in Ulster, 127—Some preliminary observations on lung splinting in the treatment of pulmonary tuberculosis, 154, 414—Some realms of gold untravelled yet by vaccine therapists, 154—The care and education of mentally defective children, 512—Treatment of congenital syphilis, 512—Reception by President, 609

Society, University of Sydney Medical: Luncheon in honour of retiring teachers, 126

Society, West Kent Medico-Chirurgical: Encephalitis lethargica and syphilis of the nervous system, 242—Tarsus dorsalis with Charcot's disease of the tarsus, 242—Boy who flexed his neck and spine whenever he spoke, 242—Pigmented mole treated by fulguration, 242—Epithelioma of chest treated by diathermy, 242—Polyglandular insufficiency, 242—Fistula following appendicitis six years previously, 242—Neoplasm of the brain, 242—Palpitation, 380—Endocrines and psychoneuroses, 514—Diagnosis and treatment of gall stones, 858

Society, West London Medico-Chirurgical: Treatment after abdominal operations, 899—Annual dinner, 1105—Gold medal awarded, 1105

Society, Zoological, of Scotland: Annual meeting, 993

Sodium or potassium salts, 1030

Sodium salicylate injections for varicose veins, 1030

Solomon, Harry C. (and Maida Herman Solomon): *Syphilis of the Innocent: A Study of the Social Effects of Syphilis on the Family and the Community*, rev., 473

Solomon, Isler: *La Radiothérapie Profonde*, rev., 557

Solomon's, Bethel: Intrinsic dysmenorrhoea, 725—Adenomyoma of the uterus, 765—Chorion epithelioma of the Fallopian tubes, 766

Somerset, W. R.: Occipito-posterior presentations, 211

South African Institute for Medical Research: *Studies in Experimental Silicosis and Pneumonoconioses* (A. Mavrogordato), 299

Southam, A. H.: Volvulus of the large intestine, 1050 (O)

Southampton and district medical men: annual dinner, 885

Southend doctors' cricket club, 838

Souttar, H. S.: The surgical clinics of Switzerland, 936

Spa treatment establishment at Llandrindod, 485

Spae judgement with one eye, 786. *See also* Eye

Spahlinger, M., appeal for to enable him to continue his experiments, 252

Spahlinger treatment of tuberculosis (parliamentary note), 393, 572, 606, 1071—Editorial on, 830, 938

Spain: "Maternity Convention" ratified, 449—Outbreak of trichinosis, 665

Spas, British: the need of scientific co-ordination, 487

Spas and health resorts of France, information re, 357

Spas, Italian, visit to, 665

Spastic paralysis. *See* Paralysis

SPARES, Dr.: Unsatisfactory appendicectomies, 67—Gastric and duodenal ulcers, 284

SPENCE, Dr.: Blood smear from a case of lead poisoning showing punctate basophilia, 287

SPENCER, Elfrida, obituary notice of, 614

SPENCER, Herbert: Adenoma of the vaginal fornix simulating carcinoma of the cervix, 151—Technique of Caesarean section, 286—Need for public education in the control of cancer, 509—Ten cases of ovariectomy in women over 70 years of age, 582 (O)—Intrinsic dysmenorrhoea, 723—X rays in inoperable cancer, 766—Congenital deformity of the posterior lip of the cervix, 767—Pelvic adenomyomata, 811—Catgut or silver as suture for vesico-vaginal fistula, 881—Sarcomatous ovarian dermoid cyst, 1054—Ruptured carcinoma of ovary, 1054—Effect on Fallopian tube of torsion of an ovarian tumour, 1054

SPENCER, W. G.: The anatomical delineations of Vesalius, 341—Treatment of cancer of the tongue, 418—A two-loop button suture, 969 (O)

SPENGLER, Carl, death of 663—A correction, 745

SPENGLER Lucius, death of, 745

Sphenoidal sinus supuration (Sir St. Clair Thomson), 924 (O)—Leading article on, 943

SPILLSBURY, Sir Bernard, knighthood conferred upon, 30—Cardio-vascular conditions in relation to anaesthesia, 240

Spine, cervical, injuries to (Geoffrey Jefferson), 632

SPINKS, A. F. G.: Triangular frontal hyperaemia in infants, 375

Spirochaetes and blackwater fever, 986

SPITZER, R. L.: *Framboesia tropica* (Parangi of Ceylon), rev., 860

Spleen, rupture of (L. R. Lempiere), 681

Splint for median paralysis (Walter Mercer), 371 (O)

SPRING, E. I.: *Duff House Papers*, vol. i, rev., 474

Sprue, blood picture in, 743

STACK, Major Henry Thompson, O.B.E. conferred upon, 30

Stalactites, 46

STANLEY, Hon. Sir Arthur: Need for public education in the control of cancer, 509

STANLEY, Dr.: Intracranial lesion for diagnosis, 330

STARK, A. Campbell: *An Index to General Practice*, rev., 1097

STARLING, Hubert J.: Diseased tonsils and heart disease, 1074

Stasis, intestinal. *See* Intestinal

State hospitals. *See* Hospitals

State relief (parliamentary note), 695

STEGEMANN, E. J., obituary notice of, 7078

STEEN, R. H.: Treatment of early mental cases, 658

STEEN, William Carmichael, obituary notice of, 131

STEFANI, Joseph: *Essai sur l'origine des cancers et tumeurs*, rev., 382

Stenosis of ileum. *See* Ileum

Sterility, review of books on, 901

Sterilization of the unfit (R. A. Gibbons), 754 (O)—Discussion, 760—Correspondence on, 835, 883

—Note on, 870—In New Zealand, 870

STERN, W. M. (and E. ROCHARD): *Thérapeutique Post-opératoire à l'usage des chirurgiens, praticiens, et infirmières*, rev., 68

STEVENS, Major F. W.: *The New Era Handbook of Physical Exercises*, rev., 475

STEVENS, Mr.: Squamous epithelioma of the vagina, 151

STEVENSON, A. C.: "Bayer 205," 149

STEVENSON, Sir Edmond S.: Caesarean section, 1093

STEVENSON, G. H.: Tendon transplantation for musculo-spiral paralysis, 472

STEVENSON, Lieut.-Col. John, obituary notice of, 1002

STEVENSON, W. C.: Deep x-ray therapy in gynaecology, 418—Treatment by radium emanations, 513

STEWART, George C.: Galen, 258

STEWART, John Kilpatrick, obituary notice of, 792

STEWART, S. H.: "Lung spitting" for pulmonary tuberculosis, 154, 414 (O)

STILES, Sir Harold, visits Boston to act temporarily for Professor Harvey Cushing, 827—Appreciation of John Chiese, 1000—Honorary Fellowship of the Royal College of Surgeons in Ireland conferred upon, 1064, 1107

STILL, George F.: Congenital hypertrophy of the pylorus, 579 (O)

STIVEN, H. E. S.: The nature of arterio-sclerosis, 788

STODDART, W. H. B.: Genius and insanity, 560

STOKES, Henry: Cause of death in intestinal obstruction, 513

Stomach, diaphragmatic hernia of the entire stomach (J. Grant Andrew), 184 (O)

Stomach, foreign bodies in, removed by operation (A. George Brand), 1018

Stomatitis, ulcerative, in children and its treatment (Donald Paterson), 104

STONES, R. Y.: The development of *Loa loa* in chrysops, 82

STONE, Mr.: Gastric and duodenal ulcers, 285

Stopes v. Sutherland and another, 445, 541

STOREY, Captain Thomas Copeland, obituary notice of, 1002

STOREY, W. L.: Some realms of gold untravelled yet by vaccine therapists, 154

STRACHAN, Gilbert: Chorion angioma, 766

STRANDBERG, J.: Venereal disease in Scandinavia, 1023

STRANGEWAYS, T. S. P.: Changes in living cells during growth and division, 479—Osteoarthritis and rheumatoid arthritis, 762

STRATFORD, Howard M.: Ragging in boys' schools, 261

STREET, Flight-Lieutenant Harold Wilbert, obituary notice of, 1002

STUART, G.: Meat poisoning in Jerusalem, 854

Sugar versus alcohol (leading article), 523—Correspondence on, 611

Sugar, blood, the control of, 478

Sugar in blood, estimation of, 777, 1115

Sugar in the blood, on the nature of (J. A. Hewitt), 593 (O), 994—(L. B. Winter and W. C. Smith) and (O), 1079

—book on, 155

—study of (leading article), 431

SULLY, P.: *Nelson's Income Tax Guide*, rev., 245

SULTAN, George: *Grundriss und Atlas der Speziellen Chirurgie*, rev., 815

SUMNER, Lieut.-Col. F. W.: Sudden death from anaphylactic shock, 465 (O)—Diphtheria carriers, 808 (O)

Superannuation allowances (Irish Free State), 784

Suprapubic operations, primary union in (Ralph Thompson), 376

Surgery, the advance of (Sir Montagu Cotterill), 1072

Surgery, review of books on, 561, 770

*Surgery of the War*, vols. i and ii, rev., 288, 332

*See also* History of the war

Surgical diagnosis (D. P. D. Wilkie), 380

Survey and Croydon Voluntary Hospitals Committee, report, 871

Sussex provident hospital scheme, 423. *See also* Hospital scheme

SUTHERLAND, G. A.: Cardiac problems in adolescent life, 496 (O)

SUTTIE, D. Campbell: Radiology in the diagnosis of pulmonary tuberculosis, 681

Suture, two-loop button (W. G. Spencer), 969 (O)

SWAN, R. H. J.: Surgical treatment of renal calculi, 65

Sweden authorizes the Telegraph Board to transmit gratuitously medical advice to ships at sea, 616—The laws relating to venereal disease (Richard J. Cyriac), 650—British otolaryngologists in, 694, 839

Sweepstakes for charitable purposes (Ireland), 170

Switzerland: Number of medical students in the universities, 839—The surgical clinics of (H. B. Souttar), 936—Statistics of goitre in school children, 1037

SWYNNERTON, C. F. M.: The entomological aspects of an outbreak of sleeping sickness near Mwanza, Tanganyika Territory, 384

Rydney. *See* New South Wales

SYM, William George: Medical physics in the curriculum, 662

SYME, David: Research prize, 1079

SYME, W. S.: Surgical diathermy in the treatment of malignant disease of the throat, 472

SYMES, J. Odery: Case of rat-bite fever, 1017 (O)

SYMONDS, Horatio Percy, obituary notice of, 172

Sympathetic, Jonnesco's operation for excision of the left cervico-thoracic ganglion of (A. K. Henry), 20

SYNGE, V. M.: Renal efficiency tests, 154—Primary cancer of the liver, 1019

Syphilimetry (Arthur Vernes), 652, 774—Leading article on, 774

Syphilis incontinuum in school children (H. Sheasby), 809

Syphilis of the lung (T. W. Wadsworth), 108

Syphilis and marriage (Amand Routh), 632

Syphilis, review of books on, 473

Syphilitic fibrosis of the lungs, diffuse, an extreme case of (F. Parkes Weber), 1049 (O)



- T.  
"T.B.," 343, 354, 402. See also Tuberculosis  
Tubes dorsalis, some clinical manifestations of  
(Gordon Holmes), 47 (O)  
Tachycardia, paroxysmal (Dr. Emanuel), 66—  
(Leonard Abrahamson), 153  
"Tarry cysts." See Cysts  
TAYLOR, Charles Joseph Gordon: Trauma and  
appendicitis, 17 (O)  
TAYLOR, Gordon: X-ray treatment of malignant  
disease, 153—Treatment of gastric and  
duodenal ulcer, 238—Treatment of cancer of  
the tongue, 417  
TAYLOR, Henry Osborn: *Greek Biology and  
Medicine*, rev., 535  
TAYLOR, Lieut.-Col. Herbert Stockley, obituary  
notice of, 458  
TAYLOR, Mark R.: A case of adder bite, 375  
TAYLOR, Col. Sir William: Hon. degree McGill  
University conferred upon, 637  
TAYLOR, W. W.: *Practical Physiological  
Chemistry*, 373  
T. (Thomas), 373  
ical, pathological, and  
of infection of (Sir  
Telephone mouthpieces and disease (parlia-  
mentary note), 572  
TELFER, S. V.: The administration of insulin  
inunction, 715 (O)  
Temperature, normal, the variations of  
(Henry H. Heward), 17  
TEMPLETON, William L.: The etiology of optic  
atrophy, 62—The treatment of general  
paralysis by malaria, 835 (O)  
Tendon transplantation for musculo-spiral  
paralysis (G. H. Stevenson), 472  
Tennis elbow, 68  
Test meals. See Meal  
Testicular grafts, 130  
"Tetanism" in meningitis (H. Baty Shaw and  
Cyril Dec Shapland), 185 (O)  
TETANUS (S. T. Truhal), 32  
THEARON, M. D.: Butyr, 492  
Theatres, ventilation of, 655  
Therapeutics, review of books on, 1655  
THOMAS, A. O'Dwyer: Adeno-carcinoma of the  
appendix, 680  
THOMAS, J. W. Tudor: Endothelioma of the  
orbit, 192—Unid tears, 378—Embolism of the  
central artery of the retina, 633  
THOMPSON, C. J. S.: The Jenner relics, 206  
THOMPSON, R. M.: presentation to, 838  
THOMPSON, Ralph: Primary union in suprapubic  
operations on the bladder and prostate, 376  
THOMPSON, W. A.: "Acute abdomen" in  
the child, 65—Two cases of acute intussusception  
in children: resection; recovery, 971  
THOMPSON, W. H.: Surgery of abdominal tuber-  
culous glands, 285  
THOMPSON, A. P.: Blue sclerotics and multiple  
fractures, 69—Obscure case of prolonged  
pregnancy, 192—Prevention of heart disease, 1033  
THOMPSON, Arthur: Appreciation of James  
Ritchie, 261  
THOMPSON, Charles S.: Small-pox and vaccina-  
tion, 43—Public education in the control of  
cancer, 612  
THOMPSON, David George, obituary notice of,  
83  
THOMPSON, F. G.: Large round-celled sarcoma of  
the kidney, 287—Indigestion, 722  
THOMPSON, J. Gordon: Spirchaetes and black-  
water fever, 396  
THOMPSON, Sir Clair: Psychotherapeutics, 327—  
Acute pan sinusitis, a severe case, 924 (O)—  
Optic neuritis of sphenoidal sinus origin:  
operation; cure, 925 (O)  
THOMPSON, Torrance: Insomnia, 329  
THOMPSON, William, obituary notice of, 614  
THOMPSON, W. W. D.: presentation to, 609  
THOMPSON-WALKER, Sir John: Some problems  
of prostatectomy, 133 (O)—Surgery of the  
prostate, 364  
THORNTON, Sir William, obituary notice of, 539,  
576  
THORNE, R. Thorne: Infection during incuba-  
tion, 355—General practitioner and consultant,  
697  
THORP, Eustace: Erysipelas of the mouth, 105—  
Perforated Sepsis and its Prophylaxis, rev.,  
70  
THORPE, Sir E.: *A Dictionary of Applied  
Chemistry*, rev., 156  
THORPE, J. F.: Appointed a member of the  
Safety in Mines Research Board, 745  
Three pioneers, 823  
Throat diseases, review of book on, 563  
Thrombo-arteritis of the right middle cerebral  
artery of uncertain causation, fatal case of  
(F. F. Parkes Weber), 324 (O)  
THURSFIELD, Hugh: Thymic asthma, a protest,  
662—Some considerations on disorders of  
growth, 841 (O)  
Thymic asthma. See Asthma  
Thymol and beta-naphthol in the treatment of  
ankylostomiasis (Harry G. Philp), 371 (O)  
Thyroid gland, influence of (F. Holt Diggle), 1093  
Thyroid gland, influence of on the response to  
adrenaline (D. Murray Lyon), 966 (O)  
Thyroid gland, influence of intestinal bacteria  
upon (D. J. Harris), 191, 553 (O)—Correspond-  
ence on, 659, 834, 856  
Tibetan anatomical chart, 537
- TIDY, Henry Letheby: *A Synopsis of Medicine*.  
rev., 110—Blood picture in spruce, 743—  
Glandular fever and infective mononucleosis,  
765  
TIDNEY, G.: Deep x-ray therapy in gynaeco-  
logy, 418  
TILLEY, Herbert: Diseased tonsils and heart  
disease, 1038—Ether versus chloroform, 1114  
TIMBAL, Louis: *Les Diarrhées Chroniques*.  
*Etude Clinique, Coprologique et Thérapeutique*.  
rev., 635  
Tobacco, craving for, 492  
Tobacco, depression caused by, 918  
TOP, Hunter Finlay, obituary notice of, 216, 306  
Tomatoes, 918  
Tongue, black, 839  
Tonsil, the lingual (J. Arnold Jones), 1094  
Tonsil: What is a "diseased" tonsil? 995, 1038,  
1075  
Tonsils, diseased, and heart disease, 1038, 1074  
Tonsillar disease, infective, discussion on,  
559  
Tooth structure and dental disease, 383  
Tooth, upper canine, in antrum of Highmore  
(John H. Pepp), 697  
Torquay as a holiday health resort, 607  
TORRANCE, Herbert, O.B.E. conferred upon, 30,  
174—A correction, 174  
TOTTENHAM, R. E.: Modification of the Rotunda,  
siphon donche, 419
- T. (Joseph)  
T. (H. W. Wild), 467—(B. P. Sabawala), 630—  
Correspondence on, 82, 332  
Traumatism, chronic, of soft tissues, 1042  
TRAVERS, E. A. O. (and William Fletcher):  
Quinine idiosyncrasy and cinchonine, 629 (O)  
TREDGOLD, Lord, gift of a mansion in Wales to  
be used as a tuberculous hospital, 132  
TREDGOLD, A. F.: *Mental Deficiency (Idiotia)*,  
rev., 291  
Trepagination of the living human skull in pre-  
historic times (T. Wilson Parry), 457 (O)  
TRESILIAN, Fred: Albuminuric retinitis as a  
prognostic sign, 148  
TREVIN, Hector: Commemoration fund to, 740  
TREVES, Sir Frederick: *The Elephant Man and  
other Reminiscences*, rev., 335  
Trichinosis outbreak in Spain, 665  
TRIMBLE, Dr.: Mentally defective children, 512  
Tropical climate, effect of on efficiency (Squadron  
Leader T. F. Rippon), 642  
Tropical diseases, review of books on, 859, 931  
Tropical Medicine, Calcutta School of, note on,  
734  
Tropical Medicine, Far Eastern Association of,  
665  
Tropical Medicine, London School of, pass' lists,  
664  
Tropics the white man in the, 260  
TROOP, Sir Edward, appointed Chairman of the  
Safety in Mines Research Board, 745  
TROUBNER, Henry, obituary notice of, 1078  
TROUPE, C. (and others): *Pneumococcus et  
affectiones pneumococcicae*, rev., 683  
Trypanocidal remedies, the new, discussion on,  
149—"Bayer 205," 149—Trypanamide, 149—  
Atoxyl and other treatments, 150—Note on,  
165  
Trypanosomiasis, treatment of (Claude H.  
Marshall and S. M. Vassallo), 231 (O)  
Trypanamide (C. C. Chesterman), 149  
Trypanamide, intrathecal injections of, 883  
Tuberculin in the diagnosis and treatment of  
tuberculosis (Sir Robert Philp), 493 (O)  
Tuberculin test, antaneous (Pirquet), with  
reference to its failure in advanced tuber-  
culous disease in childhood (Charles McNeil),  
673 (O)  
Tuberculin, therapeutic use of (W. Camac  
Wilkinson), 674 (O)  
Tuberculosis: "T. B.," 343, 354, 402  
Tuberculosis of the abdominal lymphatic glands  
(G. C. E. Simpson), 286  
Tuberculosis in co. Armagh, 573  
Tuberculosis, biometrical studies in (Raymond  
Pearl), 1104  
Tuberculosis in Canadian cattle (parliamentary  
note), 678  
Tuberculosis in cattle (parliamentary note), 1070  
Tuberculosis of the cervical glands, treatment  
of, 211, 304  
Tuberculosis in children (parliamentary note),  
909  
Tuberculosis disability, claims for (parlia-  
mentary note), 1035  
Tuberculosis: complete and permanent recovery,  
744  
Tuberculosis, conjugal (Paul Roussel), 603  
Tuberculosis, decline of, 440  
Tuberculosis, Government grants for (parlia-  
mentary note), 922  
Tuberculosis, incipient, treatment of (William  
Gordon), 555 (O)  
Tuberculosis, institutions for persons suffering  
from: Minister of Health's list, 838  
Tuberculosis institutions, standard method of  
book-keeping for, 946  
Tuberculosis, Italian place of residence for a  
case of, 794  
Tuberculosis, miners', 299  
Tuberculosis Prevention, National Association  
for: Annual conference, 491, 1064  
Tuberculosis, pulmonary, the importance of  
early diagnosis in, 782
- Tuberculosis, pulmonary, "lung splinting" for  
(S. H. Stewart), 154, 414 (O)  
Tuberculosis, pulmonary, radiology in the dia-  
gnosis of (Leonard Findlay), 681  
Tuberculosis, pulmonary, surgical treatment of  
(H. Morrison Davies), 138 (O)  
Tuberculosis, pulmonary, value of symptoms in  
the early diagnosis of (D. G. Macleod Munro),  
851 (O)  
Tuberculosis, review of books on, 244, 291, 562,  
1020, 1055, 1097  
Tuberculosis scheme for co. Monaghan, 80  
Tuberculosis settlements, administrative (parlia-  
mentary note), 823  
Tuberculosis in Sheffield (parliamentary note),  
695  
Tuberculosis, Spahlinger treatment of (parlia-  
mentary note), 393, 572, 606, 1071—Editorial on,  
830, 938  
Tuberculosis, specific treatment of, 1065. See  
also Tuberculosis, vaccine treatment of  
Tuberculosis, surgical, hospital for at Ascot,  
917  
Tuberculosis treatment (parliamentary note),  
437, 481—Residential accommodation, 484  
Tuberculosis treatment, Dublin Corporation and,  
35  
Tuberculosis treatment, the industrial colony in,  
826  
Tuberculosis treatment in Perthshire, 80  
Tuberculosis treatment, gross expenditure of  
local authorities (parliamentary note), 878  
Tuberculosis treatment in Scotland, grants paid  
to Scottish local authorities (parliamentary  
note), 823, 1035  
Tuberculosis Trust, Royal Victoria Hospital,  
report 440  
Tuberculosis, tuberculin in the diagnosis and  
treatment of (Sir Robert Philp), 493 (O)  
Tuberculosis, vaccine treatment of by a new  
method (leading article), 1059—Abstract of  
report (Georges Dreyer), 1065—Note on, 1104  
Tuberculous infection in a house, 1117  
Tuberculous patients, institutions for (parlia-  
mentary note), 393  
TUDOR, Dorothea: A sea-water dispensary in  
London, 917  
Tumor, cerebral (Professor Boxwell), 811  
Tumor, intracranial (Rosa Ford), 681  
Tumor, "mixed," of the uterus (Leith Murray  
and Meredith Litterer), 469  
Tumours, etiology of (John Patrick and J. A. G.  
Burton), 765  
Tumours on the vagina, discussion on, 151  
Turin, International Exhibition of Photography,  
Optics, and Cinematography at, 212  
TURNBULL, J. C.: Hospital policy, 485  
TURNER, Dawson: The dosage of radium, 100 (O)—  
Awarded the Macdonell-Brisbane medal of  
the Royal Scottish Society of Arts, 132—The  
use of radium in the treatment of disease, 464  
(O)—Medical physics in the curriculum, 562  
TURNER, E. B.: The dangerous drugs regula-  
tions, 304  
TURNER, H.: An unusual case of typhoid spine  
with symptoms of spinal cord affection, 142 (O)  
Turpentine or lead poisoning a cause of punctate  
basophilia, 170, 210  
TURRELL, W. J.: Treatment by diathermy,  
143 (O)—Appreciation of Horatio Percy  
Symonds, 172—Ionic medication, 536  
TWEED, P. Hastings, honorary Fellowship of  
the Royal Academy of Medicine in Ireland con-  
ferred upon, 784  
TWYING, Dr.: Diseased mastoids, 1095  
Typhoid fever. See Fever, enteric  
Typhoid spine with symptoms of spinal cord  
affection, an unusual case of (H. Turner),  
142 (O)  
TYSO, W. J.: Notes from practice, 1081 (O)
- U.  
Ulcer, duodenal, fractional test meal in (E. F.  
Guy), 191  
Ulcer, gastric, fractional test meal in (E. F.  
Guy), 191  
Ulcer, gastric and duodenal (Sir William I.  
de Courcy Wheeler), 284—Discussion, 284  
Ulcer, gastric and duodenal, some problems of  
(Sir Berkeley Moynihan), 221 (O)—Discussion  
on, 238—Leading article, 922  
Ulcer, peptic, toxic symptoms following the  
alkaline treatment of, 1074  
Ulcer, precancerous, gastrectomy for (Sir  
William I. de Courcy Wheeler), 812  
Ulcer, rodent. See Rodent  
Ulcer of the body of the stomach, chronic  
(Seymour Barling), 553  
Ulcerative colitis. See Colitis  
Ulcerative stomatitis. See Stomatitis  
Ulster, medical appointments in, 127  
Umbilical infection, portal pyaemia second-  
ary to (G. Bruce White), 373 (O)  
Unemployment and sickness (parliamentary  
note), 393, 436, 482
- UNITED STATES OF AMERICA:  
American College of Surgeons: Cruise to South  
America to promote professional and social  
relations, 599  
American medical diplomas in India, 610  
Ancient Egyptian medical papyrus, 645



UNITED STATES OF AMERICA (continued):  
And the Opium Convention, 945  
Army Medical Museum, Washington, presented with Dr. James Moores Ball's collection of ophthalmic specimens, 1107  
*Bulletin of the Buffalo General Hospital*, 522  
Cancer, prize offered for the best work on, 370  
Cancer research in, 950  
Cancer week, 45  
Death rates of mothers from childbirth and puerperal causes, 237  
Diabetes mellitus, death rate from, 186  
Filled Milk Bill adopted by the Senate, 613  
Health Insurance problems in, 986  
Hospital provision for disabled war veterans, report, 685, 692  
Medical Fellowships in, 1106  
Medical mortality in, 358  
Prohibition: statistics in New York, 557  
Psychopathic hospital at Boston, 1031  
United Hospital Fund of New York, 839  
Venereal disease in, 344

Units of a whole (leading article), 982  
Universities, Indian (parliamentary note), 695  
Universities of Oxford and Cambridge Bill, 1110  
Universities of Switzerland, number of students in, 839  
University of Aberdeen: Academic dress in Scotland, 735—Cancer research in, 949—Degrees and pass lists, 615—Gifford lectures 1921-22 to be published in volume form, 808—Graduation ceremonial, 615—Prize winners, 615—*Illustrated Universitatum Abdonensium*, 861  
University of Amsterdam: Triennial prize for the best work in physical or prehistoric anthropology, 939  
University of Belfast, Queen's: Appointments, 1078—Appreciation of services, 1078—Meeting of senate, 1078—Honorary degrees, 1079  
University of Birmingham: Prize medals awarded, 401—Post-graduate lectures, 531  
University of Bristol: Appointments, 575—Degrees and pass lists, 356, 1119—Parliamentary note on, 606—Post-graduate work, 440

UNIVERSITY OF CAMBRIDGE:  
Appointments, 306, 401, 488, 702, 1078  
Chair of animal pathology, 356, 733  
Degrees and pass lists, 173, 218, 306, 356, 744, 732, 827, 837, 997, 1041, 1078, 1118  
Fearnside's scholarship, 937  
Fellows elected, 488  
Final examinations, 702  
Honorary degrees, 827, 1041  
Interchange of teachers, 218  
Psychological medicine, course of, 837  
Research Institute for Pathology of Animal Diseases, 306  
St. Bartholomew's Hospital octocentenary, 792

University of Dublin: Degrees and pass lists, 45, 356, 488, 664, 1119—Letter from graduates of, 1037. *See also* College, Trinity  
University of Durham: Bacteriological department at the College of Medicine, Newcastle, 878—New buildings opened, 951—D. Ch. degree, regulations for, 664—Degrees and pass lists, 575, 664, 1079, 1119—Honorary degrees, 575, 1079  
University of Edinburgh: Appointments, 173—Chair of bacteriology, 1112—Degrees and pass lists, 575—Examiners, 1173—Honorary degree of doctor, 831—Honorary degrees, 575—Miner rescue instruction, 349—Rectorial address by Mr. Lloyd George, 440—War memorial, 395, 397—West Riding Association, 307—Yorkshire Association of, 307—Zoological department, 1112  
University of Glasgow: Degrees and pass lists, 664, 745, 1119—Graduation ceremony, 745, 1119  
Honorary degrees, 793, 885—Students' infirmaries' day, 209  
University of Iowa: Accepts the medical library of Sir Norman Walker, 578  
University of Ireland, the National: Death of the Registrar, 539  
University of Leeds: Appointments, 1119—Public health and education, 992—Visit of students to West Riding County Hall, Wakefield, 992  
University of Liverpool: Degrees and pass lists, 45, 131, 615

UNIVERSITY OF LONDON:  
Appointments, 218, 306, 444, 488, 615, 663, 917, 998, 1118  
Capping ceremony, 837  
Degrees and pass lists, 218, 745, 837, 998  
Diploma in psychological medicine, 998  
Dixon Fund, 488  
Elections, 539, 664, 837  
Examiners, 997  
Graduation dinner, 837  
Graham Legacy Committee, 401  
Lectures, 82, 173, 957  
London School of Tropical Medicine, 654  
Matriculation results, 401  
Meeting of Senate, 218, 306, 444, 663, 997, 1118  
New buildings, 653, 910  
Physiological laboratory, 306  
Presentation day, 837  
Recognition of teachers, 82, 306  
Regulations for internal students, amendment of, 483, 653, 933  
Resignations, 3, 6  
Service at Westminster Abbey, 837  
University medal, 82  
University studentship, 336

University, McGill: Change in the length of session, 484—Honorary degrees, 697—Industrial medicine, 697  
University of Manchester, Victoria: Annual meeting, 998—Appointments, 173, 575, 884, 1119—Chancellor, 884—Death of Sir William Thorburn, 575—Degrees and pass lists, 575, 884—Delepine Research Fellowship, 998—Dickinson Research Travelling Scholarship, 575—Diploma in bacteriology, 998—Resignations, 792, 1119  
University of Melbourne: University superannuation scheme, 255—Second year examinations in anatomy and physiology, 255—Increased university fees, 255—Changes in the medical school, 255—Stewart lectures, 255—Return of the Professor of Physiology, 831—Number of medical students, 831—David Syme Research Prize for 1923, 1079

UNIVERSITY OF OXFORD:  
Appointments, 173, 401  
Commemoration, 997  
Degree days, 218, 836  
Degrees and pass lists, 218, 355, 575, 836, 1041, 1118  
Honorary degrees, 997  
Radcliffe Prize, 575  
Radcliffe Travelling Fellowship, 575  
Representatives at Conference in London, 264  
Rolleston Memorial Prize, 836  
Theses approved, 306

University of Paris: Honorary degrees, 401  
University of St. Andrews: Degrees and pass lists, 45, 173  
University of Sheffield: Appointments, 488, 884  
University of South Australia: Note on, 785  
University of Sydney: Rhodes scholar for 1923, 697—Number of students, 697—Diploma of psychiatry, 1073  
University of Toronto: Appointments, 484  
Unqualified medical practitioners in Bengal, 39  
Upper limb. *See* Arm  
Urea, blood, 256  
Urea, precipitation of, from urine (E. A. Werner), 858  
Urea, review of book on, 1020  
Ureteral catheterization and pyelography outfit, 1098  
Urethroscopy, air embolism occurring in the course of (R. Ogier Ward), 377  
Urethroscopy, review of book on, 683  
Urinary incontinence in parous women, treatment of (B. P. Watson), 766  
Urine, precipitation of urea from (E. A. Werner), 858  
Urine, suppression of, after labour (Ambrose W. Owen), 630  
Urological diagnosis (M. Fitzmaurice Kelly), 764  
Urticaria (G. H. Lancashire), 632  
Uterus, acute puerperal inversion of (C. S. Lane Roberts), 557 (O)—(Robert R. Foote), 1092  
Uterus, inversion of (Mrs. White-Cooper and Griffith), 286  
Uterus, inversion of treated by hysterectomy (J. J. W. Evans), 854  
Uterus, chronic inversion of, emphasizing the value of Aveling's repositors (Miles H. Phillips), 470  
Uterus, prolapse of (Mr. Alexander and Victor Don), 681  
Uterus, retroversion of, operations on the round ligaments for (Haig Ferguson), 631  
Uterus, spontaneous rupture of (C. M. Rolston), 855  
Uterus, subinvolution of (Robert Sanderson), 103  
Utopia, medical, life and problems in (J. Walter Carr), 869

## V.

Vaccination of army recruits, 393—In Germany, 393, 483—Deaths from, 393—Illness from, 780—At St. Lucia, 953—In Leicester, 1035  
Vaccination, parliamentary notes on, 393, 483, 529, 780, 877, 953, 991, 1035  
Vaccination and smallpox, 43, 351, 398, 450, 877, 991—Statistics, 877  
Vaccination arresting and curing a case of smallpox, 46  
Vaccination. *See also* Small-pox  
Vaccinators, public, inspection of (parliamentary note), 529  
Vaccine, autogenous, in puerperal fever, 1042  
Vaccine, *Bacillus coli*, intravenous treatment of rheumatoid arthritis by (Rowland J. Perkins and G. Bruce White), 411 (O)  
Vaccine treatment aided by intravenous injections of pepsone (H. Warren Crowe), 1046 (O)  
Vaccine treatment of tuberculosis. *See* Tuberculosis  
Vaccines, symptoms attributable to, 542  
VAILLANT, Charles: Promoted to the rank of Commander of the Legion of Honour, 174—Reception to, 356—Receives the gold medal of the Carnegie Foundation, 356  
VALLOV, Harold: *Tuberculosis in Insured Persons Accepted for Treatment by the City of Bradford Health Committee*, 782  
VAN DER WALLE: The excretion of vitamins, 167

Van Riebeeck, in the days of (O. M. Gericke), 1018  
Varicose veins, salicylate injections for, 1083  
VARRIER-JONES, P. C.: The industrial colony in the treatment of tuberculosis, 826  
VARSITY Moonshine, 578  
Vaso-motor system, review of books on, 634  
VASSALLO, S. M. (and Claude H. MARSHALL): The treatment of trypanosomiasis, 231 (O)  
VAUGHAN, Henry F. (and others): *Epidemiology and Public Health*, rev., 726  
VAUGHAN, Kathleen: Treatment of non-malignant affections of the colon, 259  
VAUGHAN, Victor C. (and others): *Epidemiology and Public Health*, rev., 726  
Vehicles, taxation and regulation of: meeting of Departmental Committee, 265  
Veins, varicose. *See* Varicose  
VEITCH, John: Autogenous vaccine in puerperal fever, 1042  
VELLACOTT, H. F. (and Mabel L. RAMSAY): Hydatid cysts of liver associated with gall stones and empyema of gall bladder and pleura: recovery, 184 (O)  
Venereal clinics in London, work of, 655, 704  
Venereal disease in the British Army (parliamentary note), 741  
Venereal disease, child welfare and mortality (parliamentary note), 605  
Venereal disease, control of (Col. L. W. Harrison), 328  
Venereal disease, National Council for Combating, annual report, 307  
Venereal disease in New Zealand, 250  
Venereal disease publicity, 704  
Venereal disease, radical prevention of, 83  
Venereal disease: Report of Lord Trevellyn's Committee, 976—Leading article on, 1024—Correspondence on, 1039, 1076—Parliamentary note, 1071, 1109  
Venereal disease in Scandinavia, study of, 1022  
Venereal disease statistics (parliamentary note), 606  
Venereal disease in Sweden, the laws relating to (Richard J. Cyriax), 650  
Venereal disease, treatment of (T. P. C. Kirkpatrick), 633  
Venereal disease in the United States, 344  
Venesection in a case of aphasia (R. Galway Murray), 238  
Venous pulsations and venous tracings in general: with special reference to the "V" wave of the polygraphic tracing (Harrington Sainsbury), 626 (O)—Correspondence on, 787  
VERNES, Arthur: Syphilimetry, 652, 774  
VENN, John, of Caius, obituary notice of, 641  
Ventilation of London theatres, 655  
VERALL, P. Jenner: Minor traumatic disabilities of the upper limb, 97 (O)  
VESALIUS, the anatomical delineations of, 341  
Vesico-vaginal fistula. *See* Fistula  
Veterinary Encyclopaedia, 1057  
Veterinary science during the eighteenth century (leading article), 732  
Veterinary science and public health (Walter Elliot), 209  
VETTERS, G. M., appointed Superintendent of the Zoological Society's Gardens, 174  
VEX, D. C. L.: A case of hyperpiesia, 672 (O)  
Vibrating sensation. *See* Sensation  
VICARS, Frederic: The rights of a registered medical practitioner, 575

VICTORIA:  
Australasian Congress of the British Medical Association, the first, 831  
Changes in the medical school, 255  
Increased university fees, 255  
Melbourne University: Superannuation scheme, 255—Return of the Professor of Physiology, 831—Number of students, 831  
Second-year examinations in anatomy and physiology, 255  
Stewart lectures, 255  
War memorial of the Victorian Branch of the British Medical Association, 831

Vienna: Gift to the Faculty of Medicine from Mrs. Guggenheim, 220—Report on rickets, 933, 987—Post-graduate courses in, 998  
VINCENT, Professor, elected a member of the Académie des Sciences, 307  
VINCENT, Swale: Present position of organotherapy, 105  
VINES, Howard: Present position of organotherapy, 105  
VINES, H. W. C., appointed a Foulerton Research student, 252  
Virginibus puerisque, 122  
Viro, vitamin content of, 13, 131, 171, 212  
Viruses, ultraviolet, an epidemiological view of (Sir William Hamer), 869  
Visceral disease, review of book on, 109  
Vision and evolution (G. Eliot Smith), 256, 293  
Vision, monocular. *See* Eye, one  
Vision, standards of for scholars and teachers in Council schools (N. Bishop Harman), 53 (O)—Correspondence on, 354  
Vision, the theory of (F. W. Edridge-Green), 602  
Vital capacity (Cripps, Greenwood, and Newbold), 1053  
Vital statistics of England and Wales, 1922, 173—In 1921, 299, 1036. *See also* Registrar-General's report  
Vital statistics of Holland in 1920, 432  
Vital statistics of Northern Ireland, 1072  
Vital statistics of Prussia before and after the war, 165



Vitamin content of certain proprietary preparations. Metocren, Maltoline, Roboleine, Virol, Vitmar, Mellin's Food (Katharine H. Coward and A. J. Clark), 13 (O)—Correspondence on, 131, 171, 212

Vitaminic substances—subtleties (Leonard

429 (H. M. Evans and

E. S. Bishop), 74

Vitamins, review of books on, 861

Vitmar, vitamin content of, 13

Vivisection inspectorate (parliamentary note), 1071

Vivisection, opposition to in Scotland, 653.

See also Animals, experiments on

Volvulus of the large intestine (A. H. Southam), 165 (O)

Vomiting after deep x-ray therapy, 699

von Jaksch's disease (H. C. Drury), 893

Voyage d'Etudes Médicales, 1119

## W.

WADE, Henry: Pedicle forceps for nephrectomy, 685

WADSWORTH, T. W.: Syphilis of the lung, 108

Wages of research. See Research

WALDO, F. J.: Coroners' inquests, anaesthetic deaths, 721

## WALES:

Welsh National Memorial Association, 1110

Welsh National School of Medicine, 301, 607

WALKER, C. E.: *Theories and Problems of Cancer*, rev., 1096

WALKER, Sir Norman: Knighthood conferred upon, 30—Congratulations to, 80—The detective spirit in the diagnosis of skin diseases, 513—His medical library offered to and accepted by the State University of Iowa College of Medicine, Iowa City, 578

WALLACE, Sir David: Exophthalmic goitre, 512—Epithelioma of the tongue, 512—Appreciation of John Chalmers, 1001

WALLACE, L.: Non-malignant affections of the colon (intestinal stasis), 82

WALLER, Augustus, memorial to, 984

WALLIS, O. E.: Sterilization of the unit, 769

WALLIS, Mackenzie: Laboratory tests in diseases of the liver and pancreas, 468

WALLIS, E. S.: Tangled mass of ascarides, 593—Periosteal sarcoma of the tibia, 593

WALTON, R.: *Pituitary Gland*, 700

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

W.

Weather reports by telephone, 794

WEATHERHEAD, E.: "T.B.", 354

WENB, J. Cr.: "T.B.", 354

Vomiting

WENB, F.

of the right middle cerebral artery of uncertain causation, 324 (O)—*Dr. Todd's Bill*, rev., 770—

An extreme case of diffuse syphilitic fibrosis of the lungs, 1049 (O)—Hernia roster with localized muscular paralysis, 1075

ment of malign

ILLIANT: Some

The Week:

Academic dress in Scotland, 735

Air Congress, International (1923), 168

Alcohol in adolescence, 481

Almoner's work, 987

American Psychopathic Hospital, 1031

Anatomical delineations of Vesalius, 341

Animal pathology, an institute of, 138—Cambridge chair of, 733

Annual Meeting, 1923: The Pathological Museum, 525

Antirabic institute in Baghdad, 824

Antivaccination myth, 481

Artificial legs, the supply of, 525

Association, British Medical, the House of, 1061

Association of Public Vaccinators, 825

Atmospheric conditions and industrial efficiency, 36—Cotton weaving, 389

Atmospheric pollution and fog prevention, 871

Australasian Medical Congress (1923), 340

Baby clinic statistics, 645

Benvenuto Cellini, 433

Blackwater fever, etiology of, 1033

Blood sugar, the control of, 478

Brain workers, proposed international association of, 690

British Congress of Obstetrics and Gynaecology, 435, 646, 736

British Empire Cancer Campaign, 1103

British Orthopaedic Association in Holland, 1028

British oto-laryngologists in Sweden and Holland, 694

Brown, Sir Thomas, early editions of, 908

Calcutta School of Tropical Medicine and Hygiene, 734

Cambridge chair of animal pathology, 733

Cardio-vascular system, the history of, 1062

Cassel Hospital for Functional Nervous Disorders, 736

Changes in living cells during growth and division, 473

Civil profession and the medical services, 202

Civilian in future wars, the fate of, 480

Clubbed fingers in subacute infective endocarditis, 644

Congress of the history of science, 734

Country life and country doctors, 776

Creation, progress of, 570

Cruz, Oswaldo, 391

Dalby memorial prize, 693

Dental practice in Egypt, 201

Dental Register, 435

Distemper, etiology of, 249

Distemper Research Committee, 391

Drugs, dangerous, the traffic in, 602

Duchenne of Boulogne, 35

Edinburgh Congress, 736

Egyptian medical papyrus, an ancient, 645

Elliot, Dr. Walter, M.P., 124

Energetics of muscle, 342

Environment and intelligence, 643

Epidemiological view of ultraviolet viruses, 869

Erythredema, or the "pink disease," 123, 201

Exchange professors, 873

Fellowship of Medicine, 693

Foreign health visitors, visit of, 434

Friends' Relief Committee, work of the, 826

Gastro-enterostomy, acute symptoms after, 777

General Medical Council, 984

General paralysis treated by malaria, 908

Gestation, the legal period of, 691

Gray, Sir Henry, 736

Group clinic, 868

Hafnium, 252

Harveian Society's annual dinner, 1063

Harvey as an art critic, 643

Health insurance problems in America, 986

Herbals, old English, 432

Hiccup, 75

Home ambulance service, 389

Hookworm disease in India, 75

Horsley memorial lecture, 122

Hospital almoners, 603

Hospital control in the United States, 692

Hospital "maintenance" system, 569

Hospital policy of the Association, 827

Hospitals, voluntary, co-operation among, 1027

Hygienic methods of industrial painting, 167

Hyperplasia of epithelial and connective tissues of the breast, 1062

Income tax, effective rates of, 778

Indian services, 199

Industrial colony in the treatment of tuberculosis, 826

## The Week (continued):

Infectious disease in schools, 251

Influenza and the lay press, 249

Influenza, virus of, 200

Insulin, 200, 341

Insulin for sale, 690, 908—Removal of special manufacture and

International Society of Surgery, 906

Irish Medical Schools' and Graduates' Association, 527

the death of, 33, 415, 249—Appre-

Lancet, the centenary of, 34, 527

League of Nations Health Committee, 945

Leprosy, recent advances in the treatment of, 524

Lister Institute, 870

Local Government areas, 300

"Maladies par carence," 123

Manchester gift to the Royal Medical Benevolent Fund, 908

Medal of the West London Medico-Chirurgical Society, 1105

Medical fellowships in the United States, 1106

Medical Hydrology, International Society of, 482—A special course of, 735, 1029

Medical museums, 343

Medical officer of health, Cape Town, 778

Medical officers of health, annual reports of, 123, 525

Medical radiology, the future of, 906

Medical Register, 435

Medical Research Council, 1031

Medical Society of London, 528—Third jubilee of, 826

Medical Utopia, life and problems in a, 869

Medical Women's Federation, 870

Mental After-care Association, 526

Mental disorder, early treatment of, 343, 480

Metabolism, inborn errors of, 345

Microspectroscope for detection of blood, 124

Milk and Cream Regulations, 75

Milk, home production of, 642

Milk prosecutions, 985

Milk under special designations, 433, 1030

Miners' nystagmus, a new theory of, 570

Miners' nystagmus, a predisposition to, 35

Miners' phthisis, 299

Mott, Sir Frederick, 526

Murders, 169

National Association for the Prevention of Tuberculosis, 1054

National Physical Laboratory, 1106

New element: hafnium, 252

Nursing in France, 1064

Obstetrics and gynaecology, teaching of, 692

Octocentenary celebrations at St. Bartholomew's Hospital, 36. See also St. Bartholomew's Hospital

Ophthalmia neonatorum prevention in Denmark, 1061

Ophthalmia neonatorum, treatment of in London, 390

Ophthalmic hospital at Jerusalem, 693

Ophthalmological Society's Congress, 252, 693, 776

Orthopaedic Hospital, 1106

Oxford Ophthalmological Congress, 344, 1064

Oxford Osler memorial, 603

Pasteur—the artist, 169

Pasteur centenary, 250, 300, 340, 481, 946—French celebrations, 946

Pasteur, the works of, 34

Pearson, William, death of, 525

Persian (North) Forces memorial medal, 435

Phrenology, the old and new, 199

Physical training in elementary schools, 76

Physically defective children, 251

Physiological Congress, International, 168

Physiological effect of high altitudes, 240, 1028

Plumbism and lead paint, 604

Post-graduate education in London, 201

Professional slang, 343

"Prohibition" of evolution, 526

Psychological conditions found in criminals, 342

Quaker relief in stricken Europe, 300

Racial aspects of alcoholism, 644

Radiology in practice, 571

Registrar-General's statistical review, 527

Research Defence Society, 1105

Retreat, York, 74, 1029

Rhodesian tests of Bayer "205," 75

Rhythm in living organisms, 479

Rickettsia bodies, the nature of, 946

Rivers Memorial Fund, 873

Rockefeller buildings at University College, London, 691

Royal Academy, 824

Royal Medical Benevolent Fund, 736



**The Week (continued):**

Science in the army, 388  
 Scottish Medical Society, 75  
 Service of experiment to practical medicine 1061  
 Smallpox prevalence, 434, 643, 872  
 Smallpox and vaccination in the Philippines, 167  
 Society of Radiographers, 390  
 Spirochaetes and blackwater fever, 986  
 Sterilization of mental defectives, 870  
 Sugar in blood, estimation of, 777  
 Surrey and Croydon Voluntary Hospitals Committee, 871  
 Three pioneers, 823  
 Tooth structure and dental disease, 388  
 Torquay as a holiday health resort, 907  
 Tropical climate, effect of on efficiency, 642  
 Trypanocides, the mode of action of, 165  
 Tuberculosis, biometrical studies in, 1105  
 Tuberculosis, conjugal, 603  
 United States and the Opium Convention, 945  
 Vaccine treatment of tuberculosis by a new method, 1104  
 Venereal disease in New Zealand, 250—In the United States, 344  
 Venn, John, of Caius, 641  
 Vibrating sensation, 168  
 Virginitis puerisque, 122  
 Vision and evolution, 298  
 Vision, the theory of, 602  
 Vital capacity, 1053  
 Vital statistics of England and Wales in 1921, 299  
 Vital statistics of Holland in 1920, 432  
 Vital statistics of Prussia before and after the war, 166  
 Vitamins, excretion of, 167  
 Vitamins and reproduction, 74  
 Voluntary hospitals. *See* Hospitals  
 Wages of research, 342  
 Waller memorial, 984  
 Water poisoning, 986  
 Wren, Sir Christopher, bicentenary of, 344, 390  
 X-ray department, the housing of an, 73  
 X-ray measurement and protection, 389  
 X rays, the differential action of, 1028  
 Zinc poisoning, 201

WEEKS, Courtenay C.: Sugar *versus* alcohol, 611  
 WEIR, John, appointed Physician-in-Ordinary to the Prince of Wales, 45  
 WELCH, W. H., honorary degree to be conferred upon, 827  
 Welfare departments in factories and workshops (parliamentary note), 606  
 Welsh. *See* Wales  
 WEMYSS, H. L. Watson: Specimen of a large gastric ulcer, 1055  
 WENYON, C. M.: "Bayer 205," 149  
 WERNER, E. A.: Precipitation of urea from urine, 858—*The Chemistry of Urea*, rev., 1020  
 WEST, C. L.: *Flowers and Fancies*, rev., 862  
 WEST, C. M.: Foetus exhibiting spina bifida and abnormalities, 330  
 WESTLEY, H. G.: Public education in the control of cancer, 613—The Committee on Venereal Disease, 1039  
 WESTMACOTT, F. H.: Chronic oedema of the orbit, 1094  
 "Westminster Bank, Limited," new name of the London County, Westminster, and Parr's Bank, Ltd., 174, 357  
 WESTON, H. C.: Atmospheric conditions and industrial efficiency, 36  
 Wexford Local Medical Committee, 954  
 WHALE, H. Lawson: Osteitis of the temporal bone with meningitis, 323 (O)  
 What about ribs? *See* Ribs  
 WHEATLEY, James: Diet and preventive medicine, 192  
 WHEELER, Sir W. de C.: Unsatisfactory appendicectomy, 65—Gastric and duodenal ulcers, 284—Cause of death in intestinal obstruction, 513—Renal squamous-celled epithelioma, 513—Intracranial aerocoele, 560—Hyperthyroidism, 595—Gastrectomy for precancerous ulcer, 812  
 White, Charles, of Manchester (1728-1813), and the Arrest of Puerperal Fever, 515  
 WHITE, Clifford: Instruments left in the peritoneal cavity, 228 (O)  
 WHITE, G. Bruce: Portal pyaemia secondary to umbilical infection, 373 (O)—(And Rowland J. PERKINS) Rheumatoid arthritis treated with intravenous *Bacillus coli* vaccine, 411 (O)  
 WHITE, J. Stanley: The ductless glands, 742  
 White man in the tropics. *See* Tropics  
 WHITE, S. E.: Treatment of early mental cases, 535—New Mental Treatment Bill, 915  
 WHITE-COOPER, Dr.: Inversion of uterus, 286; obstructed labour due to a contraction ring, 286  
 WHITEHOUSE, A. L. W.: Sterilization of the unit, 760  
 WHITEHOUSE, Beckwith: Technique of Caesarean section, 285—Adenomatosis vaginae, 286—

Intrinsic dysmenorrhoea, 724—Cervical fibroid with a vein opening into the cervical canal, 767  
 WHITTAKER, C. R.: *A Manual of Surgical Anatomy*, rev., 109  
 WHITTINGHAM, Wing Commander Harold E.: The pathogenicity and treatment of flagellate dysentery, 799 (O)  
 Whooping-cough, 450, 666, 746, 839  
 Whooping-cough, prophylaxis of (Robert Debré), 651  
 WIGGINS, Clare Aveling, C.M.G. conferred upon, 30  
 WILD, H. W.: Trauma and appendicitis, 467  
 WILKES, G. A.: Chronic ulcer of the body of the stomach, 558  
 WILKIE, D. P. D.: Pseudo-coxalgia or osteochondritis deformans juvenilis, 191—Surgical diagnosis, 380  
 WILKINSON, W. Camac: The therapeutic use of tuberculin, 674 (O)—Reviews Loewenstein's book on tubercle bacilli in the blood, 1055  
 WILLANS, Frederic Jeune, M.V.O. conferred upon, 987  
 WILCOX, Sir William: The clinical, pathological, and radiological aspects of infection of the teeth and gums, 53 (O)—The problem of drug addiction, 566  
 Willesden War Memorial Hospital. *See* Hospital  
 WILLETT, J. H.: Repeated ectopic gestation with intraperitoneal rupture, 470  
 WILLEY, Henry, obituary notice of, 917  
 WILLIAMS, Colston: Pit-head hygiene, 20  
 WILLIAMS, J. F.: *Personal Hygiene Applied*, rev., 246  
 WILLIAMS, Leonard: Testicular grafts, 170—Endocrines, vitamins, and subtleties, 1010 (O)  
 WILLIAMS-FREEMAN, J. P.: The country practitioner, 954  
 WILLIAMSON, Alfred Maxwell, obituary notice of, 85  
 WILLIAMSON, George A.: A planorbis as the intermediate host of *Schistosoma haematobium*, 351—Treatment of general paralysis by malaria, 995  
 WILLIAMSON, Herbert: Pelvic adenomyomata, 811  
 WILLIAMSON, R. T.: Vibrating sensation, 168—*See* *Index*, rev., 246  
 WILSON, D. R.: Observations on a case of myasthenia gravis, 852 (O)  
 WILSON, Claude: On limitation of effort in heart disease, 962 (O)  
 WILSON, D. R.: Fatigue in industry, 1108  
 WILSON, H. W.: Surgical treatment of renal calculi, 65  
 WILSON, J. A.: Nystagmus, 171—Radiology in the diagnosis of pulmonary tuberculosis, 681  
 WILSON, J. St. George: Bronchopneumonia in a stillborn foetus, 859—Hydatidiform mole with unusual features, 1035  
 WILSON, Norman: Hyperemesis gravidarum, 592  
 WILSON, S. A. K.: Psychotherapeutics, 327  
 WILSON, William: *A Handbook of Annual Surgery for Students and Practitioners*, rev., 246  
 WILSON-SMITH, W. A.: Milk injections in infantile complaints, 238  
 Wind instruments and lung disease, 542  
 Windward Islands Medical Service (leading article), 1102  
 WINTER, L. B. (and W. SMITH): On a possible mode of causation of diabetes mellitus, 12 (O)—The control of blood sugar, 478—Some problems of diabetes mellitus, 711 (O)—The nature of the blood sugar, 894 (O), 1039  
 Wintering abroad: Italy, 116—Madeira, 117  
 Witherless not proved to cure deafness, 917  
 WITHERBEY, William D. (and John REMER): *X-ray Dosage in Treatment and Radiography*, rev., 597  
 WITKOWSKI (and CABANES): *Joyeux Propos d'Esculape*, rev., 517  
 WOLBACH, Binson Burt: *New Growths and Cancer*, rev., 383  
 Women doctors. *See* Medical women  
 Women workers, health of (Constance Smith), 1109  
 Women's National Health Association, annual meeting, 832  
 WOOD, J. Y.: Two cases of beri-beri, 593—Anaesthetic leprosy, 593  
 WOOD, Thomas, obituary notice of, 264  
 WOODCOCK, H. M.: The nature of Rickettsia bodies, 946  
 WOODMAN, Musgrave: Malignant disease of the upper jaw, 1094  
 WOODROFFE, J. H.: Infection of teeth and gums, 63  
 WOODYATT, Bernard Hale: The destruction of Hunter's notes, 393  
 WOOLDRIDGE, G. H. (editor): *Encyclopaedia of Veterinary Medicine, Surgery, and Obstetrics*, rev., 1057  
 Wool rug making as an aid to surgery, 353

Woolwich Arsenal, accidents at (parliamentary note), 780  
 WORK, Hubert, appointed Secretary of the Interior, U.S.A., 578  
 Workers' Compensation Act, review of book on, 1021  
 WORSTER-DROUGHT, Cecil: Atophan poisoning, 148—(And S. W. QUARTLEY) Meningitis due to Pfeiffer's bacillus, 416—Herpes zoster with localized muscular paralysis, 970 (O)  
 WORTH, Claud: *Squint: Its Causes, Pathology, and Treatment*, rev., 109  
 WRANGHAM, W. (and James PHILLIPS): Brachial neuritis due to cervical rib, 319 (O)  
 WREN, Sir Christopher, bicentenary of, 344, 386, 390—And medical science (leading article), 386  
 WRIGHT, E. J.: Rash resembling a macular syphilid, 593—Ulceration of cheek, 593  
 WRIGHT, George A. Pemberton: De Morgan's spots and malignancy, 840  
 WRIGHT, M. B.: Psychotherapeutics, 327  
 WRIGHT, R. E.: Optic atrophy, 806 (O)  
 WRIGLEY, F.: Orbital cellulitis, 1094  
 Wu Lien-teh: *North Manchurian Plague Prevention Service Reports, 1918-1922*, 115  
 WYATT, S.: Atmospheric conditions in cotton weaving, 389

## X.

X-ray apparatus, secondhand list of, 1003  
 X-ray department, the housing of an (A. E. Barclay), 73  
 X-ray diagnosis of the pathological gall bladder (A. W. George), 902—Note on, 906  
 X-ray measurement and protection (G. W. C. Kaye and E. A. Owen), 389  
 X-ray therapy, deep, vomiting after, 699  
 X-ray treatment of gynaecological conditions, 81—(Louisa Martindale), 379—(G. E. Pepper), 418  
 Discussion, 418  
 X-ray treatment of malignant disease (Robert Knox), 152  
 X-ray tube, the Coolidge, 699, 836  
 X rays in diagnosis (C. Thurstan Holland), 781  
 X rays in inoperable cancer (Herbert Spencer), 766  
 X rays, differential action of (Sidney Russ), 1028  
 X rays, review of books on, 537

## Y.

Yarrow, Alfred: *His Life and Work*, 1058  
 Yarrow gift to the Royal Society, 342  
 Yaws review of books on, 850  
 Yaws in the West Indies (parliamentary note), 878  
 Yearbook of the British Goat Society, 1923, rev., 815  
 Yearbook, *Daily Mail*, rev., 69  
 Yearbook of the Scientific and Learned Societies of Great Britain and Ireland, rev., 69  
 Yearbook of the Universities of the Empire, 1923, rev., 423  
 YORKE, Warrington: Treatment of kala-azar by "Bayer 205," 370 (O)  
 Yorkshire Association of the University of Edinburgh to be known in future as the West Riding Association, 307  
 Young, Archibald: Operative treatment of fractures, 130  
 Young, Dr.: Treatment of puerperal infections, 511  
 Young, James: Lantern slides illustrating an early ovum, 18—Appreciation of John William Ballantyne, 215—Appreciation of Constance Ellen Long, 393—Lantern slides of an early ovum, 767  
 YOUNG, Lient.-Col. G. Harrison: Craving for tobacco, 492  
 YOUNGER, Robert, obituary notice of, 541

## Z.

ZAHORSKY: Erythredema or the "pink disease," 123, 201  
 ZARCHI, Liba: Persistent headache, 174  
 Zinc poisoning, 201  
 ZINSSER, Ferd: *Syphilis und Syphilisähnliche Erkrankungen des Mundes. Für Aerzte, Zahnärzte und Studierende*, rev., 195  
 Zoology, review of books on, 1022



# THE British Medical Journal.

THE JOURNAL OF THE BRITISH MEDICAL ASSOCIATION.

LONDON: SATURDAY, JANUARY 6TH, 1923.

## An Address ON ACUTE CONSTITUTIONAL SYMPTOMS DUE TO RADIATIONS.\*

BY  
SIR HUMPHRY ROLLESTON, K.C.B., M.D., D.C.L., LL.D.,  
PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON  
AND OF THE RÖNTGEN SOCIETY.

It is a familiar truism that any kind of treatment powerful for good may under certain conditions, such as excessive dose or undue susceptibility of the organism, do harm; this danger is much more imminent when the drug, method, or operation is of recent introduction and its potentialities and limitations as yet imperfectly explored. X rays and radium are very powerful agents and have a wide field of application in the treatment of disease; as a form of energy they exert a profound effect on metabolism, acting in either a stimulating or destructive manner according to the conditions of their dosage and the state of the body. This, of course, is obvious in the various skin lesions—dermatitis, growths, and burns—from which radiologists and their patients may suffer. The selective action of irradiations on the tissues, or the sensitiveness to rays of the various cells of the body, is important both from the point of view of treatment and of the ill effects that may thus be induced. The destructive action exerted by radiations on the blood-forming organs, especially on lymphoid tissue, has attracted much attention recently on account of the unfortunate fatalities among x-ray and radium workers.

Experimental investigations of the changes in the lymphocytes have been carried out by Mottram, S. Rass, Leitch, Lazarus-Barlow, Hess, Unger and Steiner, and others; and G. E. Pfahler<sup>3</sup> has quite recently reviewed this subject. The chronic blood changes and ill health that may occur in x-ray and radium workers are now generally recognized and guarded against. The action of radium on the nervous tissues has been much investigated since 1903 by Danyasz, Obersteiner, Alquier, and Faure-Beaulieu. In 1911 Horsley and Finzi applied filtered radium rays directly to the brain, and stated that the nerve cells were unaltered, but that from damage to the blood vessels hæmorrhages occurred. In 1922 Morowoka and Mott, from histological examination of the brains of animals whose heads had been exposed to a large amount of radium, attached importance to the protective action of the skull. Pendergrass, Hayman, Houser, and Rambo, employing various methods of acting on the brain by radium, found that the nerve cells were first destroyed and then underwent autolysis. Bone is the most resistant tissue of the body to radiations, but Regaud<sup>4</sup> found that it may show necrotic changes from x rays without any concomitant damage to the skin. The remarkable sensitiveness of the mucous membrane of the small intestine in dogs to x rays has been shown by Warren and Whipple, who found that the lymphoid tissue in Peyer's patches was much less susceptible; Lazarus-Barlow's experiments also showed that the mucosa of the small intestine of cats, rabbits, rats, and frogs was damaged by the gamma rays of radium. Warren and Whipple ascribe the grave constitutional symptoms produced in dogs by exposure of the abdomen to enormous doses of x rays to the lesion of the small intestine.

### ACUTE CONSTITUTIONAL SYMPTOMS DUE TO RADIATIONS.

*Synonyms:* Roentgen-ray intoxication; Radio-toxæmia; Mal des rayons; Disease of penetrating rays; Röntgenkatarrh.

Discussion of the acute constitutional symptoms due to radiations is appropriate at the present time when radiology is so rapidly advancing and measures of protection have

rightly been seriously taken in hand. An account of this grave ill effect of radiations necessarily entails some reference to the commoner and more or less immediate disturbance which presents resemblances in kind and indeed is difficult to distinguish from the mild type of constitutional symptoms, but is less severe and very possibly due to a different cause.

The use of x rays in medical practice, which began in 1896, was soon followed by reports of the ill effects; the skin lesions were noted in the same year, and in 1897 D. Walsh first drew attention to the constitutional effects; he recorded two such cases in x-ray workers, in one of whom the symptoms disappeared when the abdomen was shielded by lead. Since then a considerable literature has grown up on this accident, which, although in the past much rarer, and, as a rule, less serious than the skin lesions, especially carcinoma (of which according to Ledoux-Lebard there have been 100 victims among radiologists), is worthy of attention. These acute reactions are becoming more frequent with the use of massive doses of deep penetrating rays which by the "cross-fire" method of administration do not cause skin lesions. Thus, to take what it may be hoped is an extreme example: Rosenthal treated eleven cases of myeloid leukaemia by penetrating irradiations in three directions, and as a result all the patients had severe constitutional disturbance coming on soon after the treatment; three of the patients died, but the eight that survived were remarkably improved for six to ten months. Bécélère,<sup>5</sup> who quotes this paper, has had verbal information of similar cases in Germany. Inquiry from my radiological friends shows that cases of this severity are rare. Acute constitutional symptoms from the use of radium appear to be both less often noted and, when they occur, shorter and less severe than those induced by x rays (Regaud,<sup>6</sup> Desjardins). Captain A. E. Hayward Pinch of the Radium Institute allows me to quote him to the effect that he has no knowledge of acute constitutional symptoms in radium workers, but he refers to a real systemic disturbance due to auto-intoxication and characterized by slight fever and general malaise in patients, especially those with lymphosarcoma, after deep radium therapy.<sup>4b</sup> According to Bowing, mild reactions, such as malaise, anorexia, nausea, and occasional vomiting, are usually disregarded at the Mayo Clinic, but when a severe reaction occurs the radium treatment is usually omitted for two to three days.

### Onset of Symptoms.

According to the reports available, the acute constitutional symptoms may come on within a few hours or be delayed for as long as twenty days. The duration of the latent period is generally stated to vary inversely as the intensity and the length of the exposures; and usually a long latent period is followed by mild symptoms, whereas the shorter the latent period the more severe the constitutional disturbance. But there are apparent exceptions to these rules. Variation in the onset of acute constitutional symptoms may possibly be explained in the following way: that the immediate or rapid onset, on the same or next day, of symptoms such as malaise, lassitude, nausea, vomiting, headache, and giddiness, is due to a cause different from that responsible for the graver constitutional disturbance which does not come on until later.

It may be convenient to refer here to the causation of the early symptoms. Three possible factors may be mentioned: (1) Mallet and Coliez incriminate the ozone in the air of x-ray rooms; though this has been widely recognized it can hardly be the sole factor, for Hayward Pinch mentions deep radium therapy, which does not involve an ionized atmosphere, as a cause of similar symptoms. (2) Schrumph-Pierron believes that high electrical charging of the patient's body is responsible and that putting the patient to earth obviates this inconvenience; this explanation is also rendered incomplete by the symptoms seen after deep radium therapy. (3) M. Giraud, G. Giraud, and Parès<sup>7</sup> argue

\* Presidential address to the Röntgen Society, November 7th, 1922.



that the early symptoms are due to haemoclastic shock caused by destruction of leucocytes; in intensive x-ray treatment lasting for hours this would seem to be highly probable. Possibly all three of these factors may in different circumstances be operative. That auto-suggestion is responsible seems unlikely. It is reasonable to believe that the later or grave constitutional symptoms, which are due to metabolic changes in the cells of the body as a result of radiation, may sometimes be superimposed on, and so appear to be continuous with, the primary disturbance; this would be more likely to follow intensive and prolonged x-ray exposures, after which both the early and the grave constitutional symptoms are prone to occur sooner and more frequently. Cases in which the early and the late disturbances have both been noted in the same patient after an irradiation have seldom been reported; Dr. R. Knox has told me of a case manifesting both groups of symptoms with an interval separating them.

The acute constitutional symptoms are usually the same in kind, though their degree naturally differs, so that two groups—the severe and the mild—are recognizable. The symptoms are toxæmic and mainly gastro-intestinal and cardio-vascular, well-marked motor impairment of the nervous system being exceptional. The most severe cases present nausea, uncontrollable vomiting, offensive diarrhoea with the passage of blood, abdominal pain and distension, fever, which in a fatal case under my observation reached 104° F., restlessness, profound prostration, progressive cardiac failure, small rapid pulse, and dyspnoea. In one of Rosenthal's cases, fatal on the sixth day after exposure, flaccid paralysis of the lower limbs involving the bladder and the diaphragm appeared on the day before death. In fatal cases death usually occurs within a few days of the onset, thus recalling the experimental results obtained by Warren and Whipple, who exposed the abdomens of dogs to high doses of x rays from a medium hard Coolidge tube and found that the animals nearly always died on the fourth day after exposure.

Fortunately the constitutional symptoms are more often mild than severe. In these circumstances the symptoms are malaise, lassitude, loss of appetite, nausea, and occasionally vomiting, the syndrome being compared by Bécclère<sup>4</sup> to seasickness. The symptoms resemble those already mentioned as coming on shortly after the exposure to x rays and ascribed to ozone. The question arises whether or not a distinction between these latter bad effects, ascribed to the highly ionized atmosphere of x-ray rooms on the one hand, and mild constitutional symptoms due to the action of x rays on the tissues on the other hand, can be based on the interval that elapses between the x-ray exposure and the appearance of ill effects. It seems doubtful if such a distinction can be maintained, and it must therefore be admitted that it may be difficult to be certain of the exact nature of comparatively mild symptoms appearing soon after radiations.

For the following details of an example of mild constitutional disturbance in a radiologist, which appear to show that the symptoms depend on radiation of the intestines and had a definite latent period of nearly three weeks, I am much indebted to Dr. A. E. Barclay.

Starting x-ray work in 1904, he always did a great deal of screening under bad conditions and without an apron; since 1914 his private work was carried on with a Coolidge tube in the usual half-open box. In 1916, after a very prolonged course of screen examinations, often with a minimum of protection, he suffered, while working in France, from several persistent attacks of diarrhoea—sudden rushes of watery and offensive stools lasting for one or two days, gradually passing off and then coming on again. There was no nausea, and, except on one or two occasions, discomfort was absent; indeed, apart from the diarrhoea and loss in weight, he was in perfect health. Subsequently diarrhoea with much offensive flatus recurred at intervals, very occasionally being severe and accompanied by nausea and vomiting. Usually the attack started with malaise, which passed off when the bowels acted, the first motion being solid, followed about a quarter of an hour later by a liquid stool, and then by six to eight evacuations of an extremely watery character; in a few hours he would feel that all the fluid had been got rid of and he knew that the attack was at an end. On the few occasions on which casts were detected there was a burning sensation about the anus, but this disappeared completely with the evacuation of the cast. After one attack with nausea for an hour or two only and no other discomfort his weight dropped one stone, but in two weeks' time, although some minor attacks intervened, this was regained. In 1921, as the attacks were getting worse, x-ray work was given up for four months, and three weeks from the date of the last exposure the symptoms disappeared. On returning to work an attack followed after an interval of twenty days, a cast two inches long being passed; and on eight other occasions an interval of eighteen to twenty days between exposure and an attack was definitely established. The most efficient means of protection was then adopted in the form of an apron made of fairly thin lead rubber, covering the front and

back of the body. Since then he has been free from attacks, except on two occasions after examinations conducted in other x-ray departments.

#### *Site of the Exposure in Human Cases.*

Many of the instances of acute constitutional disturbance have occurred after intense radiation of the abdomen—for example, for leukaemia (Rosenthal) or for inoperable malignant disease; and according to Desjardins radiation of the upper part of the abdomen is particularly likely to be followed by acute symptoms. The exposure of large tumours far from the abdomen may also cause constitutional symptoms. It appears that radiation of the pelvis and the contained organs may reach the abdominal contents. At any rate it is admitted that constitutional symptoms, usually of a mild character, may follow radiation of the pelvis for uterine carcinoma and fibromyomas, and metrorrhagia (Bécclère<sup>5</sup>; Chambacher and Descoust; von Franz; Knox). From his wide experience Bécclère considers that the occurrence of serious lesions should be avoided by good technique and accurate dosage, but he refers to ulceration of the rectum and pelvic colon following very strong radiations by cross-firing. Similar damage to the rectum may occur in the radium treatment of carcinoma of the cervix uteri unless care is taken. In connexion with the view that the grave constitutional reactions depend on damage to the mucosa of the small intestine, attention may be called to Grunkrant's caution that, as in x-ray treatment of the pelvic organs the small intestine is traversed by the rays, the genu-pectoral or Trendelenburg position, whereby the small bowel, is removed out of the field, may with advantage be employed.

The post-mortem appearances in fatal cases of acute constitutional symptoms in man have not often been recorded. In Rosenthal's three fatal cases no morbid lesion was reported; but in von Franz's case the necropsy, performed by Orth, revealed severe ulceration of the small intestine and the colon. Bécclère's<sup>6</sup> cases of perforation and stenosis following ulceration of the rectum and pelvic colon after intensive x-ray treatment of the uterus, have already been mentioned.

#### *Cause of Acute Constitutional Symptoms.*

The cause of the acute constitutional symptoms has naturally attracted much interest and some speculation. The following views may be mentioned: (1) The bad ventilation of the x-ray rooms leading to contamination of the atmosphere with gases such as ozone and nitrous acid, produced by the x-ray apparatus. (2) That the symptoms are due to acidosis. (3) That from destruction of cells and liberation of their protein a condition of anaphylaxis results. (4) That the protein products due to cellular destruction produce an acute intoxication.

1. Pfahler<sup>7</sup> suggested that the acute constitutional symptoms depend on contamination of the air in ill-ventilated x-ray rooms by gases produced by high-tension currents. Konrich found that with ozone present in the proportion of 0.5 mg. per c.c.m. of air nausea, headache, irritable cough, and exhaustion rapidly occur and that chronic blood changes follow. But the suggestion that nitrous acid in excess in x-ray rooms is responsible for the bad effects is combated by Guthmann on the grounds that in chemical laboratories nitrous acid is present in ten times the amount that it is in x-ray rooms and yet chemists do not suffer in the way that x-ray workers do. That noxious gases must be regarded as a source of danger especially to the x-ray worker is obvious, but the bad effects ascribed to the highly ionized atmosphere of badly ventilated x-ray rooms are apparently not exactly identical with the severe constitutional symptoms, for they do not include diarrhoea or evidence of acute enteritis, and they come on very soon after x-ray exposure. Too much stress, however, must not be laid on the difference in the symptoms. Mallet and Coliez have drawn a sharp distinction between (a) the early or primary disturbance occurring the same day or the following day after irradiation, and due to the inhalation of contaminated air, and (b) the delayed onset of secondary symptoms caused by destruction of the cells of the body. The immediate effects are relatively transient, passing off in forty-eight hours, and are somewhat obviated by the administration of morphine during the exposure. Confusion may arise when an x-ray worker or patient suffering from the chronic effects (blood changes) of noxious gases is attacked by acute constitutional symptoms, which would then appear to be merely an exacerbation of the existing ill health, whereas it is in reality a second intoxication of a different character, though no doubt its incidence is favoured by the previous debility and lowered resistance. A good reason why the acute constitutional disturbance cannot be ascribed, at any rate solely, to the action of the contaminated



\* Since this address was delivered Ross Golden (*Arch. Int. Med.*, Chicago, 1922, xxx, 629) has published observations on four patients with Roentgen-ray sickness and three experimental dogs showing that there is not any evidence of aedodais.



destroyed the intracellular ferments with the exception of the autolytic enzymes. According to Richards, short exposures increase whereas long exposures inhibit or destroy ferment activity, and this view is endorsed by Peterson and Saelhof. Other observers report that radiations have no effect on enzymes (Richter and Gerhartz; H. A. Colwell).

Assuming that the enzymes are not destroyed, Pendergrass, Hayman, Houser and Rambo, in a recent paper dealing fully with the results of experimental exposure of the brain to radium, give an attractive explanation of the toxæmia which was thus produced in animals. They believe that the radiations lead to death of the nucleus and then of the nerve cells which undergo autolysis by the action of the intracellular ferments, and that the lecithin-lipoids, so abundant in the brain, are thus broken up into choline and neurine—the responsible causes of the toxæmia. They argue that the products of cellular autolysis must vary with the character of the tissues acted on by the radiations; thus when the intestines, as in Warren and Whipple's experiments, or the uterus, are exposed to radiations the resulting toxæmia will be proteolytic in nature and due to protein bodies, and so differ from the autolytic products of nerve cells described by them. Dr. H. A. Colwell, from independent investigations, has arrived at much the same conclusion, which though unpublished he kindly allows me to quote—namely, that the primary action of rays is to produce a disturbance of the colloidal equilibrium of the cell, the injured elements of which are then acted upon by the intracellular enzymes.

To sum up: it seems probable that the acute constitutional symptoms are due to flooding of the circulation with proteins liberated by the destruction of cells. Experimentally it has been proved that this can certainly be due to damage to the mucous membrane of the small intestine; clinical evidence is also compatible with this view, but also shows that destruction of cells in other parts of the body, such as large growths in the neck and in the mammary region, may be followed by acute constitutional symptoms.

#### Further Determining Factors in the Occurrence of Acute Constitutional Symptoms.

As acute constitutional symptoms are comparatively rare in ordinary practice, the question naturally arises on what further factors their occurrence depends. From Warren and Whipple's experiments, in which high doses of  $x$  rays over the abdomen constantly produced these grave symptoms in dogs, it appears that the dosage is a factor of great importance. The factor of the dosage has been generally recognized by  $x$ -ray workers, and is being more abundantly proved by the reactions seen after the Erlangen treatment. Two other possible factors may be mentioned: (1) Edsall and Pemberton argued that persons already in a toxic condition are more prone than healthy individuals to manifest acute constitutional symptoms, because they are already embarrassed in dealing with the intoxication and, if to this strain is added the metabolic labour of dealing with the complete decomposition of a large amount of broken-down tissue products, the metabolism may collapse, and in consequence signs of severe intoxication appear. This is not, as shown by Warren and Whipple's experiments, an essential condition, and as many of the patients exposed to abdominal radiation are in a toxic state but do not manifest the symptoms of acute constitutional disturbance, it cannot be regarded as a very far-reaching factor. (2) The patient's idiosyncrasy, rather vague as this influence may be, must be considered as a factor that may possibly favour the development of an acute reaction. This question has been much debated, and it appears that while there is naturally a certain amount of variation in the susceptibility of individuals to radiations and that reactions of different kinds are occasionally seen, an extreme degree of sensitiveness, comparable to other idiosyncrasies, is very rare.

Treatment is first and foremost preventive; to avoid the early transient disturbance the  $x$ -ray rooms should be properly ventilated. The avoidance of the grave constitutional symptoms mainly depends on care in the technique and dosage, but other factors may play a part, and the state of the organism must be taken into account. Proust, Mallet, and Coliez mention a red blood count below four millions and a low blood pressure as indications that  $x$ -ray therapy should be conducted with great caution. In order to avoid toxæmia Beck practises surgical exposure and surgical removal of as much as possible of the growth, and then treatment by  $x$  rays or radium of the remainder of the tumour in the open wound. In this way any discharge from the radiated tissue passes into the dressing instead of into the circulation and toxæmia

is minimized. Another advantage is that a smaller dose of radiations is required than in the ordinary method of treating deep-seated tumours. In 100 cases thus treated he had not had any death from toxæmia, whereas with the usual method four of his patients had died from toxæmia.

It is to be hoped that Auer and Witherbee's<sup>64</sup> experimental protection of the skin of rabbits against the harmful effects of  $x$  rays by the previous injection of horse serum may be applied to protect the deeper tissues of man against radiations. But before this is done further work is necessary; it is not yet known if the sensitization produced by horse serum increases the resistance of the cells of malignant growths to radiations.

When the symptoms have appeared, elimination of the toxic proteins may be assisted by diuresis, and for this purpose plenty of fluids should be given by the mouth. In conformity with his unproved hypothesis that the responsible factor is acidosis, Lange advocated the administration of sodium bicarbonate, and reported benefit from its use before and after radiation.

#### REFERENCES.

(In order to avoid interruption of the text, the numbers indicative of these items are only inserted where there is more than one under the same author's name.)

1. Albers-Schönberg: *Trans. XVII Internat. Cong.*, London, 1913, viii, 57.
2. Beck, E. G.: *Journ. Radiol.*, Omaha, Nebraska, 1922, iii, 309.
3. Bécélère, A.: *Arch. d'électr. méd.*, Bordeaux, 1921, xxxi, 225.
4. Idem.: *Bull. Acad. de méd.*, Paris, 1921, 3<sup>e</sup> sér., lxxxvi, 151.
5. Bergonié, J.: *Compt. rend. Acad. de sci.*, Paris, 1916, clxii, 613.
6. Bowing, H. M.: *Collected Papers of the Mayo Clinic*, Rochester, Minn., 1921, xiii, 1205.
7. Case, J. T.: *Amer. Journ. Roentgenol.*, N.Y., 1922, ix, 530.
8. Chambaheer et Descoust: *Presse méd.*, Paris, 1922, xxx, 509.
9. Colwell, H. A.: *Personal Communication*, and in second edition of Colwell and Russ's *Radium, X Rays, and the Living Cell* (not yet published).
10. de Courmelles, F.: *Biolog. méd.*, 1922, xii, 188.
11. Denis, Martin, and Aldrich: *Amer. Journ. Med. Sci.*, Phila., 1920, clx, 55.
12. Desjardins, A.: *Collected Papers of the Mayo Clinic*, 1921, xiii, 1216.
13. Edsall and Pemberton: *Amer. Journ. Med. Sci.*, Phila., 1907, cxxxiii, 426.
14. Feissly, R.: *München. med. Wchnschr.*, 1921, lxxviii, 1418.
15. Fromme, G.: *Ztschr. Geburtsh. u. Gynäk.*, Stuttgart, 1916-17, lxxix, 579.
16. von Franz: *Berlin. klin. Wchnschr.*, 1917, liv, 622.
17. Giraud, M., Giraud, G., et Farès: *Presse méd.*, Paris, 1921, xxix, 746.
18. Idem.: *Ibid.*, 1922, xxx, 885.
19. Grunkraut: *Abstract in Arch. d'électr. méd.*, Bordeaux, 1921, xxxi, 46.
20. Grunkraut, H.: *Strahlentherapie*, 1921, xii, 262.
21. Hall and Whipple: *Amer. Journ. Med. Sci.*, Phila., 1919, clvii, 453 (references).
22. Henri, V., et Mayer, A.: *Compt. rend. Soc. biol.*, Paris, 1904, lvi, 231.
23. Hess, Unger and Steiner: *Journ. Exper. Med.*, Baltimore, 1922, xxxvi, 447.
24. Horsley and Finzi: *BRITISH MEDICAL JOURNAL*, 1911, ii, 893.
25. Joltrain et Benard: *Compt. rend. Soc. biol.*, Paris, 1922, lxxxvi, 781.
26. Kaye, G. W. C.: *Proc. Roy. Soc. Med.*, 1922, xv (Electro-therap. Sect.), 33.
27. Knox, R.: *BRITISH MEDICAL JOURNAL*, 1920, ii, 535.
28. Lange, S.: *Journ. Amer. Med. Assoc.*, Chicago, 1915, lxy, 1906.
29. Lawrence, R. D.: *Arch. Radiol. and Electro-therap.*, London, 1917, iv, 564.
30. Lazarus-Barlow, W. S.: *Medical Research Council, Special Report Series*, No. 62, 1922, 33-130.
31. Ledoux-Lebard, R.: *Paris méd.*, 1922, xii, 299.
32. Leitch, A.: *Arch. Radiol. and Electro-therap.*, London, 1921, xxvi, 122.
33. Loeb, L.: *Amer. Journ. Physiol.*, N.Y., 1900, ix, 497.
34. Loeper: *Leçons* ;
35. Mallet et Coliez ;
36. Morowoka and Mott: *Medical Research Council, Special Report Series*, No. 62, 1922, 131.
37. Mottram, J. C.: *Arch. Radiol. and Electro-therap.*, London, 1920, xxv, 194; 1921, xxvi, 271.
38. Mottram and Russ: *Journ. Exper. Med.*, Baltimore, 1921, xxxiv, 271.
39. Oberndorfer: *Zentralbl. f. Gynäk.*, 1914, xxxviii, 1454.
40. Packard, J.: *Journ. Exper. Zool.*, 1914, xvi, 85.
41. Paniez, Ravina, et Solomon: *Compt. rend. Soc. biol.*, Paris, 1922, lxxvii, 349.
42. Pendergrass, Hayman, Houser and Rambo: *Amer. Journ. Roentgenol.*, N.Y., 1922, ix, 553-569 (references).
43. Peterson, F., and Saelhof, C. C.: *Amer. Journ. Med. Sci.*, Phila., 1922, clxiii, 101.
44. Pfahler, G. E.: *Amer. Journ. Roentgenol.*, N.Y., 1916, iii, 310.
45. Idem.: *Ibid.*, 1922, ix, 647.
46. Pinch, H.: *Arch. Radiol. and Electro-therap.*, 1922, xxvii, 94.
47. Proust, Mallet et Coliez: *Ibid.*, 1922, xxvii, 89.
48. Regaud, C.: *Bull. Acad. de méd.*, Paris, 1921, 3<sup>e</sup> sér., lxxxv, 608.
49. Idem.: *Compt. rend. Soc. biol.*, Paris, 1922, lxxvii, 629.
50. Regaud, Nogier et Lacassagne: *Arch. d'électr. méd.*, Bordeaux, 1912, xx, 321.
51. Richards, A.: *Amer. Journ. Roentgenol.*, N.Y., 1917, iv, 564.
52. Richter, C.: *Compt. rend. Acad. de sci.*, Paris, 1916, clxii, 614.
53. Richter and Gerhartz: *Berlin. klin. Wchnschr.*, 1903, xiv, 646.
54. Rosenthal, E.: *Berlin. med. Wchnschr.*, 1919, lvi (ii), 1113.
55. Russ, S.: *Arch. Radiol. and Electro-therap.*, London, 1921, xxvi, 146, 377.
56. Schmidt, H. E.: *Fortschr. a. d. Röntgenstr.*, Hamburg, 1918, xxv, 314.
57. Schrumpp-Pierron: *Compt. rend. Soc. biol.*, Paris, 1921, lxxx, 217.
58. Stephan: *München. med. Wchnschr.*, 1920, lxxviii, 203.
59. Theis, R. C., and Bagg, H. J.: *Journ. Biol. Chem.*, 1920, xli, 525.
60. Walsh, D.: *BRITISH MEDICAL JOURNAL*, 1897, ii, 272.
61. Warren and Whipple: *Journ. Exper. Med.*, Baltimore, 1922, xxxv, 187-224.
62. Whipple, G. H.: *Contributions to Medical and Biological Research. Dedicated to Sir William Osler, 1919. Vol. II, 10-3.*
63. Willcock, E. G.: *Journ. Physiol.*, Cambridge, 1916, xxxiv, 207.
64. Witherbee, W., and Auer, J.: *Journ. Exper. Med.*, Baltimore, 1921, xxxiii, 791.
65. X-Ray and Radium Protection Committee's Report. *BRITISH MEDICAL JOURNAL*, 1921, i, 936.



# A British Medical Association Lecture

## ON THE INVESTIGATION OF DYSEPTICS.\*

BY  
JOHN RYLE, M.D.LOND., M.R.C.P.,  
ASSISTANT PHYSICIAN TO GUY'S HOSPITAL.

THE group of diseases embracing the various classes of dyspeptic is prevalent, and, in civilized communities, I think one may say increasingly prevalent. Its mortality rate is comparatively low, but it is responsible for much misery, inefficiency, and sick-wastage, and is by no means a trial only to its victims. From the diagnostic and therapeutic points of view it will be generally conceded that it is a difficult and unsatisfactory group; and yet if we consider and correlate the work conducted in recent years by physiologists, physicians, radiologists, surgeons, and biochemists, we must admit that great advances in our understanding of digestion and its errors have been made.

It has been my good fortune during the past three years to have opportunities of studying, both from experimental and clinical points of view, the behaviour of the stomach in health and disease, and it is my hope that I may be able to crystallize for you in some useful form the present state of our knowledge of the methods used in the investigation of dyspeptics, together with some thoughts on their relative value which I have gathered by the way.

In approaching the study of the dyspepsias we are at once confronted with a serious lack of ordered teaching and clear classification. Few of us will recollect in our student days any attempt at a scientific grouping of the dyspepsias, and many textbooks even in recent years have been content—after a discussion of ulcer, carcinoma, and gastritis—briefly to compound the remaining dyspepsias under some such vague heading as “chronic indigestion.” Attempts to classify according to symptoms have been made, and we are familiar with such designations as “flatulent dyspepsia,” “acid dyspepsia,” “fermentative dyspepsia,” “atonic dyspepsia,” and so on—all valueless and misleading titles on the whole. Even in a recent edition of a very excellent textbook of medicine we find chronic indigestion baldly summarized as follows:

“Indigestion, apart from organic lesions, is due either to irritating properties of the food or to deficiency of secretion or motility of the stomach; and these conditions may be met.”

The most satisfactory classifications of disease are those based on causal pathology. As a preliminary, therefore, to the subject under review I have drawn up a rough working classification of dyspepsias according to cause, which I have come to employ for my own purposes. There is, however, one important conception to consider even before the question of classification. It is the simple conception, now much more widely accepted than formerly, but still not sufficiently applied, that the majority of dyspepsias are not dependent on any gastric disease.

The work of Cannon with animals on the gastric responses to emotional states, such as fear and anger, and to pain, has buttressed the much older recognition in our own bodies that strong emotions, such as fear, anxiety, worry, falling in love, and depression, may upset the normal functions of the stomach. Further, if not in our own persons, at any rate in our clinical observations we are familiar with the digestive disturbances accompanying or following fatigue and infection, or reflexly induced by lesions distant from the stomach. In brief, just as with other viscera, so with the stomach it is important to realize that disturbed function as well as, and more frequently than, altered structure may produce physical symptoms. The causes which produce such disturbance of function are for the most part situated outside the viscus.

The following is a suggested classification of dyspepsias according to cause:

### Classification of Dyspepsias.

A. Dyspepsias due to organic disease of the stomach (including pylorus and duodenum)—for example, ulcer, carcinoma, gastritis, and the end-results of operations.

B. Reflex dyspepsias due to organic disease elsewhere in the alimentary tract—for example, gall stones, appendicitis, etc.—and to central nervous disease.

C. Dyspepsias resulting from the failure to lead a physiological life—for example, overeating, undereating, inefficient mastication, drinking, smoking, overworking and lack of exercise, constipation.

D. Dyspepsias due to general states of ill health—for example, early active and chronic latent tuberculosis of the lungs, anaemias, states of debility associated with muscular hypotonus, loss of natural fat deposits, and consequent visceroptosis.

E. Dyspepsias due to nervous tricks, emotional unbalance, nervous exhaustion, worry and anxiety states; and including air swallowing, hysterical regurgitation and vomiting, overconcentration on digestive processes, attempts to express a psychological unbalance as a physical abnormality, undue appreciation of normal processes in apprehensive individuals, etc.

I was interested to ascertain how satisfactorily cases would fall into these groups. Two hundred and sixty-seven unselected cases were analysed. Of these ninety were from my own records and the remainder from the records of cases under the care of Dr. A. F. Hurst, in the investigation of which it was my privilege to co-operate. They fell well into the various groups, with the exception that Groups C and E were naturally inclined to overlap. The percentage incidence of cases in the various groups was as follows: Group A, 33 per cent.; Group B, 18 per cent.; Group C, 12 per cent.; Group D, 12 per cent.; and Group E, 24 per cent.

As a large proportion of these cases had been expressly referred to us for fuller investigation, it would seem fair to assume that Groups A and B in our series probably contained a much larger percentage than they would contain in the total population of dyspeptics. Furthermore, the series includes a certain proportion of cases of gall-bladder and appendicular disease in which the symptoms were local rather than gastric.

You will note that I have made little mention of food *per se* as a cause of dyspepsia, and I would put it forward as a second useful conception, in spite of lay beliefs, that food is one of the rarest causes of chronic indigestion. Gross overeating may cause dyspepsia; injudicious dietary may aggravate a dyspepsia; certain patients have certain food idiosyncrasies; dietary and the preparation of food undoubtedly play a very important part in the treatment of many dyspepsias—all of these we may confidently assert; but it would help us in our inquiries and our treatment if we were to give food an insignificant position among the actual causal factors in dyspepsia. When dealing with the dyspnoea symptom group we look for the causes in some disturbance of respiratory, cardio-vascular, or excretory function, or in impaired oxygen-carrying power of the blood; it is only under exceptional conditions that we blame the atmosphere. In dealing with the dyspepsia symptom group we would—notwithstanding the variability and abuse of civilized diets—do well to seek for other causes of disturbed physiological balance before blaming the qualities of the food or the cook.

### CLINICAL INVESTIGATION.

So much by way of preamble. Of all the methods of inquiry in dealing with dyspeptics the clinical examination remains, and will remain, the most important; of this the most valuable part is the interrogation of the patient. It includes the customary questions with regard to family and previous personal history, and the formation of some estimate of the patient's environment and his physical and psychical reaction to that environment. It includes a collection and analysis of his subjective symptoms, and although the value of these is very variable and depends much on individual intelligence and psychology, I would regard the subjective symptoms in the majority of cases as providing more useful guidance than anything else in the clinical survey. But a collection and analysis of symptoms to be really helpful demand an appreciation of the significance of symptoms. I propose, therefore, briefly to discuss the physiological significance of such common symptoms as epigastric pain and discomfort, fullness, vomiting, nausea, flatulence, loss of appetite, furred tongue, “heartburn,” and “acidity.”

Epigastric pain may, of course, be due to other than gastric phenomena, and is met with, for instance, in cardiac and gall-bladder disease. When originating in the stomach it is, according to modern views, associated with a general or local increase in intragastric tension, commonly resulting from pyloric or gastric spasm, which impedes the onward passage of fluid, gaseous, or semi-solid contents. In short, it falls into line with other pains produced in hollow viscera; for whether we are concerned with angina pectoris, renal colic, or the pain of duodenal ulcer, we are not far from the truth in claiming that the pain is due to an abnormal increase in

\* Delivered before the Bournemouth Division of the British Medical Association.



intravisceral tension, and that in each instance the pain is best relieved by factors calculated to lower intravisceral tension. Amyl nitrite, which lessens the peripheral resistance by vasodilatation, passage of a calculus, food or belladonna overcoming the reflex hypertonus of the pylorus, are all examples of these relieving factors. Gastric discomforts are due to abnormal motor behaviour falling short of that requisite for the production of actual pain. I find it a useful leading question to put to patients complaining of epigastric pain, "Is it really pain or would it be better described as discomfort?" Real pain is always much more suggestive of an organic lesion than vague discomfort.

A sense of fullness may be present in both hypertonic and hypotonic stomachs. A man with an abnormally hypertonic gastric musculature may feel a great sense of fullness after meals, the muscle here being responsible for the tension. On the other hand, in atonic and dropped stomachs feelings of fullness and heaviness are often experienced, the food in this case, inefficiently propelled and churned, producing the sense of tension by its weight. On the whole, fullness is more often a symptom of hypotonic than hypertonic gastric musculature.

*Vomiting*, apart from that which is due to organic narrowing of the pylorus or mid-gastric area, may result from reflex spasm at either site, though the act of vomiting itself involves the co-operation of the diaphragm and abdominal muscles. The stimulus to vomit in dyspeptics may be an organic lesion, such as an ulcer, gall stones, or appendicitis; or it may be emotional; or there may be an emotional exaggeration or perpetuation of vomiting originally due to an organic cause.

*Nausea*, which is peculiarly frequent in gall stones, pregnancy, and alcoholic gastritis, and not very frequent in other dyspepsias, may also be regarded as a symptom of reflex disturbance of motor function. It is a symptom at present inadequately investigated. It may be associated with pyloric closure or failure to relax, patency of the lower oesophagus, and inhibition of normal peristaltic activity, but this needs confirmation. It appears to be felt partly as a general malaise, partly in the stomach and partly in the gullet, and may certainly be induced by mechanical irritation in the gullet.

*Flatulence*.—There are two kinds of gastric flatulence—the common odourless and tasteless variety, and the variety with a bad odour and taste. The latter, if persistent and particularly when it has the odour of sulphuretted hydrogen, is of serious import in that it suggests considerable gastric delay such as is produced by pyloric obstruction. It is more likely to be produced by carcinomatous obstruction than a cicatricial one, though I have seen it in both. Fermentation—in spite of the frequency with which it is diagnosed—does not occur in the stomach except in the presence of delay. In a very long series of fractional test meals I have never seen fermentation occurring in any of the specimens withdrawn excepting in cases of pyloric stenosis. Fermentation and decomposition are most likely to occur in the presence of a growth on account of the deficient or absent secretion of hydrochloric acid. Apart from the carbonic oxide swallowed with effervescing drinks and minute quantities evolved by food, odourless gastric flatus is generally the result of air-swallowing, or aerophagy. Aerophagy may be a result or a cause of dyspepsia, and is especially common in nervous individuals. In its major form it produces frequent and explosive belching at a rate which could not possibly be accounted for by any fermentative process, and active swallowing movements may be seen and heard.

*Appetite* is partly a psychic and memory phenomenon, but in part probably depends on gastric tonus. Good appetite means good tonus; bad appetite means poor tonus. Hunger expresses peristaltic activity. In duodenal ulcer with hunger pain there is nearly always hypertonus as well as active peristalsis, and actual appetite is not impaired, although the patient may become afraid to eat.

*Furred tongue* commonly suggests hypotonus and hyposecretion in the stomach, and possibly hypotonus of the cardiac sphincter. It is present, therefore, in febrile states with loss of appetite, in chronic gastritis, growth, constipation, and in neurasthenic dyspeptics. It may also be due to local oral disease.

*Heartburn and acidity* are difficult symptoms, chiefly because they are loosely employed to describe a variety of sensations. True heartburn is a retrosternal sensation probably dependent on spasm of the lower oesophagus or cardia. "Acidity" is the regurgitation of sour or bitter fluid into the throat, but it is not by any means necessarily associated

with hyperchlorhydria, for I have seen it in cases of hypochlorhydria, and even in achylia. It has been suggested that it may be due to organic acids or alcohols.

With the exception of this last symptom, which is not truly a gastric symptom, I am doubtful whether any dyspeptic sensations can be directly attributed to secretory abnormalities. Hurst showed that the only chemical substances capable of stimulating gastric sensations were the alcohols, and that the gastric mucosa was insensitive to all other stimuli. On theoretical grounds and for practical purposes it is justifiable to presume that all or most gastric symptoms (not including referred pains) are expressions of abnormal motor behaviour. In summary I would say that gastric pains and discomforts are usually an expression of disturbed tonus or peristaltic rhythm, with resultant general or local variations in intragastric tension.

The importance, in the course of the interrogation, of inquiring into the time incidence of pain or discomfort and the main aggravating and relieving factors cannot be overstressed.

#### THE PHYSICAL EXAMINATION.

The physical examination of the abdomen in dyspeptics, except in cases presenting gross changes, such as tumours or extreme gastric dilatation, or definite local tenderness as in ulcer, is usually regarded as disappointing. There are, however, secrets which a careful examination of the abdominal parietes may reveal, and the patient's initial gesture when asked to locate his symptom should never be ignored. A definite localization with a finger or two is much more likely to indicate organic disease. An indefinite indication with a whole hand will direct attention to Groups C, D, and E before Groups A and B.

I have interested myself of late in the referred signs of intra-abdominal disease, and have come to examine for the following signs almost as a routine:

1. The abdominal reflex in all four quadrants, noting exaggeration in any one quadrant.
2. Superficial skin soreness in any quadrant, as evidenced by wincing or complaint during testing for 1.
3. Deep skin soreness, elicited by plucking up the skin and subcutaneous fat between the finger and thumb in each of the four quadrants in turn.
4. Muscular guarding, appreciated by very gentle palpation in each quadrant.
5. Deep tenderness in the mid-line between the recti and in each quadrant.

The presence of any one, and still more of several, of these signs helps to confirm a suspicion of organic disease, but their absence does not by any means exclude it. They are most frequently useful in gastric and duodenal ulcer and, along with certain other reflex signs, in disease of the gall bladder.

If there is one point above others which I should like to emphasize it is the importance of examining patients, whenever possible, at a time when their pain or symptom is present, or even of endeavouring to produce the symptom in obscure cases. At these times they do not have to rely on memory for their descriptions, and reflex signs are more likely to be manifest. I believe that these reflex signs are not indisputably present except in association with an organic lesion.

#### ACCESSORY INVESTIGATIONS.

The last quarter of a century has witnessed the rapid development of numerous accessory methods applicable to the investigation of gastric behaviour. Their combined value is now very considerable, but they have in many ways exerted a bad influence on clinical medicine. Too much has been expected of each test as it has been evolved, and, notwithstanding that there are many cases in which an accurate opinion can only be arrived at with their aid, it cannot be too emphatically stated that they should be looked upon as contributory and not as diagnostic tests.

The most useful of these methods are radiography with opaque meals, the test meal, and the examination of the stools for evidence of bleeding in the upper gastro-intestinal tract.

#### Radiography.

It would be outside my province and beyond the scope of this lecture to discuss radiographic technique. The information obtained from radiography may be roughly divided into direct and indirect information. Direct information comprises the visualization of a definite niche or crater in gastric ulcer, of filling defects in carcinoma, and the demonstration of delayed emptying in obstructive lesions. Indirect evidences are provided by observations as to size, shape, position, tonus,



and peristaltic activity of the stomach. In other words, apart from the direct evidences, radiography is mainly employed as a test of motor efficiency. With regard to emptying rate, the normal variations have been sufficiently established, but the normal variations in size, shape, position, tonus, and peristaltic activity are so considerable in different individuals and in the same individual under different conditions that much caution is necessary before accepting opinions based on radiographic appearances. Radiography with a barium meal is of very real value in confirming a suspicion of ulcer of the lesser curvature, of which a niche or crater, often with an opposing spasm, is strongly indicative. It is of less direct value in duodenal ulcer, and we should hesitate to accept deformities of the duodenal cap as evidence of ulceration. However, a high placed, hypertonic, transverse stomach with tenderness over the cap lends strong support to a clinical suspicion of duodenal ulcer. Although frequently confirmed by radiography, carcinoma ventriculi, especially in early cases, cannot be excluded by a negative x-ray report.

#### The Test Meal.

Ewald's test meal, in which the stomach contents are withdrawn for measurement and analysis one hour after a breakfast of tea and bread, has now been widely supplanted by the fractional test meal. This method was described by Rehlfuss in 1914. I started to test its value in this country in 1919, and after three years' experience of the method am satisfied that it provides much more information than older tests, and that it should be used preferably to them in the routine investigation of dyspeptics. If radiography is accounted the best test for motor efficiency of the stomach, the fractional test meal may be accepted as an equivalent test for chemical efficiency, and it has the added advantage that it also supplies reliable evidence in regard to emptying rate. It provides information as to the amount, chemistry, and cytology of the fasting secretion; the free and total acidity throughout the meal (the results of the analyses being plotted as a curve), the regurgitation of bile, the rate of disappearance of starch, the presence or absence of after-secretion, and the presence or absence of blood at various stages. A standard meal of oatmeal gruel is employed, and specimens are withdrawn at intervals of a quarter of an hour through an Einhorn or Rehlfuss tube or a modification of these which I have had designed.

Excepting in pyloric obstruction the fractional test meal is not a diagnostic test. In the presence of obstruction it will often decide whether a cicatrized ulcer or a carcinoma is the cause. Characteristic climbing hypersecretory curves with clear acid resting juice are found in a high percentage of duodenal ulcer cases, but the findings merely express a reflex pyloric hypertonus with prevention of duodenal reflux, and may also be obtained in cases of gall-bladder and appendicular disease, in tabes dorsalis, and in some emotional dyspepsias. Achlorhydria is almost constant in early and late stages of Addison's anaemia, is frequent in carcinoma ventriculi, in which case intimately diffused blood is commonly present in several specimens, and is also met with in a higher proportion than normal of dyspepsias due to chronic gall-bladder or appendicular infection.

Impressed with the importance of a knowledge of the normal variations, I undertook in 1920, with T. L. Bennett, the investigation of 100 healthy students. Among these we found four men with complete achlorhydria, and a small group showing such degrees of hyperchlorhydria as to have stamped them, on older beliefs, as definitely pathological. Nevertheless, 80 per cent. of the men examined provided what we refer to as an "average normal" type of curve; and it is upon a knowledge of this group and the departures from it that we have come to base our opinion of the test-meal findings in dyspeptic subjects.

If radiography is more helpful in establishing a positive diagnosis of lesser curvature ulcer, I would suggest that the fractional test meal is more useful on the whole in confirming a diagnosis of duodenal ulcer. In any suspicion of growth both methods should always be employed.

I hope that I have made it apparent that, excepting in certain fairly definite and organic disease states, the evidence supplied by x rays or test meals needs careful weighing, and should be regarded as contributory evidence only.

#### Other Investigations.

Other special investigations include examination of the stools for occult blood by the benzidin, guaiac, or spectroscopic tests; the estimation of the haemoglobin in the blood,

especially in suspected carcinoma and anaemia; radiography of the chest when there is suspicion of latent tuberculosis; radiography of the whole gastro-intestinal tract; radiography of teeth and alveolar margins; and in suspected chronic appendicular trouble Bastedo's inflation test, in which pain may be produced in the appendix region by inflation of the colon with air. It will be manifest that the main function of all these tests is to confirm or allay a suspicion of some kind of organic disease.

#### THE INDICATIONS FOR A COMPLETE INVESTIGATION.

It will be asked what should be regarded as the indications for a complete investigation. I would suggest the following:

1. Any suspicion of cancer—for example, dyspepsias starting for the first time during or after middle life; dyspepsias at any time in adult life with considerable loss of weight or anaemia.
2. Suspicion or presumption of ulcer, gall stones, cholecystitis, or appendicular disease; especially with a view to deciding between medical and surgical treatment, and most especially with a view to avoiding exploratory operations.
3. Suspicion of early active or chronic latent pulmonary tuberculosis or of grave anaemias.
4. Failure of treatment in any other group.

*The most important single symptom: calling for full inquiry is genuine persistent or recurrent pain.* You may also ask whether under ideal conditions we should investigate all dyspepsias fully by modern methods. My answer would be emphatically in the negative, for that would imply confession of a serious loss of clinical sense, balance, and self-reliance, and there are, moreover, certain circumstances in which a complete investigation is actually contraindicated. I would suggest the following contraindications:

1. Cases falling obviously into Group C or E in which common-sense methods and optimism or a new mode of life are likely to achieve a cure, unless it is decided that a complete examination is necessary to remove a phobia.
2. Cases (usually falling into Group E) of the hypochondriacal type, which are likely to be made worse by further probing into their gastro-intestinal functions—that is to say, the same type which delights in abdominal operations. Reinvestigation in these cases may be almost as bad as reoperation.
3. Cases too ill for prolonged examination.
4. The patient's pocket. In other than hospital patients this is often a serious consideration, and it may well be justifiable to try a preliminary course of treatment in accordance with the presumed diagnosis, or to recommend a partial investigation. In some cases, however, a complete investigation may obviously save subsequent expenditure.

I will now attempt to summarize for you the important features of the various groups of dyspeptics. You will appreciate that it is impossible to give more than a bare outline of the picture in each case, and that in no other class of cases are individual variations and problems so numerous.

#### Groups A and B.

**Gastric Ulcer.**—Comparatively high incidence in women. Mid-line and left-sided pain and tenderness, with a gravation by food. Soreness, guarding, and increased reflex on the left, especially during pain. Relief by rest, vomiting, diet, alkalis. A normal or low curve of acidity, unless the ulcer is close to the pylorus. A normal or hypotonic type of stomach, with a niche or crater on the lesser curvature and sometimes an opposing spasm. Occult blood in the stools. A poorer tendency to recovery, both with medical and surgical measures, than duodenal ulcer. Tongue usually clean.

**Duodenal Ulcer.**—High incidence in men, particularly in the period of physical and mental vigour. Family history of duodenal ulcer or hunger in a small proportion of cases. Tendency to heal and recur spontaneously, and especially to recur in autumn and winter. Hunger pain, night pain, and relief by food. Mid-line and right-sided pain and reflex signs. A climbing hypersecretory curve. Occult blood. A high placed, hypertonic, transverse stomach with tenderness over the cap. Good tendency to recovery on rest and ulcer diet and after gastro-jejunostomy. Tongue generally clean.

**Carcinoma.**—Age incidence. Absence of previous dyspeptic history in most cases. Pain more constant than in ulcer and less definite food relationship though generally aggravated by food. Less readily relieved by rest. Sometimes pain absent throughout and general and anaemic symptoms predominating. Greater frequency of anorexia, nausea, vomiting, furred tongue, and eructations of sulphuretted hydrogen than in other conditions. Low acid curve or complete achlorhydria. Wide gap between free and total acidity. Blood cells and organisms in gastric juice. Persistent occult blood in stools. Filling defects or rigid tubular stomach. Tumours and glands.

**Gastritis.**—One of the commonest diagnoses, but a comparatively rare cause of dyspepsia. Most cases diagnosed as gastritis turn out to be ulcers or functional dyspepsias. Association with alcohol and gross oral sepsis. Acne rosacea and red nose. Loss of morning appetite; morning nausea and sickness. Diffuse burning type of pain, not so accurately localized as in ulcer. Heartburn, eructations, and tendency to diarrhoea. Low or absent free acid. Excess of mucus and cells. Furred tongue in active phases.



**Gall Stones and Cholecystitis.**—History of colic or jaundice in a small proportion of cases. High incidence in women. Pregnancy and typhoid predisposing and fatness and increasing weight common. Vomiting, nausea, flatulence, distension. Epigastric pain, right subcostal pain, scapular, interscapular, or shoulder pain. Tendency to diarrhoea or diarrhoea sensations. Shiveriness or slight pyrexia in attacks. Aggravation by exertion, jolting, and menstrual periods. Right subcostal tenderness and catch in breath on deep palpation. Referred tenderness over dorsal spines and eleventh right rib behind. Guarding of right upper rectus and impaired entry at right base in attacks with infected gall bladder. X rays seldom helpful. Hyperchlorhydria and achylia both more common than in normal subjects.

**Chronic Appendicular Dyspepsia.**—Too freely diagnosed. History of possible acute attacks. Epigastric pain without such definite food relationship as in ulcer, but sometimes closely simulating ulcer. Pain in epigastrium on pressure over appendix. Tenderness over appendix shadow when visualized with x rays. Positive inflation test. High curves and achylia both more frequent than in normal series.

**Post-Gastro-enterostomy Dyspepsia.**—This may be the result of gastric discomforts associated with an inefficient or too efficient stoma and consequently with feelings of fullness or empty feelings. It may be due to persistence or recurrence of the original ulcer or to the development of a jejunal ulcer, in which case the maximum tenderness may be found over the stoma, is usually to the left of the mid-line, and commonly at a lower point than obtains in gastric ulcer. In jejunal ulcer there is commonly a persistent high acidity. Fractional test meal shows bile in all specimens after most gastro-enterostomies, but with an unsatisfactory loop bile may be absent in many specimens. Another type of post-gastro-enterostomy dyspepsia is due to too rapid filling of the small bowel. The symptoms are usually discomforts around the umbilicus and below the area of gastric sensibility.

#### Group C.

Symptoms usually vague. Discomfort rather than pain. Fullness and feelings of weight in epigastrium. Flatulence. Aggravation by prominent causal factors and relief by healthier life, holidays, etc. In fatigue dyspepsias loss of appetite common. Physical examination may show too fat or thin a subject, but local examination negative.

#### Group D.

History or family history of tuberculosis, or debility in some cases. Poor appetite, especially in morning, with active disease. In latent disease fullness and discomfort, often aggravated by food, and tending to be worse at the end of the day. A tendency to remain below normal weight or to lose slightly. General tendency to fatigue easily. Prompt improvement in appetite and disappearance of symptoms on rest in bed and feeding up. The following is a good example of this type of dyspeptic:

A middle-aged lady who was leading a very active and useful life complained of flatulence and discomfort after food which had failed to respond to ordinary measures. Her appetite was fair, but she was afraid to eat because of the discomfort, which at times amounted to actual pain in the epigastrium. Seventeen years previously she had had a cough for a short time, and on one occasion tubercle bacilli were found in the sputum. Since then she had had no cough nor chest symptoms. The gastric investigations were negative. X-ray photographs of chest showed increased root-shadows on the right and small opacities at both apices. There was no pyrexia, cough, nor pain in the chest, and there were no physical signs of active lung disease. She was treated by rest, fresh air, and a liberal diet, which she tolerated well as soon as she rested. Six months later she had gained in weight, from 8 st. 2 lb. to 10 st. 7 lb., and had lost all symptoms.

I have seen several similar cases in which no chest trouble had ever been suspected. It is a type of case which is apt to be treated with a belt, diet, or gastric medication, but when once the cause of the debility to which the gastric mechanisms have reacted unfavourably is recognized the treatment becomes obvious, and the results of treatment are good. In the anaemic dyspeptics heartburn, acidity, poor morning appetite, and a tendency to diarrhoea are common. Relief is given by rest, treatment of the anaemia, and hydrochloric acid.

#### Group E.

Cases in this group vary from the old man who is concerned about the furring of his tongue to the young woman with hysterical vomiting; from the sufferer from simple aerophagy to the poor victim who blames every cause but the true one for his miseries, and weeds out of his dietary one article of diet after another until he is on starvation rations. The prospective, the worried, the overworked, and the indolent are numbered in the group. There is greater aggravation by anxiety and worries than by physical factors. Pain as a rule is not localized, and the whole hand is employed in the demonstrative gesture, or there may be several pains. In aerophagy left subscapular pain is not uncommon. Subjects may be "nervy," hypertonic, and restless, or they may be hypotonic and depressed. Phobias of internal disease are frequently present. There is aggravation by directing interest and treatment towards the stomach. Relief by explanation, encouragement, unearthing sources of worry, discouraging hurry and worry (especially in the neighbourhood of meal times), teaching relaxation, bromides, and sensible life and dietary. Surgery spells ruin.

#### CONCLUSION.

I have, with intent, entitled my lecture "The investigation of dyspeptics" rather than "The investigation of dyspepsias." In no branch of medicine is it more important to preserve the

wide view—to examine the patient as a whole rather than to concentrate upon his viscus. It is extremely difficult to remain balanced if one employs any single method of inquiry to the exclusion of others—if one comes to rely too much on accessory tests, or too much on clinical tests. I do not believe that there is, or ever will be, a place in medicine for such a specialism as gastrology. If the broad classification which I have outlined has a sound basis it would seem that probably less than one-third of all chronic dyspepsias are due to disease of the stomach, and even in many of these the primary factors have been situated elsewhere.

The introduction of chemical and radiographic diagnostic methods has been of inestimable value, but I believe that the chief value of these methods will finally be in the direction of helping us better to interpret symptoms and so to become more skilled at clinical diagnosis.

The works of Cannon and Carlson in America and of Hurst in this country have supplied a basis for gastro-intestinal symptomatology which has made it possible to study dyspeptics scientifically from the clinical point of view; much in the same way the work of Mackenzie and Lewis has enabled us to study cardiac manifestations reasonably and physiologically. Clinical investigation, we may now affirm, is coming back into its own. Although we shall not hastily relinquish new methods, and although we shall certainly improve upon and add to them, we must admit that we are still in the process of learning to assess them at their proper value. In the dyspepsias, as in other diseased states, it is a truism that early and accurate diagnosis is the first essential for adequate treatment. Early diagnosis depends on appreciation of possibilities and causes and on good clinical sense; accurate diagnosis in many of the dyspepsias can only be arrived at with the aid of routine investigations, the nature and scope and relative importance of some of which I have endeavoured to define. In the past we have commonly had to content ourselves with treating symptoms such as pain, flatulence, and "heartburn." Careful investigation nowadays enables us more and more frequently to discover and attack the causes of these symptoms.

## FURTHER CLINICAL EXPERIENCE WITH INSULIN

(PANCREATIC EXTRACTS)

### IN THE TREATMENT OF DIABETES MELLITUS.

BY

F. G. BANTING,  
M.D.Tor.,

W. R. CAMPBELL,  
M.A., M.D.Tor.,

AND

A. A. FLETCHER, M.B.Tor.

(From the Department of Medicine, the University of Toronto, and Toronto General Hospital.)

In this article no attempt is made to give a review of the history of the use of various pancreatic preparations in the treatment of diabetes mellitus. A careful survey of the literature published previous to the use of insulin\* indicates that all attempts to obtain a potent pancreatic preparation suitable for the continued treatment of this disease have failed. Many investigators have reported temporary success in the treatment of diabetes mellitus with pancreatic preparations. Owing to the lack of adequate dietetic and chemical control in the treatment of these cases it is difficult to determine the exact significance of their results.

Mention, however, should be made of the work of Zuelzer. In 1908 Zuelzer and his associates reported their results in the treatment of six cases of diabetes mellitus with a pancreatic extract obtained by expressing the juice from the pancreas, treating it with alcohol, and evaporating the filtrate to dryness. The residue, which contained the active principle of the pancreas, was redissolved in salt solution or water and given by injection. Following the intravenous injection of this extract in five diabetic patients kept on a fairly constant diet, the excretion of acetone, diacetic acid, and sugar in the urine decreased or entirely disappeared. An improvement in the general condition of all patients treated was observed following the injection. In four cases the excretion of acetone,

\* A general statement of the physiological and therapeutic effects of insulin, by Professor J. J. R. Macleod, was published in this JOURNAL November 4th, 1922, p. 833.



diabetic acid, and sugar in the urine returned to the former level in from one to four days after extract treatment was discontinued. The fifth case, which was complicated by a large carbuncle, was treated by incision of the carbuncle and by the extract. After the wound healed the urine of this patient remained free of sugar and acetone upon dietetic treatment alone. The intravenous injection of the extract in these five cases was accompanied by severe chills, fever, and occasionally vomiting. In 1909 Forschbach,<sup>2</sup> working in Minkowski's clinic, reported his results in the treatment of two cases of diabetes mellitus with the Zuelzer extract, which he obtained from the Schering Company of Berlin. In one case no effect was observed; in the other the administration of the extract, which was accompanied by chills and fever, reduced the excretion of sugar to one-fifth for a period of forty-eight hours. The writer attributes the positive effect obtained in one case to the use of a freshly prepared extract. Owing to its extreme lability and the severe toxic reaction following its administration the extract prepared by Zuelzer did not come into general use in the treatment of diabetes mellitus.

#### THE TORONTO RESEARCHES.

In March, 1922, a preliminary report<sup>3</sup> was published on the treatment of severe cases of diabetes mellitus with insulin. It was then noted that insulin could bring about certain definite clinical results. The excretion of sugar in the urine decreased and sometimes completely cleared up. Coincident with the decrease in sugar excretion was a lowering in the blood sugar level, and this level could be brought down to normal or even further by careful adjustment of dosage. Ketone bodies usually disappeared from the urine in twenty-four to forty-eight hours. An increase in the respiratory quotient following insulin injection gave evidence of increased carbohydrate utilization. The patients themselves gave abundant testimony of clinical improvement; their feeling of well-being during treatment, along with the improvement in their physical and mental activity, made it appear that the symptoms which are the immediate result of this disease could be relieved by insulin administration. The effects observed in depancreatized animals following the administration of insulin have been confirmed in cases of diabetes mellitus.

Since the preliminary announcement in March, 1922, applications for treatment have been received in considerable numbers. Among these applications were many from patients with severe diabetes who had been under observation for long periods on well-controlled diets, but with a gradual failure of clearance for carbohydrates. In view of the limited quantities of insulin available, the need of these patients for relief, and the fact that such patients only can furnish satisfactory data for the establishment of our main propositions, it was decided to confine attention to these severe cases, reserving for future study and treatment the less severe ones. Consequently we are not in a position, at the present time, to furnish any data on a very interesting group of patients whose disease is in the early stage, and who may ultimately show very great degrees of functional repair of the pancreas when the latter is allowed a considerable period of relative inactivity as a result of treatment.

A general plan of investigation and treatment of patients has been adapted provisionally to determine those who require treatment with insulin and the requisite dosage to be employed. On admission to hospital the history and physical condition of each patient is investigated. Patients admitted in coma or in the precomatous state, whether of the accidental type occurring with a good tolerance or as a sequel to slowly deteriorating carbohydrate tolerance, are immediately given insulin treatment. For other cases a diet based upon the normal basal calorific requirement for the age, height, weight, and sex of the patient is calculated.\* This diet contains sufficient protein to maintain nitrogenous equilibrium and carbohydrates and fats in such a ratio as to avoid the excessive production of acetone and diacetic acid. Placing patients on fasting for a day has helped to attain constancy of sugar

Patients are kept in bed for a variable session to hospital, and afterwards only light exercise is permitted. Examinations of the blood and urine are carried out daily for a period of a week or more. At the end of this period on a constant diet the patients who are sugar-free are advised to continue dietetic treatment in view of the shortage of insulin. Those who are showing decided

glycosuria and hyperglycaemia, with possibly various degrees of acidosis in addition, are selected for insulin treatment.

Having a preparation of insulin known to be potent and to contain approximately one unit to one cubic centimetre according to the pharmacological assay,<sup>4</sup> the patient is given an amount calculated to be somewhat less than that required to render the urine sugar-free. If, however, we have an accurate idea of the sugar-burning power of this preparation by previous use in other patients, we may at once calculate the dose required to render the urine sugar-free for the twenty-four hours. Insulin is administered, according to the amount required, in one, two, or three doses, at or shortly before meals. Subcutaneous injection is the method of choice. Examination of the urine at short intervals enables one to determine approximately when the patient becomes sugar-free, and to adjust subsequent dosage to maintain this condition. Blood sugar estimations are useful in determining the level of blood sugar during treatment, and assist in spacing the time of administration of extract.

Special care is taken that the food consumed by each patient is appetizing in appearance, palatable to the taste, and well served. It is all weighed and checked according to a menu prepared by the dietitian attached to the clinic. Any unused food is weighed and the amount actually used determined. Records are kept of each article of food eaten by the patient, and in many instances this is kept constant for long periods as to amount, kind, and time of serving. Atwater's tables are used as a basis of calculation, together with certain later data available in the recent literature and from our own laboratories. Actual analyses of foods consumed are not made except for special purposes, but it is well known that, considering the other factors involved before assimilation of the foodstuffs, the calculation of the diet from published analyses is sufficiently accurate. Non-nutrient materials, such as bran cakes, agar jellies, thrice-boiled vegetables, mineral oil mayonnaise, broths, tea, coffee, etc., are made use of extensively to provide bulk and increase the palatability of the diet.

Twenty-four-hour specimens of urine are collected in the usual manner, and examined qualitatively and quantitatively for sugar, acetone, diacetic acid, and total nitrogen, as well as the usual routine tests for volume, specific gravity, albumin, and character of the sediment. Sugar is determined by Benedict's and Shaffer and Hartmann's methods; ketones (acetone and diacetic acid) by Rothera's and Gerhardt's tests and Van Slyke's methods. Total nitrogen is determined by a modification of the well-known Kjeldahl method. Blood sugar is estimated by the revised Folin Wu and Shaffer-Hartmann methods; blood ketones by Van Slyke's methods; carbon dioxide combining power of the blood by Van Slyke's method; alveolar air carbon dioxide by Marriott's method and a modification of Haldane's method, similar to Roth's. Basal metabolism and respiratory quotients are determined by the Douglas Haldane and Tissot-Haldane methods. Many of these chemical methods are not necessary for the actual clinical treatment of a diabetic patient but are useful for a metabolic study of the disease.

#### GENERAL CLINICAL RESULTS.

Up to the present time over fifty cases of diabetes mellitus have been treated with insulin, and some have been under treatment continuously for several months. Although the most striking results have been seen in children and young adults, all patients have been benefited by the treatment. Many of the patients have come to the hospital in a state of extreme under-nutrition, suffering from great weakness along with an indisposition to any physical activity. On the first or second day of treatment, if sufficient insulin is given, the urine becomes sugar-free, and on the second or third day ketone-free. These patients become conscious of increasing strength before the end of the first week. From a state which may be one of discouragement or of profound mental depression they become cheerful and interested. Hunger is replaced by appetite; the thirst is lessened. Oedema, which is common in these cases, disappears. Patients find they are less irritable, and state that they begin to sleep well. The expression improves; the skin becomes less harsh and dry; even the hair becomes softer; in fact, the patient loses that appearance which characterizes the diabetic. In ten days a very considerable amount of physical vigour is restored. Some patients have been able to return to work after a month of treatment. The patient's weight frequently increases, and this can readily be brought about by supplying food in excess of the calorie requirement and increased amounts of insulin.

\* Full details as to the calculation of diets will be published shortly by one of us (W. R. C.).



One patient, aged 16, who had lost 40 lb. during her three years of diabetes, gained 35 lb. in less than four months. Mild infections are favourably influenced; for example, the pain of a chronic pyorrhoea was relieved by treatment; it recurred when the injections were stopped, and was relieved again when they were continued. Simple catarrhal infections are no longer of serious import. During this time the urine can be kept sugar-free and ketone-free. The morning blood sugars are lower and may approach the normal level. Lipaemia was present in a few cases and disappeared with treatment.

The following case is reported briefly:

T. H. B., aged 25; glycosuria discovered November, 1920, when the patient was suffering from a series of boils. Weight at that time 160 lb. Has been under continuous dietetic supervision since onset. Glycosuria became much worse in November, 1921, when increase in diet was tried. Condition became progressively worse up to time of admission, September 18th, 1922. During ten days of preliminary observation his weight varied between 112½ and 116 lb. He was emaciated, weak, and depressed. He was given a diet of protein 36 grams, fat 140 grams, carbohydrate 41 grams. Average daily excretion of urine 4 litres; specific gravity 10.10 to 10.16; glucose 38 to 75 grams; ketones, varying from 0.3 to 1.7 grams; total nitrogen 8.5 to 12 grams; morning blood sugar 0.215 per cent. For two weeks following October 4th he was given three daily injections at meal time of 2 c.cm. of insulin. After the first day he remained sugar and ketone free. Urinary nitrogen was on the average 1.5 grams less than before treatment. Fasting blood sugar on the fourth day was 0.134 per cent. The restoration of strength was rapid and by the end of two weeks the patient was able to take daily walks of two and three miles. On October 26th he was discharged, and continued to receive 3 c.cm. of insulin a day. His diet was increased to—protein 36 grams, fat 140 grams, carbohydrate 61 grams. He is feeling well and strong. He states that he does his work as a bank clerk with ease, and is quite free from fatigue at the end of the day. He has remained sugar-free since discharge. On December 5th the examination of a twenty-four-hour specimen of urine gave—volume 2,380 c.cm., specific gravity 10.08, sugar absent, acetone absent. His weight was 125 lb.

#### GLYCOSURIA.

Probably the condition toward the alleviation of which most attention has been directed in the therapy of diabetes is the glycosuria. While regarding this symptom as being, in most cases, of not more than secondary importance, it is nevertheless one in which the efficiency of insulin may be most convincingly demonstrated.

We have encountered no cases of diabetes mellitus in which insulin, given in adequate amounts, did not make patients aglycosuric within a remarkably short time, in spite of the fact that they had been excreting large quantities of sugar for months while on a fixed diet, and even in spite of large increases (1,000 calories) in the various foodstuffs. Maintenance of a patient without glycosuria may be a more difficult proposition, and involves a good many factors which will be touched upon later. However, in conjunction with a reasonably well controlled diet on which, without insulin, the patient formerly excreted large quantities of sugar, this has been accomplished for long periods. The dosage of insulin required to effect this has naturally varied in different cases and with various preparations of the pancreatic extract, but as a rule is much less than is required initially to render the patient sugar-free. Certain cases indeed may, after a period of insulin treatment, recover such a degree of tolerance as no longer to require extract to maintain them on a basal diet. The treatment and final outcome of such patients is a most interesting subject for future investigation to determine. We are at present inclined to the opinion that the newly regained tolerance of these patients should be protected for a time by the use of small amounts of insulin. An illustration of some of these points occurs in the case of a man aged 57, who entered the hospital on November 10th, 1922. He was placed on a diet of protein 27 grams, fat 116 grams, and carbohydrate 34 grams, and containing 1,288 calories. He remained on this diet for nine days, during the last four of which the sugar excretion was 27 grams a day. On November 19th the diet was increased for certain reasons to 2,280 calories, and was composed of protein 60 grams, fat 200 grams, and carbohydrate 60 grams. Simultaneously the dose of a certain batch of insulin required to make him sugar-free on the increased diet was calculated and administered on the same day. The result was that the patient has been sugar-free continuously since that time on the same diet, though the dosage has gradually been reduced to half the original amount.

#### KETONURIA, ACIDOSIS, AND COMA.

In practically all patients accepted for treatment an additional problem has presented itself in the management of varying degrees of disturbed fat metabolism—ketonuria,

acidosis, and coma. Ketonuria, associated with glycosuria, clears up when sufficient carbohydrate is burned, and this result can sometimes be brought about by dietetic treatment alone. Under insulin treatment ketonuria is relieved in a striking manner, as in the following case: This patient, who on the previous day excreted 27.3 grams of sugar and 6.70 grams of ketones, was given one dose of 4 c.cm. of a certain preparation of insulin at 7 a.m. The urine was free of sugar at the end of two hours and of ketones in four hours. Sugar was again found in the urine at ten hours after the injection, ketones in eight hours. It is of interest to note here that ketones reappear in the urine two hours before sugar.

TABLE I.—Showing the Two-hourly Output of Sugar and Ketones in the Urine for the Twelve-hour Period following the Injection.

Time.	Volume, c.cm.	Sugar.		Ketones.	
		Per cent.	Grams.	Mg. per litre.	Mg. per 2 hrs.
7-9	40	0.75	0.3	1737	70
9-11	250	0	0	262	65
11-1	520	0	0	0	0
1-3	460	0	0	0	0
3-5	470	0	0	213	100
5-7	240	0.43	1.16	491	115

Cases of severe acidosis show the same prompt reaction to insulin treatment. Ketones disappear from the urine and blood, the normal alkali reserve of the blood is re-established, and the signs and subjective symptoms of the condition completely disappear.

To those who have previously striven, practically unrewarded, with cases of diabetic coma, one of the most interesting and valuable properties of insulin is its effect upon this condition, the mechanism of which we believe will throw an entirely new light on the intermediary metabolism of the foodstuffs. We have had an opportunity of treating 10 cases of complete coma (stage of complete anaesthesia) as well as other cases of coma imminens.

Of the 10 cases of complete coma treated 4 died. The first case of coma was admitted to hospital in February, 1922, and died in April. This case came into the hospital in a state of severe acidosis, markedly emaciated and dehydrated, with a high D/N ratio. Owing to the difficulty in the production of insulin at that time many of the preparations lacked potency and satisfactory treatment was impossible. The patient was treated at intervals with insulin. The acidosis was improved, to return when treatment was discontinued. The case gradually became worse and went into coma; was brought out by large doses of a weak extract; lapsed again into unconsciousness and died when the supply of extract was exhausted. One other fatal case was effectually brought out of coma but died of pneumonia. In the other two cases, one died with sloughing gangrene of the foot, and the other of complete vasomotor failure. In both these cases coma was relieved by insulin treatment. At the time of death the urine of these patients was free of sugar and ketones; the blood sugar and blood ketones were normal, and glycogen was found in the liver and muscles *post mortem*.

The remaining six cases of coma treated are all living. One has recovered and is now aglycosuric without insulin on a diet about double the basal requirement. The other five patients have remained free of symptoms and the urine free of sugar and ketones under dietetic treatment and the daily administration of insulin.

We are not prepared, at present, to lay down definite rules for the management of diabetics in coma, for we believe that with greater opportunities for study more satisfactory methods may be devised for treating this as well as other problems in relation to the disease. The use of large amounts of fluids by mouth, by the rectum, interstitially, or intravenously, seems very desirable. Rest, warmth, purgation, and stimulation in suitable amounts seem indicated. Sodium carbonate or bicarbonate presents difficulties in arranging proper dosage and undoubtedly kills when used in excess. There is some evidence of the usefulness of the intravenous injection of glucose as a diuretic in the earlier stages of coma. The fact remains, however, that in the past four years no case entering our wards in advanced diabetic coma has recovered by any of these methods. Though we are aware of a few isolated instances of such having taken place in other hospitals, we



believe the opinion is commonly held that such cases are practically hopeless. Insulin treatment may now be said to constitute an important step in the therapy of this condition. Insulin is administered to these patients either subcutaneously, or intravenously followed by subcutaneous injections. The dose employed has been usually, though not always, far in excess of the requirement, and the danger of a hypoglycaemic reaction is guarded against by sufficient glucose given at the same time. No attention need be paid to the glycosuria at this time, as the object is to correct the disordered fat metabolism and decrease ketone production. The glucose is necessarily given intravenously in advanced coma, and perhaps it is not amiss to warn against the danger of using any but the purest form of glucose and against sterilization at unnecessarily high pressures.

The first evidence of improvement is in the rise of alveolar  $\text{CO}_2$ , but the difficulties of getting satisfactory samples of alveolar air from comatose patients leave something to be desired in the way of constancy of results, and so clinical improvement usually is noted first, and consists in movements, fluttering of eyelids, etc., response to painful stimuli, etc. At the same time, however, there is reduction of the total ketones in the blood, though this information is usually received too late to be of service. The alkali reserve, as estimated by Van Slyke's technique, is more rapidly determined, and may be used to confirm the clinical impression. It tends to rise toward normal a little later, in our experience, than the reduction in blood ketone bodies, and distinctly later than pronounced clinical signs of improvement.

Probably a considerable number of us have been formerly misled by clinical evidence of apparent improvement in the patient which was not confirmed by laboratory data, and which we subsequently found to be unreliable. But, as well as strengthening our position from a clinical standpoint, the laboratory data also provide definite indications as to the necessity of administering further amounts of insulin or glucose. In the presence of a decided lowering of blood sugar the latter is desirable; while inadequacy of insulin dosage is indicated by failure of the alkali reserve to increase. When laboratory facilities are unavailable, a great deal of valuable information may be obtained by frequent examinations of the urine. Disappearance of sugar from the urine is an indication for the administration of more glucose or possibly the use of epinephrin; while reduction or disappearance of the ketones is a most favourable sign.

#### REACTIONS AND HYPOGLYCAEMIA.

Toxic reactions may follow the injection of an extract of any animal tissue, owing to its content of protein and split protein products. These reactions have been especially severe in the experience of investigators with pancreatic extracts, and have been the chief obstacle to their introduction for clinical use. Some reactions of this type were produced by injections of the extract first used by us. The present product, however, is practically protein-free, so that, with the exception of urticarial eruptions in one, or possibly two, sensitive patients, these occurrences are no longer met with. Insulin administration may be followed by a reaction of another kind, which is the result of the fall in blood sugar (hypoglycaemia). When a single injection is given to a patient there is a rapid fall of blood sugar which reaches a low point in two to eight hours, and tends to return to the original level in twelve to twenty-four. Such a result is recorded in Table II.

TABLE II.—Showing the Fall in Blood Sugar following a Single Subcutaneous Injection of Insulin, given at 7 a.m.  
(The urine was free of sugar from 9 a.m. to 3 p.m.)

Time.	Blood sugar percentage.
7 a.m. ... ..	0.278
9.30 " ... ..	0.174
11 " ... ..	0.105
12.30 p.m. ... ..	0.073
3 " ... ..	0.127
6 " ... ..	0.168

While the extent of this fall is dependent in a measure upon the amount of insulin and upon the initial blood sugar level, it cannot be predicted with any great degree of accuracy in an individual patient. In giving a dose, therefore, to render the patient sugar-free it sometimes happens that the blood sugar falls well below the normal level, and this sudden hypoglycaemia is accompanied by a characteristic train of symptoms. When the blood sugar percentage falls to 0.07 per cent. under the influence of insulin, the patient becomes aware of it. He may first complain of hunger, or more often

a sense of weakness or fatigue, and, especially if it is his first reaction, he is conscious of some anxiety or of what he calls nervousness, or he may even show the signs of a definite neurosis with loss of emotional control, such as crying spells. Almost constantly present is a feeling of tremulousness; actual tremor is rarely seen. The patient may also have some inco-ordination for fine movements. Vasomotor phenomena are common: pallor or flushing, sometimes one after the other; a sense of heat or chilliness; almost always a profuse sweat. The severity of these symptoms increases with the hypoglycaemia, and the lowering of the blood sugar near to 0.05 per cent. produces very acute distress or even mental disturbances, such as confusion and disorientation. A blood sugar of 0.032 per cent. resulted in a state of coma with hypotonia and loss of deep reflexes. One patient while asleep passed into a low muttering delirium as the blood sugar fell to 0.052 per cent. This was followed by uncontrollable hunger. A blood sugar of 0.053 per cent. in another case was accompanied by weakness, crying, and extreme anxiety. One patient was quite irrational while his blood sugar was around 0.06 per cent. On another occasion he became deaf and had difficulty in articulation. This difficulty in articulation has been seen several times. Others have had only a vague feeling of uncertainty which would have passed unnoticed had they not experienced a previous reaction. In such cases the blood sugar is usually about 0.075 per cent.

These reactions can be relieved by food administration; 50 to 100 c.cm. of orange juice has an almost immediate effect in clearing up the symptoms. A better result is obtained with 5 to 25 grams of glucose given with orange or lemon juice. When a patient is unconscious 1 c.cm. of epinephrin (1 in 1,000 solution) should be given intramuscularly, followed by glucose by the mouth. If the patient is not well enough in a few minutes to swallow glucose, it may be given subcutaneously or intravenously. Special nursing precautions should be taken for the detection of reactions when insulin treatment is first started, when a new preparation is given, and when insulin is administered late in the day, as the reaction may occur during sleep. As yet pharmacological assay of the potency of insulin has not been satisfactory, and to this may be attributed the occasional reactions seen when new preparations are used. However, once a patient has had a reaction he is quick to recognize the onset of the next one, and means may be taken to relieve it. Up to the present time no serious mishap has occurred as a result of these hypoglycaemic reactions, but while this is so it is felt that hypoglycaemia constitutes a real source of danger.

#### GENERAL DISCUSSION OF RESULTS.

The dosage of insulin is a very important factor in the successful treatment of a patient; on the one hand, we have to fear hypoglycaemic reactions, and, on the other, we know that glycosuria will result when the blood sugar rises above the patient's threshold level for excretion of sugar. It is, therefore, not always easy to adjust the conditions so that there is sufficient insulin present to nullify the post-prandial hyperglycaemia, and yet insufficient to produce a dangerous lowering of the blood sugar. We know, however, that the effect of insulin on blood sugar is not exerted immediately after subcutaneous injection, and therefore we space the injections so that their effect is occurring during the period of assimilation of carbohydrates. This usually means injecting the insulin at, or shortly before, the meal, but instances occur—possibly due to delayed, or too rapid, absorption of sugar into the blood stream, the use of meals containing too much high carbohydrate food, etc.—in which glycosuria occurs at one time and reaction at another. These, fortunately, are not common, but serve to emphasize the necessity for careful observation of the patient for a period in a hospital before discharging him to the care of his private physician. Further, the initial symptoms of reaction are so specific as to leave no doubt in the mind of anyone who has seen them, and the remedy is, fortunately, easy to apply before there is any real danger.

At the end of the preliminary period of observation on a fixed diet the majority of cases of severe diabetes excrete a fairly constant amount of sugar, and this information is most valuable in determining the actual amount of insulin to be employed in treatment. In certain cases, possibly owing to daily fluctuation in tolerance for carbohydrates, the daily excretion of sugar varies and it is impossible to determine the initial dose of insulin. In these cases it is advisable to begin with a moderate dose, gradually increasing it until the



desired effect is obtained. The amount of insulin used will depend not only on the carbohydrate tolerance of the patient, but on the height and fixity of the blood sugar level.

Whether we shall in the future permit patients to have higher blood sugar levels than at present seems advisable is a point on which there is conflicting evidence. At present we are inclined to the belief that more successful results are obtained with regard to the general well-being of the patient, clearing up of minor and even major infections, etc., if a normal blood sugar level is aimed at. Owing to the short duration of the effect of insulin it might seem desirable to ingest the carbohydrates at one particular meal and give the extract in relation to this meal, thus avoiding the number of injections—two to three daily sometimes necessary in the severer cases. This, however, is not the case, as the carbohydrate is apparently stored and burned under the influence of the insulin, and during this period the patient feels like a healthy, normal person, and later, when only fat and some protein is available for burning, he gets a mild ketosis and experiences lassitude or fatigue. In our view a prolongation of the period of action is most desirable, and whether this is to be obtained by slowing the rate of absorption or by more frequent injection is a matter for further study.

After these patients are freed from glycosuria and ketosis and are permitted to use an adequate basal ration they usually feel so well that they demand increased food to satisfy their desire for exercise. In this case we are less particular about spreading the carbohydrate intake throughout the day and usually prescribe an increased amount of carbohydrate with three to four times as much fat at one or possibly two meals, and a corresponding amount of insulin. The same thing may be accomplished by raising the diet instead of decreasing the initial dose of insulin. As the protein is not as efficient as carbohydrate in preventing disordered fat metabolism, the amount of fat which can be given with protein is much less than with carbohydrate. Owing to the high caloric value of fat it seems desirable to raise first the carbohydrate in the diet. When increase in calories is not so urgently required, then protein may be used and fat added in the proportion of 10 grams of fat to each 8 grams of additional protein.

In severe diabetics and comatose patients the alterations in metabolism under the influence of insulin are most interesting. They furnish material for a considerable amount of investigation which we hope to report upon later. The study of the respiratory quotient reveals positive evidence of the utilization of carbohydrates. Patients with any considerable carbohydrate tolerance may be expected to produce a certain amount of insulin themselves. This may be mobilized under suitable stimuli, and the initial rise in the respiratory quotient sometimes seen is probably due to this factor. The specific effect following the administration of insulin is almost coincident with the attainment of normal blood sugar levels. Demonstration of the effect of pancreatic extracts in raising the respiratory quotient can best be made on the most severe cases of diabetes mellitus.

Other factors which we must decide in the patient's interests are his most suitable weight and condition of nutrition and the means which shall be employed to attain them, and also to what extent work shall be allowed. Following the principle of low maintenance diets in treatment it seems unwise to allow increases in weight in stout patients, or even marked increases in the emaciated. In the former, reduction of the patient's weight by using insufficient fat in the diet is recommended; in the latter it is felt that some increase in the weight is desirable on account of the associated improvement in the general condition of the patient, his resistance to infection, etc., even though an increased amount of insulin is required. Work, involving as it does the increased use of foods and consequent drain on the supply of insulin, is not to be regarded as desirable when pushed to excess, and patients are accordingly advised to moderate their usual activities.

Diabetics are perhaps more subject to infections and gangrene than any other class of patients. In such cases a distressingly high mortality has been observed. Without doubt the more recent dietetic treatment has removed many of the terrors of operation, such as coma, and has even aided in the more rapid clearing up of infections for the less severe degrees of the disease. However, many patients lose a great deal of their carbohydrate tolerance when infection is added to their diabetic condition. And further, the infections are more prone to occur in the more severe cases who do not respond favourably to dietetic treatment. For both types of

patients insulin furnishes most valuable assistance in treatment in that it keeps the blood sugar normal—an important consideration in the treatment of infection—enables the patient to utilize carbohydrates, and, in consequence, prevents acidosis and removes the danger of post-operative coma. It seems clear that necessary surgical procedures may be undertaken in properly treated cases with practically no more risk than in the normal.

Attention must be paid to various other influences in the treatment of diabetic patients. Symptomatic treatment for minor complications, such as constipation, insomnia, etc., must be carried out. Psychic factors, such as fear, anxiety, and worry, are well known to produce hyperglycaemia and glycosuria. The effect of insulin is so specific that these need not be considered as influencing the results of treatment, but in this, as in all other diseases, the best results in treatment can be obtained with happy, contented patients.

#### SUMMARY.

The following is a summary of the results of our investigation:

1. Under treatment with insulin in patients who are not otherwise amenable to treatment:

- (a) Glycosuria is abolished;
- (b) Ketones disappear from the urine and the blood;
- (c) Blood sugar is markedly reduced and maintained at normal levels;
- (d) The alkali reserve and alveolar carbon dioxide of patients in acidosis and coma return to normal;
- (e) The respiratory quotient shows evidence of increased utilization of carbohydrates;
- (f) The cardinal symptoms of diabetes mellitus are relieved and the patients show well-marked clinical improvement.

2. Insulin is a specific in the treatment of diabetic coma.

3. Certain procedures are suggested as a guide in the administration of insulin.

4. Hypoglycaemic reactions in man have been studied and described.

5. Hypoglycaemic reactions following insulin are relieved by the administration of carbohydrates and also by the injection of epinephrin.

To Dr. Duncan Graham, professor of medicine, we desire to express our sincere thanks for his interest in directing and supervising the investigation throughout its course.

#### REFERENCES.

- <sup>1</sup> Zue'zer, Dobryn and Marxer: *Deut. m. d. Woch.*, 1908, vol. 32, p. 1380.
- <sup>2</sup> Forschbach: *Ibid.*, 1909, vol. 47, p. 2053. <sup>3</sup> Banting, Best, Collip, Campbell, and Fletcher: *Canadian Med. Assoc. Journ.*, March, 1922.
- <sup>4</sup> Banting, Best, Collip, Macleod, and Noble: *Amer. Journ. Physiol.*, 1922, vol. 42, p. 162.

## ON A POSSIBLE MODE OF CAUSATION OF DIABETES MELLITUS.

BY

L. B. WINTER AND W. SMITH.

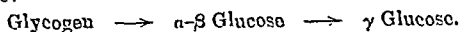
(From the Biochemical Laboratory, Cambridge.)

In a paper, now in the press,<sup>1</sup> we show that the normal blood sugar in man and animals has a lower rotatory power than would be given by the  $\alpha$ - $\beta$  equilibrium form of glucose as deduced from the copper reduction value. The sugar gives an osazone with the same crystalline form and melting point as that of glucosazone. The instability of the sugar is shown by its transient rotatory power, the curve of polarimeter readings reaching the copper reduction value in three to four days in acid solution. The sugar at first decolorizes potassium permanganate more rapidly than a solution of  $\alpha$ - $\beta$  glucose in similar concentration. This distinction no longer obtains when the polarimeter reading corresponds with that of  $\alpha$ - $\beta$  glucose. These facts, in conjunction with the work of Hewitt and Pryde<sup>2</sup> on sugar solutions introduced into the intestine, suggest that normal blood sugar is  $\gamma$  glucose. That ingested glucose or fructose is rapidly converted into normal blood sugar was shown by feeding experiments on normal persons. After 100 to 150 grams of glucose or fructose no alteration in the nature of the blood sugar could be detected.

In cases of diabetes mellitus we show that this sugar is not present in amounts capable of detection by the method employed. The polarimeter reading in these cases is initially greater than the copper reduction value, and the



curve gradually falls until the copper value is reached. This suggests that besides  $\alpha$ - $\beta$  glucose, disaccharides or other substances with a polarimeter: copper reduction ratio greater than that of  $\alpha$ - $\beta$  glucose are present in the blood of diabetic persons. We suggest that  $\alpha$ - $\beta$  glucose cannot be directly stored or utilized, but that an enzyme is responsible for the conversion of  $\alpha$ - $\beta$  glucose into  $\gamma$  glucose. We picture the change:



The absence or inactivation of this enzyme is suggested as the direct cause of diabetes mellitus.

Macleod and his co-workers<sup>2</sup> have recently shown that injection of "insulin" into depancreatized dogs causes a decrease in the blood sugar. Determinations of the respiratory quotient showed that sugar was being utilized as long as the administration of insulin was maintained. Similar results were obtained by the injection of insulin into persons suffering from diabetes mellitus. We suggest that the effect of the insulin is to activate the enzyme responsible for the conversion of  $\alpha$ - $\beta$  glucose  $\rightarrow$   $\gamma$  glucose. If this view be correct, examination of the blood sugar of diabetics after injection of insulin should show that the nature of the sugar approximates to that of normal persons.

We have investigated the action of tissue extracts on the rotatory powers of glucose and fructose. We have confirmed the observations of Hewitt and Pryde<sup>3</sup> that extracts of the intestinal mucous membrane are inactive. The liver would appear to contain the enzyme. That another factor is concerned is shown by the fact that the enzyme is almost inactive in the absence of an extract of pancreas. The extracts of pancreas which we have recently used are preparations of "insulin" obtained by Collip's method.<sup>4</sup> Similar activation of the enzyme is obtained.

Solutions of glucose or fructose when incubated at 37° C. with very small amounts of insulin and liver extract in a jacketed polarimeter tube have their rotations altered in a downward and upward direction respectively. In view of the fact that our insulin preparations invariably contain phosphorus, it is noteworthy that addition of phosphate accelerates the reaction to a degree not obtained by the use of other salts. Phosphate buffers have therefore been employed. Boiled liver extract is inactive, whereas insulin would appear to be thermostable in this respect. Our insulin preparations were tested for activity on rabbits.

The degree of alteration in rotatory power may be seen from the following examples:

Glucose.		Fructose.	
First reading ...	1.70° R.	First reading ...	177.92°
Lowest reading ...	1.47° R.	Highest reading ...	178.30°
The solutions contained 15 c.cm. of an arbitrary glucose or fructose solution, 2 c.cm. phosphate buffer, 1 c.cm. 0.1 M. KCl, 1 c.cm. weak insulin solution, 0.3 c.cm. liver extract.			
Without phosphate—			
Glucose.		Fructose.	
First reading ...	1.32° R.	First reading ...	178.60°
Lowest reading ...	1.30° R.	Highest reading ...	178.61°

The enzyme would appear to be slowly inactivated under these conditions. The unstable nature of the sugar formed is shown by the fact that after the maximum change has occurred the rotation tends to revert to the original value. Our experiments with the enzyme *in vitro* do not show a ratio copper reducing: polarimeter value equal to those observed in the case of blood sugar. It is difficult to convert any considerable amount of the sugar in our solutions into the reactive form, as this is not removed from the sphere of action. A stage would appear to be soon reached at which the reverse process attains a velocity equal to that of the original one.

The copper reducing power of the sugar solution at the beginning and end of the reaction is unaltered. The reaction is therefore different from that described by Levene and Mayer<sup>5</sup> in connexion with muscle and pancreas extracts, in which the copper reducing power was lowered.

This method would seem to lend itself to the further purification of insulin. We have already found that the final product obtained by Collip's method is capable of being divided into two fractions, which differ markedly in their nature and activity as tested by the above method and on rabbits.

## REFERENCES.

- <sup>1</sup> Since published, *Journ. of Physiol.*, December 22nd, 1922, p. 100.  
<sup>2</sup> Macleod and others: *Proc. Roy. Soc. Canada*, 1922. <sup>3</sup> Hewitt and Pryde: *Biochem. Journ.*, 1920, 14, p. 335. <sup>4</sup> Collip: *Proc. Roy. Soc. Canada*, 1922. <sup>5</sup> Levene and Mayer: *Journ. Biol. Chem.*, 1911, 9, p. 97.

## THE VITAMIN CONTENT OF CERTAIN PROPRIETARY PREPARATIONS.

BY

KATHARINE H. COWARD, M.Sc.,

AND

A. J. CLARK, M.C., M.D., F.R.C.P.,

PROFESSOR OF PHARMACOLOGY, UNIVERSITY OF LONDON.

(From the Institute of Medical Sciences, University College, London.)

At the request of the BRITISH MEDICAL JOURNAL the writers have examined the vitamin content of certain of the best known of those proprietary preparations which are advertised in the medical press as containing vitamins. The following preparations were tested:

*Metagen* (Messrs. Parke, Davis, and Co.). The advertisements state that this is guaranteed to contain the three principal vitamins, and that it is "a concentrated product for therapeutic administration."

*Maltoline* (the Maltine Manufacturing Co., Ltd.). The advertisements state: "Maltoline is therefore rich in three well-known vitamins, and is recommended as a nutritive to those who are unable to take or digest cod-liver oil"; and also that "Maltoline . . . satisfactorily takes the place of cod-liver oil."

*Roboleine* (Messrs. Oppenheimer, Son, and Co., Ltd.). The advertisements state: "The 'A.B.C.' of Diet. Because it is very rich in the vitamins 'A,' 'B,' and 'C' there is no tonic food more serviceable in wasting diseases"; and the statement is also made that it "supersedes cod-liver oil."

*Virol* (Virol, Ltd.). The advertisements state that one of the "essential points in the diet of growth" is that "the food must contain those food accessory substances known as vitamins, but the presence of vitamins is not sufficient in itself," and that "Virol as it reaches the public contains the vitamins."

*Vitmar* (Messrs. Callard and Co.). The advertisements state: "Biological tests prove that vitmar contains vitamins in abundance."

*Mellin's Food* (Mellin's Food, Ltd.). The advertisements state: "Vitamins. Those elusive principles of food which are essential to nutrition are present in Mellin's food when mixed for use as directed according to the age of the infant."

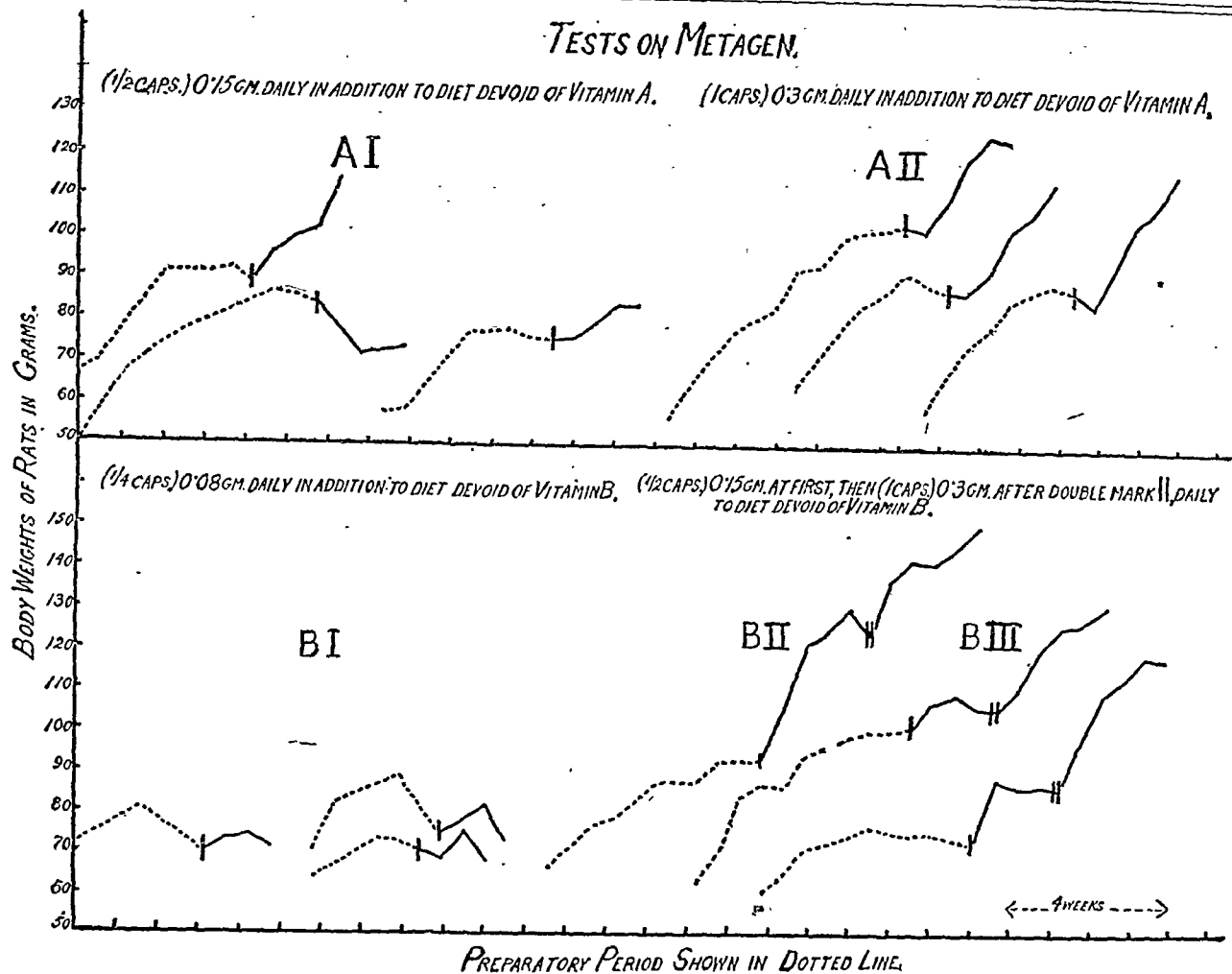
The specimens of these foods tested were all bought in the open market. Most of them claim to contain all three vitamins. Vitamins A and B are rapidly destroyed by certain chemical processes, and therefore their concentration or purification is a matter of extreme difficulty, but it is not difficult to prepare them in an unconcentrated form, in which they will keep for a prolonged period. Vitamin C is much more unstable; so far as we can ascertain it has not been concentrated, and it is difficult even to preserve it in a crude form. Dried orange and lemon juice are indeed the only known preparations in which this vitamin can be preserved for prolonged periods.

We have therefore only tested the above preparations for the presence of vitamins A and B, and have not tested for the presence of vitamin C, for it is reasonable to assume that any methods for the concentration or preservation of vitamins which fail in the case of vitamins A and B will be even less successful in the case of vitamin C.

The presence of vitamin A was determined as follows: Young rats (weight about 50 grams) were fed upon a diet which was free from vitamin A, but otherwise adequate. The rats consumed from 16 to 20 grams of food (moist weight) daily. On this diet they soon ceased to grow, and then a known amount of the substance to be tested was given to the rat before its basal diet each morning, or added to a small amount of the diet which was consumed before the rest of the basal diet was given. The minimal amount of the substance which contained sufficient vitamin A to produce growth in young rats was thus determined.

The presence of vitamin B was also determined by experiments upon rats. In this case young rats were fed upon a diet free from vitamin B but otherwise adequate. This diet soon caused arrest of growth, and the vitamin B content of the proprietary preparations was determined by finding the minimal quantity of the various preparations required to produce growth.





The course of the experiments made with metagen is shown in the accompanying figure. The curves marked A I show the effect of feeding 0.15 gram of metagen daily to rats on a diet devoid of vitamin A; this produced growth in one rat and failed to do so in two others; this result is termed "doubtful

TABLE I.—Vitamin Content of Proprietary Preparations as determined by their Power to Produce Normal Growth in Young Rats (weight about 100 grams) living on a Diet free from the Vitamin under consideration.

Proprietary Preparation.	Vitamin A Tests.		Vitamin B Tests.	
	Dose of Preparation which failed to produce Regular Growth.	Dose of Preparation which produced Normal Growth.	Dose of Preparation which failed to produce Regular Growth.	Dose of Preparation which produced Normal Growth.
Metagen...	Gram. 0.15 (D)	Gram. 0.3	Gram. 0.15 (Ir)	Gram. 0.3
Maltoline ...	1.0 (N)	—	0.5 (N)	1.0
Roboleine ...	0.5 (N)	1.0	0.2 (Ir)	0.5
Virol ...	0.2 (D)	0.5	0.1 (N)	0.5
Vitmar ...	0.2 (N)	0.5	0.2 (Ir)	0.5
Mellin's Food ...	0.2 (N)	0.5	0.5 (Ir)	1.0
Common Food Substances.				
Milk (summer feed)...	—	2 to 5 c.cm.	—	8 c.cm.
Butter (summer feed)	—	0.2 gm.	—	—
Cod-liver oil ...	—	0.003 gm.	—	—
Wheat germ ...	—	—	—	0.2 gm.
Yeast <sup>1</sup> ...	—	—	—	0.2 gm.

(D)=Doubtful growth. (Ir)=Irregular growth. (N)=No growth.

growth" in Table I. In the figure, A II shows the effect of 0.3 gram of metagen on rats on a similar diet; regular growth resulted in all three cases; this is termed "normal growth." B I shows the effect of feeding 0.08 gram of metagen daily to

rats on a diet devoid of vitamin B; no growth resulted in three cases. B II shows the effect of 0.15 gram of metagen; this produced regular growth in one case and defective growth in two cases. This result is termed "irregular growth" in Table I. B III shows that 0.3 gram of metagen produced regular growth in three cases, and this is termed "normal growth."

The results obtained with the various preparations are summarized in Table I; this table also shows, for the sake of comparison, the vitamin content of certain common foods. The doses given in the table are as accurate as can be obtained in biological tests of this nature, but can only be considered as approximately correct.

The results recorded in Table I show that the preparations tested contained vitamins A and B, except maltoline, in which case the tests failed to show the presence of vitamin A in the quantities tested. A dose of 1 gram of maltoline, which is about 8 per cent. of the total diet (dry weight) of a rat, did not contain an active amount of vitamin A, and it seemed unnecessary to repeat the test on a higher dosage. A comparison between the vitamin content of the proprietary preparations and the vitamin content of those ordinary foods which are rich in vitamins shows that the former contain less vitamins than the latter. The vitamin A content of the proprietary foods was in all cases less than that of butter obtained from grass-fed cows, and less than one-hundredth that of active specimens of cod-liver oil. The vitamin B content of the proprietary foods was in all cases less than that of wheat germ or of yeast. The vitamin value of these foods as compared with that of milk from grass-fed cows is shown in Table II.

Mellin's food is not included in Table II as it is not given alone but is mixed with milk; if the food is mixed with milk in the proportion of a teaspoonful of food to two tablespoonfuls of milk the vitamin content (A and B) of the food will raise the vitamin content of the milk. The vitamin content of Mellin's food may therefore be sufficient to be of value in cases where an infant is being fed on milk which has a low vitamin content. As regards the other preparations, none of them can be said to contain a rich, abundant, or concentrated supply of vitamins. None of them can be considered to be a substitute for cod-liver oil as a source of Vitamin A, for in no case does the total daily adult dose of the proprietary food contain as much as one-tenth of the vitamin A



TABLE II.—The Relative Value of Proprietary Foods and Milk as Sources of Vitamins.

Proprietary Food.	Adult Dose.	Approximate Weight of Total Daily Adult Dose.	Amount of milk which provides approximately the same quantity of Vitamin as is contained in the daily adult dose of the proprietary foods.	
			Vitamin A.	Vitamin B.
		Grams.	Oz.	Oz.
Metagen ...	Two to five 5-grain capsules daily	1.6	1	1.5
Maltoline ...	One tablespoonful 3 times a day	45	8	13
Roboleine ...	Two teaspoonfuls 3 times a day	30	5.3	17
Virol ...	Two teaspoonfuls 3 times a day	30	11	17
Vitmar ...	Two teaspoonfuls 4 times a day	40	14	23

content of a teaspoonful of cod-liver oil. The present paper is of course solely concerned with the vitamin content of these preparations, and no opinion is expressed concerning their merits in any other respect. Whilst these experiments were in progress two papers appeared in America describing similar investigations.

Hess, Moore, and Calvin<sup>2</sup> investigated the content in vitamin B and C of metagen and vitamin (mastin). They concluded that "metagen as obtained on the open market contains no demonstrable amount of antiscorbutic substance (vitamin C), as shown by experiments on guinea-pigs." They also found that metagen contained less vitamin B than commercial yeast, as shown by its power to protect pigeons from polyneuritis.

McCullum and Simmonds<sup>3</sup> measured the vitamin B content of six proprietary vitamin preparations advertised in the

United States; one preparation (Yeast Vitamin Harris) was found to contain a considerable quantity of vitamin B, but the others contained little or none of this vitamin.

Dell<sup>4</sup> found that half a capsule of metagen daily failed to maintain life in a guinea-pig on a scorbutic diet, although a dose of 0.5 c.c. orange juice daily had previously maintained the animal in normal health. This result agrees with the conclusions of Hess, Moore, and Calvin.

The experiments recorded in the present paper show that in none of the cases examined have the manufacturers succeeded in concentrating vitamins on the commercial scale. This result was only to be expected, for the concentration of the two more stable vitamins (A and B) is a process of the greatest difficulty even on a laboratory scale, and in the case of the successful attempts the final yield of purified vitamin only represents a minute fraction of the total quantity of vitamins present in the raw material.

Our experiments confirm what other workers on vitamins have emphasized—namely, that under normal conditions of life an adequate supply of vitamins can be easily ensured by including in the diet a suitable amount of "protective foods," such as milk, butter, green vegetables, and fruit, and that no advantage is to be gained by trying to obtain these substances in the form of drugs.

Since the above article was written Bailey<sup>5</sup> has reported that he tested the activity of more than twenty commercial vitamin preparations, and found that only in two or three was the vitamin B content higher than that of dry brewer's yeast; in several the vitamin B content was negligible.

Note.—The expenses of this research were defrayed by a grant from the British Medical Association.

## REFERENCES.

1. J. C. Shattock, *Brit. Med. J.*, New York, 1922, p. 76.
2. J. C. Shattock, *Brit. Med. J.*, New York, 1922, p. 76.
3. J. C. Shattock, *Brit. Med. J.*, New York, 1922, p. 76.
4. E. Marion Dell, *Publications of the South African Institute for Medical Research*, xiv, 1921.
5. Bull. 240, Connecticut Agric. Exper. Station, 1922; quoted *Journ. Amer. Med. Assoc.*, 1922, 79, 1846.

## APITUITARISM AND THE ANENCEPHALIC SYNDROME.

BY

D. L. BARLOW, M.B., B.S. ADELAIDE,

HONORARY CLINICAL PATHOLOGIST, ADELAIDE HOSPITAL; PATHOLOGIST AND BACTERIOLOGIST, ADELAIDE CHILDREN'S HOSPITAL.

The subject of apituitarism and the anencephalic syndrome was brought to my notice by a leading article in the *BRITISH MEDICAL JOURNAL* of November 27th, 1920, which drew attention to the work of F. J. Browne, published in the *Edinburgh Medical Journal* (vol. xxv, page 296).

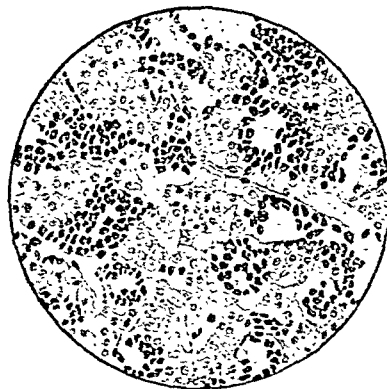
As a result of investigations in five instances of anencephalic foetus, Browne concluded that certain characteristic features of the condition were due to a failure of development or to destruction of the pituitary gland. In particular he directed attention to the large amount of subcutaneous fat, the hypoplasia of the thymus, suprarenal, and genital glands, and the shortness of the limb bones, and stated that these facts showed that the mother's internal secretions play little part in the metabolism of the foetus, which relied on its own glands. He also considered that the facts established formed an important confirmation of the functions of the pituitary glands.

I have examined four anencephalic foetuses, three preserved in the museum of the Adelaide Hospital, and one recent specimen placed at my disposal by Professor Wood Jones. In each of the four instances the anterior (pharyngeal) portion of the gland was found without much difficulty in its usual situation and resting on the body of the sphenoid. In none of the cases was any real attempt at the formation of a sella turcica apparent, though the gland was of a size approximating that in a normal full-time foetus.

In one instance a process of apparently neuroglial tissue, probably representing the pars nervosa, was found; and it is

noteworthy that this was the only one examined comparatively soon after delivery. In all, microscopic sections displayed a structure corresponding with the epithelial segment of the pituitary body—namely, strands of polygonal cells with somewhat granular protoplasm and rounded nuclei, separated by a loose connective tissue, in which were abundant thin-walled vessels. From the position and structure of these glands I have no doubt that they represent the epithelial portions of the pituitary.

[Dr. Barlow sent with his manuscript a microscopic section, which we have submitted to Professor S. G. Shattock, F.R.S., who confirms the view expressed, and has superintended the accompanying drawing (by Mr. J. Ford) of the author's specimen.]



ars anterior of  
foetus, exhibi-  
Thered blood  
are stained of  
1/5 objective.

cerebrum, cerebellum, or pons was present excepting loose vascular connective tissue. The eyes were moderately prominent and the orbital plates much foreshortened. No sella turcica was present, but resting on the body of the sphenoid was a small rounded moderately dark body. No stalk was apparent. Microscopic section showed glandular cells in strands separated by loose connective tissue containing many thin-walled blood vessels.

2. Male anencephalic foetus, normal full-time size. The eyes were prominent and orbital plates foreshortened. There was no

My observations make it appear probable that the gland has been in reality present in cases examined by others, but has not been distinguished from the vascular connective tissue covering the base of the skull.

As a result of the discovery of the anterior segment of the pituitary gland in four successive typical examples of the anencephalic syndrome, it may be concluded that the other features of the condition are certainly not due to apituitarism, and that any conception of the functions of the gland based on such an assumption is erroneous.

Details of the specimens examined are as follows:

1. Male, about the size of an average full-time foetus. Nothing representing the anterior segment of the pituitary gland in four successive typical examples of the anencephalic syndrome, it may be concluded that the other features of the condition are certainly not due to apituitarism, and that any conception of the functions of the gland based on such an assumption is erroneous.



trace of a sella turcica, but a glandular body was found resting upon the body of the sphenoid as in 1; the size was approximately the same and the structure similar. No trace of the brain stem above the level of the medulla was present.

3. Small male anencephalic foetus about two-thirds the size of a normal full-time foetus. The eyes were very prominent, especially the right. The gland in this case was smaller; it corresponded in structure with that of 1 and 2, and its location was similar.

4. Male anencephalic foetus about the size of a normal full-time foetus. The eyes were prominent. There was a moderate amount of adipose tissue. The base of the skull was covered, as normally, with loose vascular connective tissue with a very thin superficial covering of neuroglial nervous tissue. Amongst the dark vascular tissue a tongue-like projection of neuroglial tissue, somewhat irregular in outline, projected from the superficial neuroglial layer in the direction of the glandular portion of the pituitary body, which was found in the usual position. The glandular portion showed the same structure on microscopic section as in the previous cases.

## PURPURA TREATED BY INJECTION OF HUMAN BLOOD.

BY  
MONTAGUE DIXON, M.D., B.Sc.LOND.,  
MELTON MOWBRAY.

THE unfailing success of the treatment of haemorrhage of the newborn by injection of parental blood suggested to me the use of the same method in purpura. The result has been most encouraging, and I venture to hope that in this method of treatment, applied at the very onset of the disease, we have a sure way of curing it.

I have injected 2 to 5 c.cm. of blood, taken from the brachial cephalic vein, into the gluteal muscles. Clotting is prevented by sterilizing the syringe and needle in a solution of magnesium sulphate. I have used the method in four cases, with gratifying results in all, and in the very early cases (III and IV) with complete abortion of the attack.

### CASE I.

S., a boy aged 4 years, had been ill some five weeks before I saw him, so that the improvement was not so startling as in the other cases, which I got early; but the parents maintain with confidence that the injections saved the child's life, and that is also my opinion.

He was taken with pains in the legs early in February, 1920, whilst out walking, so that on two successive days he had to be carried home. After his bath his legs were tender, and he cried when they were rubbed with the towel to dry them. Purpuric spots appeared, and there was swelling of the face. A fortnight later the child had severe colicky pains in the abdomen, especially at night, and melaena was noticed. Absolute anorexia supervened, leading to acidosis, which was relieved by rectal injections of Mellin's food. A daily wash out of the colon was prescribed as the stools were so foul. Once a bowel cast of mucus was passed, and this was followed by complete relief of the colic for four days. There was often melaena and frequently haematuria. Purpuric spots appeared regularly. The child was very ill, wasting, and listless.

On March 14th I gave the first injection of blood (paternal). A definite amelioration of the child's condition resulted. On March 27th the second injection of blood (maternal) was given. This again led to benefit, and by the end of April the patient was convalescent. In June all symptoms had disappeared, except that some purpuric spots appeared on the legs if the child did not take an afternoon rest.

### CASE II.

C., a man aged 60 I had watched in the past in many attacks of subacute purpura, with visceral pains, which had yielded to horse serum administered by the mouth. On March 19th, 1922, he had had one week's epistaxis, and there was a subcutaneous haemorrhage on the right calf. One injection of blood (the son-in-law) resulted in cure.

On August 4th there was a subcutaneous haemorrhage on the leg, and a subconjunctival one too; the injection had the same good effect.

### CASE III.

W., a girl aged 3, was brought to me on March 31st, 1922, by her mother with an extensive outbreak of purpuric spots on the buttocks, thighs, and legs. I gave maternal blood at once. On April 3rd a few spots appeared over the biceps of the arm. On April 7th there were a few on one leg and slight epistaxis. After this there was no further trouble.

### CASE IV.

K. P., a girl aged 6, was brought to the surgery on September 6th, 1922, with purpuric spots on buttocks and legs (which had been present three days) and swelling of the right knee. There were pains in the knee and legs, and the temperature was 101°. Maternal blood was given at once. On September 8th there was a small haemorrhage on the left forearm. On September 9th paternal blood was administered. There were no further symptoms.

## FURTHER NOTES ON TREATMENT OF EPILEPSY.

BY  
JOHN MCCARTNEY, L.R.C.P. AND S.E.,  
ASSISTANT MEDICAL OFFICER, LANARK DISTRICT ASYLUM,  
HARTWOOD.

IN the BRITISH MEDICAL JOURNAL of October 9th, 1920, and again of October 1st, 1921, I published articles giving the results of the treatment of epilepsy by potassium bromide and borax after four and twelve months respectively. At the end of the second year's treatment I append the following notes on eighteen male cases, and I have chosen these because their history as regards fits, before treatment, is definitely known. I had hoped to quote twenty cases, but two died before the second year of treatment was completed—one of pulmonary tuberculosis and the other of cerebral haemorrhage. At *post-mortem* examination the first showed an interesting condition, which, I think, indicated that the epilepsy was traumatic. In the frontal region of the skull there was evidence of an old fracture, with a lump of callus on the inner table, which, pressing on the brain, had caused a cup-like depression in the latter. This patient had shown a reduction of 64 per cent. in the number of fits with one year's treatment. The second case was aged 72, and his record of fits was from 36 to 0 with one year's treatment.

I have divided the cases into two groups, according to the duration of their epilepsy.

Group I includes fifteen patients who have suffered from epilepsy for over twenty years, the shortest period being twenty-one years and the longest thirty-five years. Their ages range from 26 to 57 years. These fifteen patients totalled 1,886 fits in the year before treatment. At the end of the second year's treatment the total is 494—an average reduction of fully 72 per cent., the lowest individual reduction being 50 per cent. In this group the case of petit mal which I quoted in my last article is again worthy of mention. The year prior to treatment the patient had 404 fits; during the first year of treatment this was reduced to eighteen, and during the past year he has had three fits, the last being in September, 1921. This group, I think, demonstrates the value of persevering with the treatment in chronic epilepsy.

Group II consists of three cases—one of six years' duration, one of ten years' duration, and one of twelve years' duration, at the time treatment by bromide and borax was commenced. In these three cases the fits, a year prior to treatment, totalled 119. The total during the past year was seven. One of the cases, a man of 62 whose epilepsy was of ten years' duration before this treatment commenced, has had no fits since December, 1920, and after a residence of eight years in the institution was discharged as recovered in July, 1921. He has had no recurrence, and is now earning his own living. A second case has gone out on pass—he has had two fits during the past twelve months, the last being in March, 1922.

The changes to be noted in the condition of the patients are: (1) marked general mental improvement; (2) freedom from stupor after fits; (3) disappearance of irritability and quarrelsome tendencies—marked features of epileptics; (4) complete change of habits—patients formerly of degraded habits are now the reverse.

Numerous excellent results among other epileptic patients could be quoted, but I shall confine my notes to a few only. One case, a mental defective and typically epileptic, who formerly had attacks at regular intervals, has had no fits since August, 1921. The following case is nothing short of miraculous.

T. A., aged 17, used to be confined to bed, did not speak, did not appear to understand anything said to him, had many epileptic attacks both by day and night, had to be fed, was of degraded habits—in fact, could do nothing for himself, and was always in a state of stupor. Treatment was commenced in July, 1920, and he had, to begin with, half the adult dose. Very soon his fits were reduced in number and severity. He is now much improved, seldom has a fit, and is out of bed daily. His physical condition is good, he is bright in appearance, answers questions readily, shows a fair amount of intelligence considering his opportunities, assists in the work of the ward, and in appearance and behaviour is the very opposite of the typical epileptic.

Two young patients, aged 17 and 18 respectively, were sent here as epileptic, and have been treated accordingly. So far they have had no fits, and they have now been here one for seven months and the other for twenty months. Another patient, 16 years of age, was admitted last December. Up to



March of this year he had no fits, and was then discharged as recovered.

The following case I saw in private with Dr. McMillan of Shotts, and to him I am indebted for the history.

A. B., a female aged 21, began to have fits when she was 17, and they were becoming more severe and very frequent in spite of treatment with large doses of bromide. In December, 1920, she was put on bromide and borax, and has had no fits since. For the past three months she has taken no medicine, and has had no recurrence. This patient commenced with small doses of borax and bromide, which were gradually increased, and the combination which brought about the good result in her case was borax purificatus 7½ grains, potassium bromide 5 grains, and Fowler's solution 2 minims, three times a day.

The treatment of the eighteen patients mentioned has been as follows. To begin with they were put on potassium bromide 10 grains, borax purificatus 5 grains, and Fowler's solution 2 minims, three times a day. The dose was gradually increased, and I found I obtained the best results with potassium bromide 15 grains, borax purificatus 7½ grains, Fowler's solution 2 minims, three times daily, and this combination gave the results as stated in the above two groups. In addition the patients had a laxative at bedtime. At present I am trying different combinations of the two drugs from the above by way of experiment.

In conclusion, I may say that the continuous treatment has had no deleterious effect on the health of the patients, there have been no gastric or skin disturbances, and, in fact, the general physical condition has improved.

## TRAUMA AND APPENDICITIS.

BY

CHARLES J. G. TAYLOR, M.A., M.D.,

SURGEON, NUNEATON AND DISTRICT GENERAL HOSPITAL.

The following two cases, which have recently been under my care, raise some interesting points in regard to the etiology of appendicitis, and on that account may be worthy of putting on record.

### CASE I.

A. S., aged 18, was playing football on September 30th, 1922, when, towards the end of the second half, he was charged and received a severe blow on the right side of the abdomen from his opponent's elbow, which laid him out for the moment. He vomited, but was able to rise and walk to the dressing room. Whilst changing he vomited again. He then walked about half a mile to a bus, which conveyed him to within a short distance of his home. During the whole time pain in the abdomen was severe. When he arrived home he lay down, and as the pain got no better he, later in the evening, called in his doctor, who thought that he must be suffering from appendicitis, but in view of the history decided to wait till the following morning. The diagnosis then seemed certain. When admitted to hospital at 2 p.m. the temperature was 100°, the pulse 88. The tongue was furled, the abdomen was definitely rigid and tender in the right iliac fossa, the point of maximum tenderness being somewhat below McBurney's point.

At 7 p.m. Dr. E. N. Nason administered an anaesthetic, and the abdomen was opened through a right rectus incision. Omentum presented on opening the peritoneal cavity. A small quantity of slightly turbid fluid was mopped out, and the appendix was then found pointing downwards over the brim of the pelvis, the vessels deeply engorged, and the organ throughout its length covered with patches of lymph. The appendix was removed in the usual manner and the abdomen closed without drainage.

Convalescence was uneventful, except that two days after operation a tense swelling the size of a plum was discovered in the tissues of the right spermatic cord immediately above the testicle. This was diagnosed as a haematoma, and at the time of discharge it had shrunk almost to vanishing point.

On cross-examination after operation this youth informed me that some two months previously he had suffered from an attack of "indigestion" (pain all over the abdomen and vomiting), which lasted for two days and then cleared up. He was positive that when he walked out to the football field he was feeling as well as he had ever done in his life.

### CASE II.

H. V., aged 22, at about 1 a.m. on October 18th, 1922, was working on the night shift down the pit when he had to put forth a violent effort to lift a tub on to the rails. About three minutes later he was seized with sudden acute pain across the lower abdomen and vomited. He was brought out and sent home, when he vomited again three or four times, and the pain continued to be severe. At 9 a.m. he was seen by his doctor, who advised his immediate removal to hospital, but as "his people were not willing" he refused. However, at 6.30 p.m. on the following day he was admitted. The temperature was 99.8° and the pulse 88. He complained of severe pain in right side of the abdomen.

On examination there was tenderness all over the lower abdomen, with increased rigidity; tenderness was very marked over McBurney's point. An anaesthetic was administered by Dr. Bradbury, and at 8.45 p.m. the abdomen was opened by a right rectus incision, and a short, stumpy, acutely inflamed appendix, buried in adhesions, was found behind the caecum. About half a drachm of thin pus free in the peritoneal cavity was sponged out and the operation completed in the usual way, the abdomen being closed without drainage.

He had had a troublesome cough previous to the present illness, and this somewhat complicated his recovery, as he coughed open the skin wound. In other respects convalescence was uninterrupted.

In both of these cases the attack was definitely ushered in by violence—in the one by a direct blow on the abdomen, in the other by a severe strain. An intriguing point in both cases is their bearing on the Workmen's Compensation Act. In the first case, of course, that question did not arise; but supposing it had, I do not think that compensation could have been withheld, even allowing that the patient had had a previous attack, the onset being apparently so definitely the result of the blow. In the second case the influence of trauma is more debatable.

I find on looking through my notes that I have dealt with one other case allied to these. It occurred at Scapa Flow in 1916. A boy, aged 16, from H.M.S. *Conqueror*, was kicked on the right side of the abdomen. He was admitted to hospital ship two days later with tenderness and rigidity in the right iliac fossa, but the temperature was normal. I removed a very long and congested appendix. This case would probably have cleared up without operation.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### THE VARIATIONS OF NORMAL TEMPERATURE.

A PASSAGE in Dr. E. Clark-Jones's article (BRITISH MEDICAL JOURNAL, November 25th, 1922, p. 1026), that ignorance obtains as to what constitutes a normal temperature, leads me to record some investigations I made as a student on my own body temperature in March and April, 1892. I found that thermometers differed by as much as a third of a degree, and selected one which recorded the mean of six as I was unable to procure one with a Kew certificate of accuracy.

I made 170 records of my mouth temperature at intervals of an hour or two during a period of twenty-one days in April, 1892, and, averaging each period, I obtained the accompanying Chart A. I was led to do this because in the previous

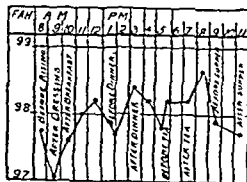


CHART A.—Normal day temperature curve while studying, with short periods of slight exercise.

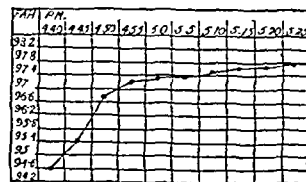


CHART B.—Rise of temperature at five-minute intervals after severe exertion in well-trained condition.

March, during training for the Hospital Rugby Cup final, I had been trying to find out the effect of exercise on the temperature, with some astonishing results. I found that the effect of slight exercise was to raise the body temperature slightly for a short time until perspiration began, when, if the exercise was continued, there was a continuous fall, and a few days before the final cup tie after a two hours' run I found my mouth temperature was 94.6°; Chart B shows the rise afterwards at successive five-minute intervals. At the commencement of vigorous training on March 6th that year after one hour's run I recorded 95.4°, and after half an hour's interval it had risen to 99.1°, and did not return to normal till four hours afterwards. The effect of training was to diminish that rise until it was not perceptible, although the fall was lower.

On March 8th, after one hour's run, I discovered that the urinary temperature was three degrees lower than the mouth temperature at the same time, being 93.7° while the mouth was 95.7°, and when I recorded the mouth temperature of 94.6° the urinary temperature was 99.6.



I find that the urinary temperature is always, even before rising in the morning,  $0.6^{\circ}$  higher than the mouth temperature, and during the day is from one to two degrees higher according to the amount of exercise taken. In the intervals between urination I have taken it at the urinary meatus, and find it half a degree higher than that at the mouth, and the latter is a quarter of a degree higher than that in the armpit even when there is perspiration, and half a degree when the armpit is dry.

Further, the temperature always falls after urination, but there is no perceptible further fall after defaecation unless rectal readings are taken, when they are lower than the mouth reading by  $0.2^{\circ}$  to  $0.4^{\circ}$ . At other times rectal readings are higher than mouth readings up to half a degree when the bladder is full, and consequently I have regarded them as the most unsatisfactory method of getting nearest to the heat of the blood, the changes in the temperature of which we wish to determine.

The fall of the mouth temperature on rising is very striking and absolutely constant and seems to indicate inaction of the heat-regulating centres.

Northwich.

HENRY H. HAWARD, M.B., B.Ch., etc.

### TREATMENT OF MIGRAINE.

A RECENT contribution lauding luminal in migraine prompts record of other experience.

When, despairing of the use of bromides in epilepsy, atropine was added, or when the "mal" was entirely "petit" used alone, hope returned. And very notable successes followed.

In migraine for years the best treatment, unfortunately limited to those cases exhibiting warning symptoms, was found to be hourly administration of calomel to catharsis. Likening migraine to sensory or subcortical epilepsy—that is, to the action of the epileptic poison on the basal ganglia—atropine was tried. From the experience of eight years it may be confidently asserted that the remedy is as nearly a specific as the state of knowledge permits. The dose is 1 to 3 minims of liquor atropinae, thrice a day after meals. Continuous and indefinite administration is unnecessary. A course of three weeks or more to commence with, followed by ten or fourteen days' treatment at intervals determined by the reaction of the particular patient, suffices.

Burton-on-Trent.

H. D. O'SULLIVAN, M.B., B.Ch.

## Reports of Societies.

### ACUTE OEDEMA OF THE CERVIX.

A MEETING of the Edinburgh Obstetrical Society was held on December 13th, 1922, with the President, Dr. J. LAMOND LACKIE, in the chair.

Dr. W. F. T. HAULTAIN read a communication on "Acute oedema of the anterior lip of the cervix." In a case which he had had under observation, the patient, a 5-para, had always been healthy except for eclampsia with her first child. On examination when she was a week overdue, the head was low down in the pelvis, the abdomen somewhat pendulous, and the os uteri the size of half a crown. The cervix was then normal, except that the anterior lip was slightly tongue-shaped. Labour was induced with castor oil, quinine, and pituitrin, and pains started next day; a child 8 lb. in weight was born within four hours without difficulty, the placenta being expelled ten minutes later. Before the placenta was expelled a large mass was found lying beside it which was thought to be another lobe of placenta, but when the placenta was expelled the mass remained. On Dr. Haultain's arrival, three-quarters of an hour after birth of the placenta, he found a tumour the size of a medium-sized Champetier de Ribes's bag, and shaped like it, dilating the vulval orifice. It was purple in colour, and extremely tender on pressure. On vaginal examination it was found to be continuous with the anterior lip of the cervix, and there was no pedicle of attachment. The uterus was well contracted, and there was no unusual bleeding from the vagina, while the patient's general condition was excellent. The tumour became rapidly reduced in size, and in half an hour had entirely disappeared within the vulval orifice. Next morning the only relic was a slight tongue-like thickening of the anterior lip of the cervix, similar to that found before the onset of labour.

The literature on the subject (added Dr. Haultain) is extremely scanty, only some 13 cases having been reported. All have occurred in multiparae between 20 and 40, the previous confinements having been normal. In two cases it occurred with an abortion, two of the women were phthisical, one had a large ovarian cyst, one suffered from very marked constipation, and in two cases it was associated with prolapse. All the others were healthy. The oedema usually began about the seventh month, but in two cases it came on just before labour, and in one at the third month. Labour was spontaneous in nine cases, forceps were required in two, one came off prematurely at the beginning of the ninth month, and one died after an operation for ovarian cyst. The striking features in all the cases were: (1) the sudden onset; (2) the rapid disappearance of the swelling; (3) the tendency which it has to come and go during pregnancy; (4) the absence of difficulty in the birth of the child; (5) the absence of pain. The etiology is obscure. Jolly believes it to be due to an inflammatory oedema caused by infection or by a toxin, and to be of the nature of angio-neurotic oedema. Geyl thinks it is due to stagnation of blood by an acute kink between the cervix and the lower uterine segment, and that the slight increase of abdominal pressure during pregnancy exaggerates the defect.

Dr. JAMES YOUNG showed lantern slides illustrating an early ovum which he considered to be not more than fourteen or fifteen days old. The blastocyst was smooth all round, showing no projections of the mesoderm into the trophoblast. Unlike the Teacher Bryce ovum, the trophoblast consisted almost entirely of cells of the Langhans type.

Dr. W. F. T. HAULTAIN showed a specimen of myosarcoma in the main horn of a two-horned uterus in a nullipara aged 42. The only symptom had been menorrhagia with no loss of weight or disturbance of general health. The tumour mass completely filled the main body and blocked the cervix, the smaller horn being unaffected.

Dr. HAIG FERGUSON showed: (1) A large cervical fibroid enucleated by abdominal section. (2) Ruptured pregnancy in a rudimentary horn of a bicornute uterus. There had been three months' amenorrhoea, followed by an acute attack of abdominal pain, vomiting, and collapse. The abdomen was opened and found to be full of blood, while the four months' foetus and membranes had escaped into the abdominal cavity. There was no apparent connexion between the ruptured half and the other half of the uterus or with the vagina, although a somewhat doubtful communication had been demonstrated microscopically. The corpus luteum of pregnancy was present in the ovary of the opposite side. (3) Fundal carcinoma in a double uterus in which the original septum had been destroyed by the malignant growth; the patient was a sterile married woman aged 65. (4) A large uterine fibroid with twisted pedicle and intraperitoneal haemorrhage. The abdominal cavity was found full of blood, and the fibroid, a large subperitoneal one, was found to be twisted one and a half times from left to right upon its pedicle. Blood was flowing freely from a rent in a vein about the size of a slate pencil, which was one of many coursing over the surface of the fibroid. Supravaginal hysterectomy was followed by complete recovery.

### HEART DISEASE IN PREGNANCY.

A MEETING of the North of England Obstetrical and Gynaecological Society was held at Manchester on December 15th, 1922, with the President, Mr. HAROLD CLIFFORD, in the chair.

Mr. A. LEYLAND ROBINSON (Liverpool), in a paper on heart disease in pregnancy, said that the conclusions formed by Angus Macdonald in 1878 were in the main surprisingly applicable at the present time, although some modifications had to be made in view of the results of recent cardiological research. The latter had shown that cardiac murmurs did not necessarily indicate serious disease and that many systolic bruits were innocent if not actually physiological. The myogenic theory of heart conductivity had been demonstrated and a rational explanation provided for many types of formerly obscure cardiac irregularity. The discovery of auricular fibrillation had brought to light an important mechanism in the production of heart failure. Prognosis was now determined by the efficiency of the heart muscle and its capacity for work. A pregnant woman with heart disease was primarily a heart case, but the



influence of pregnancy on cardiac disease and the special dangers of labour formed a problem of great importance to the obstetrician. Pregnancy affected the heart and circulation in several ways: (1) An increased output of blood was demanded by the growing tissues (uterus, breasts) and by the placental circulation; (2) the uterine tumour produced certain mechanical effects by simple pressure on the base of the lungs and on the heart itself, which was displaced upwards and rotated to the left; as a result the pulmonary circulation was impeded and the right heart embarrassed. Pregnancy, therefore—and in particular labour with its severe muscular effort—implied cardiac strain and called up the reserve power of the heart: in health that reserve was quite adequate, but in disease such physiological response might be impossible, and heart failure would then occur.

Mr. Leyland Robinson then referred to 39 cases from the Liverpool Maternity Hospital, comprising 26 cases of mitral stenosis, 6 of mitral regurgitation, 2 of aortic regurgitation, and 5 of functional cardiac disease. Of these patients 5 died—4 from mitral stenosis, 1 from aortic regurgitation and mitral stenosis. The effect of treatment was shown by the result in 17 cases of mitral stenosis (10 with severe and 7 with advanced disease). Of 12 women who received careful pre-natal supervision, one died (a difficult breech delivery); of 5 women who received no such treatment all died. Accurate cardiological diagnosis was essential before undertaking treatment, as many systolic bruits and arrhythmias had no pathological significance and no treatment was required. In the presence of organic disease rest and prolonged observation were of first importance; the physiological activities of the patient must be limited and made to conform with the capabilities of the heart muscle. The appearance of signs of incipient heart failure (such as the persistence of crepitations at the pulmonary bases) indicated that the cardiac reserve was being seriously encroached upon and demanded special treatment. Drugs of the digitalis group were chiefly called for by auricular fibrillation, whilst haematinics, regulated exercise, and nourishing food were of great value in improving the tone of the cardiac muscle. The termination of pregnancy might be called for under special circumstances: In early pregnancy, for the incipient heart failure of aortic disease (because compensation once broken could not be restored by treatment), or for a progressive decompensation in mitral stenosis when there was no response to digitalis. In advanced pregnancy the induction of premature labour was permissible for mild cases with full compensation, but was definitely contraindicated in the presence of heart failure near term.

The conduct of labour was a great responsibility and required careful consideration. During delivery *per vias naturales* morphine was extremely helpful in reducing the voluntary efforts of the patient, and forceps might be employed to expedite delivery. Caesarean section would give better results, particularly in the case of a primipara, where (1) the disease was severe and the heart barely compensated and the reserve poor, or (2) if there was the least reason to suspect delay or difficulty in delivery. Although many cardiac patients successfully passed their one or more confinements and the immediate result appeared to be satisfactory, the strain on the heart was rarely transient but usually prolonged and sometimes permanent and irremediable. Apart from parturition, many cardiac diseases were naturally progressive, as endocarditis, which was prone to occur, might convert a quiescent lesion into an active and progressive one. It was therefore doubtful whether repeated pregnancies should be allowed, and, if not, the question of sterilization would have to be cautiously considered in those cases where it was not possible to prevent conception.

Mr. Leyland Robinson's paper was discussed by Dr. DOBBIN CRAWFORD (Liverpool), Dr. W. E. FOTHERGILL (Manchester), and Dr. J. E. GEMMELL (Liverpool).

### TREATMENT OF EMPYEMA.

At a meeting of the Oxford Medical Society held at the Radcliffe Infirmary in December, 1922, Dr. F. J. HATHAWAY (Windsor) read a paper on the treatment of empyema. He began by remarking that the treatment of empyema—namely, incision and drainage by a tube—had not changed for the last one hundred years. He hoped that soon the open drainage of a chest with a sucking wound would be looked on as a surgical abomination. This was the subject he had been

working on for the last five years and at last the immediate closure of pneumococcal empyema was being recognized and justified. He pointed out that the post war surgeon was not satisfied with the eradication of disease or of pus alone, but put before himself a higher ideal—namely, restoration of function—provided he ran no risk of septicaemia.

Dr. Hathaway quoted from his experiences of war surgery on the knee-joint, peritoneum, and pleura, and showed that in these regions immediate closure of wounds had been more than justified by restoration of function. In regard to empyema, he pointed out that the structure of the pleura was peculiar in that a rigid thorax contained a collapsible lung; that therefore in the treatment of empyema with a collapsed lung it was essential that the lung should be encouraged to expand as fully and as early as possible, for it was not until the lung fully expanded that pleural suppuration would end. This full and early re-expansion of the lung could only be produced by the method of immediate closure, because this method did away with the two great hindrances to lung expansion—the effects of atmospheric pressure and secondary infection. After quoting his own experiences in gunshot wounds of the chest when surgeon to a casualty clearing station in France, Dr. Hathaway briefly reviewed the history of wounds of the chest, pointing out that even in the thirteenth century Henri de Mondeville immediately closed the chest in order to avoid a "sucking wound." Felix Wurtz in 1563 recommended, with the era of gunshot wounds, that chest wounds should be closed, as also did Guthrie and Baron Larrey in the nineteenth century. During the American civil war, the Franco-Prussian war, the Boer war, and at the beginning of the late war there was no improvement. But in 1915 the era of immediate excision of gunshot wounds, introduced by Sir Henry Gray of Aberdeen, led the way for the immediate closure of wounds of the chest, abdomen, and joints.

As an important point bearing on the treatment of empyema, the crippling effects on the lung itself by adhesions were described in even a simple haemothorax. Mr. James Berry, in a recent paper, had laid down this axiom: "A good surgeon is one who knows when to use a drainage tube and when to remove it." Dr. Hathaway went further: "A good surgeon is one who realizes that restoration of function is more important than the use or abuse of a drainage tube." He then dealt with the method of immediate closure of pneumococcal empyema. Early and complete restoration of lung function could only be accomplished by complete operation—namely, by freeing the visceral pleura of all adhesions—and by doing away with atmospheric pressure and a sucking wound and with secondary infection.

The three most important points in the technique of operation were:

1. Bacteriological examination of pus after aspiration. He did not advocate immediate closure in any but pneumococcal cases. He would not think of doing so in a mixed staphylococcal and pneumococcal case, or pure staphylococcal or pure streptococcal cases. Here he advocated the use of a "passage tube," also called a rubber "dam," with closure of greater part of the wound, or the use of Carrel-Dakin treatment in streptococcal cases.

2. Sufficiently large incision and resection of one or of two ribs in order to allow the whole hand to be introduced into the pleural cavity, to remove all pus and fibrinous clots and especially all adhesions which might have formed on the visceral pleura causing crippling effects on lung expansion.

3. After operation daily aspiration of the fluid put into the chest, with an aspirating syringe between the lips of the wound. This was quite painless. The fluid used for filling up the pleural cavity was either a 2 per cent. suspension of iodoform in paraffin or more frequently flaine. A daily bacteriological examination of the aspirated fluid was made, and under this treatment the organisms gradually diminished until the fluid became sterile, when the aspiration could be stopped.

In conclusion Dr. Hathaway claimed that he had proved his case and that the operation of immediate closure of pneumococcal empyema was established and justified, and that his work of the last five years was being recognized. As pleural suppuration would only end with full lung expansion, then if the technique of early and complete operation was carried out the mutilating operation of Estlander would no longer be necessary. Convalescence would be shortened and the physio-therapeutic results would be much better than they ever were with the use of a drainage tube and a sucking wound. Restoration of lung function was the aim of treatment, and this was more important than mere evacuation of pus.



## PIT-HEAD HYGIENE.

At a meeting of the Society of Medical Officers of Health, held on December 15th, 1922, with the President, Dr. T. EUSTACE HILL, in the chair, a paper was read by Dr. COLSTON WILLIAMS, Medical Officer of Health for the county of Glamorgan, on pit-head baths and other amenities in colliery areas.

He defined pit-head baths as such provision as would enable the miner to go to his work like other men in ordinary clothes; at the pit-head or near by to change and store them safely before putting on his pit clothes. That when he had finished his job of work he could have a warm bath to remove the sweat and coal dust, and so be able to return to his home clean and in clean clothes ready for his meal. After describing in detail the existing unsatisfactory bathing arrangements in the homes of the colliers, transgressing too often the laws of decency, and involving a great deal of hard work on the part of the wife, Dr. Williams referred to the effect of industrial habit on the minds of those engaged in particular trades. The collier in the street or in a public conveyance, returning from his work with blackened face and dirty clothes, was conscious that he compared unfavourably with others not bearing upon them the unpleasant marks of their craft. Such a feeling influenced action in the life of the coalfields, and it was harmful and dangerous that a large body of men should feel they were a class apart because of a social disadvantage. The Coal Mines Act of 1911 enacted that a mine owner must provide accommodation and facilities for bathing and drying the clothes of the colliers if two-thirds of the workmen in a ballot expressed a desire for it and undertook to pay one-half the cost of maintenance, this sum not to exceed threepence a week for each workman liable to contribute. At the end of 1920 there were seven pit-head installations—four in Lancashire, one in Yorkshire, one in Scotland, and one in South Wales. The last was erected at Treharris, in the Aberdare valley, at a cost of £8,000, through the generosity of certain shareholders in the Ocean Colliery Company, and is used by over 60 per cent. of the workmen employed. The apathy of the workmen and (strange though it might seem) of their wives was largely responsible for the lack of bathing facilities elsewhere. The welfare fund created through the Mining Industry Act of 1920 was built up by a levy of a penny on each ton of coal raised, and it was estimated that in the five years of the statutory life of the fund about five million pounds will be produced. The objects of the fund were to improve the social well-being, the facilities for recreation, and the conditions of life of those working in or about mines, and to promote research and mining education.

Dr. HERBERT JONES considered that coal dust in itself was not harmful and should not be looked on as ordinary dirt, and if the colliers could be prevailed upon to see that they must rid themselves of it as the miller must get rid of the flour that clings to him the apathy of the colliers towards pit-head baths might be lessened. He was surprised to find that the soldiers who had returned to the coalfields and who had become accustomed to the admirable bathing facilities in many fixed camps had not insisted on pit-head installations. Failing baths at the pit-head, where they were obviously the most economical, he suggested the erection of ranges of baths near to groups of houses.

Dr. E. H. T. NASH said that colliers were very difficult to get out of grooves, due in great measure to the grey, dull monotony of their lives. Many of them were prejudiced against pit-head baths because of the fear of taking cold after a hot bath. If they could come home clean it would have an immense influence on their state of mind and their self-respect would be very much increased. He could not agree with the suggestion that coal dust was not real dirt or that there would be any advantage in having ranges of baths away from the pit-head. Dr. T. L. THOMSON believed that within the next twenty years pit-head baths would be the rule and not as now the exception, for the children of to-day, who are being educated by school inspection and in other ways to the advantages of cleanliness, will as the men and women of the time demand them. Dr. T. SHADICK HIGGINS considered that the conditions of employment of many workers was a distinct menace to our present social order, but a promising feature of present-day civilization was the more human attitude adopted towards their workpeople by many employers of labour. He could not agree that coal dust was not real dirt.

The PRESIDENT was in favour of pit-head baths rather than communal baths and said that in the county of Durham the latter would be impracticable. The Durham colliers, though many of them lived in two-roomed houses, were the cleanest of their class, and the most industrious. There was a great deal to be said in favour of making pit-head baths a charge on the industry, and this view was held by some colliery owners. He suggested that the welfare fund might be used in the support of child welfare work and similar enterprises. In Durham county the colliers and their wives took very great interest in the voluntary welfare centres.

## JONNESCO'S OPERATION.

At a meeting of the Section of Surgery of the Royal Academy of Medicine in Ireland, held on December 15th, 1922, with the President, Sir W. DE C. WHEELER, in the chair, Mr. A. K. HENRY described a new method of excising the left cervico-thoracic ganglion of the sympathetic. He said that Jonnesco in 1920 had reported a well authenticated case of angina pectoris associated with aortic atheroma, successfully treated by ganglionectomy of the sympathetic in 1916. The man reported himself to Jonnesco four years later. He had had no recurrence of pain; he was a syphilitic, and admitted that he was still addicted to alcohol and tobacco. Jonnesco reported his second case in 1921, and Tuffier at the same meeting also recorded a success by this method. In the first case the middle cervical and cervico-thoracic ganglia were resected on the left side. In the second, Jonnesco removed in addition the superior cervical ganglion as its removal was easy. Tuffier, however, in his successful case, limited the resection solely to the left cervico-thoracic ganglion. The operation had been suggested to Jonnesco by François Franck with a twofold object: first, to interrupt afferent impulses from the aorta which are responsible for the pain of the seizures; secondly, in removing the cervico-thoracic ganglion, sympathetic filaments ascending on the vertebral artery were interrupted, which might carry dangerous constrictor impulses to the vessels of the brain stem.

Mr. Henry thought, too, in view of the fact that the first patient's pulse rate increased gradually after the operation, that sympathectomy possibly diminished vagal "grip" upon the heart. Removal of the cervico-thoracic ganglion was the essential part of the procedure, and by the accepted antero-lateral route it was difficult. The cervico-dorsal ganglion lay at the back of the thoracic inlet upon the joint between the first costal head and the first dorsal vertebra, in the little space between the anterior scalene muscle and the longus colli. Into this space on the left side were crowded the common carotid artery, the subclavian artery, the vertebral branch of which passed inwards and upwards behind the carotid, and was separated from that trunk by the inferior thyroid artery and thoracic duct. The vertebral vein, passing down to end in the subclavian, lay anterior to the vertebral artery, and received the deep cervical vein. These structures occupied planes anterior to the ganglion, and helped to screen it from the surgeon using the antero-lateral route. The veins especially were easily wounded.

The relation of the first costal head to the ganglion suggested a more direct approach by costo-transversectomy at this level, and with this Mr. Henry had dealt in a previous communication. Further investigation, however, had suggested to him that, as the tip of the second dorsal transverse process was almost level with the head of the first rib, an approach as direct, and less cramped, might be obtained by removal of this process, together with the proximal part of the second rib. It was not difficult to mistake the second rib for the first, and an accurate method of locating the second rib after division of the vertebro scapular muscles and the upper serratus posterior was described. The "strategic interval" occupied by the summit of the pleural dome, between the caudal end of the cervico-thoracic ganglion and the vertebral artery, was demonstrated by means of a model. This interval, which appeared after the intact pleural dome had been depressed, facilitated the safe separation of the cephalic end of the ganglion from the artery. The model also showed the connexions and the peculiar angulation of this compound ganglion. It was essential to divide these connexions in due sequence. The points of the procedure were illustrated by means of lantern slides, and colonic etherization by the safe method of Dr. Alfred Boyd, combined with regional anaesthesia, was suggested as the anaesthetic of choice.



## RICKETS IN INFANTS.

A MEETING of the London Association of the Medical Women's Federation was held on December 12th, 1922, at the Elizabeth Garrett Anderson Hospital, with the President, Dr. LOUISA MARTINDALE, in the chair, when Dr. HELEN MACKAY read a paper entitled, "Rickets in infants: some views on its etiology based on twenty months' work in Vienna."

Dr. Mackay first summarized briefly the results of recent experiments on animals carried out by McCollum, Hess, Mellanby, and others, showing that light and diet were etiological factors in rickets. Diets which produced rickets in rats exposed to insufficient light might become adequate if the exposure to light was increased, and increased exposure to light would cure rickets in rats which had developed the disease in the laboratory on a defective diet. The dietetic factors of primary importance appeared to be the amount in the food of an organic antirachitic factor present in small amount in milk fat and in large amount in fish oils, with the amount and relative proportion of calcium and phosphorus. Other factors, such as excessive carbohydrate, probably played a contributory part. Under the auspices of the Medical Research Council and the Lister Institute of Preventive Medicine, a party of British workers, consisting of Miss Harriette Chick, Dr. Elsie Dalyell, Miss Margaret Hume, Miss Henderson Smith, and the speaker herself, had been studying rickets in infants in Vienna, where exceptional facilities were placed at their disposal. At the University Kinderklinik, where cases of rickets were known to develop, Professor Pirquet set aside beds for the investigation of the disease; sixty cots in all were available. Infants were observed on the diet in routine use at the Kinderklinik, which consisted of full milk with heavy carbohydrate additions, and also on a contrasting diet arranged by the British workers, which consisted of milk with the addition of one to one and a half drachms of cod-liver oil. A five months old baby frequently received about one pint if it was on the first diet, and one and a quarter pints if it was on the second. The results, taking a radiographic standard of diagnosis, were clear cut: in summer no infants on either type of diet developed rickets, whereas in winter babies on the diet of full milk and carbohydrate developed the disease, while those on the second diet did not. All the infants who developed rickets were diagnosed radiographically between January and April, most frequently at about the age of 6 months. Curative observations demonstrated the fact that exposure to sunlight out of doors (in direct sunshine or even in the shade), exposure to the light of the mercury vapour quartz lamp, and the administration of cod-liver oil brought about rapid calcification of the rachitic metaphyses and healing of the bone lesions. All three methods of treatment, however, were not equally effective in improving the general health, the most marked improvement occurring in infants treated out of doors. Other workers had pointed out, said Dr. Mackay, that the seasonal incidence and geographical distribution of rickets were determined chiefly by light.

## Reviews.

## WOMEN DOCTORS.

To write such a book as Dr. LOUISA MARTINDALE'S *The Woman Doctor and her Future*,<sup>1</sup> one of the main purposes of which appears to be to justify the position which women now occupy in medicine, is, in these days, almost a work of supererogation. Women have more than justified their position in medicine and the public has accepted their advent as one of the more natural and desirable developments of feminine "emancipation." It would seem, in fact, that none of the many new professional careers now open to women presents so many attractions to the woman student as medicine, and the available teaching institutions find it difficult to deal with the numbers who seek to gain admittance. Medical women occupy responsible and distinguished posts in our hospitals; they undertake important work at maternity and child welfare centres; and in general practice, more particularly in connexion with diseases of women and children, they occupy an honoured place in the public service. The early struggles of the pioneers of the medical women's movement in the last century are described by Dr. Martindale with the enthusiasm begotten of unstinted admiration. We

are given glimpses of the lives of Dr. Elizabeth Blackwell the first woman to obtain a medical degree, Dr. Sophia Jex-Blake, the founder of the Edinburgh School of Medicine for Women, and Mrs. Garrett Anderson, who instituted the New Hospital for Women, now called the Elizabeth Garrett Anderson Hospital. The opposition with which these first women doctors had to contend has given to their determined and heroic struggles the atmosphere of a sacred crusade, waged against the forces of reaction. This opposition was undoubtedly unjust and appears now in the light of experience to have been altogether mistaken.

Whereas at the beginning of this century the number of medical women in this country was inconsiderable, there are now nearly three thousand women students as against some ten thousand male students in our medical schools. Without in any way reverting to the antagonistic attitude of the past the question may be asked, Does not this proportion meet the public demand at the moment? It is obviously of great importance to the interests of medical women that the supply of women doctors should not suddenly exceed a demand on the part of the public which is steadily but slowly increasing. In this connexion we fear that the prospects which Dr. Martindale offers to the newly qualified doctor in her chapter on "The Position of Women in Medicine" are more roseate than many of the younger medical women have experienced. Undoubtedly many women prosper in private practice, but not many can at once earn incomes of "between £1,000 and £4,000 a year." A newly qualified medical woman often has difficulty in finding an opening in private practice, partly because there are not so many practices for women "on the market" as for men, and partly because the special nature of the work which most women take up makes it difficult for them to find openings suitable to their experience. The fourth chapter, entitled "A Doctor in the Making," gives some excellent advice to women students who have decided to embark on the medical curriculum and details the facilities which exist for their training in this country. The final chapter, on "The Woman Doctor's Future," describes the opportunities for service in hospital work, in research, in public health duties, and in political life.

The book is animated by that high idealism which appears to have inspired all the early pioneers of medical education for women: no woman student could read it without a feeling of pride in the courageous and public spirited work of her predecessors.

## GREEK BIOLOGY AND MEDICINE.

*Greek Biology and Greek Medicine*,<sup>2</sup> by Dr. CHARLES SINGER, is the first of a series entitled "Chapters in the History of Science," under the general editorship of this indefatigable worker. Of the four sections of the present volume three—namely, those on Greek biology before Aristotle, Greek biology after Aristotle, and Greek medicine—are reprinted, with some corrections and additions, from *The Legacy of Greece* (1921), edited by Mr. R. W. Livingstone with the object of conveying some idea of what the world has learnt, and can still learn, from ancient Greece in various realms of the spirit and intellect. Of the voluminous works ascribed to Aristotle the scientific fall into three groups, dealing with physics, with biology, and with psychology and philosophy in their biological bearings. The work on physics commanded respect for two thousand years, but after Galileo's time it ceased to receive attention, whereas the biological observations which had attracted little interest during the Middle Ages came in for close study from the sixteenth century onwards, and especially in the nineteenth century.

Much of what is ascribed to Aristotle is, of course, spurious, and his biological works are, in form at least, so unlike his general style that they probably represent his notes imperfectly edited rather than a considered work. Dr. Singer emphasizes the number of first-hand observations made by Aristotle and refers to the suggestions—none of them very satisfactory—advanced to explain an achievement so difficult to understand. His observations are considered in detail with many quotations, and this admirable essay may with advantage be read together with Professor D'Arcy W. Thompson's enthusiastic and pleasantly written article on the same subject in *The Legacy of Greece*. Dr. Singer prints out that as a physiologist Aristotle is on a lower plane than as a biologist, and is in much the same position as he is as

<sup>1</sup> *The Woman Doctor and her Future*. By Louisa Martindale, M.D., R.S. Lond., J.P. London: Mills and Boon, Ltd. 1922. (Demy 8vo, pp. 198; 8 illustrations. 7s. 6d. net.)

<sup>2</sup> *Greek Biology and Greek Medicine*. By Charles Singer. (Vol. I of *Chapters in the History of Science*. General editor, Charles Singer. Oxford: The Clarendon Press. 1922. (Cr. 8vo, pp. 123; 21 illustrations. 2s. 6d. net.)



a physicist; since he never dissected the human body his ideas about the functions of the vascular and nervous systems were hazy. As a naturalist he was at his best as an original observer, but is weaker and less comprehensible when theorizing on the views or work of others.

In his account of biology before Aristotle Dr. Singer makes the best use possible of the material available, scanty though it be. He discusses the information to be gleaned from early Greek art showing the close observation of animal forms, and finds in the Hippocratic collection the first systematic account of animals. It is indeed not surprising that it is in connexion with medicine that biology was studied by the ancient Greeks, for their science and philosophy were essentially anthropocentric and they took interest in animals in so far as observations of them bore on human problems.

The essay on biology after Aristotle begins with the botanical work of Theophrastus, a pupil of Aristotle, though a pedestrian when Aristotle was a creature of wings. Theophrastus stood in much the same relation to his master as the morphologists of the second half of the nineteenth century did to Darwin. With the death of Theophrastus (287 B.C.) pure biological science practically vanished from the Greek world, and science became an applied study subservient to medicine. This assertion is supported by reference to the Alexandrian school, Dioscorides, Celsus, and others; full attention, however, is given to Galen's work also.

Greek medicine is described in its general characters at its best period; our debt to the Hippocratic school is clearly established. The outstanding merit of Greek medicine is held to be that it is based on observation and not on hypotheses. The character of the Hippocratic collection is fully set forth, and its strength from a clinical point of view is shown to lie in the admirable description of cases. Anatomy, physiology, and pathology were weak before the time of the Alexandrian school, and yet the therapeutic equipment of the Hippocratic physician is said to have been much the same as that of the medical man of seventy years ago. This is perhaps an overstatement, but it need not be denied that the Hippocratic school, though without the help of anatomy, experimental physiology, and pathology, gained, by a process of pure scientific induction, an insight into the practice of medicine that was little surpassed until the nineteenth century had begun.

## TWO POSTHUMOUS WORKS OF BRETONNEAU.

THE publication for the first time, on the occasion of the centenary of his work on diphtheria, of Bretonneau's treatises on enteric fever and specificity, with an introduction and notes by Dr. Louis DUBREUIL-CHAMBARDEL,<sup>3</sup> may be regarded as an important event in the history of medicine. "The work of Bretonneau," says Professor Gilbert in his preface to this volume, "is a trilogy composed of diphtheria, enteric fever and specificity." The treatise on diphtheria, which is known to English readers from the translation in the New Sydenham Society's publications, was published in 1822, but the other two essays, in spite of the entreaties of Bretonneau's two most distinguished pupils, Trousseau and Velpeau, have remained in manuscript until now. Dr. Dubreuil-Chambardel, a distinguished medical historian of Tours and a descendant of Bretonneau, has divided his introduction into three chapters, the first dealing with Bretonneau's teaching at Tours, the second with his three principal works, and the third with the medical doctrines prevalent from 1808 to 1829, dealing especially with the gastro-enteritis of Broussais (1808), the entero-mesenteric diseases of Petit and Serres (1813), and the typhoid fever of Louis (1829). A vivid picture is given of Bretonneau's activities at Tours, and an anecdote is related illustrating his scientific enthusiasm which nearly cost him his life. In his anxiety to confound his opponents, who maintained that the disease prevalent in the town was quite distinct from that which he had described in the hospital patients, he used to make nightly visits, accompanied by his intern, to the cemetery, where very rapidly he opened the graves of the children who had died of croup, made an examination of the fauces and larynx, and beat a hasty retreat under fire from the neighbours, who had mistaken the pair for robbers.

The treatise on enteric fever, or *dothinentérie* (a word

derived from the Greek *δοθήνη*, a pustule, and not from *δοθέρη* as wrongly stated on page 44), consists of four sections: the first is anatomical, and the second clinical; the third deals with the relations of the anatomical lesions to the symptoms, and the fourth with the contagious nature of the disease. Bretonneau was the first to show that the essential lesion of enteric fever was in the small intestine with exclusive affection of the agminated and solitary glands, a fact which accounted for the rarity of the disease in infancy and old age. As regards the clinical picture of typhoid fever Bretonneau is to be credited with the first description of the osseous and articular complications, the affection of the larynx, and the involvement of the eyes and ears. Lastly, Bretonneau was the first to describe the contagious nature of the disease, which had been denied by Andral, Bouillaud, and Chomel, and regarded as doubtful by Louis.

The treatise on specificity as originally planned consisted of four chapters, the first dealing with diphtheria, the second with enteric fever, the third with dysenteric inflammation, and the fourth with malarial infection. The last two chapters, however, were never written, although a paragraph was devoted to dysentery in the treatise on enteric fever, where a description is given of the specific character of dysenteric lesions.

Dr. Dubreuil-Chambardel draws attention to a number of aphorisms in the chapter on enteric fever, from which we may select the following as foreshadowing the doctrines of bacteriology: "Many disorders and notably a large number of inflammations are determined by extrinsic material causes, by actual substances of external origin or at least foreign to the normal condition of the organic structure." The influence of Bretonneau's teaching on specificity is to be found in the celebrated clinical lectures of Trousseau, who acknowledges his "eternal gratitude" to his master in the dedication of his work.

## DISEASES OF CHILDREN.

DR. BERNARD MYERS'S *Diseases of Children*<sup>4</sup> is a short and reliable handbook: it covers the whole field and follows the usual plan of textbooks on this subject. Introductory chapters on the special anatomy and physiology of children, the requisite data on growth, and the dietetics of infancy, are followed by others on the diseases of the newborn, the nutritional disturbances of infancy, and the diseases of the various systems. Two final chapters give a short account of the important infectious diseases, and practical details of treatment applicable to the period of childhood.

The author has been able to command the collaboration of others in certain departments of the subject. Thus Dr. Mackenzie Wallis contributes a very useful chapter on biochemistry in children's diseases; Professor Eyre writes on the employment of serum vaccines; there is a short account of the physiology of digestion by Sir William Bayliss; and there are other short articles on special subjects written by those with special knowledge. These special contributions increase the value of the book without interfering with its unity; and, indeed, the field covered by a textbook on this subject is too wide to be adequately covered by one man. It is no easy task to deal fully and clearly with a large and often complicated subject within the limit of about five hundred pages; that could only be done by presenting a very careful digest of the author's experience and of his study of the literature. Dr. Myers has performed his task well, but would have done even better if he had embodied in his book more of his own personal experience and had given us less of the opinions and dicta of other writers. For example, he is a follower of Finkelstein, and gives a faithful transcription of Finkelstein's classification of the dyspepsias of infants. But he does not furnish the reader with convincing examples from his own clinical material illustrating the Finkelstein doctrines, and his account of the symptoms and signs in the different groups does not provide a clear clinical picture. So that the case for Finkelstein's classification cannot be said to be strengthened by the chapter on this subject. On the whole, and considering the modest size of the book, an accurate account of the commoner diseases is given, modern views and doctrines are kept well to the front, and the details of treatment are fully and clearly described.

<sup>3</sup> *Traité de la dothinentérie et de la spécificité de Pierre-Fidèle Bretonneau*. Publiés par la première fois d'après les manuscrits originaux avec un avant-propos et des notes par le Dr. Louis Dubreuil-Chambardel. Préface de M. le Professeur Gilbert. Paris: Vigot Frères. 1922. (Fr. 12.)

<sup>4</sup> *Practical Handbook on the Diseases of Children*. By Bernard Myers, M.C.G., M.D. (Edin.), M.R.C.P. (Lond.). London: H. K. Lewis and Co., Ltd. 1922. (Demy 8vo, pp. xvi + 548; 61 figures. 21s. net.)



## GUY'S HOSPITAL REPORTS.

THE quarterly number for October, which completes the volume for 1922 of the *Guy's Hospital Reports*,<sup>5</sup> contains ten papers; half dealt with abdominal subjects, and of these three are by the indefatigable editor, Dr. A. F. Hurst. In a paper on chronic appendicitis and appendicular dyspepsia he insists on the great value of  $x$  rays and of Bastedo's inflation test in the diagnosis of this condition; operation should not, he considers, be undertaken until the diagnosis has been thus confirmed; it is not clear to what extent adhesions binding down the appendix may be concerned in the production of pain after inflation of the colon; but as Bastedo's sign may be positive in the absence of adhesions it is probable that the chief factor in this test is distension of the diseased appendix. Dr. Hurst also describes chronic obstruction of the duodenum by the mesenteric vessels (chronic duodenal ileus), and in conjunction with Dr. J. A. Ryle two examples of "epigastric hernia," which are really fat prolapses from the fat of the falciform ligament of the liver and not true hernias. In an investigation into the state of the gastric secretion in appendicitis and cholelithiasis Mr. T. G. Bonar found that of 40 cases of chronic appendicitis with symptoms confined to the right iliac fossa 22 showed achlorhydria or hypochlorhydria, which probably favours appendix infection; whereas among 25 cases of appendix dyspepsia none had achlorhydria or hypochlorhydria, and 22, or 88 per cent., showed hyperacidity. Mr. W. H. Bowen describes with commentaries 5 cases of perforation of the large bowel presenting some features of interest.

In the fourth instalment of his stimulating studies on tumour formation Dr. G. W. Nicholson discusses acquired tissue malformations, and after giving many examples from his own experience concludes that certain anomalies that arise in the tissues long after their development is completed are in every way comparable with congenital malformations. Mr. Malleon's notes on dental histology are freely and successfully illustrated by forty-one figures. Professor Pembrey, Dr. Hunt, and their collaborators now bring out the second part of their elaborate investigation into tests for physical efficiency, and find that the pulse ratio—namely, the ratio between the pulse rate for two minutes immediately following the given *mild* muscular exercise and the pulse at rest—is a good indicator of physical fitness. The results of six months' routine use of the urea concentration test are summarized by Dr. Hugh Barber, who has found it of practical value in confidently excluding renal disease—more especially in the condition in middle life which he terms "leaky kidney," and remarks that the excellent health of two such men with albuminuria of ten or more years' duration is due to the absence of treatment. In a brief note Dr. J. Ryle records two cases of traumatic thrombosis of the brachial artery due to prolonged pressure of a crutch. This interesting fasciculus also contains the index for the completed volume.

## ORTHOPAEDIC NURSING.

EVERYONE who has had the advantage of seeing the work done at the Shropshire Orthopaedic Hospital at Baschurch or at Oswestry will welcome the notes on *Orthopaedic Nursing*<sup>6</sup> by the Honorary Superintendent, Miss A. G. Hunt, R.R.C. We say advisedly "everyone," for, although these notes are intended for orthopaedic nurses and probationers, they contain many hints which will be found useful by surgeons. This hospital has been remarkable for the thorough way in which open-air treatment has been carried out in it for upwards of twenty years and for the enthusiasm, skill, and administrative ability of the author of this pamphlet, to which so much of its success is due.

The outstanding symptoms of tuberculosis in the various regions of the body are clearly set forth and the method of using splints and plaster-of-Paris for each of them is described in detail. The illustrations and instructions are clear and definite and some of the hints given are enforced with that humour which is characteristic of the author. It may be objected that the diagnosis of tuberculous lesions is no part of a nurse's business, but in carrying out the admirable

scheme of after-treatment in the villages of Shropshire nurses may have the first opportunity of detecting disease and of providing the "stitch in time" by handing cases on to the surgeon, and to do this they must have the necessary knowledge. We hope that Part I of these notes may soon be followed by Part II.

## NOTES ON BOOKS.

THE fact that a second edition has been called for within two years of the appearance of the first is sufficient testimony to the value of Dr. MODI's *Textbook of Medical Jurisprudence*.<sup>7</sup> The author has followed the arrangement usually adopted in textbooks on this subject, and much of his material is identical with that relating to this country. Dr. Modi has, however, included such extracts from Indian law as are appropriate to his subject, particularly sections of the Indian Evidence Act, Criminal Procedure Code, Indian Penal Code, Lunacy Act, and Poisons Act. He also gives full and interesting accounts of various vegetable poisons unknown in this country. It would seem that most of these are taken for the purpose of procuring abortion. We note with interest that powdered glass is frequently administered in India with homicidal intent, usually mixed with food such as rice or flour. If well powdered it does not as a rule have any ill effects. This book is written primarily for students, and it can be recommended to them as sufficient for their purposes. It will also be useful to medical and legal practitioners.

Among the numerous students' gazettes the *St. Bartholomew's Hospital Journal* has for many years past held a high place both for the general standard of its contents and for the excellence of its humour. In 1909 a selection was made from the large number of light verses and sketches that had appeared from time to time, and these were issued in book form under the title *Round the Fountain*, the profits from the sale being devoted to the Nurses' Home Rebuilding Fund. The first and second editions were soon exhausted, and now a third and enlarged edition has been published.<sup>8</sup> This comic anthology will be relished by all old Bart.'s men, recalling memories of happy moments of gossip round the fountain in the square. Some of the reprinted pieces are mainly of local interest, but many others will be appreciated by medical men whose student days were passed elsewhere. Of the new numbers the six little poems entitled "Disrespectful Ditties" seem to us particularly neat, and a burlesque set of questions for out-patients, modelled on the army field postcard, is quite one of the best things of its kind we have seen.

Mr. KEITH MONSARRAT's new volume, *Poems, 1920-1921*,<sup>9</sup> shows increased command of his medium and a greater power of getting his thought through the barrier that separates mind from mind. Many of the pieces are in blank verse, and three at least—"Sigurd," "In Rome," and "Samson"—in dramatic form. In these he philosophizes, showing himself a lover of man, but in them also peeps out the lover of nature whose greatest solace is in the beauty of this world, "sweet with the scent of gardens after rain." Herein is his strength, and many will think the poem, "To a Garden," the best in the book. There is also an experiment in galloping rhythm sufficiently successful to be repeated.

Dr. WILLIAM BARR, whose volume of poems, *Passing Songs*,<sup>10</sup> has just been published, is without doubt an easy versifier, with an excellent sense of rhythm and a conservative taste in rhyme. His emotions, however, are never very deep, and he is inclined to echo other poets, great and small. When one remembers those other noble lines, beloved of every anthologist, the following—

"My feet are blistered with the stone  
That paves the way for many dead,  
And yet—my spirit is my own  
And nobly do I hold my head"

—rather taste like so much Henley and soda-water. Many of Dr. Barr's poems convey the suggestion that they would go well to music, of the lighter school—Hermann Löhr rather than Schumann or Schubert (although the latter, one observes, is now also to be numbered among the musical comedy composers)—and that is an excellent criterion of light verse, particularly in these days of *vers libristes*.

<sup>5</sup> *Guy's Hospital Reports*, No. 4, October, 1922, vol. Ixiii (vol. ii, Fourth Series). Edited by A. F. Hurst, M.D. London: Henry Frowde, and Hodder and Stoughton. (Med. 8vo, pp. 122; 67 figures. Single copies numbers 22s.)

Part I: Joint Tuberculosis. A. G. Hunt, ed. from the Printers, Messrs. Hall, Oxford.

<sup>7</sup> *A Textbook of Medical Jurisprudence and Toxicology*. By Rai Bahadur Jaising P. Modi, L.R.C.P. and S. Edin., L.R.F.P.S. Glasg. Second edition. Calcutta and London: Butterworth and Co., Ltd. 1922. (Demy 8vo, pp. 640; appendix, cxxxi; one illustration. 15s. net.)

<sup>8</sup> *Round the Fountain*. Published by the Editors at the Journal Office, St. Bartholomew's Hospital, London, E.C.1. 1923. (Cr. 8vo, pp. 153. 2s. 8d. post free.)

<sup>9</sup> London: John Murray. 1922. (Small 8vo, pp. 70. 3s. 6d.)

<sup>10</sup> *Passing Songs*. By W. Barr. London: Grant Richards, Ltd. 1922. (Cr. 8vo, pp. 57. 5s. net.)



## THE MUSTERING OF THE PROFESSION.

### MEDICAL SERVICE IN THE GREAT WAR, 1914-19.

THE story of the manner in which the medical profession in Great Britain responded to the call of the country in 1914 and the following years is well worth the telling. We all remember how first the medical officers of the Reserve and the Territorial Force were called up, and simultaneously we witnessed the crowding of medical volunteers willing to make any sacrifice to serve their fellow countrymen who in such large numbers were joining the service battalions; then came the strenuous effort that had to be made to keep pace with the growth of the Armies—the five armies in France, the army based on Salonika, and the army in Mesopotamia, the Expeditionary Force to the Dardanelles, and the forces engaged in the many lesser operations in South Africa and elsewhere. The Navy and eventually the Air Force also made their own calls, but on a lesser scale. The problem of how to meet the demand for military service while keeping going the life of the country at home was presented to all callings, but to none in so direct a way or on so large a scale as to the medical profession. The home demand was perhaps more imperative for it than any other. Both calls were met successfully mainly because the Government consented to allow the profession to deal with its own difficulties in its own way through machinery it itself established.

Dr. J. R. CURRIE, who, until his recent appointment to be Professor of Preventive Medicine at Queen's University, Kingston, Ontario, was medical officer to the Scottish Board of Health, has, at the request of the Scottish Medical Service Emergency Committee, of which he was a member, prepared a record of the work done in Scotland. It is published in a volume entitled *The Mustering of Medical Service in Scotland 1914-1919*,<sup>1</sup> and has a preface by Sir Alfred Keogh, who makes a graceful reference to the value and magnitude of the work done by Dr. Norman Walker, the convener of the committee. The opportune publication of this volume affords an occasion for recalling in chronological order the chief points of the medical policy which was developed to provide medical officers for the armies, while at the same time safeguarding the interests of the people at home, both in Scotland and in England and Wales.

#### THE FIRST FIVE MONTHS—1914.

At the outbreak of war in August, 1914, when men were dimly conscious of the magnitude of the task which was before them, it was natural that many people should ask themselves in what manner they could best contribute to the success of the issue. In the beginning these questionings were more frequent with individuals and with small bodies than with larger associations, whose multifarious duties invited them to carry on their "business as usual." Thus it was that the earliest stirrings in the medical profession were found in individual volunteering for service in the R.A.M.C., and amongst Divisions and Branches of the British Medical Association, rather than in the Central Council of the Association.

#### *The First Move in Scotland.*

The earliest recorded administrative effort is that of the Scottish Committee of the Association, of which the late Dr. J. R. Hamilton of Hawick, that fine type of broad-minded practitioner, was chairman. Dr. Hamilton was quick to see that the departure of the Reserve and Territorial medical officers made it imperative that action should be taken for carrying on their civilian duties alike in their own interest and in that of the public. Acting at once, he caused a conference to be held in Edinburgh so early as August 12th, 1914, to which were invited representatives of the medical faculties of the Universities and Royal Colleges in Scotland, to consider what steps should be taken to meet the emergency that had arisen owing to so many medical practitioners having been called up for active service. By August 22nd a committee was in being as a "bureau or clearing house for information, for the purpose

of assisting to meet the immediate difficulties in regard to medical practice among the civil population." This body, created for only the one limited purpose, became the Scottish Medical Service Emergency Committee, whose history is now told in Dr. Currie's volume. The Committee as originally constituted was composed of fifteen medical men, seven of whom acted *ex officio*, while eight were elected by the conference.

The seven *ex-officio* members were the Presidents of the Royal Colleges of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow, and the deans of the Faculty of Medicine of the Universities of St. Andrews, Glasgow, Aberdeen, and Edinburgh.

Of the eight elected members, six, who were in general practice, included five office-bearers of the British Medical Association—Dr. John Adams (Glasgow), Dr. G. C. Anderson (Fife), Dr. John Gordon (Aberdeen), Dr. J. R. Hamilton (Hawick), and Dr. John Stevens (Edinburgh). Dr. John Playfair, president of the Medical Guild, completed the six. Of the two remaining elected members, one was the deputy chairman of the Scottish Insurance Commission, Dr. John C. McVail, and the other the Direct Representative for Scotland on the General Medical Council, Dr. Norman Walker.

To them the Committee at its first meeting added Dr. J. R. Currie, medical officer of the Scottish Insurance Commission. Mr. T. H. Graham, librarian of the College of Physicians, was appointed secretary.

About the same time—August, 1914—a local medical committee was formed in Dundee, and schemes for emergency medical services were drafted there, at Southampton, at Exeter, by the London Panel Committee, and in various other districts.

It is worth noting as a matter of history that all these local movements in England as well as Scotland were concerned primarily with the maintenance of an adequate medical service for the civilian population and with the preservation of the practices of the men called up for service with the forces. Within a few months, however, the main concern of the medical profession became the provision of medical officers for the army; while later still the drain upon the profession for service abroad once more brought civilian needs to the forefront, and the difficult task of holding a balance between the demands of the army and the needs of the civilian population had to be faced.

While these local efforts were in progress the Central Office of the British Medical Association had opened a list for retired medical practitioners willing to offer service, and had indicated to the War Office its readiness to make any appeal that might be desired.

In the SUPPLEMENT to the BRITISH MEDICAL JOURNAL of September 5th, 1914, a suggestion was made for establishing a reserve of medical officers for the army through the machinery of the Association. The proposal was submitted to the branch of the War Office known as A.M.D. I, and it was suggested to that department that the army of 1,000,000 men then contemplated would require more medical officers than were available; that civilian practitioners would be more quickly absorbed into the Service if they had some preliminary training in army methods; and that the British Medical Association offered excellent machinery for establishing in this way a reserve of medical officers with some preliminary training. If this proposal had been acted upon the foundations of a Central Medical War Committee would have been laid in September, 1914. But A.M.D. I turned down the offer; the authorities of the Association did not feel able to act without the approval of the War Office, and the formation of a professional committee for England and Wales was thereby delayed for nine months.

#### THE SECOND YEAR—1915.

#### *The Provisional Committee of the British Medical Association.*

Beyond the development of local activities for the protection of practices, and sundry proposals for the gratuitous treatment of the dependants of men on service, nothing further seems to have happened until January, 1915. At the Council meeting of the Association on January 27th of that year, it was proposed by the late Sir James Galloway "that in order to increase the efficiency of service and to economize the resources of the medical profession, matters arising from the withdrawal of medical men from civil practice to serve with the military forces of the Crown be referred for consideration to a committee of the Association, with instructions to take such action as may appear desirable." These powers were given to a committee consisting of the Chairmen of the Standing Committees, with power to co-opt other members. This

<sup>1</sup> *The Mustering of Medical Service in Scotland 1914-1919*. Being a record of the work of the Scottish Medical Service Emergency Committee in the war. By J. R. Currie. With preface by Lieut.-General Sir Alfred Keogh, G.C.B., G.C.V.O., C.H., late Director General of Army Medical Services. Copies (price 3s. paper, 4s. 6d. cloth) may be obtained post free on application to T. H. Graham, Librarian, Royal College of Physicians, Edinburgh.



committee discussed the grievances of individual medical officers, which were already beginning to be numerous, and made a collection of the evidence thus provided; but it did not feel itself competent to deal with broad questions pending the consideration of the position by the Representative Body. At the same time the then Director-General at the War Office, Sir Alfred Keogh, no doubt hoped that the committee would be useful for the purpose of providing more officers for the service. The disasters at Gallipoli in February and March were not foreseen by the Cabinet, but, coupled with other events which occurred at about the same time, they helped to impress on everyone the bigness of the job the British Nation and the Dominions had undertaken. The Director-General found it necessary to approach the committee with a request for assistance in obtaining at once 2,000 more medical officers. The request rendered visible the irony of the refusal of A.M.D. I in September, 1914, to join the British Medical Association in establishing a reserve of officers for emergencies.

#### *The War Emergency Committee of the Metropolitan Counties Branch.*

At this stage certain members of the Metropolitan Counties Branch made representations to the Council of that Branch and early in April, 1915, a War Emergency Committee of the Branch Council was appointed "for the purpose of organizing the profession in the area of the Metropolitan Counties Branch so as to meet the necessities of civil and military practice." Of this committee Dr. James Galloway was appointed chairman, Dr. Charles Buttar deputy chairman, and Dr. R. Crosse and Mr. Bishop Harman secretaries. At its first meeting, on April 19th, the committee was informed that certain tentative action had already been taken, that Colonel Peterkin, of the London Command, had been interviewed in order to ascertain the military requirements in the matter of medical officers, and that the central authorities of the Association had been approached with regard to the provision of funds for the committee's work.

One of the results of the formation of this Committee of the Metropolitan Counties Branch Council was that the Council of the Association at its meeting on April 28th resolved, on the motion of Dr. Galloway, to set aside £1,000 "for use in recruiting officers to the Army Medical Service and generally to aid the War Office in providing an efficient medical service." It will be seen, therefore, that from January to April, 1915, attempts at co-operation between the British Medical Association and the War Office were desultory in nature and unsatisfactory in results. The Army Medical Department was ready enough to obtain medical officers by any method, through the British Medical Association or otherwise; and the British Medical Association was largely concerned in the grievances of individual medical officers. It had, however, been suggested to the Divisions and Branches that they should hold meetings in their areas which the D.D.M.S. of the Command should be invited to attend. In some cases the D.D.M.Ss. wrote sympathetically, in others they sent representatives. Though this measure of co-operation may have been of value locally in some cases, it had no noticeable effect on the broad question of the relation of the Army Medical Department to the civilian profession.

On May 3rd the Committee of the Metropolitan Counties Branch addressed a memorandum to the Committee of Chairmen of Committees; and on May 7th Dr. James Galloway was co-opted to the latter committee; on May 13th Dr. Buttar was invited to attend a meeting of the Committee of Chairmen of Committees, as a representative of the War Emergency Committee of the Branch, and explained that it desired a grant from the £1,000 which had been voted by the Council of the Association, to defray the expenses of carrying on recruiting propaganda. A grant was made, and the War Emergency Committee of the Metropolitan Counties Branch obtained also the loan of a room at the Association's house and the services of two of the Association clerks. A business man was appointed to take charge of the office, and the first piece of work undertaken was to form a register of all practitioners within the area of the Metropolitan Counties Branch, with a record of their age, kind of practice, experience, the war work on which they were engaged, and so on. At the same time there arose the idea of enrolment for military service when required, to which the curious term "voluntary conscription" was later applied. The interest taken by the Director-General and Assistant Directors A.M.S. in the interim report by the Metropolitan Counties Branch War Emergency Committee

on the information it had obtained was shown by a letter on the subject addressed to the Central Office of the British Medical Association on June 11th, 1915. The Committee of Chairmen of Committees accepted the view that a complete register was necessary, and a War Register of the Association was started.

#### *The War Emergency Committee of the Association.*

The War Emergency Committee of the Metropolitan Counties Branch soon found that it was hopeless to carry on recruiting propaganda for one small patch of the country only, and at the Representative Meeting in London on July 23rd, 1915, they carried a proposal for the extension of the scheme of the Metropolitan Counties Branch to the whole country. The Association was now definitely committed to taking a hand in the organization of the medical profession for war-time service, military and civilian, and the Committee of the Metropolitan Counties Branch ceased its activities. The War Emergency Committee appointed by the Association was constituted as follows:

*Ex officio:* Sir Alexander Ogston, Mr. E. B. Turner, Dr. J. A. Macdonald, Dr. Edwin Rayner.

*By Representative Body:* Sir Clifford Allbutt, Sir William Osler, Sir Arthur Shipley, Sir Jenner Verrall.

*Representatives of the Council:* Dr. R. A. Bolam, Sir James Barr, Sir James Galloway, Mr. Bishop Harman.

*Representatives of the Representative Meeting:* Mr. A. Lucas, Mr. W. J. Greer, Mr. Russell Coombe, Dr. C. Buttar.

*Added subsequently:* Sir Frederick Taylor, Sir Rickman Godlee, Professor Harvey Littlejohn.

Dr. Alfred Cox and Mr. Bishop Harman were appointed secretaries, and gave very valuable services to the Committee until it was dissolved in 1919. The reference to the Committee was wide; and the wisdom of the promoters in making it wide was proved on many occasions subsequently. The Committee was formed—

"To organize the medical profession in such a way as will enable the Government to use every medical practitioner fit to serve the country in such a manner as to turn his qualifications to the best possible use; to deal with all matters affecting the medical profession in connexion with the war; and to report to the Council."

#### *The Scottish Medical Service Emergency Committee.*

The Scottish Medical Service Emergency Committee drew its information from three main sources—the Scottish Corporations and Universities, the British Medical Association, and the Government departments. Though not constituted by any formal election, it was able to make a broad appeal to the profession and to command its confidence. All the members were medical men, so that medical destinies were in medical hands. The convener was Dr. Norman Walker, the Direct Representative for Scotland on the General Medical Council. His wisdom and self-sacrificing assiduity had a large share in the success achieved. Down to the end of 1914 the work was entirely in the civil sphere, arranging with practitioners desirous to get or to give help, drafting agreements as to terms in order to avoid future difficulties, and advising as to reduction of institutional resident staffs. Its first contact with the War Office appears to have occurred late in 1914, when, in consultation with the Scottish Insurance Commission and the Highlands Medical Board, it approached the Director-General, who agreed, as far as practicable, to forbear from removing single practice men when their units received marching orders.

#### *Early Meetings of the War Emergency Committee, England and Wales.*

The War Emergency Committee of the Association met for the first time on July 30th, 1915. Sir Jenner Verrall was appointed chairman. The Committee began the consideration of the War Register and of the protection of the practices of medical men called up for service. The question of organization of local war emergency committees was also discussed, and the Committee also decided to appoint an Executive Subcommittee. On August 4th a letter was received from Sir Alfred Keogh welcoming the formation of the Committee. On August 18th the Executive Subcommittee met for the first time, and Dr. Buttar was appointed chairman. On August 25th "voluntary conscription" was discussed by the full Committee, and on August 30th the Executive Subcommittee began the organization of local war emergency committees, issuing at the same time leaflets on enrolment and on the preservation of practices. At this time the Director-General was asking for 2,500 more medical officers.



*Local War Emergency Committees.*

During September, 1915, the formation of local war emergency committees was in progress, the enrolment system was developed, the question of the age limit for commissions was discussed, and pressure began to be put upon Government departments and public bodies with regard to setting free medical officers of military age. The position already achieved by the Committee was shown by its reception of a deputation from the hospitals in Manchester, and by the fact that certain Government departments made a statement to the Committee as to the medical officers they employed.

*The Growing Demands of the War Office.*

Another interesting development during this month was the receipt of evidence that temporary medical officers in the army were declining to renew their annual contracts. Though the War Emergency Committee was aware already of the frequency of complaint by medical officers that their time was insufficiently occupied, the refusal to renew annual contracts was the first overt expression of the feeling that had arisen. To a certain extent it marked the beginning of the third period of activity in the medical profession—the period of adjustment of army demands and civilian needs. At the meeting of the Executive Subcommittee on October 11th evidence was produced that R.A.M.C. medical officers were in fact not being used to full advantage, and a memorandum on the subject was drawn up for submission to Sir Alfred Keogh. As a result the Director-General modified his demands as regards numbers, and the full Committee decided to continue enrolment, and to endeavour to fulfil what was then beginning to be called the "quota."

*Central Medical War Committee.*

At this meeting, on October 15th, 1915, the title of the Committee for England and Wales was changed from War Emergency Committee to Central Medical War Committee. A suggestion was also made for the formation of a compensation fund for those who might be hard hit in consequence of being called up for service. This suggestion was ultimately developed by the War Emergency Fund of the Royal Medical Benevolent Fund. It was during the month of October, 1915, also that the inauguration of Lord Derby's recruiting scheme began to raise questions of the relation of his scheme to the War Committee's enrolment. The matter was promptly dealt with by the Executive Subcommittee, and on November 8th it was announced that Lord Derby had agreed to recognize the Central Medical War Committee.

*The Entry of the English Insurance Commission.*

In November, 1915, occurred an event of far-reaching importance to the Central Medical War Committee, an event which might have led to deplorable results but for the fact that it introduced into the work of the Committee one of the most brilliant of civil servants. Amongst the Government departments approached at the end of September was the Insurance Commission. This body was naturally concerned with the maintenance of the panel system in face of the continual drain on the civilian profession in response to the demands of the War Office. There is reason to believe that the Insurance Commission for England and Wales considered carefully whether it should set out to establish its own machinery for controlling the supply of medical officers to the army, or whether it should support the voluntary committee which had arisen in connexion with the British Medical Association. The Commission decided to adopt the second alternative, feeling possibly that through an independent body more could be effected in controlling War Office demands than through the Government inter-departmental committee which was already in existence. During the month of October there is evidence that the Insurance Commission was concerning itself with the work of the office of the Central Medical War Committee by means of inquiries and suggestions, and on November 16th it was reported to the full Committee that the Insurance Commission, while declining to nominate representatives on the Central Medical War Committee, suggested co-operation. The Commission had objected to the Committee's method of assessment and was beginning to elaborate its own scheme, but on November 19th co-operation in working out the assessment figures for each area was agreed to by the Executive Subcommittee of the Central Medical War Committee. It was at the meeting of the full Committee on November 24th, 1915, that the momentous step was taken which changed the position of the Committee. Prior to this

meeting there had been informal pourparlers between the heads of the Insurance Commission and the British Medical Association, and the result was that Sir Robert Morant, Chairman of the English Insurance Commission, asked to be allowed to attend the meeting of the Central Medical War Committee and to put certain questions to the Committee. The meeting took place on November 24th. Before the interview it was agreed that the Committee would listen to Sir Robert's questions, and consider its answers when the representatives of the Insurance Commission had withdrawn. But Sir Robert Morant, by means of his dialectic skill, speedily began to obtain answers to his questions. Thereupon it was proposed that the Insurance Commission representatives should withdraw while the Committee reconsidered its position in private. In rejecting this proposal the Committee took the step which led to the intimate association throughout the war of the Insurance Commission with the work of the Central Medical War Committee. There is little doubt that without association with the Insurance Commission, and the assistance it gave in dealing with Government departments, the task of the Central Medical War Committee would have been almost insuperable. At the same time it is very doubtful whether the association between the two bodies would have been successful if there had not been a man of the outstanding character and capacity of Sir Robert Morant at the head of the Commission. Through him it became possible to guide the policy of the Committee on lines which avoided difficulties with Government departments. Through the clerical help obtained from the Commission it was possible to introduce sound business methods into the office of the Central Medical War Committee. And as more and more of the able officials possessed by the Commission became drawn into the work, a combination of official methods with the independent thought of those untrammelled with the bureaucratic routine led to the happiest results. Had the Insurance Commission alone attempted to organize the profession it would have incurred suspicion from all sides. Had the Central Medical War Committee acted alone it would have had to encounter the opposition of Government departments. The combination of the two led to a success which greatly enhanced the prestige of the British Medical Association.

*Third-Year Medical Students.*

In November, 1915, questions arose about medical students in their third year. By this time it was realized, even by the most optimistic, that the war was going to be long, and the question arose whether it might not be wise policy to keep third-year students in the Schools until they qualified, when they could be recruited to make up for the inevitable wastage constantly going on from the Royal Army Medical Corps. Dr. T. W. Shore, of St. Bartholomew's Hospital, was co-opted to the Committee to represent the Deans of Medical Schools; ultimately he became chairman of a very important subcommittee of the Central Medical War Committee. The rest of November was occupied by discussions with the Insurance Commission as to statistics and as to the danger of depletion in certain counties; and with the Manchester Committee on local approval before the granting of commissions. Other matters discussed were the classification of the different kinds of medical practitioners and the question of employment of men of military age in V.A.D. hospitals.

*Completion of Organization for England and Wales.*

By the end of 1915 the Central Medical War Committee had established its position; its scheme of enrolment had been generally accepted, and its classification of medical practitioners had cleared away various objections. Only five areas remained without local medical war committees; attestations of medical men under the Derby scheme were on the way to annulment; and the system by which all applications in England and Wales for commissions were referred to the Central Medical War Committee, which then took the advice of the Insurance Commission, was settled. At the end of December representatives of the Insurance Commission were definitely co-opted to sit with the Executive Subcommittee.

*Completion of Organization for Scotland.*

Meanwhile in Scotland, when applications for commissions became frequent, an agreement with the War Office had been reached under which all names from Scotland were sent by the War Office to the Insurance Commission, who conferred



with the Committee, which intimated to the War Office whether it was satisfied that local arrangements could be made. Then the Scottish Committee became recognized as a recruiting agency, and the Scottish Insurance Commission withdrew, no doubt satisfied with the fact that its deputy chairman and senior medical officer were members of the Committee. In April, 1915, the Special Committee of the British Medical Association had urged the Divisions to comply with the Director-General's appeal to free men for the army by arranging with local military authorities for part-time work being done with troops by civil practitioners. The appeal met with a prompt response. The Aberdeen Branch, indeed, under the presidency of the late Dr. John Gordon, who was also a member of the Emergency Committee, had already established a bureau of medical service at the Royal Infirmary. At the end of 1915, of 3,822 civilian practitioners in Scotland, 1,290 were on service.

#### THE THIRD YEAR—1916.

At the beginning of 1916 the difficulties with the War Office over attestation under the Derby scheme of enrolled medical men were finally adjusted, mainly through the efforts of Sir Robert Morant. This adjustment had been made urgently necessary by the passing of the first Military Service Act. In March, 1916, it was announced that the Army Council had agreed that no enrolled doctor would be taken for general service but would remain in the Reserve until selected for a commission in the R.A.M.C., and that in the case of the unenrolled all cases coming before the Central Tribunal would be decided by that tribunal only after receiving advice from the appropriate representative committee of the medical profession.

#### *The Committee of Reference.*

About this time the Central Medical War Committee came to the conclusion that it could not deal effectively with the staffs of hospitals in London. A request was made, therefore, to the Royal Colleges of Physicians and of Surgeons to appoint an advisory committee to consider the minimum necessity of the several metropolitan hospitals and medical schools, and to advise the Central Medical War Committee on any case in which the question arose of indispensability or of excessive personal hardship. As a result of these representations the Committee of Reference was formed; Mr. F. G. Hallett became its secretary, and the triad of professional committees was completed.

In April, 1916, the system of regular conferences between the Director-General A.M.S. and the Central Medical War Committee was instituted, and was continued until late in 1917. At these conferences many important questions were dealt with, and difficulties between the War Office and the civilian committees were frequently smoothed away.

#### *The Central Professional Committees as Tribunals.*

When the Military Service Bill (Session 2), 1916, was introduced in May the position of the professional committees again came up for consideration. The appointment of these committees as the sole tribunals for medical men was opposed in the House of Commons, but owing to the efforts of Sir Robert Morant a clause providing for the establishment of professional committees was inserted in the House of Lords and became Section 7 of the Military Service Act, 1916 (Session 2). Under this Act regulations drafted by Sir Robert Morant at the end of May were approved, and the Central Medical War Committee and the Committee of Reference became recognized as the Central Professional Committees for England and Wales, and the Scottish Emergency Committee as the Central Professional Committee for Scotland. The Central Medical War Committee was made more fully representative by the addition of Dr. Langley Browne, Dr. Adam Fulton, and Dr. Naughton Morgan. Finally, a suggestion made by the Director-General A.M.S. that the Central Professional Committee should be transferred to the office of the General Medical Council was negatived. The offices of the British Medical Association became a busy hive of clerks sent by the Insurance Commission. The Central Medical War Committee met for the first time as the Central Professional Committee at the offices of the British Medical Association on July 7th. Sir Jenner Verrall and Mr. E. B. Turner became chairmen of the two sections of the tribunal, and ultimately Dr. T. W. Shore was made chairman of a third section.

#### *Proposals for Civilian Training of Disabled Men.*

In August, during the lull which followed the strenuous work of establishing the professional committees as the tribunals for medical men under the Military Service Acts, and while these committees were settling down to their work, questions were raised as to the future of disabled soldiers who would not be fit for further military service. The matter was debated by a joint committee which had been established by the Central Medical War Committee and the Committee of Reference, and the Secretary of State for War was asked to receive a deputation in order that the views of the joint committee might be laid before him. The committee was strongly of opinion that disabled men should not be returned to civil life until an effort had been made to fit them for some occupation in accordance with the capacity that remained to them. Ultimately Mr. Lloyd George, then Secretary of State for War, received three deputations together—a deputation from the Statutory Pensions Committee, led by Sir Cyril Jackson; a deputation from the Unionist War Committee, led by Major Astor; and a deputation from the Central Medical War Committee, led by Sir Clifford Allbutt and Sir Jenner Verrall. While expressing sympathy with the policy urged by these deputations, Mr. Lloyd George plainly could not, or would not, adopt that policy. He stated that the matter was being reported on by Sir Walter Lawrence; and in the end very little result followed this piece of work by the joint committee of the Central Medical War Committee and the Committee of Reference.

#### *Proposed General Mobilization for Civilian Work.*

During August of this year a suggestion for the mobilization of unfit men of military age for civil work was made to the Central Medical War Committee by the War Office. This seems to have been the origin of the many suggestions for mobilization of the whole medical profession which continued to crop up from time to time, but did not materialize even when made in the later stages of the war by the Ministry of National Service. In November, 1916, the possibility of the raising of the compulsory age for military service was mentioned by Mr. Russell Coombe, who suggested that it might be necessary to ask for powers to mobilize all medical men up to the age of 55. The history of the movement within the profession for its complete organization, under medical control, for civil and military work, independently of any age limit, is told—with special reference, of course, to Scotland—by Dr. Currie with careful impartiality. It had the hearty and almost unanimous support of the medical organizations which dealt with the question, but the whole project was cut across by the creation of the new Department of National Service under Mr. Neville Chamberlain as Director-General. In December the Central Medical War Committee agreed to support the proposal for mobilization of the whole profession, and appointed a deputation to meet Mr. Neville Chamberlain, in company with deputations from the Committee of Reference and the Scottish Emergency Committee.

During the year 1916 Colonel John Atkins was appointed to sit with the Central Medical War Committee to represent the Director-General A.M.S., and also to represent Sir John French in respect of matters connected with Home Defence. Dr. Wheaton sat with the Committee as representative of the Local Government Board; and in April Colonel Thom undertook duties as representative of the Army Medical Department which had been fulfilled by Dr. Galloway before he was sent to France.

#### THE FOURTH YEAR—1917.

The difficulty of maintaining efficient attendance on the civilian population in the face of the continued and increasing demands of the army led to a series of investigations, of propositions, and of negotiations with the War Office, which ended only when the arrangements for the supply of medical men for the army were transferred to the Director-General of National Service. In February, 1917, the question of mobilization of the whole profession raised in December, 1916, was again under discussion; it was proposed also that warning should be issued to enrolled men between 41 and 45 that they might be called up, and a local arrangements subcommittee was appointed to advise the Executive Subcommittee.

On March 14th and 15th a conference was summoned by the Director-General of National Service, under the chairmanship of Sir Donald MacAlister, to answer certain questions with regard to mobilization of the whole medical profession.



In view of the possibility of such mobilization Dr. Mary Bell was appointed a member of the Central Medical War Committee to represent women practitioners; and Mr. Hallett submitted a memorandum on the financial aspects of national service for doctors.

Opinions and recommendations of the Conference were submitted in a unanimous report to Mr. Neville Chamberlain, who desired time to consider it, and requested that the proceedings be not made public at the time. His consideration appears to have been prolonged, as the embargo was never removed during his career in the department, and it is only now, with his permission, that the report is formally disclosed by Dr. Currie.

#### *The Derby Calling up Notice.*

In consequence of the pressing nature of civil needs the Central Medical War Committee decided to ask the War Office if men could be released from military service during the winter months. On April 11th the Executive Subcommittee was authorized to report to the Director-General A.M.S. that no further substantial reduction of doctors in civil practice could be made without arousing considerable public dissatisfaction, and that the Committee proposed, therefore, to place the position before the Government. The reply of the War Office was the sudden calling up by the Secretary of State for War, Lord Derby, within seven days of all medical men of military age—that is, under 41. This precipitate action was met by the immediate summoning of a joint meeting of the Central Medical War Committee and the Committee of Reference, and the passing of a resolution, proposed by Sir Watson Cheyne, stating that unless the War Office would undertake not to grant a commission to a doctor whom the committees considered indispensable for civil work the committees could take no further part in the selection of doctors for military service. At the same time a memorandum was prepared for the War Cabinet, setting forth the dangers which would arise from the indiscriminate calling up of all medical men under 41. The result was that the Secretary of State at once withdrew from an untenable position, and requested the committees to "continue doing the excellent work for the War Office that they had done in the past." At the same time Lord Derby asked for 850 doctors at the rate of 100 a week. The Central Medical War Committee replied that it would do its best to fulfil this demand, but could not guarantee to do so in consequence of the disorganization caused by the action of the War Office; at the same time the Committee suggested that attention should be given to the possibilities of economy in the use of doctors in the Army Medical Department, and of the increase of co-operation between the military authorities and the committees, both central and local.

On April 26th a Local Arrangements Subcommittee was formed to take over the consideration of the capacity of each area to supply medical officers for the army. Dr. T. W. Shore was appointed chairman of the new subcommittee, which proceeded to make an analysis of all the areas in England and Wales. In view of the increasing work of the Central Medical War Committee as the Central Professional Committee, six more members were added.

In consequence of the delay caused by its action in calling up all men under 41, the War Office turned its attention to the possibility of obtaining the help of American doctors, and to the calling up of Territorial officers *à la suite*. Both procedures led to difficulties which had to be dealt with by the Central Committees. In July the Review of Exceptions Act led to further difficulties, which were smoothed over by Dr. Galloway, but the impossibility of providing the 850 medical officers asked for by Lord Derby caused the Committee to address the Prime Minister on the desirability of an inquiry into the future requirements of the army. At the end of July the Director-General A.M.S. was informed of the approaching end of the civil supply of medical officers, and a letter to the same effect was sent also to the Secretary of State for War.

#### *Medical Recruiting Boards.*

Between the months of May and July the Central Medical War Committee dealt with many other matters, such as the staffing of provincial hospitals (in conjunction with the British Hospitals Association); the possibilities of establishing central surgeries in certain areas; the use of dentists in the army (raised by the British Dental Association); and the preparation of a register of all medical officers in the services, with a view to the steps it would be necessary to take in

the event of demobilization. A special joint conference was also arranged on the question of reconstituting the medical recruiting boards. This conference was held in August, and eventually a scheme was drawn up which formed the basis of the reconstitution effected by the Director of Recruiting (Sir Auckland Geddes) and Dr. Galloway. A Recruiting Medical Advisory Board, upon which representatives of the Professional Committee sat, was appointed in October, and the advice of the local Medical War Committees was used in the appointment of recruiting medical boards.

#### *A Committee of Inquiry in France.*

At the beginning of August, 1917, a rumour reached the Central Medical War Committee that the War Office had decided to send to France a committee of inquiry into the use of medical officers in the army, and a request was sent to the War Office that the inquiry should be extended to the army in Great Britain. This committee of inquiry consisted of Sir Frederick Taylor, Sir Rickman Godlee, Sir Watson Cheyne, Sir Harold Stiles, Dr. Norman Walker, Dr. Charles Buttar, and Dr. J. B. Christopherson. Sir Francis Howard was appointed to take charge of the committee as chairman, and Dr. Christopherson became the secretary. The committee spent the whole of September in France, but was not permitted to extend its investigations to this country, although this would have been within its terms of reference. It sent its report to the War Office in December, but nothing further was heard of it, although the War Office professed to have adopted many of the recommendations.

#### *Attempts to Estimate Future Army Demands.*

In November, 1917, Dr. Galloway (who had become Chief Commissioner for Medical Services, Ministry of National Service) brought before the Central Medical War Committee the possibility of the raising of the military service age. At the end of the month arrangements for the supply of medical men to the army were transferred to the Director-General National Service, and direct communication between the Central Medical War Committee and the Director-General A.M.S. practically ceased. In December discussions began with the Ministry of National Service regarding the supply of doctors for the army; it became clear that the annual contract for medical officers would have to go; and the Minister (then Sir Auckland Geddes) was asked for the estimated net demand of the army for the ensuing year, whether the Ministry was satisfied that medical officers in the R.A.M.C. were being utilized to the best advantage, and whether the Ministry had considered any kind of relief that could be given to the profession in the bill for the amendment of the Military Service Acts shortly to be introduced.

The characteristic feature of 1917 was the growing feeling that over-recruitment of the profession was being demanded by the War Office. The difficulty of discovering the truth was not diminished by the refusal of the War Office to publish the report of the Howard Committee which had been sent to France. From Dr. Currie's book it does not appear that this difficulty was felt in Scotland as acutely as it was in England. Probably the position of the Central Medical War Committee in London, with its greater facilities for obtaining information, made it more acutely alive than the Scottish Medical Service Emergency Committee to the dangers of unsupervised demands by the Army Medical Department. Thus it arose that with the reconstitution of the Ministry of National Service under Sir Auckland Geddes in November, 1917, the Professional Committees, as has been said, ceased to have direct relations with the War Office and became associated with the Medical Department of the Ministry of National Service.

#### *THE FIFTH YEAR—1918.*

The first duty of the Ministry of National Service in 1918 was to attempt to ascertain the position of the R.A.M.C. as regards wastage and to budget for the supply of medical officers for the ensuing year. At first it was announced that no further increase in establishment was asked for at the moment, and that wastage would be made good largely by means of the newly qualified, by a system of replacement of demobilized medical officers, and by expediting the work of tribunals. At the end of January, however, there were hints of further demands by the Army Medical Department. The Central Medical War Committee promptly called attention to



the impossibility of providing further large numbers of officers; to the suspicion that still existed as to the lack of economy in the use of officers in the R.A.M.C.; and to the delay in publishing the report of the committee which went to France. The Insurance Commission also protested against the presentation of a fresh demand so shortly after it had been stated that no need existed. The Central Medical War Committee estimated that under existing powers only 100 more medical practitioners could be made available for commissions during the ensuing year; it presented a memorandum on the impossibility of meeting demands; it proposed various methods for relieving the situation; and in March the Committee replied to a further demand by suggesting that the War Cabinet ought at once to take the matter into consideration.

At the end of March the German offensive in Picardy entailing severe losses on the R.A.M.C. led to another medical emergency, to meet which the Central Medical War Committee put forward a scheme for obtaining volunteers upon a guarantee that they would only be used for the immediate emergency, and would return to civil life in three months, or at most six months, from the beginning of their service. The authorities would not accept this condition, although they agreed that each case should be reviewed on application at the end of the crisis or in six months' time at the latest; and that the officers would then, if possible, be released. The refusal of the guarantee probably spoilt the scheme; at all events only 27 volunteers were obtained.

The Military Service Act of February 6th, 1918, gave power to the Minister of National Service to cancel certificates of exemption from military service granted on occupational grounds. To cope with the additional work placed on the Ministry the Professional Committees were asked to assist the Ministry in arranging for additional National Service medical boards, as well as for medical boards for discharged soldiers. Thus at a time when the War Office was pressing the civilian profession for more medical officers additional work was being thrown upon medical men in providing medical officers for National Service Boards.

#### *Age Limit Raised: Proposed Mobilization for Civilian Medical Service.*

The Military Service (No. 2) Bill, 1918, introduced two provisions that applied to doctors as apart from the rest of the community. In the first place the limit of age for military service was fixed at 55 as against 50 for the rest of the population; and secondly, a provision was made that a certificate for exemption on occupational grounds was to be subject to the condition that the practitioner should undertake such professional service, and under such conditions, as the Director-General of National Service might, after consultation with the medical tribunal and in concert with any Government department concerned, deem best in the national interests. In other words, the principle of vocational control by a Government department was introduced. These provisions were the nearest approach to mobilization of the whole profession that was ever attained. The second provision was the result of prolonged debate between the Ministry of National Service and the Central Medical War Committee which had arisen from the inquiries of Sir James Galloway from the Local Arrangements Subcommittee with regard to co-operation and substitution on February 5th, 1918. On April 5th the Ministry of National Service asked the Professional Committees (1) whether the raising of the military service age would induce other practitioners to move to depleted areas, (2) whether the time was opportune for methods of reorganization and co-operation in order to release younger men. The Central Medical War Committee replied that an organized attempt should first be made to obtain substitutes voluntarily. The Scottish Medical Service Emergency Committee was inclined to the view that substitutional medical practice was unavoidable and favoured a plan of agreed action, subject to any compulsory powers to be furnished by the bill.

With the passing of the Military Service (No. 2) Act, 1918, the connexion between the Professional Committees and the Ministry of National Service became closer, and a Government official, Mr. Vivian, was attached to the office of the Central Medical War Committee to assist the secretary and to be a liaison officer with the Ministry. But the committees still retained considerable powers of criticism, and were able to obtain modifications of the proposals of the Ministry in several directions. The Central Medical War Com-

mittee proceeded with the task of working out a system of substitution, and also dealt with the regulations for the special tribunals dealing with doctors. The Committee approved the appointment by the Ministry of National Service of officials who were to visit the local medical war committees for the purpose of inquiring on the spot into local conditions. A special subcommittee was formed to consider the financial aspects of substitution arrangements. An estimate of available Grade 1 medical men between 43 and 46 was made. In July the Central Medical War Committee was constituted a medical tribunal, and the local medical war committees were recognized as local committees under the Military Service Regulations, 1918. In September the Treasury agreed to the financial proposals with regard to substitution, and the Central Medical War Committee suggested a conference with the authorities controlling the military hospitals in the country before substitution was finally adopted. In the meantime a medical examination of all remaining medical men up to the age of 55 had been made.

In January, 1918, the Central Medical War Committee received a request from the Committee of Reference for a joint meeting with regard to the certificates of medical practitioners in the matter of food rationing. From this meeting arose a small committee which was appointed to advise the Food Controller, Lord Rhondda. Later on conferences were held with the Medical Women's Federation with a view to obtaining its help in economizing man power, and information about women practitioners was added to the card register. In June the Committee of Reference assisted in formulating the lines upon which information should be asked as to the staffing of provincial hospitals. The general principles for the conduct of central surgeries were investigated.

#### *The Last Demand.*

From time to time during the year the Army Medical Department continued to make fresh demands, but it was beyond the power of the committees to satisfy these demands to the full under existing powers. The last demand came on October 1st, and was represented to be an urgent need. In reply, the Local Arrangements Subcommittee made several suggestions, such as expediting the examination of students, the volunteering of young doctors for a period of three months, an appeal for voluntary substitutes for men accepting the three months' service, and the ultimate adoption of compulsory substitution. Within three weeks, and before any of these suggestions had been given a trial, the possibility of an early peace arose. At the same moment the first bad epidemic of influenza that had occurred in this country during the war broke out, and the policy of the Professional Committees in endeavouring to maintain a fair standard of efficiency in medical attendance on the civilian community in the face of the urgent demands of the Army Medical Department was justified. Though the task of the profession in this country in coping with the epidemic was hard, and though the sufferings of those unable to obtain medical attendance were great, the difficulties would have been infinitely greater but for the persistent efforts of the Professional Committees during 1917 and 1918 to force the War Office to justify its requirements.

#### DEMobilIZATION—1918-19.

Questions relating to demobilization at the end of the war had been raised as early as August, 1916, and again by Mr. Russell Coombe in March, 1917. In August, 1917, a subcommittee was appointed by the Central Medical War Committee to deal with this matter, and met for the first time under the chairmanship of Dr. Adam Fulton on September 19th. In November, 1918, conferences arranged by the Interdepartmental Committee of Medical Services, set up by the Ministry of National Service, were attended by representatives of the Professional Committees, and schemes for demobilization were drawn up. These schemes were never carried out completely owing to the action of the Secretary of State for War, Mr. Winston Churchill, which was announced at a meeting of the Interdepartmental Committee on February 24th, 1919. Shortly afterwards the Ministry of National Service ceased to exist, and the duties of the Professional Committees came to an end, though the Scottish Committee continued in direct relation with the naval and military authorities until the end of the year.



## NEW YEAR HONOURS.

## KNIGHTHOODS.

MEMBERS of the British Medical Association throughout the world will be only second to his medical friends in the North of England and his old pupils in congratulating Dr. David Drummond on receiving the honour of knighthood in the list issued on New Year's Day. Sir David Drummond, who for many years was physician and is now consulting physician to the Royal Victoria Infirmary, Newcastle-on-Tyne, won his spurs as a pathologist, a subject he taught in the Newcastle School of Medicine for many years. He is now Professor of the Principles and Practice of Medicine in the University of Durham and Pro-Vice-Chancellor of that University; he is also President of the University of Durham College of Medicine, and is one of the most popular members of its teaching staff. He had long been a member and consistent worker for the British Medical Association, and had for some years represented the North of England Branch on the Council before he was, by the suffrage of his fellow members in that Branch, unanimously nominated to be President of the British Medical Association at the Annual Meeting held in Newcastle in 1921. The success of that meeting, which was most conspicuous, owed not a little to the qualities of mind and heart which had raised Professor Drummond to the position he held. The recognition now afforded to him by the Crown will give immense pleasure to his old pupils and fellow townsmen. We would wish Sir David Drummond the continuance of many years of happy life to enjoy it.

Sir William Hamer, who also receives the honour of knighthood, has worthily filled for many years the high office of Chief Medical Officer to the London County Council, the most important municipal body in the British Empire. He succeeded to that post on the retirement of Sir Shirley Murphy, the Council's first medical officer, to whom Sir William Hamer had been principal assistant. Apart from his official position he is a distinguished epidemiologist and is a doughty defender of the separate existence of the science of epidemiology against encroachment alike by the bacteriologist and the mathematical statistician. He is the author of numerous valuable works on subjects connected with infectious diseases. In 1906 he delivered the Milroy lectures before the Royal College of Physicians, his text being "Variability and persistency of type." The lectures were afterwards published as a book. His staff at the London County Council cannot but be gratified by the honour which the King has conferred upon their chief.

That Sir Norman Walker's name appears in the list under India is doubtless due to his mission not long ago to that country to inquire on behalf of the General Medical Council into the arrangements for the teaching of midwifery in the Indian medical schools. But he has many other claims which well merited earlier recognition. He was chairman of the executive committee of the Highlands and Islands Medical Service Board and, during the war, of the Scottish Medical Service Emergency Committee; he is treasurer of the Royal College of Physicians of Edinburgh, and has been direct representative for Scotland on the General Medical Council since 1907. For several years past he has performed the onerous duties of chairman of the Council's business committee. He is an Edinburgh graduate, physician for diseases of the skin at the Edinburgh Royal Infirmary, and lecturer on that subject in the university.

Sir Bernard Spilsbury's knighthood recognizes valuable service to the Home Office in the medical investigation of crime, and distinction as a teacher in three large metropolitan medical schools. He is now lecturer in morbid anatomy and histology at St. Bartholomew's Hospital Medical College, and lecturer in forensic medicine and toxicology at the London School of Medicine for Women; for many years he was pathologist and lecturer in pathology at St. Mary's Hospital. On relinquishing the pathological work done by him on behalf of London coroners he was lately appointed honorary pathologist to the Home Office in order that his services might still be available for criminal cases of special difficulty. He is examiner in forensic medicine at the University of Oxford, of which he is a graduate, and at the Universities of Manchester and Birmingham. His published works include many important papers on medico-legal subjects, the outcome of long experience in the criminal courts, where his fairness

and his powers of lucid exposition have earned him the respect of bench and bar.

The honour of knighthood is also conferred on two distinguished members of the medical profession in the Dominions: Dr. George Cuscaden, honorary consulting surgeon to the Women's Hospital, Melbourne, late Director-General of the Australian Army Medical Services; and Dr. Hilarion Marcus Fernando, consulting physician to the General Hospital, Colombo, and an unofficial member of the Legislative Council of the Island of Ceylon. He graduated M.D. in 1889, and is a Fellow of University College, London.

The K.C.B. (Military) is conferred on Major-General Sir William Rice Edwards, K.C.I.E., who has just vacated the appointment of Director-General of the Indian Medical Service, and the K.C.S.I. on Sir R. Havelock Charles, G.C.V.O., medical adviser to the Secretary of State for India. He is the first occupant of that office, the establishment of which was an important reform in the organization of the India Office. By his courage and loyalty he has rendered great services to his brother officers and to the people of India. The K.C.I.E. is conferred on Major-General Godfray Giffard, C.S.I., Surgeon-General to the Government of Madras. Sir Milsom Rees, C.V.O., laryngologist to the King and Queen, is promoted to be K.C.V.O.

## COMPANIONSHIPS.

The C.B. (Military) is conferred on Surgeon Rear-Admiral Jonathan Shand, and Lieut.-Colonel and Brevet-Colonel Howard Ensor, C.M.G., D.S.O., R.A.M.C., and the C.B. (Civil) on Dr. F. J. H. Coutts, Senior Medical Officer, Ministry of Health.

The distinction of C.I.E. is received by Lieut.-Colonel Andrew Thomas Gage, I.M.S., Superintendent of the Royal Botanical Gardens, Calcutta, and Director Botanical Survey of India, Bengal; Lieut.-Colonel John Philip Cameron, I.M.S., Inspector-General of Prisons, Madras; Lieut.-Colonel Henry Ross, O.B.E., I.M.S.; and Lieut.-Colonel Alfred Hooton, I.M.S., Agency Surgeon, Kathiawar, Bombay.

Dr. Clare Aveling Wiggins, P.M.O. of the Uganda Protectorate, receives the C.M.G.

Lieut.-Colonel W. J. P. Adye-Curran, O.B.E., R.A.M.C., is promoted to C.B.E. (Military); and the distinction of O.B.E. (Military) is conferred upon Major W. Brooke Purdon, D.S.O.; M.C., R.A.M.C., and Major Henry Thompson Stack, R.A.M.C.

The honour of C.B.E. (Civil Division) has been conferred upon Dr. Henry Curwen, late principal medical officer, Zanzibar Protectorate; Dr. William McNiven Muat, senior medical officer, Wei-hai-wei; Dr. Pryce Peacock (Dublin); and Dr. Henry Percy Pickerill, the last being in recognition of valuable services rendered since the war in connexion with facial and jaw operations on wounded soldiers in New Zealand. Dr. Herbert Torrance, medical missionary, Scottish Hospital, Tiberias, and Major Michael Courtney, I.S.O., I.M.D., Superintendent Central Gaol, Montgomery, Punjab, receive the O.B.E. (Civil Division), the former for valuable services rendered to the people of Palestine.

## KAISAR-I-HIND MEDAL.

The Kaiser-i-Hind medal has been conferred upon Dr. Robert Harper, medical missionary of the American Baptist Mission, Burma; Dr. Nasarwanji Nowroji Parakh, a member of the local Legislative Council, Burma; and Mrs. Isabel Kerr, M.B., medical officer in charge of the Leper Home at Dichpalli, Hyderabad, Deccan.

## PROMOTIONS.

Surgeon Commanders Robert J. MacKeown, O.B.E., Frank H. Nimmo, M.V.O., Richard F. Clark, and Reginald St. G. S. Bond, of the Royal Navy, have been promoted to the rank of Surgeon Captain.

Surgeon Lieutenant Commander Robert Wilbond, R.N.V.R. is promoted to be Surgeon Commander, and Honorary Surgeon Lieutenant Commander Francis J. Hannan, R.N.V.R., to be Honorary Surgeon Commander.

The promotions in the Medical Branch of the Royal Air Force include Wing Commanders Henry Cooper, D.S.O. and Martin William Flack, C.B.E., to be Group Captains; Squadron Leader Harold E. Whittingham to be Wing Commander; and Flight Lieutenants Joseph M. A. Costello, M.C. John H. Wood, M.C., and Arthur J. Brown, D.S.O., to be Squadron Leaders.



# British Medical Journal.

SATURDAY, JANUARY 6TH, 1923.

## THE ORGANIZING OF THE PROFESSION FOR WAR.

THE manner in which the medical profession in Scotland and in England and Wales organized itself so that neither the armies nor the civil population should suffer more than the extraordinary calls made upon the profession during the great war rendered inevitable is sketched in an article published in this issue (p. 24). The occasion of the article is the publication of Dr. Currie's book on *The Mustering of Medical Service in Scotland, 1914-1919*, but we have taken the opportunity to dwell at some length on the services of other professional committees which have not hitherto found an historian, as has been the good fortune of the Scottish Committee. A perusal of Dr. Currie's interesting and valuable narrative, and a contemplation of the more summary record we have compiled of the work accomplished in England and Wales by the Central Medical War Committee and the Committee of Reference, suggest certain reflections and may justify an attempt to draw out some of the lessons they contain.

The Scottish Medical Service Emergency Committee owed its origin to the action promptly taken by the late Dr. J. R. Hamilton of Hawick, then Chairman of the Scottish Committee of the British Medical Association. More far-sighted than most of us at the time, he realized the strain to which the medical profession was to be subjected, and from the first grasped the principle that if the strain was to be met it must be through the concerted action of all sections of the profession—the Colleges, the medical teaching faculties, and the general body of practitioners throughout Scotland. He did not hesitate to take action, and gathered a meeting representing all these interests, at which a provisional committee was formed. That committee's sanction to make arrangements for medical vacancies was derived from the goodwill of the profession. A second medical conference in Scotland was also, in a sense, summoned arbitrarily, but the scheme evolved was put into operation by the Scottish Committee of the British Medical Association and then handed over to the Scottish Medical Service Emergency Committee. Later on it was more or less a matter of chance that this Emergency Committee came into charge of medical recruiting, although before undertaking the work it ascertained that it would have the cordial support of the War Office. Throughout all the work of the Scottish Committee the wisdom and assiduity of the convener, Dr. Norman Walker, were of outstanding value, not only in Scotland, but at the War Office.

Medical recruiting under the 1915 scheme was on voluntary lines both *de jure* and *de facto*; and even when compulsory service was introduced for medical men of military age the work continued to be on voluntary lines, since all the practitioners called up for service under the Acts and submitting appeals under them had already voluntarily expressed their desire to serve and their willingness to accept the Committee's decision as to whether they should go into the army or stay at home. When conscription was introduced for the general population it had little practical application to the profession. No Scottish doctor was in fact a conscript; each one who joined did so voluntarily.

Under the Medical Practitioners' Regulations of 1918 a doctor who sought exemption from medical service on occupational grounds got it on condition that he agreed to perform such civil medical service as the Director of National Service might deem best. This provision was much criticized as a form of vocational compulsion. Strictly, however, it was not so, since no doctor who was willing to serve in the army could be made to do civilian work. But for practical purposes it came very near to compulsion.

Owing to the fact that the number of practitioners in Scotland was relatively small, the task of the Scottish Committee was simpler than that which faced the professional committees that sat in London. The difficulties in maintaining adequate medical attendance on large masses of population were great, and their nature and the way in which they were surmounted must be fully considered and understood when the details of any scheme for future emergencies are being worked out. The problem set to the committees was the adjustment of medical activities to new and unexpected conditions. For this purpose it was necessary that a watchful eye should be kept upon every development in connexion with the war, and that a continual stream of new ideas should be kept up to meet or anticipate each development. The committees were fortunate, first, in the men who conceived the ideas; secondly, in the receptivity of their members; thirdly, in the aid they received from certain Government officials; and, fourthly, in the able staff of Government clerks with which the Central Medical War Committee was supplied. Finally, the profession was fortunate in possessing in the British Medical Association a voluntary body which covered the whole country, and through its Divisions was able to maintain direct connexion with members in all parts of the kingdoms. As is mentioned above and is more fully explained in the article published elsewhere, it was the action promptly taken by the Chairman of the Association's Scottish Committee which led directly to the establishment of the Scottish Medical Service Emergency Committee. At the earliest stage of the movement in England the Association provided money and a local habitation for the Committee which eventually became the Central Medical War Committee. It continued its aid throughout the whole existence of that Committee; moreover, it lent to the Committee the services of the Medical Secretary, Dr. Cox, who acted as Secretary to the Committee along with Mr. Bishop Harman, who had been closely associated with the action taken early by the Metropolitan Counties Branch, and had acted as one of the secretaries of the special committee appointed by that Branch.

Though during the war the profession was able to establish an organization which succeeded in supplying the army with medical officers and in maintaining reasonable standards of civil practice, it cannot be assumed that on another occasion fortune will be equally propitious. In England the profession was very happy to have as Chairman of the Insurance Commission a public servant of the eminence and width of view possessed by Sir Robert Morant, an official to second him of the ability of Mr. Vivian, now Registrar-General, and a member of its own body so wise as Dr. James Galloway, who was later on brought within the official fold as Chief Commissioner for Medical Services in the Ministry of National Service. Everyone hopes that "the war to end war" may have achieved its object, but if another war breaks out it may be even less foreseeable than the last. A scheme of medical organization to meet the emergency of a war should be devised and approved during peace. Therefore it will be well that the lessons to be learnt from the development of the Committees in England and Scotland should now be



taken to heart and the scheme for future emergencies built up on the history of the three professional committees. A study of that history may prevent the mistake being made, of which there is already a hint, that in another emergency the organization of the profession shall be in the hands of the Ministry of Health. It was the voluntary basis of the committees which was the root cause of their success; and the early recognition of the value of this principle redounds to the credit of Sir Robert Morant.

### INSULIN IN DIABETES.

THE report by Drs. Banting, Campbell, and Fletcher on the results of the treatment of cases of diabetes mellitus, including some of diabetic coma, in the Department of Medicine of the University of Toronto and the Toronto General Hospital, which is published at page 8, will be read with great interest by the numerous medical workers who, having read the general account of the physiological and therapeutic effects of insulin given by Professor J. J. R. Macleod in our columns of November 4th, 1922 (p. 833), have been looking eagerly for evidence as to the limits within which insulin treatment is likely to be practically successful.

Owing to the difficulty in preparing insulin in large quantities and to the desire to avoid disappointing patients by a cessation of treatment after it has once been begun, the treatment has been applied to some fifty individuals only, and preference was given to those in whom the disease had already assumed the gravest form. It is particularly interesting to note that several children were among those treated. These young diabetics, in whom, according to all previous experience, the prognosis is most unfavourable, responded to insulin as well as older patients. This is a critical test of any treatment for diabetes. Where the condition of the patient permitted he was subjected to a careful preliminary examination, kept at rest in bed, and then permitted to take light exercise for a period. At the same time dietetic measures were adopted to ascertain whether the urine could be rendered by such means sugar-free. Those who became sugar-free were advised to continue dietetic treatment in view of the shortage of insulin. Thus the insulin treatment has been confined to those who resisted carefully planned dietetic treatment.

The record now submitted confirms the earlier conclusion that all the features of abnormal metabolism which constitute diabetes mellitus can be removed temporarily by an adequate dose of "insulin," and can be kept in abeyance by repeated dosage and a suitably adjusted diet. There is a hint at the possibility of a more permanent curative effect, in the reference to the recovery, by certain patients, of "such a degree of tolerance as no longer to require extract to maintain them on a basal diet." No details, however, are given of any such cases, and it would clearly be premature to assume, as yet, that insulin is likely to have a more permanent effect on tolerance than that which has been achieved hitherto by periods of complete abstinence. The question as to how long the advanced case of diabetes can tolerate several daily injections has yet to be answered. There is no reason for assuming that the difficulties will never be circumvented, but their existence must be recognized. It would seem that insulin in some cases not merely renders the urine of sufferers from certain forms of diabetes free from sugar, or reduces the blood sugar within normal limits, but can also enable them to make such improved use of food as to restore them to something approaching normal nutrition and greatly increased vigour.

The claims made in respect of the treatment of cases of complete coma are remarkable. Of ten cases treated,

six, the authors state, are living. "One has recovered and is now aglycosuric without insulin on a diet about double the basal requirement. The other five patients have remained free of symptoms and the urine free of sugar and ketones under dietetic treatment and the daily administration of insulin." Ketones disappear from the urine, but this effect is produced later and ceases earlier than in the case of sugar; simultaneously the normal alkali reserve of the blood is re-established and the signs and subjective symptoms are no longer observed. Statements of this kind are naturally received with caution, and even with some misgiving. The reader is bound to ask whether the authors have possibly been misled by their own enthusiasm. But the facts remain that these six patients are alive, that the improvement which was apparent clinically was confirmed by the laboratory data, and that the observations have been made under the supervision of so skilled and careful a clinical worker as Dr. Duncan Graham, professor of medicine at Toronto. It is satisfactory to be told that the toxic reactions which followed the injections of the extract first used by the Toronto investigators can now be prevented. The description of the symptoms which attend the sudden hypoglycaemia produced by insulin is interesting, especially the account of the nervous phenomena with loss of emotional control. These symptoms read like an account of cases of shell shock that during the war were often seen after prolonged battle strain without exposure to actual explosive effects.

The conditions in which the benefit to be derived from insulin is least open to doubt are the emergencies of diabetes—coma, threatened or already developed, and gangrene necessitating operation. Even if it should prove in the long run that the lifelong maintenance of an increased tolerance, by daily administration, is impracticable, the existence of a remedy which promises to carry the patient past a threatened danger to life, to make possible and safe a necessary but otherwise desperate operation, and which can be brought into play whenever an intercurrent infection lowers the tolerance of the patient for carbohydrates, is bound to be a factor of great importance in the treatment of diabetes mellitus. It is to be hoped that, before long, workers in our own country will be contributing to the record of experience with the new remedy.

Of interest in the same connexion is the brief account (at page 12) by Winter and Smith, working in the Biochemical Laboratory at Cambridge under Professor F. G. Hopkins, F.R.S., of some very suggestive observations, which give the first hint available as to the mechanism of the action of insulin and its relation to the glycogenic function of the liver. Their observations appear to indicate that the glucose of the normal blood is not the ordinary  $\alpha$ - $\beta$  glucose, but the unstable form known as  $\gamma$  glucose, which has never yet been isolated in the free condition. They find indications of the conversion of  $\alpha$ - $\beta$  glucose into the unstable  $\gamma$  form by a liver extract when activated by insulin, which seems to play the part of a co-enzyme. The confirmation and extension of these observations will be awaited with great interest; even a small step towards a scientific understanding of a condition like diabetes may well entail a sweeping advance in practical treatment.

At the present time no insulin is available in this country. The method of preparation on a commercial scale is under intensive investigation in the laboratories of the Medical Research Council, and there is reason to hope that within a few months a sufficient supply may be obtained for careful test in hospitals. It is, of course, essential that the preparation should be free from bacterial contamination, and it will be observed from the paper by Banting and his colleagues published this week that the clinical administration of a pure



product calls for very careful management. The details they have set out will, we have no doubt, be studied by practitioners in expectation of the time when adequate supplies become available.

### PSYCHO-ANALYSIS.

THE discussion of psycho-analysis, which has been carried on in our columns for several months, has, we think, served a useful purpose. The profession have had the advantage of reading many clearly expressed opinions entertained by men eminent in various special departments of medical science upon a subject of general interest. These opinions have been widely divergent, but they have been expressed without the personal bitterness which has often made such discussions distasteful to fair-minded men. We think, however, that the last word in this particular discussion may fitly be left to Professor G. M. Robertson, whose thoughtful letter is printed in this issue. We do not, of course, take upon ourselves to pronounce judgement upon the issues, but we may be allowed to say that the concluding paragraph of Professor Robertson's letter seems to us to enunciate a thoroughly sound doctrine. We do not mean, and we do not suppose that Professor Robertson means, that no useful opinion upon the principles of psycho-analysis can be formed save by the small minority of the profession who are able to employ technical clinical methods based on these principles in the actual treatment of many patients. But, as we indicated some weeks ago, a scientific testing of some of the psycho-analytical principles is within the power of us all.

The reason why so little of such testing has been done is easy to see. Any reader of Freud's Introductory Lectures or of his *Traumdeutung*—which are, we suppose, the first of his works likely to be studied—will experience numerous temptations to digress into that verbal dialectic which is the bane of discussions of psycho-analysis in general and Freud's theory of dreams in particular, a logomachy from which even our recent correspondents have not been altogether immune. The interpretation of particular dreams is so delectable, so reminiscent of the triumphs of Mr. Sherlock Holmes, that one is led to doubt whether the eminent author is playing us quite fair. One wonders, for instance, whether the dream of the father who appeared repeating the quarters of the hour is really better interpreted by the pun of *Urmensch* and *Uhrmensch* than by the dreamer's prosaic first association.<sup>1</sup> Then again the explanation of dream symbolism by analogy with primitive forms of language inevitably raises the venerable but no longer venerated ghost of Paley.

But if these temptations are resisted it will be found that Freud not only suggests but urges upon us many subjects for direct investigation, which need no elaborate apparatus nor access to psycho-pathological material. We may take as an example his comment on a paper published by Pözl in 1917. This investigator, compared the immediate reproduction of certain visual stimuli with the reproduced contents of the dreams of the subjects in the night following the experiment. Freud comments in the following terms: "It appeared, then, unmistakably that details of the picture exhibited to the subject of the experiment and not noticed by him (*nicht von der Versuchsperson aufgefassten Einzelheiten*) provided material for the dream activity (*Traumarbeit*), while the details consciously perceived and recorded in a drawing after the experiment did not reappear in the manifest content of the dream. The material assimilated by the dream activity was by it utilized in the well-known 'arbitrary'—more properly, self-controlling—way

for the service of the dream-building tendencies. The suggestions of Pözl's research go beyond the scope of dream interpretation as investigated in this book. Briefly, however, one may note how far removed this new method of experimentally studying the formation of dreams is from that crude technique which consisted in the introduction into the dream content of sleep-disturbing stimuli."<sup>2</sup> This is but one example of the many possibilities which Freud's work suggests of experimental work, testing fundamental points of the general theory, which all who choose can perform. We note that Mr. Whateley Smith has recently<sup>3</sup> applied experimental and statistical methods to the testing of the value of Jung's word-association method and to the psycho-galvanic reflex. The psycho-galvanometer is not an instrument available to many, but an experimental and statistical investigation of the word-association test can be carried out without access to a psychological laboratory; indeed the statistical methods of Jung himself leave much to be desired. There is, in fact, a wide range of psychological phenomena within the compass of the normal which anyone can study, and, by studying, both add to knowledge and entitle himself to form and express an opinion upon what is, whether for good or evil, a remarkable movement in psychological medicine. Freud himself insists upon the duty of making such investigations, and tells his elementary students that dreams and slips of the tongue, etc., are material which they can study as well as he can—"the phenomena are not strange, you have or may easily acquire as much experience of them as I have myself." But not unreasonably he declines to admit the pretensions of the man in the street, or even the man in the consulting room, to sit in judgement upon technical clinico-pathological developments of principles which the critic has never investigated at all. In any other branch of medical science this distinction would be regarded as self-evident. A man whose physiological training consists of an elementary course of undergraduate instruction perhaps twenty years ago does not presume to controvert the opinions of a Sherrington or a Haldane. Were it an unwritten law that none should either publish books or even write letters upon psycho-analysis unless they had themselves executed a piece of research, however humble, within the field of normal psychology, a healthier professional opinion on the whole matter would be created, and we should soon know whether our generation has witnessed the discovery of a great truth or the exploitation of a gigantic error.

### THE CENTENARY OF JENNER'S DEATH.

THE centenary of the death of Edward Jenner, the discoverer of vaccination, will be commemorated in Paris and in London. Jenner was born at Berkeley, in Gloucestershire, where his father was vicar, on May 17th, 1749, and, after a life of varied activity, died there on January 26th, 1823. On Tuesday, January 23rd, the Académie de Médecine of Paris will hold a meeting in honour of Jenner, and on Friday, January 26th, there will be a special meeting of the Royal Society of Medicine, under the chairmanship of the President, Sir William Hale-White, at 8.30 p.m., with the same object; an address on Jenner's life and work will be given, and objects of historical interest will be shown. An exhibition of personal relics of Jenner—pictures, engravings, manuscripts, books, caricatures, etc.—will be open at the Historical Medical Museum, 54a, Wigmore Street, on January 26th, and will remain open for some months. Jenner performed vaccination for the first time on May 14th, 1796. The subject was a boy, about 8 years old, named James Phipps, and the vaccine matter was taken from

<sup>1</sup> *Vorlesungen zur Einführung in die Psychoanalyse*, fourth edition, pp. 264-265.

<sup>2</sup> *Die Traumdeutung*, seventh edition, p. 127 (footnote).

<sup>3</sup> *The Measurement of Emotion*. London: Kegan Paul, 1922.



the hand of Sarah Nelmes, a dairymaid, who had become infected by her master's cows. On July 1st Jenner inoculated the boy with variolous matter taken directly from a pustule, but no disease followed. He wrote to his friend Gardner at once. "The boy," he said, "has since been inoculated for the small-pox, which, as I ventured to predict, produced no effect. I shall now pursue my experiments with redoubled ardour." The possibility had been present in the mind of Jenner for a good many years. He began his professional education under Mr. Daniel Ludlow, of Sodbury, Gloucestershire, when only 13 years of age. He became a house pupil of John Hunter at St. George's Hospital in 1770. While at Sodbury Jenner learnt that there was a popular belief that a person who had had cow-pox could not take small-pox, and when, on leaving St. George's Hospital, he went back to Berkeley, he found that the belief was general among the milkers in and around that small town. It was not until 1788 that he brought his hypothesis that inoculation with cow-pox would prevent small-pox before the profession in London, and it was not until 1796, as we have said, that he ventured to put it to the test. Henry Cline, surgeon to St. Thomas's Hospital, who seems to have been one of the few people impressed by Jenner's statement in 1788, was probably the first person to perform vaccination in London. In August, 1798, he wrote to Jenner: "The cow-pox experiment has succeeded admirably. The child sickened on the seventh day; and the fever, which was moderate, subsided on the eleventh day. . . . I have since inoculated him with small-pox matter in three places, which were slightly inflamed on the third day, and then subsided." It was in 1798 that Jenner published his famous "Inquiry into the Causes and Effects of the Variolae Vaccinae, a Disease discovered in some of the Western Counties of England, particularly Gloucestershire, and known by the name of Cow-pox." A second edition was published in 1800, and a third, with some additions, in 1801. The "Inquiry" was also published in America, and was translated into Latin and into nearly every European language. A special Jenner Centenary Number of the BRITISH MEDICAL JOURNAL was published on May 23rd, 1896, to commemorate the one-hundredth anniversary of the first vaccination. The issue contained a biography of Jenner, a number of articles on cow pox, vaccination, and small-pox, and a remarkable set of coloured drawings made by Kirtland in 1802, showing side by side the development, from the second day to the sixteenth, of the pock produced by the inoculation of small-pox and by the inoculation of cow-pox. The contrast after the fifth day is very striking, and so far as we are aware no similar series has ever been published, nor is it likely that it will ever again be possible to produce such a set of drawings from nature. On July 5th, 1902, a special Vaccination Number of the JOURNAL was issued, reproducing the biography above mentioned, and containing a series of authoritative communications on small-pox and vaccination, together with coloured plates and other illustrations, contrasting the eruptions of chicken-pox and small-pox, and depicting the local course of vaccination with calf lymph.

#### THE WORKS OF PASTEUR.

PASTEUR usually reported the results of his work to scientific or medical societies, and his papers are scattered through the transactions and proceedings of these societies and in reviews and journals. He produced only two books—one on beer and the other on disease in silkworms. His grandson, Dr. Pasteur Valléry Radot, has undertaken to edit a complete collection of all his grandfather's writings; it will be issued in seven volumes by the firm of Masson of Paris. The papers will be classified under six heads, which mark the stages of Pasteur's scientific development. Two volumes have already appeared. They make a very handsome appearance in large octavo (8° jésus), and the frontispiece of the first is a well-known portrait of Pasteur in his laboratory, by A. Edelfelt. This volume contains the articles on molecular dissymmetry (50 francs), and the second those on fermentation and so-called spontaneous generation (65 francs). The other papers will be arranged in four classes—his studies of

vinegar and of wine, of diseases in silkworms, his inquiries into the manufacture of beer, and his investigations of virulent diseases and virus vaccines. The seventh volume will consist of miscellaneous scientific and literary articles. A few hitherto unpublished papers will be included. The articles will be arranged in chronological order under these several heads. The text is being produced without alteration, but a large number of notes are being added. The editor in his preface says that the articles, lectures, and memoirs brought together in these volumes show both the immensity and the unity of Pasteur's work. By a chain of facts, reasoning, and experiment Pasteur was led from molecular dissymmetry to the fermentations, then to a study of so-called spontaneous generation, and finally to the investigation of transmissible diseases, to virus vaccines, and to the prophylaxis of rabies. We may take this opportunity of complimenting our contemporary *Nature* on the excellent Pasteur Supplement which it published on December 23rd; it is illustrated by a portrait of Pasteur and a photograph of the statue at the Sorbonne, Paris. It contains an introductory article by Mr. Stephen Paget, a masterly review of the influence of Pasteur on the development of bacteriology and the doctrines of infection and immunity by Professor William Bulloch, F.R.S., and another on Pasteur and preventive medicine by Professor J. C. G. Ledingham, F.R.S. The French illustrated paper *L'Illustration* has published a fine supplement containing beautiful illustrations, including portraits of Pasteur at various ages, and a coloured drawing of the crypt of the Institut in Paris, where he is buried.

#### THE CENTENARY OF THE "LANCET."

THE *Lancet* has entered upon its centennial year, for its first number was published on October 5th, 1823. The prospectus stated that the primary object of the founder was to convey to the public and to distant practitioners, as well as to students, reports of the metropolitan hospital lectures and to describe all important cases that might occur in England or elsewhere. Not satisfied with this comprehensive programme the editor assured his future subscribers that he would be indefatigable in making his paper a complete chronicle of current literature. Another purpose, not announced, but disclosed even in the first number, was to support the political party to which the editor belonged. The first number in its original form consisted of thirty-six small octavo pages, so that the space the editor allowed himself to carry out his rather grandiose intentions was limited. He kept his promise about the lectures, for the first number contained a report of one given by Sir Astley Cooper, and to keep the balance true there was inserted an extract from the *London Medical Repository* in which Mr. Henry Earle, assistant surgeon to St. Bartholomew's Hospital, developed a controversy with Cooper as to whether fracture of the neck of the thigh-bone ever united, and whether Cooper had said that Earle was maintaining the contrary view in order to depreciate Guy's Hospital and its teaching; for Cooper, while lecturer at St. Thomas's Hospital, was surgeon to Guy's Hospital. Those who have read Sir Squire Sprigge's biography of his great predecessor will know that Thomas Wakley was a man of volcanic energy, not very heavily weighted with scruples, and not at all afraid of the law of libel. He was in fact involved in a group of libel actions which dragged on some ten years, but in most of them he won actual or moral verdicts, for the abuses he denounced were real, though the manner of his denunciation was often unnecessarily violent. The *Lancet* under Wakley's direction had a great part in the reform of medical education, in the abolition of the nepotism which had governed the selection of hospital staffs, and generally in raising the standard of knowledge of the medical practitioner in England. His criticisms, destructive and constructive, were among the most important elements in the formation of the public and professional opinion which resulted in the passage of the Medical Act in 1858 setting up the *Medical Register*. Among the other abuses he attacked in the public interest were the defective



organization and administration of workhouse infirmaries and the evils of quack medicines. A point of perhaps rather technical interest is that the form of make-up of a general medical journal which Wakley evolved—the publication of original articles, of reports of societies, of reviews, of editorial comments on medical occurrences, pathological, social, and political—has been very generally imitated by other medical journals in this country, in America, and in Germany. The influence of the *Lancet* has been very great and very beneficial, and it may, we hope, continue to prosper along the lines which have established and maintained its reputation with the medical profession.

#### DUCHENNE OF BOULOGNE.

A CORRESPONDENT has forwarded to us the following notes from an old diary: One summer morning in the year 1860, about 7.30 a.m., in the Hôtel-Dieu, Tuckwell of Oxford and I were awaiting our master, Trousseau. As in his genial way he entered the ward, we saw behind him a little, quick, wiry, vigilant man, whom Trousseau introduced to us as Duchenne of Boulogne. Duchenne had no post in the hospital, but Trousseau, in his sympathetic and ardent way of welcoming any scientific brother, having discovered Duchenne, carried him into his wards to help him in his own researches and also to give Duchenne a large field for his energy and talents. Trousseau, whose courtesy to his English pupils was well known, had been very friendly to me, and thus it was that I became intimate with Duchenne. He invited me to his clinic, which at that time was a remarkable crowd. How it was gathered together and maintained I cannot say. I have no recollection of any assistant, or at any rate none of any quality. His apartment consisted of two or three narrow rooms in the mountainous top of a building in the Boulevard des Capucins. How on earth, in those days of no lifts, day by day this oncourse of cripples from every department of France lumbered up to these consulting rooms I cannot imagine. Perhaps the busy clicking and other more aggressive properties of his electric apparatus, to which the sanguine little man attributed even more virtue than has since been realized, had their ascination. Indeed these machines had much in character with their lively, impulsive and nimble-minded master. At his time of his life I suppose, from the motley groups I saw in his clinic, his practice was mainly gratuitous. In his ardent desire for knowledge Duchenne did not make money his first consideration. He cordially invited me to attend his clinic and never alluded to any fee, invaluable as that experience was. It was wonderful to watch the unravelling under his penetrating eye of the several kinds of disease of nerve and muscle as he discriminated them, or described them anew. It was a rare lesson in clinical insight and in apprehension of our ignorance. But my purpose at present is only to recall some of the personal qualities of that great clinical discoverer. In after years I saw much of Duchenne, chiefly in Paris; but once or twice he was tempted over to England. His chief visit was, if I remember right, at an annual meeting of the British Medical Association, when, by Hughlings Jackson, Lockhart Clarke, Buzzard, G. H. Lewis, and myself, he was tempted to cross the Channel. Duchenne, a child in travel, started from home with a trunk which may have held a few small pieces of raiment, but chiefly a collection of bones from a few of his autopsies. This baggage, as his manner was, he lost *en route*, and arrived in London in much agitation about his missing specimens, a distress which became almost frenzy when we warned him of the hubbub which would arise on the official investigation of his trunk. It so happened that about that time certain human remains in a carpet bag, supposed to be the relics of a gruesome murder, had been dropped into the Thames. Happily his trunk was returned to him intact, and he was able to demonstrate his bones with joy. Duchenne had that childlike nature which often comes with genius: insight, earnestness, ardour, enthusiasm, simplicity; he deserves to be remembered by neurologists as one of the great pioneers of his day.—C. A.

#### A PREDISPOSITION TO MINERS' NYSTAGMUS.

A PAPER on miners' nystagmus, which Mr. A. S. Percival of Newcastle-on-Tyne communicated to the Oxford Ophthalmological Congress, expresses some dissatisfaction with the recent findings of the Departmental Committee which reported on this disease. Mr. Percival holds that the one and only conclusive factor in the production of the disease is working in a bad light, but he recalls some of the work of the late Mr. Simon Snell, who concluded that working in a bad position was also a factor. The main point of Mr. Percival's communication, however, is to maintain that there is a congenital predisposition to the disease. He believes that the disease is only likely to affect those who have some primary deficiency in the "light fixation centre," and that there is as much diversity in the activity of this centre as there is in the control of binocular fixation. He writes: Some "5 per cent. of all children born have a predisposition to the disease [miners' nystagmus], and if they have not this predisposition they will never acquire it. If they have this predisposition they have it for life. Unfortunately no means have yet been discovered for recognizing the predisposition before the onset of the disease." The practical bearing of this theory lies in the application of the Workmen's Compensation Act. He contends that it is fundamentally unjust. "Practically it means that the patient receives whole or part compensation for the rest of his life, for there are very few workmen who are wise enough to seek other employment. It is bad for the workman pecuniarily, for whatever his ability in other ways he can never make much money, even with part compensation, while doing light jobs at bank. . . . It is obvious that the unfortunate pitman who acquires miners' nystagmus must be given compensation for a limited period, say twelve months or so, while recovering from his symptoms, and to give him time to obtain other employment, but that he should never be allowed to obtain underground work again." Mr. Percival states that he has had four cases of workmen who have acquired and reacquired miners' nystagmus three or four times—getting relief, returning to the pits, and again obtaining compensation. Such experiences as these certainly support the recommendation that a man once affected by the disease should be definitely debarred from coal mining once and for all. The theory of predisposition was noticed in the report of the Miners' Nystagmus Committee, which drew attention to the work of Ohm; but even this worker failed to discover any practical plan for sifting out the predisposed, and had to conclude, "I can only add my voice to this cry for 'More Light' in the mines." The magnitude of the problem is shown by a recent reply on behalf of the Home Office to a question in the House of Commons. It was stated that the total number of workmen in receipt of compensation for nystagmus was 6,449 in 1919, 7,928 in 1920, and 6,717 in 1921; statistics were not collected for 1918. The first report of the expert committee of inquiry into the causes of nystagmus set up by the Medical Research Council in 1920 was published early in 1922, and the committee is still at work.

#### THE RHODESIAN TESTS OF BAYER "205."

In the *Deutsch-medizinische Wochenschrift* for December 22nd, 1922, there is a report by Professor F. K. Kleine and Dr. W. Fischer on the inquiry they conducted in Rhodesia into the action of Bayer "205" in trypanosomiasis. Three lines of investigation were followed: What therapeutic effect does the drug have (a) on infected human beings, (b) on infected cattle, and in what measure is it effective as a prophylactic of trypanosome diseases in man and beast? A fourth question to which an answer was sought was: Can an infected fly be sterilized by being fed on an animal given "205"? To this last question the answer appears to be in the negative. It was found that the proportion of infected tsetse flies was small, and even when they were artificially fed on infected animals most of the flies escaped infection. The trypanosomes investigated were *T. brucei*, *T. rhodesiense*, *T. bovis* (which is possibly identical with *T. vivax* and *T. caualbus*), and *T. caprae*. More than 180 monkeys (*Cercopithecus rufovir*)



were employed, as they are very susceptible to infection with *T. brucei* when not living in freedom. It was found that when 0.25 gram of "205" was given by the mouth (stomach tube) the organisms (*T. brucei* and *T. rhodesiense*) disappeared from the blood in forty-eight hours. In some cases a single dose was sufficient to effect a cure, but of seven monkeys given 0.25 on two consecutive days three relapsed. Seven other monkeys given 0.25 gram on each of three or four consecutive days showed no sign of relapse during an observation period of about four months. The subcutaneous administration of the drug was considerably more effective than the oral; after the subcutaneous injection of 0.05 to 0.15 gram not one of the twenty-seven monkeys showed a relapse, and the injection was followed by the disappearance of the trypanosomes from the blood within twenty-four hours. The superiority of the subcutaneous over the oral route was still more marked when prophylaxis was the object. Given by the mouth "205" prevented infection only for two to four days, whereas when given by subcutaneous injection two months' immunity was conferred; the explanation suggested is that the subcutaneous route provides the body with a *dépôt* which is slowly eliminated. When the oral administration of the drug to a healthy monkey was followed in a few days by exposure to infection an abortive form of the disease sometimes developed; though organisms were not demonstrable in the blood, the monkeys were at least comparatively immune to subsequent infection and this immunity must have been active, as the passive immunity conferred by the oral administration of the drug lasts only a few days. Resort to this active immunization is, however, in the opinion of Professor Kleine and Dr. Fischer, not likely to be very successful. They found that the organisms soon become resistant to the drug if the dose was too small, and they confess that their therapeutic experiments were less successful with cattle than with monkeys. Their detailed report on six cases in man is very encouraging; and they recommend subcutaneous or intravenous injections of 1 to 1.5 grams repeated once or twice at moderate intervals. This is a big dose, but it is urgently indicated on account of the risk, already referred to, of the organisms losing their susceptibility to the drug when it is given in small doses.

#### ATMOSPHERIC CONDITIONS AND INDUSTRIAL EFFICIENCY.

Two reports have just been issued by the Industrial Fatigue Research Board, and it may be said that the main conclusions of each of them relate to the influence of atmospheric conditions on the efficiency, and presumably therefore on the health, of two large classes of industrial workers. In Report No. 20 Mr. H. C. Weston describes his observations on efficiency in fine linen weaving. The weaving of fine linen is one of the most trying industrial operations known in this country, as it has to be carried on in a hot and very moist atmosphere, in order to reduce the breakages of the yarn to a minimum. Owing to artificial humidification, the wet and dry bulb temperatures of the air in the sheds seldom differ by more than 2° F., and the actual temperature often exceeds 70°. Mr. Weston made hourly observations on the rate of production of forty looms in each of two sheds for periods of four or five months, and as the temperatures were observed at the same time, he was able to obtain accurate information concerning efficiency (as indicated by output) in relation to temperature. He confirmed the already well-established fact that within certain limits the higher the temperature the greater the quantity of linen woven, but he found that at temperatures above 73° (wet bulb) the relation no longer held. The high temperatures caused such discomfort and fatigue in the weavers that their productivity fell off, and it might become distinctly less than that observed at lower temperatures, in spite of the more favourable physical conditions for weaving. Other evidences of fatigue were obtained by comparing the rate of production in the morning and afternoon. Due allowance being made for the temperature effect, it was found that when the

workers were on a nine-hour day their afternoon production rate was 8 per cent. less than the morning rate. When on an eight-hour day it was only 4 per cent. less, but when on a seven-hour day it was 3 per cent. more than in the morning. Again, the rate of production is greatly affected by illumination, and with artificial lighting the output was 11 per cent. less than with natural lighting. In Report No. 22 Miss May Smith describes some results of her study in the laundry trade. This trade is a difficult one to investigate, for even in the largest laundries the workers are not often kept on exactly the same class of work for more than a few hours at a time, so that variations of output are not easily ascertained. Still, Miss Smith was able to show that the efficiency of women employed in ironing shirts, in smoothing by means of presses and calenders, and in other work, is usually lower in the afternoon than in the morning, and falls off especially towards the end of the afternoon. Still greater reductions of efficiency were observed when the women were put on to a ten-hour day instead of the usual nine-hour day. Such fatigue effects are not to be wondered at, because of the adverse atmospheric conditions. Observations made in twenty-two laundries showed that the temperature near the hand-ironing and calender tables was frequently over 80°, and on hot days was well over 90°, whilst the cooling power of the air (investigated by means of the kata-thermometer) fell to 2 or even to 1. It is well known that, for reasonable comfort, this cooling power ought to exceed a value of 6, but only 12 per cent. of all the observations attained this standard. Supposing that the heat derived from the laundry apparatus is unavoidable, then the cooling power of the air ought to be increased by greater ventilation, and yet it was found that the air currents in the laundries were not, as a rule, much greater than those observed in the factories of an industry such as that of boot and shoe manufacture, which has no hot processes. Hence it is highly important that the investigation of atmospheric conditions in laundries should be widely extended, and the employers made to realize that they must so control their plant, or control their ventilation, that these excessively low cooling powers are avoided.

#### OCTOCENTENARY OF BART'S.

ST. BARTHOLOMEW'S HOSPITAL celebrates this year its octocentenary, for it was in 1123 that Rahere founded it upon its present site. In our issue of February 4th, 1922, we recorded the holding of a meeting at the Mansion House to make preliminary plans. The provisional programme for the 800th anniversary celebrations is published in the current issue of the *St. Bartholomew's Hospital Journal*. The days chosen are Tuesday, Wednesday, and Thursday, June 5th, 6th, and 7th; these three days have been definitely fixed upon, though the precise events of each are subject to alteration. According to present arrangements the celebrations will begin with service at the Priory Church of St. Bartholomew-the-Great, followed by luncheon to the delegates from medical schools in the British Empire and from American schools, and the reception by the Prince of Wales, President of the hospital, of addresses from the delegates; in the evening an old students' dinner will be held. On the second and third days "Bartholomew Fair" will be held within the hospital precincts; there will be a reception at the Royal College of Surgeons, a *conversazione*, a banquet to the delegates, and a service at St. Paul's Cathedral. During the celebrations an historical and scientific exhibition will be held within the hospital.

We understand that the Royal Society of Medicine intends to celebrate the centenary of Pasteur by a meeting next month. On Friday, February 2nd, a dinner will be held at Vintners' Hall, when the French Ambassador will be in the chair, and the guest of the evening will be Dr. Pasteur Valléry-Radot, Médecin des Hôpitaux de Paris, Pasteur's grandson. Tickets, two guineas (inclusive), can be obtained from M. André Simon, 24, Mark Lane, E.C.3.



## Louis Pasteur.

[FROM OUR PARIS CORRESPONDENT.]

"The greatest charity we can show to the dead," said Pascal, "is to act towards them exactly as they would have wished us to have acted while yet they lived."

We have just been celebrating the hundredth anniversary (December 27th) of the birth of Pasteur. How limited are our means of offering due homage to such a man! The bells of France have rung in his honour. The faithful in pious pilgrimage have assembled at his humble birthplace in Dôle. Strasbourg and Lille have celebrated the sojourn of the master within their universities. Lastly, Paris, the heart of France, has stood in meditation before his tomb, where a simple name more eloquent than all epitaphs is inscribed.

And we have had speeches! It is here that the thought of Pascal obtrudes upon the mind, and one wonders what Pasteur would have made of this flood of words—he, the silent worker who never left his laboratory except to oppose to impassioned arguments sober language and the final verdict of the facts of experiment. Recall the famous debates in the Academy of Medicine. Hardly could that illustrious assembly forgive a chemist, a layman, for daring to tread the path reserved for clinical medicine. The Academy was bitterly reproached for its attitude, but let us note that these discussions would not have taken place at all if the Academy had not first done itself honour in inviting Pasteur to take his place in its ranks. The medical profession could hardly extricate itself from the language of metaphysics, while its fiery adversary spoke the language of experiment. For Pasteur, a man who made an ill-conceived experiment or indulged in false reasoning was capable of anything. Dr. Roux tells a story of the delightful simplicity of his master, who, after having read a work which appeared to him particularly bad, cried in his exasperation, "I should not be surprised if a man who writes things like that beats his wife!" As though to beat one's wife were the depths of scientific depravity.

This same Academy consecrated its meeting of December 26th, 1922, to the memory of Pasteur. It was a fine meeting; the leaders of the profession came in turn to bow before the master. It was a cascade of oratory—a little prolonged, no doubt, but deeply moving. President Behal sketched with bold strokes the career of Pasteur. Then Professor Delezenne spoke for biology, Professor Vidal for medicine, and Professor Delbet for surgery. Wallich, Barrier, and Calmette described his influence on obstetrics, on veterinary medicine, and on hygiene. The mere enumeration is eloquent.

From a field so wide let us glean a few grains. In 1871 Pasteur wished to visit a great English brewery. He was received in England as a leader of French science. He did not spend much time in talking to the managers. He examined all the specimens of beer microscopically and picked out those which were going to be spoiled. A week afterwards he returned to France; the brewery had bought a microscope, and all the yeasts had been changed.

He meditated incessantly on the work of Jenner, and was himself an actual link between those two benefactors of humanity, Jenner and Lord Lister. By Lister he was connected with Simpson of Edinburgh, and with Semmelweis of Vienna.

Behal drew a picture of a very human Pasteur. He did not show him to us marked from his birth with a star on his forehead. He was not a particularly brilliant student—"He is not at all a genius." On the other hand, the orator who succeeded him, Vidal, said, "He appears to us like one of those providential beings that Nature sometimes creates to renew abruptly the orientations of science. He was served by a spirit of divination. But that is not the whole secret of his genius . . ."

Of these two conceptions the first is the more encouraging, and Pasteur is only the greater if it be true that, far from being one of the predestined, he was the child of his work, of his method, and of his will. It is not necessary for us little people to descry an impassable abyss between our minds

and his. Let us realize that if we see him on a lofty peak it is not an inaccessible Everest. And yet! . . . What seems the most genuinely moving trait of genius in Pasteur is the flash of his thought, which passes from physical chemistry to biology in studying the constitution of the racemates. A splendid cerebral reflex involving prodigious consequences: Pasteur for a moment embodied the intellect of man.

I shall take no great risk if I attempt to reconcile the two conceptions by regarding Pasteur in a light which seems to have escaped the attention of the orators. Pasteur was an artist. He had the artist's gifts, the artist's imagination. He soars above concrete experience. Looking on the picture presented by the formation of a crystal, Pasteur, though not yet a biologist, asked himself whether the healing of wounds might not be compared with this phenomenon. During his study of the diseases of beer he proved that they were caused by microbes. At once his imagination took wing: might not the same be true of the diseases of man? Scientist, he would have stopped at experimental facts; artist, he cast his line over the unknown. Pasteur the artist . . . Some day, perhaps, we shall return to this subject.

After the academic discourse of Vidal comes Delbet, full of fire; he has no written speech, but, as becomes a surgeon, handles words as he would handle a knife—neatly, incisively, brilliantly. He shows in bold outline the struggle of Pasteur against the theorists of spontaneous generation; the coming of the autoclave; the part played by Lister; the difficulties of Lucas-Championnière in introducing to Paris the principles of Edinburgh; the frightful mortality of the surgical wards before the sixties; the discovery of vaccines; serotherapy; the dawn of bacteriotherapy.

With Wallich we come to the most simple and the most persuasive form of eloquence—that of figures. It was much appreciated. What maternity meant before and after Pasteur, such was his theme. "May the memory of Pasteur receive this day the homage from all mothers!"

Calmette spoke last. He recalled the figures of Copeland of New York: "Where two persons out of a thousand died fifty years ago, in 1920 only one dies." He deplored the fact that in hygiene the theory of infection, the idea of which was expressed for the first time in 1876 in the Public Health Act, was not accepted in France until 1902. "We cannot but regret," he said, "that the country of Pasteur was not the first to profit by the beneficent consequences of his work."

A second gathering, more intimate, more poignant, was held on December 27th at the Institut Pasteur. It is well known that Louis Pasteur sleeps within the crypt of the building, a holy sepulchre worthy of him. The laboratories of the Institut raise towards heaven their perpetual intercession, and the fervent spirit of scientific research mounts guard of honour above the tomb. The President of the Republic came to bow before the great dead, while Parliament rendered respectful homage by imposing upon itself the sacrifice of five minutes' silence. At the Institut we had a series of nineteen speeches . . . but do not be alarmed—they lasted only ninety minutes altogether. Alas, that no other manner of honouring Pasteur could be thought of. The idea was to ask a representative of each of the societies to which Pasteur had belonged to speak. Yet this series of brief testimonies was impressive. The secretary of the Academy of Medicine, Professor Achard, made the *amende honorable* for its early opposition. "He has taught us much, and"—lowering his voice—"to be humble."

The speeches over, the guests bowed reverently before the tomb of the master. It seemed as though we were present at the birth of a new cult—a divine cult of a deity from which nothing was lacking, not even miracles. . . . That was the impression produced once again by the ceremony at the Sorbonne on the evening of the 27th, when we had the happiness of seeing delegations of students, not only French, but foreign. Thus did the great Frenchman soar above the boundaries—the artificial divisions which have no part in the domain of science.

Ring out, bells of Dôle! The centenary we have just been celebrating is one of the great dates in the history of the world. And to give an example of that "great charity" of which Pascal spoke, let us honour Pasteur by putting into practice the counsel he gave in such simple terms: "Again I tell you—work."



## England and Wales.

### THE NEWCASTLE MEDICAL INSTITUTE: DR. J. W. SMITH'S PORTRAIT.

ON December 20th, 1922, a very interesting and enjoyable evening was spent at the monthly supper, when the presentation was made of the portrait of Dr. J. W. Smith, the donor of the institute. The portrait was painted by Mr. Hodgson Campbell of Newcastle, and was the gift of members of the Institute, and also of many other medical friends in the United Kingdom. Dr. James Don presided. Professor David Drummond, who made the presentation, referred in very appreciative terms to Dr. Smith, his services to the profession, and his gift, and remarked that coming generations of medical men, though they had never had the privilege of knowing him, would value all that had been done for them, and would be able to form some estimate of the qualities of their benefactor, who was respected and loved by patients, and esteemed and honoured by practitioners. Professor Drummond's speech was followed by the enthusiastic singing of "For he's a jolly good fellow." Dr. Smith, in accepting the gift, said he was very much touched by the kindly words of Professor Drummond, and the way in which those present had endorsed them. He thanked them most heartily. To have the honour and respect of one's fellow medical men was indeed something to be proud of, and he knew that this gift was but an expression of these sentiments. He begged Dr. Bolam, a friend of many years, to accept it for the Institute on behalf of the members, and asked him to accept also an enlarged photograph of his son, the late Dr. James Wilkie Smith, to whom the Institute was a memorial. Dr. Bolam in accepting these gifts, and thanking Dr. Smith, alluded to his enthusiasm in all matters pertaining to the welfare of the profession, and to the fact that for many years he had been a Representative at the Annual Meetings of the British Medical Association.

### UNQUALIFIED MIDWIFERY PRACTICE.

At a special meeting of the Central Midwives Board for England and Wales held on December 20th, 1922, Sir Francis Champneys presiding, two of the cases were dismissed and three midwives were removed from the roll. The ordinary monthly meeting was held next day. A letter was read from the secretary of the Royal Sanitary Institute urging that action should be taken by amending Section 1 Subsection (2) of the Midwives Act, 1902, or otherwise, in order to prevent unqualified persons from attending women in childbirth without the effective direction of a qualified medical practitioner. In connexion with this letter a resolution of the County Councils Association was considered to the effect that Section 1 (2) of the Midwives Act, 1902, should be amended so as to ensure that in no case, save an unpreventable emergency, shall an uncertified woman, for gain, attend women in childbirth otherwise than under the direct physical supervision of a qualified medical practitioner. It was agreed to reply that in the opinion of the Board the words "under the direction of" in Section 1 (2) of the Midwives Act, 1902, mean "in the presence and under the direction of." The Section also includes the words "habitually and for gain," which, in the Board's opinion, are unnecessary, lead to confusion, and generally render the Section futile. The Board will take the earliest opportunity of pressing for the necessary amendments.

### SCHOOL MEDICAL TREATMENT IN LONDON.

The London County Council has decided on the arrangements for the year 1923-24 for the medical and dental treatment of children attending the elementary schools. Three new dental centres are to be opened in 1923, and it is hoped that suitable premises will be secured for three others which have been authorized. It is hoped also that four new centres for the treatment of minor ailments will be opened early in the year. The present arrangements for the treatment of eye defects provide for 33,750 cases a year; it is proposed to increase this total provision by 900. A class conducted for children suffering from squint is to be continued. The proposals for the treatment of ear, nose, and throat cases for the ensuing year will enable 12,850 cases to be dealt with, as compared with 17,030 cases in 1922-23. There has been a falling off in the number of children sent for operative treatment, partly because of recent statements in a section of the press, and partly because the tendency now is for surgeons not to

operate in slight cases. It is thought that the provision may safely be reduced by more than 4,000 cases. In-patient treatment for these cases is provided already at one centre, where the children are kept for two nights after the operations, and is shortly to be provided at a second. It is estimated that there will be a net reduction of 330 cases of ringworm to be dealt with. The special treatment of discharging ears by the ionization process has proved successful, and it is hoped that it may be started at one or two additional centres during the year. Three centres provide facilities for remedial exercises for children suffering from curvature of the spine. The Education Committee is considering whether the purpose of these centres could not be achieved in the remedial classes which have been formed in a number of schools. Remedial courses for stammering children are in operation at six centres and are to be continued. A reduction was made in the fees of doctors and dentists as from April 1st, 1922, and it is not proposed that any further reduction should be made at present. The estimated cost of the arrangements, apart from administrative charges, for 1923-24 is £85,425, a decrease of about £3,200 upon the expected expenditure for the current year.

## Scotland.

### SIR ROBERT PHILIP.

PROFESSOR SIR ROBERT PHILIP retired from the post of physician in charge of the special clinic for tuberculosis at Edinburgh Royal Infirmary on December 31st, 1922. At the meeting of the Royal Infirmary managers on December 18th, a special minute was adopted, on the motion of Dr. George Mackay, expressing the Board's deep appreciation of the very eminent services which Sir Robert Philip had rendered to the institution. He had been associated with it ever since 1882, when he became resident house-physician to the late Professor John Wyllie. In 1890 Sir Robert Philip was elected to the honorary staff as an assistant physician, and sixteen years later he became a full physician in charge of wards. In 1887, prior to his appointment to the infirmary honorary staff, he founded the first tuberculosis dispensary in the city, and his exertions and advocacy led later to the establishment of the Royal Victoria Hospital for Consumption. Since 1917 Sir Robert Philip has occupied the chair of tuberculosis in Edinburgh University, and in October, 1921, having completed fifteen years' service as full physician, the managers of the Royal Infirmary appointed him an extra physician with charge of a special clinic for tuberculosis. The time having come when the regulations debarred the appointment being renewed in its present form, the managers have invited Sir Robert Philip to join the consulting staff, and conferred upon him the title of physician consultant for tuberculosis, whereby his expert knowledge and advice might still be available, especially in connexion with the work of the tuberculosis out-patient clinic.

### MASSAGE ORGANIZATION IN SCOTLAND.

The first meeting of the recently constituted Scottish Board of the Chartered Society of Massage and Medical Gymnastics was held on December 11th, 1922, at the Western Infirmary, Glasgow, with Dr. J. Stuart Ross (Edinburgh) in the chair. Two subcommittees were appointed. One is to study the problem of providing an insurance scheme suitable for the needs of the Scottish members of the society, while the other is to study the local conditions under which the benefits of treatment by massage and allied methods may be made more available to patients, particularly those suffering from industrial injuries. Steps are also being taken to organize demonstrations to which the medical profession will be invited. The Board will meet quarterly in one of the larger cities in Scotland.

## India.

### NURSING AND CHILD WELFARE.

At a meeting at Delhi of the All-India Nursing Fund, Lady Reading reviewed the progress made towards an increase in the supply of Indian nurses, and emphasized the need for further financial assistance in pursuing a work which was so essential and urgent, in order to reduce the present high infant mortality in India. The meeting decided that in order to



attract Indian women of good education and position, the highest grades of the nursing profession should be opened to them. For that purpose two scholarships for post-graduate training in England are to be offered to Indian nurses. Application for scholarships should be sent to the honorary secretary, Lady Reading Nursing Fund, Delhi.

The Madras Child Welfare Association has arranged to start a school for the training of health workers in Madras. The Corporation has agreed to its child welfare centres being utilized for the training of health workers, and the superintendent of its child welfare scheme is undertaking the training.

#### ROCKEFELLER FELLOWSHIPS FOR INDIA.

The Indian Scientific Advisory Board, at the invitation of the International Health Board of the Rockefeller Foundation, has selected five Indian medical graduates, out of thirty-six candidates, to be the first holders of the fellowships allotted by the Foundation to India; they will pursue post-graduate studies in America. It is intended that each of the fellows should take up some special branch of medicine, and if at the end of the year the result justifies such a step they may be sent by the Foundation to England, or to some other European country, to extend their researches. The first five Indian fellows are a representative body, as they include two Hindus, one Sikh, one Mohammedan, and one Parsee. Their names are: Assistant-Surgeon Saranjan Khan, B.Sc., M.B., B.S.; C. R. Edibam, M.B., B.S.; H. G. Mathur, B.Sc., M.B., B.S.; Captain Sokhey, I.M.S.; and A. R. Mehta, M.B., B.S., D.P.H., D.T.M. and H.

#### UNQUALIFIED MEDICAL PRACTITIONERS IN BENGAL.

Of late years there has apparently been a considerable increase in the number of unqualified medical practitioners in Bengal, and particularly in Calcutta, and there was published recently in the *Englishman* an account of an interview on the subject with the Surgeon-General of Bengal, Lieutenant-General Deane. According to this article General Deane said that the Government could do nothing with the large army of quacks so long as they kept on the right side of the law; once they committed an offence, however, and were convicted, there was ample power to deal with the guilty person's freedom of practice. It could not be expected that the Government should allow only registered practitioners to practise, as there were so many "kavirajes" and other persons using indigenous systems. There was, in fact, no restriction on those who chose to follow the medical profession according to any system—Western, Ayurvedic, Unani, or homoeopathic—so long as they did not break the law either in the treatment of cases or in the supply of drugs. The Bengal Medical Act of 1914, which provided for the registration of duly qualified medical practitioners through the Bengal Council of Medical Registration, was working well. Registration was optional, but the Government intended eventually to make it compulsory.

#### RAT REPRESSION IN INDIA.

In a bulletin issued by the Agricultural Research Institute, Pusa, a plea is made for an organized attempt in India to deal with the rat pest, which is not only a danger to the health of the community, but causes much destruction of the food supplies. It is calculated that on the basis of an estimate of 800 million rats in India there is an annual loss of 9,125,000 maunds of grain, worth Rs. 45,62,50,000. A campaign for the extermination of rats by poison is suggested, but it is pointed out that to ensure success co-operation is essential among the people themselves, and between them and Government officials. Operations, to be successful, must be carried on over large areas and in an organized manner.

THE sixth Italian Congress of Industrial Medicine will be held at Venice in 1924, under the presidency of Professor Devoto of Milan, when the following subjects will be discussed: The effects of uniform and monotonous labour, introduced by Professors Cervidalli of Padua and Donaggio of Modena; Pre-natal assistance to healthy and sick mothers during pregnancy, introduced by Professors Ferroni of Florence and Devoto of Milan; Industrial poisoning through the respiratory tract, introduced by Professors Preti of Milan and Monti of Pavia, and Reduced hours of work for partially disabled workmen, introduced by Professors Pieraccini of Florence and Vitali of Venice. Professor Giglioli of Florence will review the recent progress in the pathology and hygiene of industry, and there will be a discussion on compulsory insurance in Italy and its results.

## Correspondence.

### PSYCHO-ANALYSIS.

SIR,—I hesitate to enter this controversy, but do so in the hope of throwing light on some misunderstandings and of making the issues simpler.

Dr. Steen, quoting Hart, is quite right in asking that "brain cells" and "ideas" be not confused or mixed. They belong to entirely different categories, and are best studied apart. This is, however, very different from saying that mental functions have not a physiological aspect. Dr. Steen is merely repeating a favourite text or maxim of that great neurologist and most profound and accurate thinker on the functions of the brain and nervous system, Dr. Hughlings Jackson. All who enjoyed the privilege of being taught by him will bear out the truth of the above observation, and those who wish to know why he laid such stress on this point will find the explanation in his classic writings.

The relationship between mind and matter is an unsolved problem. No one has bridged over the chasm that divides the two. But although no solution of this problem has yet been found, no physician, and certainly not Dr. Steen, denies that there exists a very important relationship between mental functions and the working of the cells and fibres of the brain. The onus of explaining this does not rest, however, on psycho-analysts. They are no more in default than all others who speculate on the mind and treat its disorders.

We all know that various physical conditions affect the life and the nutrition, and in consequence the functions of the cells and fibres of the nervous system. In the case of some of the simplest disorders of nerve function proof of this can be obtained. It is assumed, and with good reason too, that complex disorders of nerve function—namely, mental symptoms—are associated in an analogous way with affections of nerve cells and fibres. Materialistic investigations have, however, not led us very far, but fortunately mental symptoms have a psychic aspect as well as a physical one. Let me explain this by a very simple illustration.

I had a patient, a licensed grocer, who drank to excess and suffered from hallucinations of hearing. Why? The physiologist answers because the alcohol had poisoned the cells in his centre for hearing and affected their function. I next ask, Why did he suffer from these hallucinations when he was making out his bills? Why were the remarks heard always in the nature of complaints of overcharging? Why was he troubled by the voices of some of his customers only and not of others? The physiologist is now silent; the content of delusions and hallucinations is beyond his ken and his sphere; can he tell what language a man spoke when alive or what he said by examining Broca's convolution? The psychologist answers that the grocer is predisposed to receive hallucinations when he makes out his bills because, along with other factors, his conscience then reproaches him for dishonesty and he feels overcome by a guilty emotion. He hears the voices of those customers only whom he had overcharged, complaining that he makes them pay more than others for the same articles. Lastly, he hears the voices of those customers only who have telephones installed in their houses, and none of the others. These psychological observations are not only interesting but important, and anyone who ignores them and fixes his attention on alcoholic poisoning alone is pursuing an unscientific course, even though the psychologist does not cover the whole ground. Were the mental suggestion of the possession of a telephone and the sensitive soil of the guilt-stricken mind not essential elements in these hallucinations? The hallucinations did not occur when the patient made out the accounts of those customers who did not possess telephones.

We know, further, from clinical experience that psychic factors of a special kind, if sufficiently powerful, may produce mental disorder in a person with a sensitive mind, not necessarily abnormal or diseased, which psychic therapy is able to remove. Thus had the licensed grocer inherited this mental disposition, the threat of exposure, disgrace, and ruin might have produced the same hallucinations as he suffered from, without the aid of alcohol. So, also, a girl may react to a disappointment in love by an hysterical symptom or a fantasy, and she can be cured of her faulty adaptation to the needs of her environment by psychic means. And in still more serious mental disorders the psychic element plays its part,



but in these the foundation of the disorder may be sunk so deeply in the hidden recesses of the mind that only psycho-analysis, of all the known methods at our disposal, can reveal it.

Let all beware of adopting to psycho-analysis the attitude of Thomas Carlyle to evolution, who dismissed that doctrine as false because its views were intolerable to him. But, he admitted, he could never read a page of the stuff! It is necessary not only to read and understand the doctrine of psycho-analysis, but also to put it personally to the test of clinical experience before expressing decided views about it.—I am, etc.,

University of Edinburgh,  
Dec. 25th, 1922.

GEORGE M. ROBERTSON.

SIR,—In your issue of December 23rd, 1922, one of your correspondents seems to think that it is a sufficient answer to the questions raised—that “psycho-analysis works.” I don’t think anyone has denied that in a certain number of cases a cure is brought about after psycho-analysis, but so it is in probably a larger number of minor mental cases by talking over matters and reasoning with the patient—the method that has been used by many doctors for a long time. That is psychotherapy, but it need not be the Freudian method of psycho-analysis. Faith healing, Christian Science, and visits to Lourdes may also “work” in some cases, probably chiefly by suggestion, but that is no reason why they should find their place as a recognized form of medical treatment. Physiologists freely admit the importance of inherited physical and physiological cerebral associations, and dynamic associations, the result of experience, or of the reaction of the organism to its environment in the building up of the mental life of an individual, and the method of free associations may have a limited place in the investigation and diagnosis of a certain number of cases, but this is a small part of Freudian psycho-analysis.

One of your correspondents states that they do not deny the physiological basis of thought. Perhaps many don’t, but more is required than that. Do physiologists accept the many conclusions on which psycho-analysis is based? Do physiologists admit Freud’s theory and interpretation of dreams, the *via regia* to psycho-analysis? Are their views not more in accord with those shortly stated by Professor Berry? Are Freud’s views as to a censor between the unconscious and the conscious mind accepted by physiologists? Is it a reasonable hypothesis, far less being in accordance with what physiology teaches, to suppose that in each of us there is a censor, nominally on a lower level than consciousness, endowed with ideas, knowledge, ingenuity, and imagination which make the plots of a Conan Doyle and his creation Sherlock Holmes pale into nothingness?

This censor is supposed to have more knowledge than the conscious ego, and to act by keeping some of that knowledge from and practically deceiving the conscious ego, not only in dreams, but in certain mental states. Can anyone imagine anything having knowledge and yet not being conscious? Yet this censor, by means of symbols, etc., of which it seems to have at its disposal an enormous vocabulary, transforms the information it possesses; works out elaborate plots in order to do—what? To deceive the consciousness! In dreams the censor transforms the “latent” content of the dream into the “manifest” content. In doing so it may reverse it, use one thing for another, one symbol for another, do almost any thing with it. The “manifest” is what the dreamer dreams; the “latent” is what the interpreter imagines it was before it was censored. Physiologists have, of course, long recognized the importance of inhibition in all nervous processes, but the Freudian censor goes far beyond that.

Another correspondent disapproves of Professor Berry quoting from what he calls “popular drivel.” The fact that psychology is too often divorced from physiology accounts for so much drivel being published. Much of it might be a contribution to speculative philosophy; it should have no place in serious medical literature.

Let us by all means as a scientific profession encourage scientific psychotherapy, psychiatry, and experimental psychology, but let us recognize the limitations of psycho-analysis and get rid of its extravagances.—I am, etc.,

WILLIAM ELDER, M.D., F.R.C.P.E.

Leith, Dec. 31st, 1922.

\* \* \* We cannot continue this correspondence.

## THE PYREXIA OF HODGKIN’S DISEASE.

SIR,—The publication (December 23rd, 1922, p. 1201) of the admirable post-graduate lecture on Hodgkin’s disease by the late Sir James Galloway emphasizes the great loss which clinical medicine has sustained by his untimely death. I am particularly interested in the case there recorded because he told me about it and of his intention of recording it, when we met at the annual meeting of the Association of Physicians at Oxford last April, where the subject of recurring pyrexia in these conditions was discussed.

It is very desirable that such cases should be recorded, for there is no doubt that in all there must be some common factor causing this remarkable form of rhythmic temperature curve.

In the paper recently published in the *Quarterly Journal of Medicine*, referred to in Galloway’s lecture, Professor Douglas and I showed that of the cases already published the “pyrexial span”—that is, the time between corresponding periods of successive waves of fever—was in 86.5 per cent. of the cases between fifteen and twenty-five days. Galloway’s case comes also within these limits. The first three “pyrexial spans” are about twenty days each. In the pyrexial period in late December something has interrupted its decline, and although there has been an attempt to return to normal it is overcome by a second ascension. The recurring periods after this also show a distinct regularity, but the “stride” or “span” is shorter—namely, about sixteen days.

This change of span during the course of a case is by no means uncommon. It is well seen in a case recorded by the late Sir Frederick Taylor (Case No. 2, *Guy’s Hospital Reports*, 1906), where the span changes from about twenty days during the earlier part of the chart to about sixteen days in the later. In Melland’s (*Edinburgh Medical Journal*, 1911) case also the spans varied between sixteen and twenty days. A similar change was present also in a chart (unpublished) recently shown me by Professor Russell of Birmingham. In his case there was, as in this, an interruption to the expected decline of one pyrexial period, which marked the change in “span” from longer to shorter.

Galloway’s chart shows all the characteristics: the sub-normal temperatures during apyrexial intervals; the steppage upwards, to which MacNalty called attention, which begins before the temperature gets above the normal level; and the constancy in height of successive peaks. Of the eight peaks recorded, the extreme height only varies between 103.8° and 104.8°; if we omit the first recorded, which only shows the beginning of the decline, and was probably higher at its peak, the remainder show only a difference of six-tenths of a degree, 104.2° to 104.8°.

This constancy of height in any particular case is one of the most remarkable features in these temperatures. In one case it may be always 105° or even higher, in another only 102° or 103°. Whatever it is, it usually repeats itself with surprising constancy. When one considers that these temperatures are often, as in Galloway’s case, passing through 10° Fahrenheit in the course of a few days, this is a somewhat remarkable fact.

As regards measurement of “pyrexial span,” it seems preferable to measure from the middle of one “pyrexial period” to the middle of another. Sometimes the actual crossing of the “normal line” occurs a little sooner or a little later in successive curves, so that measured from the actual point of such crossing to a similar point at the next rise, there may be an appearance of irregularity in what are obviously very regular waves. It must be remembered that we are here dealing with the waves as a whole. Although the exact date of this patient’s death is not recorded, yet from internal evidence it seems to coincide with the end of the chart, and the appearance of the “pre-lethal” span with the rise of temperature just before death corresponds with others to which attention was called in our paper.

The form of “standardized chart” Galloway used in this case is a considerable help in making these cases more clear. By presenting the temperature curve in this form it is possible to see it as a whole and realize its symmetry in a way which the proportions of an ordinary temperature chart make impossible. The symmetry becomes even more clear if horizontal and vertical lines are used, as was suggested in our paper, in place of the “dot and slope” of the ordinary chart.

Finally, the question why the temperature behaves in this unusual way in these cases of Hodgkin’s disease remains unanswered. Various writers have from time to time



suggested the possibility of a parasitic origin, and attempts have been made, hitherto without success, to discover such a parasite. Douglas and I, in the paper referred to by Galloway, detailed our reasons for thinking a parasite probable, and the knowledge that so able and experienced a clinician as the late Sir James Galloway inclined to the same view strengthens us in our opinion.

The fact that no parasite has yet been found is not conclusive evidence against its existence. These cases are not very common, so that opportunities for investigation are not frequent, and it must not be forgotten that even in a very common disease where opportunities were constantly present—namely, malarial fever—it was a considerable time before the parasite was discovered.—I am, etc.,  
Sheffield, Dec. 23rd.

ARTHUR J. HALL.

#### ADDER BITE.

SIR,—The perusal of Sir Thomas Oliver's interesting article on adder bite impels me to translate for the benefit of your readers the following graphic description from the pen of Dr. Bernard, erstwhile of Cannes<sup>1</sup>:

"On arriving at the caravansary of Bou Ghzoul, about half-way from Algiers to Laghouat, I found the bedouins crowding round the entrance, a prey to violent excitement. They had just killed a horned viper, one of the most dangerous varieties of the viper family. It was nearly four feet in length, and though dead its tiny eyes glittered like jet. The skin was of a light grey colour with black patches. The body, short and thick, was nipped at the end and finished off in a sort of rat's tail, hideous to behold. The head, flat, square, indented, was surmounted by two little curved horns about half an inch long. The mouth looked small, but when the animal prepares to bite it gapes horribly, like the mouth of a giant toad. Some of these animals attain six feet in length, the body being as thick as the wrist and the head the size of a child's fist.

"On inquiry I found that the reptile had, six hours before, bitten a native, and the people were the more astonished thereat, seeing that the victim enjoyed a great reputation as a serpent charmer. It appeared that he was cutting alfalfa grass to light the fire, watching the *lefau* (native name for vipers) as they rushed hissing away, climbing up the rocks to a cave which was known to be full of them. This particular viper was probably asleep and the man had grasped it unawares in taking hold of a bundle of grass. The serpent thereupon had bitten three fingers of his left hand. Greatly scared, he had tied his turban cord tightly round the arm and started running to the caravansary. This was only ten minutes distant, but by the time he reached there his arm up to the ligature had swollen enormously. The *toubib* (native medicine man) had deeply incised the flesh with a small knife used by them as a razor and stuffed the wound with a chopped-up plant that stings like a nettle. After the operation he pronounced certain cabalistic formulae in a language not understandable by any human being. The patient meanwhile said never a word, but bore the pain with absolute stoicism.

"At this juncture there was a movement in the crowd, for the victim, as it happened, belonged to a neighbouring tribe, and his relatives had rushed over to take charge of him. He passed before me, half reclining in their arms, wrapped in his blood-stained bournous, looking very sick of the whole business. As the procession wended its way out of the caravansary the *toubib* shouted to them a final piece of advice—namely, that if the man became feverish they should 'trample on his belly,' which would squeeze out the fever as it would the juice out of the grape.

"He will die all the same, remarked an alfa reaper, who seemed to take a good deal of interest in the accident. He will die because, when all's said and done, there is only one real remedy, and that is to chop the fingers off. Look, said he, and he showed me his left hand which lacked the second and third fingers. I was bitten once upon a time but fortunately I had a chopper in my hand and I cut off the two fingers right away, and here I am to tell the tale. So you see!

"But suddenly we hear cries of despair, ghoulishly lugubrious; heard in the darkness of the night they make one's flesh creep. They emanate from the women, who are bringing back to the caravansary the man who had been bitten by the viper. Fantastically lighted by burning branches the white procession stood out against the dark rocks, and again I caught sight of the Arab, still whispering that he is swelling up, ached the chest, and they have treatment that the *toubib* alone can

apply. . . .

"I prepared to mount my fiery Arab steed next morning when it occurred to me to inquire about the man's history. How about the Arab bitten by the *lefau*, I asked of my spahi? Oh, the Arab, oh, he's all right, he's dead. You can see him if you like, he is swollen up to the size of a barrel."

Only the other day the native gardener on a neighbouring property came to me to be treated for a scorpion sting. On removing the summary dressing I was startled to see a young scorpion flattened out on the site of the sting. What's that? I asked. Oh, said the man, we always do that. We are told

that there is no better remedy than to apply the crushed animal to the wound. The sting had been inflicted a quarter of an hour earlier, and so far there were no symptoms, local or constitutional. I injected a few drops of a strong solution of potassium permanganate round about the spot and nothing happened. It may be that as it was only a baby scorpion it had not yet become virulent. While not usually fatal, the results of the sting of an adult scorpion are usually very severe, though this depends greatly upon the time of year and possibly, too, on the particular variety of scorpion. Though plenty of scorpions are to be found in the neighbourhood of Algiers it is an extremely rare event for anybody to be stung as far as my experience goes.—I am, etc.,

Algiers, Dec. 22nd.

ALFRED S. GUBB, M.D.

#### HOSPITAL POLICY.

SIR,—The revived discussion on hospital policy is happily confined to a very clear and simple issue. The Council in its further Report (SUPPLEMENT, November 18th, 1922) reaffirms the principle that all payments made by, or on behalf of, patients must suffer a compulsory contribution to the medical staff fund. The words now suggested differ, it is true, from those of the paragraph rejected at Glasgow, but there is no change in the meaning and intent. The new proposal can therefore hardly be expected to satisfy the views of those who have on repeated occasions contended that it is not in accordance with the traditions of the medical profession or of honorary hospital service to accept payments, even token payments, from patients who are unable to do more than make some contribution to the expenses of their accommodation and maintenance. Such being the position it remains for the Divisions (and in due time for the Representative Body) to come to a decision on the issue thus joined. What falls immediately on those of us who unhappily differ from the Council's proposal is to find a form of words that can be moved as an amendment to the Report. Some attempts have already been made in this direction, but these, at least so it seems to me, fail to put in the forefront the positive aspect of a policy which has as its essential feature the continuation of honorary medical service to necessitous patients. With due respect, therefore, I suggest that the Divisions, when discussing the Council's Report, should consider the possibility of an amendment on some such lines as the following:

"That (excluding the question of payments made by private patients referred to in Sections IX (a) and IX (b)) the medical staffs of hospitals should retain their honorary status by continuing to provide gratuitous advice and treatment for all patients found on due inquiry to be unable to pay more than the sum estimated as sufficient to meet the charges for their accommodation and maintenance, but that in any case where the payment accepted is in excess of this sum, as also in the event of an arrangement being made for the treatment of patients on behalf of the State, municipality, or other public body, or under a hospital benefit or insurance scheme or any similar organization, a percentage of the amounts received by the hospital must be passed to a fund to be placed at the disposal of the honorary medical staff of the hospital."

The Council's policy is that every patient must needs contribute something to the hospital doctors' fund. The amendment here suggested opposes this innovation, continues the hospital tradition, and at the same time provides safeguards against the exploitation of the medical profession. My present purpose is not to repeat arguments about which most of us have already made up our minds, but rather to sketch a plan of campaign for those who, on the point in question, cannot accept the policy advanced by a majority of the Council.—I am, etc.,

London, W., Jan. 1st.

C. O. HAWTHORNE.

SIR,—The new hospital policy of the Council is the Leicester policy thinly disguised, and as the latter is so patently inapplicable generally that it has never been promoted anywhere where almoners are allowed, the former is scarcely more acceptable to the profession or the public. I would suggest the following compromise, devised after attending three London meetings of hospital representatives, at one of which both lay and medical staffs were heard, after correspondence with exponents of the most opposite views, and, last but not least, after two consultations with our hospital lay board, who are capable, friendly, and successful in hospital finance.

These proposals distinctly transgress that limit of safety set by the Cave Committee, and may be rejected on that account by some staffs and many lay boards, who are

<sup>1</sup> L'Algérie qui s'en Va. Librairie Plon. Paris.



likely to attach greater importance to an authority which patiently heard lay and medical experts than to any one-sided opinion. They would bring about, if accepted, a grave departure from the policy which was universal up till 1921, was approved by Scottish staffs in that year, and is still very generally popular and in operation. Therefore they mark, in my opinion, the extreme limit of possible concession to that revolutionary party who have lately beguiled the Council. These men have in two years conceded practically nothing, declining to consider any areas but their own. They are, I believe, far less numerous than one would gather from meetings, for it is notorious that the man who is content is apt to stop away. Any further yielding to them spells ruin to the voluntary system, since it is allowed that, under the new scheme, lay boards must also be paid, and no one has even hinted whence, under any voluntary system, such funds shall be raised. Also it would inevitably bring us into violent and disastrous conflict with lay opinion, in which we should certainly be the losers, and probably sacrifice what we have already won.

#### AMENDMENTS TO SECTION VI, PARAGRAPH 19 (SLIGHTLY MODIFIED SINCE THE GLASGOW MEETING).

(a) *Ordinary Hospital Patients* (receiving free treatment from the medical staff).—Those who can produce evidence satisfactory to an official of the hospital that they are unable to contribute anything towards their cost while in hospital, or, at any rate, not more than such sum as may be agreed upon between the medical staff and the lay board as representing the expenditure on their mere maintenance and accommodation, as distinct from treatment, and who do not come within the definition of "tariff patients."

(b) *"Tariff Patients."*—1. Those for whom is paid in part or in whole the tariff cost of maintenance or treatment by public authorities, approved societies, employers of labour, insurance companies, or other bodies.

2. Those for whom the above payment is made under any contributory scheme which involves definite financial arrangement between the Board of Management and the contributors, or which carries any claim to admission in priority to the "ordinary hospital patients" in class (a).

3. Those who are deemed able, personally or through their responsible relatives or guardians, to contribute a weekly sum in excess of that required for accommodation and maintenance only, who are therefore ineligible as "ordinary hospital patients" under class (a), yet have not means necessary to qualify as "private patients" under class (c).

In conclusion I would quote the Cave Committee:

"The voluntary hospital system, which is peculiar to the English-speaking peoples, is part of the heritage of our generation; and it would be lamentable if by our apathy or folly it were suffered to fall into ruin."

Dr. Fothergill's letter, which I have just read, is a most useful contribution to the controversy. It will be seen that some such modification of Section VI, paragraph 19, as I suggest would follow necessarily on the acceptance of his resolution. I am not quite clear whether we agree as regards mass contributions. Public opinion would not tolerate the exclusion of the genuinely poor from Class A merely because they have paid a penny a week to a village fund, and expect nothing in return.—I am, etc.,

Chichester, Dec. 30, 1922.

G. C. GARRATT.

#### PSYCHIATRIC CLINICS.

SIR,—I write in reference to Dr. R. H. Steen's letter of November 18th, Dr. H. E. Davison's of December 16th, and Dr. Laughton Scott's of December 30th, 1922. Dr. Steen makes an admirable statement of the necessity of establishing psychotherapeutic clinics; Dr. Davison enlarges upon this necessity, and finds the only obstacle in the apparent shyness of the "open-handed philanthropist"; and Dr. Laughton Scott suggests that the financial difficulty is not really serious. The experience gained at the Tavistock Clinic is, I think, sufficiently relevant to the discussion to justify me in quoting it. The clinic treats an average of 350 cases a year. In round figures the revenue and expenditure are as follows:

Revenue.		£	s.	d.	Expenditure.		£	s.	d.
Patients' fees	...	403	0	0	Doctors' and lecturers' fees	...	1,200	0	0
Lecture fees	...	500	0	0	Running expenses	...	450	0	0
Public subscriptions and donations	...	750	0	0					
		£1,650	0	0			£1,650	0	0

It will be seen from these figures that without the aid of "the open-handed philanthropist," and indeed with relatively little support from the public, the clinic is able to remain solvent. It will also be seen that three-quarters of the

revenue is spent upon payments to the medical staff. This apparently is not contemplated by Dr. Laughton Scott; but on the other hand it is an entirely different proposition from Dr. Steen's, for he refers to "whole-time, well-paid, and comparatively numerous medical officers." While I accept the principle of payment to the medical officers, I believe that in general they should be part-timers, for the reason that serious psychotherapeutic work is too exacting for the average man to carry on continuously under the same conditions and in the same environment with advantage.

Dr. Steen raises the question of the time that should be available for each patient. At the Tavistock Clinic we have from the beginning worked on the principle that every patient should have as much time devoted to him as appeared profitable, without reference to the demands of the waiting list. In treating an average of 350 patients a year the average number of attendances by a patient worked out at nine; but this figure is misleadingly low on account of the fact that a large number of cases are only seen once and not considered suitable for a regular course of treatment. The average duration of a patient's interview is fifty minutes.

But the real crux of this work lies not in the financial difficulty, nor in the "conversion of the medical profession" (the Tavistock Clinic has always had as many patients as it could cope with, and the large majority are recommended by their doctors): it lies rather in the personal factor. With the heavy crop of aspiring students of psychotherapy there is a serious dearth of qualified and effective psychotherapists. Dr. Steen's band of enthusiastic students forms the right kind of nucleus for a beginning; but it is useless to hope that enthusiasm and a little experience will make up an effective psychotherapist. It is even useless to count upon results because the psychotherapist has had great experience and has been analysed *à outrance*. These are valuable qualifications, but in the absence of certain essential innate characteristics they are not sufficient to make a good psychotherapist; and it is only the good psychotherapist whose results will maintain a respectable level. I believe that those who have had the greatest experience of students of psychotherapy—Dr. H. E. Davison or Dr. Bernard Hart, who under Dr. Rowse had more to do with the making of psychotherapists at Maghull than anyone else—would endorse this opinion.

It is my conviction that if the cause of modern psychotherapy is to be maintained, and the public well served, clinics should be established only in so far as really competent psychotherapists can be supplied. Otherwise clinics will be established with vacant posts to act as a temptation to the men who are tired of general practice; who have an infatuation for the *dernier cri*; who imagine that psychotherapy is a path to effortless success; or who are otherwise unqualified for the work that is to be undertaken.—I am, etc.,

London, W.C.1, Jan. 1st.

H. CRICHTON MILLER.

#### THE TEACHING OF PSYCHOTHERAPY.

SIR,—As my letter to you was the humble means of starting this interesting correspondence, perhaps you will allow me space for comment thereon. Nothing could better prove the existence of the unconscious mind than the naïveté of the opposition, as shown by some of the contributors.

The letters of Dr. Berry and Dr. McBride published in your issue of December 9th are striking examples of the influence of the emotions in paralysing the accommodation of scientific thinkers, thus rendering them blind to the meaning of words and sentences which they would readily understand were they used in any other connexion. Dr. Berry quotes two perfectly intelligible sentences from two psychological works, and frankly admits that to him they appear to be unintelligent rubbish; whilst Dr. McBride takes two paragraphs from Dr. Steen's letters and is apparently unable to see the difference between their obvious meaning and the interpretation which he prefers to place on them. As both these gentlemen are clearly acting in good faith it is impossible to explain this kind of aphasia on any other ground than that of the internal resistances aroused by the threat to the unconscious of laying bare its content.

In his *Introductory Lectures on Psycho-analysis* Professor Freud takes full account of this instinctive defence mechanism on the part of those who are commencing the study, and by leading his readers on gently, step by step, enables them to overcome their own inhibitions. His lucid style will come as a pleasant surprise to those who only know him through the medium of his commentators, and I recommend those who



can see nothing but rubbish in his theories to read and reread this book, and then to test the theories on themselves and others before again airing their views.

The ultimate test of all theory must be that of its practical working, and in the case of Freud such tests can only result in conviction. Dr. Berry will find that Freud by no means ignores the effect on the dreamer of enteroceptive and exteroceptive impulses, but whilst these may partly account for the outlines of the dream they cannot account for the pattern formed. Why suppose that these impulses run riot and refuse to search for any possible laws which may control them?

I have no quarrel with Dr. Berry's contention that the psychological physician should be a sound physiologist and neurologist; but both he and Dr. McBride should realize that physiology and psychology deal with two entirely different aspects of life, and that each must necessarily have its own terminology. That physiological activities accompany psychic processes and vice versa is undeniable, but the exact working of this partnership is at present a matter of speculation.—I am, etc.,

Wylde Green, Birmingham,  
Dec. 10th, 1922.

R. MACDONALD LADELL.

#### DIPHTHERIA PROPHYLACTIC AND IMMUNITY.

SIR,—The question raised in Dr. H. Cooper's letter in your issue of December 23rd, 1922 (p. 1244), is one of some importance. A group of workers at this laboratory has been investigating cases similar to the one described, and we hope to publish our results in the near future. We may here anticipate our results by stating that we have as yet found no evidence that indisputable diphtheria—that is, serious illness caused by intoxication arising from *B. diphtheriae*—ever occurs in a patient who has given a "negative" response to a satisfactory Schick test.

We may also point out that the 95 per cent. conversion of a "Schick positive" population to a "Schick negative" one occurs only when dealing with children; in an adult population, consisting of "Schick positive reactors," the rapidity and efficiency of immunization is much less.

We wish to obtain material from cases such as that described by Dr. Cooper, or from those where there is clinical justification for suspecting diphtheria in a patient who has previously given an undeniable Schick negative reaction. The three essentials are: a swab from the patient, 5 c.cm. (or preferably 10 c.cm.) of blood taken from the patient's vein immediately before any antitoxin is given, and another 5 or 10 c.cm. taken seven or ten days later.

We would gladly examine these materials and send the results to the physician concerned.—I am, etc.,

R. A. O'BRIEN.

Wellcome Physiological Research Laboratories,  
Langley Court, Beckenham, Kent, Jan. 1st.

#### TREATMENT OF FRACTURES BY OPERATIVE METHODS.

SIR,—Professor Young's interesting paper (December 23rd, 1922, p. 1209) on the operative treatment of fractures raises again the important question of the best material to use in these cases. I am glad to see that he has discarded silver wire and screws in favour of iron nails and screws, but I am surprised at his using brass wire when he has in pure malleable iron (not steel) a stronger, more flexible, and more reliable material, one not influenced by any heating for sterilization and not acted on by any of the tissues, while brass is corroded by animal fats. The plates also should be light and made of the same material; most of those in use are unnecessarily thick and heavy.

Professor Young does not mention what drills he uses for the hard bones. I have found that the Morse twist drill, as used by engineers, is far superior to the spud drill usually supplied to surgeons; and in my experience there is nothing so reliable, both for putting in and removal, as ordinary carpenter's screws, which can easily be obtained in every variety of length and size.

I cannot quite agree with Mr. Hey Groves that a screw for dense bone should be of the engineer's variety, but I think that Lane's screws, which are threaded up to the head, leave nothing to be desired for thin plates. Everything depends, of course, on the accurate relation of the hole to the screw.—I am, etc.,

CHARLES FIRTH, M.D.Lond., F.R.C.S.Eng.,  
Consulting Surgeon to the Gravesend Hospital.  
Gravesend, Dec. 27th, 1922.

#### SMALL-POX AND VACCINATION.

SIR,—Dr. Millard now admits that cases of small-pox may walk about for a time. There is little to add to the discussion. I fear that no matter what I say, Dr. Millard will say I am "begging the question."

In thanking you for the courtesy of your columns, might I say that if anyone wishes to procure a really fine article on how to suppress a small-pox outbreak, let him write and ask Dr. Alexander, medical officer of health of Poplar, for a copy, similar to that sent to metropolitan medical officers of health, of his report on the Poplar outbreak.<sup>1</sup> Dr. Wanklyn's books, of course, are classics.—I am, etc.,

CHARLES S. THOMSON,  
Medical Officer of Health.

Town Hall, Deptford, S.E.14,  
Dec. 27th, 1922.

#### TREATMENT OF MALTA FEVER.

SIR,—Admiral Sir P. W. Bassett Smith's article on undulant (Malta) fever in the JOURNAL for November 11th is very instructive, and the mention of the relationship between infectious abortion in cattle and Malta fever is specially valuable. A good deal of investigation into this point is now being done in Rhodesia. But under the heading of treatment nothing is said as to the effect of the arsenical preparations—606, galy, kharsivan, novarsenobillon, etc.

A few years ago I reported in the *South African Medical Record* some cases in which very striking results had been obtained by the use of galy intravenously or preferably intramuscularly, and I believe an abstract of this paper appeared in the JOURNAL. Being away from home and my papers I cannot give the exact dates. I hoped this report would attract the attention of those who see more Malta fever than I do, and have better opportunities for studying the effect of treatment. My most successful case was one in which the patient, a man of about 35, living under the most favourable circumstances, had suffered from repeated severe attacks (temperature often 104°) for several years, and had gained no benefit from a long course of autogenous vaccine, yet he was absolutely cured by one intravenous injection of galy. As this was five years ago and there has been no recurrence I think "absolutely cured" is correct.

I notice that Sir P. Bassett-Smith's own approval of vaccine treatment is rather guarded.—I am, etc.,

E. OLIVER ASHE, M.D.Lond., F.R.C.S.Eng.,  
Senior Surgeon, Kimberley Hospital, South Africa.

Johannesburg, Dec. 10th, 1922.

#### Obituary.

J. J. PRINGLE, M.B.EDIN., F.R.C.P.LOND.,

Consulting Physician for Diseases of the Skin, Middlesex Hospital.

WE regret to announce the death of Dr. J. J. Pringle, the well-known dermatologist, on December 18th, 1922, at Christchurch, New Zealand. Recently on retiring from practice he hoped to find renewed health in a voyage taken to Australia and New Zealand. From the latter place the news of his death has been received.

John James Pringle came of a Scottish family which numbered among its members the celebrated Sir John Pringle. He received his early education at Merchiston and at Edinburgh University, where he graduated M.B., C.M. in 1876. After holding the appointment of resident physician at the old Royal Infirmary he spent four years in further study in Vienna and Paris, and it is probable that this period had a considerable influence upon his future career, for he came there under the influence and teaching of four masters of dermatology—Hebra, Kaposi, Vidal, and Fournier. While to this period may be traced the beginning of the interest in the special branch of medicine he practised, his earlier professional years were not occupied with dermatology but with general medicine.

Coming to London in 1882, he was elected to the post of medical registrar at Middlesex Hospital in 1883, then assistant physician—an appointment he held for ten years—and finally physician to the Department for Diseases of the Skin in succession to Dr. Liveing. To the wider experience gained as an assistant physician he attached much importance, and in his gift of recognizing the larger factor in cutaneous disease he often gave convincing proof of the value of his early training. But it was as a dermatologist that he was known in

<sup>1</sup> This report was referred to briefly in the BRITISH MEDICAL JOURNAL of December 23rd, 1922 (p. 123).



this country and abroad. He devoted himself with enthusiasm to his chosen subject, both in its practical part and in what may be termed the academic side. He had a distinct literary gift, and his contributions are models of correct style and lucid exposition. This gift he put to good purpose as editor of the *British Journal of Dermatology*, a post he held for many years. He was for sixteen years secretary to the old Dermatological Society of London.

Dr. Pringle was an accomplished linguist, speaking and writing both German and French fluently. This brought him into close association with his foreign colleagues, and was no doubt one of the reasons which caused him to be chosen Secretary-General to the International Congress of Dermatologists in 1895. In 1913 he became President of the Dermatological Section of the Royal Society of Medicine, and here his genius for organization found opportunity in many reforms and improvements of procedure. His foreign colleagues also honoured him by conferring upon him the corresponding membership of the French, Vienna, Berlin, Italian, and Lisbon Dermatological Societies. He was the author of many papers, and to one particular condition first described by him the name "Pringle's disease" is often attached by dermatologists. Although no book appears from his pen alone, he may be said to have largely inspired the well-known work to which his name and Jacobi's are attached.

Although his private practice was large he never allowed any outside engagement to interfere with hospital duties. These he carried out with unfailing regularity: his clinical assistants knew he would be present at the appointed hour, that he would give the same care and attention to the last patient as to the first, and that even after a long and tiring day in the out-patient department his work would be completed with the thoroughness which was characteristic of the man. As a teacher he attracted many followers and he spared no pains to instil the elements of dermatology into the junior students. Perhaps he was even more successful with senior workers, who found in him an inspiring example. Of his former clinical assistants, six are dermatologists in London hospitals. During the war the department of which he had charge suffered from the conditions then obtaining. Pringle willingly undertook the additional work thus created and he further organized a department for diseases of the skin at No. 3 London General Hospital, carrying it on with success from 1914 to 1919. It will be remembered that during the later stages of the war period the authorities launched their scheme for the treatment of venereal diseases. For the success of this scheme he worked with enthusiasm, organizing at Middlesex Hospital the special department upon lines which have fully justified his foresight and judgement.

For many years Dr. Pringle's health had been indifferent, and when the additional strain of his war work came he must often have been tempted to curtail his public duties. But these he regarded as a task to be carried on regardless of personal discomfort so long as they might be required. If he received no or little recognition he sought none, content to feel that he was forwarding the cause he had at heart. Pringle's place is undoubtedly among the great British dermatologists. He was always a leader of progress, careful to listen to new ideas, constantly improving and advancing. He was an enthusiastic musician, and found in music his chief recreation. Those who knew him well were aware how seriously he was handicapped by ill health, and saw and admired his courage. He was a loyal friend, and there must be many who have cause to remember some kindly act on his part.

#### HARRY POOLE BERRY, O.B.E., M.B.,

Chairman of the Kesteven Division, British Medical Association.

WE regret to announce the death of Dr. H. Poole Berry, which took place at Grantham on December 19th, 1922, at the age of 63, after a short illness. He graduated M.B. Lond. in 1883 from Guy's Hospital, where he held resident appointments, and started practice at Grantham thirty-seven years ago. He was for many years M.O.H. to the urban district, and had a long association with the Grantham Hospital, of which he was senior surgeon at the time of his death. He was also then occupying the position of Chairman of the Kesteven Division of the British Medical Association. Dr. Berry had a very large connexion with the 2nd Volunteer Battalion, and afterwards, when the Territorial scheme was formed, with the 4th Battalion of the Lincolnshire Regiment. He obtained his captaincy in 1890, and became surgeon-

major in 1902. The regiment was mobilized in 1914, and he served for a considerable time both at home and in France. He was invalided home in 1915, and it was a matter of regret to his friends that he never recovered the juvenile appearance and activity which had been so marked before the war. Nevertheless, he subsequently did very valuable work in connexion with the Red Cross Hospital at Grantham, and no one more deserved the O.B.E. which was bestowed on him. Other honours included the Territorial Decoration and the Volunteer Long Service Medal. He was always a hard worker, and his professional skill, sincerity, and kindly disposition were valued alike by his colleagues and his patients. A striking tribute was paid to his memory by the large attendance of people at the funeral on December 23rd. He leaves a widow and a married daughter, who have the heartfelt sympathy of his many friends.

Dr. CORNELIUS BIDDLE died at Merthyr Tydfil on December 16th, 1922, after a long illness. He was born in 1848, and received his medical education at Charing Cross Hospital, taking the diplomas of M.R.C.S. Eng. in 1870 and L.R.C.P. Lond. in 1871. Returning home, he built up an extensive practice in Merthyr Tydfil, where for forty years he held the esteem and confidence of his fellow townsmen. He was one of the four surgeons to the Merthyr General Hospital since its foundation, and brought to his patients the skill and resource that a large industrial area demands. He found time to interest himself in public work, and his dignified presence and graceful speech won him the highest honour in the gift of his fellow townsmen, for he was chosen the last High Constable of Merthyr. For many years he was a justice of the peace of the borough. He was keenly interested in matters medical, and was treasurer and a former President of the South Wales and Monmouthshire Branch of the British Medical Association; he set a high value on membership of the Association and never missed an opportunity of urging its value on his younger colleagues. Although he was close on 70 years of age and had retired from practice when the war came, he took upon himself the work of his colleagues on active service, bringing to it a vigour and freshness that excited astonishment and admiration. He also held a commission in the local Volunteer Defence Corps, attended all its meetings, and carried out its training. He leaves a widow, four daughters, and two sons who are both members of the medical profession.

Dr. ERNEST VICTOR GOSTLING, of Needham Market, Suffolk, died at Felixstowe on December 30th, 1922, aged 50. He was educated at Framlingham College, at Caius College, Cambridge, and at St. Thomas's Hospital; he graduated B.A. Cantab. in 1896, and took the diplomas of M.R.C.S. Eng. and L.R.C.P. Lond. in 1900. After qualifying he held resident posts at Addenbrooke's Hospital, Cambridge, and at Derby Royal Infirmary. At Cambridge he had captained his college cricket club and represented the university at association football. He was greatly interested in the Territorial Army, and held the rank of lieutenant colonel in the R.A.M.C. (T.). He formerly commanded the East Anglia Field Ambulance, with which he proceeded overseas on the outbreak of war, and was at the first landing at Suvla Bay. He was slightly wounded, and gained the D.S.O. Subsequently he held the post of A.D.M.S. in England until he was demobilized in 1919.

Major WILLIAM HENRY HENDER BENNETT, R.A.M.C. (T.F.), died at Batley, Yorks, on December 9th, 1922, aged 61. He was educated at the Universities of Sydney and Edinburgh, graduating at the latter as M.B. and C.M. in 1890. After serving as clinical assistant in the eye wards of Edinburgh Infirmary and as assistant medical superintendent of the Argyll and Bute Asylum, he went into practice at Batley, where he was honorary surgeon to the Batley and District Hospital. He took a commission as lieutenant, R.A.M.C. (T.F.), in the 4th (Wakefield) Territorial Battalion of the King's Own Yorkshire Light Infantry on October 30th, 1914, became captain on April 30th, 1915, and was afterwards promoted to major.

Dr. IWAN BLOCH, a writer on sexual disorders, has recently died in Berlin at the age of 50.



## Universities and Colleges.

## UNIVERSITY OF ST. ANDREWS.

THE following candidates have been approved at the examinations indicated:

**THIRD M.B., Ch.B.—Forensic Medicine:** F. El Ahmadi, C. B. Armit, T. F. Black, R. Blair, W. R. C. Campbell, R. H. Craig, W. Cunningham, J. W. A. Dennis, T. A. Doran, L. Farrell, D. R. Ferens, H. J. Fraser, C. H. S. Gowdie, J. S. Gururwar, J. A. G. Keddle, L. R. Khan, J. M. A. Lowson, A. K. McCowan, J. C. MacMillan, D. F. Menzies, J. R. Murray, D. Myles, G. Napier, D. M. Ross, B. W. Rycroft, J. D. Saggart, A. Shand, J. D. Sinclair, D. Stewart, C. F. Swinton, J. Wilson. **Public Health:** F. El Ahmadi, C. B. Armit, T. F. Black, R. Blair, W. R. C. Campbell, R. H. Craig, W. Cunningham, J. W. A. Dennis, T. A. Doran, L. Farrell, D. R. Ferens, H. J. Fraser, C. H. S. Gowdie, J. M. A. Lowson, A. K. McCowan, J. C. MacMillan, D. F. Menzies, D. Myles, G. Napier, J. Petrie, D. M. Ross, B. W. Rycroft, J. D. Saggart, A. Shand, J. D. Sinclair, R. P. Sood, D. Stewart, C. F. Swinton, J. Wilson.

**FOURTH M.B., Ch.B.—Medicine:** J. Craigie, Jean M. Davidson, H. Fisher, P. G. Grant, S. S. Ogilvie, J. E. Overstad, Nora A. M. Rodger, Blanche D. S. Spence, W. A. Steel, A. K. Tateston, W. Thomson, T. Wilson. **Surgery:** W. S. D. Elder, Ruby N. Foggie, P. G. Grant, O. R. Henderson, Mary M. Jack, Nora M. Lindberg, Gracie M. McRorie, Jean H. Morton, Janet L. A. Muirhead, S. S. Ogilvie, A. B. Richardson, Nora A. M. Rodger, J. Singh, Janet O. Stephen, W. Thomson. **Midwifery:** D. A. K. Cassells, C. R. Henderson, S. S. Ogilvie, Blanche D. S. Spence, Janet O. Stephen, W. Thomson, T. Wilson.

## UNIVERSITY OF LIVERPOOL.

THE diploma in tropical medicine has been awarded to M. J. Cohen, A. C. Crawford, C. M. Gracias, W. A. Letham, and S. D. Riley.

## UNIVERSITY OF DUBLIN.

## TRINITY COLLEGE.

AT the Winter Commencements held on December 20th, 1922, the following degrees and licences in the Faculty of Medicine were conferred:

**M.D.—G. O. F. Alley, F. G. Robertson, \*J. P. de Villiers, \*H. V. F. F. Exner.**

**M.B., B.Ch., B.A.O.—R. R. Baker, C. E. Brunton, L. J. Coetzee, F. B. D'Arcy, H. C. Dundon, M. Galivan, B. Guck, Mary H. Harcourt, R. Hegy, G. E. Holmes, J. B. Horan, Florine I. Irwin, Ruth Lemon, C. G. R. McCaldin, G. B. E. McCrea, J. O'N. McKenna, D. J. Malan, I. P. Myers, M. G. J. Powell, V. Robinson, P. Samolsky, M. Schwartzberg, Charlotte A. Stuart, C. G. S. van Heyningen, D. M. Vellema, B. Vivier, J. D. Wicht.**

**Lic. MED. AND S.—A. W. Eksteen.**

\* In absentia.

## SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates passed in the subjects indicated:

**Surgery.—D. D. Anderson, G. K. Buttsworth, E. M. Chidson, H. Hirst, G. Rothaus, R. A. Walker, A. Weinger.**

**Medicine.—D. D. Anderson, G. K. Buttsworth, E. M. Chidson, \*L. A. Daly, S. Douglas, D. J. Dubash, \*M. P. Parker, P. D. Richards, \*E. W. Turtle.**

**Forensic Medicine.—A. H. Allam, D. D. Anderson, L. A. Daly, M. P. Parker.**

**Midwifery.—D. D. Anderson, B. Dous, S. E. Hymans de Tiel, C. F. Parry.**

\* Section I. † Section II.

THE diploma of the Society (L.M.S.S.A.) was granted to the following candidates entitling them to practise Medicine, Surgery, and Midwifery: D. D. Anderson, E. M. Chidson, B. Dous, D. J. Dubash, C. F. Parry, P. D. Richards, G. Rothaus, and A. Weinger.

## The Services.

## DEATHS IN THE SERVICES.

Major Satyachara Pal, Indian Medical Service, died at Chittagong on October 7th, 1922, aged 40. He was born on December 24th, 1881, and educated in the Calcutta Medical College, after which he took the Scottish triple qualification in 1906. He entered the I.M.S. as lieutenant on February 1st, 1908, became captain after three and major after twelve years' service. He was serving in civil employment in the province of Bengal.

Captain Norman Edward Packer, R.A.M.C., died at Cologne, on October 25th, 1922, aged 31. He was born on June 13th, 1891, and educated at Sydney University, where he graduated M.B. and Ch.B. in 1915. He took a temporary commission as lieutenant R.A.M.C. on March 23rd, 1915, was promoted to captain after a year's service, and on April 1st, 1919, was confirmed as captain in the corps, ranking from September 23rd, 1918.

The Order of the British Empire conferred A.M.S., announced in the *London Gazette* on the recommendation of the Secretary of State for War, been transferred to the Military Division of the Order.

## Medical News.

THE scheme for the administration and staffing of the Maudsley Hospital provides for the employment of consulting surgeons and for an expenditure of £500 a year in payment of fees and expenses, including the cost of any dental work necessary. The London County Council has now proposed that the number of consultants shall be five—namely, a surgeon, a gynaecologist, an ear, throat, and nose surgeon, an ophthalmic surgeon, and a dental surgeon—and that the honorarium in each case shall not exceed £100 a year.

SIR AUCKLAND GEDDES, G.O.M.G., M.D., the British Ambassador, recently opened with an address the local cancer week held at Washington. An announcement was made to the effect that Mr. Albert D. Lasker, chairman of the United States Shipping Board, had made a donation of 25,000 dollars to the American Society for the Control of Cancer, in recognition of the excellent work that has been done by the Washington Committee.

THE Prince of Wales has appointed Lord Dawson of Penn, G.C.V.O., K.C.M.G., C.B., M.D., Sir Thomas Horder, M.D., and Dr. John Weir, to be Physicians in Ordinary to His Royal Highness; Sir Hugh Rigby, K.C.V.O., M.B., F.R.C.S., to be Surgeon in Ordinary to His Royal Highness; and Sir F. Stanley Hewett, K.C.V.O., M.D., to be Surgeon-Apothecary to His Royal Highness and his household.

PERIODICALS which purport to enlighten the lay public to a greater or less degree upon matters of medical interest are not unknown either in this country or in America, but the new monthly magazine *Hygeia*, which is shortly to be published by the American Medical Association, is in a somewhat different category. It is designed to appeal to the medical practitioner as well as to the layman, to serve as a link between the organized medical profession and the general public, and to keep the public in touch with the advances that scientific medicine is making in the prevention and alleviation of disease. Its contents are to include original contributions by leaders in public health and scientific medicine, as well as editorial comments. Authoritative information is to be given in replies to questions of general interest, and a section "for the children" is announced, written "in language they can understand." The magazine is to be illustrated and will contain summaries of literature and reviews of books, with a column of humour depicting "the lighter side of health problems." There are many difficulties to be overcome by this new venture. For instance, those scientists whose knowledge is greatest are not always those who can best place a scientific subject suitably before a lay audience. Again, for the understanding of any explanation of the processes of the disease a certain fundamental knowledge of the essentials of the anatomy or physiology is necessary. There is, however, evidently a demand to-day by the lay public for enlightenment on medical science, since even in this country many newspapers think it desirable to have a "medical correspondent" on the staff.

DR. W. KEEN, district medical officer for Chelsea, has just completed fifty years of service with the Chelsea Board of Guardians. Dr. Keen was educated at St. George's Hospital, and took the diplomas of M.R.C.S.Eng. in 1866 and L.R.C.P. Lond. in 1867.

THE annual general meeting of the Harveian Society will be held at the rooms of the Medical Society of London, 11, Chandos Street, Cavendish Square, on Thursday, January 11th, at 8.15 p.m., when the election of officers for the forthcoming year will take place and the president, Sir Wm. Willcox, K.C.I.E., will give an address. A smoking concert will be held at the end of the meeting.

DR. JOHN C. D. IRVINE, who recently resigned the office of parochial medical officer, Muthill, has been presented by his friends and patients with a chiming clock and cheque for £275, as a token of their respect and esteem, and in appreciation of his services to the parish for over thirty-two years.

AN outbreak of cholera began in the province of Chiba in Japan on September 29th, 1922, and by October 7th there were 107 deaths. The disease spread along the coast, and by October 10th there were 44 deaths in Tokyo.

OF the 17,350 medical officers who were employed in the German army during the war, 1,783, or 10.2 per cent., were killed or died of illness; 4,696 members of the sanitary corps were killed, and 157 died of disease; 5,722 stretcher-bearers were killed, and 786 died of disease; 28 nurses were killed, and 560 died of disease; and of the chaplains, dispensers, voluntary nurses and sisters, 9, 9, 16, and 8 respectively were killed.



## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2. on receipt of proof.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology*, Westrand, London; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand, London; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra*, Westrand, London; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

### QUERIES AND ANSWERS.

#### THE STING OF THE NETTLE.

DR. SHEFFIELD NEAVE (Ingatstone) asks to be informed of the nature of the irritating substance introduced by the sting of the common nettle. Formic acid has been mentioned, but apparently, Dr. Neave thinks, on insufficient grounds. He is led to make the inquiry by the result obtained in a difficult case of Raynaud's disease in the fingers of a patient who also has rheumatoid arthritis in the same parts. He found considerable benefit in the application of stinging nettles, which appear to administer the exact kind of counter-irritation and dilatation of capillaries advisable.

#### INCOME TAX.

"S. J. H." uses his motor-car occasionally for private purposes; the local inspector has deducted £30 from the expenses claimed.

\* \* In view of the small extent of the private use, it would seem that the life of the car and its replacement cost would not be affected. In that case the only additional—that is, non-professional—expense incurred would be the running costs for the short journeys and occasional rides to which "S. J. H." refers. We suggest therefore that he estimates the petrol and tyre cost of that private use per annum and objects to any deduction from the expenses claimed by him in excess of that amount. He has a right of appeal from the decision of the inspector to the District Commissioners or the Commissioners for Special Purposes.

### LETTERS, NOTES, ETC.

#### CANCER OF THE SCROTUM.

DR. J. S. PEARSE (Plymouth) writes: The article by Mr. A. H. Southam and Mr. S. R. Wilson (November 18th, p. 971) reminds me of a clinical lecture, given about thirty years ago by the late Mr. George Lawson at the Middlesex Hospital. He said that the sweeping of chimneys was not the reason or cause for a sweep developing cancer of the scrotum, but the fact that the men sifted the soot after removal to their own establishments before disposing of it. It was the method of sifting that caused the soot to get inside the clothes and thus set up the irritation. It is very seldom nowadays that a sweep sifts the soot, hence the small number of cases of chimney sweeps' cancer. At the same lecture Mr. Lawson said he made a practice of giving arsenic to cancer patients after operations for removal of the neoplasm. He was not able to give any definite explanation for so doing, except that he held the view or the impression that arsenic would prevent or control any recurrence of the disease.

#### A CASE OF SMALL-POX ARRESTED AND CURED BY VACCINATION.

DR. J. A. BENSON (Green Hammerton, York) writes: In the early seventies in the suburbs of a large Midland town my father, the late John Benson, M.R.C.S., L.S.A., was called to see a domestic servant who was in the services of Lady B—, and found the maid in a state of fever and broken out with a well marked small-pox rash. No. 2 maid had been sleeping with her in the same bed. Lady B— was expecting a large house party in about three weeks. The small-pox case was immediately isolated in a distant lodge in the grounds and her bedroom recently occupied was fumigated and cleaned. No. 2 maid was placed in quarantine in another lodge in the grounds. Sir John and Lady B— and the whole household were all vaccinated, including No. 2 maid, who was suspected of being in the incubation stage of the disease. The case of No. 1 maid ran its

usual course and she recovered in due time. On the third or fourth day after vaccination No. 2 maid broke out and became covered with the small-pox rash. On the fifth or sixth day after vaccination it began to take, and as it developed the small-pox died away, and in a very short time, and long before No. 1 maid this patient was perfectly cured. No other cases occurred, and the house party was permitted to arrive and depart, and were none the wiser and none the worse. In later years my father told me of this case, which to his mind was a remarkable one, and he often regretted that he had never reported it to the BRITISH MEDICAL JOURNAL.

#### "B.P.C." BANDAGES.

In March, 1922, the Council of the Pharmaceutical Society of Great Britain published a Supplement to the *British Pharmaceutical Codex*, 1911, relating to surgical dressings. The section on bandages (ligaments) lays down the requirements for the nine varieties of "B.P.C." bandage. In respect of crêpe bandages these requirements are set out as follows:

"Normal length.—2½ to 2¾ yards.

"Extension.—Length, when fully extended, to be not less than twice the normal length. To contain not less than 33½ per cent. by weight of wool, the remainder of the fabric to be of cotton."

This is intended to ensure a certain standard of elasticity, and also a definite minimum length when the bandage is delivered to the customer. We understand that foreign bandages are now being offered for sale in this country which do not comply with the requirements laid down in the Supplement to the *Codex*. Medical practitioners would therefore be well advised to buy only bandages manufactured by reputable firms, and where "B.P.C." bandages are desired to insist upon a guarantee that the requirements set out in the Supplement are fulfilled. We are informed that Messrs. Grout and Co., Ltd., of Great Yarmouth, manufacturers of the Norvic crêpe bandage, give this guarantee, and we have no doubt that other leading makers would be willing to do so.

#### OFFERS OF MOTOR SPIRIT.

DR. H. E. MCCREADY (74, Middleton Hall Road, King's Norton, Birmingham) writes under date November 28th: A man giving the name of C. G. Ward, and representing that he is travelling for the National Benzol Company, Newcastle-on-Tyne, is calling upon doctors and obtaining various sums of money from them by offering spirit for sale and asking for cash in advance—this man is wanted by the police for similar offences in different parts of the country. He now appears to be specializing on doctors; should he call on any of the doctors, if they will detain him and immediately inform the police of their district—who will take the necessary steps for his arrest—by so doing they will render the profession a service. The following is a description: Age 45; about 5 ft. 9 in.; fresh complexion, grey eyes, clean shaven, bald, smart appearance, and usually carries an attaché case with all the usual motor literature and advertisements.

#### THE LONG UNLOVELY STREET.

A CORRESPONDENT suggests that Tennyson's "long unlovely street" must be Wimpole Street and its continuations, not Harley Street, for it was in Wimpole Street, apparently in the part called "Upper" that Arthur Hallam's father lived. Our correspondent admits that *Wimpole and Harley Streets* are very much alike and does not contend that the latter is beautiful.

#### STALACTITES.

DR. A. G. C. POCOCK (Shotley Bridge) writes: The following anecdote of a consultation with a patient's mother may amuse: "I advise you to rub a little of the ointment into the back each night. You know the Latin proverb, which runs: *Gutta cavat lapidem non vi sed sæpe cadendo*." I translated this to her and she replied: "Oh yes, doctor, I know the stalactites."

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 34, 35, 38, and 39 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 36 and 37.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 12.

### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429 Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.



## A British Medical Association Lecture ON SOME CLINICAL MANIFESTATIONS OF TABES DORSALIS.

DELIVERED TO THE HARROGATE BRANCH, OCTOBER 7TH, 1922,

BY

GORDON HOLMES, M.D., F.R.C.P., C.M.G., C.B.E.,

PHYSICIAN TO OUT-PATIENTS, NATIONAL HOSPITAL; ASSISTANT  
PHYSICIAN, CHAMBER CROSS HOSPITAL.

THERE can be little doubt that no nervous disease presents itself under so many and varied manifestations as tabes dorsalis; perhaps no other affection of the body assumes so multifarious forms, and the experience of my own practice is that in no other condition is my help in diagnosis more frequently asked by general practitioners and by other specialists. I have consequently selected as my subject some of the clinical manifestations of this disease, and will deal chiefly with those which offer difficulties in diagnosis. These are usually early or isolated symptoms. Time will, unfortunately, prevent any but a cursory reference to the pathology of the disease or to the pathogenesis of its symptoms, and even the question of treatment must be largely neglected, conscious though I am that to those engaged in the daily care of patients treatment must demand the foremost place in the discussion of any disease. My excuse is that in tabes diagnosis must precede efficient treatment.

### *Tabetic Pains.*

Pains are notoriously among the earliest and most common symptoms, but they are by no means constant, for even the most careful questioning of some patients fails to elicit a history of any. There can be rarely any doubt of their origin when an accurate description of their nature is obtained, since the shooting, lancinating, or lightning pangs, or the sharp darting or burning stabs, often compared to red-hot needles, which shift from place to place, are almost typical. The difficulty in recognizing them occurs when their character or the description of them obtained is less typical, and especially when, being an early feature of the disease, it is for their relief only that the patient seeks our advice.

The proportion of early tabetics who first complain of "rheumatism," or, using the term made popular by the war, call their trouble "myalgia," is certainly considerable, and in many of these the knee-jerks are still present, the pupils react to light, and there is often no disturbance of gait. The features that should attract our attention are the reference of the pains to the muscle masses, or to the tissues between rather than around the joints, and the fact that they are usually neither excited, aggravated, nor otherwise influenced by movement or by pressure as rheumatic and myalgic pains are. Further, these early pains frequently occur in the trunk, where rheumatic pains are rare, or trunk pains appear simultaneously or alternately with limb pains.

In many cases where the pains are limited to a small region the diagnosis of "neuritis" is made, or they may be attributed to "sciatica" when they occur chiefly on the posterior aspect of the lower limbs. But if we have an intelligent patient, or can obtain an accurate history, it is usually easy to exclude a neuritis. In the first place the pains are rarely, if ever, limited to the distribution of the sciatic or any other nerve, and if they happen to be they spread over a small part only of its sensory area and do not follow its whole course; if they occupy the sciatic region they generally occur in other parts of the limb too, or in the opposite limb, or in the trunk, which is, of course, exceptional in sciatica. Further, in neuritis and sciatica the affected nerves are tender or at least sensitive to pressure and stretching, while in tabes they are usually completely or abnormally insensitive, as Biernacki pointed out.

It is, however, pains limited to certain regions that are most likely to confuse us or lead us into error. While the description of a typical girdle pain around the waist or thorax arouses our suspicions at once, we are more likely to overlook the origin of a pain which is more or less constant and fixed in one side of the abdomen or chest, seeking its explanation in some disease or disturbance of the underlying visceral organs. But such local pain is common in tabes, and is often an early symptom. Here again the nature of the pain and its distribution are valuable guides. As a rule the tabetic pain is not

limited to an area on any aspect of the trunk as visceral pain usually is, or though it may be greater at one point it tends to spread around the whole distribution of those sensory roots to the disease to which it is due. But this is not always a characteristic feature, since girdle or semi-girdle pain is often associated with visceral disease; we are all familiar, for instance, with the pain which encircles one side of the lower thorax and abdomen in basal pleuropneumonia, and the radicular hyperaesthesia of Head and McKenzie associated with disease of deeper organs is often described as pain. The absence of evidence of such disease is, of course, an important point in diagnosis, but still more is the fact that in tabes the pain is not accompanied by those manifestations which one would expect were it due to an affection of a visceral organ. Pain referred to the abdomen, which we might attribute to the appendix or gall bladder, is, for instance, not associated with tenderness or resistance over these organs, and that in the thorax is not aggravated by deep breathing nor associated with limitation or alteration in the respiratory movements. Further, the patient's conduct and activity are not, as a rule, compatible with visceral disease of sufficient intensity to produce such pain, for the tabetic often continues to lead an active life, or shows at least little reluctance to move, though he complains bitterly of his sufferings.

The possibility of tabes must be therefore always considered when, on the one hand, movement or the functional activity of the organ suspected does not aggravate or increase in any noteworthy degree a severe and persistent pain, and on the other when pressure or handling of the parts to which it is referred has little or no influence on its severity. But caution is necessary in applying these tests, since the skin of an area where tabetic pains have persisted for some time often becomes unnaturally sensitive to certain forms of stimulation at least. It is most commonly excessively tender to moving stimuli, as to a hand or even a wisp of cotton-wool drawn over it, but then heavy pressure or a pin-prick may give no discomfort, or indeed less than it would on normal parts.

This observation leads us to the most important point in its differential diagnosis, which is that where tabetic pain has persisted for any considerable time there is a disturbance of sensation, most commonly a reduction of pain sensibility. The suffocating tightness around the thorax or the abdominal girdle pain occurs, as is well known, in areas of analgesia or hypalgesia, and the same general rule holds for pain of other distribution. It is, in fact, rare to find all forms of sensation intact where pain is severe, except in a small proportion of those cases in which it is recent.

These sensory disturbances are almost invariably the only objective or demonstrable changes associated with tabetic pains. Occasionally, though very rarely, the existence of pains in one region of the body is followed by changes in the skin; I have seen subepidermal haemorrhages in limbs that had been subject to prolonged local pains, and in one case repeated outbursts of herpetic vesicles. A local falling of hair and thinning and atrophy of the skin have been also described.

The frequency of local pains in the limbs, and particularly in the trunk, is generally recognized, but such local pains occurring in the head have attracted less attention. They are not prominent symptoms in a large proportion of the cases, but are yet sufficiently common to warrant notice. I have, for instance, seen more than once recurring tabetic pains in the cheek diagnosed and treated as trigeminal neuralgia, and one of my patients had even undergone alcohol injections for this condition, though careful questioning would have revealed the true state and obviated a therapeutic failure. But more common than facial pain is pain of either sharp and stabbing or dull and aching character, limited to or most pronounced in the occipital region of the scalp; it is therefore likely to be confused with occipital neuralgia. When an isolated complaint the origin of these pains may not be easily recognized, but a careful history generally discovers the existence at some time or other of more or less similar pains elsewhere, and examination brings to light other signs of the disease, for these facial and occipital pains are rarely early or isolated symptoms. When tabes is suspected their nature can be assured by even a cursory examination of sensation, for, as is the rule elsewhere, pain sensibility is absent or diminished where they occur, though tactile and probably other forms of sensation are intact or little disturbed.

Not infrequently it is not for the relief of pains that the patient consults us, but owing to the existence of an unnatural sensitiveness or tenderness of some part of his body to stimuli



which normally give little or no discomfort. Those accustomed to the routine examination of patients with nervous complaints are familiar with the excessive reaction and violent expostulations that even gentle scraping of the soles in eliciting the plantar reflex may evoke in a tabetic. Sometimes there is a similar hyperaesthesia to other stimuli, as the rubbing of the clothes on the trunk and limbs. Unnatural sensitiveness to thermal stimuli, and especially to cold, is more common. The touch of a cold hand may be resented, and a few drops of cold water sprinkled on the trunk, particularly on the back, may evoke intense burning or stabbing pains. This is occasionally one of the first symptoms of the disease. I lately saw a doctor suffering with tabes who discovered three years before any other symptoms appeared that he could no longer swim or take a cold bath, since immediately the water reached his waist he experienced what he described as "an awful feeling as if his body were being cut through by red-hot knives." Some of these patients come under observation complaining of rheumatism or neuralgic pains, which are excited or aggravated by a draught of cold air or by contact with any cold object.

#### *Paraesthesiae.*

Another important group of symptoms are the various paraesthesiae so common in tabes. Sometimes it is a complaint of numbness or loss of feeling; sometimes it is of a "uselessness" of the hands or feet, to employ a vague description often used by the patients; more rarely it is a distressing sensation of either heat or cold, or a feeling of dampness or wetness of some part. The difficulty in recognizing the nature of these symptoms is due mainly to the fact that objective changes corresponding to the loss or perversion of sensation of which the patient complains cannot usually be demonstrated by a casual examination. Though he may tell us that he does not feel the ground properly under his feet, that it seems to him as if he were walking on air or on soft cushions, we may find tactile and perhaps other forms of cutaneous sensibility on his feet unaltered, and we may consequently conclude that there is no organic basis for his complaint. But, as Hughlings Jackson pointed out, the sensation of resistance or the recognition of the consistence of objects, as the hardness of the floor, depends not on cutaneous sensation but on those afferent impressions which arise from the deeper structures of the limbs, especially from the muscles and tendons. The feeling of "uselessness" in the hands also is due mainly to disturbances of the sense of position, or of the power of recognizing the form and weight of objects handled, rather than to loss of cutaneous sensibility.

There is often, however, some disturbance of skin sensation too. In a patient under my care one of the first symptoms was inability to "feel" his billiard cue properly, which seemed at first inexplicable, as tactile, pain, and thermal sensibility on his fingers were intact. Later the "loss of feeling" increased so much that he had to cease dining out since he could not use his knife and fork properly, and since he could not "feel" the coins in his pocket he could take a taxi only when accompanied by a friend; but still there was little or no insensitiveness of the skin to the ordinary tests. A more complete examination revealed, however, great impairment of the sense of position in his fingers, and that he was unable to recognize accurately the shape, size, and weight of objects placed in his hands. Since it is to disturbances of these qualities of sensation that similar disorders are due in other spinal and cerebral diseases as well as in tabes, a careful investigation, particularly of the sense of position, is essential in attempting to elucidate their nature.

This numbness or subjective loss of feeling is occasionally found in unexpected parts; I have seen a few patients whose chief complaint was that their penis and scrotum felt numb or dead, and in one man at present under my care the most distressing symptom is that he has no feeling in his lips and cheeks.

#### *Tabetic Crises.*

Next in order after pain it is the tabetic crises that are most likely to offer difficulties, or to lead us into error in diagnosis. We are all familiar with the patient on whom perhaps several abdominal operations have been performed without giving the promised relief. I recently saw two patients on successive days, one of whom had undergone four and the other five abdominal explorations for attacks of acute abdominal pain and vomiting. The appendix or the gall bladder may be suspected, or the symptoms may suggest perforation. A neurologist may easily exaggerate the frequency with which this mistake is made, but that it is not

uncommon is shown by the experience of an American colleague lately working with me. He obtained permission to investigate patients on whom abdominal operations for acute symptoms had been recently performed in several general hospitals, and he discovered among them a proportion of tabetics subject to gastric crises much larger than I would have believed possible. Gastric crises probably occur in about 10 per cent. of all tabetics.

Here, as is the case in tabetic pains, the errors in diagnosis can be attributed largely to the fact that these crises are frequently early symptoms, and are often not accompanied by those signs that are commonly held to be characteristic of the disease. Many patients, in fact, state that apart from the abdominal attacks they enjoy perfect health.

We can as a rule gain little information of value from the patient, as the pain and the character of the vomiting resemble closely those due to intra-abdominal conditions. The pain, which generally precedes the vomiting, commences in the epigastrium, but later radiates into the back and spreads throughout the whole abdomen and into the loins; it is usually of an intense burning or violent cramp-like character, and is generally accompanied by sensations of constriction or distension. The vomiting which soon sets in may be more or less continuous for days, and may or may not be associated with nausea. The points which should arouse our suspicions that the pain and vomiting are of nervous origin are, in the first place, the history that similar attacks have occurred before, each of which ceased more or less abruptly and left the patient in apparently perfect health. But this is not a pathognomonic feature, since renal and biliary colic may also recur between periods of normal health, and it is when we are so unlucky as to meet with a patient in the first crisis that our difficulties are greatest. In the second place the most striking feature of a tabetic crisis is that, though the patient vomits incessantly and gives evidence of the most intense pain, the abdomen between the bouts of vomiting is lax, or at least not so resistant as it would be with an acute visceral lesion, and handling or palpation does not notably increase or excite the pain. But here too we must be on our guard, since the vomiting is often accompanied by intense hyperaesthesia of the skin; the first touch of the hand, and particularly gentle stroking, may evoke at once great discomfort and excite a reflex contraction of the muscles. But when the hand is laid firmly on the abdomen this tenderness disappears, and deep palpation can be often carried out without discomfort to the subject and without exciting muscular contractions; this is the most valuable diagnostic feature of tabetic vomiting.

Not infrequently patients complain not of the characteristic paroxysms of pain and vomiting, but of a constant nausea or aching in the region of the stomach. In these the symptoms are likely to be treated as merely manifestations of dyspepsia, but it is usually found that neither the nausea nor pain bears any relation to food, and that they do not yield even temporarily to change or restriction of diet, or to those drugs by which we treat dyspepsia or the conditions to which it is ordinarily due. Further, the appetite usually remains surprisingly good despite the discomfort, and there are no objective signs of gastric disturbance.

Laryngeal crises are probably the next most common variety. They, too, may give rise to errors in diagnosis. The most common form begins with tickling or a feeling of constriction in the throat, followed by a violent paroxysm of coughing, accompanied in severer attacks by dyspnoea and stridor, continuing till the patient becomes asphyxiated or even semi-conscious. An accurate description will probably indicate their nature at once, but unfortunately accurate descriptions, unless we elicit them by adequate questioning, are not common. The patient's complaints may consequently suggest either a local laryngeal disturbance or an attack of asthma; the latter is likely to be suspected, since laryngeal crises occur most frequently at night. Unless the signs of tabes are sufficient to attract attention or to indicate the diagnosis the conclusion must be based on negative rather than on positive evidence. Laryngoscopic examination reveals nothing to account for the attacks, or at the most an abductor palsy, while examination of the chest shows none of the signs usually associated with asthma.

Rectal crises, characterized by paroxysms of local pain, with distressing tenesmus, and often with the sensation of a foreign body in the rectum, are rarer, but I have seen them give rise to serious mistakes in diagnosis. Here, again, the absence of signs of local disease, the persistence of the symptoms over long periods, and the fact that the pain often



radiates more widely into the perineum and surrounding parts than it does in rectal affections, must put us on the search for a nervous origin of the complaint.

#### *Bone and Joint Lesions.*

The next group of symptoms that are perhaps most important to those engaged in the general practice of medicine are the bony and arthritic lesions which are so common in tabes. Fractures of the long bones, especially of the femur, may occur as a result of a trivial injury, or even of muscular action. The fact that there is often little or no pain may lead to failure to detect the true nature of the condition, and the difficulty in obtaining proper union may be, in the light of recent legal decisions, a serious matter for the surgeon who is so unlucky as to meet such a case. I obtained recently an autopsy on a woman whom I had followed for several years. About twenty years ago she slipped in the street, and, being unable to rise, was taken into hospital. There a fracture of the right femur was detected, and, according to her own story, the left femur was inadvertently fractured too, during the manipulations to set the broken limb. As a result she never rose from bed again. At the *post-mortem* examination I found both femora fractured, the broken ends widely separated and eroded, and enclosed in dense fibrous cysts. These fractures often occur under unsuspected conditions. Several years ago, while resident in a hospital, I was asked to see a charwoman employed there, who, while at her work immediately before, suddenly developed an enormous swelling of the right shoulder, with subcutaneous haemorrhage, which eventually tracked over that side of the thorax and down the arm. Examination revealed a fracture of the upper end of the humerus, which had apparently occurred without any pain; the haemorrhage was probably due to the jagged end of the broken bone having torn one of the large vessels in its neighbourhood. This woman's husband had died with tabes several years previously, but she had believed herself in good health, and even questioning failed to elicit any previous symptoms of the disease apart from a little 'rheumatism.'

The arthropathies are much more common, and are often the first symptom that brings the patient to notice. It is unnecessary to refer to the more or less characteristic features of these lesions, which were so accurately and vividly described by Charcot, but there are a few points in connexion with them which are of general interest. The first is their relation to injuries often so slight that they are disregarded by the practitioner who is called in, though emphasized by the patient, who is always on the look-out for an extraneous causal factor for his troubles. A slight strain at the knee or ankle is followed by a more or less painless swelling which persists longer than the nature of the injury appears to warrant, and is succeeded by disintegration of the joint, laxity of its ligaments, and the well-known deformities. It is often only when this stage is reached that the real nature of the condition is recognized. In fact the only feature which, as far as I am aware, may in the early stages excite suspicion is the painlessness of the swelling, but even this is not pathognomonic. Arthropathies in the limbs are generally easily recognized, but those which occur elsewhere may escape detection. A few months ago, for instance, a man was sent to me owing to a swelling in his lumbar region which obviously involved the spine. A vertebral tumour was suspected, the existence of which would have explained the absence of his knee-jerks, as the lumbar roots would have been certainly involved. It was only further examination of the patient which showed he was suffering with tabes, and the painless nature of the deformity then made diagnosis clear.

The arthropathies sometimes follow more serious injuries. Some time ago I saw a woman who, while in apparently good health, had twelve months previously sustained a Pott's fracture of her left ankle owing to a fall. The bones did not unite as would have been expected, and the swelling about the ankle-joint increased rather than diminished. When I saw her there was a typical Charcot lesion with considerable absorption of the lower fragment of the tibia and disintegration of the joint.

Among the so-called trophic disturbances the painless chronic and indolent perforating ulcers which occur on the soles need no comment; the only other condition in which they are commonly seen is diabetes, but they are in this disease, in my experience, usually associated with more pain or discomfort. It is, however, worth while bearing in mind that they are not limited to the sole; I have seen one on

the stump that bore an artificial leg, and one on the inner side of the cheek where a denture rubbed. Falling of the hair is less common, but lately a man under treatment for alopecia was referred to me as he complained of rheumatism; examination showed he was a typical tabetic who had almost suddenly and without apparent cause lost all his hair. Rapid loosening and falling out of the teeth is also sometimes seen.

#### *Sphincter Disturbances.*

The sphincter disturbances of tabes are another pitfall to the unwary. We all recognize the frequency of either retention or incontinence of urine in the advanced stages of the disease, but often forget that these may be among its earliest manifestations. Not infrequently I see patients who have been under treatment for local vesical troubles, or who have even undergone operations; it is consequently worth our while to consider shortly the more common forms that these bladder symptoms assume. The earliest change is generally slowness in starting the flow of urine; the patient has to wait an unnatural time before the urine comes and may have to use accessory means, as pressure over the bladder, to start it. Further, the bladder is often not completely emptied, so that a considerable amount of residual urine may be found immediately after micturition. In a man over middle age these symptoms may, of course, suggest an enlarged prostate or a stricture. Frequently occasional incontinence occurs at this stage too, the urine dribbling away in a few drops at a time, especially at night or on a sudden exertion, often unperceived by the patient, since the urethra and penis may be anaesthetic. In other cases there is a chronic distension of the bladder which may be unnoticed, since it is frequently insensitive to that degree of tension which normally produces pain or discomfort.

Rectal troubles are less common, but I have seen incontinence occur as an early symptom, occasionally the passage of faeces not being noticed by the patient owing to the anaesthesia of the anal region. As the sexual power is generally lost in males early in the disease, the possibility of tabes must be also considered in every case of impotence. Since the sexual appetite usually disappears at the same time it is not a matter of such distress and worry to the tabetic as impotence due to other causes usually is.

#### *Ocular Symptoms.*

One other group of symptoms to which I shall refer are the ocular troubles which occur so frequently in the course of tabes. Certainly the majority of patients afflicted with this disease have at some time or other during its course diplopia due to paresis of one or more of the ocular muscles. The external rectus is the muscle most commonly involved, especially in the early transient palsies, and next in frequency those supplied by the oculo-motor nerve.

There is nothing characteristic in either the form or course of these ocular palsies, and their origin can be consequently determined only when the disease is diagnosed. In many cases they are transient, disappearing within a few days or weeks; in others they are permanent and resistant to treatment of every form. Frequently the degree of dislocation of the visual axes is so slight that no squint can be observed, and the patient may complain of blurred or indistinct sight rather than of double vision. This is occasionally a source of confusion, since a disturbance of refraction may be suspected, or, the sight of each eye alone being good, the origin of the defect may be obscure.

Ptosis, or drooping of the eyelids, may, of course, result from a lesion of the trunk of the oculo-motor nerve, or it may appear as an isolated symptom apart from palsy of any of the external ocular muscles. It is on the latter variety that I wish to lay emphasis, since it is an important diagnostic sign. There are, in fact, few cases who do not present it in some degree. The upper lids droop equally, or the one perhaps more than the other, but at first they rise to the full extent, or almost so, when the patient looks up. In order to compensate it the frontalis muscle is permanently contracted, and the forehead is therefore wrinkled. Largely to this is due the 'tabetic facies' by which many cases can be recognized at the first glance; other factors in this typical appearance are the small pupils and the curious moist glistening eyes. So characteristic is this facies that one familiar with it can almost always pick out tabetics lying in a ward with, or sitting among, other patients.

It is also necessary to insist that though failure of the pupils to contract to light is regarded as one of the most characteristic signs of the disease it is not invariably present



in tabes, nor is it the only pupillary anomaly that occurs. The Argyll Robertson sign—that is, miotic pupils which fail to react to light but contract on accommodation—is probably seen in not more than 60 per cent. of the cases. In others the pupillary apertures may be normal in size, or those of the two eyes may be unequal, and not infrequently the pupils fail to contract on convergence too. In the latter case there is often a disturbance of accommodation; being a physician to a large ophthalmic hospital I often see patients complaining of defective vision due to palsy of accommodation, in whom examination reveals no cause other than tabes.

It must be borne in mind that though tabes is the condition in which the Argyll Robertson phenomenon is most commonly seen, it is not pathognomonic of this disease. There can be no doubt that it may result from local lesions of the mid-brain, and that it occurs occasionally in syphilitic subjects who never develop tabes; according to some authors it is found in uncomplicated cases of chronic alcoholism.

Finally, the frequency with which tabes is the cause of blindness or diminution of vision due to primary atrophy must not be forgotten. At the Royal London Ophthalmic Hospital a large number of cases with diminishing vision and the ophthalmoscopic appearance of primary optic atrophy are referred to me, and in a considerable proportion of these the neurological diagnosis is tabes. That the proportion is really larger than the physical signs at the moment of examination indicate I have no doubt, since the onset of blindness is frequently the first and the only sign of the disease. It is therefore worth bearing in mind that about 20 per cent. of all tabetics develop optic atrophy, and that tabes is a very common disease. Consequently, we can never afford to neglect the possibility of tabes in any patient who in adult years complains of failing sight.

#### DIAGNOSIS OF TABES.

As we have not considered some of those symptoms of tabes that may present difficulties in diagnosis, we must turn to the means by which diagnosis can be most accurately made.

The first question that arises is, What is tabes? Are we justified in making this diagnosis in patients with isolated symptoms, each of which may be due to other causes?—when, for instance, a man complains of pains in his legs and examination discovers only diminution of one knee-jerk; or when another has a primary optic atrophy and gives a history of transient diplopia, but presents none of the other so-called cardinal signs; or when Argyll Robertson pupils are the only demonstrable abnormality; or when we find a painless, swollen, and disintegrating joint, and loss or diminution of some of the reflexes. It may be easy to answer this question in any specific case, but it is certainly difficult to make a general rule. Even the pathological and serological tests are not conclusive, as they often are negative in patients with characteristic symptoms, and especially in slowly progressive cases in which the symptoms are not typical. Indeed, a positive Wassermann reaction is obtained in the blood in not more than 65 per cent. of all cases, and it may be negative even in the cerebro-spinal fluid, and the latter may show no other pathological changes in 20 per cent. If we therefore rely on the clinical pathologist we are liable to an error of 1 in 5 at least.

A short review of the pathology of the disease may help us. The most obvious anatomical change is a degeneration of the posterior columns of the cord. The older views that this is the primary lesion have been conclusively disproved, and all now agreed that the spinal degeneration is secondary to disease of the posterior roots. But the nature of this primary affection is not yet conclusively settled. According to one hypothesis it is a primary degeneration of the fibres of the posterior roots due to the selective action of a syphilitic toxin upon them; according to another the main factor is injury of the roots by an overgrowth of connective tissue which surrounds and constricts them. All recent evidence points to the latter hypothesis as being the more probable. Some years ago Nageotte insisted that the essential lesion is to be found where the posterior root joins the anterior root before they reach the ganglion. This portion, which he calls "*le nerf radicaire*," is surrounded by a sheath of the arachnoid, and, according to him, in suitable cases it may be shown that the changes commence in the subarachnoid tissue around this portion of the root; they consist in the proliferation of granulation tissue, which, partly by interfering with the nutrition of the nerve fibres, partly by mechanical constriction of them,

leads to their degeneration. Nageotte's findings have been lately confirmed by Richter, who has in addition demonstrated the presence of spirochaetes in this arachnoid funnel.

Whether this theory of Nageotte and Richter ultimately proves to be true or not, there can be no doubt that the essential lesion of the disease is a degeneration of the posterior roots, and consequently the most constant and characteristic symptoms should be disturbances in the functions of the afferent systems. The knee-jerks and other reflexes depend on the integrity of this, and they are consequently usually absent in the advanced stages of the disease. But this is by no means so in the early stages, and in many cases they certainly persist for years after unequivocal signs have appeared. Further, Romberg's sign is by no means constant, especially in the early part of the disease when diagnosis is most important. Even the pupillary reflexes are often normal or the reactions are anomalous, and in quite a large proportion of all cases gait is never affected. We thus find that all the cardinal signs on which the ordinary textbooks of medicine lay so much stress may, like the clinical pathologist, leave us in the lurch.

When, however, we turn to the examination of sensation we find, as we might expect from the pathological site of the disease, that there are very few if any cases in any stage in which there are no sensory changes. But a complete examination of sensation is extremely difficult and time-consuming, and there are but few competent either by training or experience to carry it out. Further, the character and form of the sensory disturbances vary enormously from case to case. We must therefore for clinical purposes select tests that are simple, reliable, and practicable. And this is luckily possible, for the most constant and characteristic changes are in sensibility to cutaneous pain.

When sensation is tested with the point of a sharp steel pin or needle widespread disturbances are usually found even in the early stages of the disease. But even this simple test requires some care, as the insertion of a pin-point evokes, in addition to pain, an idea of sharpness by which the stimulus can be often recognized in analgesic areas, and unintelligent patients may consequently make replies that confuse the observer. This difficulty is obviated by placing the point of the pin against the tip of the observer's index or middle finger and pressing with the finger on the skin as the pin penetrates it; then the patient can be asked to reply whether each contact is only a touch, or if there is a prick as well.

The earliest loss of sensibility to pin-prick is usually found on the lower extremities; it is most marked on their distal segments, and diminishes gradually in intensity towards the groins. It does not as a rule correspond to root distribution; it may, for instance, be slight or absent on the thighs and buttocks though considerable in degree in the legs, which are innervated by the same sacral and lumbar roots. Sometimes, however, it follows the lines of the cutaneous root areas.

At first the loss is only partial—either the pain evoked by the stimulus is less than a prick produces elsewhere, or more commonly only a certain proportion of pricks of moderate intensity, but sufficient to cause pain in normal persons, are recognized. As the disease advances this hypalgesia becomes more intense. Not uncommonly patients appreciate no discomfort from a pin-prick on any portion of the lower limbs, or only in the upper thighs, but before this stage is reached certain anomalies of sensation are often present. There may be a delay in the perception of pain, or the prick excites abnormal sensations, as burning or tingling, or the pain persists unnaturally, so that the patient commonly attempts to "rub away the feeling."

Even more common than disturbance of pain sensibility on the legs is the zone of analgesia around the trunk, to which Laehr first drew attention. The upper margin of this zone generally lies at the level of the second ribs in front where the areas of the cervical and dorsal roots meet; it may extend downwards only a few inches or as far as the groins. As a rule the hypalgesia is most intense between the second ribs and the nipples, while the zone around the trunk immediately above the groins and buttocks is that which generally escapes longest. The loss of pain sensibility in this trunk zone is usually more profound than on the legs. When it is only partial it can be easily demonstrated by making a series of pricks from below upwards towards the clavicles or on to the neck.

Another common area of analgesia is the ulnar borders of the arms, but this usually appears later in the disease. It is variable in extent, and may be represented by a narrow



band in the inner border of the forearm, or may comprise the whole ulnar half of the limb, including the two or three ulnar fingers. Here too, as on the legs, the analgesia is rarely complete, and is often represented only by a relative insensibility as compared with the radial borders of the arms.

Duchenne observed many years ago that the face is occasionally analgesic in *tabes*, or rather that portion of it which is supplied by the trigeminal nerve. He spoke of this trigeminal loss as "*le masque tabétique*," but a complete mask is rare. Some diminution of sensibility to pin-prick is, however, extremely common on an irregular area in the centre of the face, especially on the nose and the neighbouring portion of the cheeks. It is an important symptom, as sensory loss of this distribution is not found in any other nervous disease, except perhaps leprosy. It is easily demonstrated, for probably on no part of the body is the prick of a sharp pin so painful as on the nose and adjoining portions of the cheeks, and it is exactly here that sensibility is often lost or diminished in *tabes*. The area affected may vary from a small patch on the nose to the greater part of the face, until indeed it forms a typical tabetic mask. If slight it may be apparent only when the sensibility is contrasted with that of a normal area, as on the neck.

The diminution, loss, or alteration of sensibility to pin-prick in some or all of these areas—that is, the distal portions of the lower limbs, the thoracic zone, the radial borders of the arms, and the central portion of the face—constitutes the most common, the most definite, and the most characteristic physical sign of *tabes dorsalis*. It is frequently present when the knee-jerks and the pupillary reactions are normal and before ataxia or other symptoms develop, and it is consequently a most important phenomenon in the diagnosis of the disease. The loss of sensation in these areas is a dissociated one—that is, its different modalities are affected in different degrees, or some forms only may be disturbed. Touch, for instance, is frequently intact on the chest and face at least, and the affection of thermal sensibility is inconstant and irregular. Its diagnostic value is enhanced by the fact that in no other disease is there dissociated analgesia of a similar distribution.

Though I lay so much weight on the presence of this cutaneous analgesia as a diagnostic sign owing to its constancy and the simplicity with which it can be demonstrated, I do not wish to underestimate the importance of other sensory disturbances. Tactile sensibility is rarely profoundly affected, but is often reduced, especially on the legs. Thermal sensibility is more irregular, and as the sensations evoked by the contact of hot and cold test objects may be perverted rather than reduced, its investigation is too difficult for ordinary clinical purposes. On the other hand, though changes in so-called deep sensation—that is, the sense of position and movement, the recognition of size, shape, and weight, and the appreciation of vibration—are certainly the most important in the pathogenesis of the symptoms of the disease, their investigation requires more care and skill, and disturbances in them are much less constant in the slighter cases and in the early stages.

Few diseases are so protean and irregular in their manifestations; few, if any, present so many symptoms that may lead us into error in diagnosis and prognosis, and few require in their early stages so much care in investigation and treatment. I have endeavoured to put before you some of the pitfalls that await us, for consciousness of danger is our surest safeguard, and to point out the simplest means by which, in my experience, we may avoid mistakes.

THE question of indirect advertising has been occupying the General Council of the Bar. The annual report for 1922 states that the attention of the Council was called to an article, which appeared with sensational headings in a Sunday newspaper, purporting to be written by a leading counsel. When asked for an explanation, this gentleman stated that the managers of the paper had pressed him to see a reporter and to give him his views on a legal subject. After several refusals the counsel ultimately acceded to the request, warning the reporter that the interview was not to be used in any way that might be regarded as advertising himself. The interviewer apparently worked up the conversation into an article, which appeared under the name of the counsel as if it had been actually written by him. Eventually the managers of the paper expressed regret for what had occurred. The General Council of the Bar, with a view to avoiding possible misunderstanding in the future, has passed the following resolution: "That it is contrary to the etiquette of the Bar for a practising barrister to give an interview to a representative of the press on any matter in which he has been or is engaged as counsel."

## SOME APPLICATIONS OF PHYSIOLOGY TO MEDICINE.

### I.—SENSORY PHENOMENA ASSOCIATED WITH DEFECTIVE BLOOD SUPPLY TO WORKING MUSCLES.

BY

J. A. MACWILLIAM, M.D., F.R.S.,

PROFESSOR OF PHYSIOLOGY,

AND

W. J. WEBSTER, M.B.,

ASSISTANT IN PHYSIOLOGY, IN THE UNIVERSITY OF ABERDEEN.

(From the Physiological Laboratory.)

ACCURATE knowledge of the effects of defective blood supply to the various tissues and organs is obviously of great importance in view of the innumerable conditions of stress, derangement, and disease in which this factor comes into play, with manifold results in the way of disturbed or impaired functions in the different systems of the body. "Defective supply" naturally covers different conditions—quantitative deficiency in normal constituents, or the presence of abnormal and injurious constituents, or inadequacy as regards the volume, pressure, and rapidity of flow of normal blood. This communication deals with the last-named—certain effects of deficiency in the supply of normal blood to normal muscles.

Many impairments of functional activity from more or less extensive interference with blood supply have long been known, such as the weakening of the heart muscle from deficient coronary supply, and the common occurrence of fibrillation after sudden coronary obstruction; the effects on the brain in the form of giddiness, faintness, or loss of consciousness; and the primarily exciting and secondarily depressing influences exercised powerfully on the medulla (respiratory, vasomotor, and cardio-inhibitory centres, etc.) and on the spinal centres from sufficiently extensive or sudden acute lack of blood supply; also the derangement or stoppage of kidney function from similar interference.

Various observations are on record dealing with the functional behaviour of excised organs and muscles artificially perfused with blood or in the exsanguine condition, and also observations on the effects of artificial interference with the blood supply of organs and muscles *in situ* in animal experiments. Under such conditions there is of course no information obtainable as to sensory phenomena attendant on altered blood supply in the conditions of rest and activity.

The present inquiry deals with the behaviour of human muscles temporarily deprived of their blood supply while their normal innervation remains intact; the sensory phenomena recognizable in the states of rest and activity are examined and brought into relation with other functional conditions, such as changes in contractile power, etc.

#### Methods of Experiment.

The forearm was investigated (a) while the normal circulation was going on, and (b) when the blood supply was stopped, the limb either retaining its blood in a stationary condition or being rendered exsanguine before the circulation was arrested—that is, the "congested arm" and the "ischaemic" arm were examined with arrested circulation. The circulation was stopped by a blood pressure armlet applied to the upper arm, which was rapidly pumped up to a constricting pressure much above what was necessary to produce arterial obliteration in the particular individual examined—that is, an armlet pressure largely exceeding the systolic pressure. When this was done in the usual way, as for the measurement of systolic blood pressure, a "congested arm" was obtained containing a large amount of stationary blood shut off from the general circulation, the veins becoming prominent and tense. To obtain the bloodless or ischaemic arm an elastic bandage was first applied to the hand and arm, and removed after the armlet had been pumped up as described.

In the congested arm the sensory phenomena are naturally complex, being partly attributable to conditions attendant on the arrest of the circulation as influencing the muscles, etc., and partly to the discomfort caused by the venous turgescence. To avoid the latter complication the method of the ischaemic arm is employed; the sensations induced by muscular activity in presence of acute want of blood can then be examined.

Under these conditions muscular action was tested in various ways. Graphic records of the flexor muscle of the



middle finger were made by means of a Mosso's ergograph, the voluntary flexion movements being made in regular series—one in one second or in two seconds, etc.—timed by a metronome, while the weight lifted at each contraction varied in different experiments from 1 to 3 kg. The behaviour of the muscle in different conditions, the amounts of mechanical work done as measured in kilogram-metres, the development of fatigue, etc., were graphically recorded, while the sensations associated with different phases were noted. The results as regards fatigue, etc., will be described elsewhere, the present communication having to do with the sensory phenomena.

Another method is to use a series of grasping movements with the hand, bringing them to bear on a dynamometer or a dynamograph; this method is in some respects less precise than the preceding.

Another mode of experiment was to use the abductor indicis muscle, working against the resistance of a strong elastic band embracing the fingers; successive abduction movements of the fingers were then made in regular series; only the hand was rendered ischaemic in this case, the armlet being applied to the forearm. The hand was supported on a table with the palmar surface downwards. Graphic records can be obtained by making the movements of the finger inscribe on a moving smoked paper.

#### *Ischaemia of the Resting Arm.*

In observations made by these methods it was found that simple deprivation of blood in the ischaemic limb for periods up to twenty minutes caused no great sensory effects, only coldness in the bloodless part, with an inclination to shift the position of the limb, and a certain amount of discomfort from the continued constriction by the obliterating armlet; the absence of pain is to be noted.

#### *Muscular Action in the Ischaemic Arm.*

Muscular action in the ischaemic limb soon becomes painful, and when carried to the point of "fatigue" is acutely painful. "Fatigue" is indicated by inability to go on executing contraction movements even of greatly reduced range. This index of "fatigue" is convenient for comparing the state of matters in normal and ischaemic muscles, though it does not represent inability of the muscle to do more mechanical work in more favourable circumstances—for example, with less resistance opposing the contraction, a lighter weight to lift, etc. It is a useful index of the stage of enfeeblement of the voluntary contractile power with which the sensory manifestations in muscles under different conditions can be correlated. The actual time necessary to induce fatigue and the number of movements that can be executed prior to this point are of course largely influenced by the weight used; with a sufficiently light weight the movements can be kept up for hours without the occurrence of fatigue in the normal arm while the circulation is intact. Under normal conditions the phenomena of fatigue as shown by ergograph records are well known. The associated sensations as the fatigue point is approached take the form of a sense of increased effort being necessary to raise the weight even for a short distance, an increasing disinclination to go on making the successive efforts, aching or dull pain in the central part of the forearm, etc. We have often found a certain amount of local tenderness to pressure in the fatigued muscles, lasting for some little time after action has been discontinued.

In the ischaemic arm the fatigue point is reached much more rapidly, often in one-half or one-third the time needed in the normal arm, with a proportionate diminution in the number of contractions executed, the more rapid development of extensive weakening at a relatively early stage, etc. Pain develops and by the time the fatigue point is reached becomes severe; further efforts at contraction movements lead to distressingly acute pain and the desire for relief becomes urgent, while there is a strong disinclination to attempt further efforts.

#### *Distribution and Characters of the Pain.*

The pain is felt over the flexor aspect of the forearm and is most intense in the central part of the forearm; it is specially marked from wrist to elbow along the line of the flexor digitorum sublimis. It seems to be centred in the belly of the working muscle with a good deal of spreading,

but there is, as a rule, no referred pain in more distant parts; in one subject pain in the palm of the hand was complained of. The pain goes on increasing progressively while contractile activity is kept up; there is no remission, as may sometimes occur markedly in the normal arm, where, working with a suitable load, decided aching may develop at a comparative early stage, to pass off more or less completely at a later stage.

It is to be noted that the pain, increasing to almost intolerable severity in some of these experiments, arises from exercise of a comparatively small amount of muscular tissue—the limited portion of the flexor muscle engaged in moving a single finger—in presence of an acute lack of blood supply, involving urgent want of oxygen (anoxaemia) and its consequences, with excessive accumulation of metabolic products, acids, and other bodies. The pain is no doubt protective in character, tending to limitation of effort and shielding the muscle from being spurred on to further and injurious activity. Discontinuance of further effort for short periods does not remove the pain, but it is almost immediately relieved—in a few seconds—by readmission of blood into the limb by removal of the obliterating pressure of the armlet. Contractile energy, on the other hand, recovers gradually and slowly; it takes some time to be fully re-established, and even then is apt to fail more readily than before on repetition of the experiment. It is evident that the pain and the depression of contraction force do not run parallel in the ischaemic arm.

#### *Relation of Pain to Weakening of Contraction Force.*

The conclusion just stated is supported by the fact that in the ischaemic arm the development of pain in the course of a successive series of contractions is much greater in proportion to the weakening of contraction force than in the arm with intact circulation; with an equally extensive cutting down of the energy of movement in the two types of arm, as shown by the ergograph tracings, there was sharp pain in the ischaemic arm at a stage when there was only a tired feeling with some aching in the normal arm; pain and weakening of contractile force were differently related to one another in the two cases.

It may be noted that in the normal arm slight aching or local tenderness may last for some little time after the exercise of the flexor muscle (as recorded by the ergograph) has been discontinued, while in the ischaemic arm the sharp pain disappears quickly on re-establishment of the circulation. There is reason to believe that in fatigue following severe muscular exertion under normal conditions (for example, football, etc.) the muscular aching and tenderness, felt for a considerable length of time afterwards, especially in individuals out of training, are dependent on a mechanism of production that is not identical with that of the pain caused by working an ischaemic muscle.

The production of severe pain from a small amount of skeletal muscle working with its blood supply cut off recalls the agonizing pain excited by excessive contraction of a small amount of unstriated muscle in a bit of bile duct in gall-stone colic, or of ureter in renal colic, etc. Of course it does not follow that the mechanism of pain production is similar in the two kinds of muscle—the unstriated and the striated.

#### *Observations on the Abductor Indicis Muscle.*

Experiments with the abductor indicis muscle gave results essentially similar to those described above. For example, in an experiment when a certain strength of elastic band was used to resist the abduction movement, a series of about 240 movements could be carried out in the normal state at the rate of one per second before the "fatigue" point was reached—that is, the point where any abduction movement failed to occur against the resistance of the band; this was attended by only slight discomfort and aching—where the latter was present at all. In the ischaemic hand the fatigue point was reached at about one hundred contractions—that is, in less than two minutes, as compared with four minutes in the normal state; this was attended by pain, which spread more or less over the dorsum of the hand, though most sharply felt in the working muscle. Stoppage of the efforts at abduction for a minute did not lead to removal of the pain, but the latter was promptly relieved by re-establishment of the circulation; contractile power recovered much more slowly, and was more easily fatigued subsequently. Some minutes later



the hand was again rendered ischaemic, and kept in that condition with quiescent muscles for ten minutes; the hand became cold, but there was no pain, simple ischaemia having, as described above, no appreciable effect in this respect. Abduction movements of the index finger were then performed as before; there was painful fatigue after about sixty-five movements; the pain was removed as before by readmission of the blood. The usual well-known flushing occurred after the period of ischaemia; sensations of tingling gradually developed somewhat later.

#### *Effects of Continuous Muscular Tension.*

Experiments were also performed with the middle finger flexor muscle kept voluntarily contracted to sustain the ergograph weight at a certain level instead of making a series of consecutive lifting efforts as already described; graphic records of the behaviour of the muscle were made. Continuous motor effect failed to preserve the initial level beyond a certain time, which varied according to the weight employed, etc.; then came a general progressive decline, varied by minor irregularities in the slope of the tracing, until after a time the weight sank back to the resting position. This "fatigue" is attended by comparatively little subjective disturbance, even in the ischaemic arm. There was disinclination to keep up the tension of the muscle, which seems to need more and more voluntary effort, with some discomfort and aching—the latter felt chiefly in the upper arm and the finger—probably attributable not to the muscle itself but to the mechanical conditions connected with the fixed position of the limb and pressure on the skin of the finger by the loop at the end of the cord which supports the weight. There is evidently a notable difference as regards pain production between an alternately contracting and relaxing muscle doing mechanical work and the condition of sustained tension necessary to maintain the weight at certain levels. Similar results were obtained with the abductor indicis.

#### *Relation to Pains of Angina Pectoris, Intermittent Claudication, etc.*

It need hardly be pointed out that the foregoing observations have a close bearing on the problems associated with the production of the pain of angina pectoris, showing as they do how readily acute pain can be excited in skeletal muscle working with lack of blood supply, the pain developing while the contractile power, though to some extent weakened, is still sufficient to execute movements of considerable range and energy—that is, long before complete fatigue.

There is every reason to believe that processes of the same nature, with a similar production of pain of varying grades of severity, up to the agonizing suffering of fully developed angina, occur in cardiac muscle compelled to work with a blood supply that is inadequate—absolutely or relatively to the amount of work which the arm has to perform. Sir James Mackenzie has emphasized the conception of anginal pain as an expression of exhaustion of the cardiac muscle, commonly associated with a defective coronary blood supply and a susceptible nervous system. He has laid stress on the production of the symptoms of heart failure—pain, breathlessness, giddiness, faintness—as expressions of impaired functions of organs which fail to receive a blood supply adequate to the needs of their normal activities in consequence of a defective output of blood from the heart, the latter itself suffering from insufficient blood supply to its muscular walls; heart failure is thus recognized, not by direct examination of the organ itself, but by the functional effects of diminished blood supply to various organs.

It may be added that the results of the present experiments have an obvious application to the phenomena of the condition called "intermittent claudication," as seen in the legs of men and horses, in which muscular exertion is interrupted by attacks of pain, loss of power, coldness of the limbs, etc. These symptoms can be definitely explained: in consequence of blocking of the main artery, or disease or spasm of the vascular walls, the blood stream has been reduced to such an extent that, while it may suffice to supply the muscles in the resting state, it is quite inadequate for their greater requirements during activity—the results (pain, etc.) of the defective blood supply are of the same nature and mechanism of production as those demonstrable in the ischaemic arm of the healthy subject.

## THE CLINICAL, PATHOLOGICAL, AND RADIOLOGICAL ASPECTS OF INFECTION OF THE TEETH AND GUMS.\*

BY

SIR WILLIAM WILLCOX, K.C.I.E., C.B., C.M.G.,  
M.D., F.R.C.P.

PHYSICIAN TO ST MARY'S HOSPITAL.

### *Historical.*

Septic absorption from the teeth and gums must date from the earliest period of man's history, for the examination of ancient skulls shows that dental sepsis has ever been present. The clinical symptoms resulting from infection of the teeth and gums must have afflicted the human race during its whole existence, and it is very remarkable that the causation of these symptoms escaped recognition for so long a period. The recognition of the clinical symptoms resulting from oral sepsis is quite modern.

Disease of the teeth and gums was described by H. A. Fauchard in 1740, and from that date much has been written on the subject. In 1875 John T. Riggs gave a full description of the disease in an address read before the American Academy of Dental Surgery on "Suppurative inflammation of the gums and absorption of the gums and alveolar process," and the disease "pyorrhoea alveolaris" is often called "Riggs's disease."

The next advance in knowledge resulted from the development of the application to the investigating of the cause of dental sepsis. Galippe and P. Labadie, able pioneer work in this respect from 1884 to 1894. The work of Pasteur and Lord Lister on the great influence of bacterial infection in the causation of disease prepared the way for the recognition of the far-reaching effects of the toxic absorption resulting from the organisms found to be associated with dental infections.

Dr. William Hunter, a distinguished Fellow of this Society, was the pioneer amongst physicians in recognizing "the relation of dental diseases to general diseases," and he read an important paper bearing this title before the Odontological Society of Great Britain in 1900. It is not too much to say that the appreciation to-day of dental sepsis as one of the commonest and most important causes of general diseases is very largely due to the unceasing and untiring work of Hunter in this department of medicine.

### *The Bacteria Causing Infection of the Teeth and Gums.*

Professor Miller of Berlin in 1900 carried out a series of brilliant researches on the bacteria found in connexion with dental infections. He found no less than twenty different bacteria in twelve cases of pyorrhoea; amongst them were streptococci, staphylococci, bacilli of various kinds, and leptothrix. Recently, J. McIntosh, Warwick James, and P. Lazarus-Barlow have isolated a bacillus which they believe to be the cause of dental caries and have named *Bacillus acidophilus odontolyticus*.

In this discussion we are mainly concerned with the organisms occurring in dental infections, the absorption of which, or their toxins, gives rise to general disease. There seems to be no doubt that it is the streptococcus infections which are almost entirely responsible. The streptococci found in mouth infections are usually classified into three groups, from their behaviour when grown on media containing blood.

1. *The Haemolytic group* cause severe toxæmia, and are found in the anaemias resulting from dental sepsis.

2. *The Viridans group* includes those streptococci which are associated with rheumatic affections. *Streptococcus salivarius* and *S. faecalis* belong to this group. They are both toxic, producing general toxæmic symptoms, and may give rise to arthritis, fibrositis, and other rheumatic affections. Arthritis and cardiac lesions have followed the inoculation of rabbits with the living organism in either case. Each of them has been found in malignant endocarditis.

3. *The indifferent group of Streptococci* are not toxic to guinea-pigs, and their association with rheumatic conditions is doubtful.

4. *Gram-negative cocci* are found associated with dental infections, but they are not usually toxic, and some of these types have probably been described as staphylococci in earlier writings.

\* Paper read to open the discussion held at the Medical Society London, December 11th, 1922.



5. *Staphylococci* are not usually found in dental infections, but often in the post-nasal space.

In the infections of the teeth and gums the same streptococcus is not necessarily found in different cases, nor can the local disease be constantly transmitted from an infected patient by inoculation of the healthy gums of another person; so that Koch's postulates of a specific infection are not satisfied. The infecting organisms are variable and the infection may be mixed, so that the problem of dental sepsis is a complicated one.

*Evidence for the Conclusion that the Teeth and Gums are the Source of Infection.*

It must not be hastily assumed because a patient is suffering from symptoms such as arthritis, fibrositis, anaemia, or some affection which is commonly associated with dental sepsis, that the teeth are the cause of the illness. Every case must be approached with an open mind and no preformed opinion.

There are many other foci of infection which may produce diseases identical with those resulting from dental sepsis; in other words, a streptococcal toxæmia may be due to a great many causes other than dental. Thus the tonsils, the nasopharynx, the intestine, and the urogenital tract may all be foci of infection for pathogenic streptococci or other organisms. Careful examination should always be made to determine if these other foci of infection may safely be excluded.

The practice of extraction of apparently healthy teeth merely because a patient is suffering from a disease which is often due to a dental infection cannot be too strongly condemned. There should always be strong evidence that the teeth are primarily and directly responsible for the disease in other organs before their extraction is justifiable.

*The Signs of Unhealthy Conditions of the Teeth and Gums.*

The presence of gingivitis is shown by an unhealthy spongy condition of the gums, which bleed readily and have a congested free margin. Often congested hyperplastic projections occur between the teeth. These are particularly well marked in scorbutic conditions and have been described as "buds." Tartar and dirty collections may be present between the free surface of the gums and teeth. Pressure on the gums may cause pus to ooze up from between the gums and teeth if pyorrhoea is present. Local swellings of the gums due to periosteal abscess may occur. The teeth themselves may show marked caries with gingivitis around them. An important clinical symptom often present is a sweet sickly smell of the breath.

In a large number of patients who habitually clean their teeth carefully little or no evidence of a dental infection can be found from an external examination; this point cannot be too strongly emphasized. On many occasions I have seen teeth and gums, apparently perfectly healthy, in which radiographic examination disclosed dangerous peri-apical necrotic lesions. Sir Frank Colyer truly says, in his book on *Chronic General Periodontitis*:

"It is not safe to judge the extent of the disease from clinical appearances only, and it is necessary to call in the aid of skiagraphy in order to ascertain how far bone destruction has proceeded."

The gums may appear healthy, and yet there may be an extensive disease of the alveolar process around the roots of the teeth, and considerable bone destruction, the involved area being heavily infected with pathogenic streptococci. The grave clinical effects resulting from infected bone are well known, and from observation of a large number of cases which have been carefully investigated by bacteriological and radiological methods I am strongly of opinion that the general clinical effects produced by dental infections are accounted for by the extent and nature of the disease of the bone in the neighbourhood of the teeth, rather than in the gums or teeth themselves, though these latter are the primary causes of the bone disease.

It cannot be insisted upon too strongly that in every case of illness in which the teeth may be primarily responsible—even if external appearances of the teeth and gums are healthy—a radiographic examination should be made to ensure that the alveolar process around the teeth is also healthy.

*Radiographic Evidence.*

Careful photographs of the teeth and surrounding jaw, taken so that two or three teeth only are included in each plate, will show in detail the exact condition of the roots of the teeth and surrounding bone.

The periodontal membrane of a tooth may be swollen, and the alveolus may show superficial erosion, such as occurs with advanced age, but the most important evidence of all is the presence of necrosis of bone in a more or less spherical area around the apex of the tooth.

These apical lesions are commonly called "apical dental abscesses." The term is a bad one, because there is no pus present, and, most important of all, they give rise to no pain. The term "apical granulomata" has been used; this also is bad, because the microscopical appearances are not those of a granuloma.

When a tooth is extracted with an apical dental lesion, a mass of solid gelatinous substance is found adherent to the apex. This contains pathogenic streptococci and necrotic substance with very few leucocytes. The term "peri-apical bone necrosis" would accurately describe the condition actually present.

In my opinion the "peri-apical bone necroses"—the so-called "apical dental abscesses"—are the most serious lesions found in connexion with dental sepsis, and it is these which give rise to the gravest general disease resulting therefrom. It is probable that from these lesions there is a constant flow into the blood stream of either virulent streptococci or their toxins, and the anatomical position of the lesions prevents an adequate supply of leucocytes and bactericidal body fluids to the part.

An interesting example of the deadly effect of even a small peri-apical bone lesion may be cited here.

CASE 1.

In 1919 a patient, aged 46, had been under my care for some months, suffering from the effects of long residence in the tropics. He was in fairly good health and then developed an irregular pyrexia. No evidence of malaria was found and the pyrexia did not respond to quinine. A systolic murmur was present in the apical cardiac area, which was of old standing. A blood culture made by Dr. J. Matthews showed a streptococcal infection. Although the teeth had been pronounced perfectly healthy by an experienced dental surgeon an x-ray examination was made, and this revealed the presence of a "peri-apical bone necrosis" round one of the lower central incisor teeth. Extraction of the affected tooth showed a marked infection with streptococci, identical in characters with those found in blood culture. The patient developed additional cardiac valvular lesions and was seen in consultation with me by Sir William Hale-White. The condition was obviously one of infective endocarditis, and this subsequently terminated fatally.

If lesions of this kind are present, the maintenance of health is obviously impossible; some serious general disease is bound to result if it has not already appeared. In my opinion if a lesion of this kind be present no compromise is permissible—the affected tooth must be extracted.

Gardner of America has asserted that extraction of the tooth is not a sufficient safeguard and advises a preliminary trephining of the alveolar process over the peri-apical lesion. The diseased area is then curetted, the tooth extracted, and the infected area sterilized by the application of a suitable antiseptic. In this country the simple extraction of the affected tooth is, I think, considered adequate, and trephining and curettage are not thought necessary.

Where "peri-apical bone necroses" are present the affected tooth is usually dead, and this is an important indication. Attention must here be called to the very common occurrence of this dangerous lesion in connexion with crowned teeth. So common is this occurrence in my experience that I have no hesitation in condemning the procedure of crowning teeth.

*Does the Simple Erosion of the Surface of the Alveolar Process around Teeth Call for Extraction?*

Each case must be judged on its merits. If there are no obvious symptoms of streptococcal toxæmia, I should say that the answer to this question is No. The presence of gingivitis without bone disease around the teeth should be amenable to treatment and does not necessarily call for extraction.

The presence of pyorrhoea alveolaris does not of itself demand extraction of the teeth. This should only be decided upon after considering the radiographic evidence in conjunction with the local symptoms of pyorrhoea. Also the gravity of the constitutional toxic symptoms resulting from the pyorrhoea will be an important factor. It must be remembered that sometimes pyorrhoea alveolaris may be a secondary symptom of some primary disease, such as dysentery, colitis, scurvy, etc., and if the general disease is cured the cure of the pyorrhoea may follow naturally.



The general factors which influence the effects of dental sepsis are:

1. *The Virulence of the Organism.*—Just as in other pathological infections—diphtheria, for example—a small lesion, if the organism is virulent, may produce very severe effects, or an extensive local dental lesion may give rise to little constitutional disturbance.

2. *The amount of toxins absorbed into the circulation* is an important factor. Everyone who is familiar with hospital out-patient practice has been impressed by the appalling dental sepsis observable by the naked eye in patients with no constitutional symptoms therefrom. The reason must be that there is free discharge of the toxins produced. On the other hand, an invisible deep-seated lesion with healthy gums may be associated with the most severe constitutional effects. The "time factor" is important. If there is only slow absorption the toxic effects will be slighter than with rapid absorption. The whole question is one of dosage with toxin.

3. *The Resistance of the Patient.*—This is a most important factor. Some patients, from constant absorption of toxins, become extremely sensitive, and a condition of anaphylaxis results. The recent work of Sir Almroth Wright on septicaemia is most interesting in this respect, since he has shown that in certain conditions of septicaemia the patient is incapable of developing bactericidal substances. Julius A. Toren of Chicago showed (1921) that in certain cases of dental infection and gingivitis a leucopenia occurred, and he regarded this as an anaphylactic phenomenon and a signal of danger. He concluded that in this condition extraction of many teeth was dangerous, and advised removal of not more than one at a time. This observation has a very important practical bearing.

#### *Secondary Intestinal Infection.*

Where dental sepsis is present and it has given rise to general disease, examination of the stool or intestinal washings shows in practically every case a marked preponderance of streptococci similar to those present in the dental lesion. This is an important factor in the consideration of the general effects produced by dental sepsis, for in most of these cases there is a secondary intestinal infection which may of itself cause similar general disease. This explains why in advanced cases of arthritis the disease may progress when the primary dental focus of infection has been eradicated.

#### *The General Diseases caused by Infection of the Teeth and Gums.*

Infection of the teeth and gums by reason of the streptococcal infection arising therefrom is undoubtedly one of the greatest sources of disease of adult life.

*Acute streptococcal septicaemia and septic-pyæmia* have not infrequently arisen from dental sepsis. The risk of this dangerous complication must always be borne in mind in connexion with the extraction of infected teeth in patients whose resistance to streptococcal infection is low. As already mentioned, a leucopenia is a danger signal.

*Toxaemia* is commonly associated with dental sepsis. It may be chronic, subacute, or acute. Chronic toxaemia is present in a great many of these cases, and in all where some general disease has resulted from the primary dental infection. There is a feeling of malaise and general ill health, a tendency to exhaustion on slight exertion, a pale and muddy complexion is common, and often some general pains in the hands and feet indicate an irritation of the peripheral nerves; frequently some symptoms of fibrositis or threatening arthritis occur. Insomnia, headache, and dyspeptic symptoms are common. In such cases a careful radiographic examination of the teeth should always be made.

Subacute toxaemia may give rise to intermittent pyrexia, with general constitutional symptoms of ill health, extending over months and years.

#### CASE II.

F., aged 32, recently seen by me, had had an irregular pyrexia for three years, the temperature in the evening commonly being 100° or 101°, and marked constitutional symptoms of ill health were present. Extensive bacteriological investigations had been carried out, with negative result, beyond the finding of a streptococcal infection in the stools. Vaccine treatment had been of no avail. An x-ray examination of the teeth showed two extensive peri-apical necroses, although to external appearances the gums and teeth were healthy and no toothache had occurred.

Extraction of the infected teeth by Sir Frank Colver resulted in the complete disappearance of the pyrexia and restoration to good health.

In some cases pyrexia and general symptoms of ill health are followed by profound *acute toxaemia*, and a condition of stupor, delirium, and coma result.

#### CASE III.

M., aged 57, had had malaise and irregular pyrexia due to septic teeth. In consequence of this six teeth were extracted on July 24th, 1921. The operation was followed by a condition of profound toxaemia, the patient being in a "typhoid state" with pyrexia, stupor, and low delirium; there was slight splenic enlargement and a macular rash.

All tests for enteric or typhus infections were negative, and it was clear that a severe streptococcal toxaemia was present.

On August 8th the patient was in a lethargic stuporose state, with mild pyrexia, and the condition was very grave.

Several unhealthy crowned teeth were still present, and it was decided to remove one of these each day. The removal of the remaining infected teeth was followed by disappearance of the toxaemic condition, and the patient made a complete recovery. Dr. Geoffrey Evans made a most careful study of this case, and we were both of opinion that the removal of the remaining infected teeth, even though the condition was most grave, held out the only hope of recovery.

#### *Local Infective Conditions Resulting from Dental Infections.*

Such conditions as stomatitis, tonsillitis, naso-pharyngeal infections, infections of the maxillary antra, cervical adenitis, and Ludwig's angina have been observed.

#### *Blood Conditions.*

A secondary anaemia, mild or severe in type, is a common result of dental sepsis. The more severe types of anaemia are associated with streptococci of haemolytic type. In many cases of pernicious anaemia a severe dental infection with haemolytic streptococci is present. Hunter does not regard dental sepsis alone as a sufficient cause of pernicious anaemia, but rather as a predisposing cause to which an additional factor is added.

*Leucocytosis* is commonly present, and usually the differential count approximates to the normal. It may show variations in different cases, and in the same case at different stages of the disease.

Some acute cases show a marked relative lymphocytosis. This may be a true lymphocytosis, or simply an apparent lymphocytosis, due to a polymorphonuclear leucopenia.

Thus, in one acute case the blood examination on July 22nd, 1922, showed a leucocytosis of 16,600, with 17.5 per cent. of polymorphonuclears and 79.5 per cent. of lymphocytes. On August 3rd the polymorphonuclears were 30 per cent. and the lymphocytes 65.7 per cent. On August 9th the polymorphonuclears were 64.29 per cent. and the lymphocytes 34.28 per cent.

Another similar acute case showed on February 9th, 1921, a normal differential count, and on April 20th the lymphocytes were 52 per cent. and the polymorphonuclears 44 per cent.

An increase of the eosinophilia is uncommon. Two cases, however, have come to my notice.

The first patient (Case 1) gave, on August 24th, 1919, 20 per cent. of eosinophile leucocytes; on September 3rd 12 per cent.; on November 22nd 15.05 per cent., and on January 9th, 1920, 8.17 per cent.

Another patient, who had never resided in the tropics, showed 9 per cent. of eosinophile leucocytes in the differential count.

The presence of leucopenia in some cases has already been alluded to.

#### *Cardio-vascular Complications.*

*Streptococcal infections* of dental origin may cause phlebitis and venous thrombosis, and also arterio-sclerosis, which is not necessarily associated with an increase in the blood pressure. The changes in the arterial wall may give rise to narrowing of the lumen with symptoms of intermittent claudication, or even arterio-thrombosis.

*Cardiac Conditions.*—Tachycardia of toxic origin is often to be observed, and pericarditis, myocarditis, and myocardial degeneration may occur. Endocarditis when present may be of the simple type, such as occurs in acute rheumatism, but not infrequently dental sepsis gives rise to ulcerative endocarditis. Five such cases have been under my care during the past three years, where the origin of the infection appeared to be definitely the teeth.

#### *Respiratory Complications.*

The streptococcal infection may give rise to laryngitis, tracheitis, and bronchitis. Pleurisy and empyema were described by Hunter in 1900 as possible complications. Septic bronchopneumonia is a serious and not uncommon complication, and it may be followed by bronchiectasis, or lung abscess.



At the present time a patient is under my care in St. Mary's Hospital suffering from abscess of the lung the result of very severe dental sepsis. Attention has been called to the adverse influence of dental infections in cases of pulmonary tuberculosis by Dr. R. C. Wingfield.<sup>2</sup> He considers the removal of dental sepsis an essential preliminary in the treatment of pulmonary tuberculosis, and says that in such cases untreated oral sepsis may frequently turn the balance against the patient.

#### *Gastro-intestinal Complications.*

Dental sepsis is one of the commonest causes of gastric and intestinal dyspepsia. Hunter in 1839 laid stress on the frequency of toxic or infective gastritis, and he then expressed the opinion that dental sepsis was the probable cause of some cases of that rare condition "phlegmonous gastritis."

*Gastric and duodenal ulcer* probably result from septic infection, and the trend of opinion at the present time is that dental sepsis is a most important cause. In my experience it is rare to find a case of gastric or duodenal ulcer in which an adequate explanation of the cause cannot be found in the condition of the teeth and gums, and I should say that dental sepsis was much the most important etiological factor. The work of Rosenow in America gives strong support to the view that gastric and duodenal ulcer arise from streptococcal dental infection, and he has produced gastric and duodenal ulcer in animals from inoculation with cultures of human dental streptococci.

*Appendicitis* is, in many instances, due to a streptococcal infection, and several cases have recently been under my care in which the primary infection appeared undoubtedly to arise from the teeth.

*Enteritis*, with symptoms exactly like paratyphoid fever, including enlargement of the spleen and similar pyrexia, may undoubtedly result from streptococcal dental infections. The differential diagnosis can only be made by complete bacteriological investigations, and by the recognition of the dental disease for which often radiological examination is necessary. Three cases of this kind have been under my care.

*Colitis*, simple and ulcerative, is frequently due to a streptococcal infection, and in many of these cases the primary focus is undoubtedly connected with the teeth. Peri-apical dental necroses will often be found in intractable cases of colitis. Dr. N. Mutch<sup>3</sup> has called attention to the frequency (84 per cent.) of pathogenic streptococci in the colon in an analysis of 200 cases of arthritis. In 52 per cent. of these cases he concluded that the primary focus was a dental infection.

#### *Renal Complications.*

Nephritis has been described by many writers as sometimes resulting from dental sepsis.

#### *Liver Complications.*

Toxic conditions of the liver are well known to result from streptococcal infections, and frequently slight jaundice and evidences of hepatic disturbance are observed in cases of dental infection. There can be no doubt that hepatic efficiency is often impaired as the result of the toxæmia from dental sepsis.

#### *Skin Complications.*

Rashes of an erythematous, urticarial, papular, and eczematous type have been observed. Purpuric rashes may occur, especially where the streptococci are of the haemolytic type.

#### *Eye Complications.*

Conjunctivitis, iritis, irido-cyclitis, episcleritis, retrobulbar neuritis, have all been described as resulting from dental infections. Undoubtedly vascular lesions, such as thrombosis of the central artery or vein of the retina, may be so caused. Of special interest is retinitis. Dr. Batty Shaw has recently called attention to the great importance of the toxic factor in this condition, and undoubtedly dental sepsis is not infrequently the cause.

#### *Nervous Diseases.*

The toxæmia from dental infections may give rise to cerebral conditions such as abnormal mental states, melancholia, etc., and it is possible that inflammatory conditions, such as meningitis, may be so caused.

Spinal cord diseases, such as combined sclerosis with its associated anaemia, disseminated sclerosis, etc., are often due to toxic causes, and dental sepsis must be included amongst these.

Peripheral neuritis may occur from the streptococcal toxæmia of dental origin, and the sensory symptoms, tingling, and numbness of the hands and feet are of common occurrence. Local neuritis, such as sciatica, brachial neuritis, etc., is a common result of dental sepsis, but these are better included under the fibrositis group, because the cause is rather a perineuritis than a primary involvement of the nerve fibres.

#### *Rheumatic Conditions.*

In a paper published in the *BRITISH MEDICAL JOURNAL* (June 4th, 1921) I called attention to the great importance of infection of the teeth and gums in the causation of rheumatic conditions such as fibrositis and infective arthritis.

*Fibrositis*.—The streptococcal infections so arising may give rise to the various forms of fibrositis—namely, panniculitis, inflammatory conditions of fasciae, and aponeuroses—as occurs in lumbago and myalgic conditions; inflammations of tendons and ligaments, such as stiff neck, tender heels due to involvement of the plantar ligaments, Dupuytren's contractions of the palmar fascia; inflammations of tendon sheaths, arterio-synovitis; bursitis; Heberden's nodes; finger pads; fibrous nodules in subcutaneous tissue; local perineuritis and neuritis, as in sciatica and brachial neuritis. Fibrositis in some of its forms is the commonest occurrence in cases of dental and gum infections.

*Non-specific infective arthritis*, which includes the forms known as rheumatoid arthritis, arthritis deformans, osteoarthritis, and chronic villous arthritis, is generally due to a streptococcal infection. Dr. Beddard, in a paper before this Society in October, 1918, expressed the opinion that 90 per cent. of these cases were due to infection arising from the teeth, and my personal experience agrees with this view.

It is well known that in cases of non-specific infective arthritis numerous bacteriological examinations have shown that no living organisms are to be found in the joints. It is probable that the streptococcal toxins give rise to the inflammatory conditions. The recent work of Dr. W. E. Gye, and Dr. E. H. Kettle has shown that marked proliferative changes can occur in organs such as the spleen, through the action of colloidal silica, without the presence of living micro-organisms.

*Acute rheumatism* is not commonly caused by dental infections, but several cases have been described. The organism found by Poynton and Paine in numerous cases of acute rheumatism closely resembles the *Streptococcus salivarius* and *S. faecalis* found in dental infections.

#### *Gout.*

In some cases of gout dental sepsis is important, and should be removed, as far as possible, in every gouty patient. Dr. Llewellyn has expressed the opinion that gout is the result of a toxic idiopathy to certain toxic protein substances. Undoubtedly the streptococcal toxins of dental origin are in not a few cases the important causative factor.

#### *Diabetes.*

Streptococcal and other toxins may cause a toxic glycosuria, probably by impairment of the endocrine function of the pancreas. Dental sepsis is undoubtedly a factor in the causation of glycosuria in some cases, and it should always be removed in cases of diabetes. A rise in the carbohydrate tolerance has often been observed by me after the removal of dental sepsis in early cases of diabetes.

#### *Scurvy.*

This disease, due to vitamin deficiency, shows marked dental sepsis on its earliest appearance. During the war over 20,000 cases of scurvy occurred amongst Indian troops in Mesopotamia, many of which I personally examined, and in almost all very marked infection of the teeth and gums was present. The result of careful observation showed that if pre-existing dental sepsis was present in a marked degree, then such patients were very predisposed to develop scurvy.

#### *TREATMENT.*

The treatment of infections of the teeth and gums, and the diseases arising therefrom, does not come within the scope of this discussion. The most important general principles in the treatment of such infections have, however, been indicated, namely:

First, remove the focus of infection, either by extraction of teeth, or suitable treatment.

Secondly, it must be remembered that intestinal infections very frequently result from dental infection, and these may



qure treatment by such measures as Plombières colon irrigations, or an autogenous vaccine prepared from the streptococci found in the teeth and intestine.

### Prophylaxis.

The early recognition of dental sepsis and its appropriate treatment would be one of the most important factors in greatly improving the health of the nation.

### REFERENCES.

<sup>1</sup> *British Journ. Exper. Path.*, March, 1922. <sup>2</sup> *Lancet*, July 18th, 1914, bid., October 7th, 1921.

## REMARKS ON THE VALUE OF BUTYN AS A LOCAL ANAESTHETIC.\*

BY

W. M. BEAUMONT,

CONSULTING OPHTHALMIC SURGEON, S.W. REGION,  
MINISTRY OF PENSIONS.

For some years the experts connected with the Abbott laboratories of Chicago experimented assiduously to find a synthetic substitute for cocaine, and in 1918, with the collaboration of Professors Roger Adams and Oliver Kamm of the University of Illinois, butyn was discovered; in their opinion it fulfils all the requirements they had in view. The next step was to refer butyn to a committee of the Section of Ophthalmology of the American Medical Association under the chairmanship of Dr. Albert Bulson, jun., of Indiana, and after prolonged clinical investigation a report was published early in 1922. The conclusions are summarized as follows:

1. Butyn is more powerful than cocaine, a smaller quantity being required.
2. It acts more quickly than cocaine.
3. Its action is more prolonged than that of cocaine.
4. Butyn in the quantity required is less toxic than cocaine.
5. It produces no drying effect on tissues.
6. It produces no change in the size of the pupil.
7. It has no ischaemic effect and therefore causes no shrinking of tissues.
8. It can be boiled without impairing its anaesthetic efficiency.

Unlike cocaine, it does not deteriorate quickly by keeping—an advantage to those practitioners who wish to have supply ready in case of emergency. Still more important, it has no attractions for the drug taker.

Professor Adams in a letter tells me that his first experiments on toxicity were disappointing because he found that with mice butyn was two or three times as toxic as cocaine. But, on the other hand, its anaesthetic power was also two or three times as great as cocaine. Further experiments showed him that the comparative degree of toxicity varied with the size of the animal. For instance, with guinea-pigs the two substances are about equally toxic. In cats butyn is about 5 per cent. less toxic, and in dogs from 25 to 30 per cent. less toxic than cocaine. In monkeys the toxicity of butyn is probably as low as 50 per cent. compared with cocaine; but these latter experiments are not yet completed. Professor Adams considers that it may be concluded that in man it is still less toxic. This view is supported by the fact that no toxic symptoms have occurred in America although butyn has been used in many cases. The low toxicity of butyn was confirmed by the committee of the Section of Ophthalmology of the American Medical Association.<sup>2</sup> In the opinion of the manufacturers butyn is probably considerably less than half as toxic as cocaine.

### Tests.

Dissolve 1 gram of butyn in 10 c.c.m. of water. Separate portions of the solution yield a white precipitate with potassium mercuric iodide solution; a brown precipitate with iodine solution; a brown precipitate with gold chloride solution; and a yellow precipitate with picric acid solution. A portion to which barium chloride solution is added gives a white precipitate (distinction from cocaine).

Dissolve about 0.1 gram of butyn in about 5 c.c.m. of water, add drops of dilute hydrochloric acid and 2 drops of sodium nitrate solution (10 per cent.) and mix with a solution of 0.2 gram of beta-naphthol in 10 c.c.m. of sodium hydroxide solution (10 per cent.). A scarlet-red precipitate is formed (distinction from holocaine, which gives a white precipitate).

\* Read at a meeting of the Bath and Bristol Branch of the British Medical Association, November 29th, 1922.

To a solution of about 0.1 gram of butyn in 5 c.c.m. of water add 3 drops of diluted sulphuric acid and mix with 5 drops of potassium permanganate solution. The violet colour of the latter disappears immediately (distinction from cocaine).

Dissolve about 0.1 gram of butyn in 1 c.c.m. of sulphuric acid. The solution is colourless (organic impurities).

Dissolve 0.1 gram of the salt in 10 c.c.m. of water and saturate with hydrogen sulphide. No coloration or precipitation occurs (salts of heavy metals).

Incinerate about 0.5 gram of butyn accurately weighed. There is not more than 0.2 per cent. residue.<sup>3</sup>

Early in 1922 I resolved to try butyn, but the impossibility of getting it in England caused some delay, and it was necessary to send to Chicago. Unlike some German substitutes, butyn, not being a derivative of cocaine, can be freely prescribed without restriction.

### In Eye Work.

In ophthalmology butyn has been extensively used in the United States. Dr. H. S. Gradle, from an experience of more than 2,000 cases, finds it superior to cocaine and holocaine in eye surgery.<sup>4</sup>

My own experience is confined to about 60 cases, including operations for the extraction of cataract, discission, iridectomy, removal of foreign bodies, and skin operations on the lids by infiltration. For operative work on the eye a 2 per cent. solution is used, but for profounder anaesthesia 4 or 5 per cent. Four applications should be made at intervals of two minutes. If a bloodless field is required, a drop or two of adrenaline solution (1 in 1,000) may be instilled after the last drop of butyn. The eye is then ready for operation. For operations on the skin of the lids 10 drops or more of a 0.5 per cent. solution may be injected subcutaneously with a hypodermic needle.

For all operative work on the eye, in my experience, butyn is most satisfactory, the anaesthesia being more profound and prolonged than when cocaine is used, and there are no after-effects. I sum up my present position with regard to butyn by saying that neither in the consulting room nor in the operating theatre have I found it necessary to resort to cocaine during the last nine months.

### Butyn in Ear, Nose, and Throat Work.

Some 200 operations have been done, including septum resection, tonsillectomy, adenectomy, opening accessory sinuses, etc. It can be used in a 2 per cent. solution and applied topically. It acts efficiently and is superior to a 5 per cent. solution of cocaine. For profounder anaesthesia for major operations on the throat and nose, 5 per cent. may be used, and adrenaline can be added for all intranasal operations. Dr. Bulson of Indiana reports that still stronger solutions can be used in throat operations.<sup>5</sup> For intranasal work he employs a 5 per cent. solution of butyn, with epinephrin, swabbed over the operative field and beyond, if possible.

"Within two or three minutes following the first application, flattened pledgets of cotton soaked with the solution, but from which the surplus has been squeezed out, are applied over the operative field and when possible over the source of the sensory nerve supply. These pledgets are removed after the end of five to eight minutes. Five minutes later the operation may be commenced with the assurance that in practically all cases the patient will suffer no pain or even discomfort."

I can find no record of butyn having been used as a spray. Nevertheless there seems to be no contraindication.

### Butyn in Dentistry.

In dentistry butyn is notably satisfactory. There are none of the after-symptoms which sometimes occur with other local anaesthetics. Ten drops or more of a 1.2 per cent. solution are injected on opposite sides of the tooth to be extracted, with or without adrenaline, and after sixty seconds the tooth is ready to be removed. I quote the following from a report issued by the Abbott laboratories.

"In March, 1921, the first (dental) extractions under butyn anaesthesia were performed by a Chicago dentist. Following about 100 such cases, quantities of butyn were sent to a considerable number of dental practitioners in all parts of the country. These men used butyn in various concentrations for all types of dental anaesthesia. As their reports began to come in it was apparent that it was producing results of a far more satisfactory nature than had at first been expected. The dentists who were co-operating with us in this research simply had to tell their friends of the unusually fine results they were getting with this new







give the candidate and his guardians a guarantee of some sort of fitness for the work. Most local education authorities have instituted such tests. That they are not always satisfactory is indicated by reports of some school medical officers. There is also a necessity for some measure of uniformity in the tests throughout the country, for trained teachers are in a sense current coin and legal tender to any educational authority. It is in every way good that this should be so, for the more movement there is amongst the teachers the wider their outlook and the better teachers they make. It is therefore lamentable when a teacher trained by one authority is rejected on account of defective eyesight by another authority. The purpose of this paper is to suggest for agreement the limits of defective sight permissible for candidates for scholarships, training college, and teaching posts in council elementary and secondary schools.

Children in elementary schools are examined as a matter of routine thrice—at about the ages of 5, 8, and 14 years. Children suspected of defect are examined at any time. The average age for entry upon a junior county scholarship is 11 years; the holder is transferred to a secondary school for five years. Intermediate scholarships are awarded a year later, and give four years at a secondary school. Senior county scholarships are granted at the age of 16 years and are available at a university for four years. Prospective teachers undergo training at a college between the ages of 17 and 20 years. Thereafter a teacher's life extends to the age of 65 years, when a pension is earned. During service failure of health is met by temporary allowances on a generous scale, and a complete breakdown necessitating retirement is met by a modified pension and a gratuity after ten years' service and a small gratuity after two years' service. Such provision adds to the necessity for care in the selection of candidates.

#### *Defective Vision and Inefficiency.*

In considering what limitation in defect should be made at the several stages of an educational career it is convenient to take the teacher first. If we can arrive at a fair standard of fitness at about the age of 21 years at the entry to the strenuous career of forty-five years' teaching, and a standard that will provide a reasonable prospect of efficient service and limit the risk of early disablement, the main part of our task is done. It will be comparatively easy from that standpoint to adjust a scale fitting junior and senior scholarships and a college course.

The question will at once arise, What evidence is there of inefficient service or disablement due to defective vision? That question is not easy to answer in terms of figures. Such answer of this sort as is possible I gave this year in a paper read before the Ophthalmological Society.<sup>1</sup> That evidence dealt with myopes only. Similar evidence for hypermetropes cannot be presented. Every ophthalmic surgeon sees a fair selection of myopes, because all myopes suffer the disability of being unable to see. We do not get a similar fair selection of hypermetropes; we get only those who fail to see with comfort. So that although it is possible to suggest a definite answer as regards the myopes we can only arrive at an estimate in the case of hypermetropes based upon our general appreciation of the effects of hypermetropia in causing eyestrain in early middle life, from 30 to 35 years, when the rigour of youth and its compensatory powers are beginning to wane. The evidence as regards the myopes is as follows:

A series of histories were gathered of myopes of over 3 D. between the working ages of 20 to 60 years, and classified according as they were engaged in close work all day or in manners of life which did not entail habitual close work. Of the close workers, no less than 53 per cent. came to a time when there was an unmistakable failure of ability to carry on because of serious eyestrain; some changed their occupation to work that did not entail close eye work; most could not do this, and had to "cut canny" for the sake of their eyes. Of myopes of the same types and ages who were not engaged in continuous close work, only 9.4 per cent. experienced a critical failure of capacity owing to eyestrain or disease. If we classify the myopes who were engaged in habitual close eye work according to degrees of myopia we get the following:

Myopia 3 to 5 D. ...	Breakdown 33.7 per cent.
... 5 to 10 D. ...	66.5
... over 10 D. ...	77.4

These figures represent a fair indication that myopia of more than 5 D. presents an undue risk of inefficiency or breakdown for teachers, who must be classified as those who are engaged in habitual close eye work.

#### *Suggested Standards for Teachers.*

**Visual Acuity.**—The vision of each eye separately should equal Snellen's 6/9, with glasses needed to correct an error of refraction within the allowable standards; or with inequality of the eyes, 6/6 in the better eye and 6/18 in the worse, also with glasses. Exceptions may be allowable in amblyopia of one eye or loss of one eye not arising from disease (vide infra).

**Hypermetropia.**—This usually only causes trouble when it exceeds 5 D. With this degree, or more, vision can rarely be brought to the full 6/6 standard with glasses. The subjects of the defect are very liable to headaches and failure of vision in periods of ill health; these concomitant disorders are more frequent in women than in men. Candidates with hypermetropia not exceeding 5 D. may be accepted.

**Hypermetropic Astigmatism.**—When this error is uncomplicated by hypermetropia the error should not exceed 4 D.; higher errors are very troublesome; full vision of 6/6 is rarely obtained with the most suitable glasses. With compound hypermetropic astigmatism the average is found—that is, the sum of the four meridians should be divided by 4; if the quotient does not exceed 5 the candidate may be accepted provided the total astigmatism does not exceed 3 D. in either eye: for example, R. and L. +3.5 D. sphere + 3 D. cylinder, the sum of the four meridians = 20 and the quotient 5, the candidate would be passed. Both hypermetropia and hypermetropic astigmatism are very liable to cause fatigue on close work and in ill health, and the defect becomes increasingly disturbing with years, so the decision regarding any candidate has to be made with this regard.

**Myopia and Myopic Astigmatism.**—The defect has its own special disability in that it is not only liable to cause strain but that it is very likely to increase with work. Also there is the additional liability to degenerative changes in the eye, whether of vitreous lens or of choroid and retina. Simple myopia of 5 D. or myopic astigmatism of 4 D. should be passed. In compound myopic astigmatism the total myopia should be calculated in the same manner as the hypermetropia; the sum of the four meridians should be divided by 4, and if the quotient does not exceed 5, and the total astigmatism in either eye does not exceed 3 D., the candidate should be passed. Mixed astigmatism should be classed with myopic astigmatism.

**Odd Eyes.**—When one eye has (a) normal vision with 6/6 vision or better, or (b) the vision of 6/6 with glasses correcting an error of refraction not exceeding plus or minus 3 D. sphere, less importance should be attached to the defect of the other eye, provided there is no sign of disease in that eye: for example, R.—3 D., L.—5 D. sphere with —4 D. cylinder, sum of meridians=20, quotient 5, the candidate may be passed. Amblyopia in one eye due to squint, the deformity of which has been satisfactorily corrected, should not disqualify.

Loss of one eye by reason of accidental injury which in no way affects or is likely to affect the remaining eye should not disqualify for scholastic studies or employment, provided the deformity is satisfactorily masked by an artificial eye. Monocular cases should not be admitted to trade scholarships where there is risk of injury arising out of the work.

**Opacities.**—The presence of opacities in the media of the eyes, or of uveitis, should render the candidate unfit at any age. Cases showing signs of past or present iritis, cyclitis, and most cases of keratitis would, under this rule, be disqualified, but not cases of stretching of the choroid about the optic discs due to the allowable degrees of myopia.

**Colour Vision.**—This should be tested in every case, but deficiency in this respect should not disqualify the candidate except in special circumstances.

**Sex Differences.**—If it be not too great a heresy in these days to distinguish between men and women candidates, I should be inclined to allow men a greater margin of error than women. That high conscientiousness of women, so admirable in the nursery, becomes a source of weakness to the school teacher; women also appear to be more susceptible to the effects of eye defect in causing neurasthenia than do men; further, the more sedentary pursuits of women out of school render their health less robust than the men's and their liability to strain greater.

#### *Standards for Scholars.*

For children, the same limitations should apply as regards visual acuity, hypermetropia, hypermetropic astigmatism, odd eyes, and damaged eyes, as for the teachers. The only difference in the scale will arise in the case of myopia and myopic







standards, such as will do bar as few promising candidates as possible and yet limit future risks. It cannot be too strongly urged that decisions in scholastic cases are decisions for a lifetime, and not merely decisions for the three years or so of military service. It is therefore better in every way to stop a dubious case at the very beginning, when a diversion of interest is easy, rather than to risk the grievous hardship of a stoppage in the future, with the possible wrecking of an established career.

## REFERENCE.

<sup>1</sup> The Consequences of Myopia as an Industrial Disease of the Eyes, *Trans. Ophthalm. Soc. U.K.*, 1922.

## THE EFFECT OF ANAESTHETICS ON THE LUNGS.

(Preliminary Communication.)

BY

R. J. S. McDOWALL, M.B., D.Sc., M.R.C.P. EDIN.

(In the Department of Physiology, University of Leeds.)

In the issue of this JOURNAL for November 11th, 1922, was published the report of the discussion at the Annual Meeting of the British Medical Association on broncho-pulmonary complications following operations under anaesthesia, and it was a strange coincidence that the succeeding article should be on the effect of anaesthetic vapours on tissues, in which Flemming has collected a very interesting series of experiments which show their detrimental effects on tissues and living organisms in general. In the first article stress was placed on the possible irritant effect of the vapours on the lungs; in the second no special emphasis was laid on the effect on the lung tissue.

It does not seem to be appreciated that the lung tissue may, apart from mere irritation, suffer serious damage as a result of actual contact with the vapour, apart from concentration in the blood.

Until quite recently knowledge of the function of the lung tissue was comparatively small, apart from the fact that the lungs were adapted for the supply of oxygen to the blood. The function of the bronchial muscles has been largely ignored and the physiology of the pulmonary circulation has been avoided, largely because of the experimental difficulty involved in its study and the negative results obtained by several well-known investigators. From book to book it had become quoted that the vasomotor mechanism in the lungs was negligible. Why there should be such an amount of muscular tissue in the lungs remained unexplained.

Much controversy centres round the action of adrenaline on the pulmonary circulation, as it is accepted that generally this drug acts only on tissues supplied by the sympathetic nervous system. While many observers have obtained negative or indefinite results, others, including Plumier, Starling, and Sharpey Schafer, have brought forward good evidence that adrenaline constricts the pulmonary vessels as it does the systemic. This suggests that the vessels have a sympathetic control, although in the light of more recent knowledge referred to below, this has not been reinvestigated.

By the introduction in 1919 by Sharpey Schafer of a convenient method of recording the pressure in the pulmonary artery new light has been thrown on the pulmonary circulation, and amongst the findings has been the fact that the effect of drugs which act on the circulation was greatly modified by anaesthetics.

I first noted that the effect of drugs on the pulmonary circulation would be much more easy to demonstrate on decerebrate animals, or animals under light ether anaesthesia, than on those anaesthetized with chloroform. For example, it was shown that the action of amyl nitrite on the pulmonary circulation can be prevented by deep anaesthesia. An investigation is in progress\* to find out to what extent the functional activity of the lung tissue may be impaired by anaesthesia. It has already been shown that the action of histamine, now acknowledged to be a pulmonary constrictor (Dale and Laidlaw, Morris), may be similarly abolished.

There is evidence, too, that the action of adrenaline on the pulmonary circulation may be prevented while the systemic effect may be unaffected. This has occurred where all possibility of backward pressure through an incompetent mitral valve and cardiac effects have been excluded.

When the literature of the subject is surveyed it is found that the most probable reason for the negative or variable

results of different investigators, largely in the days when chloroform was in more common use, was the effect of the anaesthetic. The effect of anaesthetics is not necessarily excluded in lung perfusion experiments, as the animal is under an anaesthetic immediately prior to death, and with the cessation of blood supply and anaesthetic the anaesthetic has all the better chance to produce its bad effects. In the positive experiments of Sharpey Schafer and of Starling, referred to above, volatile anaesthetics were not used except in the preliminary anaesthetization, but chloral and chloralose respectively.

This is not the first time that attention has been drawn to the action of anaesthetics on the lungs. In this JOURNAL, in 1880, McKendrick, Coats, and Newman described complete stoppage of the pulmonary circulation of the frog as the result of chloroform anaesthesia, with actual destruction of the lung epithelium.

When the evidence put forward by Flemming is considered, the importance of the local effects of anaesthetics on the lungs will be seen. He might also have added to his list the fact that a piece of muscle exposed to chloroform vapour is killed with great rapidity, a fact which is made use of in the thermopile experiments of Hartree and Hill on heat production.

My results so far agree with those of Flemming on isolated tissues. Recovery from the pulmonary effects occurs after ether, but after deep and prolonged anaesthesia with chloroform recovery is the exception. The actual death of tissue in the lungs as a result of the anaesthetic does not appear to be a remote possibility—indeed, may be easily considered the natural sequel. It is outside the scope of this paper to consider the evil results of such lethal action, but obviously the symptoms discussed at the Glasgow meeting might readily follow. That the absorption of toxic products from such dead tissue should produce delayed chloroform poisoning seems most reasonable.

Another function shown to be abolished is that of the bronchioles, which limit the amount of air passing in to the alveoli. Brodie and Dixon first demonstrated that the vagus no longer caused bronchiole constrictions under deep anaesthesia. The muscles or their nerve supply were considered to be paralysed by direct absorption of the anaesthetic through the mucous membrane. I have demonstrated that the action of adrenaline on the bronchioles may similarly be prevented by deep anaesthesia.

Now the abolition of the bronchiole function must necessarily throw a greater strain on the alveoli and cause them to be exposed to particles which otherwise would not reach them. Even if actual death of tissue does not occur, the mere loss of this protective mechanism temporarily must expose the lung to possible damage.

The investigation is proceeding, but from the results already obtained it is seen that the local effects of the common anaesthetic cannot be ignored, not only from the purely experimental standpoint, but also from that of the clinician. Although anaesthetics may be given to thousands of cases yearly without effect, it must be urged that we are still without an ideal anaesthetic for general use.

From the evidence given it is seen that deep or prolonged anaesthesia with ether, and especially with chloroform, should be avoided whenever possible. It is suggested that narcotics should be more extensively used to supplement volatile anaesthetics.

## INTESTINAL OBSTRUCTION FOLLOWING ACUTE APPENDICITIS AND PERITONITIS.

BY

P. F. MCFARLAN, M.B., Ch.B., F.R.C.S. EDIN.,

SURGEON TO STIRLING ROYAL INFIRMARY.

In the case here reported adhesions must have begun to form immediately after the first operation. The second operation was undertaken because of the increasing distension and in spite of the fact that there was no vomiting and that the patient's bowels had moved on the previous day. The part of the ileum opened on the fifteenth day was below the site of obstruction, which had been liberated at the second operation; the opening acted simply as a safety valve, and by relieving distension allowed the intestines to recover tone.

On February 6th, 1922, a man aged 20 was sent in to Stirling suffering from acute appendicitis. His illness had started suddenly thirty hours, approximately, before admission. When I first saw

\* The research is being assisted by a grant from the British Medical Association.



him he had a temperature of  $101^{\circ}$  and a pulse of 112. He was very tender all over the lower half of the abdomen, and there was marked muscular rigidity. He gave no history of previous attacks, and in all other respects he was healthy and well developed. He was operated on a few hours after admission, and a gangrenous appendix with two concretions was removed. There was a considerable quantity of pus in the pouch of Douglas, and there was marked injection of all the peritoneal surfaces which came into view. A corrugated rubber drain was introduced into the pouch of Douglas. He was given normal saline and 6 per cent. solution of glucose alternately every two hours by the bowel, and morphine  $\frac{1}{2}$  grain on the first night. On the day following he was able to take liquids by the mouth and had no vomiting, so the saline and glucose enemata were stopped. His temperature came down to normal on the morning after the operation, and never rose again above  $103^{\circ}$ . His pulse came gradually down to 96 on the third day, and to 89 to 84 on the fifth day. The tenderness and rigidity also passed off in the first three days. In all respects he appeared to be making a good recovery, except that from the evening of the second day he began to complain of intermittent pain, of slight distension, and of a desire to have his bowels moved. Because of this constant demand on the part of the patient, on the evening of the third day he was given a small turpentine enema, which was returned coloured with a little constipated faecal matter. His distension continued slowly to increase, and his discomfort was more marked. He was given castor oil on the afternoon of the fourth day, and another turpentine enema. The bowels moved slightly that night, and they moved three times the next day, aided by  $\frac{1}{2}$  grain of calomel hourly up to 2 grains and another enema. Still the distension did not diminish and his discomfort was no less. He was given nuxvomine  $\frac{m\bar{x}}$  on the night of the sixth and seventh days. He still had no vomiting. His tongue by this time was dry and coated. His pulse remained at about 88, and his temperature never rose above  $99^{\circ}$ .

On the seventh and eighth days he had several small motions, mostly liquid, but his distension increased and also his discomfort, and owing to the distension the incision for the removal of his appendix stretched and broke down. Still no vomiting.

On the ninth day I opened the abdomen in the middle line and found the small intestine very much distended above a dense adhesion which bound the small bowel firmly to the mesentery of the pelvic colon. There were two other adhesions between the small intestine and the floor of the pelvis. These adhesions were all separated and the raw areas were covered over. A small quantity of pus was found in the pouch of Douglas. The distended bowel was all replaced in the abdomen, and I put a rubber drain into the pouch of Douglas, which was removed the next day. He had some sickness after this operation, and some dilatation of the stomach, which improved rapidly with gastric lavage. He was given pituitrin and enemata, and castor oil by the stomach tube thirty hours after the second operation. The next day he had a copious liquid evacuation. He went on fairly well for a day or two, but never was quite comfortable and his distension did not diminish. Then he got worse again, and on February 21st—that is, fifteen days after the first operation—I opened the ileum, which was presenting at the original appendix incision, and stitched a small rubber tube into it. This tube drained freely at once and continued to do so for several days. His distension came gradually down and his bowels moved freely two days after. He made a slow recovery, being troubled with diarrhoea for some days, but he was able to go home six weeks after the date of his admission with all his wounds healed. By the third week of April he was wonderfully well. There was, however, a hernia at the site of the appendix incision.

Twenty years ago we were taught to give aperients and enemata to similar cases on the second day after operation. Now the practice is to withhold all stimulants to peristalsis either by the mouth or rectally till "convalescence is well established." Mr. H. W. L. Molesworth,<sup>2</sup> in an excellent article on the after-treatment of acute abdominal disease, recommends giving no purgative till after the patient's bowels move, and he advocates a fairly liberal use of morphine. During the last two years or so it has been my practice not to give a purgative till the fifth or sixth day after operation. I give morphine readily for the first twenty-four hours; after that I try to avoid giving it.

We have had several cases of intestinal obstruction recently following pelvic peritonitis, and these cases have made me wonder if it is wise to withhold purgatives so long in all such cases. Is it not possible that by keeping the bowel at rest for six or seven days, with a fairly free use of morphine, we encourage the formation of adhesions and give them time to contract and so pave the way to intestinal obstruction?

## REFERENCES.

<sup>1</sup> Keen's *Surgery*, vol. viii, p. 229. <sup>2</sup> BRITISH MEDICAL JOURNAL, February 11th, 1922, p. 218.

DR. ARNOZAN, professor of clinical medicine in the University of Bordeaux, has retired from his chair after having spent fifty years in the practice and teaching of medicine.

THE fifth Congress of the French Society of Orthopaedics will be held in Paris on October 12th. The subjects set down for discussion are: pes carus; bone cysts, excluding hydatid cysts; congenital elevation of the scapula.

## Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

## THE CORRECTION OF MALPOSITIONS: THE RATIONALE OF THE PADDED BINDER.

IN using the method of the padded bandage to produce a favourable version or rotation the aim is to apply localized pressures in the same direction as we should choose for pressure applied manually. The difference is that by the pads the pressure is exerted with less intensity but over a longer time than by the hand. The mechanics of the problem is very simple. The binder applied in a circle exerts nearly equal inward pressure at each point of its course, but when pads are applied under it the inward pressures through the pads are greater. Being applied at opposite points of the child's body these pressures give the mechanical couple which is necessary if we are to produce a rotation. To obtain the greatest number of successes it is important to individualize the cases by selecting the most effective points for the placing of the pads and the best form of each pad for the application of pressure to the underlying part of the child's body, but the essential in every case is to secure two pressures which are in opposite directions at points as remote as possible from the line which is the axis of the rotation we desire.

Dundee.

R. C. BUIST, M.D.

## HYSTERICAL ELBOW.

THE case of hysterical simulation of fracture associated with hyperextension of the elbow-joint, recorded by Drs. H. C. Woodhouse and F. Carlton Jones (December 16th, 1922, p. 1171), induces me to publish the following similar case:

On May 6th, 1921, an intelligent girl, aged 14, applied to me for treatment at Bootle Borough Hospital. The history was that she had had a slight fall on some stairs and had struck the back of her right elbow, which at once became stiff and could not be flexed.

The elbow was found to be hyperextended to about 15 degrees, and the arm was rotated outwards, the forearm fully supinated, and the wrist and fingers extended. The patient complained of pain in the elbow-joint, but no sign of local trauma was found. When attempts were made to flex the forearm the triceps was felt to contract and the amount of contraction was found to vary with the force applied. The left elbow could readily be extended to a similar degree as the right, but no other joint possessed an abnormal range of movement. The patient volunteered the information that this was her first day in domestic service.

A diagnosis of hysterical elbow was made, and I proceeded to take a photograph of the condition. While adjusting the camera tripod I noticed that the gross hyperextension gradually disappeared, and that the forearm became pronated. Pretending that I was about to move her chair into a better light I seized the girl's arm, and—without difficulty and against no resistance—fully flexed the elbow.

On June 11th, 1921, the patient returned with a history that she had gone back to domestic service and had struck her arm again, when the condition had recurred. On this occasion there was less hyperextension, and the wrist and fingers were in no fixed position, but again the arm was rotated outwards and the forearm supinated. I suggested to the patient that the spasm would pass off when the pain from the blow had subsided. I persuaded the mother that the condition was hysterical, and she promised to show no sympathy: at the same time she was advised to find more congenial work for the girl. The patient did not again apply for treatment while I was at the hospital.

A. B. KEITH WATKINS, F.R.C.S. Eng.,  
Clinical Assistant, Surgical Out-patient Department,  
London Hospital.

## THE ETIOLOGY OF OPTIC ATROPHY.

WITH reference to the report of the discussion on the etiology of optic atrophy at the recent meeting of the Section of Ophthalmology of the British Medical Association (JOURNAL, December 16th, 1922), and more especially with reference to Dr. C. O. Hawthorne's remarks on the neuritis of acquired syphilis, which he said was a very exceptional event in the early stage of the disease, the following case may be of interest.

A woman, aged 25, was seen in the Finger Klinik here a few days ago, when she showed a typical syphilitic leucoderma of a week's duration. Inquiry elicited the information that infection had taken place about four months previously. The cerebro-spinal fluid gave a positive Wassermann reaction. Three days later the same patient was encountered in the ophthalmological department, and then showed a typical acute double optic neuritis.

On the authority of Professor Kyrle, of the Finger Klinik, it can be stated that most cases of syphilitic leucoderma show



a positive Wassermann reaction in the cerebro-spinal fluid at the time when the skin lesions first appear—that is, in the secondary stage of the infection. This he takes as undoubted evidence of a syphilitic meningitis at this early stage of the disease. May it not be, then, that the optic neuritis which occurs in the early stages of acquired syphilis is to be regarded, not as an isolated effect of the syphilitic poison upon the optic nerves, but rather as evidence of a widespread involvement of the central nervous system in the form of a syphilitic meningitis?

WILLIAM L. TEMPLETON,

Vienna, Austria.

M.B., Ch.B. Glasg.

## Reports of Societies.

### INFECTION OF TEETH AND GUMS.

A DISCUSSION on the clinical, pathological, and radiological aspects of infection of the teeth and gums took place at the Medical Society of London on December 11th, 1922, with the President, Lord DAWSON of PENN., in the chair.

Sir WILLIAM WILCOX introduced the subject in a paper printed in full at page 53.

Professor J. McINTOSH related particulars of his work, with Mr. Warwick James and Professor Lazarus-Barlow, on the isolation of a bacillus which they believe to be the cause of dental sepsis, and to which they have given the name of *Bacillus acidophilus odontolyticus*. He then briefly summarized present day bacteriological knowledge with regard to pyorrhoæa alveolaris. The type of organism commonly associated with pyorrhoæa was the streptococcus. *Spirochaetes* and *amoebæ* had also been found, but he thought they did not play any etiological part. They were chiefly to be found in the grossly contaminated pockets and not in the deeper regions.

Dr. J. H. WOODROFFE gave an account of the x-ray appearances attending sepsis, which he illustrated with some dental radiographs. He also touched on the relation between the doctor, the dentist, and the radiologist. The doctor was frequently anxious for more radical measures than the dentist thought desirable, and there was a tendency for the radiologist to be drawn into the controversy. He did not think that the radiologist should be expected to say what teeth should be extracted; this should be a matter for discussion between doctor and dentist.

Sir FRANK COLYER said that as a dental practitioner one of the most difficult things he had to decide was whether teeth should come out or not. What dentists wanted to know from the radiologist was whether the bone behind the tooth was deeply infected. Patients under 50 who were definitely suffering from general symptoms, and in whom the bone showed definite trouble, should without a doubt have their teeth extracted. The best results following the removal of dental sepsis in general conditions were in patients under 50 whose tissues had power to recuperate.

Dr. GREGORY EVANS gave an account of a case, to which Sir William Wilcox had also alluded, in which a patient had malaise and irregular pyrexia due to septic teeth. The extraction of six teeth was followed by a profound streptococcal toxæmia. The removal of the remaining infected teeth was followed by a gradual disappearance of the toxæmic condition. He showed the blood picture obtained in this case, and indicated the changes in the differential count, which signified in some cases the absorption of poisons from dental sepsis.

Dr. WILLIAM HUNTER referred to the fact that in 1900 he read a paper before the Odontological Society of Great Britain on the relation of dental diseases to general diseases. The paper created a good deal of interest, largely because of the previous investigations by Professor Miller in Berlin, which had emphasized the magnitude of the infection and the variety of the flora. His own contribution drew attention to the foci of disease in the month which came under the direct observation of the physician. The present discussion was the first which had taken place on oral sepsis since the subject originated twenty years ago, in striking contrast to the keen interest shown in the United States. Since his original paper the x-ray method had made its appearance, but he hoped that physicians would maintain their own individuality and form an independent judgement without implicit reliance upon one piece of evidence such as an x-ray picture.

Dr. P. WATSON-WILLIAMS, with his colleague Mr. W. R. ACKLAND, showed some stereoscopic odontograms, and spoke

further on infections of the teeth and gums in relation to the ear, nose, and throat, which had formed the subject of a recent communication by him to the Odontological Section of the Royal Society of Medicine. The radiograph, he said, would show a good deal which was not to be discovered by other means, but it needed cautious interpretation.

Lord DAWSON, in closing the discussion, said that this subject afforded a very good example of the necessity for team work. What was wanted was some really connected work upon the subject to which dentists, radiographers, clinicians, and bacteriologists would all contribute; these should take a selected number of cases and follow them through. In spite of many interesting contributions to the discussion, the evidence available as to the effects of dental sepsis was extraordinarily thin. There was a great deal of sloppy thinking on this subject. Many members of the public now had had their teeth extracted, to the detriment of their appearance, and very often without benefit to their health. Hardly a week passed by without some example of the kind coming to his knowledge. One recent case was a young woman who had had her teeth taken out for scroderma, without any benefit to her condition. If the teeth were definitely and markedly affected, the appropriate measures were, of course, called for; or if the patient was suffering from a febrile disease which had potentialities of evil it seemed a rational and proper proceeding cautiously to remove the teeth. But the cases in which he found difficulty were those of people with vague ill health—people who had no real illness, but were not quite up to the mark—or, again, people with an illness whose cause eluded the physician. There he saw grave difficulty in removing the teeth just on the chance that they might be the cause of the trouble. In very many cases there were no means of tracing the causal relationship to the teeth. He could not bring himself to believe that so many diseases as Sir William Wilcox had enumerated could be produced by oral sepsis. He knew of no one cause which could produce so much. Sir William had even deprived part of its responsibility for gout! Were his catalogue justified the wonder was that a larger proportion of mankind were not diseased, or that, of the large numbers of people with oral sepsis, comparatively few got any of these diseases. Lord Dawson admitted that in rheumatism and other diseases there were striking examples of improvement following the treatment of oral sepsis—so pronounced that one was bound to say in some instances that this disease must be caused by oral sepsis. But in a large number of diseases ascribed to oral sepsis he believed that the direct influence of this condition was far less than it was now the custom to take for granted. Take duodenal ulcer: he did not believe that there was the smallest indication that duodenal ulcer was produced by sepsis of the month.

Sir WILLIAM WILCOX agreed that every case should be approached with a critical mind. It was a great responsibility to advise the extraction of a patient's teeth, and there should be adequate local grounds for such extraction. Much yet remained to be done in finding the scientific proofs for the etiology of many of the common diseases he had instanced, and he agreed with Lord Dawson that there was no department of medicine in which team work was likely to be more valuable than in the investigation of oral sepsis.

### SURGICAL TREATMENT OF RENAL CALCULI.

The Section of Surgery of the Royal Society of Medicine on January 3rd held a discussion on renal calculi, more especially their surgical treatment. The President, Mr. JAMES BERRY, announced that Sir J. Thomson Walker was unable to take part owing to absence from London.

Mr. W. SAMPSON HANDLEY opened with a few remarks on the pathogenesis of renal calculi. From personal observation in two cases he was convinced that the first step in the formation of a calculus might be the appearance of a cyst in the cortical substance. In this cyst a calculus was deposited later, and came to light when the cyst ultimately ruptured into a calyx. He would not suggest that this mode of formation was frequent, but unless it was recognized the chances of overlooking a stone during operation were increased. He gave particulars of the cases he had seen which bore on this point, and showed a specimen (No. 3618) from the museum of the Royal College of Surgeons of a kidney which, when split open, was found to contain a calculus wedged in the pelvis, while in the middle convexity of the kidney was an empty cystic cavity, ovoid in form, measuring 1 in. by 1/2 in. in section,



and communicating by a narrow oval opening with the dilated calyx which led down to the blocked pelvis. He believed that this specimen represented a late stage in the history of cystic calculus.

He then addressed himself to a review of the methods of removing stone from the kidney. He regarded the operation of nephrolithotomy or the splitting of the kidney as an unscientific procedure, to be reserved for kidneys with a very large calculus, and for cases in which, owing to a short pedicle or a deep loin, the necessary exposure for an incision into the renal pelvis could not be effected. In the last ten years he had only twice been driven by necessity to do a nephrolithotomy in preference to pyelolithotomy. Sir J. Thomson Walker, in his *Genito-Urinary Surgery*, adopted too detached an attitude in discussing the rival claims of nephrolithotomy and pyelolithotomy, and yielded too much territory to the former operation; but he made no doubt of his real preference for the second operation when he recommended it for removal of a stone from a solitary kidney. There was something to be said for a restricted nephrolithotomy. Hartmann of Paris had insisted that if upon exposure of the kidney a stone could be plainly felt in its substance and near to its surface, and the radiograph had shown the stone to be single, it was best to cut down upon it through the renal substance; the French surgeon declared that a small incision only was necessary, little damage to the kidney substance was done, and the operation had the merit of directness and simplicity. When a stone or stones could not be palpated externally some surgeons recommended that the pelvis should be reached by two incisions, one in the upper and one in the lower third of the kidney, opening the uppermost and the lowest calyx. The speaker did not believe, however, that free access to the pelvis could be obtained in this way, and the same objections applied to unipolar nephrolithotomy. In his belief the kidney should be explored by way of the renal pelvis directly. The cavity of the pelvis occupied to the kidney the relation of a manhole to a drainage system, and like the manhole could be opened and closed easily without injury to the rest of the system. He read Thomson Walker's description of the technique for pyelolithotomy. Some surgeons, especially Hartmann, maintained that it was unnecessary to suture the incised pelvis, and Mayo also was said to have abandoned suturing. The insertion of a layer of sutures in the pelvis was certainly tedious, and increased the strain of the operation on the patient's vital powers. Nevertheless the firm, immediate, and accurate closure of the pelvis after incision was an end desirable in itself if it could be done easily and simply.

Mr. Handley then described a method of "subcapsular pyelolithotomy" evolved by him:

The kidney, having been exposed by a lumbar incision, is brought up to the surface intact in its capsule. An incision about 3 in. long, and following the long axis of the posterior surface of the kidney, is made through the fibrous capsule. Two pairs of forceps are clipped upon the posterior edge of the incision in the capsule. While these are situated a pair of dissecting forceps is insinuated beneath the capsule in the direction of the pelvis until an entrance to the hilum of the kidney is reached. Here the capsule, or one layer of it, leaves the kidney and passes on to the posterior surface of the pelvis. The forceps or dissector enlarges the pocket formed beneath the capsule until, at its bottom, the line of entrance of the pelvis into the substance of the kidney is reached. A knife is now taken, and with its point the posterior surface of the pelvis is cautiously incised at the bottom of the capsular pocket in the long axis of the kidney. The forceps, or if necessary the finger, can now be introduced into the pelvis, the stones present in it removed, and the opened recesses explored. When the opening in the pelvis has served its purpose it can be completely and rapidly closed by three stitches uniting the edges of the original incision in the capsule on the posterior surface of the kidney.

He had performed this operation in nine unilateral cases of renal calculus and in two bilateral cases. In all of them the calculi were small and lay in the pelvis or in the calyces, from which they could be extracted by way of the pelvis. In none of the cases did any complications arise. In dealing with a compound branched pelvis, instead of opening the main pelvis one might possibly open the two branches, and so be confronted with two cavities instead of one, which would add to the difficulty of the operation; but his subcapsular method had the advantage that the flap, which was common to both cavities, would of itself reconstitute the pelvis when placed in position. He also emphasized the value of digital examination. For certain purposes in surgery the gloved finger, gently used, was not merely the safest but the only instrument to supply the necessary information.

Mr. FRANK KIDD was glad that Mr. Handley had emphasized the danger attending the splitting of the kidney—a procedure

which should hardly ever be needed. When it was done it should only be after the blood vessels had been controlled temporarily. Most urinary surgeons nowadays had adopted the method of using a finger in the pelvis and a finger on the surface of the kidney, in preference to splitting the kidney. Great help could be afforded by exploration with the finger. The danger of secondary haemorrhage after the splitting was very considerable. Often the patient did not bleed so much at the time, but when the catgut ligatures separated about the tenth day very severe secondary haemorrhage might occur. He thought Mr. Handley's subcapsular method, if taken up at all generally, might lead to accidents. Mr. Handley had carried it out in only a few cases; if done in a hundred cases he believed it would be found that in perhaps 5 or 10 per cent. serious haemorrhage occurred from an artery which came down from the top of the kidney posteriorly, and often ran very low. He himself believed that the longitudinal incision in the pelvis, as described by Thomson Walker, was the safer for routine purposes. The danger of fistula after pyelolithotomy he believed to be entirely misconceived. Fistula followed only when some of the stone was not removed. A little bit of the stone might be broken off and get into the ureter, blocking it and causing fistula. Urinary surgeons had tried at various times to apply x rays to the operating table. He had been lately in America, watching the Mayos, who had at last got an x-ray apparatus which worked satisfactorily (though not without occasional danger) on the operating table, so that fluoroscopic examination of the kidney was possible at the time of operation. It was rather disconcerting to find how often the x rays showed that all the stone had not been removed. He doubted whether, without some means of combining x-ray examination with the actual operation for stone in the kidney, justice was done to the patient. For bilateral calculus he believed that both kidneys should be incised at the same operation.

Professor F. HORDAY, speaking from the veterinary point of view, said that renal calculus was common in animals, and as some animals were herbivorous only, some carnivorous only, and some omnivorous, there was scope for interesting observation. Renal calculi were found in the horse, the dog, the cow, the sheep, and the pig. In the horse this condition was quite common; sometimes the involvement was such that nothing was left of one kidney but the mere capsule. As long as one kidney was functioning it was remarkable how long the animal could go without showing any outward indications. The same held true of the dog. In the sheep, pig, and cow the calculi were observed less commonly, but this was probably because these animals did not live the long lives of the other two. The condition was met with chiefly in old or at least in adult animals, though not exclusively, for he had had a case of calculus (in the urethra) in a puppy four weeks old. In a large canine practice in London he saw twenty or thirty cases every year. If an operation was done, the procedure generally was to remove the diseased organ. Radiography had been of the greatest service, and with an animal suffering pain in the region of the kidneys, even though it had not haematuria or any other indication of stone, it was the common practice to obtain a radiograph.

Mr. J. SWIFT JOLY said that he endeavoured in each case to select the operation which would do least damage to the kidney. No rigid rule could be proclaimed as to the relative merits of nephrolithotomy and pyelolithotomy. Much depended, to begin with, upon the patient's physique. In a fat person, with a thick abdominal wall, the kidney perhaps could not be got sufficiently out of the loin to do pyelolithotomy with safety. Again, the relative size of the stone to the renal pelvis was a factor to be taken into account. If a stone was definitely in the renal pelvis not extending up into the calyces a pyelolithotomy could almost always be done, provided the kidney could be brought out of the loin. There was no real limit to the size of the true pelvic stone which could be got out through the pelvis. Recently he removed two stones from a kidney pelvis through a pelvic incision, the larger stone being about the size of a hen's egg and the smaller about the size of a cherry; but the patient had a dilated pelvis, and it was easy to get them out. But when, owing to branching, the stone involved calyx as well as pelvis it was not always possible to get it out through the pelvis, and to attempt that operation was to do more damage to the kidney than by making a clean cut through the kidney itself. When there were stones both in the pelvis and in the calyces the line of conduct would be governed chiefly by the amount of dilatation of the pelvic-calyx system. If the



kidney was dilated and the pelvis and all the calyces dilated, these stones could be got out through the pelvis quite comfortably; but if, as often happened, though the pelvis was dilated, there was a very narrow opening between pelvis and dilated calyces, he thought it wrong to try to enlarge that opening either by dilatation or by cutting through the pelvis. It was much safer to cut through the cortex in such cases, and while taking the pelvic stone out through the renal pelvis to take the smaller stones out by way of the cortex. He went on to consider the methods of exploring the kidney in those uncertain cases in which the  $\pi$  rays showed a small shadow, whose exact position was uncertain, and nothing was very palpable. Generally the  $\pi$  rays gave a good idea of the locality of the stone, and this greatly simplified the operative technique. But if quite in the dark as to where the stone was the rule he followed was first to look at the renal pelvis. With a big pelvis, extending well out from the kidney, he opened it and passed his little finger in and explored the calyces one by one. If he could find nothing there he made an incision over the lower third of the kidney and cut down on the lower calyx. One was given a much more direct line of action from the cortex downwards than from the pelvis upwards. This plan of exploration could be continued, but it was rarely necessary nowadays, for usually the surgeon was able to have a map of the position before he started.

Mr. H. W. WILSON said that if the kidney cortex was opened the danger of secondary haemorrhage was always to be feared. Yet the surgeon could not deal effectively in all cases by working through the pelvis, and he was bound to leave stones behind if this were attempted: but the secondary haemorrhage which followed the other course was very serious, and he desired to know from his colleagues whether they were aware of any means of averting it.

Mr. R. H. J. SWAN agreed with all the speakers that a perfectly open mind must be kept as to the kind of operation to be performed. In the great majority of cases, when the surgeon had got the kidney thoroughly exposed, the line of procedure would be perfectly obvious. Secondary haemorrhages after nephrolithotomy were very serious, and he had had to do a nephrectomy to save the patient's life. At the same time he was convinced that not every stone could be removed through the pelvis. Each case must be studied separately. He added that he had never seen a urinary fistula occurring after a pyelolithotomy.

Mr. J. E. ADAMS had found a transverse incision extremely satisfactory. He imagined that Mr. Handley had adopted the incision he described because he thought it might facilitate the healing of the wound in the pelvis of the kidney, and therefore obviate the risk of fistula. He believed the transverse incision would answer to these requirements. If the stone was large the transverse incision would necessarily be large.

Mr. SAMPSON HANDLEY, in reply, believed that members who tried the subcapsular method would discover its practical advantages. His own belief was that the posterior branch of the renal artery was pushed out of the way with the capsule; he had had no trouble from that source. In his operation the flap of the capsule guided the operator down to the line of the hilum so that he could see where the incision should be made. He could not help feeling that sometimes the severity of the double operation for bilateral calculus would be more than the patient could be expected to stand; it should be reserved for the earlier cases. The dangers of secondary haemorrhage had been alluded to; he had found vaseline gauze useful in one case to stop persistent bleeding from the kidney substance, and this might sometimes prove more efficient than sutures. He had never tried the transverse incision, which was likely to cause increased haemorrhage.

### CLEAN MILK.

At a meeting of the Liverpool Medical Institution, held on December 21st, 1922, with Mr. C. THURSTAN HOLLAND in the chair, Dr. DOBBIN CRAWFORD read a paper on the subject of clean milk. She said that America was the pioneer of the clean milk movement, but it was in England that the National Clean Milk Society was founded in 1915 with the following objects: (a) To examine the condition of milk as received by the consumer. (b) To furnish a standard of clean milk. (c) To create a demand for clean milk. It was found in 1915 that the average sample of London milk contained more than 3,000,000 bacteria per cubic centimetre—rather in

excess of the number of bacteria present in the city sewage! Tubercle bacilli were present in 10 per cent. of the samples and over 99 per cent. contained *Bacillus coli*—absolute evidence of contamination with manure. A standard of clean milk was furnished in the licences issued by the Ministry of Health in 1921 for the production of certified Grade A milk, which must contain no tubercle bacillus, no *Bacillus coli*, and not more than 30,000 bacteria per cubic centimetre at any time before reaching the consumer. It must be delivered within two days after the day of production. Every animal in the herd must be examined by a veterinary surgeon and give a negative reaction to the tuberculin test at intervals of three months.

Dr. Crawford quoted the following statistics of Liverpool milk from the report of the Public Health Department:

Of 943 samples examined in 1921, from 9 to 15.6 per cent. contained tubercle bacilli. The veterinary inspectors in 1921 found 31 cows with tuberculosis of the udder supplying milk to the city. From 80 to 90 per cent. of the samples tested contained *Bacillus coli*, and in that year diarrhoea and enteritis killed 683 infants in Liverpool.

The practical effect of grading milk was to raise rapidly the standard of the whole milk supply; it tended also to increase the consumption of milk. The cost of certified milk was 7½d. a pint, just double that of ordinary milk. The need of the moment was the education of the consumers, so as to increase the demand for clean milk. Dr. Crawford showed lantern slides to illustrate clean methods of production and their effect. These were taken at the Storms Farm Dairy, Keswick, from which she had received certified milk during the past year. The reports of this milk by the Ministry of Health showed that when seventeen to eighteen hours old it contained no *Bacillus coli*, and an average of only 242 bacteria per cubic centimetre. She had persuaded a dairyman in Wallasey to retail this milk, but, owing to lack of demand, it was not procurable in Liverpool.

### Dermatitis in Bakers.

Dr. OSCAR DE JONG read a note on the etiology of dermatitis in bakers. Dr. de Jong said that bakers' dermatitis occurred in bakers employed in bakeries where the hands are used in mixing, not in bakeries where machines are used. Investigations showed that the flour used was not responsible, as no cases of dermatitis were found in men employed in flour mills who were constantly handling flour. Similarly, no cases were found in men handling or preparing yeast. The condition was due to immersing hands and arms in the salt solution added to the flour, which was about 3.6 per cent. in strength. Owing to the temperature of the bakehouse and the ovens the salt crystallized on the arms of the workman, and the process of kneading worked the crystals into the skin, setting up a dermatitis in susceptible individuals. Cure was obtained by rest from work and local treatment. Dr. de Jong concluded his note by suggesting prophylaxis by the use of a spray of fresh water after mixing the salt solution and at periods during kneading. The condition relapsed as a rule on return to work.

Dr. FRANK H. BARENDT alluded to the terminology of this affection, and showed that it was well known in bygone ages. He emphasized the fact that the proportion of those suffering from bakers' itch was but slight. In spite of the number of possible excitants and a too vigorous use of soap and water in ablution that should not be overlooked, one was compelled to admit the presence of idiosyncrasy. Dr. Barendt considered that nevertheless all the necessary preventive measures to which Dr. de Jong had drawn attention should be taken, and every case should be treated *sui generis*.

### "Acute Abdomen" in the Child.

Mr. W. A. THOMPSON read a paper on the acute abdomen in the child, based on 100 consecutive cases. These included 53 cases of acute appendicitis, 15 of which had general peritonitis; of these, 5 died. There were 27 intussusceptions, the great majority occurring between the fourth and eighth months; 21 recovered, 6 died, three following resection and lateral anastomosis, one of which lived nineteen days, and one case, moribund on admission, died soon after reduction had been performed. The reduction should be intra-abdominal. Many cases were associated with enlarged ileo-caecal glands, some of which were connected by bands to the gut immediately in front of the original apex of the intussusception. Mr. Thompson explained how these might cause an intussusception, and how a much enlarged gland caused a recurrent



incipient intussusception. The majority of cases commenced as ileo-ileal—66 per cent. Of 8 cases of acute intestinal obstruction operated on 5 recovered; 3 cases of strangulated hernia had been met with in over 1,000 of Mr. Thompson's cases; they all recovered.

### MILITARY SERVICE AND HYGIENE.

A MEETING of the Naval, Military, and Air Force Hygienic Group of the Society of Medical Officers of Health was held on December 1st, 1922, when the President, Major-General Sir WILLIAM MACPHERSON, K.C.M.G., delivered his presidential address on "The influence of military service on hygiene." By historical outline he showed how some indication could be gathered of the influence that military service had brought to bear on questions of health preservation and prevention of disease. Maintenance of physical fitness, physical training, hygiene of the march, relationship between food and energy, hygiene of clothing, camp sanitation and all it implies (such as water supply, camp sites, hospital accommodation, barrack rooms lighting and ventilation, etc.), prevention of specific diseases, and education of the individual in sanitary habits, were all dealt with in turn. The President referred to the workers of ancient times, such as the numbering of the men by Moses "from 20 years old and upwards, all that were able to go forth to war"; to Vegetius in the fourth century A.D., who laid stress on the graduated training of men; to the sports and exercises of the ancient Greeks; and to the care of bodies as advised by Alexander the Great for obtaining and preserving physical fitness. Mention was then made of the more recent pioneers, such as Sir John Pringle, Robert Jackson, Edmund Parkes, and Lieut.-Colonel Garrison of the U.S. army. Lastly, Sir William Macpherson's references to the preventive investigations of David Bruce and Horrocks in regard to Mediterranean fever, of Almroth Wright and Leishman in regard to inoculation against enteric fever, of Manson and Ronald Ross in regard to malaria, and of the workers on cerebro-spinal fever in the recent war, brought a most instructive address to a close.

Lieut.-Colonel H. R. KIRKWOOD, who occupied the chair, expressed the regret of those members who were unable to be present, and the meeting concluded with a cordial vote of thanks to the President, proposed by Surgeon Rear-Admiral Sir PERCY BASSETT-SMITH, and seconded by Major-General W. W. O. BEVERIDGE.

### BLUE SCLEROTICS AND MULTIPLE FRACTURES.

A MEETING of the Midland Medical Society was held in the Birmingham Medical Institute on December 20th, 1922, when the President, Dr. PUNSLOW, took the chair, and about forty members were present.

Mr. A. W. NUTHALL showed the cases of a father and two daughters, who exhibited the combination of blue sclerotics and multiple fractures. Mr. Nuthall shortly reviewed the literature of this interesting condition. The father had over thirty fractures, and both daughters had fractured several bones. These cases were discussed by Dr. A. P. THOMSON, who knew of four families exhibiting the same symptoms. He stated that in these cases the fractures were more frequent up to the age of 10 years, and after that age became much less frequent.

#### Paroxysmal Tachycardia.

Dr. EMANUEL showed a man of 52 who for some years had suffered from attacks of a rare form of paroxysmal tachycardia.

In the attacks, which lasted from two or three hours to three or four days, the pulse rate was slow—34 to the minute—and consisted of runs of 2, 3, 4, or 5 regularly spaced beats at a rate of 82. These runs were separated by pauses of three to seven seconds in which no beats were felt at the wrist, and no heart sounds were audible over the præcordium. The electrocardiogram showed that the silent pulse periods corresponded to paroxysms of ventricular extra-systoles arising in the right ventricle at the rate of 173 to the minute, as many as 17 being counted in a single paroxysm. In the paroxysm the ventricle drove the auricle with a reversed heart-block of 2 to 1 and sometimes 3 to 1. During the intervals between the attacks the pulse was regular, at a rate of 60 to 66 to the minute. Dr. Emanuel said that Dr. Hart described a similar case in *Heart* (1912-13, vol. iv, p. 128). Those cases were clinical counterparts of the paroxysmal tachycardia experimentally produced by Sir Thomas Lewis by ligation of the right coronary artery, described in *Heart* (1909-10, vol. i, p. 98).

Dr. Emanuel's case was discussed by Dr. BUNTING, Dr. WILKINSON, and Dr. MELSON.

### Pasteurization of the Milk Supply.

Dr. JOHN ROBERTSON, medical officer of health for Birmingham, read a paper entitled "The pasteurization of the milk supply in Birmingham," and emphasized the following points. About 75 per cent. of the milk supply in Birmingham was at present pasteurized or sterilized in order to prolong the life of the milk. Several firms sterilized milk in bottles. Milk should be efficiently pasteurized, then cooled to a temperature of 40° F. and bottled in a bottle which had been sterilized. Such milk was safer than any other variety of milk, pathogenic organisms of tubercle, enteric fever, scarlet fever, sepsis, etc., being killed. No contamination could take place until after the bottle had been opened in the consumer's house. Probably less damage to vitamins was caused than by nursery heating. The keeping properties were also better. Because the milk was clean and of good quality and safe more milk was used. Dr. Robertson's paper was discussed by Dr. MELSON and Dr. ROBB.

### UNSATISFACTORY APPENDICECTOMY.

At the meeting of the Section of Surgery of the Royal Academy of Medicine in Ireland, held on December 15th, 1922, with the President, Sir W. DE C. WHEELER, in the chair, Mr. W. DOOLIN, in a paper on "Some unsatisfactory appendicectomies," said that the so-called appendicular dyspepsias cover a varied group of living pathological changes, whose differential diagnosis is not always easy. For many of these patients appendicectomy, whilst technically easy of accomplishment, failed to relieve symptoms; further, many appendices were removed without sufficient pathological justification for the operation. In the out-patient department at St. Vincent's Hospital, of 29 patients who had undergone appendicectomy, either there or elsewhere, for the relief of "chronic appendicitis," 20 had been completely relieved of their symptoms by the operation, but in 9 cases symptoms persisted after operation. The majority of the unsatisfactory results were in females. Eight of these were admitted to hospital for further study, and a second operation showed the continuation of trouble to be due in 3 cases to caecum mobile, in 3 to tubercle, and in 2 to pericolicitis. Detailed notes of the cases were given. A common pre-operative syndrome was to be found in

these patients, consisting of . . . . . stant pains situated below or to the right of the umbilicus. Tenderness over McBurney's point was inconstant; in many women painful flatulence was the dominant complaint. The whole symptom complex was an unsatisfactory one upon which to recommend appendicectomy offhand. Other observers, notably Gibson of New York and Enriquet of Paris, had reported anything from 25 to 40 per cent. of bad end-results following appendicectomy in such cases.

Four different conditions might be found responsible for such symptoms: (1) Chronic appendicitis, secondary to an acute attack, which was relieved without operation; (2) appendicitis chronic from the start, and unassociated with other intra-abdominal pathological change; (3) chronic appendicular pathology accompanying pathological changes in stomach, duodenum, gall bladder, etc.; (4) lesions of ileum, caecum, and colon, such as Lane's kink, mobile caecum, caecocoloptosis, pericolicitis. It was not justifiable to recommend operation on the case history and clinical examination alone in such cases; before operating on an alleged "chronic appendix" a complete abdominal diagnosis should be made, based on combined clinical, x-ray, and haematological findings, as recommended by the Paris school of surgery. In the author's opinion, the McBurney "gridiron" incision was responsible for many incomplete operations, and should not be taught to students. A large incision, properly placed and cared for, would heal just as quickly, and throw more light on the living pathology under the operator's hand.

The President remarked that there was very little to be learnt from operative success, but a great deal to be learnt by mistakes. He disliked the term "appendix dyspepsia." Mr. Doolin had mentioned exploratory laparotomy. The President said that it was his custom to exhaust all possible aids to diagnosis before operating, and to make at least a provisional diagnosis before opening the abdomen.

Mr. CHANCE said that, in view of the accepted fact that the diagnosis of chronic appendicitis was not to be made with certainty from the clinical findings, the history of the case, or the x-ray findings, an exploratory laparotomy was not, in his opinion, infrequently necessary. Dr. CROFTON was



not surprised that so many failures occurred, as in a great many cases no thought was taken of the infecting organism.

Mr. McCONNELL considered that the end-results in cases of this sort were not sufficiently studied. If an operation was not indicated, it would do no good; in fact, it would probably do harm. If the diagnosis of a case was not known before operation, he was of opinion that it would not be known after operation. At operation it was sometimes difficult to know whether the appendix had given rise to the symptoms or not. It was not an abnormal appendix unless some definite lesion was found when the abdomen was opened. He did not believe that x rays were of any use in detecting chronic appendicitis. In cases where a distended caecum was found, it was of great importance, and should not be ignored. He thought that Mr. Doolin's suggestion of examining patients under a screen, instead of by isolated x-ray plates, was very important, as in this way a much better idea of the case was obtained. There should be much more definite co-operation between the physician, the surgeon, and the radiologist.

Dr. SPEARES had had a number of such patients x rayed, but had not got much help in this way, except in one case, in which but for the radiologist a serious blunder would have been made. He agreed that there should be more co-operation between the physician and the surgeon; the physician had usually kept the patient under observation for some time, and so had the advantage over the surgeon in making a diagnosis.

## Rebicus.

### WAR BLINDNESS.

THE character of the blindness caused during the war differs considerably from that found amongst the civilian population owing to the high incidence of injury. Sir ARNOLD LAWSON has done good service in collecting details of the cases that passed under his hands at St. Dunstan's: the little book on *War Blindness*<sup>1</sup> which he has published gives a well balanced and interesting account of his observations.

The grand total of cases of persons blinded directly or indirectly as the result of the war, estimated eighteen months after the armistice, was 1,833 men of all ranks. The comparison between the relative number of cases of disease and wound blindness shows that disease was responsible for a little more than 26 per cent. of the total number, a proportion which is appalling enough, and for which syphilis was very largely responsible. Besides the totally blind there were a number of cases of men with indifferent but useful sight who, as the fame of St. Dunstan's spread abroad, were anxious to press their claims to twelve months' hospitality without charge, and lastly a number of pure malingers who scented pension and St. Dunstan's and whose cunning in dissembling engaged all the skill of the detective abilities of the institutional authorities.

A study of traumatic cases brings out a few general facts. Of first interest is the notable absence of sympathetic inflammation. The author did not see a single case of sympathetic disease occurring in the other eye after the smashing of one eye by shell splinters or bullet wound. A few cases were seen after some operative treatment had been carried out on one eye. He suggests that the missiles, shell or bullet, are absolutely aseptic when striking an object; it was very interesting to note how quickly and cleanly eyes would heal even after wounds of the most destructive character. At first his inclination was to remove blind stumps, but the refusal of some to submit to operation led to the observation that there was no untoward sequel, so that later cases were left untouched.

An interesting observation was that the number of cases of rupture of the choroid was large. Ruptures were often multiple, and varied in shape and position, though only three cases of solitary rupture to the inner side of the disc were seen. It would seem that there may be some element of the choroid especially liable to split, for a large number of cases showed no injury to the eye beyond the rupture, accompanied by neighbouring concussion changes and other choroidal atrophy. The direction of the blow disturbing the eye seemed immaterial to the result. There were a large number of cases where both eyes were destroyed by through-and-through penetration of the bullet. Usually the bullet took the

horizontal line of the temples. Occasionally one eye would suffer less complete damage, or part of the nerve might escape. In this way 17 per cent. of the traumatic cases were accounted for, and this suggests the desirability of improvement in the steel helmet. A brim a little broader and more obliquely set would add little to the weight and would improve the protection. Fractures of the skull accounted for many cases. Those in the region of the occiput produced a variety of field disturbances. Rarely the central field might be undamaged with a vision of 6/5, but the narrowness of the field made this acuity useless; a good field and little or no macular is infinitely more useful.

Blindness from disease was in very many cases the accentuation of existing defects. This leads the author to observe that it is not advisable to accept for active service any man whose defective sight in both eyes is due to old inflammatory disease of the uveal tract. No matter how quiet the eyes may be, or for how long a time disease has been stationary, old inflammatory mischief is always apt to recrudesce under conditions inimical to general health. If a careful ophthalmoscopic examination of all suspicious cases had been made a large number of cases of active congenital disease, such as retinitis pigmentosa or other forms of fundus disease, would have been refused, and the State would have been saved disability pensions amounting at the present time to many thousands of pounds a year. The appalling share of the total number of cases of blindness due to disease which must be allotted to syphilis will, it is hoped, have some little effect in stirring public opinion to force more attention to the subject.

### TYPHUS FEVER.

In their book on *Typhus Fever, with Special Reference to the Russian Epidemics*,<sup>2</sup> Captain J. M. MITCHELL, Dr. I. N. ASHESHOV, and Mr. G. P. N. RICHARDSON, who were all formerly attached to the British Mission to Denikin's army in South Russia, give an account of the main features of typhus fever based on their experience of the disease in that country in 1919-20. The first chapter is devoted to a consideration of the cause and prevention of typhus, including a description of the epidemic following the retreat of Denikin's army. In the second chapter, which contains an account of the clinical course of the disease and of its most frequent complications, it is stated that complications may be considered to some extent as an index of the efficiency of the nursing; with capable nurses under favourable conditions the rate of complications should be low, while with an inefficient nursing staff under unfavourable conditions, as occurred in many of the Russian temporary hospitals, the rate of complications is high. In the third chapter, which deals with the general treatment of typhus, it is said that if delousing is efficiently done cases of typhus may be treated in the general medical wards without fresh cases arising.

The last two chapters, which are written by Dr. Asheshov, are concerned with specific treatment and preventive inoculation respectively. Specific treatment is considered under the three headings of chemotherapy, including salvarsan, mercury, etc., specific serotherapy, and protein therapy. The results of chemotherapy, it is shown, are negative. Salvarsan and its derivatives are not only useless but dangerous, and mercuric cyanide and calomel, which were once regarded as specific, are now abandoned as ineffective. The use of the serum of typhus convalescents was also disappointing; although a general improvement in the patient's condition ensued, no great influence on the temperature and no marked shortening of the duration of the disease was observed. Dr. Asheshov attaches most value to the use of foreign proteins, including bacterial proteins, milk, or serum. As the presence of toxins cannot be excluded in the case of material derived from bacteria—and it is impossible to be sure of sterility in the case of milk owing to the frequent presence of spore-bearing organisms—horse serum in the form of normal horse serum, diphtheria or tetanus antitoxin, or antistreptococcal serum should be preferred. After a desensitizing dose of 0.5 to 5 c.c.m., increasing doses are given, "20 c.c.m., 40 c.c.m., and even up to 80 c.c.m., every day or every other day." Although the treatment does not shorten the disease, it has a distinctly stimulating effect on the circulatory and nervous systems. Cases so treated had rarely, if ever, any complications or sequelae. Preventive inoculation was performed by

<sup>1</sup> *War Blindness at St. Dunstan's*. By Sir Arnold Lawson, K.B.E., M.D., F.R.C.S. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1922. (Demy 8vo, pp. 148. 7s. 6d. net.)

<sup>2</sup> *Typhus Fever, with Special Reference to the Russian Epidemics*. By J. M. Mitchell, O.B.E., M.B., Ch.B., I. N. Asheshov, M.B., Ch.B., and G. P. N. Richardson, M.B., B.Ch. London: Baillière, Tindall, and Cox. 1922. (Demy 8vo, pp. 48. 3s. 6d. net.)



subcutaneous or intramuscular injection of sterile defibrinated blood taken from a typhus patient free from any other disease (especially tuberculosis and syphilis) between the fourth and eighth days of illness. The protection conferred by this method was shown by the fact that of 195 members of the British Mission who had been completely inoculated only one developed the disease, whereas among the uninoculated the incidence was from 9 to 10 per cent.

The book contains much interesting information which is of special value as being the outcome of first-hand experience of the disease in circumstances, it is true, particularly unfavourable for elaborate clinical or pathological observations. We have noted, however, two omissions. In the first place, we should have expected at least a passing reference to the recent investigations on the pathology of the disease, which have clearly proved that typhus is a systemic disease of the small vessels. Secondly, although Plotz's bacillus is mentioned in two places, no allusion is made to *Rickettsia prowazekii*, which has greater claims than any other organism hitherto described to be regarded as the causal agent of typhus (vide BRITISH MEDICAL JOURNAL, June 17th, 1922, p. 956).

#### A TEXTBOOK OF ANAESTHETICS.

THE appearance of a new work by a well-known writer on subjects connected with the anaesthetic art, larger in scope and more complete in detail than anything he has hitherto published, cannot fail to elicit, among those interested in the subject, a certain pleasurable expectation, not unmingled with curiosity as to how his efforts would compare with those of others whose books have already become established as textbooks of anaesthesia. Dr. BLONFIELD, in his textbook of *Anaesthetics in Practice and Theory*,<sup>1</sup> modestly eschewing a preface, either of his own or other person's writing, plunges direct into chapter I, which he entitles "Introductory and Historical"; in it he defines the purpose of his labours, which is "to succeed at least in helping those who are beginning to practise this branch of medicine, and to interest those who have already gained experience."

After careful perusal of this well printed, well illustrated, and eminently readable volume, it may be said at once without reserve that the author has succeeded in the task which he has set himself. The book is free from all useless padding, but this result has not been achieved at the expense of adequate description either of methods, apparatus, or of choice of anaesthetics. The inclusion of a number of cases illustrative of the particular points the author wishes to bring out increases the general interest of the text as well as impressing facts on the mind of the reader. The physiology of anaesthesia with regard to the various anaesthetic agents employed is adequately, and at the same time interestingly, dealt with; the important work on these points being noticed and briefly commented upon. The practical aspects of the subject are clearly set out, and the choice of anaesthetics, of apparatus, and of methods of administration are explained lucidly, and without personal bias. In fact, it would not be easy to hazard a guess as to which particular piece of apparatus or which method of administration of any one anaesthetic is the favourite of the author, and this is perhaps as well in a textbook which aims at teaching not only the student but the practitioner. The advantages and disadvantages of each method are set forth clearly, and a good explanation given of each type of apparatus in common use. Nor are the more complicated methods of administration neglected, though in this case the reader is referred for details to the original papers and monographs. Chapters are included on the preliminary use of narcotic and other drugs, on the posture of the patient and its bearing on anaesthesia, on undesirable conditions of the patient during anaesthesia—their causation and treatment, on accidents and complications that may follow anaesthesia, on unusual uses of anaesthesia, on local analgesia, and on spinal and sacral analgesia. In his chapter on the fatalities of anaesthesia the author makes a well founded protest against the present custom of some coroners' courts, by which inquests are held only on those dying on the operating table, whereas in the case of those dying later in bed as the result both of operation and anaesthetic no such inquest is held. The result is to make the public believe that all deaths on which an inquest is held are due to the anaesthetic, whereas it is quite possible that the anaesthetic was not even the principal cause of the fatality.

<sup>1</sup> *Anaesthetics in Practice and Theory*. A Textbook for Practitioners and Students. By J. Blomfield, O.B.E., M.D. Cantab. London: William Heinemann (Medical Books), Ltd. 1922. (Roy. 8vo, pp. xii + 424; 48 figures. 25s. net.)

Altogether this is a book that can be confidently recommended to the student, and to the practitioner who is not in search of an encyclopaedia of anaesthesia. We may suggest that in a future edition reference should be made to Phillips's modification of Hewitt's air-way, which is a distinct improvement on the original, and to the apparatus devised by Loosely for the administration of ethyl chloride, which is very satisfactory for use in hospitals. Induction is rapid and uniform, and the patient is able to breathe air while getting used to the feel of the facepiece; this in children tends to diminish struggling prior to loss of consciousness; the instrument has the further merit that it is readily cleansed.

#### POST-OPERATION TREATMENT.

MM. ROCHARD, surgeon to the Paris hospitals, and W. M. STERN, another surgeon trained in Paris, have written a book on the general care and nursing of patients after operations, and on medical and surgical treatment of the complications which may occur.<sup>2</sup> It is directed to meet the wants of a house-surgeon at a general hospital, where the engagements of the surgeon prevent him from afterwards attending on the patients upon whom he has operated. Instruction and the examination upon what is taught tends, it is said, to become more general and theoretical, because those actually practising surgery take less part in teaching. Their attention being directed to pathology and diagnosis, students learn little of what happens after the operations, for their attendance in the wards is interrupted by the increasing number of classes. Thus a nurse has far more opportunities of learning about post-operative treatment and complications. Incidentally the book is generally of interest because it supplies indirectly information as to the practice of surgery in a Parisian general hospital. The illustrations are remarkable because there are a number of clever sketches, with a ward orderly to represent the patient; the resident surgeon wears a skull-cap on the top of his head, and has a beard; masks and gloves seem out of fashion. The very young nurses have a fringe of hair protruding under their kerchiefs. Some of the drawings provoke a smile—for example, a nurse and orderly washing out the stomach, a man sitting on the side of his bed stark naked, feeding himself through a gastrostomy tube, and the vigorous methods of compressing arteries by the surgeon. Under general headings we find notes on the treatment of the complications following inhalation and spinal anaesthesia, artificial respiration being described under spinal anaesthesia by novocain. There follows a full account of the treatment of sepsis and haemorrhage. Under special headings, in which there are of necessity repetitions, we note that what is included mainly relates to the surgery practised on acute and urgent cases in a general hospital. The after-treatment of cases in special hospitals for eye cases and for children is not included; thus we miss accounts of the after-treatment following removal of tonsils and adenoids, of tracheotomy for diphtheria, and of the orthopaedic treatment of deformities. On the other hand, there is a full account of the after-treatment of gynaecological cases.

#### JUVENILE DELINQUENCY.

THOUGH there is now a tendency to regard the juvenile offender against the law as a patient to be treated rather than a criminal to be punished, the social mechanism for dealing with these cases is still very inadequate. As a contribution to this problem Dr. H. H. GODDARD's small volume on *Juvenile Delinquency*<sup>3</sup> will be found of practical value, because it contains an actual record of work accomplished and difficulties overcome. One of the great difficulties in coping with what is a very large social problem is to know the kind of organization necessary to deal with it at all adequately. The author shows that an attempt has been made by the legislature of the State of Ohio to deal seriously with the problem: a bureau of juvenile research has been established to treat cases appearing in the juvenile courts on scientific lines. The necessity for some such organization can be gauged from the fact that Dr. Goddard estimates that eventually the bureau, of which he is the director, will be called upon to handle 4,000 cases a year—cases of serious delinquency the causes of which must be discovered in order to prescribe treatment.

<sup>2</sup> *Thérapeutique Post-Opératoire à l'usage des chirurgiens, praticiens et infirmiers*. By E. Rochard and W. M. Stern. Paris: G. Doin. 1923. (Demy 8vo, pp. 723; 156 figures. Fr. 30.)  
<sup>3</sup> *Juvenile Delinquency*. By Henry Herbert Goddard, Director, Ohio Bureau of Juvenile Research. London: Keegan Paul, Trench, Trübner, and Co., Ltd. 1922. (Gr. 8vo, pp. 120. 3s. 6d. net.)



Broadly speaking, the author finds the juvenile delinquent either feeble-minded or what he characterizes as "psychopathic." His views as to the second group are not particularly encouraging or hopeful. He appears to regard the cases included in it as suffering from actual mental disease; and, somewhat unconvincedly, attributes this in a large proportion of cases to the influence of congenital syphilis. The term "psychopathic child" is not satisfactory; we should imagine that it must include a number of benign cases, due to unfavourable environment, neglect, and psychogenetic factors, in which a psychotherapeutic approach would be very beneficial.

### NOTES ON BOOKS.

THE thirty-ninth annual *Year Book of the Scientific and Learned Societies of Great Britain and Ireland*<sup>6</sup> is a well arranged volume which records the work done in science, literature, and art during the past year. The information which it gives cannot easily be found elsewhere, and the increasing size and scope of the volume make it each year more useful as a work of reference. Such a volume depends greatly upon the co-operation that exists between the officials of the numerous scientific and literary societies and the publishers, and both are, on the whole, to be congratulated on the results. The contents are grouped under sections, which include science generally—that is to say, those societies occupying themselves with several different branches of science, or with science and literature jointly: astronomy, mathematics, and physics; chemistry and photography; geography, geology, and mineralogy; biology; economic science and statistics; mechanical science and architecture; agriculture and horticulture; literature, history, and music; medicine; archaeology; and some others. Twenty-four pages seem hardly an adequate share for medicine in a scientific reference volume of 374 pages, but the fault may be rather with the secretaries of medical societies than with the editors of the *Year Book*. The personnel of the Ministry of Health is detailed, and the names are given of the principal officers of the British Medical Association, with the titles of the papers read at the different Sections of the Annual Meeting. The titles of all the papers read at the Royal Society of Medicine are included, and also the titles of the publications issued by the Medical Research Council and of the scientific papers published from the Lister Institute, together with similar details of many medical societies throughout the country.

The application to psychology in recent times of what in comparison with the older procedure by way of introspection may be called the observational and experimental methods has had the effect of greatly increasing public interest, and it is a sign of the times that a publication written so completely from the popular standpoint as the *Daily Mail Year Book* (1923) should contain an article on applied psychology. Within the limited space at his disposal Mr. W. N. Shansfield has succeeded in giving the casual reader a very good idea of what is being done with regard especially to applications of science to the estimation of industrial capacity, and of the intelligence and aptitude of children; in this connexion he relates the origin of the Binet-Simon tests, designed mainly to detect the cause of backwardness in any particular case. Dr. Kimmins, speaking from his experience in London schools in an address given during the annual conference of the Education Association last week, praised the Dalton plan for discovering the unusually endowed or unusually quickly learning child and giving scope to this ability or quickness, while not forgetting that the tortoise may win the race.

Professor HALLIBURTON's book, *The Essentials of Chemical Physiology* for the use of students,<sup>7</sup> was first published in 1893. New editions have been called for every three or four years, and we have now received a copy of the eleventh. It does not differ materially from the tenth, but new exercises have been introduced dealing with the detection of enzymes, the estimation of oxygen in the blood, and on gastric acid. Opportunity has been taken to rewrite the section on coagulation of blood: in concluding this section the author admits that he finds it difficult to be dogmatic and has been content to give an outline of what to his mind is the probable explanation of the remarkable phenomenon of coagulation. The exact part played by the platelets has still to be ascertained, but he thinks it not improbable that their function, if any, will be found in their effect upon surface action.

<sup>6</sup> *The Year Book of the Scientific and Learned Societies of Great Britain and Ireland*. Thirty-ninth issue. London: C. Griffin and Co., Ltd. 1922. (Demy 8vo, pp. vi + 374. 15s.)

<sup>7</sup> *The Essentials of Chemical Physiology*. For the Use of Students. By W. D. Halliburton, M.D., LL.D., F.R.S. Eleventh edition. London and New York: Longmans, Green, and Co. 1922. (Demy 8vo, pp. xi + 313; 71 figures. 1 plate. 8s. 6d. net.)

## DANGEROUS DRUGS ACT, 1920.

### THE POSITION OF DOCTORS AND DENTISTS.

THE following memorandum, dated January 9th, has been issued by the Home Office, and will subsequently be published in pamphlet form by the Stationery Office:

#### HOME OFFICE MEMORANDUM.

1. By the Dangerous Drugs Act and the Regulations made under it certain obligations in regard to the giving of prescriptions, keeping of records, etc., devolve on medical and dental practitioners and the Home Secretary, with whose Department rests the general responsibility for the administration of the Act and Regulations, has had under consideration the best means of carrying out such inspection as may be necessary from time to time to ensure the due fulfilment of those obligations. He has come to the conclusion that such inspection would be best carried out by medical officers, and after consultation with the Minister of Health and the Scottish Board of Health, it has been arranged that as a general rule this work shall be carried out in England and Wales by medical officers of the Ministry of Health, and in Scotland by medical officers of the Scottish Board of Health.

2. It is considered that it may be convenient for doctors and dentists to have a short statement of the main provisions of the Act and Regulations in which they are specially concerned.

#### I. GENERAL PROVISIONS.

##### Substances Involved.

3. The substances to which the Dangerous Drugs Act applies are: Raw opium; and

Collectively referred to as Dangerous Drugs:—

Medicinal opium;

Cocaine and ecgonine and their salts;

Morphine and its salts;

Diamorphine (heroin) and its salts; and any preparation, admixture, extract or other substance containing one-fifth per cent. or more of morphine or one-tenth per cent. or more of cocaine, ecgonine, or diamorphine.

The percentage in the case of morphine is calculated as in respect of anhydrous morphine.

4. No person is allowed to bring into, or take out of the country any of the drugs unless he is licensed by the Home Secretary, and no person is allowed to be in possession of the drugs (subject to the exceptions named in the next paragraph) unless he is licensed or otherwise authorized for the purpose, or unless the drug has been supplied for his use by a medical practitioner or in accordance with a medical or dental prescription.

##### Preparations Exempted.

5. It should be noted that the following preparations, though they come within the Act, are specially exempted from the Regulations and may be bought and sold in this country in the same way as ordinary "poisons" under the Poisons and Pharmacy Act:

Cereoli iodoformi et morphinae, B.P.C.

Emp. opii, B.P. 1898.

Lin. opii, B.P.

Lin. opii ammon., B.P.C.

Pasta arsenicalis, B.P.C.

Pil. hydrarg. c. opio, B.P.C.

Pil. ipec. c. scilla, B.P.

Pil. plumbi c. opio, B.P.

Pil. digit. et opii co., B.P.C.

Pil. hydrarg. c. creta et opii, B.P.C.

Pulv. cretae aromat. c. opio, B.P.

Pulv. ipecac. co., B.P. (Dover's powder).

Pulv. kino. co., B.P.

Sappos. plumbi co., B.P.

Tabletæ plumbi c. opio, B.P.C.

Ung. gallae c. opio, B.P.

Ung. gallae co., B.P.C.

It should also be noted that the following preparations do not come within the Dangerous Drugs Act:

Any preparation containing less than one-fifth per cent. of morphine or one-tenth per cent. of cocaine, ecgonine, or heroin. Thus any mixture containing in each drachm not more than 11 minims of tr. opii or 13 minims of liquor morph. use hydrochlor. and 15 minims of liquor morphinae acetat. would be unaffected by any of the provisions of the Regulations.

#### Medical Practitioners and Dentists are authorized Persons.

6. Any duly qualified medical practitioner and any registered dentist is authorized by the Regulations to be in possession of and to supply dangerous drugs and (in the case of medical practitioners only) raw opium, so far as is necessary for the practice of his profession. The words (in italics) are important: a doctor or dentist may not have or use the drugs for any other purpose than that of ministering to the strictly medical, or dental, needs of his patients.

7. Subsequently throughout this Memorandum "doctor" is to be read as meaning a medical practitioner whose name is on the *Medical Register*; and "dentist" as a dental practitioner whose name is on the *Dental Register*.

8. In what follows it should be noted that Part II applies to all practising doctors and dentists, Part III to those only that dispense.



## II. REGULATIONS APPLICABLE TO ALL DOCTORS.

*Prescriptions.*

9. The following remarks only apply to prescriptions for medicines containing a dangerous drug in sufficient strength to come within the Act (see above).

10. The Home Secretary has power to prescribe an official form to be used for such prescriptions, but he has not at present done so.

11. Under the Regulations the prescription—

(a) must be in writing and be dated;

(b) must be signed with the *full name* of the prescribing doctor or dentist (the Christian names, as well as the surname, must be written in full; initials do not satisfy the Regulations);

(c) must bear the *address* of the prescribing doctor or dentist (except in the case of prescriptions issued for National Health Insurance purposes on the official form);

(d) must state the name and address of the patient (a prescription may not be given for the use of the prescriber himself);

(e) must state the total amount of the drug to be supplied on the prescription.

12. Dentists may give prescriptions for dental treatment only, and in addition to complying with the above requirements they must mark the prescription "for local dental treatment only."

13. The prescription has to be retained by the chemist by whom it is dispensed (except in the case of prescriptions issued for National Health Insurance purposes on the official form), and he is only allowed to dispense it once, unless the doctor or dentist specially directs in the prescription that it may be dispensed twice or three times (but not more than three times) at intervals which he specifies. In no case is the chemist allowed to dispense it more than three times.

14. A doctor or dentist who gives, and a chemist who accepts and dispenses, a prescription not drawn up in every particular in accordance with these Regulations commits an offence against the Act.

15. The Home Secretary desires to impress as strongly as possible on doctors and dentists the importance of their observing these requirements strictly when giving a prescription. Any irregularity on the part of the doctor or dentist may lead to delay in the patient obtaining the medicine prescribed for him, and it is extremely unfair to the chemist that he should be placed in the position of delaying an important prescription, and possibly offending the doctor or dentist, or committing a breach of the law. The Secretary of State has reason to believe that at the present time there are very numerous irregularities in giving prescriptions for the drugs, and representations have been made to him by chemists as to the difficult position in which they are placed, and, he is afraid he must add, the annoyance or resentment displayed by doctors and dentists in many cases at being asked to correct the irregularities of their prescriptions.

*Method of Obtaining Supplies of the Drugs.*

16. A doctor or dentist who requires the drugs for the purpose of his practice may obtain them from any person who has a general licence or authority under the Dangerous Drugs Act to supply the drugs. All pharmacists who are lawfully keeping open shop in accordance with the provisions of the Pharmacy Acts are so authorized (except in the rare cases where the authorization has had to be withdrawn for offences against the Regulations), and all or practically all the established firms of wholesale chemists have also obtained licences from the Home Secretary to supply the drugs. In any case of doubt a doctor or dentist can always ascertain, by inquiry from the Home Office, whether a firm is authorized to supply the drugs or not.

17. It will assist the administration of the law, and probably also save the doctor or dentist some inconvenience, if he gives all orders for the drugs in writing (except in cases of extreme emergency), and signs them with his full name and address. The chemist has to satisfy himself before selling the drugs that the purchaser is authorized by the Regulations to have them, and in cases where the doctor or dentist is not well known to him some delay in making inquiries may be avoided by a full written order, duly signed.

18. If a messenger is sent by the doctor or dentist to take delivery of the drugs, the messenger must be given an authority in writing, signed by the doctor or dentist, to receive the drugs on behalf of the doctor or dentist; a chemist is forbidden to deliver drugs to a messenger not so authorized.

19. A doctor or dentist is not allowed to be supplied with the drugs on a prescription made out by himself in his own favour.

20. Doctors and dentists are advised to keep any dangerous drugs, when not in use, under lock and key so far as possible. This is not actually required by the Regulations, but is obviously a desirable precaution.

21. A doctor or dentist who requires the drugs solely for administration to his patients by himself personally, or under his own direct personal supervision, and does not dispense them, is under no obligation to keep the records required by the Regulations as explained in Part III of this Memorandum.

\* It is proposed in the case of prescriptions issued for National Health Insurance purposes on the official form to require only the surname in full, with the initials of the Christian names.

## III. REGULATIONS APPLICABLE TO DISPENSING DOCTORS.

22. Doctors who dispense or supply medicine\* are under the obligation to keep the registers of purchases and supplies described below.

*Register of Purchases.*

23. Separate registers or separate parts of a register are to be appropriated for each of the drugs. The form in which the register has to be kept is as follows:

Date on which supply received.	Name of person, body, or firm from whom obtained.	Address of person, body, or firm from whom obtained.	Amount obtained.	Form in which obtained.

24. The correct entry in the register must be made on the day on which the drug is received or the following day; an entry must not be cancelled, obliterated, or altered—any mistake must be corrected by a footnote or marginal note giving the correct particulars, and dated.

*Register of Supplies.*

25. Similar registers or parts of a register must be kept for each drug "supplied" in the following form:

Date of supply.	Name of person to whom supplied.	Address of person to whom supplied.	Authority of person, body, or firm to be in possession of the drug.	Amount supplied.	Form in which supplied.	Specify the ingredients of the prescription.

\* Where, as will usually be the case, the supply is on the doctor's own prescription, it will be sufficient to enter the word "Patient" in this column.

26. The entry must be made on the day on which the drug is supplied or the following day. The same rules as to mistakes and corrections apply.

27. *N.B.*—It is specially provided, however, by the Regulations, that if a doctor keeps a day-book in which he records particulars of any of the drugs dispensed by him to his patients, with the name and address of the patient and date of supply, he need only record in his register of supplies the date and the appropriate reference to the entry in his day-book.

28. A doctor who dispenses at more than one set of premises is required to keep a separate register or registers at each set of premises.

29. All records, including registers, day-books, and other documents, must be kept for not less than two years from the date of the document or the last entry therein.

## IV. OFFENCES AND PENALTIES.

30. A doctor or dentist who obtains, or attempts to obtain, the drugs for a purpose not covered by his authorization, or who infringes any of the Regulations, commits an offence against the Act, and if convicted is liable to a fine of £200 or to imprisonment with or without hard labour for six months, or to both, fine and imprisonment.

31. Further, the Home Secretary has power, after the conviction of any doctor or dentist, to withdraw from him his authorization; the effect of this would be to deprive him entirely of the right to be in possession of or to supply the drugs.

## V. HOSPITALS, ETC.

32. Hospitals, asylums, Poor Law institutions, or sanatoriums supported by a public authority or out of public funds, or by a charity or voluntary subscriptions, have been exempted by Home Office Order from the operation of the Dangerous Drugs Regulations subject to compliance with the conditions laid down in the Order. The terms of the Order (dated August 15th, 1921, and to be obtained from the Stationery Office) should be consulted.

## VI. INSPECTION.

33. All registers, and other records, required to be kept for the purposes of the Dangerous Drugs Act and Regulations thereunder, and any stocks of the drugs held, must at all times be available for inspection by any duly authorized inspector.

34. As indicated in the opening paragraph of this Memorandum, the Home Secretary has authorized Medical Officers of the Ministry of Health and of the Scottish Board of Health to act as Inspectors for this purpose in England and Wales and in Scotland respectively.

35. Notice of a visit for the purposes of inspection will not necessarily be given, and medical practitioners who dispense should make such arrangements that the registers and other records can be produced, if required, for inspection in their absence.

\* The obligation would apply in the case of a doctor or dentist leaving a supply of any of the drugs with a nurse for administration to a patient during the absence of the doctor or dentist.



# British Medical Journal.

SATURDAY, JANUARY 13TH, 1923.

## "ANGELS AND MINISTERS."

SIR JOHN SIMON, in his famous essay on a Ministry of Health, after putting his finger on the more glaring defects and wrongs of the sanitary condition of the country in 1854, indicated the obvious remedy: "Surely no one will doubt [he said] that this great subject should be dealt with by comprehensive and scientific legislation; and I hardly see how otherwise, than that it should be submitted in its entirety to some single department of the executive, as a sole charge; that there should be some tangible head responsible—not only for the enforcement of existing laws, such as they are or may become, but likewise for their progress from time to time to the level of contemporary science, for their completion where fragmentary, for their harmonization where discordant."

This was the ideal set before the General Board of Health by the great sanitarian who became its first medical officer. The establishment of that Board and the appointment of medical officers of health were largely due to the report of the Royal Commission appointed by Sir Robert Peel in 1843 at the instigation of Edwin Chadwick. Among those who gave evidence before the Royal Sanitary Commission of 1869 were Simon and Farr. "Speaking broadly," says Sir George Newman, "the 1843 Commission found the existence of a serious national evil of insanitation and ill health, and recommended a legislative remedy, whereas the 1869 Commission found that the remedy had proved ineffective, and recommended that 'the present fragmentary and confused sanitary legislation should be consolidated.' They proposed, in fact, for the first time, a Ministry of Health; but the case miscarried, and the Local Government Board was created in 1871."<sup>2</sup> But although the case did indeed miscarry, Simon throughout his long official career kept steadily before him the ideal expressed in his essay. He was convinced that there should be a Minister of Health sitting in Parliament, and that the duty of the central department of health should be, in the widest sense, to care for the physical interests of the people, just as their educational interests were the care of the Minister of Education: "the people, through its representatives, must be able to arraign him wherever human life is insufficiently cared for." Simon declared that the incongruities belonging to "our abortion of a sanitary system" must be ended, and he called for the appointment of a parliamentary leader (not necessarily himself a medical man) who could recognize principles and stick to them.

In 1868 the British Medical Association pressed upon the Government of that day the policy of instituting a Ministry of Health, and in subsequent years it again tried to obtain consideration of this national question, but without avail. Then, fifty years later, when the spirit of reconstruction was abroad, an opportunity came for furthering the cause. A feature of the closing stages of the great war was the movement of public opinion towards a demand for the extension and co-ordination of the health services of the country. In 1917 a Committee of the Association undertook the task of presenting to the Government and to the public the medical case for the establishment of a Ministry of Health, and a reasoned

statement was issued in the following April. The purpose of the proposed reform was to make administration more efficient through a combination of departments and co-ordination of powers. The Association's scheme for the new Ministry included the recommendation that an Advisory Council, composed of representatives of all the interests concerned, including the medical profession, should be, by statute, an integral part of the Ministry. This idea was further developed by Lord Dawson in his Cavendish lectures published in our columns on July 13th, 1918. A Medical Advisory Council, he held, should form part of the permanent organization of the Ministry. It is interesting to recall here the words of Simon sixty-four years earlier: "Into the hands of this new Minister—advised, perhaps, for such purposes by some permanent commission of skilled persons—would devolve the guardianship of public health against combined commercial interests, or incompetent administration."

The times were ripe for this reform. After preliminary administrative changes had been made a Ministry of Health was set up by Act of Parliament, and on July 1st, 1919, all the powers and duties of the Local Government Board and of the Insurance Commissioners for England and Wales passed to the Ministry of Health. Simultaneously a Scottish Board of Health and an Irish Public Health Council were constituted. The creation of the new Ministry carried with it an undertaking for reform of the Poor Law—as yet, however, unfulfilled. At that moment the Premier had a choice of two Cabinet colleagues of great administrative experience for the new post—Dr. Christopher Addison and Sir Auckland Geddes. Both were doctors of medicine, though each, in fact, was an anatomist, not a practitioner. Dr. Addison became first Minister of Health, with a great public servant, the late Sir Robert Morant, as permanent head of the department, and the first Medical Consultative Council was appointed by the Minister three months later, with Lord Dawson as Chairman. The new central department of health had much to contend against in its earlier months. The task set before it was tremendous. It was called upon to meet the demands of the medical profession and the public for better health conditions; at the same time it was ordered to find and apply an instant solution of the urgent housing problem. Within a year Dr. Addison had become an object of political enmity, and this campaign went on until April, 1921, when, being in disagreement with the Premier over the Government's housing policy, he resigned office to a layman. On the fall of Mr. Lloyd George's Government Sir Alfred Mond was succeeded by Sir Arthur Griffith-Boscawen, another layman, who at the moment is in the ambiguous position of being a Minister but not a member of either House.

This brief outline of events and opinions will perhaps be useful to the general medical reader as an introduction to Sir Lenthal Cheate's spirited article in the current issue of the *Nineteenth Century*. The essay is aptly entitled, "Ministers of Health—Defend Us!" Here we have in uncompromising terms the case against any layman ever holding the post of Minister of Health. In the interest of public health, says Sir Lenthal Cheate, this office must be held only by a medical man of recognized position in his profession, just as the Lord Chancellorship can be held only by a man of recognized position in the legal profession. The public and the medical profession, he declares, should not tolerate for a moment a Ministry directly concerned with public health being in the hands of a politician, however brilliant, who is not a doctor having special qualifications for the post. In making this point over and over again the author probably has in mind the saying, attributed to Delane, that repetition is the soul of journalism. He is aware of certain objections

<sup>1</sup> *Public Health Reports*. By John Simon, C.B., F.R.S. Edited by Edward Seaton, M.D. London, 1887. Vol. i.

<sup>2</sup> *An Outline of the Practice of Preventive Medicine*. 1919.



to the principle he advocates, but they do not dismay him. Thus the argument founded on the allegation that Dr. Addison was not a success is answered, and we think quite fairly, by saying that a Minister of Health should not have foisted upon him the conduct of political affairs that have no concern with public health, and in any case his failure in such matters should not be visited upon him as Minister of Health. "I can quite see that the Minister of Health should advise the Government to build more houses, and that he should be consulted as to whether the houses provided are sanitary and fit to live in; other than that function, I cannot see how the policy involved can possibly be a question for a Minister of Health. It is a great Government problem." Another objection—that several great departments of State are not represented by professional men in Parliament—is noted, but reserved for future argument.

Without going all the way with Sir Lenthal Cheate, we may say that his point of view, expressed with much cheerful vigour, has a great deal to commend it. The ideal Minister of Health would obviously be a medical man having the exceptional attainments here sketched. But entry into the House of Commons turns so largely upon the play of party politics, and the changes and chances of political life are so great, that when a Government has to be formed a medical statesman of the first magnitude may not be at hand. Such a man may be amongst us to-day; yet when he went out of office it might be said with truth: "Here was a Caesar! When comes such another?"

## A CENTURY OF PASTEUR.

PASTEUR was born at Dôle, in the Jura, on December 27th, 1822; he died on September 28th, 1895, at Villeneuve-l'Étang, where the French Government had assigned him a small estate for the study of rabies. His life of original research began in 1844, and into the next forty-five years was crowded so much that his pupil and successor Roux can truly exclaim, "When we study the work of Pasteur we marvel that one man could do so many things and such great things!"

Pasteur began with crystallography, and was one of the founders of stereo-chemistry; he went on to fermentation and founded the chemistry of the fermentation industries, now a big department of applied chemistry; and finally gave himself to the study of the cause of infectious diseases, and so founded the science of bacteriology, and laid down the main lines on which the study of attenuation and immunity has since proceeded. He had industry, patience, and courage, as well as genius; he had many fellow workers, not a few critics and opponents; these he met with the facts of experiment, brilliantly devised and logically interpreted, but for the most part he went his own way, gathering about him a great company of disciples, so that the *opus Pastorianum* did not end with his life.

It is interesting to note how Pasteur was drawn on from one set of investigations to the next. He was trained as a chemist, and for the first ten or twelve years of his working life was a lecturer on chemistry. His first great achievement was in physical chemistry.<sup>1</sup> Tartaric acid had been known since 1796. A substance which it was soon seen resembled it was found in grape-juice vats in Thann, in Alsace. To it the name racemic acid was given, and before long it was shown that it had the same empirical composition as tartaric acid. Biot, who was then at work on polarization, discovered that while tartaric acid, its salts and their solutions,

turned the plane of polarization of light to the right, racemic acid, and its salts and their solutions, did not produce any effect. Pasteur proved that the racemic salt consisted of two varieties of crystals, the one turning the plane of polarization to the right (dextro-rotatory tartaric acid), the other to the left (laevo-rotatory tartaric acid). The crystal of the one was the mirror image of the crystal of the other. He also showed that the two tartaric acids went into molecular combination, taking up a molecule of water to form racemic acid. In the product the two varieties of tartaric acid, active optically in opposite directions, produce optical inactivity. Here Pasteur was working at the foundations of stereo-chemistry, which in our days has gone on to the elucidation of the structure of the atom and of the molecule, as well as of the crystal. Pasteur in after life often expressed his regret that he had not stuck to crystallography; but the subject in all its bearings, it is now seen, could only be elucidated with the help of radium and the  $x$  rays. During the course of his investigations of racemic acid and its salts Pasteur made the surprising observation that when the green mould, *Penicillium glaucum*, was grown in a solution of racemic acid it attacked only the dextro-rotatory tartaric acid, leaving the laevo-rotatory variety untouched so long as any of the dextro variety remained. Thus did Pasteur get his first insight into the chemistry of life and the activities of the infinitely little. In 1854 Pasteur was appointed dean of the newly established Faculty of Science at Lille and a professor in that faculty. The town was the centre of the industry which makes alcohol from beetroot. He made the observation that the amylic alcohol produced during the process of fermentation consisted of two isomers, the one deflecting the plane of polarization and the other inactive; and the idea occurred to him that there might be some relation between the ferment and the molecular constitution of the bodies produced by the fermentation. He was diverted from these speculations by an appeal—to which all through his life he was always ready to respond—to come to the rescue of the industry. The request was made by a distiller, M. Bigo, who complained that the fermentation in some of his vats went wrong. Pasteur went to the distillery; in the healthy vats he found only the yeast, but in the sick vats he detected also small rods, which he proved to be living things.

His next observations were on lactic fermentation.<sup>2</sup> He had been transferred to an administrative post at the Ecole Normale, in Paris, and his experiments were made in an attic fitted up as a laboratory by himself, where he had no helper except his wife. He showed that the transformation of sugar into lactic acid was due to an organism hitherto undescribed, and he put out the idea that every fermentation was due to a ferment special to it, and that the ferment was a living microscopic thing. This was in 1857; in the following year he began to investigate the fermentation of sugar, which produces alcohol, and, besides that, as was then supposed, carbonic acid only. He found that in the process of fermentation small quantities of glycerin and succinic acid were produced, representing together about 5 per cent. of the sugar employed. He maintained that the fermentation was due to the life and growth of a living ferment—a commonplace to-day, but a view which at that time brought him into conflict with the general belief among chemists, which was that fermentation was set up by the disintegration of dying nitrogenous substances. He showed that, on the contrary, it ran parallel with the growth of the living ferment, and was in fact due to the activity of the living thing. At this stage he was brought

<sup>1</sup> Rev. des Deux Mondes, December 15th, 1922.

<sup>2</sup> Œuvres de Pasteur. Tome I. Dissymétrie moléculaire. Paris: Masson et Cie. (Fr.50.)

<sup>3</sup> Œuvres de Pasteur. Tome II. Fermentations et générations aérées spontanées. (Fr.65.)



into conflict also with those who defended the doctrine of spontaneous generation. We will not attempt to relate the prolonged controversy which ensued, but will only note that the arguments of his opponents stimulated Pasteur and his fellow workers, Roux and Chamberland, to perfect their methods of sterilization.

From lactic fermentation he passed to butyric, in which sugar and lactic acid are transformed into butyric acid, and made the unexpected discovery that the butyric fermentation was due to a micro-organism which could not live in contact with air. Very soon he established the existence of other anaerobic organisms, and reached the generalization that they were the true organisms of putrefaction, those which first attacked dead nitrogenous matter reducing it to simpler forms, which were then attacked by aerobic organisms which transformed them into still simpler bodies. Next he turned to the acetic fermentation: he was induced to do so by difficulties encountered in the manufacture of vinegar similar to those that had occurred in the manufacture of beetroot alcohol at Lille. French vinegar is made in butts half filled with wine and inoculated with the *Mycoderma aceti*, which grows on the surface as a sort of scum; failures in manufacture he showed were due to contamination of the wine with other microbes. This observation brought him into conflict with Liebig, who maintained that the organism was not present during the manufacture of vinegar in the German manner, from alcohol and sour beer. Everyone knows now that Pasteur was right. Next he was called upon to apply to wine the principles he had established with regard to the cause of failure in the manufacture of beetroot alcohol and of vinegar. He accepted an invitation from the town of Arbois, not far from his birthplace, to study the diseases of wine—acidity, bitterness, ropiness, and so on. By microscopic examination he proved that all were due to microbial contaminations, and that these germs could be destroyed by warming the wine out of contact with air to a temperature of 55°C., a process which did not interfere with subsequent maturation.

From wine, in 1870, he went on to beer, and by the application of the same principles rendered a similar service to that industry. Meanwhile he made his first contact with disease. In 1865 one of his old teachers, J. B. Dumas, appealed to his patriotism to investigate the disease of silkworms, which was ruining the silk industry. Rather against his will he accepted the invitation, mainly because he desired to help the unfortunate peasants whose livelihood was being destroyed. The disease was found to be associated with the presence of certain corpuscles which could be seen in the infected worms. These corpuscles were transmitted from the imago to the eggs. The inquiry was complicated by the fact that silkworms also suffer from another disease due to a sporing vibrio, but Pasteur showed how both diseases could be prevented, and his methods are now taught in special schools of sericulture. It was at this period of his life (1868) that Pasteur was struck down by left hemiplegia, but he recovered quickly, regaining all his mental and nearly all his physical activity.

Pasteur was disinclined to embark on the study of human diseases, but he consented, at the request of a pupil, to investigate the cause of puerperal fever. He came to the conclusion that it was due to a chain microbe (streptococcus), and that it was carried from the infected woman to a healthy woman by the doctor and the midwife. Consequently he recommended the sterilization of all linen and dressings. He had been watching also the work of Lister, and the great things it was achieving for surgery encouraged him to give his attention more and more to disease in animals and man. At the request of the French Director of Agriculture he

began to investigate anthrax, but first made some experiments on the disease called fowl cholera. It was during his study of the last-named disease that he discovered the possibility of attenuating the virulence of a virus. In this instance it was achieved by keeping the cultivation of the microbe at a temperature of 37°C., when it was observed gradually to lose its virulence. Birds inoculated with material taken from the cultures at a suitable period were protected from subsequent inoculation with a virulent virus. To this method of protection Pasteur applied the term "vaccination," in honour of Edward Jenner, who had, by another way it is true, formulated a method for protecting man against small-pox—a method Pasteur himself adopted when providing a means of vaccination against swine erysipelas. He turned next to rabies; the nature of the virus was then and is still unknown; but he recognized that the disease was mainly localized in the brain and spinal cord, and by drying the cords of rabbits at various periods obtained material for therapeutic inoculation. As Professor Ledingham has well said, "To Pasteur the accurate knowledge of a virus was simply a stimulus to attack the disease on the preventive side, but neither to him nor to his great contemporary Lister was this stimulus an essential one. If a virus could be demonstrated and cultivated outside the body, so much the better. Attenuation was all the simpler. So when he came to rabies, ignorance of the actual virus did not deter him from the attempt to attenuate its virulence."

There was in Pasteur something of the faith of the great religious propagandists. His religion was the love of humanity, and his observance was to win for man control over the forces of Nature; he would have agreed that "ignorance is the curse of God, knowledge the wing wherewith we fly to Heaven."

#### THE JENNER CENTENARY.

THE centenary of the death of Edward Jenner, the discoverer of vaccination, will be celebrated by the Royal Society of Medicine at a meeting on the anniversary day, Friday, January 26th. The President of the Society, Sir William Hale-White, will give an address on Jenner and his work, and a collection of relics and exhibits will be lent for the evening by the Wellcome Historical Medical Museum. The Curator of the Museum is arranging in it a commemorative exhibition of personal relics, pictures, engravings, drawings, documents, and caricatures, which will remain open for some months, and will be on view from 10 to 5 daily. The Curator asks us to say that he will be glad to hear from any persons possessing objects of interest in connexion with Jenner and his work which they would be willing to lend; loans while on exhibition will be insured, and any expense incurred in transit will be paid by the Museum. Communications should be addressed to Mr. C. J. S. Thompson, M.B.E., Curator, the Wellcome Historical Medical Museum, 54a, Wigmore Street, London, W.1. As already announced, the Académie de Médecine intends to celebrate the centenary on January 23rd; the Académie has invited the Royal Society of Medicine to send representatives, and is ready also to welcome any Fellows of the Society who may be able to go to Paris.

#### THE HOUSING OF AN X-RAY DEPARTMENT.

THE new x-ray department of the Manchester Royal Infirmary, some description of which appeared in the JOURNAL of November 25th, 1922 (p. 1044), was the principal subject of a lecture given by Dr. A. E. Barclay before the Röntgen Society on January 2nd. The planning of an x-ray department is usually a matter of compromise and to some extent of makeshift, but at Manchester this factor of compromise had required less consideration than usual, except in so far

\* Pasteur Supplement to Nature, December 23rd, 1922.



that the department had to be accommodated within the walls of an existing building of mediaeval solidity and modern ferro-concrete construction, originally designed as common rooms for students. One interesting feature was the method adopted for protecting the partition walls between the various rooms. It had been intended to protect them with sheet lead, but the suggestion was made that commercial barium sulphate could be used with cement, and after a number of experiments a successful mixture was found. When tested with radium a thickness of three-quarters of an inch (19 mm.) of this plaster proved to be equivalent to between 3.5 and 4.5 mm. of lead. The walls of the treatment cubicles were plastered on both sides, the total thickness of plaster being one and a half inches. The ease of application and the smallness of cost of the barium plaster should make this the protective method of choice. The cost of lead at the time the department made its purchases was £22 a ton, while commercial barium sulphate was obtained at £10 a ton. In discussing the general question of housing an x-ray department, Dr. Barclay said that in the average country hospital, if one looked for the darkest, steepest, and most awkward stairway leading below ground, one generally found that it led to the x-ray room. In one English town a hospital of 60 or 80 beds had enlarged itself by absorbing the adjoining police station. The police had sold the place because the cells were too damp for the well-being of their lodgers, and it was in two of these cells that the x-ray and dark rooms were accommodated. An x-ray department in a cottage hospital was expected to tackle anything and everything; hence the outfit in the small hospital had to perform many functions, though, the number of cases being small, there was usually plenty of time for the necessary rearrangement. In a general hospital of 150 beds both radiographic work and x-ray treatment would be in progress for the greater part of the day, with the result that separate rooms would be necessary for these two branches. In a still larger hospital there would be further subdivisions, such as a special room for screening work. In a hospital associated with a medical school a new set of conditions presented themselves; here the large volume of routine work of a general hospital had to be done, and in addition much special work along the lines of teaching, investigating, and recording. Dr. Barclay's plan for a large hospital with a teaching school included the provision of rooms both for ordinary and for intensive x-ray treatment, an ordinary radiographic room and a special room for screening, a fluoroscopic room for serial plates and the like, and a suite of rooms for the medical officers and nurses, and for office, storage, and workshop purposes. The staff should include two senior and two junior medical officers, a physicist, three assistants for x-ray treatment, a radiographer, a photographer to develop negatives, a photographic librarian, a mechanic, a clerk, two nurses, and a sister. The largest department differed from the small department in the cottage hospital only in the respect that the numbers dealt with made it necessary to multiply the units, and as the units were multiplied it was reasonable to adapt certain of them to certain special types of work. In small hospitals radiology was a problem which even apart from the cost was not easy to solve owing to the difficulty of obtaining the services of a radiologist; they could not afford to pay a radiological specialist adequately for the time that was necessary, and from his colleagues on the staff such a specialist was not likely to get sufficient private work to make the post worth his while. The only solution appeared to be the provision of central x-ray clinics, maintained by a number of small hospitals, each of which would contribute according to the amount of work it required to be done. In each small hospital there would be, in addition, a simple plant for dealing with fractures and light work, which would be operated by one of the assistants, who would bring the plates back to the centre for development and report. The central clinic would also be available for x-ray work under national insurance when that scheme came to provide specialist services. Doubtless such clinics would pay their way and afford adequate salaries for radiologists, but they

would be abused by people who could afford to pay full fees and would be harmful to the interests of the radiologist who depended on private practice.

#### VITAMINS AND REPRODUCTION.

THE existence of the three vitamins A, B, and C has been generally accepted, but several workers have brought forward evidence for the existence of other vitamins. For example, it has been suggested that the antirachitic substance present in cod-liver oil is not identical with the fat soluble vitamin A. It is not improbable that there are a large number of organic substances, small supplies of which are essential to animal life, and hence it is not possible to set a limit to the number of these substances. The existence of a new vitamin essential for reproduction is suggested by H. M. Evans and K. S. Bishop of the University of California.<sup>1</sup> The authors fed rats on a diet containing a limited amount of vitamin A, plenty of vitamin B, and no vitamin C; on this diet the rats grew and developed normally but did not reproduce. The addition of lettuce leaves or even of dried alfalfa grass to the diet was followed by sudden restoration of fertility; the same effect was produced by an excess of butter, but not by cod-liver oil nor by orange juice. It is difficult to express an opinion on this work. It has long been known that animals on a diet slightly deficient in vitamin A will grow but will not reproduce. It is extremely difficult to be certain that the variations in reproduction observed were due to the action of a vitamin hitherto unknown and not to variations in the quantity of vitamin A in the diet. That this may be the explanation is made the more likely by the fact that the authors used butter and milk fat as the source of their vitamin A, and tenfold variations of vitamin A content have been observed in different samples of milk and butter. The number of possible experimental errors in work upon vitamins is extremely large, and hence it is permissible to reserve judgement as to the value of the conclusions reached by Drs. Evans and Bishop until we have an opportunity of studying their experimental methods in more detail. If the existence of a specific substance stimulating reproduction is established the observation may be important for the treatment of sterility both in the human race and in stock.

#### THE RETREAT, YORK.

THE 125th annual report of the Retreat, York, for the year 1921, records the retirement of Dr. Bedford Pierce, who had been its chief medical superintendent for nearly thirty years. The Committee of Management expresses its appreciation of the work done by Dr. Pierce during his long term of office, and records that under his management the great traditions of the Retreat have been more than maintained, and its sphere of usefulness extended. Dr. Pierce alludes to some of the changes which have taken place, and describes more particularly the efforts which have been made to develop the profession of mental nursing. Apart from the ordinary courses of instruction given in the hospital Dr. Pierce has arranged an annual lecture for the nursing staff. These lectures have been delivered by well known psychiatrists, and if it were possible to publish them in book form they would no doubt be found of value to mental nurses as a whole, and would usefully supplement the systematic knowledge contained in the nursing manuals. The report contains some interesting comments on the practical difficulties met with in dealing with voluntary boarders in mental hospitals. The question of certification which sometimes arises in these cases is recognized to be one of considerable difficulty. As Dr. Pierce points out, it is obviously not straightforward to receive a patient on the understanding that he may leave when he wishes, and then directly he asks to go to make arrangements for his detention as a certified patient. At the same time, though the practice of certifying voluntary boarders whilst in residence

<sup>1</sup> On the Existence of a Hitherto Unrecognized Dietary Factor Essential for Reproduction. *Science*, N.S., vol. lvi, No. 1458, December 8th, 1922, p. 651.



may be undesirable, it cannot always be avoided. A change of phase in the psychosis may occur in which the voluntary status of the patient becomes impossible, and Dr. Pierce gives some striking instances in which certification became necessary in some of his voluntary boarders. There is no doubt that the addition of voluntary cases adds to the problems of the medical superintendent, and renders him liable to criticism even when he has acted in the best interests of his patients. Since, however, the system by which patients can be admitted on a voluntary basis to mental hospitals has much to commend it, every effort should be made to ensure that it is carried out in the right spirit. As Dr. Pierce observes, if either patients or boarders have any grounds for thinking that voluntary admission was intended to facilitate subsequent certification—in other words, that the authorities were insincere in accepting them—it would certainly cause grave injury to the prestige of the hospital. He suggests, also, that if any individual patient should feel aggrieved on this matter, even without justification, it is desirable that he should not remain, but be transferred elsewhere. Lastly, we may note that the committee has established a nursing home (Millfield), quite apart from and independent of the Retreat, for the care and treatment of mild and incipient cases of nervous disorder. Notwithstanding the financial difficulties it entails, the committee feels it right to continue this venture in response to the urgent public need for a home of the kind, free from any institutional connexion or association. This progressive move should meet with success: it represents on a small scale what it is hoped may be possible in the future in connexion with the public mental hospitals.

#### A SCOTTISH MEDICAL SOCIETY.

THE Aberdeen Medical Society was founded in 1789 by James McGrigor, afterwards known to fame as Sir James McGrigor, Bt., K.C.B., F.R.S., and for thirty-five years Director-General of the Medical Department of the Army. With him were associated James Robertson and a few medical students. In 1812 the society was reconstructed under the name of the Aberdeen Medico-Chirurgical Society, with William Livingstone, M.D., as president. Eight years later it entered into occupation of its permanent home, the hall in King Street, designed on classical lines by Archibald Simpson. Throughout the 133 years of its existence the society has had close relationships with the Aberdeen Royal Infirmary and with the Aberdeen Medical School. In its early days it did much to improve the medical teaching in the two rival foundations—King's College and Marischal College—which in later times amalgamated to form the University of Aberdeen of our own day. All this and much besides is told with pious care by Dr. John Scott Riddell in the *Records of the Aberdeen Medico-Chirurgical Society*.<sup>1</sup> Drafted at first in the form of a presidential address, the historian's work grew as he dug deeper into the records of the past, until its size got beyond the possibility of oral delivery at one session. The material was thereupon recast, many additions were made, and the whole was arranged for publication in book form. In this process the record of the work and influence of the Aberdeen Medico-Chirurgical Society came to embrace the medical history of Aberdeen since 1789. And so, as the author says in his peroration (chapter xii), "What was begun as a short address has expanded into a little book." A shortened version was, however, spoken to the members in the Society's Hall, by Dr. Scott Riddell, on October 26th, 1922, that being the statutory day for the delivery of the presidential address. At the conclusion of the address a copy of the book now before us was handed to each member. It is a pleasant volume to read and to handle; the printing is good, and the eleven illustrations, including several portraits and views of old King's College and Marischal College, are well reproduced on art paper.

#### HICCUP.

THOUGH it can be a grave complication in surgical shock and is then justly dreaded by surgeons, hiccup is usually a disorder which, though distressing to the sufferer, is regarded with a very moderate degree of sympathy by the onlookers. It may, however, go on for hours and days, and seriously interfere, not only with the comfort, but even the health of the subject. There are a multitude of remedies, some of them really partaking of the nature of folklore, but their action is capricious. Master John Arderne had evidently met with troublesome cases, for he has a note on remedies "against hiccough." He writes: "Let the leech tell the patient to hold his breath as long as possible. But if this does not stop the hiccough make him vomit, with radishes and mastiche. Let him drink warm water with a decoction of dill. Rue, too, drunk with wine is useful in such cases." A correspondent has sent us an extract from the Rev. W. B. Money's book, *Humours of a Parish and other Quaintnesses*, published a couple of years ago. Mr. Money's remedy presents some resemblance to Arderne's first prescription, and though the feat is not quite easy to perform it seems unlikely that it can have any injurious effect. "Take a tumbler and fill it about half-full of water, put your lips to the opposite side of the rim to what you ordinarily would in drinking, tilt the glass away from you instead of towards you, and so sip the water. That is all, but you will want nothing more; you will be a healed, a quiet, a restful man." Mr. Money declared that he had never known it fail, but relates the following instance as its greatest triumph: "I was fishing off the coast of Cornwall and my fisherman was fiercely attacked by hiccups, which he called 'the jicks.' They had lasted for two days. They were of the most terribly noisy character. They were almost like the 'minute gun at sea.' Poor fellow, they kept him awake at night. He really was in a most parlous condition, but he snuffed at my remedy and I couldn't induce him to try it till the end of the second day. When he did try it he was cured directly. The storm of hiccups was hushed, and now he is the most devoted believer in its powers." Mr. Money's prescription seems to be nothing but an ingenious device for inducing the patient to keep his lungs for a time in an average condition of distension, though he can still breathe. Ever since the classical experiments of Hering and Breuer we have known that on distension of the lungs afferent nerve ending of the vagus are excited and the corresponding impulses on reaching the respiratory centre inhibit inspiration. It seems, therefore, that these impulses inhibit also the violent inspiratory spasms of hiccup, and that the temporary relief thus produced lasts on for at any rate a very considerable time, so that the hiccup can by this means be controlled. Master Arderne's prescription of holding a deep breath for as long as possible seems to depend on the same principle.

#### MILK AND CREAM REGULATIONS.

IN 1912 Regulations were made under an Order of the Local Government Board the object of which was to prevent the use of preservatives in milk and to restrict their use in cream. Amending Regulations made in 1917 limited the amount of boric acid which could be added to cream to an amount not exceeding 0.4 per cent. of the cream, and required that on the labels attached to the vessels containing the cream there should be printed "Not suitable for infants or invalids," in addition to the words "Preserved cream." Early in January, 1921, the Minister of Health issued a memorandum with regard to the reports of public analysts under the Sale of Food and Drugs Acts, and the reports of medical officers of health on the Milk and Cream Regulations, and in a circular recently addressed by the Minister to town clerks and the clerks of county and borough councils a request is made that the reports for 1922 of these two officials should be on the lines of that memorandum. Information is asked for as to the results of proceedings taken with respect to samples examined and found not to be genuine, as to the extent to which preservatives are added

<sup>1</sup> *The Records of the Aberdeen Medico-Chirurgical Society from 1789 to 1922*. With Recommendations and Reflections. By E. M.A., C.M., LL.D., President of the Society. 1922. (Demy 8vo, pp. xii+144; 6d. cloth.)



to food, and in the case of samples of milk as to the number of instances in which a sample of milk is reported on adversely and a further sample is taken direct from the cow for comparison. The medical officer of health is asked to supplement his report on the administration of the Milk and Cream Regulations with information as to the action taken under Section 4 of the Milk and Dairies (Amendment) Act, 1922. This is an important section, for it prohibits the addition to milk of any colouring matter or water or of any dried or condensed milk or any skimmed milk or separated milk. If the section is thoroughly and completely enforced an end ought to be put to the sophistication of milk which it is to be feared prevails in some districts.

#### THE JUBILEE OF THE ROYAL NORMAL COLLEGE FOR THE BLIND.

THE Royal Normal College for the Blind at Norwood is about to celebrate its jubilee, and its treasurer, Lord Burnham, is making an appeal for help to mark the event by establishing its finances upon a surer foundation; he asks for £75,000. There are few institutions for the training of the blind which are better known, and certainly there is no other that has done better work. The late Sir Francis J. Campbell, who was for many years the organizer and head of the college, had a genius for efficient management, and his ideas of what a college for the blind should be were far in advance of his time. Those ideas have been largely realized at Norwood both in his own time and subsequently under the control of his son, Mr. Guy M. Campbell. The work of the college is essentially practical, as will be apparent to anyone who pays a visit to the institution. The schools for the teaching of pianoforte repair and tuning are unique, and the efficiency of the training which is given to the blind who show musical capacity, either as performers or pianoforte tuners, is most excellent. The work is not limited to this branch, but extends to all that is required for an efficient higher training of the blind. The writer of this annotation visited the college recently and was greatly impressed with the excellence of the work in progress, and with the industry shown by both teachers and pupils. There was also a remarkable spirit of comradeship which is of inestimable value in replacing the shrinking timidity of the blind by a spirit of assurance and independence. The appeal of the college is one that should be supported by the generous-minded.

#### PHYSICAL TRAINING IN ELEMENTARY SCHOOLS.

IN 1917 the Board of Education offered grants in aid of the salaries of "organizers" of physical training in order to secure a high level of efficiency amongst the school teachers who were themselves to carry out the necessary physical exercises of the children. The organizers were not to teach the children, but to instruct and stimulate the teachers in this work, which was to be regarded as part of the regular curriculum. In a new circular (No. 1291) issued recently the Board states that experience has shown that the school teachers are competent to undertake this work, and that they can derive great benefit from the advice and demonstrations which the organizers are able to give. Certain education authorities have arranged for the organizer to engage in the actual teaching of the children, but this the Board finds unsatisfactory; the organizer becomes an expensive supernumerary, and the work which should be integral with the school work becomes a side issue in which the teachers are not directly interested. Other authorities have delegated certain teachers to do the work, with similar disadvantages. Yet other authorities have appointed persons to these duties without obtaining recognition for them as organizers. The Board states that it has no wish to close the door to reasonable experiments, which it will consider on their merits, but generally speaking it adheres to the practical advantages of its own scheme. The expenditure involved is small, and it is anticipated that the advantages to the children of the plan

if properly developed will gradually afford relief from some of the heavy expenditure on other "special services." The advantages of the physical training as a means of preventing debility and promoting health, and also its general educational value in cultivating habits of discipline, self-control, and a sense of order and responsibility, need not be insisted on.

#### HOOKWORM DISEASE IN INDIA.

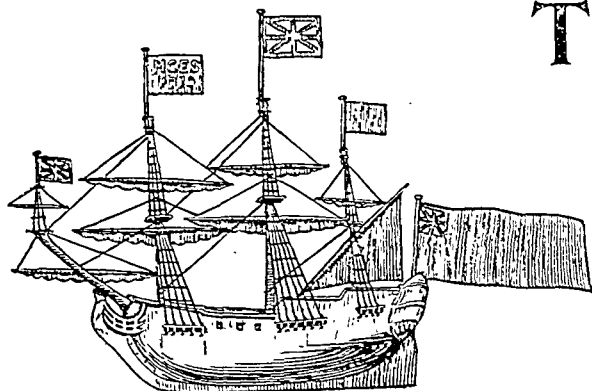
THE results of an investigation into the distribution and control of hookworm disease in India, prepared by the International Health Board of the Rockefeller Foundation, New York, have been published in the *Indian Journal of Medical Research* (October, 1922). The disease is present over almost the whole of the Indian Empire, but is more prevalent in Bengal, Assam, and Madras than in other districts. Of over 100,000 annual emigrants from Southern India arriving in Ceylon, the Malay States, and British Guiana, about 70 per cent., and among immigrants from India arriving in the United States from 63 to 90 per cent., were infested. In the Madras Presidency it is estimated that 70 per cent. of the population of 45 millions are infested, and many of these fall an easy prey to tuberculosis and other diseases. The infestation rate is high among English troops, and of the Indians of the Mesopotamia Expeditionary Force 24 per cent. were affected. Although in 1888 the prevalence of the disease was known and it was recognized that the consequences might be serious little was done until 1903; since then its importance from the economic point of view has been recognized by the establishment of treatment stations and by the inauguration of educational campaigns explaining the importance of early treatment and the value of preventive measures. As regards the distribution of the species of parasite, *Necator americanus* appears to occur in Southern India, and the *Ankylostomum duodenale* in Northern India. The damp heat of the Indian coal mines is favourable to larval development, and infestation is found among the coal miners in the Madras Presidency and also in the gold miners of Mysore; it is thought probable that as the workings in the coalfields become deeper the disease will increase. Although no organized effort is made by the Government for the control and eventual eradication of the disease, the Indian Medical Service is alive to the seriousness of the problem, and is endeavouring to estimate its relative importance as a factor in the ill health of the people. Specific methods of control, which have been found to reduce the number of persons suffering from hookworm disease and the consequent anaemia, consist in the examination of the tongue and conjunctivae of the workers at least once every three months, and the administration of iron twice daily and of beta-naphthol once a month. Where this plan has been effectively carried out the labour efficiency of the coolies has, it is estimated, been increased by 25 to 50 per cent., and it is believed that what has already been accomplished in 30,000 persons with a minimum of friction could be done for the whole 300 millions. In addition to the benefits so attained, such control of disease might be expected materially to assist in the abatement of other diseases, such as cholera and plague, by overcoming prejudices against more extensive sanitary programmes. Suggestions are outlined in the article for educational campaigns, and, with Government assistance, for the building and management of latrines, for the improvement of water supply and surface drainage, and for the care of the general health.

THE Hunterian Oration before the Royal College of Surgeons of England will be delivered by Sir John Bland-Sutton on Wednesday, February 14th, at 4 p.m. The President and Council have issued invitations to a dinner in the College on the evening of the same day.

THE usual half-yearly indexes to the *JOURNAL* and to the *SUPPLEMENT* and *EPITOME* have been prepared. Any member or subscriber wishing to have one or all of the current indexes can obtain them post free on application to the Financial Secretary, 429, Strand, W.C.2.



# NINETY-FIRST ANNUAL MEETING of the British Medical Association, PORTSMOUTH, 1923.



The Golden Barque, the weather vane on St. Thomas's Church tower.  
Length of hull, 3 ft. 5 in.

THE ninety-first Annual Meeting of the British Medical Association will be held at Portsmouth next summer under the Presidency of Mr. Charles P. Childe, F.R.C.S., Senior Surgeon to the Royal Portsmouth Hospital, who will deliver his Address to the Association on the evening of Tuesday, July 24th. The sectional sessions will be held on Wednesday, Thursday, and Friday, July 25th, 26th, and 27th, the scientific and clinical work of the Annual Meeting being divided among sixteen Sections, as follows: Medicine, Surgery, Obstetrics and Gynaecology, Pathology and Bacteriology, Neurology and Psychological Medicine, Ophthalmology, Public Health, Diseases of Children, Laryngology and Otology, Radiology, Naval and Military Hygiene, Tuberculosis, Medical Sociology, Orthopaedics, Venereal Diseases, and Anaesthetics. The full list of the names of

officers and the provisional programme for the sectional discussions and demonstrations will be published in due course in the SUPPLEMENT. The Annual Representative Meeting for the transaction of the medico-political business will begin on the previous Friday, July 20th, at 10 a.m. Saturday, July 28th, the last day of the meeting, will be set apart for excursions to places of interest in the neighbourhood. The article published below is the second of a series of descriptive and historical notes on Portsmouth and its surroundings, for which our readers are indebted to Dr. W. Carling, Chairman of the local Printing Committee; the introductory article appeared in the JOURNAL of December 9th, 1922 (p. 1137). The Honorary Local General Secretary for the Portsmouth meeting is Mr. C. A. Scott Ridout, F.R.C.S. (St. Elmo, Clarendon Road, Southsea).

## AN OUTLINE OF PORTSMOUTH HISTORY.

### I. PORT DOCK AND HARBOUR.

"Would you lift the veil, long fallen, on the Ages rolled away  
And sealed as a Past Forgotten? Who knows but perchance ye may  
If ye go as little Children, and dream on the upland sward,  
But they pass no doubting cynic where the Gods keep watch and ward."

Mr. H. G. Wells, the writer of many thought-provoking books, once lived on Portsea Island. Before he became an author he worked and lived in one of Portsmouth's emporiums. He, in the imagination of one of his created characters, came after a dusty journey and rested on the side of Portsdown Hill. He philosophized and enjoyed the not unpleasing picture of the Solent tinted with the rays of the setting sun. He, like many another Portsmouthian has done and will do again in the future, powdered how and why Portsmouth should have been built on that mudflat island and not on the protected and sunny side of Portsdown. Indeed, quite recently Portsmouth did extend her boundaries, and has included Portsdown within her borough jurisdiction. In fact, new houses are beginning to dot the sunny face of the down. Sitting up here against the thyme-scented short grass on the chalk, one sees the Wight standing clear in the sea. Below at the foot of the down is a stretch of flat land intersected here and there by water channels, bays, and harbours, and between the flats and the Wight a narrow channel of the sea—the silvery Solent. Here, contemplating the harbour and its creeks, one is struck by its sheltered position and the many places a vessel could rest in without being seen. Hills to the north, and at the south a narrow entrance, easily defended if need be, opening from a sheltered strait protected from the storms of the channel by the Wight.

Should the visitor have with him a map of England he will on looking at it soon be struck with another fact. The coastline is much broken up and there are many places where the arms of the sea run a long way inland. Now let him take a blade of grass, if he has nothing else, and cut it according to the scale of his map to measure seventy-five miles. Place the scale anywhere on the map, one end on the seacoast, and he will find there is scarcely a town or village not reached by the other end. In the days when there were no aeroplanes, no motor lorries, no railway trains, methods of transport were indeed cumbersome and slow on land. It was then the day of the small ship, towns near and on the coast were able to exchange their marketable goods by water transport. Thus all round the coast, wherever there was a convenient or natural anchorage, there we have a town and port. Harbours were essential for the growth of the country.

Most towns have grown up round some hallowed spot sacred to history or romance, round some aerie castle, revered shrine or well, round some stately manor house with its family traditions of chivalry and statesmanship, round some spot of beauty or utility. Portsmouth grew up round its harbour. The land-locked harbour we have been watching



from the hill called Portsmouth into being, and Portsmouth itself called into being its docks, its fortresses, its castle and its hospice, and its sunny Southsea.

Ever since his appearance on this globe man has been a wanderer; his face is ever set towards the west, and the British Isles come right in the track to the setting sun. Palaeolithic man was here when it was possible to cross from France on dry land. His flint implements have been found on Southsea Common. He did not found Portsmouth, neither did the Neolithic man who followed him, bringing his beautifully wrought and polished stone and bone artefacts. The men of Bronze may have come this way, landing at the top of the harbour, for they have left their earthworks or rings, their long barrows and their round barrows, scattered over Hampshire and Wiltshire. The westward thrust, started by the drift of population, next brought to these isles from Europe two tribes of Celts or iron-using peoples. One has been distinguished as Gaelic (and their descendants may perhaps be found to this day in Ireland and Scotland) and the other as Brythons. The second race had learned on the Continent to smelt iron and to build boats. Their boats were swift and were used as models by the Romans when they came. The sails were dyed blue, probably for the same reason that a modern ship is painted slate colour. The Brythons were later joined by a tribe closely related to them—the Belgae. The latter were very famous for their iron work, and were at one time strongly established on the site that is now occupied by the city of Winchester.

The inhabitants of Britain were a highly civilized people when Caesar appeared amongst them. They had regularly planned towns and villages, agriculture was developed, the crafts of weaving, pottery making, and metal working were practised. For warfare they had chariots and horses, they used metal coins for barter, and they had an overseas trade through Phoenician mariners.

Ships when first built must of necessity have been small in size, and neither could they for many reasons be at sea for any length of time, nor could they go far from the sight of land. Consequently it would be quite natural for them to hug the shore and be on the lookout for estuaries, creeks, natural harbours, and protected waterways. Now, where could these creek-seeking men find a better place than the protected waters of the Solent or a more convenient harbour than that between the mainland and the Isle of Portsea—a narrow entrance easily watched and if need be protected; with waters broadening out and many creeks and bends in which to hide; plenty of soft mud banks on which to run the boats for repair and rest, and the chalk hills on the north preventing any sudden invasion from the mainland? Here at the north-west corner of the harbour the Britons had a town and a landing place, and here on the same spot the Romans established the westernmost station of the "Litus Saxonicum." Thus for 2,000 years of historic time has Portsmouth harbour been a centre of naval and maritime activity. Roman Porchester was a castle enclosing an area of 9 acres, and its walls, as measured to-day, are 10 feet thick.

After the Roman departure Saxons and Jutes landed at Porchester, and have left their marks behind all along the Meon Valley. The *Anglo Saxon Chronicle* records a legend that in A.D. 501 "Port and his two sons, Beida and Maegla, came into Britain with two ships at a place called Ports Mutha." Whether this story be true or no, there is plenty of evidence of Saxon occupation in the neighbourhood. The record follows the account of the landing in 495 of Ceauric, who became the first King of the West Saxons.

In 860 Danes landed at Southampten, near Porchester, established themselves on shore, and proceeded to Winchester and took the city. Alfred was now king, and he to the con-

clusion that the Danes must be met on the sea; he therefore turned his mind to ship building and ship designing. In 893 "he gave orders for building against the Esks long ships, which were full nigh twice as long as the others. Some had sixty oars, some more; they were not shaped after the Frisian model, but so as he himself thought they might be most serviceable." This is interesting as the first indication of a British navy. Most of the fighting was done off the Hampshire coast, and a few years ago the remains of a Danish ship, 30 feet long, was found near here up the Hamble River.

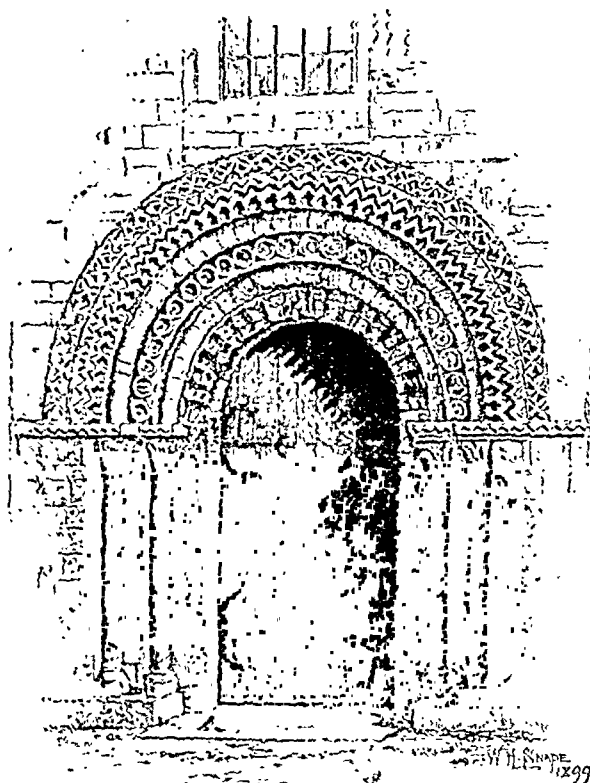
Our next invaders were the Normans, who when their conquest was complete built a castle at Porchester on the Roman site. The Norman invasion was different in character and purpose from those that had taken place before. This was an extension of the Norman kingdom. William came with the titles of Duke of Normandy and Aquitaine, Earl of Anjou, and added to his royal roll that of King of England. The Norman kingdom was now divided and separated by the English Channel. The king would require knowledge of all parts of his kingdom. It would be necessary, therefore, for ships to cross the channel.

Opposite nearly to the Isle of Wight were the ports of Bawlfleur and Honfleur. What more natural than that ships from these ports should make for the sheltered waters of the Solent. In fact, for the crossings of the early Norman kings of England first Southampton, then Porchester, and finally Portsmouth became the port of embarkation. From 1066 to 1204 Hampshire was the heart of the Norman kingdom.

Domesday Book makes no mention of Portsmouth nor of Portsea Island, but speaks of Bedhampton, Wymering, Cosham, Bouthaut, Porchester, Buckland, Copnor, and Fratton as making up the "Hundred of Portsdown." The last three manors mentioned are situated on the Isle of Portsea, and now form part of the borough of Portsmouth. Buckland was held by Hugh de Port, who held fifty-five other manors in this country direct from the Crown, besides some others indirectly. In 1085 there may have been a few fisher folk living at the south-west corner of Portsea Island; a hundred years later there were enough people living here to justify their demanding a charter. This increase was undoubtedly due to

the coming and going of the Norman kings.

With the Norman restoration of Porchester the harbour again became important. On returning from the first Crusade Robert Duke of Normandy found his youngest brother had seized the throne. Robert gathered his forces about him and landed on the shores of Portsmouth Harbour in 1101. At West Meon he met his brother, and arranged a peace which left Henry in possession of the throne. Henry was now a frequent visitor via Winchester, Bishop's Waltham, and Wickham to Portsmouth Harbour. The *Chronicle* tells of his taking ship here in October, 1114, and again at Whitsun, 1123. On this latter occasion he stayed on board a ship for a week awaiting fine weather in order to cross the channel. This was probably a matter of great importance to Portsmouth. The narrow entrance to the harbour, the wide expanse of land-locked water—calm within, rough without—must have impressed on the minds of the travellers a great feeling of security. The king, too, would remember that only a few years before his brother had landed here without opposition. The old castle being restored, Henry I in 1133 founded here the Priory of St. Mary at Porchester for Canons Regular of the Order of St. Augustine, "for the benefit of the souls of his Father and Mother, and William (Rufus) his brother, his ancestors and successors, and for the prosperity and safety of his kingdom." Forty years later, for some unknown reason, the Priory migrated to Southwick, on the other side of Portsdown Hill. All that now remains of the Priory buildings is



West doorway, Porchester Church.



the beautiful church of St. Mary. The west front has a fine decorated Norman doorway similar to that at Iffley. Like the Oxford gateway, it has a sculptured figure of Sagittarius, and as this figure occurs in the badge of Stephen it may be that the church was completed in his reign. The font is a richly carved specimen of Early Norman work.

The commencement of the civil wars in Stephen's reign began with the landing of Matilda on the shores of Portsmouth Harbour.

It is recorded that Henry II crossed from and returned to Portsmouth Harbour at least ten times. In 1177 he ordered most of the shipping of England and Normandy to assemble here to transport an army to Bauffeur.

Richard Cœur de Lion was in France when his father died. He returned to England via Portsmouth and immediately set to work to organize his crusade. On returning from Palestine he was detained a prisoner through the treachery of the King of France. Eventually, on reaching England he held a conference with his barons at Bishop's Waltham and immediately set to work to gather an army and fleet together in Portsmouth Harbour to avenge the insult. Whilst these preparations were in progress he was compelled to remain some time in the little town of Portsmouth, and it is reported of him that he passed the time superintending the erection of a hall with a kitchen and private apartment for himself. The spot chosen for the royal residence is now covered by the Clarence Barracks. Richard not only built for himself but granted sites to his followers on which they could build, but more important than all this he later gave the townsfolk their first charter, which bears the date May 2nd, 1194. During Richard's enforced detention in Austria, John de Gisors, Lord of the Burg of Portsmouth, formed a conspiracy against Richard. For this he was punished by the forfeiture of all his lands. The charter granted to the forfeited town conferred very important privileges on the burgesses, for which they had to pay into the king's exchequer £18 a year. The burgesses were now in a position to regulate trade with Normandy and other places and to extract fees from travellers who visited them. The proceeds thus obtained could be used for the benefit of the town and not for lining the pockets

of the manor lord. The charter was given by the hand of Bishop William Longchamps, and contrary to all precedent he used a personal seal which had as its device a crescent and a star with eight wavy rays. These since the fourteenth century have always appeared on the borough arms.

The number of people living in Portsmouth up to Richard's time could not have been large. There was only one church on Portsea Island. That stood between the three manors of Copnor, Fratton, and Buckland (Portsea), on the site of the present church of St. Mary, Kingston. If it were in existence

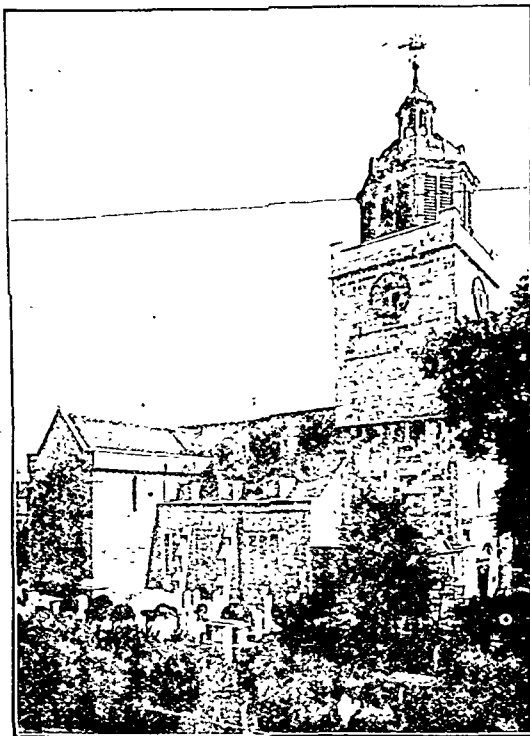
it would be the oldest building in Portsmouth. It was under the control of the Priory of Southwick. There is mention of it in 1166, and that it was dedicated to St. Mary. The remains of it were finally cleared away in 1843. The pathway from this church to Old Portsmouth can still be traced on the borough map. The oldest building in Portsmouth is the Church of St. Thomas. In 1180 (fourteen years before the granting of the charter) "John de Gisors gave an acre of his town of Portsmouth to the Black Canons of Southwick—serving God on the far side of Portsmouth Hill—to build thereon a Chapel to St. Thomas the Martyr." It is not recorded that he provided the cost of the building, but he gave the convent certain properties in the neighbourhood for the perpetual upkeep of the fabric. The Chapel of St. Thomas was not originally a parish church for Portsmouth. St. Mary's was the mother church of the island, and with its daughter chapel, St. Thomas's, was the property of the Prior and Canons of Southwick. According to Messrs. Lilley and Everett:

"The work of St. Thomas's about the year 1230 was carried on by two of these Canons a senior and a junior assisted by a Chaplain

and two Clerks in minor orders. They appear to have lived, all of them, in a Clergy-house at the corner of St. Thomas Street and Lombard Street on the East side of the latter diagonally opposite the Churchyard. The house had a garden by the side famous in later times for the succulence of its Warden pears. There was another garden on the North side, surrounded by a wall—a quasi-cloister—where the Canons could study their holy books and watch the grapes ripening."

The next oldest building on the island is the Domus Dei, of which more anon.

[Blocks kindly lent by Messrs. Charpentier, Ltd., Portsmouth.]



St. Thomas's Church, Portsmouth.

## England and Wales.

### WILLESDEN WAR MEMORIAL HOSPITAL.

The first pavilion of the new war memorial extension of the Willesden Hospital was opened on December 15th, 1922, by Viscount Burnham. The Willesden Hospital was founded as a cottage hospital of eight beds in 1892, and was enlarged to twenty-five beds in 1899. The war led to an addition of forty beds, and the latest extension will provide a total of 120 beds. Another pavilion is to be opened next year, chiefly to increase the accommodation for the nursing and domestic staffs. The pavilion which has just been opened consists mainly of a number of private wards for paying patients; each holds one or two patients, who will pay from three to six guineas a week. Lord Burnham, in unveiling a tablet which commemorates the raising of £1,000 by the school children of Willesden for the new hospital, said that, to his mind, no part of the national equipment, about which they had good reason to be proud, was so remarkable and efficient as the voluntary

hospital system. Lord Riddell and the Bishop of Willesden also spoke, paying eloquent tribute to the excellent work done by the Willesden Hospital.

### MANCHESTER PATHOLOGICAL SOCIETY.

At a meeting of the Manchester Pathological Society held on December 13th, 1922, with Professor Shaw Dunn, the President, in the chair, Mr. Sampson Handley read a paper on the "Pathology of the lymphatic system." Mr. Handley limited the scope of his discourse to a consideration of the nature of lupus, endeavouring to show that it is largely a lymphatic disease, that it spreads in the deep fascial lymphatics, and that the isolated nodules beyond the edge of the skin ulcer come about by extension along these vessels. Many sections were shown bearing out this hypothesis, and illustrating the absence of a network of lymphatics in the skin itself, so that lymphatic extension in the skin must needs take a circuitous course. Complete eradication of a focus of lupus can only be said to have been effected when the fascial lymphatics have been dealt with. In the discussion which



followed Professor Jamieson of Leeds did not appear to be quite satisfied that our knowledge of lymphatic supply and of the physiology of lymphatic flow was sufficiently definite to warrant absolute conclusion in pathological matters.

## Scotland.

### GLASGOW ROYAL INFIRMARY.

THE Lord Provost of Glasgow, Sir Thomas Paxton, presided at the time-honoured meeting between the managers and the nursing staff of Glasgow Royal Infirmary on New Year's Day. In his speech to the nurses the Lord Provost took occasion to refer to the early work of Lister in the old Royal Infirmary, and expressed the hope that it might yet be found possible to preserve the old ward, in which Lister worked, on its present site as a memorial of the great service Lister rendered to humanity. The Chairman of Managers, Mr. James Macfarlane, referred to the satisfactory and encouraging position of the infirmary, despite the time of severe industrial depression. With a continuance of public support he hoped that the completion of the reconstruction scheme could soon be proceeded with. The gate-house block would come first, and thereafter it was hoped to erect a new ophthalmic department on a site adjacent to the infirmary. What the managers required was more ground, and then the retention of the Lister ward would become possible, though not on its present site, which was needed for infirmary purposes. The university authorities had accepted the offer of the ward for re-erection in their grounds, but owing to lack of space they had to relinquish the idea. There was still less space available in the infirmary grounds as the managers desired to utilize all their space for the healing of patients, and the comfort of the suffering and those engaged in that noble work. He made bold to say that if Lord Lister were alive he would be the first to commend the position of the managers. He hoped still to see the Lister ward removed and re-erected on some suitable site in Glasgow. The treasurer gave some account of the financial position for the year just completed. General annual subscriptions for the year were £126 short of 1921, and employees' subscriptions, though reaching £28,902, showed a diminution of about £2,000. Considering trade conditions, this total showed that the working classes continued to take a very practical interest in the infirmary. Ordinary income was exceeded by expenditure by £24,325, but legacies and special donations amounted to £39,185, which after squaring the deficit in ordinary revenue left £14,860 for capital account.

### EDINBURGH ROYAL INFIRMARY.

The report of the managers of the Edinburgh Royal Infirmary for the year ending September 30th, 1922, shows that the total number of patients treated during the year was 14,156, as compared with 13,635 in the previous year—an increase of 721. The largest number of in-patients on any one day was 914, as against 900 in the previous year, and the average time each patient was under treatment was 22.1 days, as against 22.2 days. The percentage of deaths to cases treated was 6.5, but if the 238 deaths occurring within forty-eight hours of admission were deducted the percentage was reduced to 4.9, or 0.5 less than in the preceding year. In addition to the 14,156 in-patients there were 42,342 out-patients. The total ordinary income was £99,171, as compared with £118,191 in 1921. Voluntary contributions amounted to £65,712, a decrease of £17,332, as compared with the preceding year, but this was mainly due to the sum of £16,097 received in 1921 from the National Relief Fund. The combined contributions from individuals, business firms, public works and establishments, the League of Subscribers, and churches, showed an increase. The League of Subscribers had raised a total sum of £18,333, and its membership is now 85,000. The ordinary expenditure for the year was £119,759—a decrease of £13,569 as compared with the year 1921. The chief economies were effected in the house steward's department, owing to a fall in the cost of food; in the medical department, chiefly due to favourable purchases made at the Government Disposal Board's sales; and in the works department, owing to a decrease in the cost of fuel and the tonnage consumed. The extraordinary income (legacies and donations of £100 and over) amounted to £80,177, while the extraordinary expenditure was £5,740, chiefly expended upon the venereal diseases department and

the medical electrical department. The income of the improvements and extension fund amounted to £3,249. The cost per occupied bed was £136 14s. 3d., which was a decrease of £16 14s. 4d. on that of the previous year.

### SIR NORMAN WALKER.

The Scottish Board of Health has sent the following minute of congratulation to Dr. Norman Walker:

"The Board resolved to record their deep satisfaction that the honour of knighthood should have been conferred on Dr. Norman Walker, to whom the Board have been frequently indebted for valuable assistance and advice—more especially in his capacity first as vice-chairman and latterly as chairman of the Medical and Allied Services Consultative Council. The Board offer Dr. Walker their hearty congratulations and good wishes."

### TREATMENT OF TUBERCULOSIS IN PERTHSHIRE.

At a meeting of the Perthshire County Council in December it was stated that the Scottish Board of Health had approved of the plans for a joint Perth county and city sanatorium at Muris House, Errol, with seventy-five beds. The estimated cost of the scheme was £61,000, towards which a Government grant of £13,500 would be made, the remainder being provided by the county and the town council of Perth in a proportion of three-fourths to one-fourth. Discussion centred round the financial aspect of the question. Lord Forteviot said that in 1903 an estimate had been received from a Glasgow firm to erect a sanatorium of eighty beds for £9,200, while in 1919 an estimate for the same number of beds was £22,200; the latest estimate for a similar building from the same firm amounted to £32,000. He did not, therefore, think they were justified in accepting an offer for less accommodation at £61,000. After further discussion it was unanimously agreed that the Board should be asked to reconsider the whole matter.

## Ireland.

### FREE STATE MINISTRY OF LOCAL GOVERNMENT AND POOR LAW MEDICAL OFFICERS.

THE Irish Medical Secretary of the British Medical Association recently addressed a letter to the Ministry of Local Government (Irish Free State) with regard to the salaries of Poor Law medical officers engaged in the administration of the Medical Charities Acts, and the pensions of certain medical officers of Union hospitals who are compulsorily retired as the result of the recent amalgamation schemes of workhouses. The Minister of Local Government has in reply stated "that the aim of the Ministry is to secure that the salaries of the officers should be fixed on a suitable homogeneous basis for the whole country. To secure this result the Ministry are prepared to consider favourably revised scales of salaries for medical officers in each county in which such scales are necessary to remove existing anomalies. Meantime the Minister does not see his way to sanction any scales in excess of the existing highest scale for dispensary medical officers." The Minister also stated, with regard to the representations made as to the grievances of certain medical officers who were pensioned under the amalgamation schemes, that the Ministry will be prepared to look into any individual cases in which specific grievances are alleged.

### TUBERCULOSIS SCHEME FOR COUNTY MONAGHAN.

A deputation consisting of local clergymen and Dr. J. T. Elliott, secretary of the Co. Monaghan Local Medical Committee, recently waited on the county council to urge that the tuberculosis scheme should be continued, and that steps should be taken to extend it on a wider basis than heretofore. The council agreed to adopt the suggestion and decided to appoint a whole-time tuberculosis officer for the county at a salary of £500, with £100 travelling expenses.

### DAIRY AND COWSHED INSPECTION.

Lurgan and Moira Rural District Councils have decided to oppose the Belfast Corporation's bill seeking powers to control the inspection of dairies and cowsheds in the rural districts, on the ground that such powers would be calculated to set up a system of dual control which would be highly unsatisfactory. On the other hand, the Belfast Corporation justifies the main purpose of its bill on the ground that it should have a voice in the sanitation of these rural districts, from which is derived a considerable proportion of the milk supply distributed to the citizens of Belfast.



## Correspondence.

### APITUITARISM AND THE ANENCEPHALIC SYNDROME.

SIR,—In a brief article under the above heading in your issue of January 6th, 1923, Dr. D. L. Barlow shows that the anterior glandular portion of the pituitary gland was present in each of four anencephalic foetuses examined by him. These facts dispose conclusively of Dr. F. J. Browne's evidence for the suggestion that anencephaly is associated with faulty growth of the pituitary gland.

I wish to add one further instance in support of Dr. Barlow's proof. In 1911 I examined a fresh anencephalic foetus, in which not only the brain but all the spinal cord was absent; the peripheral nervous system and ganglia were present, as described in the case dissected by Sherrington. My own interest was then in the condition of the adrenal glands, but naturally I looked at the same time for the pituitary. A fully formed, well vascularized mass of glandular tissue (*pars anterior*) was easily identified. The microscopic sections show the same appearance as that figured in Dr. Barlow's article.—I am, etc.,

University College Hospital, W.C.1,  
Jan. 6th.

T. R. ELLIOTT.

SIR,—In your issue of January 6th (p. 15), under the heading "Apituitarism and the anencephalic syndrome," Dr. Barlow states that in four anencephalic foetuses he has found evidence of the presence of the *pars anterior* of the pituitary gland, and deduces from that the fact that the anencephalic syndrome described by me is no proof of the functions of the pituitary or that the internal secretions of the mother play only a very minor part in the development of the foetus.

The main object of my paper was more to draw attention to the anencephalic syndrome than to the apituitarism to which I attributed well marked cases of it. Whether the condition present in the anencephalic foetus was one of *hypopituitarism* is a point of minor importance. Indeed, there is no doubt that in many cases, probably in most, some pituitary tissue is present, for it is almost certain that its deficiency is due, not to developmental causes, but to destruction of the gland at an early period of its growth, in consequence of its exposed position on the floor of the basis cranii. I believe the amount of destruction varies in different cases, and that in certain instances it may so far progress that no trace of pituitary tissue may be found even on microscopic examination of the entire mass of tissue overlying the sella turcica. On the other hand, a considerable amount of vascular connective tissue intermixed with nerve cells may so protect the gland that little or no destruction of it may occur. This being so, the anencephalic syndrome to which I drew attention will vary in its degree and may in certain cases be almost entirely absent. The writer of the leading article in the BRITISH MEDICAL JOURNAL to which Dr. Barlow refers says: "Some anencephalics do not show the syndrome completely. Some are of what may be called the pretty type. . . . Now, it would be most interesting to know whether in these less ugly specimens there are traces of the pituitary gland." From the description of the four specimens examined by Dr. Barlow it seems probable that all belonged to this so-called "pretty" type, and that in none was the anencephalic syndrome as described by me at all well marked—that is, protruding eyeballs due to the smallness of the orbital cavity and the large pad of fat behind the eyeball, increase of the subcutaneous fat, protrusion of the tongue due to smallness of the mouth cavity, *hyperplasia* (not *hypoplasia* as stated in Dr. Barlow's paper) of the thymus, and *hypoplasia* of the genitals. For example, in specimen No. 4 the "adipose tissue was of about average amount." In a good example of the syndrome one of the most striking features is the great depth of subcutaneous fat which in one of my specimens measured 1 inch in depth over the manubrium sterni. To what is this to be attributed if not to pituitary deficiency?

That thymus hyperplasia exists in the anencephalic foetus when the syndrome is well marked there is no possibility of doubt. I have worked out the mean weight ratios of the thymus in over 200 infants, and in those of 8 to 9 months' development (most anencephalic foetuses are premature) found it to be 324, the heaviest ratio being 160 and the lightest 751. In four anencephalic foetuses, on the

other hand, in each case, adding one-eighth to the body weight to compensate for the absence of the brain, the thymus ratio was 94, 167, 95, and 331. In two of these cases the abnormal appearance of the thymus was most striking; quoting from my notes:

"It is a remarkably large and octopus-looking structure, consisting, in addition to the main mass, of several smaller lobes: weight 17 grams, weight ratio 94. It extends on the right side as far as the outer end of the clavicle, displacing the lung and filling the greater part of the lung space; on the left this is even more marked, the gland filling the entire upper part of the pleural cavity. The lungs on each side are rudimentary, and occupy only the lower part of the chest, having been evidently pushed down by the gland, which seems to have also interfered with their growth. Below the mid-line the thymus reaches to the diaphragm. A fairly large accessory thymus is present, and seems to be attached to the lower border of the left lateral lobe of the thyroid."

I have only once, apart from anencephaly, met with a weight ratio approaching those above quoted. In that case the infant was at term, and the ratio was 116. Apart from that one case the heaviest weight ratio I have ever met with at any age was 153. How is this hyperplasia to be explained? It surely cannot be a mere coincidence that by far the heaviest thymus glands I have ever met with were found in two out of the first five anencephalic foetuses which I examined.

The most marked example of the anencephalic syndrome that I have met with, and the one in which the above described thymus was found, was in my first specimen of anencephaly, upon which my conclusions were mainly based. In this naked-eye and microscopic examination failed to reveal evidence of pituitary tissue. In later specimens the syndrome has been less well marked, and in them I have more than once found evidence of the presence of varying amounts of pituitary tissue, but in all cases less than normal. That I did not claim its entire absence in every case is proved by the fact that I stated in my paper (p. 1), "in the monster under discussion we have a foetus which by virtue of its placental attachment to the mother is able to develop in utero to term frequently at least without any trace of a pituitary gland." In consequence of later findings I have been accustomed in conversation and in writing to refer to the condition in the anencephalic as one of *hypopituitarism* or *apituitarism*.

I have never seriously claimed that the hypoplasia of the adrenals, which I believe invariably present in anencephaly, is a part of the anencephalic syndrome.

So striking has this variability of the intensity of the syndrome above referred to been that in my notes of cases I have been accustomed to describe it as "well marked," "poorly marked," etc.

The sum of the matter seems to be this, that the title of my original article was somewhat unfortunate. Had it been "The anencephalic syndrome in its relation to apituitarism or hypopituitarism" my position would then have been unassailable.—I am, etc.,

Edinburgh, Jan. 8th.

F. J. BROWNE.

### THE TREATMENT OF GYNAECOLOGICAL CONDITIONS BY X RAYS AND RADIUM.

SIR,—In Dr. Knox's paper on the treatment of gynaecological conditions by x rays and radium, in your issue of October 14th, 1922 (p. 678), appears the following: "In other words, can the x-ray method compare with the surgical so far as complete removal is concerned? The answer must be in the negative."

Yet what surgeon would believe that he is able to eradicate the multitude of lymphatics and glands of the pelvis in their immediate relations to the numerous and important blood vessels, especially the aorta and the iliacs, although such might readily be accessible to x rays of sufficient penetration and intensity even though containing microscopic quantities of malignant cells?

Further on appears: "Another factor of some importance is the response of the tissues to the radiation. Some may only require a large quantity of relatively long wave-lengths, while in others the shortest wave-length of the gamma rays of radium may be more suitable." If by this Dr. Knox implies that it is the actual wave-length in any specific case which is characteristic for any desired response, it would be interesting to know on what evidence he bases this opinion. The numerous experiments carried out by Kroenig and Friedrich indicate clearly that a therapeutic effect can be obtained with a definite quantity of radiation quite irrespective of the quality.—I am, etc.,

Victoria, Australia, Dec. 1st, 1922.

H. FLECKER, F.R.C.S.



DISAPPEARANCE OF RODENT ULCER AFTER  
ERYSIPELAS.

SIR,—I do not know whether the case I am about to relate exhibited marked leucocytosis, as the blood was not examined; but without that provision it may be accepted as supporting the contention of Dr. John T. MacLachlan (December 30th, 1922, p. 1280).

Within the last three years a paucal patient under treatment for slight complaints from time to time was advised by me to have a small rodent ulcer at the left inner canthus removed by surgical operation. He refused this, and I observed the gradual enlargement until it became the size of a sixpenny piece. I was finally called in to treat him for an attack of erysipelas in the face. I noticed that the poison had entered by way of the ulcer and spread down over the left cheek. The attack was not severe, and I left him in a fortnight's time with a box of zinc ointment to apply to the ulcer, which remained red and angry. A month or two later I was informed by friends that my ointment had "cured the cancer." This seemed too flattering to be true, so I called on him to make sure. I then found that the ulcer had entirely disappeared, and only a supple white scar remained.—I am, etc.,

London, N.W., Jan. 5th.

HOPE GRANT, F.R.C.S.Ed.

NON-MALIGNANT AFFECTIONS OF THE COLON  
(INTESTINAL STASIS).

SIR,—I feel that Mr. Paramore, when dealing with the "physics" of the abdomen in your issue of December 9th, 1922 (p. 1145), has rather overlooked the fact that it would require an enormous and continuous lateral pressure to support a weight in such a well lubricated cavity as the abdomen. The moving intestinal contents are such a weight, and I have a strong suspicion that very many cases of stasis are connected with displacement of the gut, either by gravity or by the loaded portion being squeezed out of place by the abdominal muscles, much like a cherry stone from between the fingers. This may result, secondarily, in a local inflammation which increases the effects, or if a slight inflammation first led to the collection this may be increased. Here manipulation may help.

I would agree in deprecating too much surgical interference, for I feel that the future treatment of such conditions and all "indigestions" depends on the study of the specific action of drugs on the different parts of the gut, inch by inch almost, together with the almost specific results of local stases, whether these be "burned tongue," a localized cutaneous eruption, or (possibly) an attack of gout.—I am, etc.,

London, N.W., Dec. 22nd, 1922.

L. WALLACE, M.B.Oxon.

## THE DEVELOPMENT OF LOA LOA IN CHRYSOPS.

SIR,—In the BRITISH MEDICAL JOURNAL of October 21st, 1922, I notice in the article by Drs. A. and S. L. M. Connal on "The development of *Loa loa* in Chrysops," on page 730, that it is stated that the geographical distribution of *Loa loa* and of Calabar swelling is limited to West Africa. In this connexion the following note may be of interest. When I was in Yambio in the Bahr el Ghazal province of the Southern Sudan in 1914 I found Chrysops in fair number. I found no cases of Calabar swellings among the natives, but two years later I met in Cairo one of the men with whom I had lived in Yambio. He told me that since he left on furlough in 1915 he had suffered from peculiar swellings and irritation in his hands and arms. He spent his furlough in Australia, and said that he had puzzled the doctors whom he saw about this condition; one at last told him that his sickness was due to Calabar swellings, and that he was the first case of this complaint to be seen in Australia. He had never been in West Africa, and travelled to Australia via Egypt.—I am, etc.,

R. Y. STONES, M.D.Lond.

Church Missionary Society, Maseno, via Kisumu,  
Kenya Colony.

## TRAUMA AND APPENDICITIS.

SIR,—Dr. Charles J. G. Taylor's report of two cases under the heading of "Trauma and appendicitis" (January 6th, p. 17) leads me to mention a case that I have at present under my care in the Leicester Royal Infirmary.

A boy aged 12 years was playing football in the afternoon of Saturday, December 23rd, 1922, when he was kicked in the right lower abdomen by another boy. He was so badly hurt that he had to be taken home at once and put to bed. His

condition got worse and he was brought into the infirmary on the afternoon of December 26th. I saw him shortly after admission and it was at once obvious that he had some grave intra-abdominal lesion. Immediate lower median laparotomy was performed and extensive suppurative peritonitis throughout the lower abdomen disclosed. This was found to be due to a gangrenous appendix, which was removed and the pelvis drained. He is making a good recovery.

The boy tells me he was perfectly well before he was kicked. If the injury and the appendicitis are merely a coincidence it is a most extraordinary one.—I am, etc.,

Leicester, Jan. 8th.

F. BOLTON CARTER.

## HOSPITAL POLICY.

SIR,—The chief point now seems to be to find a formula which will unite those who still sincerely desire to maintain the voluntary principle and at the same time recognize that other factors have come into play. Therefore I suggest that if there must be a Medical Staff Fund it should consist—

1. Of voluntary contributions.

2. Of contributions from contracts made with the State, local authorities, employers of labour, and other bodies, where such contracts exceed the cost of maintenance in order to contribute to the medical fund.

This proposal is simple, honest, logical, and covers the hard cases in industrial districts. "Hard cases make bad law" is a well recognized axiom, but if we can meet them without infringing the voluntary system, which is infinitely more important than the hard cases, we must do so. If a Board of Management is convinced that a hard case exists in its hospital—and any Board should be open to conviction—it would be encouraged to contribute to the Medical Staff Fund.

This proposal does not prejudice the future because it frankly recognizes the present realities of the situation, and future policy would depend on how the profession was exploited by the laity. It need not be exploited at all if good will prevails. To force the present official policy is really to take advantage of the present difficult position of voluntary hospitals, and this is surely repugnant to us. We ought to be fighting to maintain the voluntary hospital, and not to undermine its position. The official policy was started in a somewhat obscure way when some people thought the voluntary system was doomed. The position has now changed by hospitals waking up and finding new sources of income. Surely we should welcome this instead of trying to turn it to our advantage.—I am, etc.,

Leitchworth, Jan. 6th.

NORMAN MACFADYEN.

## Universities and Colleges.

## UNIVERSITY OF LONDON.

THE University medal at the M.B., B.S. examination for internal and external students, October, 1922, has been awarded to Samson Wright, of the Middlesex Hospital.

Mr. F. J. Cleminson has been recognized as a teacher of otolaryngo-rhinology at the Middlesex Hospital Medical School. Sir William Willcox has been elected chairman of the Physiological Laboratory Committee. Sir Cooper Perry has been appointed a governor of Royal Holloway College, and Dr. P. H. Mitchiner a governor of Reigate Grammar School.

A course of lectures on mental deficiency for medical officers to local authorities and medical men engaged on work for defectives will be held, at the request of the Council of the Central Association for Mental Welfare, at the central buildings of the University from May 28th to June 2nd, 1923. Amongst the lectures arranged by the Faculty of Natural Science at King's College is one by Dr. J. S. Haldane, F.R.S., on the fundamental conceptions of biology, on February 7th.

Three lectures on psychology and psychotherapy will be given in the Department of Psychology at King's College by Dr. William Brown, on Mondays at 5.30 p.m., beginning on February 19th.

## LONDON INTER-COLLEGIATE SCHOLARSHIPS BOARD.

TWENTY-THREE scholarships and exhibitions of an aggregate total value of about £3,035, open to men and women, and tenable in the Faculties of Arts, Science, Medical Sciences, and Engineering of University College, King's College, and Bedford College, will be offered on May 1st. Fifteen medical entrance scholarships and exhibitions of an aggregate total value of about £1,530, tenable in the Faculty of Medical Sciences of University College and King's College, and in the medical schools of Westminster Hospital, King's College Hospital, University College Hospital, the London (Royal Free Hospital) School of Medicine for Women, and the London Hospital, will be offered for competition on Tuesday, June 26th. Full particulars and entry forms may be obtained from the Secretary of the Board, S. C. Ranner, M.A., The Medical School, King's College Hospital, Denmark Hill, London, S.E.5.



## REPORTS ON DRUGS.

## CHLOROFORM AND ETHER.

We have received from Messrs. J. F. Macfarlan and Co., Edinburgh and London (9, Moor Lane, E.C.2), samples of chloroform and ether prepared by them. We find that both samples comply with the B.P. tests for purity, and inhalation tests do not disclose any difference between them and other standard samples of these anaesthetics.

Messrs. Macfarlan claim that their products can be obtained at about one-third the cost of those made from ethylic alcohol. They point out that since chloroform and ether are definite chemical substances, therefore their purity does not depend upon the raw materials used in their manufacture, but upon the skill and care with which they are prepared.

There is certainly no scientific evidence against this claim. As regards chloroform, the Anaesthetics Committee of the British Medical Association, which made a prolonged investigation of undesirable effects due to anaesthetics, stated in its report (1900) that "comparing 'pure,' 'methylated,' and other chloroforms, no evidence is afforded of one kind being safer than another." Sir William Ramsay in the same report stated that all standard samples of chloroform left the manufacturer's hands in a highly pure condition, and that the presence of undesirable side-products such as phosgene ( $\text{COCl}_2$ ) was due to exposure to light and air, owing to the drug being stored in an improper manner.

The problem of ether has been complicated by the conclusions of Cotton and of Wallis, who claimed that pure ether had a low anaesthetic power, and that its action was increased by the presence of carbon dioxide and ethylene and other substances. In this connexion it is of interest to note that Stehle and Bourne<sup>1</sup> prepared highly pure ether and found that it had the same anaesthetic power as ordinary ether, or as the combination recommended by Cotton.

There is therefore no certain evidence that the action of anaesthetic ether depends on the presence of any other substance than ethylic ether. The chief requirement for anaesthetic ether appears to be that it should be a pure product and free from traces of such irritant substances as mercaptans.

## ROYAL MEDICAL BENEVOLENT FUND.

At the last meeting of the Committee 31 cases were considered and £417 granted to 29 applicants. The following is a summary of some of the cases relieved:

Son, aged 18, of M.D.Lond. who is now insane. The applicant is now at a training college and a bus training. The friend the £100 required. The

R.C.P.Edin. who died in 1920. asked the Fund to help her to purchase outfit. The sum of £72s. 2d. was paid by the Royal Medical Benevolent Fund Guild, and the Fund voted the sum of £4 towards this amount.

Widow, aged 40, of M.B.Lond. (1904), who died in 1918. Applicant was left to provide for her two children, aged 9 and 7, and asked for help towards education, but as her income is in excess of the condition of help from the Fund they voted the sum of £1 to qualify her for assistance from the Royal Medical Benevolent Fund Guild in helping to get the son into Epsom when old enough.

Widow, aged 45, of M.B., C.M. (1893), who died in January, 1912, leaving only £120 for applicant and three sons. This case received grants from the War Emergency Fund, and at present this Fund is paying the sum of £45 for one year's school fees for the youngest son. Another fund is helping with the maintenance grant, and the current expenses of the twelve months have reduced the applicant's balance to £30. The older son is a clerk who earns £100 per annum, out of which he gives his mother £43 towards his keep. The youngest son is a clerk who earns £78 per annum.

his applicant was owing to ill health. He was granted by the Fund in March, 1922, £26 in . . . was chosen as the most deserving to receive . . . of £2 which has been given to the Fund for a suitable unmarried grantee.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters Symonds, K.B.E., C.B., M.S., F.R.C.S., at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild is overwhelmed in these days of exorbitant prices for clothing and household necessities with applications for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles for the benefit of the widows and children who in happier times would not have needed assistance. The gifts should be sent to the Secretary of the Guild, 45, Bolsover Street, W.1.

## Obituary.

D. G. THOMSON, C.B.E., M.D.,

Late Medical Superintendent, Norfolk County Medical Hospital;  
Past President, Medico-Psychological Association.

We much regret to record the death of Dr. D. G. Thomson, for many years medical superintendent of the Norfolk County Mental Hospital, and from 1915 to 1919 commanding officer of the Norfolk War Hospital, with the rank of lieutenant-colonel R.A.M.C. He had recovered sufficiently from a recent severe illness to be able to spend Christmas with his son-in-law at Lingwood, near Norwich; but soon after he had a relapse and died on January 4th.

David George Thomson was born at Edinburgh in 1855, the son of Thomas Thomson of Princes Street. His younger brother is Professor Alexis Thomson, the distinguished Edinburgh surgeon. After studying in the University of Edinburgh and at Dunkirk and Dresden, he graduated M.B., C.M.Edin. in 1878, proceeding M.D., with honours, in 1881. Having served as house-surgeon at the Edinburgh Royal Infirmary, he began to apply himself to the study of mental disorder, and held in succession the post of assistant medical officer at the Derby County Mental Hospital and at Camberwell House, London. He was next appointed senior assistant medical officer to the London County Asylum at Cane Hill.

At the close of 1886 he was appointed medical superintendent of the Norfolk County Mental Hospital at Thorpe, Norwich, and held that office with great distinction for the long period of thirty-five years. During that time the institution grew much in size, and many and great improvements were effected. In July, 1914, the centenary of the opening of the hospital was commemorated by the holding of the annual meeting of the Medico-Psychological Association of Great Britain and Ireland at the hospital, under the presidency of Dr. Thomson. His presidential address gave an account of the development of psychological medicine in the preceding hundred years, together with a short history of the Norfolk Mental Hospital during that period, the oldest institution of its kind in this country. In this he discussed the origin and evolution of the laws relating to the insane, the growth of humanity in the treatment of the mentally afflicted, and the progress of the science of psychiatry. Twelve months later, towards the end of the first year of the war, the Norfolk Mental Hospital was taken over by the War Office for conversion into a military hospital, with Dr. Thomson as commanding officer. How the difficult task of reorganization was faced and accomplished was described by him in a paper in the *Journal of Mental Science* in 1916 and in an appendix to his Annual Report for 1920. Transport arrangements by road and rail had to be made for evacuation of the mental patients and their accompanying staff and documents. Within twelve days 950 persons were safely transferred to Ipswich, Melton, Colchester, Brentwood, Aylesbury, St. Albans, Arlesey, Godmays, and Cambridge. Some of the patients had been at the asylum for over fifty years and could remember no other home; many had never been in a railway train. Then came the necessary structural changes involved in the conversion of a large asylum into a military hospital of 1,000 beds at a cost of some £16,000. Eventually the total available accommodation of the Norfolk War Hospital grew to 2,423 beds, remaining at this figure from the spring of 1918 until its demobilization in April, 1919. During the four years and a half 45,000 sick and wounded soldiers passed through the wards.

In the autumn of 1915 Colonel Thomson took over the military supervision of all the auxiliary hospitals in Norfolk—some 60 in number—and these were henceforward affiliated to the Norfolk War Hospital for purposes of administration, inspection, and supply. This heavy task, like all other he undertook, was carried through with conspicuous success. For his war services Thomson was awarded the C.B.E., and retained his rank of lieutenant-colonel R.A.M.C. In December, 1919, the permanent heads of departments of the war hospital and the members of the medical staff made him presentations as a mark of their esteem and in remembrance of the privilege they all had of working under him during the war. Early last year, on retiring from the post of medical superintendent of the institution (once again the Norfolk County Mental Hospital), he was the recipient of a farther presentation, and was appointed medical adviser to the Mental Deficiency Acts Committee of the Norfolk County Council. In retirement at his home in Norwich he continued also to

<sup>1</sup> R. L. Stehle and W. Bourne: *Journ. of Amer. Med. Assoc.*, 73, 375, 1922.



act as Honorary Consulting Physician to the National Association for the Care of the Feeble-minded.

He remained in office as President of the Medico-Psychological Association throughout the period of the war. For many years he had lent his influence to the cause of reform, urging the need for properly equipped clinics for the treatment of early and incipient forms of mental disorder, and for the training of young medical practitioners in psychiatry. In 1919 his successor in the presidency, Dr. Hubert Bond, reviewed the progress that had been made towards realizing the measures powerfully advocated in 1908 by Thomson for providing adequate instruction in psychiatry. Besides his advocacy of mental clinics and schools of psychiatry, Thomson wrote and spoke on the need for removing the disabilities of the asylum medical service, and thus encouraging young graduates to look on psychiatry as a career in medicine.

Thomson was a loyal and devoted member of the British Medical Association and served it well in many capacities. He was Honorary Secretary of the East Norfolk Division from its formation in 1903 until 1920 and represented it on the Representative Body of the Association. He was a member of the Norfolk Branch Council, and was President of the old East Anglian Branch in 1909. In 1913 he received from the medical practitioners of Norfolk a presentation of plate in recognition of his great services to the Division and also of his work as honorary secretary of the Norfolk Insurance Committee. At the Annual Meeting of the Association held in London in 1910 he was Vice-President of the Section of Psychological Medicine and Neurology. He was for some years a valued member of the Medico-Political Committee, of the Medico-Legal Subcommittee, and of the Asylum Assistant Medical Officers' Subcommittee; and during the war, notwithstanding his many other duties, he found time to serve as secretary of the Local Medical War Committee for East Norfolk. From 1918 to 1919 he was a member of the Central Council of the Association.

The funeral took place at Lingwood on January 8th. Sir Hamilton Ballance represented the Council of the British Medical Association; Mr. Blaxland and Dr. Cleveland the Norfolk Branch; and Dr. Ian Dickson the Norwich Division of the Association. Representatives of the Norfolk Mental Hospital included Dr. O. G. Connell, medical superintendent, and Dr. A. W. B. Livesay, senior medical officer. The Board of Control was represented by Dr. C. Hubert Bond, who, together with Dr. Rice and Dr. Livesay, also represented the Medico-Psychological Association. The Norwich Medico-Chirurgical Society was represented by Dr. Crook, Mr. Maxted, and Dr. Starling.

The MEDICAL SECRETARY writes: I am glad to have the opportunity of paying my respects to the memory of one of the best British Medical Association workers I have known. He was not a man whose intimacy was easily reached, but those who knew him well realized his great ability, his soundness of judgement, his acute sense of humour, and, above all, his intense devotion to the Association. There was nothing the Association could ask of him that he was not prepared to do with all his might, though always keeping well out of the limelight. He was a signal refutation of the theory held by some that to do good work for general practitioners a man must be in general practice himself, because though Thomson had never been in general practice he was completely trusted by his constituents, who knew that he would never let them down. And well he deserved their trust. He regarded himself as the shepherd of the East Norfolk Division, and it was his pride to say, as he often did, that the Association could always depend on his men. He will be greatly missed by his friends in the Representative Body, of which he was a member and attended uninterruptedly from 1907 to 1922. I have lost one of my best friends in the Association, and wish to extend my sympathy not only to his family but to the East Norfolk practitioners, to whom for so many years he cheerfully gave of his very best.

HARRY RAINY, M.A., M.D., F.R.C.P.E.,  
Physician, Edinburgh Royal Infirmary.

DR. HARRY RAINY, one of Edinburgh's distinguished graduates, physicians, and teachers, died on January 4th at his residence in that city. For some months his health had been giving anxiety to his friends, and, although there had been improvement recently, the end was not unexpected. He was in his fifty-ninth year.

Dr. Rainy came of a family distinguished both in medicine and the church. His great-grandfather was George Rainy, minister of Criech in Sutherlandshire, and his grandfather was Professor Harry Rainy, a student of medicine both in Glasgow and Edinburgh, an M.D. of the former (1833), and the professor of forensic medicine and medical jurisprudence in its university (1841-62). Professor Rainy's second son, George, was also M.D. of Glasgow and surgeon to the Eye Infirmary there; he was the father of the subject of this notice.

Whilst Professor Harry Rainy of Glasgow played a leading part in the great ecclesiastical movement which terminated in 1843 in the Disruption and in the formation of the Free Church of Scotland, his eldest son, Robert Rainy, D.D., uncle, therefore, of the subject of this memoir, was a leader of the Free Church, Principal of New College, and Moderator of the first Assembly of the United Free Church in 1900. With such an ancestry it is no wonder that Dr. Harry Rainy made a mark in medicine and took more than a passing interest in church affairs. He was an elder in the New North United Free Church, Edinburgh, and an ardent supporter of the movement for union between the two churches whose separation constituted the Disruption in 1843.

Harry Rainy was born in Glasgow in 1864. He received his education in Edinburgh at the Academy and the University. He graduated M.A. in 1885 and M.B. and C.M. in 1891; he was the most distinguished student of his year in medicine, gaining the Ettles Scholarship. He built up an important reputation as a physician. He was among the first to use the x rays extensively in diagnosis. With his friend, Dr. Robert Hutchison, he wrote an admirable students' textbook entitled *Clinical Methods*, which, published in 1897, has passed through a number of editions. In 1895 he had passed the examinations for the membership of the Royal College of Physicians of Edinburgh and in 1896 he was elected to the Fellowship. He was soon appointed an examiner in medicine in that college; he acted for many years as honorary secretary; served for five years on the Council, and was for a time vice-president. In 1899 he graduated M.D.; his thesis, which was deemed worthy of competing for a gold medal, was on the action of toxic substances on spinal stichochrome cells. In 1907, when he attended the bicentenary celebrations of the birth of Linnaeus in Sweden as one of the representatives of the Royal College of Physicians of Edinburgh, he was given the honorary doctorate of medicine by the University of Upsala. Meanwhile Dr. Rainy was rapidly making his influence felt in Edinburgh: he was lecturing on the principles and practice of medicine in the Extramural Medical School; he was acting as one of the physicians to the New Town Dispensary; and he was doing good work as honorary medical electrician to the Royal Hospital for Sick Children. In 1912 he was appointed lecturer on physical methods in the treatment of disease in the University of Edinburgh; he was one of the physicians to the Edinburgh Royal Infirmary and extern examiner in medicine in the University of Aberdeen; and was elected a Fellow of the Royal Society of Edinburgh. Comparatively recently he succeeded Dr. Crauford Dunlop as medical adviser to the Prison Commission for Scotland; and just a few weeks before his death he was appointed physician to the Longmore Hospital for Incurables in place of the late Sir James Affleck. In 1918 also he was nominated by the University Court as senior lecturer on clinical medicine in charge of wards in the Royal Infirmary. During all these years of constant work Dr. Rainy found time to contribute to the literature of his profession; in addition to *Clinical Methods* he wrote on the pathology of Friedreich's ataxia, on congenital facial diplegia due to nuclear lesions, on skiagraphic researches in teratology, on clinical methods of estimation of sugar in the blood, and on dyspnoea (in the second edition of the *Encyclopaedia Medica*).

Dr. Rainy's qualifications were conspicuous in several directions. He was a deft administrator; his counsel, founded on great experience and on sure knowledge, was highly valued in all the public bodies with which he was associated, as for instance in the Governing Board of the School of Medicine of the Royal Colleges, where he was one of the representatives of the Royal College of Physicians. As an investigator of scientific problems he was critical to a degree, never failing to submit his own work to the same trial as by fire to which he subjected that of others. He was a fair, if searching, examiner, free from fads. As a teacher he showed something of the equipment of his revered master, the late Professor Greenfield; in other words, he delighted to educate his pupils by



helping them to demonstrate to themselves (and incidentally to others) their amazing lack of precise knowledge; but underneath his searching methods there was never lacking a redeeming and saving humour, often coming in where and when least expected, and always carrying away with it every trace of chagrin or soreness. It is reported that once when he was teaching clinical medicine to women students he remarked that the class notices were not being attended to, and that, in future, he had given orders they should be hung up immediately under the mirror on the wall of the dressing room! His humour peeped out too in the word *pluvium*, which he chose for his abbreviated telegraphic address.

As has been already noted, Dr. Rainy shared with his relatives an interest in ecclesiastical matters which was deeper even than that of the average Scotsman. He acted as superintendent of sabbath schools in his own congregation, and he was nearly always returned as a Representative Elder to the General Assembly of the Church. He was beloved by his patients, and his opinion as a consultant was placed high. There was yet another sphere in which he shone. His friends found that his mind was stocked with the best passages from the best authors; he was at home in the classics of all ages and times, from Plato and Euripides (how he loved Gilbert Murray's translations!) to Dante and Bunyan. It was no longer ago than New Year's Day that he showed with pride to the writer of this obituary notice an early edition of the *Divina Commedia* which he had recently acquired. Here, too, his sense of humour came in, for he enjoyed nothing so much as a clever parody such as Kipling and Graves have given of the almost unknown fifth book of Horace's *Odes*. He had a fine taste in music, too, and could discourse with understanding of the Gregorian chant. Dr. Harry Rainy leaves a place in medical Edinburgh which will not soon be filled, a place which he had made all his own and had furnished with gifts of intellect and character of unusual brilliancy and depth.

The funeral took place on Monday, January 8th, from the New North Church to Rosebank Cemetery, and was attended by the Vice-President and the Fellows of the Royal College of Physicians, by representatives of the University and Royal Infirmary, and many others.

A. MAXWELL WILLIAMSON, M.D., B.Sc.,  
M.O.H. City of Edinburgh.

DR. ALFRED MAXWELL WILLIAMSON, after a serious illness of some three months' duration, died on January 5th, at the Palace Hotel, Castle Street, Edinburgh, which had been his home for the past sixteen years. Like Dr. Harry Rainy, whose death occurred only a day before, Dr. Williamson never married; he gave all his time and energy to the work of his office as medical officer of health to the city of Edinburgh, and he achieved results of the highest importance to the Scottish capital and to the country at large.

He was the son of a medical man in Leith (now a part of the "extended Edinburgh"), and was born there in 1859. At first his bent was towards the sea, and he was trained as an engineer in one of the shipbuilding firms in his native town. Then he turned to the profession of his father and studied medicine in the University of Edinburgh, and graduated M.B. and C.M. in 1888 when he was 29 years old. He took the B.Sc. in Public Health in 1890, and from that time till his death his life was more or less intimately bound up with the maintenance of the public welfare of the city which was ultimately to be amalgamated with Leith; it is a somewhat interesting fact that some of the strongest arguments which in the end brought about this amalgamation were those founded on the desirability of conjoining in one the health activities of the two neighbouring towns. In 1899 Williamson graduated M.D. in the University of Edinburgh; his thesis, which was deemed worthy of competing for a gold medal, had as its subject the infectivity of tuberculous meat and the methods of tuberculous meat inspection employed in public abattoirs, and embodied a criticism of the report of the Royal Commission on Tuberculosis.

In 1891 Dr. Williamson was appointed an assistant to Sir Henry Littlejohn, then the active and distinguished medical officer of health for Edinburgh. He occupied this post for six years, acting for a short period as temporary medical officer in Sir Henry's absence, and again for a three months' interval performing the duties of Dr. Wood (then seriously ill) as medical superintendent of the City Hospital. Dr. Williamson was especially appointed to deal with the outbreak of small-pox in 1894-95 and with the system of free

vaccination which was then offered to the citizens. In 1898 he was made chief sanitary inspector to the city, and had the responsibility of organizing a new department and of getting to know the health conditions of the town in a way which enabled him later to work so efficiently in the post of medical officer of health, which, on the retirement of Sir Henry Littlejohn, became vacant in 1908. Events more than justified the wisdom of the choice which gave this important post to Dr. Williamson. He did other things than those that fell to him in his civic appointment—for instance, he was examiner in medical jurisprudence and public health for the Colleges of Physicians and Surgeons and in public health for the University; he had also been President of the Society of Medical Officers of Health of Scotland—but the business of the medical officership of health was his life-work.

Dr. Maxwell Williamson's tenure of office coincided with the coming into force of a number of legislative enactments which had a profound influence upon public health activities everywhere and gave a special tinge and character to his work. He was quick to see their bearing upon local conditions, and had a scheme ready for acceptance as soon as the way opened for it. It was so with tuberculosis (under the National Insurance Act), and rapidly provision was made at the City Hospital, at the Victoria Hospital, and elsewhere for the treatment of this disease; it was so again with mother and child welfare (under the Births (Extension) Act, the Midwives Act, and the Maternity and Child Welfare Act), and immediately centres (preventive and curative) sprang up all over the city, and the Royal Maternity Hospital and various dispensaries were swept into the City of Edinburgh Welfare Scheme; when the report of a Royal Commission and the discovery of better means for diagnosing and treating the venereal diseases brought these matters into the public eye the medical officer of health was prepared with a scheme to utilize all this at once for the well-being not only of Edinburgh but of many of the surrounding districts too. Sir Henry Littlejohn had foreseen many of these developments and had as far as possible prepared for them, but it fell to Dr. Williamson to carry them out and to witness a fall in the total death rate, a fall in the infantile death rate, and a lessening in the danger and destructiveness of the venereal diseases. Dr. Williamson never forgot his early experiences in the domain of housing, and most of the contributions which he made to medical literature (in addition, of course, to his vivid annual reports, which caused dry facts to live) were devoted to the housing problem. Thus he was the author of *Housing Conditions in their Relation to the Spread of Tuberculosis*, and he contributed to the second edition of the *Encyclopaedia Medica* an admirable article on housing, founded upon the Edinburgh conditions. He had from time to time anxious hours and days when epidemics swept over or near to the city, but he was then seen at his best, rapid and resourceful; and when mistakes were made—as on an occasion not so long ago—he was quick to recognize them and frankly to own an error and as quickly to set about on a right tack.

Dr. Williamson's care of the health of Edinburgh was well known; but to the few who were his intimate friends he seemed almost as if he added a responsibility for the ethical conditions of the city. He was deeply religious, and was much concerned by the temperance question and the social problems of city life with which he was so often in contact. He carried on a club for men and boys in the Cowgate, he was a director of the Free Breakfast Mission, and he was a constant supporter of temperance and evangelistic campaigns. He was an elder in St. George's United Free Church. The funeral at South Leith Churchyard took place on Sunday, January 7th, and was largely attended.

JOHN D. LLOYD, L.R.C.P., M.R.C.S.,  
Formerly of Chirk

DR. JOHN DANIEL LLOYD, M.B.E., J.P., who died on November 23rd, 1922, aged 73 years, received his medical training at the old Bristol School of Medicine, where W. G. Grace was one of his fellow students; he also studied at St. Bartholomew's Hospital, and took the diplomas of L.R.C.P. (Edin.) in 1873 and M.R.C.S. (Eng.) in 1874. Soon afterwards he joined a practice at Chirk, Denbighshire, where he spent the remainder of his working life. He was a justice of the peace for Denbighshire and held many public medical appointments; he was M.O.H. for Chirk and surgeon to Brynkinalt Cottage Hospital. He had held the rank of surgeon lieutenant-colonel in the Shropshire Yeomanry, and received the Territorial Decoration; he was also a Knight of Grace of the Order of St. John of Jerusalem.



For forty years Dr. Lloyd carried on successfully a very extensive general and colliery practice, and was held in high esteem by all who knew him. He took a great interest in public affairs and in the welfare of his profession; he was an active member of the British Medical Association, and had been president of the Shropshire and Mid-Wales Branch. He was a sagacious practitioner and a hard worker, who rarely took a holiday away from his practice. He was fond of all kinds of sport, and in his early days a successful steeplechase rider. He was an excellent judge of a horse and before motor cars came into regular use did his work on horseback. Occasionally, too, he was able to put in a day with the hounds. He was also interested in the gentle art of self-defence. During the later years of his life in Chirk he set himself the task of raising funds for a hospital at Chirk. He chose the site, arranged the aspect, and considered every detail of its construction. He laid the foundation stone, and before leaving Chirk had the satisfaction of seeing this hospital of sixteen beds in full working order. He was a man of sunny nature, whose geniality was appreciated even on a slight acquaintance. He has left behind him many friends to mourn his loss. He was laid to rest in Lillesley Churchyard, near Gloucester, where his wife and eldest son are also buried. He is survived by a son and a daughter.

#### JOHN BERRY HAYCRAFT, M.D., D.Sc.,

Emeritus Professor of Physiology, University College, South Wales.

PROFESSOR JOHN BERRY HAYCRAFT, whose death was briefly mentioned in our issue of last week, had retired from the Chair of Physiology, University College, South Wales, in 1920, when he was appointed Emeritus Professor. He had since resided in Cambridge, where he continued his physiological researches. A paper by him on the photographic kymograph is ready for publication in the *Journal of Physiology*, and just before he was attacked by his last illness he had completed a further series of experiments on the pulse.

John Berry Haycraft, whose father had the same Christian names, was born in London in 1857, and received his medical education in Edinburgh, where he graduated M.B., M.Ch., and B.Sc. in 1878; ten years later he took the degrees of M.D. and D.Sc. After working for some time in Ludwig's laboratory in Leipzig he became demonstrator of physiology in the University of Edinburgh under Professor Rutherford. After holding that position for nearly three years he was, in 1881, appointed to the newly founded chair of physiology at Mason College, Birmingham. His teaching in Birmingham was successful in attracting students, and in 1887 he accepted an invitation to take the place of Professor Rutherford, who was unable, owing to ill health, himself to conduct the classes and give the systematic lectures. When Professor Rutherford returned in 1888 Haycraft continued to take the practical courses and organized an advanced class of practical physiology. He remained in the physiological department in Edinburgh until 1892, when as the post of assistant professor of physiology, which he had been led to expect he would receive, had not been established, he went to London and was appointed a research scholar of the British Medical Association. During his years in Birmingham and Edinburgh Haycraft had been actively engaged in research and had published papers on the coagulation of the blood, a subject in which he took a deep interest; on the estimation of uric acid, on the nature of the striation of muscle, and on other subjects. In 1893, when the medical school of University College, Cardiff, was established, he was appointed to the chair of physiology, and again had the task of organizing the department. In 1899 he was laid aside for a year by an attack of hemiplegia, but made a remarkable recovery. About 1908 he began to insist on the need for a new physiological department, and his hopes were realized in 1913, when the erection of new buildings, made possible by the generous gift of Sir William James Thomas, Bt., was undertaken. Haycraft was responsible for the planning and equipment of the physiological department, which he continued to direct until 1920, when, as has been said, he retired. In 1894 he was appointed to deliver the Milroy lecture of the Royal College of Physicians, and took for his subject, "Darwinism and race progress." He was the author of the articles on animal mechanics, taste and smell in Schafer's *Textbook of Physiology* (1900), and of numerous articles in the *Journal of Physiology* and other periodical publications.

Dr. Haycraft was thrice married: his first wife, a sister of Mr. de Vere Stapoole, was an artist and writer. He leaves

a widow and two sons, one of whom is Mr. J. B. Haycraft, M.C., F.R.C.S., assistant in the surgical unit of the Welsh National School of Medicine, and honorary surgeon to the Prince of Wales's Hospital, Cardiff.

By the death of Sir FRANCIS FARMER dentistry loses a vigorous and inspiring personality. To the medical profession he was best known for his work as consulting dental surgeon to the Queen's Hospital at Sidcup. His skill and ingenuity in prosthetic dentistry were invaluable both to the operating surgeon and to the dentist. The dental profession knew him long before this as dental surgeon to the London Hospital and one of those who helped in the founding of the London Hospital School of Dentistry. He took a deep and practical interest in the dental museum of the school, which contains many specimens of his giving. Free of the cares of practice Sir Francis Farmer was a most agreeable comrade, and those who were privileged to know him will agree that as a teller of stories he was beyond compare. His sudden death will be deplored by all who knew him and his work.

We regret to record the death, at Coventry, on December 21st, 1922, of Dr. T. W. FOWLER, at the age of 61. Thomas Webb Fowler received his medical education at Queen's College, Birmingham, and took the diplomas of M.R.C.S. Eng. in 1885 and L.R.C.P. Lond. in 1887; he graduated M.B., Ch.B. of Birmingham University in 1901 and M.D. in 1906, and became F.R.C.S. Edin. in 1902. After practising for a few years at Matlock and at Birmingham, he went to Coventry in 1885 and built up a large practice there. In 1889 he was elected a member of the city council, and at the time of his death he was by length of service its senior member. Throughout his long public career public health claimed his closest interest; he brought to a successful issue schemes for a small-pox hospital and for an extension of the city hospital; he always kept a watchful eye upon the city's water supply and on his initiative a monthly analysis of the supply was instituted; he was for seventeen years chairman of the Watch Committee. In 1897, at the early age of 36, he was elected mayor of Coventry, and was re-elected at the end of his year of office. On the completion of his term he was raised to the aldermanic bench, and he was also a justice of the peace for the city. Dr. Fowler represented Coventry on the board of governors of Birmingham University, and had been chairman of the Coventry Education Committee. He held the appointment of honorary physician to the Coventry and Warwickshire Hospital, and was a member and a former president of the Coventry Division of the British Medical Association. He will long be remembered in Coventry for his energetic work in the interests of the city, for his high professional reputation, and for his kindness of heart.

WE regret to record the death of Dr. BERNARD PICKERING, which took place at his residence in Bolton on December 18th, 1922, after an illness which had lasted for about three months. He was born at Lichfield in 1881, and received his medical education at Edinburgh University, where he graduated M.B., Ch.B. in 1904. As a student he was an active member of the University Rowing Club. For three years he was house-surgeon at Bolton Infirmary, and on resigning entered into partnership with the late Dr. Jefferies. In May, 1915, he joined the R.A.M.C. and saw service in France, where he was surgical specialist in the 20th Casualty Clearing Station. Dr. Pickering was honorary assistant surgeon to the Bolton Infirmary; he was a member of the Panel Committee and had been secretary of the Bolton Medical Society. He was a quiet, unassuming man, who hated ostentation. So conscientious was he in his work and so ready to respond to all demands on his time, whatever the hour, that there is little doubt his health was so undermined as to diminish his recuperative power during his illness. His cheerful courage, his patience, and his consideration for others were characteristic, and never once failed him during his last illness. The affection in which he was held was shown at his funeral, when over thirty of his colleagues and many patients were present.

Professor JOLYET of Bordeaux, a well-known physiologist and biologist, has recently died.

Professor OBERSTEINER, the well-known neurologist of Vienna, has died at the age of 75.



## The Services.

### TERRITORIAL DECORATION.

THE Territorial Decoration has been conferred upon the following officers.

*Territorial Army: Royal Army Medical Corps.*—Majors H. A. Ahrens (ret.), R. Y. Anderson, E. H. Brunt (deceased), W. F. Muoro, M.C., and H. B. Low, M.C. (ret.).

*Territorial Army Reserve: Royal Army Medical Corps.*—Major W. A. L. Holland.

## Medical News.

THE celebration at the Royal Society of Medicine of the hundredth anniversary of Pasteur's birth, to which we made reference last week, will be held on February 28th. The Bulletin of the Académie de Médecine for December 26th, 1922, contains a report of the speeches made in celebration of the one-hundredth anniversary of the birth of Pasteur, of which our Paris correspondent last week gave a spirited account. The number is illustrated by a photographic portrait of Pasteur which we have not seen before. It is a striking likeness, showing him in the prime of middle life.

LIGHT is thrown on the attitude of the rulers of public schools to science by the reception accorded at the Head Masters' Conference last week to the report of the Science Masters' Association, made at the request of the conference and of the Associated Preparatory Schools, on the teaching of elementary science and nature study in preparatory schools. The report contained proposals that two periods should be given weekly to science, or a least one period of three-quarters of an hour, and that candidates for scholarships at public schools should have the opportunity of answering questions in science in *viva voce* examination. Mr. Talbot (Haileybury) in supporting the recommendations said that boys who had not done some preliminary science at the preparatory schools were handicapped at the public schools; in the period of a boy's life which immediately preceded the public school age (13) his natural disposition was to be keen in his inquiries about things, and this was the moment to introduce him to science. Mr. Eccles (Gresham's), though in favour of the recommendations, said that the preparatory school masters were opposed to them on the ground that any time taken from Latin tended to handicap the boys in scoring for scholarships at public schools. The head master of Eton expressed the view that the burden to be placed on preparatory schools was greater than they could bear, and eventually the conference rejected the proposal that where possible two periods weekly should be given to science, but agreed that candidates for scholarships at public schools should be allowed an opportunity of answering questions in science at the *viva voce* examinations.

A NEW course of lectures at the Hospital for Sick Children, Great Ormond Street, W.C.1, commenced on Thursday last, when Dr. Thurstield spoke on the diagnosis of pulmonary tuberculosis in children of school age. The lectures, which are free to medical practitioners, will be continued on Thursdays, at 4 p.m., up till and including March 22nd. The subjects are announced each week on the last page of the SUPPLEMENT.

A NEW post-graduate course will commence at the National Hospital for the Paralyzed and Epileptic, Queen Square, Bloomsbury, W.C.1, on January 22nd, and continue to March 23rd. The course will consist of lectures on the pathology of the nervous system, by Dr. J. G. Greenfield, on Mondays; out-patient clinics and clinical lectures and demonstrations on Mondays, Tuesdays, Thursdays, and Fridays. Lectures on the anatomy and physiology of the nervous system will also be given if sufficient entries are received.

A COURSE of lectures on tuberculosis and venereal disease has been arranged by the Royal Institute of Public Health. The lectures will be given at the Institute (37, Russell Square, W.C.1) on Wednesdays, at 4 p.m., from January 17th to March 21st inclusive. The lecturers are Professor Lyle Cummins, Dr. Gordon Pugh, Dr. Lisle Punch, Dr. James Watt, Dr. Hope Gosse, Colonel L. W. Harrison, Dr. Townley Clarkson, Major A. T. Frost, Dr. J. H. Sequeira, and Dr. W. J. O'Donovan. Admission is free, without ticket.

AN international congress of hydrology and climatology will be held at Brussels in September, when the hydro-mineral treatment of diseases of nutrition and of heart diseases will be discussed.

THE post-graduate lecture at the Whitworth Street West Branch of St. Mary's Hospitals, Manchester, arranged for January 19th, has been postponed till March 9th.

THE health organization of the League of Nations recently brought to a successful conclusion an international course for medical officers, in which twenty-two officials from the health services of Austria, Belgium, Bulgaria, Italy, Poland, Russia, and other countries took part. The course was held in Belgium and Italy during two and a half months, under the auspices of the directors of the Belgium and Italian health services respectively, through the aid of a grant from the Rockefeller Foundation. On the completion of the course those who took part in it assembled at Geneva, where a discussion was held on the results. Dr. D. C. Kirkhope, M.O.H. Tottenham, attended the course as an observer, as the next course is to be held in England.

THE annual meeting of the French Society of Comparative Pathology was held in Paris on December 19th, 1922, when papers were read on the action of the lung on fats, by Professor Roger; on articular and febrile symptoms of alimentary origin, by Professor Bezançon; on cancer of plants, by Professor Fock; on gonococcal phlebitis and periphlebitic abscess, by Achard, Rouillard, and Bloch; on therapeutic applications of d'Herelle's phenomenon, by Philibert, Handuroy, and Cordey; on researches on the physiological and therapeutical properties of tissue diastases, by Professor Maignon; on normal radiological pictures in the dog, by Taskin; on clinical applications of giant syringes, by Rosenthal; on biological causes of depopulation, by Bérillon; and on early diagnosis of pulmonary tuberculosis by x rays, by Faugère.

THE Lord Chancellor, Viscount Cave, will open the new Haslemere and District Hospital at 2 p.m. on Saturday, January 20th. The hospital is equipped for 35 beds, and has been built at a cost of £32,000, the whole of which has been raised, so that the institution starts free from debt.

THE scheme adopted last July by the Voluntary Hospitals Commission to establish a small consultative committee of members of local committees has now been carried out. Among the members are Sir David Drummond, C.B.E., M.D., representing the Northumberland Local Voluntary Hospital Committee, Sir A. Garrod Thomas, M.D. (Monmouthshire), and Colonel R. J. S. Simpson, C.B., C.M.G., late A.M.S. (Kent).

A DISCUSSION on the treatment of human trypanosomiasis will be held at the meeting of the Royal Society of Tropical Medicine and Hygiene on Thursday evening next; the value of the drug called "Bayer 205" and of tryparsamide will be discussed. Full details are to be found in the Diary.

THE question of the return of disabled men to industrial life will be discussed at the meeting of the Governing Body of the International Labour Office of the League of Nations to be held in Geneva on January 30th.

At a sessional meeting of the Royal Sanitary Institute to be held at the Birmingham University on February 2nd and 3rd a discussion on town and country milk supplies and their improvement will be opened by Dr. John Robertson, M.O.H. Birmingham; the chair will be taken by Professor H. R. Kenwood.

At the meeting of the Royal Statistical Society to be held at the Royal Society of Arts, John Street, Adelphi, W.C.2, at 5.15 p.m. on Tuesday next, January 16th, Dr. R. Duddfield will open a discussion on the registration of disease.

A MEETING of the Medical Prayer Union will be held by invitation of Dr. and Mrs. J. Burnett Rae, at 98, Portland Place, W.1, on Thursday, January 25th, at 8 p.m., when the Right Rev. E. A. Knox, D.D., late Bishop of Manchester, will read a paper. An intimation of intention to be present will be welcomed by the Hon. Secretary, Dr. Tom Jays, Livingstone College, Leyton, E.10.

THE annual meeting of the Canadian Medical Association will be held at Montreal on June 12th, 13th, and 14th. The Canadian Medical Association Journal states that among those present at the annual meeting will be Sir Berkeley Moynihan, Sir Robert Jones, Sir William Taylor of Dublin, and Dr. W. J. Mayo of Rochester, U.S.A. Arrangements have been made for the meetings of other associated societies to take place at the same time.

THE next international congress of the history of medicine will be held at Geneva in 1925.

At the meeting of the Medico-Legal Society to be held at 11, Chandos Street, W.1, on Tuesday next, at 8.30 p.m., Professor Harvey Littlejohn will read a paper on the micro-spectroscope in the medico-legal detection of blood, to be followed by a demonstration thereof. Dr. T. H. G. Shore and Sir Bernard Spilsbury will exhibit specimens.

MESSRS. CASSELL AND CO., LTD., announce for early publication a new book by Sir Frederick Treves, entitled *The Elephant Man and Other Reminiscences*.

PROFESSOR FINKET has been elected President of the Belgian Royal Academy of Medicine.



## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, Attilogy, Westrand, London; telephone, 2630, Gerrard.

2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), Articulate, Westrand, London; telephone, 2630, Gerrard.

3. MEDICAL SECRETARY, Mediscera, Westrand, London; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: Macillus, Dublin; telephone, 4757, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: Associate, Edinburgh; telephone, 4361, Central).

### QUERIES AND ANSWERS.

DR. HENRY WALDO (Clifton, Bristol) asks for advice as to the most suitable parts of England for a male patient, aged about 50, to live, with more or less persistent anaemia.

#### INCOME TAX.

"J. C." has been assessed separately for his remuneration as coroner.

"We understand that the Board of Inland Revenue have no objection to salaries for such appointments being included with the general earnings of a medical practitioner in one sum for assessment under Schedule D; "J. C." might point this out to the local inspector. Allowances made voluntarily by relatives are not chargeable to tax on the recipient. Allowance can be claimed for the children (on the form of return or subsequently), provided they are attending recognized educational establishments for whole-time instruction. Our correspondent does not say at what sum his general earnings were assessed, and we therefore cannot deal with the other points to which he refers.

### LETTERS, NOTES, ETC.

#### TENNIS ELBOW.

DR. J. G. M. MOLOSY (Truro) writes: At the end of September, 1921, I returned from a month's holiday with a very acute tennis elbow. The pain and tenderness were typical. To lift a loaf of bread with my hand pronated was almost impossible owing to pain. The only treatment was rest, and I refrained from playing badminton during the winter. I started this year's tennis season in fear as my "elbow" was still rather tender. The condition I attribute solely to the fact that as I thought my racquet handle in 1921 was too thin for my grip I put some strapping and two layers of gauze bandage over it. I removed this artificial thickening at the beginning of the 1922 season, and have had no further trouble. Eventually, for the first three weeks of last September I played every day at least five or six sets. My arm is now perfectly well, no pain or tenderness.

#### A QUESTION OF PIGMENT.

CHANCE, aided by circumstance, has made us acquainted with the existence of *The Shakespearean Quarterly*, printed in Sydney, which reached its fourth number in October. The circumstance which has brought us this good fortune is that the number contains a paper by Dr. Frank A. Nyulasy of Melbourne, who is exercised by the question whether Othello was brown or black, arab or negro, and by other doubts. Professor A. C. Bradley is quoted as asserting that the stage tradition down to 1814 was that Othello was to be played as almost quite black, but it may be questioned whether Bradley's statement is correct. At the present time the stage tradition is that Othello should have a full brown complexion, not black, but nobody exactly knows how far this tradition goes back. It is really rather amusing how easily many of us get excited about a question like this, which is, in truth, insoluble. We are really trying to satisfy ourselves as to the picture Shakespeare had in his mind, for doubtless he had a picture of the Moor, since Shakespeare's visual memory was very strong.

#### A CATGUT HOLDER.

MR. A. P. BERTWISTLE, M.B., Ch.B., Resident Surgical Officer, General Infirmary, Leeds, writes: The need for a simple catgut holder is felt by all doing casualty work. A glass jar with an internal flange is selected and a strip of plate glass perforated in

the centre is cut, the length equal to the diameter of the jar. The perforation in the strip is plugged with rubber tubing and through it the ends of several strips of catgut are drawn, the catgut being lightly rolled on glass reels. The plate is now wedged in position with the aid of rubber tubing. The design permits of a suitable length being withdrawn, the rubber preventing the end from slipping back.

#### PREVENTION OF VENEREAL DISEASE.

DR. C. LUXDIE (S. Africa) writes: "G.'s" comments (October 14th, 1922, p. 706) on Mr. Herbert Caiger's letter about the "Radical prevention of venereal disease," seem to me needlessly alarmist in nature. Mr. Caiger is very explicit about the slowness of his proposed method, as is made very clear when he admits, in spite of his results on the improvement of morals between the first and the twentieth centuries, that the results are disappointing and inadequate to modern moralists (italics are mine). If nearly 2,000 years of the method upheld produce only disappointing and inadequate results in 2,050 years, I think we may safely take it that a geological aeon will be required to accomplish what is desired; so sweaters and other oppressors of their fellow men may sit at ease and fear no revolutionary turn of events to sweep them untimely to the warmer climes that they anticipate. What works at the rate of natural evolution will work no revolutionary changes in human affairs.

If Mr. Caiger had included among the very inadequate other methods the one which is equally inefficient from an ethical point of view, but which is the most efficient deterrent to the individual sinner, I should certainly have expected an outcry, in spite of the excellent practice that the adoption of such a method would provide for young surgeons, and the restoration of balance that it would effect in the coming generation between the progeny of the survivors of the unsyphilized who were killed wholesale during the war and the syphilized who were so safe from danger during long periods at the base. Not every one had such a long time of duty (not as one promoted from the wards to the staff as so many were) in military venereal hospitals as myself, so that I do not expect even such even-handed justice as the equalizing of the chances of posterity to reconcile many to such drastic treatment; so the equalizing must be left to the disease itself with, unfortunately, much more involvement of the innocent than the deliberate administration of justice would do. I am afraid my long spell of safe and inglorious duty among the "blessés de Venus," as a French officer once described them to me, would make me more easily reconciled to such an adjunct to Mr. Caiger's preventive method than most would be. It is a simple little operation that has even been done with a string. It certainly might save much suffering if scientifically carried out. Further, it would postpone the time anticipated by Stefansson (in his articles contributed to *The World's Work*), when the world's food supply will run short and either plague, famine, or a still more dreadful war than the last will be necessary to adjust the population whose overstocking could have been so easily prevented surgically.

#### COLLOIDAL GOLD FOR THE LANGE TEST.

##### Correction.

DR. TEMPLE GREY calls attention to a misprint in his memorandum under the above heading printed in the JOURNAL of December 9th, 1922 (p. 1120). In the third line of the small type, for "1 c.cm. of AuCl<sub>3</sub>NaCl" read "1 c.cm. of a 1 per cent. solution of AuCl<sub>3</sub>NaCl" (in aq. dest.).

#### A DISCLAIMER.

MR. HAROLD BURROWS, F.R.C.S. (Portsmouth), writes: As the author of a book, designed solely for medical practitioners, on *Mistakes and Accidents of Surgery*, may I have the hospitality of your columns in order to disclaim any connexion with the notices of that book which have appeared in the public press? I wish it to be known that I have not granted any interviews to journalists, nor have review copies of the work been forwarded to the lay newspapers.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 33, 34, 35, and 38 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 36 and 37.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 15.

### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive post restante letters addressed either in initials or numbers.



## A British Medical Association Lecture ON SOME PRACTICAL DIFFICULTIES IN OBSTETRICS AND GYNAECOLOGY.\*

BY

COMYNS BERKELEY, M.D., M.Ch., M.A.CANTAB.,  
F.R.C.P.LOND.

OBSTETRIC AND GYNAECOLOGICAL SURGEON TO THE MIDDLESEX HOSPITAL;  
SURG. ON, CHELSEA HOSPITAL FOR WOMEN; SENIOR OBSTETRIC  
SURGEON, THE CITY OF LONDON MATERNITY HOSPITAL.

### RUPTURE OF THE PERINEUM.

If sufficient care is not taken, particularly when attending a woman in her first labour, to ensure that the occiput has escaped under the pubic arch before the birth of the head by extension is allowed to occur, a tear of the perineum will almost certainly result, and this is not infrequently fairly severe. Now tears of the perineum should always be sutured, and, although it may seem superfluous to say this, yet one has often heard a doctor state that he never inserts any sutures unless the laceration is a bad one. A wound in such a position, however, increases the risk of bacterial infection; it may slough, with resulting septic intoxication, and, inasmuch as it is an indication that some part of the pelvic floor has been injured, it is partly responsible for prolapse of the uterus should this occur later on.

Not only should all tears be sutured, but they should be efficiently sutured, and this entails a thorough examination of the injury. I do not think I shall exaggerate if I say that many doctors are satisfied with an inspection of the base of the perineum as it stretches between the vulval orifice and anus, and, if the skin in this situation is intact, assume that the perineum is not ruptured; or, if a laceration in this situation can be seen, are satisfied that this is the only part that requires attention.

Now, apart from the risk of sepsis, a mere laceration of the skin and immediately subjacent tissues between the vaginal orifice and the anus is not of great moment. If, however, in all cases the patient be properly examined it will be found that in certain of them the anterior face of the perineum, covered by the lower inch or so of the posterior vaginal wall, is torn, and it is this injury that plays a part in prolapse of the uterus, meaning, as it does, that the levatores ani are torn or unduly stretched. After labour, therefore, every patient should be placed in the lithotomy position across the bed and the labia separated; with the aid of a good light the practitioner will then be able to determine accurately the extent of an injury should it be present, and if so to treat it efficiently by inserting deep sutures. It is impossible to make a proper examination with the patient in the left lateral position. That this is often deemed to be sufficient is evident by the fact that one is not infrequently called upon to perform plastic operations on the vagina in cases of prolapse in which the skin between the vulval orifice and anus is perfect, but in which a proper examination will disclose that the perineal body has been badly torn and has not been repaired.

### OCCIPITO-POSTERIOR PRESENTATIONS.

The most severe ruptures of the pelvic floor are due to the use of the forceps, as a first choice in treatment, in those third or fourth vertex presentations in which the birth of the head is delayed because the occiput has rotated backwards. What is the reason for such unscientific treatment? My experience tells me that either the doctor does not recognize this complication, or, if he does, is usually unacquainted with the correct way to treat it.

At the commencement of labour there should not often be much difficulty in detecting an occipito-posterior presentation if a routine abdominal examination is made. This diagnosis can be confirmed by vaginal examination when the cervix is dilated sufficiently to allow the presenting part to be palpated easily. Unfortunately such routine examinations are not by any means universal. If, as rarely happens, such examinations are postponed until there is an obvious delay in the birth of the head, it must at once be admitted that a correct diagnosis is not at all an easy matter, even for one with special experience. When the membranes have ruptured and

the uterus is strongly contracting an abdominal diagnosis is very difficult, whilst the large caput succedaneum prevents efficient palpation of the presenting part by vaginal examination.

I think it is a fair statement to make that in very many of these cases the doctor rightly comes to the conclusion that the delay in the birth of the child is due to disproportion between its head and the pelvis of the mother, but that he remains ignorant of the cause of this disproportion until, having applied the forceps more than once and finding that they keep slipping, he at last does what he should have done hours before—that is, make a thorough examination.

If the head is presenting as a third or fourth vertex one should be able to feel in front, early in labour, knobs due to the arms and legs, instead of the usual broad back. The head has not entered the pelvis as far as it should have done, the foetal heart, if heard at all, is heard out towards the flank, and there is often a history, which is very suspicious, of premature rupture of the membranes. Later, when the cervix is sufficiently dilated, the sagittal suture can be felt in one or other oblique diameter and the anterior fontanelle can be felt, showing that the head is not properly flexed. With such information, if it is found that as time goes on the head is not descending so rapidly as it should do in spite of good uterine contractions, it is at once possible to visualize the cause and the appropriate treatment can then easily be applied. But supposing the doctor is not called in until the second stage of labour has become prolonged, or has allowed it to be prolonged before making his examination, he can, in spite of the large caput succedaneum obliterating the sutures and anterior fontanelle, still arrive at a correct diagnosis by passing his hand up the side of the head and feeling in which direction the pinna of an ear is pointing. In first labours an anaesthetic must be given for this examination.

The causes of delay can easily be understood. As the head is incompletely flexed the occiput rotates back below the sacral promontory and the fronto-occipital diameter of 4½ in. has to pass through the vaginal orifice, whereas when the occiput has rotated forwards and the head is properly flexed a diameter of 3½ in. distends the orifice. Again, the occiput being behind, the greatest circumference distending the vaginal orifice is 14 in., instead of 12 in. when the occiput is in front.

On the other hand, the doctor may have diagnosed correctly the misplacement but does not treat it scientifically; the result will be just the same as if he had not made a diagnosis—namely, a very badly lacerated pelvic floor, often into the rectum. This means that frequently a recto-vaginal fistula results, and in due course prolapse of the uterus is nearly certain to occur. But this is not all; the child is often born in a condition of white asphyxia or is delivered dead, or dies soon after delivery from intracranial haemorrhage due to the severe pressure of the forceps.

The treatment, therefore, is with the internal hand to flex the head by pushing up the forehead and to rotate the occiput forward. Such a procedure, with the patient anaesthetized, unless labour has been very prolonged, is not difficult if care be taken when the head is being rotated with the internal hand to turn the anterior shoulder to the front with the other hand on the abdomen. The neglect to turn this shoulder will result in the head being twisted on the neck only, and when it is released it will return to its original position. If it be found impossible to rotate the occiput forward by such means success may still be obtained by passing the internal hand above the head and then seizing the shoulders and rotating them. After the head has been rotated the child can be delivered by the forceps.

There remain those rare cases in which, owing to the strong pains and undue prolongation of labour, the head of the child has been driven down so tightly into the pelvic cavity that its rotation is impossible. If the child is dead it should, in the interest of the mother, be delivered by perforating its head. If the child is alive, there remains only delivery by the forceps. The proper forceps to use are the axis traction, because the fact that the handles are free to move in any direction will at times allow the occiput to rotate even at the last moment; serious injury to the mother will thus be averted.

### THE OBSTETRIC FORCEPS.

I often think that, in the case of womankind, this additional supplication should be added to the Litany: "From the obstetric forceps and uterine curette, Good Lord, deliver us." They are the two most dangerous instruments which any doctor may legitimately employ in the practice of his

\* Delivered before the Northamptonshire Division of the South Midland Branch on November 14th, 1922.



profession. By far the most common indication for the use of the forceps is unusual delay in the birth of the child, and in the vast majority of cases when the forceps are used it is for such a purpose.

Now, strictly speaking, in such cases the forceps should only be used when it is certain that, if the uterine contractions were only strong enough, Nature would herself deliver the child. Hence it comes about that the forceps, when used legitimately, are in most cases employed when the patient is suffering from the condition known as a "sluggish uterus."

No woman with a contracted pelvis should be delivered by the forceps in whom, if only the pains had been strong enough, the head could have been moulded and pushed through the pelvis. It may be taken, therefore, as a maxim that if, in the presence of strong uterine pains and a normal presentation, allowing plenty of time, the child is not born before the condition of the mother warrants interference by the doctor, then the case is not suitable for delivery by the forceps.

It is a fact that the forceps are used much more frequently in private practice than in the labour wards of a hospital, and this in spite of the fact that the percentage of difficult cases is greater in hospital than in private practice. The reasons for this are not far to seek. In the first place the general practitioner is apt to be worried by the relatives of the patient if the child is not born as soon as they think it should be. In the second place—and here its use is if anything more reprehensible—the instrument is employed to save his time.

Delivering the child with this instrument before the os is properly dilated is responsible for a large amount of misery to many women, and every now and then is the direct cause of their death or that of their children. Now, it is an aphorism that the forceps should never be applied and the head delivered until the os is fully dilated, except in rare cases, and then only when this canal has been dilated with the gloved fingers. There are some who do not hesitate to use the forceps before the os is sufficiently dilated, relying on the forceps to do this. In not a few instances I have known the uterus by such a procedure torn right into the broad ligament, with a resulting haematoma, on occasions followed by suppuration, and twice I have known a patient bleed to death from rupture of the uterine artery. Fortunately such catastrophes are rare because the softened cervix allows itself to be stretched. Quite commonly, however, the cervix is split up to the vaginal fornix, and this is not realized at the time. Moreover, even apart from such a laceration, by the time the forceps have stretched the cervical canal sufficiently to allow the head to pass, the cervix has been pulled down so much that its attachments, especially the lateral cervical ligaments, become stretched or torn and the integrity of the pelvic floor is severely damaged, with the inevitable result of prolapse of the uterus later on. Only last week a patient with a normal pelvis, and in whom a normal vertex had presented, was admitted to hospital with the history that delivery by the forceps had failed. On examination the os was found to be only partially dilated, and the head of the child had escaped through a laceration of the uterus in its lower uterine segment into the abdominal cavity.

Now let us turn to the use of the forceps when there is a disproportion between the head of the child and the pelvis of the mother. I will pass by the cases due to malpresentation, since these should be rectified, and also those in which the head of the child is larger than normal, since these are quite rare, and, moreover, the treatment is the same as when the pelvis is smaller than normal. From time to time I meet one of my old students at the hospital, and every now and then one of them will tell me with pride how, after a tremendous struggle and with the aid of one of his feet against the side of the bedstead, he has been able, by pulling with all his might, to deliver the child. Not much of a testimonial to my teaching, you will say! Inquiry as to the child's health will elicit the information that unfortunately it was born dead or died a few hours after delivery—the death being due, of course, to intracranial haemorrhage. The unscientific use of the forceps in this connexion is responsible every year for a large number of foetal deaths, some maternal deaths, and much maternal morbidity.

In such cases of disproportion, however, it frequently happens that the pains are not very strong, and it will be asked in what circumstances can the practitioner justifiably use the forceps. The head may be arrested above the brim, in the brim, or in the pelvic cavity. If the head is movable above the brim the forceps are absolutely contraindicated.

If the head is delayed in the brim a most careful examination should be made, under anaesthesia, of the relative sizes of the head and the pelvis. If no malpresentation is present, and if, in the case of a flattened pelvis, the biparietal diameter has passed through the brim, it is evident that the disparity in size is not great; if in the case of a generally contracted pelvis the head is held fast, additional time should be given to Nature for the head to mould, when as a rule Nature's efforts will suffice. The general condition of the patient should be treated and the forceps only applied when the condition of the mother—as shown by the pulse rate and the fact that she is not sleeping between the pains—demands interference. The necessity for such a warning is evidenced by the fact that a strong pull will be necessary, and, however careful the practitioner may be, lacerations of the perineum are likely to result, and certainly the head of the child will be unduly compressed, and very likely for some time. If the head is delayed in the pelvic cavity and does not advance with the pains or recede in the interval, and if the vagina is oedematous and hot and dry, the forceps again are contraindicated. I need not further discuss the care that should be exercised in the application of the forceps. It seems superfluous to mention that the blades should be applied inside the uterus if the head has not yet passed through the cervical canal, and they should be in contact with the head. And yet I know of two cases in which the forceps were forced into the broad ligament, the lower uterine segment grasped as it was in contact with the head, and by strong traction torn right off the upper uterine segment.

#### CURETTING.

The operation of curetting is extremely common, and is constantly being abused, employed as it is from time to time for most of the conditions which may be attributed, without any adequate reason, to local disease of the uterus. In a large number of cases the operation does no good, whilst in some, from time to time, it is followed by such disasters as intra-peritoneal haemorrhage, pelvic haematoma, pelvic cellulitis, salpingitis, and even death. The operation of curetting, as too often practised, consists in removing the mucous membrane lining the body of the uterus. Such a procedure presupposes that this lining is diseased, but in many cases it is quite healthy.

Let us review the sort of cases for which curetting is most frequently employed. In the first place we will take leucorrhoea, because this is the commonest symptom for the relief of which the operation is performed. The normal discharge escaping from the vagina is sticky, from the mucous secretion of the cervical and Bartholin's glands. Just before menstruation and during pregnancy there may be such an excess of discharge as to cause a certain amount of vulval discomfort and to soil the underlinen. A leucorrhoeal discharge in excess of this, and at other times sufficient in quantity to necessitate the use of a diaper, is abnormal and should be treated. Curetting the body of the uterus, however, in such cases will do no good at all, and the doctor may well be disappointed. The discharge from the corporeal mucous membrane is clear and watery, and, although women suffering from chronic endometritis may have severe leucorrhoea as well, most of the discharge is due to a chronic inflammation of the cervical mucous membrane, and as this is seldom treated efficiently disappointment results.

The cause of excessive leucorrhoea is a chronic inflammatory condition of the cervical mucous membrane. Such a condition is often found in women who have had children, but unmarried women who have not had children not infrequently suffer from it. The endometrium of the body is not as a rule affected, the only symptom being leucorrhoea. When a vaginal examination is made quite commonly an erosion is detected.

Now, the operation of curetting for leucorrhoea, as generally performed, consists in removing the fairly thick, loosely attached soft mucous membrane of the body of the uterus, whilst the thin mucous membrane of the cervix which is firmly attached to the muscle, and in which are embedded the racemose glands, is not curetted at all, or so perfunctorily that the diseased glands remain. When the only complaint is leucorrhoea and an operation has been decided upon, there is no need to curette the body of the uterus; it will not do any good and it may do harm. The cervical mucous membrane, however, should be thoroughly scraped with a sharp spoon, and the erosion if present should be similarly treated.

Another common complaint for which curetting is performed is congestive dysmenorrhoea; this is due to an additional



flow of blood to the genital organs, which causes increased tension, stretches the nerves, and so gives rise to pain more or less severe. Removing the mucous membrane of the body of the uterus cannot prevent the additional flow of blood naturally taking place prior to menstruation, neither can it remove the nerves or interfere with their distribution. Hence the operation is an unqualified failure. Why, then, is it so commonly employed? The answer must be that in some cases it is followed by alleviation of the menstrual pain; but in these cases the pain that is relieved is not due to the congestive dysmenorrhoea, but to the spasmodic variety with which it is in such cases associated. Moreover, even then it is not the curetting that relieves the patient, but the dilatation of the cervix antecedent to the curetting, so that the latter is superfluous. It is obvious, therefore, that the disappointment so often associated with the operation when performed for dysmenorrhoea could be obviated if doctors would only take care in diagnosing which variety of dysmenorrhoea their patient is suffering from.

Another class of case for which this operation is performed is that of excessive uterine haemorrhage. Such diseases as chronic endometritis, mucous polypi, and subinvolution, with or without retained products, are successfully treated by this method. In the absence, however, of a careful local examination and a full consideration of all the circumstances, the uterus is quite frequently curetted for haemorrhage due to conditions in which it can do no good, and may perhaps do harm. Among these I may mention excessive bleeding due to an abnormal function of the endocrine glands, fibrosis of the uterus, salpingo-oophoritis, and fibroid tumours.

Lastly, curetting is often employed in cases of sterility, without the doctor certainly ascertaining that it is not due to some condition of the husband which renders him sterile. I should not be surprised to hear, in the majority of cases in which curetting has been employed for sterility, that the seminal fluid of the husband has never been examined. If one comes to think of it, however, considering that it is calculated that in 10 per cent. of all cases of sterility the fault is on the husband's side, what a criminal thing it is to subject a wife to the discomforts and dangers of such an operation before ascertaining that the testicular secretion of her husband is normal. However, in the absence of local disease, curetting for sterility is on occasions dramatically successful. But here again it is a question whether the actual curetting, in most cases at any rate, is the cause of the success. More probably it is due to the dilatation of the cervix, in spite of the fact that many authorities consider the curetting to be an essential factor.

Apart from the indications I have given, the cervix should certainly be dilated, whatever the age of the patient, in those cases in which no local disease can be found and yet the patient is suffering from irregular bleeding; although in the case of young women it may be justifiable to try a short course of medicinal treatment first on the chance that the symptoms will be cured.

When the cervix is dilated, retained products of conception, polypi, small submucous fibroids, or malignant disease may be discovered; whilst in the absence of any evidence of such disease some mucous membrane can be removed for microscopical examination, when, especially in elderly women, early malignant disease or senile endometritis may be discovered, the latter being well treated by a thorough curetting.

The operation of curetting is generally regarded as easy and safe, though I have known operators of great experience fail to dilate the cervical canal, and be able to enlarge the internal os only by incising the cervix on each side until this appears in view. Safe the operation never is, and gynaecological surgeons, even of large experience, do not care much about performing it.

There are special accidents connected with each of the two parts of the operation which the operator, unless he is forewarned, may fail to detect. I will not discuss the risk of sepsis, though it is a very real one, since everyone who does any operating should have full knowledge of it. There remain laceration of the cervix, perforation of the uterus, and excessive bleeding.

To curette the uterus the cervix must be dilated. Before inserting the dilators it is necessary to know the exact position of the uterus; failure to recognize this has often led to perforation of the anterior wall of the uterus when the latter has been displaced backwards. Yet doctors quite frequently start the operation without making a bimanual examination or passing the uterine sound. The next danger

is concerned with the dilatation of the cervix. It is probable that in all cases in which the cervical canal is dilated sufficiently to insert the index finger for purposes of diagnosis some of the muscle fibres in the neighbourhood of the internal os are lacerated. At times, however, owing to the rigidity of the tissue and the consequent employment of excessive force, or because of bad technique, the cervix is very badly lacerated. Excessive force can easily be avoided by holding the dilator with the thumb and first two fingers only and resting the wrist against the buttock of the patient. To seize hold of the dilator with the hand, and without any counter-pressure of the buttock, then to press the dilator forward with great force, at times leads to the internal os suddenly splitting, when, before the operator can control it, the end of the dilator shoots forward and the uterine wall is perforated. I have seen this happen more than once.

By bad technique I mean not being sure that each succeeding dilator is inserted at least through the internal os. If the internal os is difficult to dilate it may easily happen that the dilator used is not inserted as far as the previous one. If the operator is not paying particular attention, or is ignorant that such a thing is likely to occur, each succeeding dilator goes in a shorter and shorter distance; in fact, the cervical canal only is being dilated efficiently and not the internal os. When he has passed as many dilators as he thinks necessary the operator in ignorance curettes the cervical canal only; or alternatively, if the operator notices that there is an increasing difficulty in getting his dilators to pass through the internal os, he commences to use undue force. The result is that the muscle fibres in the neighbourhood of the internal os are lacerated, and the point of each succeeding dilator, instead of passing through the os, catches in this laceration and perforates the uterus, commonly into the broad ligament and more rarely into the utero-vesical pouch. In such circumstances the curette has been passed through the laceration and the tissue beyond curetted.

The cervix having been dilated successfully there still remains the danger of perforation. This accident is very likely to happen if the uterine wall is soft, as it is in pregnancy, and this, together with the risk of sepsis, is the reason why most authorities teach that the uterus should not be curetted for retained products in cases of very recent miscarriage. On the other hand, the uterine wall may be the seat of unsuspected malignant disease, into which the curette will sink as easily as it will into a pat of butter. If a flushing curette is being used some of the lotion may be delivered into the peritoneal cavity before the operator is aware of the accident, and fatal results have been reported in such circumstances; if, as should be the practice, a non-flushing curette is being used and the case is a clean one, as a rule the patient does quite well as long as the operation is stopped and a douche is not given. If the case is a septic one, pelvic cellulitis or peritonitis, as the case may be, may result, and I have known deaths in such circumstances. Perforation may also lead to intraperitoneal bleeding necessitating the removal of the uterus, of which I have seen one case.

Sometimes after curetting the bleeding is quite severe, especially in cases of retained products which are rightly curetted some time after miscarriage; in such cases the uterus should be packed. A graver form of haemorrhage occurs in severe laceration of the cervix when the uterine artery or an important branch thereof has been ruptured. In such cases sutures inserted through the lacerated cervix are usually sufficient to stop the bleeding; failing that the artery will have to be exposed and tied either by the vaginal or the abdominal route. More rarely the blood, instead of escaping externally, infiltrates the cellular tissue of the broad ligament, causing a large haematoma, which may spread upwards over the pelvic brim and necessitate the abdomen being opened.

Lastly, occasionally very serious bleeding happens about the tenth to the fourteenth day after the operation, and failure to recognize its cause may lead to a fatal result. It is due to sloughing of the uterine artery, or to the displacement of a thrombus in the torn artery following a severe laceration of the cervix. I have seen such cases in hospital practice, and on three occasions I have been asked to see similar cases in private. On the last occasion the patient was so bad that I had to remove the uterus immediately and resort to transfusion. In this case when the bleeding first started the uterus had been packed on the assumption that the blood was coming from the uterine cavity.



## THE ARTIFICIAL TERMINATION OF PREGNANCY.

Women regard miscarriages or premature labours from different points of view. While some are heartily glad to be free of what they consider to be an incubus, others are so grieved that a serious mental effect may be produced, and if it be the only time they have been pregnant entirely after their outlook on life. Apart, however, from the feelings of the patient or her husband, the medical attendant has certain things to consider. For instance, every year a certain number of deaths are associated with the artificial termination of pregnancy; moreover, such an operation may be followed by much misery from chronic disease of the uterus and its appendages. Further, the practitioner is depriving the nation of a potential citizen, and perhaps—who knows?—of a Shakespeare or a Newton.

There are many conditions in which pregnancy may legitimately be terminated forthwith and without any hesitation; these are for the most part rare, with the exception of molar pregnancy and severe toxæmia, and I do not intend to discuss them. Certain other conditions comprise the majority of cases in which pregnancy is prematurely terminated, and in many instances such a method of treatment is inadvisable or quite unwarranted. These conditions are: bleeding from the uterus, severe vomiting, and certain cases of albuminuria.

It is often very difficult to determine in the case of a pregnant woman who is bleeding whether to empty the uterus or not. Unless the bleeding is so severe that it causes marked symptoms and signs it is no indication that the pregnancy should be terminated, neither is the duration of the bleeding nor the colour of the blood escaping. I have vivid recollections of a patient who bled not a little for five consecutive weeks, commencing when she was four months pregnant. At the end of the five weeks the bleeding stopped, and after a further rest in bed for another ten days I allowed her to get up. The same afternoon, when walking from her bed to the sofa, she had a really furious hæmorrhage which spoilt the sofa and carpet before she could be got back to bed. As she had previously had one Fallopian tube removed for a ruptured tubal gestation, when she nearly lost her life, and had subsequently not become pregnant for four years until she had been cured for chronic endometritis, and as an heir was particularly desired and her husband was approaching 60 years of age, great pressure was brought to bear upon me to give her another chance. Beyond a somewhat free discharge for the next day or two nothing occurred, and at the end of another fortnight I again allowed the patient to get up, and subsequently delivered her at term, with no difficulty, of a child weighing 8 lb.

I feel confident that the uterus in a large number of pregnant patients is emptied because of bleeding when there is no need or justification. The doctor is not always to blame for this; many patients will not tolerate the proper treatment, or their circumstances will not allow them to follow it. Others, in their anxiety to get rid of the pregnancy, do not follow the treatment prescribed, and deliberately by various acts endeavour to hasten the evacuation of the uterus, whilst the patients of a third group or their relatives may be so alarmed at the bleeding and worry the doctor so much that in desperation he empties the uterus. Now unless the bleeding is really dangerous the doctor should be in no hurry to empty the uterus until he is satisfied, by the fact that the uterus is not normally increasing in size, that the ovum is dead. This may mean waiting for a month or more. Moreover, the fact that a discharge is brown in colour is no certain indication that the ovum is dead; such a colour may be due to the fact that the blood has been held up in the uterus, and if allowed to lie in the vagina it may even become offensive.

Of all the subterfuges women invent to get rid of their pregnancy, sickness is the commonest. Morning sickness, or, later in pregnancy, severe vomiting due to neurosis and not toxæmia, may be very difficult to treat, short of emptying the uterus. In such cases many a doctor has been driven to empty the uterus against his better judgement, either from the insistence of the patient or of her relatives, or because the patient refuses or cannot afford to follow the correct treatment. It behoves every doctor, therefore, to be very circumspect when he is faced by such a complication. In the first place, he must satisfy himself that the patient really is as sick as she says, and, secondly, whether the sickness is due to neurosis or to toxæmia. To give an example: I know of the case of a well educated woman in a very good position who, having had three children, was determined not to have a fourth. In due course, therefore, she commenced to

complain of sickness and inability to take any food. That she took but little food at her meals was certain from the observation of those in her company, and that she was constantly being sick was evident from the noises she made and the contents of the receptacles into which she vomited. Her medical attendant never tested her urine, and at last, what with the worrying of the patient and her husband, became unduly alarmed and telephoned for a consultant, who hurried down to the patient and, without any examination of the urine, then and there emptied the uterus. Needless to say, the patient made a splendid recovery. Now as a fact, as reported to me some years later by a friend of hers, the patient had boasted to her how she had tricked the doctors by eating quite good meals in secret and later making herself sick by tickling the back of her throat.

If severe vomiting in pregnancy is not due to toxæmia—and in most cases it is not—it can be cured by placing the patient in an institution away from her friends, taking no notice of her refusal to eat, and supplying her regularly with three meals a day. Unfortunately all patients cannot afford to go into a nursing home, and some may refuse to go into the hospital, so that in the end pregnancy has to be terminated. The presence of albumin in the urine and other evidences of toxæmia is an indication that the vomiting is of the toxæmic type, and such indications will now be discussed.

## ALBUMINURIA IN PREGNANCY.

It is the duty of every doctor to examine periodically the urine of his pregnant patients. By so doing the superintention of eclampsia, one of the most tragic complications of pregnancy or labour, may be avoided. There is also another aspect. Nowadays, what with the ante-natal clinics and the wider diffusion of knowledge generally, it is well known by others than members of the medical profession that the urine of pregnant women should be examined at repeated intervals. The neglect to do so, if eclampsia intervenes, may, as in the instance of a doctor friend of mine, land the practitioner in an action for damages for gross neglect, and sooner than face a public trial of such a nature he may have to pay a large sum to settle the matter.

With the modern biochemical methods of ascertaining the condition of the liver and kidneys at his command, either through the medium of hospital or private laboratories, the doctor has but little excuse if, having discovered albumin in a pregnant woman, he does not have such an examination made. A chemical examination of the blood and urine may be of the greatest value in preventing permanent damage to the patient and also of the greatest value to the doctor in showing him when it is advisable to terminate the pregnancy. Nowadays we do not rely on the amount of albumin and the general condition of the patient so much as on certain tests, which include (1) the estimation of the blood urea, (2) the urea concentration test.

## Estimation of the Blood Urea.

Blood (10 c.cm. or even more) is taken from the patient and tested for the amount of urea it contains. Normally there is in a healthy pregnant woman about 20 mg. per 100 c.cm. If the urea content of the blood is definitely raised, say to 40 mg. per 100 c.cm., it is proof that the kidneys are severely damaged, and an indication that the labour should be terminated.

## Urea Concentration Test.

The bladder having been emptied, 15 grams of urea dissolved in half a pint of water are given. One hour and two hours after this solution has been drunk the bladder is emptied and the amount of urea is estimated in each specimen. If the kidneys are normal the first specimen should contain at least 1.5 per cent. of urea, the second 2 per cent. If lower figures are obtained a renal lesion is to be suspected. Repetition of both estimations after an interval is invaluable, since a rising blood urea with a falling concentration capacity constitute an obvious indication of a progressive lesion.

## PELVIC HÆMATOCELE: RETROVERTED GRAVID UTERUS.

An error of diagnosis, among the most serious I know of with respect to its immediate result, is that of mistaking a pelvic hæmatocele due to extrauterine gestation for a retroverted gravid uterus that is bleeding. I have met with this mistaken diagnosis many times, and have known it to lead to a fatal result.

If we consider the symptoms and signs of these conditions up to a point we need not be so astonished at such a mistake, since the condition may easily be confused unless a most careful investigation is made. In both these complications there may have been a period of amenorrhoea, for the rupture or abortion of a pregnant Fallopian tube does not usually take place before the sixth week of pregnancy, and



may occur as late as the twelfth week, whilst nausea, alteration in the breasts, and softening of the cervix, which are found in intrauterine pregnancy, may also be present in extrauterine pregnancy. In the case of rupture or abortion of a pregnant tube there is bleeding due to the separation of the decidua, whilst a threatened or inevitable miscarriage in a retroverted gravid uterus is not uncommon. In extrauterine gestation a decidua membrane may have been passed, whilst the ovum or part of it may be expelled by the retroverted gravid uterus. In the case of a ruptured or aborted pregnant tube the swelling in the pouch of Douglas is due to the blood which has escaped, whilst the body of the retroverted gravid uterus forms a somewhat similar swelling.

If, then, a case of pelvic haematocoele presents itself to a practitioner he may wrongly assume that he has to deal with a case of retroverted gravid uterus that is bleeding, and he proceeds to treat the patient as follows; and I remember many examples of all three methods of treatment.

1. If the bleeding is not very much, he may endeavour to push up the supposed fundus of the uterus preparatory to inserting a ring pessary with the object of preventing the supposed miscarriage.

2. If the bleeding is severe, he may endeavour to empty the uterus.

3. If the bleeding is slight and continuous, and some substance has been passed, he may come to the conclusion that his patient, having miscarried, is suffering from subinvolution, and think it his duty to curette her.

But suppose the case is one of pelvic haematocoele, what will be the result? In the first case he cannot push up the swelling with the ease to which he is accustomed, and, using greater force, still further ruptures the tube if it is already damaged, or ruptures it if it is aborting, and the woman becomes desperately ill from internal haemorrhage the cause of which he does not identify. In the second case, on dilating the cervix he is surprised to find the uterus empty, thinks she has miscarried, and as a result of his manipulations serious internal haemorrhage may be started. In the third case, if he does not start serious internal bleeding he will think he has curetted in vain, and the woman will still go on bleeding.

Such a mistake can be avoided by a careful consideration of the history and by a thorough and complete examination of the patient. No woman has a tubal rupture or abortion without very severe abdominal pain. As a rule the pain associated with a threatened or inevitable miscarriage is not very marked. Moreover, in those cases of miscarriage in which the pain is bad the bleeding is also marked, the pain being due to the contraction of the uterus as it separates the whole ovum. On the other hand, with extrauterine gestation the bleeding in practically all cases is slight, and yet the pain is very bad. Again, if the patient exhibits the classical symptoms and signs of bleeding, and the bleeding which can be seen is slight, why does she have such symptoms? She must be bleeding internally. However, even here one may meet with difficulty, because at times the bleeding goes on so slowly that the classical symptoms are a long time developing.

Lastly, we have an absolute means of diagnosis at our command. The cervix in a retroverted gravid uterus will be pointing forward—so far forward at times that it can scarcely be reached, and then only with the patient on her back. On the other hand, the cervix in extrauterine gestation is pointing backwards and the whole uterus is driven forward by the haematocoele. Even this may escape notice, but where is the fundus of the uterus? The practitioner must make certain of this; if he cannot satisfy himself without putting the patient under an anaesthetic this must be done. A bimanual examination in the case of a retroverted gravid uterus will disclose the fact that the body of the uterus is absent from its normal position, and in the case of an extrauterine gestation that the body of the uterus can be grasped bimanually and that there is a further swelling in the pouch of Douglas. The correct diagnosis is made and perhaps a fatal error has been avoided.

#### CARCINOMA OF THE UTERUS.

Out of every hundred women who die during the year in England and Wales four die of cancer of the uterus. The uterus is by far the commonest seat of cancer in the female, and more women die of cancer than of consumption.

Without the slightest doubt cancer of the uterus can be cured. The reason why the vast majority of women thus afflicted die is because the disease is not diagnosed until it is too late to operate. Cancer of the uterus is quite easy to diagnose if the doctor uses all the resources at his hand and

of which he is well aware. Therefore, if a doctor has been consulted, the fact that the disease remains undiagnosed cannot in any way be ascribed to ignorance.

Carcinoma of the cervix is, as a rule, quite easy to diagnose because the suspected part bleeds easily, and sometimes markedly, on being touched. On occasions a patient will present herself to the doctor in an early stage of the disease. He finds that the diseased area bleeds rather freely on being rubbed; so do some erosions; there is no apparent growth, and to his eye it looks like an erosion. He therefore treats her for months, and then, as the condition gets worse, sends the patient to hospital with a note that in spite of prolonged local treatment he cannot get the condition to heal. What should that doctor have done when he found the local condition bled so easily? He should have cut a wedge-shaped piece of the diseased area out of the cervix, including the muscle underneath as well as the surface epithelium, and had it examined by the microscope. This small operation is quite easy to perform, and the bleeding, such as it is, can be at once arrested by suturing the edges of the incision with a catgut suture. If afraid to do this, he might have tested the friability of the patch with a blunt probe or uterine sound.

The only symptom that the patient suffering from carcinoma of the body of the uterus may complain of is bleeding. The average age for carcinoma of the body of the uterus is 53—that is, about the time of, or soon after, the menopause. The cause of irregular bleeding from the cavity of the uterus can easily be determined by dilating the cervical canal and examining the interior of the uterus, when, unless the cancer is very early, its presence can at once be detected. Even if the case be very early, so that no friable patches are felt, a microscopical examination of the material obtained by curetting will give the diagnosis.

I am sure that all medical men know what I have just stated. Why do some of them not apply this knowledge? I cannot tell; I know only what I have been told. Patients are admitted into my wards at the Middlesex Hospital almost every month for cancer of the uterus too far advanced for operation. The notes taken out by the house surgeon state: "The patient has been bleeding for many months; she consulted a doctor, who did not examine her and told her the bleeding was due to the change of life." Again a patient is sent up to me with a note from a doctor that she has had irregular bleeding for some time, that he has given her drugs to no purpose, but he has not examined her because he would not know what he was feeling if he did. Perhaps he adds that he had never had any chance of examining patients vaginally when a student, and so has never felt equal to making a diagnosis in that region. The fact that an erosion of the cervix does not improve with local treatment and bleeds every time it is treated does not for a long while strike some doctors as peculiar.

Now I do not mean to assert for a moment that the blame can always be attributed to the doctor; on the contrary, I think in most cases the reason a diagnosis is not made sooner is because the patient does not seek advice sooner. Her reasons for this are threefold. Most commonly she attributes her irregular bleeding to the change of life, this opinion being supported by the views of her female friends and perhaps of those of some nurse or midwife; or she may object to an internal examination; or, lastly, she may think she has cancer and fears to have her thoughts confirmed. The unfortunate circumstance that irregular bleeding may occur at the menopause without any disease of the uterus is indirectly responsible for the death of hundreds of women every year. When irregular or excessive bleeding does occur, however, there is always an interval, of longer or shorter duration, in which there is no bleeding. The lesson to be learnt, then, is that any unusual bleeding, and especially about the time of the menopause, should always be investigated by a thorough internal examination.

By the radical operation cancer of the cervix can be treated at a very much later stage than by any other procedure. I have taken out the cancer figures at the Middlesex Hospital for the last fifteen years, and I find that I have operated upon over 40 per cent. of those admitted. Most of these were advanced cases, and the disease could not have been removed by any other method. Even with such a handicap my absolute cure percentage—that is, freedom from recurrence for five years—is over 30. I leave you to form your own conclusions as to the results that might be obtained if one could only get these cases in an early stage. The importance of the early diagnosis of cancer of the uterus should be strongly impressed upon nurses and midwives. At the Middlesex



Hospital we have leaflets for distribution to female patients containing in simple language the most important facts concerning this fearful scourge.

#### POST-MATURITY.

It must have happened to everyone who has practised midwifery that on occasions he has had a patient who, by the usual methods of reckoning, has gone beyond term. Such an event not only causes worry to the patient and her relatives, and additional expense because of the nurse, but it may also be a source of much anxiety to the doctor, who in the end has perhaps to attend a difficult labour, followed in many instances by death of the child. The following points are of interest:

1. Post-maturity may be recognized by the presence in the child of excessive length, weight, ossification, and an easy separability of its dura mater.

2. It is probable that spermatozoa cannot live longer in the genital canal than ten days.

3. Although the time between the first day of the last menstruation and delivery, and that of insemination and delivery, can be calculated, that between impregnation or fecundation and delivery cannot within ten days.

4. There are undoubted dangers both to the mother and the child when pregnancy is prolonged beyond its normal time. These dangers are mostly concerned with the difficulty in the passage of the child.

The correct treatment when the practitioner thinks that the child is post-mature is to induce labour. How is he to arrive at such a diagnosis?

1. By noting any prolongation of pregnancy beyond the expected date of delivery, as calculated from the first day of the last period.

2. By a careful ante-natal supervision of his patients, noticing particularly, in the absence of uterine contraction, the ease with which the head of the foetus is passing into the pelvis in a primi-gravida or can be pressed into the pelvis in a multipara.

3. If an allowance of ten days be made over and above the date selected for the day of delivery it may safely be assumed that after this the pregnancy is post mature, due regard being paid to the relation of the foetal head to the mother's pelvis.

4. With this information, therefore, the doctor may justifiably induce labour 290 days after the first day of the last menstruation, and, indeed, many authorities think that he should do so.

#### HOT-WATER BOTTLES.

Burns from hot-water bottles are not as uncommon as one would think. The late Dr. F. J. Smith stated that he knew personally of 80 cases.

As a working rule never allow a hot-water bottle to be placed in the bed of a patient recovering from an anaesthetic, not even if it is surrounded with blankets, because in such a case the patient may be restless and kick the blanket off, when the exposed hot-water bottle may burn her. If, however, it is considered essential, because of shock, to place protected hot-water bottles in the bed, a nurse should be directed to stay by the side of the patient until she has regained consciousness to ensure that she is not left alone. If these precautions have not been exercised, burns may result which take months to heal and then only with dreadful scarring.

I introduce this subject to warn you that even with this knowledge you may be let down owing to the carelessness or disobedience of the nurse.

A friend of mine operated upon a patient. The operation was a very severe one, and he deemed it necessary to give her an intravenous infusion, and as he could not expose the vein in one arm he had to cut down on a vein in the other. The patient, who was in a nursing home, was put back to bed and was frightfully burnt on one buttock and foot with hot-water bottles. Neither the patient nor her husband appears to have been very inquisitive, and the doctor, therefore, did not feel called upon to discuss with them the exact state of affairs. At the end of fourteen weeks the husband said, "Don't you think that those wounds you made on the buttock and leg, which have been so septic, would heal better at my own home?" My friend then discovered that the owner of the nursing home had told the husband that the surgeon had made wounds on both arms and in two places on the leg to inject saline into the veins, and that the wounds on the buttock and leg were larger because the blood vessels could not be found. This was more than my friend could stand, with the result that when the husband was enlightened he refused to pay the expenses of the nursing home. The owner of the home then brought an action to recover the money; the husband brought a counter-claim for damages, and the matter was settled out of court, the husband being paid £500 and costs.

I remember the case of a lady from whom I removed with the greatest difficulty a very adherent ovarian cyst. There was some very free oozing from the raw surfaces left, and no bleeding point could be secured. I therefore had recourse to the method of

temporarily packing the pelvis with swabs wrung out of boiling water. Three days later I visited this patient in the absence of the doctor and with his consent, and discovered to my horror that her buttock and leg had been frightfully burnt with hot-water bottles. The nurse, of course, had to own up, but begged me not to tell the doctor, saying that he might not employ her again if she did not tell him herself. Foolishly I agreed. I heard nothing more of the patient at the time, and was a little disappointed that the doctor had not written to me, because the operation as a surgical exercise was a great success, and it was the first time this particular doctor had given me a case. Some years later a relative of the patient consulted me; told me that her relative's leg was frightfully scarred. Expressing surprise and inquiring how this accident had arisen, the answer was, "Why, don't you remember, it was due to your pouring all that boiling water over her." I asked who said this, and was told the nurses. I then had no hesitation in telling her the true facts. Naturally I at once wrote off to the doctor, from whom I had never heard again, and he replied that the nurses had told the patient that I had had to use boiling water to stop the bleeding, and when wringing out the swabs had spilt the water all down her side. Further, the doctor was kind enough to add that he had thought it wiser to let the blame rest on me because I could be excused in an endeavour to save the patient's life, whereas the nurse could not be excused, and the husband, if he had known the true facts, would have been certain to have brought an action for damages against the nurse; and he, the doctor, hated law suits!

#### REFERENCE.

<sup>1</sup> Ballantyne, J. W., and Browne, F. J.: The Problems of Foetal Post-maturity and Prolongation of Labour, *Journ. of Obstet. and Gynaecol. of the British Empire*, 1922, vol. 29, No. 2, p. 177.

## THE DIAGNOSIS OF INDEFINITE MASSES IN THE BREAST.

BY

DUNCAN C. L. FITZWILLIAMS, C.M.G., CH.M., F.R.C.S.,  
SURGEON, ST. MART'S HOSPITAL, LONDON.

THE diagnosis of small indefinite masses in the breast presents such peculiar difficulties to the medical man, right diagnosis carries with it such advantages, and wrong diagnosis or unnecessary delay such awful penalties to the patient, that the subject is well worthy of consideration.

In early cases of lumps in the breast it is curious, but true, that though the question, Is it a new growth or is it an inflammatory mass? always arises in one's mind, the smaller the mass is the more one is inclined to put it down as inflammatory. Malignancy is associated in our minds with something sinister and threatening. A small and apparently harmless mass is acquitted merely on account of its small size. This is of course quite wrong; malignant growths must all begin small, and then is the right and most favourable moment for their extirpation; that, indeed, may be the only time at which a cure can be guaranteed. But how many small malignant growths do we operate upon, and how many large ones? The proportion is not more than one in six.

It is widely recognized that if carcinoma is removed early, especially in an organ like the breast, where such a large part of the lymph field is easily accessible, the very best results may be achieved. The difficulty is to decide what is early removal, and how it is to be effected. That difficulty I wish chiefly to deal with.

At the same time it must be recognized that we are not dealing with the constant factor of a machine, but with the vagaries of human nature, with those peculiarities of the human mind, with those prejudices inborn centuries ago, and those leanings which we can only explain by saying that they are second nature. We have all heard of cancer cures—the violet-leaf cure, the cure by turpentine, and by escharotic paste, not to mention some of the older ones; then lately x-rays, then radium, then selenium, and now back again to x-rays, and larger and more expensive instruments. Wait! these will go like their predecessors, and will be succeeded by some treatment just as effective or ineffective as you may be pleased to term it. Explanations are useless. Each of these methods not only claims its cures, but each can, I know, produce them; people live after each of these treatments for ten, fifteen, and twenty years in the case of the older methods, and the modern methods and future ones will, I am quite sure, afford similar instances. Each holds out just sufficient encouragement to lure on and, I am afraid, to delude the practitioner into thinking that at last the cure is about to be discovered.

Investigations and experiments should and must continue; I should be the last to decry them. But we, as a profession,

\* A paper read before the Chelsea Clinical Society.



are so prone to rush after every goose long before it flies, crying out so loudly that it is a swan, that a note of warning must be sounded. We are only yet at that stage where, alas! in the vast majority of cases it is the knife, and only the knife, on which we can rely with any certainty. That is the only method upon which we have relied for the last two hundred years. All other methods change constantly; each is said to be successful—why does it fall into disrepute? I think perhaps its success may possibly be fanciful, and due not to the cure, but to the well recognized vagaries of the disease. I believe the same thing will happen with the methods now employed.

Why is it that human nature, especially female nature, fears the knife? You may use an *écraseur* or a cautery, if you like, to do an incomplete operation, but a complete and clean one by the knife is often objected to; and yet for every case receiving benefit by any other means a hundred receive it from the knife. Again, why is it that the knife is refused in early cases, when it is most useful, and resorted to after the waste of so much time that its success is a matter of conjecture? Why is it that human nature prefers a cure by some unorthodox means? Why is it that Naaman the Syrian was wroth and wished Elisha "to come out and strike his hand over the place and recover the leper," instead of doing what the man he had come so far to see told him to do? Human nature is the same to-day as it was then—it still craves for novelty.

In dealing with tumours perhaps it is not recognized sufficiently clearly that the vast majority are malignant. It is computed that 80 to 85 per cent. of tumours of the breast are malignant, and at most 15 to 20 per cent. are innocent, or innocent in their early stages. I do not think that these figures are entirely accurate, as they are collected from records, and it must be obvious that many small and apparently innocent lumps such as we deal with in the out-patient department will have no records at all. But still, if we take 70 per cent. malignant and 30 per cent. innocent we shall be within the true figures.

That means that a lump in the breast, however small, is more than twice as likely to be malignant as it is to be innocent. This is a point which needs emphasis to bring it home to us. It is one of the most difficult things in practice to imagine that a lump, however small, is twice as likely to be malignant as innocent; we are always ready to acquit it on size alone. Then one must bear in mind that there are a large number of cases which we admit are innocent to begin with, but which later take on malignant characters. They do this in two ways—either the character of the growth changes and becomes malignant, or a malignant growth starts in part of a purely innocent growth, such as a cyst wall. To begin with these must obviously have all the symptoms and characters of innocence.

Now if I ask, What is the difference in character between an innocent and malignant growth? you will at once begin to say adherence to the skin, to the deeper structures, glands in the axilla, retraction of and perhaps discharge from the nipple, shrinkage of the organ, etc.—these are the characters with which we associate malignancy, and the absence of these characters denote innocence. The presence or absence of a tumour felt with the flat of the hand, which used to be, and is even now, so insisted upon, is of course quite fallacious. A large malignant growth will of course be felt, but an early and a small one will be just as imperceptible as a chronic mastitis, in which indeed it is very often embedded. I do not, however, intend to go into these characteristics, but rather to deal with the subject in a different manner and ask, What is the meaning of all these characters that we take to be malignant? Is it really true that absence of these characteristics veritably denotes innocence? and we realize at once that the answer is "No." After a moment's reflection we realize that these characteristics denote nothing more than spread, and, pursuing this matter to its more logical conclusion, spread means that much time has been lost before a diagnosis has been made. To extirpate a growth we have to go outside all areas of spread—that is admitted. Why, then, do we wait deliberately till spread has occurred before we arrive at a diagnosis?

I now invite you to accompany me in imagination to the out-patient department. A healthy-looking woman of 50 complains of a lump in the breast which her doctor has seen six months previously and told her was nothing. She now shows a breast with scirrhus written large across it. There is a temptation to abuse the doctor for not sending her to the surgeon for advice sooner, and I have even heard very severe

comments made upon such behaviour to the students. But wait—the very next case which comes up is a woman of the same age who says she has shown her doctor something in her breast, and he has sent her up for advice. On examination there is a small indefinite mass, not adherent to the skin or underlying structures, lying far from the nipple, so that there is no suspicion of retraction, there are no glands in the axilla, there is nothing to point to any cause whatever. On you now rests the responsibility. What are you going to advise? It is often extremely difficult to refrain from giving much the same advice as the doctor you were quite ready to blame a moment ago. You might quite well say, "This is nothing, my good woman, do not worry your mind about it; just come up and see me in a month's time," and think you were justified in doing so. Two or three months may pass without any very obvious change, and then the woman might neglect to come, thinking that it was not very important, as no operation was suggested—for to her an operation is the only important association she has with a lump—and that she need bother no further. Four, six, or eight months might quite well elapse before you see her again, and then the diagnosis may be as easy as in the first case we supposed. Spread has been going on slowly all the time, and the comments you were ready to pass on others may be as justly applied to yourself. You missed the opportunity offered you the first time of carrying out an investigation which would have placed the matter beyond the region of doubt at a time when, if it proved to be malignant, success was almost certain, while now, six to eight months later, it is very problematical.

But while making every excuse for the doctor who has failed to make certain in the early and doubtful stages through which every malignant growth must pass, there are certain cases we all know in which blame may rightly attach to the medical man. There is the careless man, always in a hurry, who never makes a thorough examination—you cannot alter him. Then there is the stage through which we all naturally pass, of non-experience, that rights itself with time. And lastly, and worse than all, there is the too fussy man who knows everything—he alone can assure the patient that "it is nothing." He, curiously enough, is almost always believed implicitly; perhaps the patient wants to believe him. If any doubt is raised he will put in a hypodermic needle, and if he succeeds in drawing off some clear fluid from a mastitic cyst will say, "Now what did I tell you? It is just a fluid cyst." I might here say that the use of a hypodermic needle or simple puncture is a most misleading and useless procedure. There is, lastly, our teaching, which is grievously at fault in this matter, as it does not sufficiently lay stress on the necessity for an immediate and thorough investigation.

Let it be clearly stated at once that no one has any right to tell a patient that a lump which has no characteristic at all is nothing; no one can tell. But yet the procedure I have laid before you from one cause or another is that almost universally adopted in practice.

We know that malignant disease must start in a small area, and yet how many cases are operated upon before anyone of any experience can diagnose them! By the time they can be diagnosed with certainty they are no longer to be considered early cases: they have spread to such an extent that they are now characteristic of the disease. These should be classed as advanced cases in which it should clearly be understood the prognosis has become grave. We do stumble on early cases sometimes, it is true, but the gospel of immediate investigation has yet to be preached a long time before it will be generally accepted. It is rational, it is right, it is only fair to the patient, and it will be generally accepted some day. The other day I came across an old-fashioned physician who advised against an operation for well marked recurrent appendicitis because "the last attack was only a mild one." That advice is now the exception, but twenty years ago it was the rule. We are still in this old-fashioned stage with regard to diseases of the breast.

Now, what can we do in early cases? We may as well confess at once that by the ordinary methods of inspection, palpation, etc., we can get no farther—we cannot, in fact, make a diagnosis. We can only say that there are as yet no characteristic features of malignancy; but if we are not to sit down calmly and deliberately and wait for these features to develop under our noses we must do something more. The probabilities are, in sporting parlance, something between two and three to one that the mass is malignant; that alone should urge us forward.

What are the innocent masses, adenomata, cysts, chronic



mastitis from whatever causes, tubercle, lipoma, gumma, hydatid?—we need go no farther into the rarities. Which of these are important? Adenomata, which have a very typical and definite feel however small, occur in young subjects, and are nearly always removed at once when diagnosed; they offer very little trouble.

Deeply seated lipomata, gummata, and hydatids may be placed aside too, for all practical purposes, for they are rare and still more rarely diagnosed. Tubercle, also, unless it is advanced, or has ulcerated, is much more often diagnosed by the microscope than by any other means. There remains, therefore, that large group of cysts, and chronic mastitis, and involution masses. These arise in the same period of life as malignancy develops. In the early stages they have the same lack of characteristics as early carcinoma. They may cause more pain, but not always. Do what we will, the microscope is the only method of distinguishing between these classes.

I think it should be pointed out to every patient over 30, and certainly to everyone over 35, that the microscope is the only method we have at our disposal of arriving at a diagnosis without losing so much time as to render the outlook exceedingly grave if a growth should prove to be malignant.

Perhaps I should add here a note of warning about the danger of acquitting a tumour on no other grounds than that of the age of the patient. I know of two cases of cancer of the breast which occurred under 12 years of age, and many which occurred in the teens. Rodman collected 5,000 cases, of which nearly 10 per cent. were under 30 years of age. These facts alone will show you that you are acquitting a very doubtful tumour on very inadequate evidence.

How is the investigation to be carried out? We do not want to cause more disfigurement than is necessary. Luckily what is necessary can easily be done without leaving any visible scar. The operation is associated with the names of Dr. Thomas and Dr. Collins Warren of Boston. It consists in making a sweeping incision in the circumference of the breast below and to its outer side. The incision extends nearly half-way round the breast, and goes right down to the muscles. The breast is then lifted up so as to expose its deep surface. The deep surface even of the upper part of the breast can thus be brought into view. A wedge shaped portion of the breast is then removed, containing the suspicious mass in its centre. The wound can then be closed. Once free of the body the mass may be cut into and inspected. Often this gives most valuable information, though it should also be borne in mind that the knowledge thus gained may be misleading, as the cases quoted below prove only too well.

If one can arrange to have a pathologist with a freezing microtome waiting to cut a section this may be done, and the microscopical examination made there and then in the course of a few minutes. The surgeon can be told, with a fair amount of certainty, whether he has done all that is needed, or whether he should proceed to do the complete operation.

As a rule it is only in hospital that we have the advantage of a pathologist upon the spot, most of us being content to wait the verdict after a lapse of some days, and then if necessary perform a second operation. There are pros and cons for both ways, as I have known the freezing microtome give a wrong diagnosis, simply because in the hurry the wrong piece of tissue had been frozen and cut, or the section had not traversed the growth. To me the more methodical examination conducted in the laboratory seems the safer of the two, especially if the raw surface is seared with the cautery, or the lump cut out by this means so as to close the ends of the lymphatics.

It matters not which plan is adopted, so long as this method of diagnosis and treatment is urged on the patient, and it is explained to her that the responsibility for delay rests solely with herself, for her medical man can give her no further help in the matter. Delay is the method relied upon heretofore; it should now be discarded. Delay means spread and the development of characteristic signs, but at what a price! The needed information can be obtained with certainty within a few days by the operative means.

The following cases illustrate the method; many others might be quoted.

#### CASE I.

A lady, aged 50, seen in private, had noticed a small lump in her left breast for some two months. There was no pain. As the lump did not go away she had come for advice. Examination showed a small indefinite mass or ill-defined thickening, hardly a lump, deeply placed in the upper and outer quadrant of the breast. It was hardly perceptible to the flat hand as the patient was well

developed. There were no signs or symptoms of malignancy, and no glands to be felt. She was advised to have it investigated. It was removed by circumferential incision. To the naked eye it looked doubtful. It was sent to the pathologist, who returned a verdict of carcinoma. A complete operation was performed after the lapse of a week. There has been no sign of a recurrence since.

The following cases show that the method must be carried out systematically and carefully, and that no reliance whatsoever must be placed upon examination by the naked eye. This last truth I find personally is very difficult to learn. The difficulty of diagnosing the true nature of the mass by any other means than by microscopical examination is illustrated by Case II.

#### CASE II.

A lady, aged 54, under the care of Dr. Fiddes, was seen on November 8th, 1920. About a month previously she had noticed a small lump in her right breast which had caused a small amount of pain on stretching and reaching with her arm. There was nothing of importance in her family or previous history.

A very small but indefinite mass, deeply placed, about the size of a date, was detected just outside the nipple. The skin was free but the mass was incorporated in the breast. There was no discharge from the nipple. The nipple was attached to the mass and appeared slightly retracted; this, however, she denied, and said that the nipple had always been like that. There was one small gland in the axilla. The diagnosis lay between a cyst and early scirrhus.

The same procedure above advocated was advised, and in November the mass was removed. It seemed quite obvious to the naked eye that it was a simple mastitis, but it was sent to the pathologist. In the meanwhile the friends were told that it was probably quite simple and were reassured. A few days later the pathologist reported that the mass was a carcinoma of the ordinary scirrhus type. The patient had to be told, and a radical operation was performed. There has been no sign of a recurrence.

However awkward it may be to tell the patient disagreeable truth, after having assured her that the mass was to all intents and purposes a simple condition, the gain in having got the condition so early amply compensates for the unpleasantness. It, however, illustrates how unreliable is an examination by the naked eye.

#### CASE III.

A single woman of 45 was sent by Dr. Kellett to see me in 1911, with what was obviously a chronic interstitial mastitis of the involution type and cystic in character. There was such pain that she wished to have the mass removed. The whole breast was removed by the circumferential incision, the nipple being left. It was a mass of involution cysts and mastitis. A portion was sent to the pathologist; this portion, however, was innocent. I did not see her until 1912, when she said that seven months previously she had noticed a tiny nodule in the region of the scar, and later others came, but she took no notice of them as they were some distance from the scar. She had only gone to her doctor again the night before. Her condition now was as follows: There was a ring of small nodules varying from the size of a wheat grain to that of a pea, about nine in number, all situated about two and a half to three inches from the nipple, mostly to the upper and outer side of the breast. They were obviously secondary growths. A complete operation was then performed and a large area of skin had of course to be removed, the deficiency being made up by sliding in skin from the back. The pathological examination showed them to be carcinomata, and as the whole breast had been removed they were obviously secondary to a primary focus in the removed breast. The patient was seen this year with no signs of recurrence.

In this instance a small part only of what had been removed was sent to the pathologist, and this portion did not contain any malignant tissue.

This was one of my earlier cases, and since that time I have always been careful to send to the pathologist the whole mass as it has been removed.

The last case I wish to quote illustrates how one may be misled by naked-eye appearances in just the opposite direction and mistake a simple tumour for a malignant one.

#### CASE IV.

A Russian lady, aged 42, seen in private last year, said she had noticed a small lump in her left breast for twenty years, but it had now started to grow larger; she thought there was one coming in the right breast.

There was an ill-defined mass in the left breast in the upper and outer quadrant. There was no pain. It could be felt with the flat hand, though the breasts were large. The skin was distinctly attached to the mass, but the nipple seemed free. In the right breast was a similar but smaller mass just above the nipple, and here again the skin was drawn down and did not move so freely. There were glands in both axillae. On account of the history that she had had the lump in the left breast for twenty years a diagnosis of old mastitis was made, but at the same time she was urged to have the mass removed. She consented.

At the operation the breast was turned up and a portion radiating from the nipple was removed. On cutting this open a small area a little larger than an almond, but with an irregular outline, was found surrounded by mastitis. This area was grey and presented



every appearance of being malignant. It cut like an unripe pear; it retracted and hollowed on section: on scraping with the knife it gave the well known "cry of a cancer." Cancer I thought it to be, and proceeded to do a radical operation.

The mass was sent to the pathologist, and the husband was told what we had found, what we feared, and what had been done. He was also informed that the other breast would have to be treated in the same way.

There was a delay in receiving the report from the pathologist, but as the case was so obvious one did not give the matter a second thought. What was my surprise, therefore, the evening before the second operation had been arranged for, to get word from the pathologist that the mass was an old fibro-adenoma. The news was at once communicated to the patient and her friends. The next day a circumferential incision was made and the growth removed from the remaining breast. On cutting this across, exactly the same typical carcinomatous appearance presented itself. An experienced surgeon of high standing who was present gave it as his opinion that the mass was undoubtedly carcinoma, although I had purposely told him my previous mistake. We were now in a quandary; there was this tissue in my hand presenting to the eye every known appearance of carcinoma. Should we perform a radical operation or be content with the partial one, relying on the experience we had gained from the other breast? Would we get the same verdict from the pathologist as in the other breast? We had promised the patient that we were only going to do quite a partial operation. Should we have to come later and inform her that the pathologist's report required us to do a larger one? It was a very difficult position. I decided to close my eyes to the naked-eye appearances, to shut my ears to the surgical advice of our friend, and be content with a partial operation.

Fortunately, the pathologist returned again the same verdict as in the case of the other breast—that it was an old fibro-adenoma.

These cases have been quoted to show that, though radical investigation must be urged on patients at an early stage, there are yet many pitfalls for the unwary, and the very greatest care is necessary to arrive at a correct diagnosis.

## MINOR TRAUMATIC DISABILITIES OF THE UPPER LIMB.\*

BY

P. JENNER VERRALL, F.R.C.S.,

BURGEON, MINISTRY OF PENSIONS HOSPITAL, SHEPHERD'S BUSH; CHIEF ASSISTANT, ORTHOPAEDIC DEPARTMENT, ST. BARTHOLOMEW'S HOSPITAL.

I HAVE used the word "minor" to exclude fractures, dislocations, and gross lesions of the vessels and nerves, but in a way it is a misnomer, as the disability caused by a fracture or a dislocation, though more complete at the time, is often more easily repaired, and as it is regarded by both patient and practitioner in a more serious light more care is taken in the after-treatment and re-education of the limb in order to ensure a perfect result. The greater disability caused by comparatively minor lesions of the upper limb as compared with similar lesions of the lower limb is, to my mind, explicable by the finer adjustment of the neuro-muscular mechanism and more sensitive connexion between brain and periphery found in the former. Unless we are professional dancers or something akin, we do not ask our legs to perform very intricate movements, and the sensation is not so acute. We are content if our legs will bear our weight and carry us along. Good evidence of this sensibility is seen in the behaviour of amputation stumps. It is quite rare to find in leg stumps what we call "pain of central origin," whereas an upper arm stump is frequently the seat of great pain, for which no local cause can be found, and on which no artificial limb has ever been worn. Bulbous nerve ends may have been excised again and again, even up to the plexus above the clavicle, and yet the pain continues. Even posterior root section often fails to relieve the pain, proving conclusively that the pain is of central origin, and a very long period must elapse before the cortical cells give up their hopeless struggle for activity. The only hope lies in active occupation of mind and body, thus diverting the nervous impulses into new channels and relieving the tension in the now useless mechanism.

I desire to call attention to the extreme importance of the presence of septic foci in other parts of the body in the conversion of a minor strain into an intractable disability. As common septic sources I would put in order of frequency the teeth (root absorption, abscess, and generalized pyorrhoëa), the tonsils (especially in younger subjects), the colon (chronic colon bacillus infection), the uterus or prostate, and the nasal sinuses. Unless these sources of infection are cleared up the

treatment of a minor lesion may prove wellnigh impossible. When these underlying causes have been excluded, the question of diagnosis turns on, first, the history of the injury—that is to say, the precise action that the patient was performing at the time symptoms first appeared; secondly, a diligent search for a spot tender on pressure; with these must be combined accurate knowledge of the structures underlying that spot; thirdly, the limb must be put systematically through its normal movements in order, noting by which of them pain is produced and whether or no pressure on the tender spot during the performance of these movements relieves the pain or not.

The vast majority of minor traumatic disabilities in the shoulder region are due to adhesions in or around the joint, the movements most frequently affected being those of abduction and external rotation. The shoulder is a simple joint, unstable in itself, and depending for its stability with the help of its own ligaments on the interaction of a complicated musculature surrounding it; its capsule is weak in all parts and actually lax beneath the joint at the apex of the axilla. Acute simple traumatic bursitis of the subdeltoid bursa is a condition described in the textbooks and frequently diagnosed, owing to the fact that tenderness is elicited below the end of the acromion process, but in my opinion it only rarely occurs. The source of trouble is much more frequently either strain of a muscular attachment or adhesions. With other more serious forms of subdeltoid bursitis we are of course familiar—such as tuberculous, gouty, or calcareous bursitis—and I would regard definite swelling in the situation of the subdeltoid bursa as an indication for taking a more serious view of the case, or at any rate for obtaining a skiagram of the shoulder.

As to adhesions, we must understand how these come about and how they can be diagnosed. We will assume that there is no clinical sign of a gross lesion and that the skiagram (if one has been taken) shows a normal joint. First we must exclude active arthritis, which may be present although the skiagram shows a normal joint. Pain and limitation of movement in all directions indicate arthritis. Sir Robert Jones expresses the matter well when he says that if there is limitation of movement in all directions there is probably arthritis; if even one movement is free there is probably none! The point is important, as the treatment of the two conditions is diametrically opposed—rest for active arthritis, movement for adhesions. Adhesions commonly give rise to pain and limitation of movement in one or more directions, but not in all, and come on fairly soon after the accident. Sir Robert Jones also calls attention to a condition which he terms "contusion of joint cartilage," such as may occur from a fall on the outstretched hand, pain and limitation of movement coming on gradually about a fortnight after the injury and being due to a process of repair in the damaged and bruised cartilage during which there is vascularization of the injured area. We have here the phenomena of an aseptic inflammation, and the treatment is determined by this. If due rest be given, the symptoms clear up, but if movement be allowed or forced at this stage, the recovering cartilage is further injured and recovery is delayed. However, the later history of such cases may well be that of "adhesions." As long as there are visual signs of active inflammation in the neighbourhood and of a definite arthritis, so long must we employ rest and soothing applications. When, however, this stage has passed we may allow movement without forcing it—that is to say, active movement, but not passive. Passive movement, apart from the full mobilization of a joint under an anaesthetic, is of very limited utility, and the temptation to employ it, although very great, should be firmly resisted. This applies to all joints. Assisted active movement should commonly take the place of true passive movement in the treatment of all joint lesions. If active movement is allowed and inflammation has passed, the movement of the joint should steadily increase in range. If it does not and the range begins to lessen, inflammation is still present and a further period of rest is indicated. If the range increases steadily with active use of the joint, let well alone. If it remains stationary, especially if the limitation of movement is in one or two directions only, the joint should be mobilized under an anaesthetic. It is commonly said that gas does not give sufficient muscular relaxation, but I maintain that with gas properly administered adequate relaxation can be obtained for the mobilization of all joints, with the possible exception of the hip. Under the anaesthetic all the normal movements of the joint should be carried through to the full extent,

\* Abridged from an address delivered to the annual meeting of the Essex Division of the British Medical Association July, 1922.



systematically and in order, and care should be taken to control both sides of the joint and to protect bones from fracture—by splinting if necessary. Active controlled exercises and massage should follow either on the same day or on the next day if much trauma to the joint has been produced by the operation. The correct principles of mobilization are not new, and are well recognized by orthopaedic surgeons, but are less well recognized by others, and failure to realize them permits patients to have recourse to less orthodox ways in order to obtain correct treatment. There is one more condition which, to the best of my knowledge, has not previously been described, but is not very rare. Owing to long continued strain of the arm in a person unaccustomed to great exertion, abduction of the shoulder becomes limited in extent when an attempt is made to perform it with the arm in the coronal plane. If, however, the arm is brought forward, a painful snap is felt (or even heard) over the front of the joint, and the arm can then be freely abducted. I have recently been investigating this condition, and ascribe it to a slipping to and fro of the short tendon of the biceps over the lesser tuberosity of the humerus and the subscapularis tendon, which immediately underlie it. I thought that possibly there might be a bursa in this situation, but I have examined some twenty subjects in the dissecting room and have found no trace of a bursa. I think the condition is purely mechanical, and the results of treatment confirm this view; ordinary treatment fails entirely to produce a cure, but if the elbow be flexed and the arm brought well forward by a sling so as to relax the biceps, and a pad be strapped in place over the short tendon of the biceps just exterior to the coracoid process, cure is certain in two to three weeks.

It is in the elbow that we find the commonest injuries. Golf, tennis, and cricket have each of them their characteristic strains. Flexors and pronators from the inner condyle, extensors and supinators from the outer, are liable to strain in turn, and it is the key to comprehension of these injuries to realize that excessive tension of a muscle is felt at its origin no less than at its insertion. The pathology of such injuries is usually as follows: a few fibres are torn off from their bony origin, the periosteum is raised, and there is haemorrhage both subperiosteally and into the interstices of the muscle fibres with all the ensuing phenomena of inflammation and fibrous tissue formation, possibly aggravated, as I have already mentioned, by the presence of some septic focus elsewhere in the body. In addition to these muscular lesions the elbow-joint or superior radio-ulnar joint may be the seat of traumatic arthritis, or of adhesions; the diagnosis and treatment are on the same lines as those already indicated for the shoulder.

The commonest muscle to be injured is the flexor carpi ulnaris. Although a flexor of the wrist the most important action of this muscle is a restraining one, preventing undue abduction of the hand, and it is commonly injured in returning forehand a hard drive at tennis or in removing a large and rocky divot from the ground at golf. Pain is felt over the inner condyle at the time, but the game can usually be finished, and it is not until evening that the arm stiffens—that is, to say, not until the haemorrhagic infiltration of the injured area is considerable. If immediate treatment be applied cure is usually rapid, but this is rarely possible, as we are not consulted soon enough. If opportunity occurs, a firm pad placed over the injured spot and strapped on will limit effusion and immobilize the muscle. The arm should be rested in a sling, if possible. Massage at this stage is unnecessary and may do harm.

The common tennis elbow is usually caused by a back-hand stroke. Its onset is similar to that of strain of the flexor carpi ulnaris, and pain is felt over the origins of the brachioradialis and radial extensors. The exact pathology of this lesion has long been in doubt. Probably in the majority of cases it is due, like other similar accidents, to muscle rupture, and can be treated as such; but in April, 1921, Osgood<sup>2</sup> of Boston described his own personal experience and gave a review of the literature, which is very instructive. After describing the mode of onset he notes the common symptoms of a sudden unexpected sensation of weakness and pain running down the forearm, leading the patient to drop objects; he notes also that the pain and the tenderness differ in severity with different positions of the forearm; but this is to be expected whatever the causation. The same applies to the slight swelling and increased feeling of elasticity, which he also mentions. X-ray appearances are negative, as was to be expected. He gives the various theories of etiology that

have been advanced: (1) tearing of muscular origins; (2) periosteal injury and periostitis; (3) post-influenzal periostitis; (4) injury to radio-humeral capsule; (5) arthritis of the radio-humeral joint. Unquestionably all of these occur and are responsible for the symptoms in certain cases; in my opinion the first two are those commonly to blame. He goes on to describe his own condition, which I have not seen, or at any rate have not verified, but which is well worthy of attention. He was treated in the usual way without permanent benefit. Dissection was made to see if a bursa were commonly present in this situation, and such a bursa was found beneath the conjoined tendon over the radio-humeral joint. An operation was performed on him under local anaesthesia, and an extremely sensitive area was found with outlines of a dirty grayish-white, but with no distinct sac. This was removed and found to be chronic inflammatory tissue. This operation cured him, and subsequent dissection showed the bursa present in seven consecutive elbows examined.

Dr. Osgood has performed a very useful service in calling attention to the presence of this bursa and its tendency to inflammation; but we frequently meet with inflamed bursae, and it is not always necessary to dissect them out. If we make use of appropriate non-operative methods, and pay attention to the possibility of septic foci elsewhere in the body, and remember, with thanks to Dr. Osgood, the possible existence of the bursa he describes, we may reserve excision of the inflamed area for extremely chronic and refractory cases in the same way as with cases of prepatellar bursitis which resisted treatment by other means.

In golf the pronator radii teres muscle comes into action to a degree not commonly realized, particularly in mashie and niblick shots out of bad ground, in the performance of which obviously forcible pronation causes the club to bite into the ground. I have never seen strain of this muscle of any great severity, but I can well imagine it occurring in a not over-muscular player.

In the treatment of cases which have had no early treatment or are refractory, but in which for the time at least there is no question of any operative measures, all septic foci must first be sought for and adequately treated until the toxic output has entirely ceased. Secondly, complete rest to the part must be obtained. The guide to correct treatment lies in an accurate knowledge of the functions of the injured muscle; the limb must be fixed in a position which relaxes the injured muscle while allowing as full play as possible to the uninjured ones. This is not always easy, but it is unsound treatment to limit the function of a limb more than can be avoided, as the muscles will require re-education and there is no method so good as a case or a plaster splint, which has the advantage that it is removable and therefore permits of massage. Where massage is unobtainable, or there is doubt that the patient will continue to wear the splint when not under the eye of the medical man, it is better to apply a plaster case for about six weeks, and rely on functional activity of the arm to restore use and power after its removal. By massage we seek to remove the effete products of inflammation and to loosen the limiting fibrous tissue that has formed. The affected area is moderately tender, though not as tender as it was when first injured. Massage to the required spot should be deep and vibratory and performed with the hand and not with a mechanical vibrator with an insensitive surface and of a force difficult to control. The pain produced should be little or absent, and the force of the pressure and vibrations should increase *pari passu* with the relief of the patient and the diminished sensation of resistance to the fingers. At the same time conservative centripetal massage should be given to the other muscles in order to keep up their tone and circulation, and controlled exercises given to these other muscles in such a manner as not to strain the injured part. This principle of relaxation applies to nearly all the minor injuries of which I am speaking; the essential point is to know exactly what position produces relaxation. The rest is easy.

In strains of the origin of the flexor carpi ulnaris the ulnar nerve is often thickened and tender and displaced or displaceable forwards even to the front of the internal condyle. Associated with this may be definite symptoms of ulnar neuritis, pain and tingling in the little and ring fingers, and so forth. The degree of mobility of the ulnar nerve in this region varies considerably under normal conditions. I have not been able quite to make up my mind whether these are cases of injury to an abnormally mobile nerve or whether the nerve is actually loosened by the injury, for abnormally



mobile nerves do not give rise to any symptoms. I am inclined to think that the injury loosens the nerve and also causes a traumatic neuritis; the nerve passes under a fibrous arch from which a certain number of the fibres of the flexor carpi ulnaris actually arise, and which may well be broken, thus liberating the nerve. This is a most painful condition, however it arises; it is treated initially by placing a soft wool pad behind the condyle and strapping it in place. In old-standing cases I have no hesitation in operating. The nerve is cut down on behind the condyle and either transplanted definitely to the front of the condyle and sutured into a bed made for it in the flexor muscles, or fixed back into its normal position by a strip of periosteum turned down from the humerus. Either of these proceedings will cure the condition, as the neuritis rapidly subsides when the nerve is no longer subject to recurrent injury.

The ligaments round the elbow, with the exception of the orbicular ligament, are of comparatively slight importance, and the trouble here is rarely ligamentous in origin. Similar muscle strains to those mentioned above occur in the insertions of the biceps, brachialis anticus, and triceps, and can be easily diagnosed by the situation of the tenderness and the pain on movement; they are readily treated on the same lines by relaxation of the damaged muscle. It is rarely necessary to suture the ruptured tendon. Bursitis of the bursa around the insertion of the biceps also occurs, but is not deserving of any special mention.

Partial or complete rupture of a muscle belly, such as the biceps, should be treated by complete relaxation of the muscle, and two pads strapped in position so as to approximate the divided ends and limit effusion. Union is always by fibrous tissue, and some degree of permanent impairment of function must always be anticipated, the degree depending on the extent of the injury. While massage may be employed as soon as the initial inflammation passes off, no movement of the muscle should be allowed until repair is complete. Suture of a muscle belly is, in my opinion, useless, as, the union being by fibrous tissue only, the muscle degenerates, and either a fresh rupture occurs or the fibrous tissue stretches when any great strain is put upon it. Where rupture has taken place, either through tendon or, more commonly, at the junction of tendon and muscle belly, open operation for repair by suture and careful after-treatment hold out good prospects of cure and should always be attempted.

In the neighbourhood of the wrist, where there are many tendons lubricated by a complicated system of tendon sheaths, teno-synovitis is naturally common. Perhaps the commonest site is along the tendons of the extensor communis digitorum. Simple teno-synovitis is caused by strain or excessive use of a tendon; the sheaths and parts around become inflamed and the lubrication defective. To treat such a condition by counter-irritation with iodine while permitting the full use of the tendons is like pouring water over an overheated car engine while allowing it to continue running with insufficient oil. This much used simple remedy will only cure the slightest cases, and is not really economical in time. If teno-synovitis of the extensor tendons be treated for a few days by complete rest of the fingers on a long cock-up splint and either counter-irritation or cooling lotions be applied, cure will really be more rapid; if the finger extensors alone are affected, it is not necessary to include the thumb, and thus the hand is not entirely disabled during treatment. Teno-synovitis thus treated will soon subside, but there is a special form which is particularly obstinate. It occurs in people—mainly women—who either play the piano very frequently or who have frequent need in their occupation to span the hand widely, as in the movement of playing an octave or grasping a large object in one hand. The symptoms are absolutely characteristic. There is a general sensation of weakness in the hand and pain and tenderness on pressure over the deep groove on the back of the radius, in which the tendon of the extensor longus pollicis runs, and along the tendons of the flexor and extensor carpi ulnaris. As may be readily noted on one's own hand, these two latter are synergic muscles in abduction of the thumb, preventing the abduction of the whole hand at the same time as the thumb. It may be worth mentioning that, as I wrote in the BRITISH MEDICAL JOURNAL some years ago, in such patients as these the deep groove of the extensor longus pollicis may be converted into a narrow canal by overgrowth of bone and thick fibrous tissue. To such an extent may this occur that I have twice been compelled to operate to free the tendon and flatten out the groove by chiselling away bone. The results of operation were absolutely successful, and it can quite easily be done

under a local anaesthetic. In the milder form of this condition, rest from piano playing and the avoidance of all actions which necessitate a wide grasp, such as holding a large vase, supplemented perhaps by wearing a wrist strap for a time, may suffice to cure, but I have found it necessary on some occasions to fix the wrist and hand in plaster with thumb abducted and hand deflected to the ulnar side for six weeks. This, being a much more drastic performance, has, in addition, a curative effect upon the functional element which is usually present in these cases, leading the patient to complain greatly of what cannot be a very severe pain.

To the prevalent custom of wearing a wrist-strap more or less permanently after a strain in the region of the wrist I have no objection, provided the patient be encouraged to dispense with the strap as much and as soon as possible, or at least to wear it only when engaged in some laborious work or sport. The strap gives a comfortable feeling of support, supplements the annular ligaments, and at the same time limits and controls the movements of the tendons as they pass through them, thus making a useful transition stage between absolute fixation and free movement. An elastic knee-cap, on the other hand, has a permanently constricting effect on the underlying vasti muscles, on which a large part of the lateral stability of the knee depends, and produces wasting and weakness of them, owing to inhibition of their blood supply and limitation of their activity. It is quite otherwise with the wrist, for the simple reason that in the wrist, with the exception of the pronator quadratus which lies deeply and the lower part of the flexor carpi ulnaris, there is no acting muscle to constrict and only a collection of practically avascular tendons.

Another disability that I would mention is mallet-finger, about which a series of letters appeared recently in the BRITISH MEDICAL JOURNAL; it is due to a rupture, partial or complete, of the extensor tendon on the dorsum of the last interphalangeal joint. It arises from a blow on the end of the finger, as in an ineffectual attempt to catch a cricket ball, and is often neglected in the early stages. The finger should be kept straight for three weeks on a straight palmar metal gutter splint. At the end of this time, if the rupture has been incomplete, the patient will be able to extend the joint voluntarily. If not, the tendon must have been completely torn, and an open operation for suture of the tendon, followed by splinting, is the only method that will suffice. In old-standing cases the structures on the flexor aspect may be so contracted that the finger cannot be straightened, and the question of amputation of the distal phalanx will arise.

Disabilities of the hand I propose to treat in a somewhat general manner, with more reference to general principles than to detail, as it is obviously impossible to cover every possible lesion. If we leave out such developed functions as piano playing, the functions of the hand may well be described as only two, grasping objects and picking up objects, and it is these two functions which we must endeavour to restore after injury. Apart from gross destruction of the hand or nerve injuries, the actual division of tendons and the after-results of cellulitis claim our chief attention. Owing probably to the greater complexity of their tendon sheaths, repair after suture is much less satisfactory in flexor than in extensor tendons, and although suture of cut finger flexors should always be carefully performed, when both flexor tendons of a finger are divided, a most guarded prognosis should always be given as to the subsequent utility of the finger; in manual labourers the hand is often more useful without the damaged finger than handicapped by a useless digit that impedes the action of its fellows. I do not, however, wish to be unduly pessimistic, as it is often possible to obtain a good result by careful after-treatment. Suture of extensor tendons is always promising, and even when there has been such a loss of tendon length that end-to-end suture is impossible, grafts of fascia lata are usually successful. I will say nothing of the immediate treatment of septic hands and fingers, except that acute inflammation is an indication for rest, and that too early movement should be avoided, as recovery of function is not hastened, but hindered thereby.

In order to be able to grasp an object satisfactorily flexion of at least two fingers is necessary, the possession of a thumb advisable but not essential, and a wrist capable of dorsiflexion essential if the grip is to be a strong one; for a good grip of a round object the preservation of the form and mobility of the transverse arches of the hand is of prime importance, and therefore the physiotherapy or, if necessary,



the operative interference with the metacarpal joints must not be neglected. The duo mobility of these transverse arches is also of importance in picking up objects, as without it, although opposition of the thumb may be free and unimpaired, the thumb cannot reach farther than the middle finger, and the fourth and fifth fingers cannot be used in conjunction with it. Abduction and opposition of the thumb are easily lost after septic wounds of the palm. If opposition is defective a band of adhesive strapping round the hand, keeping the thumb in opposition and preserving the palmar arches, reapplied as progress is made and the band loosens, is quite effective. For deficiency in abduction a series of small plaster splints moulded to the first interdigital space will gradually restore function.

Fingers may become stiff from a variety of causes, but assuming them to be potentially mobile and useful—that is to say, that all the structures essential to their mobility are present—their restoration to function is a purely mechanical problem. In dealing with the problem elsewhere<sup>1</sup> I described certain methods of treatment by metal splints and plaster that I had devised. I still use these methods and find them effective, but others have published other devices equally good, and the principles involved are in the main identical. If a masseuse move a stiff finger to and fro repeatedly, resistance is induced, often unnecessary pain, and a certain amount of reactionary inflammation. Should massage alone without mechanical aid be employed, the hand should have a preliminary bath treatment, preferably paraffin, and the massage immediately after should be confined to a single movement of the affected joint in each direction to the full extent possible without pain; the patient should then be encouraged and re-educated in active movements. I strongly disapprove of forcible mobilization of stiff fingers under an anaesthetic; though applicable to other joints, this method is not satisfactory for the fingers, and more gradual methods are indicated. The classification and the principles of treatment I advocate are as follows:

A. Fingers flexed when wrist is dorsiflexed, extension possible with wrist flexed. This, the type of ischaemic contraction due to shortening of flexor tendons, is best treated by Sir Robert Jones's method, the joints being straightened seriatim, beginning distally, leaving each joint in the deformed position until all the joints distal to it have been corrected, and retaining that correction by continued splinting, ending up with dorsiflexion of the wrist.

B. Wrist movement free, one or more fingers flexed at all three joints, contraction unaffected by position of wrist. One must aim at obtaining extension without losing flexion. I employ a metal splint extending beyond the fingers and terminating in a bar, fixed to the hand by plaster. To the affected fingers loops of adhesive plaster are fixed and tapes are tied between these and the bar. By gradual tightening of these tapes extension is obtained, but every day the tapes are released and the finger is brought back to its original flexed position and the tape then retied. There is then no loss of flexion; should this be noticed, extension is being carried out too rapidly and one must call a halt.

C. Free movement at the metacarpo-phalangeal joint, distal joints flexed. Gradual straightening on metal palmar gutter splints will suffice, flexion being preserved by daily movements, as before.

D. Metacarpo-phalangeal joints stiff in hyperextension, distal joints straight or slightly flexed. The important principle in treatment consists in getting the metacarpo-phalangeal joints to pass the dead point or straight line position. For this condition I use an ordinary short cock-up splint (which keeps the wrist dorsiflexed) with attached to it a quadrilateral wire loop springing from its palmar surface at the wrist and extending to the level of the metacarpal extremities. To this the fingers are flexed by tapes; daily movement as before.

These methods exert very great force, but can be graduated to a nicety; correction is gradual and gives no pain, and the range of movement is never lost. Tape traction is better than elastic, as there is no tendency on the part of the patient to resist it. Finally, employment of the hand, at first in gymnastic exercises and later in actual work, will put the finishing touches on the treatment.

## REFERENCES.

- <sup>1</sup> Sir Robert Jones: *Injuries to Joints*. Oxford War Primers. <sup>2</sup> Robert R. Osgood: *Radio humeral Bursitis, Epicondylitis, Epicondylalgia (Tennis Elbow)*. <sup>3</sup> An Abnormality of the Tendon Grooves of the Radius, *BRITISH MEDICAL JOURNAL*, May 10th, 1919. <sup>4</sup> Stiff Fingers, with Special Reference to Methods of Treatment by Metal and Plaster Splints, *Journ. of Orthop. Surgery*, June, 1919.

## THE DOSAGE OF RADIUM.

BY

DAWSON TURNER, M.D. EDIN.,

IN CHARGE OF THE RADIUM TREATMENT AT EDINBURGH ROYAL INFIRMARY.

The duration of the application is a most important element in radium treatment, and it is one which there may be a tendency to overlook in institutions where large quantities of radium are available. Consider, for an example, a dose of 500 mg. hours, which would be a fair dose to administer to a small rodent ulcer. This dose might be given by 10 mg. of radium for fifty hours, or by 50 mg. for ten hours, or by 500 mg. for one hour. Does anyone contend that similar effects would be produced in each case? I have no hesitation in making the affirmation, based upon an experience of twenty years, that for each case there is a certain optimum combination of milligrams and of hours, and that this question is one for the radium expert to decide. Levin and Joseph,<sup>1</sup> from an experimental study of the influence of radiations on the development and growth of the crown gall on plants, have shown that the primary effect of radium or x-ray radiations consists in the inhibition of the proliferating power of the cancer cells and not in their direct destruction. The crown gall, tumour-like formation on plants is so called because the growth frequently appears where stem and root join (called the crown). It is due to a parasite and can be induced artificially by inoculating a plant with an agar culture of the micro-organism. Plants were inoculated by these observers and some were submitted to radiation and some kept as controls; the control plants developed large crown galls, the others none or stunted growths containing true tumour cells. Cancer cells go through a cycle of (1) youth, (2) maturity, (3) old age. At one time they are actively dividing and at another they are not, and it has been shown that they are more susceptible to radiations when their nuclei are dividing than when they are in any other stage. In certain stages they may be as immune as normal tissues.

The lesson to be learned from a consideration of these facts is that in order that the dose of radium may be effectual it must be applied for a certain time, for it is only by a prolonged application that we can make fairly sure of catching all the cancer cells in their susceptible stage. We may therefore conclude that small amounts of radium for prolonged periods are more likely to prove beneficial than large amounts for short periods. The oven may be too hot and the bread will be burned on the outside instead of being baked throughout.

To take another point: suppose one possesses 100 mg. of radium, in what quantities is it best to put it up into tubes? The answer depends mainly upon the nature of the diseased condition to be attacked, upon its situation, its area, its volume, and upon whether the radium is to be applied externally or buried in the growth. Take the case of a lymphosarcoma—perhaps the most susceptible of all growths to radium—of the size of a large orange; in this case it would be best to have the radium put up in 5 or 10 mg. portions in separate tubes, so that they could be distributed throughout the mass, and particularly arranged like sentinels around the borders of the growth, for in this way the central parts will be receiving cross-fire radiation from all the tubes, but the peripheral parts will only get efficient radiation from the peripherally placed tube which happens to be nearest. In order that the whole of a growth may be efficiently and uniformly radiated the radium should theoretically be uniformly distributed throughout it—in fact, the desideratum would be to scatter radium like pepper from a pepper pot throughout the mass. Though this is for several reasons impracticable yet the more nearly we can approach to it the better. Dr. Stevenson's needles are a means to this end. Small tubes are filled with the radium emanation and are enclosed in hypodermic needles for embedding in the neoplasm. There is a disadvantage which applies to all cases in which the emanation is used, owing to its steady loss of strength—namely, that the dosage is not known unless the tubes have been tested for their emanation strength before being employed and unless a table of their rate of decay be consulted. As the time element in radium treatment, as I have endeavoured to show, is important, emanation tubes have the disadvantage that they would have to be replaced from time to time by freshly charged ones. Where the application is external this would be easily done, but in



the case of a tumour, in which the radium is embedded, it would mean a minor surgical operation each time the emanation tubes were changed.

Another point of importance is to give the whole maximum dose at first, and not to break it up into smaller ones which are repeated. The latter course may in certain cases turn out a fatal error, and this chiefly because the malignant cells, which were stunned but not killed by the first application, will, when they recover, tend to breed cells which are more immune to radiation, until, the same process continuing after several exposures, only those cells will survive which are refractory to the rays. There is a tendency by natural

selection to breed cells which are immune, and further exposures will now only do harm. The knock-out blow should be given by a sufficiently long exposure to a sufficient amount of radium while the cancer cells are not suspecting an attack; they must be taken by surprise, so that they will be unable to organize a resistance and be incapable of putting up a serious defence.

Were more attention paid to these points there would, I venture to think, be fewer failures following radium treatment.

## REFERENCE.

<sup>1</sup> *Annals of Surgery*, vol. 67, p. 442.

## THE FUNCTION OF THE ADRENAL GLANDS AND ITS RELATION TO CONCENTRATION OF HYDROGEN IONS.\*

BY

ROBERT McCARRISON, M.D., F.R.C.P.,

LIEUTENANT-COLONEL, INDIAN MEDICAL SERVICE; IN CHARGE OF THE DEFICIENCY DISEASES INQUIRY, INDIAN RESEARCH FUND ASSOCIATION.

(From the Pasteur Institute of Southern India, Coonoor.)

The object of this research was to inquire further into the causation of the adrenal hypertrophy occurring in inanition and in avitaminosis.<sup>1</sup> This hypertrophy is accompanied by an increased epinephrin content of the glands,<sup>2</sup> and is due, in the avitaminosis of birds, to the absence of vitamins A and B from the food. It is associated also, as shown by Cramer,<sup>3</sup> with an almost complete disappearance of lipoids from the adrenal cortex. The enlargement rapidly reverts to a more normal state when the missing vitamins are supplied. The question as to why hypertrophy of the adrenal glands should occur under conditions that give rise to greater or lesser degrees of atrophy of all other organs (the pituitary body in males excepted)<sup>4</sup> is of fundamental importance both in relation to the disorders of nutrition in which it is found and to the function of the adrenal bodies themselves. The facts suggest some purpose underlying their enlargement; some purpose, also, in their increased content of epinephrin. It was thought that it might be related to the increased concentration of hydrogen ions that occurs in avitaminosis. Recently Kato,<sup>5</sup> Takahira,<sup>6</sup> and others have drawn attention to the increased hydrogen ion concentration of nerves, spinal cord, heart, and blood vessels in polyneuritis avium. I have confirmed this observation in so far as it relates to the heart, and found also an increase of P<sub>H</sub> concentration in pectoral muscle. In a few cases of polyneuritis columbarum accompanied with effusion into the pericardial sac or with oedema of the tissues, the dropsical fluid has been well on the acid side of neutrality—pericardial effusion, for example, having a P<sub>H</sub> of approximately 6.5.

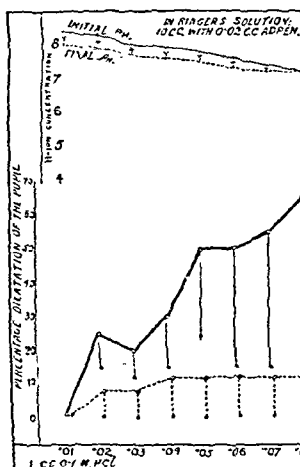


FIG. 1.—Showing the effect on the action of adrenaline hydrochloride on the iris of the enucleated eye of adding increasing quantities of N/10 HCl to Ringer's solution containing 0.02 c.c. of the commercial solution of adrenaline (1 in 1,000). As the P<sub>H</sub> of the medium falls, from alkalinity to acidity, the curve of pupils (sl) gradually heightens, and the range of action of the irides increases (shown as vertical continued lines falling from the points of maximum dilatation to points of maximum contraction). The curve of maximum dilatation and the ranges of action of the irides of control eyes subjected to the influence of the adrenal

adrenal of in are: approx. the tubes to which HCl was added are shown at the top of the figure. Initial P<sub>H</sub> of control tubes was approximately 8. It will be noted that under the influence of the metabolic activities of the eye the P<sub>H</sub> falls towards neutrality during the course of the experiment (thirty minutes).

Experiments were accordingly undertaken to ascertain the effect of changes in concentration of hydrogen ions on the action of commercial adrenaline hydrochloride and of the active principle of the adrenal medulla—epinephrin—in various media.

Enucleated eyes of the toad (*Bufo melanostictus*) were employed for the purpose; in all 1,300 were used. Each test on one eye was controlled by the other eye of the same animal. It has been stated that while adrenaline causes mydriasis of the enucleated frog's eye, it does not do so in the enucleated toad's eye. So far as *Bufo melanostictus* is concerned this is not the case. It has long been known that, by its action in stimulating the dilator mechanism of the iris, adrenaline causes mydriasis; but, so far as I can find, no reference is made in the literature to its further and, as I believe, more important action of sensitizing the enucleated eye in such a way that the iris responds more readily to the normal stimulus of light through its maximum range of action. This sensitivity of the toad's iris to the stimulus of light, when under the influence of adrenaline hydrochloride or of epinephrin, was utilized as a means of determining the effect upon the action of these substances of changes in concentration of hydrogen ions in various media. P<sub>H</sub> indicator tablets ("A. and H.") were used throughout; the P<sub>H</sub> values are therefore approximate.

The observations made in the course of the inquiry are enumerated below; the reader is referred to the full paper for details regarding them.

1. There is in the eye of *Bufo melanostictus* a peripheral mechanism which can act independently of the nerve centres. It is responsive to the stimulus of light within a limited range—25 per cent. dilatation in the dark to slit-like contraction on exposure to light—provided the eye be preserved in media of suitable composition and suitable P<sub>H</sub> concentration. In such it retains a gradually waning sensitivity for a comparatively short period—approximately two hours.

2. This mechanism can be so sensitized by adrenaline hydrochloride or by epinephrin that, under appropriate conditions, the iris will respond with enhanced sensitiveness to the stimulus of light through its maximum range of action. It retains its enhanced sensitivity for prolonged periods—three to eight hours—and in exceptional cases for even longer periods. This effect of adrenaline and of epinephrin is spoken of as the "adrenaline-iris-light-sensitivity reaction."

FIG. 2.—Showing the effect on the action of adrenaline hydrochloride of adding increasing quantities of N/10 HCl to normal saline solution containing 0.02 c.c. of the commercial solution of adrenaline (1 in 1,000). As the acidity increases the curve of maximum dilatation and the range of action of the irides drop precipitately until the critical point of acidity is reached at 0.03 c.c. N/10 HCl. The lesser degrees of acidity (0.01 and 0.02 N/10 HCl) enhance the action of adrenaline on the pupil of the enucleated eye; greater degrees (0.03 to 0.5 N/10 HCl) inhibit its action; greater degrees still enhance it again, while the irides tend to be fixed in the position of mydriasis. The bulk of inhibition is wider in normal saline than in serum

of control. It will be seen that the P<sub>H</sub> in the acid tubes rises towards neutrality. Experimental eyes, uninterrupted lines; controls, without acid, dotted lines. Duration of observation, thirty minutes.

\* Abstract of Twelfth Report to the Indian Research Fund Association on the Pathogenesis of Deficiency Disease. The full paper will appear in an early number of the *Indian Journal of Medical Research*.



It is markedly influenced by temperature conditions—heat inhibiting it, cold enhancing it.

3. The action of adrenaline hydrochloride and of epinephrin is dependent in some measure on the composition of the media in which the eye is contained: it is greatest in fresh serum and normal saline solution, least in Ringer's solution. Compare "controls" in Figs. 1, 2, 3, 5, and 6.

4. The action of adrenaline hydrochloride and of epinephrin is intimately correlated with the concentration of hydrogen ions in the medium containing the eye:

(a) Slight increases in acidity enhance the action of small doses of adrenaline hydrochloride or of epinephrin; greater increases of acidity retard it; greater increases still tend to fix the pupil in the mydriatic position. (Figs. 2 and 3.)

(b) As the medium approaches neutrality from alkalinity

the range of action of the irides, under the influence of adrenaline hydrochloride or of epinephrin, increases until at the neutral point they respond to the stimulus of light through a wide range of action. (Fig. 1.)

(c) As the medium departs from neutrality towards acidity the range of action of the irides, under the influence of adrenaline hydrochloride or of epinephrin, diminishes until a point is reached—"the critical point of acidity"—at which their action is completely inhibited. (Figs. 2, 3, and 5.)

(d) This point is attained when 0.03 to 0.04 c.cm. N/10 HCl is added to 10 c.cm. of serum containing 0.02 c.cm. commercial adrenaline solution (1 in 1,000) or 25 mg. of emulsion of guinea-pig's adrenals (equivalent to approximately 0.013 mg. of epinephrin). (Figs. 3 and 5.)

(e) Epinephrin, in appropriate dosage in normal saline and Ringer's solution, exerts its optimum effect within a range of P<sub>H</sub> of approximately 7.4 to 6.8; above or below these limits its action is inhibited.

5. By increasing the concentration of adrenaline hydrochloride or of epinephrin in proportion to the increase in acidity the gulf of inhibition can be bridged. (Figs. 3 and 4.)

In order, for example, that the same effect may be produced by adrenaline hydrochloride in 10 c.cm. of sheep's serum, containing 0.04 c.cm. N/10 HCl, as is produced in 10 c.cm. neutral serum three times the amount of adrenaline is required. (Fig. 4.)

6. The influence exerted on the action of epinephrin and of adrenaline by increased concentration of hydrogen ions is dependent on the quantity of epinephrin or of adrenaline hydrochloride present in the medium; while lesser degrees of acidity enhance the effect of the smallest dose of these substances that exerts any action whatever upon the eye, the

effect of larger doses may be retarded by the same degrees of acidity. (Figs. 5 and 6.) The maintenance of maximal functional activity by the iris of the enucleated toad's eye demands accurate adjustment between the quantity of epinephrin and the concentration of hydrogen ions.

7. The cortex of the adrenal glands, when associated in its action with adrenaline hydrochloride or with epinephrin, possesses the property of aiding the eye to bring the medium in which it is contained towards neutrality. This property may be lost by, or be greatly reduced in, the adrenal glands of birds suffering from polyneuritis columbarum. Its loss may possibly be correlated with the loss of cortical lipoids in this condition, and with the loss of lipoids from the blood in human beri-beri. Not only, therefore, is the adrenal medulla intimately related in its function to the concentration of hydrogen ions in the medium through which it acts, but the adrenal gland as a whole contributes its share to the regulation of the neutrality of the medium.

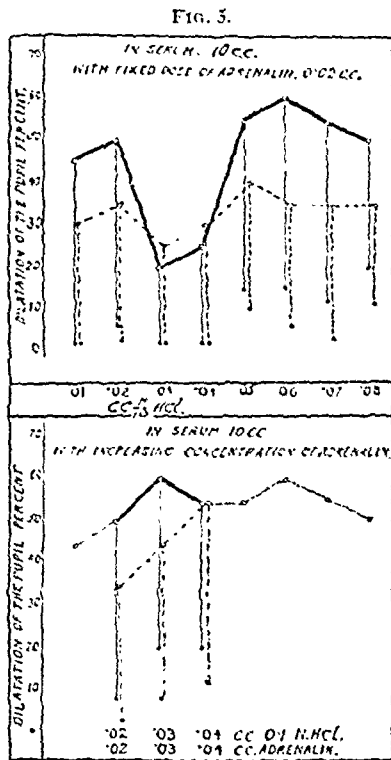
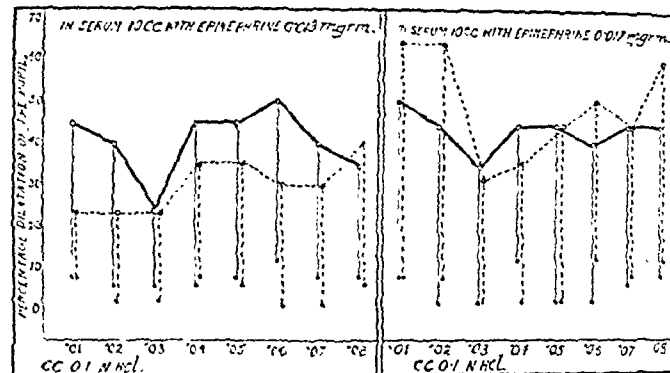


FIG. 4.

Fig. 3.—Showing the effect of adding increasing amounts of N/10 HCl to 10 c.cm. serum on the action of 0.02 c.cm. adrenaline hydrochloride solution (1 in 1,000). The lesser increases of acidity enhance its action, greater increases of acidity retard it; greater increases still again enhance its action. The critical point of acidity is seen at 0.03 to 0.04 c.cm. N/10 HCl, where the gulf in the curve of maximum dilatation is bridged. Experimental eyes, uninterrupted lines; controls, without acid, dotted lines. Duration of observation, thirty minutes.

Fig. 4.—Showing how the gulf of inhibition can be bridged by increasing the concentration of adrenaline in proportion to the increase in acidity of the medium. The "bridge" is shown as a dark line in the course of the dotted curve of dilatation taken from Fig. 3. Experimental eyes, uninterrupted lines; controls, without acid, dotted lines. Duration of observation, thirty minutes.



Figs. 5 and 6.—Showing (a) The effect of the lesser degrees of acidity—0.01 and 0.02 N/10 HCl in 10 c.cm. sheep's serum—in enhancing the action of approximately 0.013 mg. of epinephrin (from guinea-pig) on the irides of enucleated toad's eyes (Fig. 5). Effects on experimental eyes shown in uninterrupted lines; on control eyes, without acid, in dotted lines. (b) The effect of the same degrees of acidity in retarding the action of a larger dose of epinephrin—approximately 0.017 mg. (Fig. 6). In Fig. 5 the critical point of acidity is shown at 0.03 c.cm. N/10 HCl. Duration of observation, thirty minutes.

8. The serum of birds suffering from polyneuritis columbarum enhances the action on the enucleated toad's eye of minute doses of adrenaline hydrochloride; this action, interpreted in the light of the above results, indicates increased acidity of their serums.

9. The pericardial effusion from birds suffering from polyneuritis columbarum (P<sub>H</sub> approximately 6.5) retards the action on the enucleated toad's eye of minute doses of epinephrin (healthy pigeon's adrenal emulsion); this action, interpreted in the light of the above results, indicates that such effusions have reached "the critical point of acidity" at which the action of epinephrin is inhibited.

#### Conclusions.

1. The active principle of the adrenal medulla maintains and enhances the sensitivity of, rather than stimulates, the myoneural junctions of the true sympathetic terminals of the enucleated toad's eye, so that their response to the stimulus of light is more sensitive and their sensitivity is longer retained.

2. If this sensitivity is to be sustained and optimum function of the iris is to be maintained in media on the acid side of neutrality, the concentration of epinephrin must be proportionate to the concentration of hydrogen ions in the medium.

3. The observations recorded in this paper provide evidence that: (a) The enlargement—with increased epinephrin content—of the adrenal glands in inanition and in avitaminosis may be correlated with the condition of acidosis associated with these states. Its occurrence, for the most part, during the terminal phases of avitaminosis, its association with marked respiratory disturbances,<sup>1</sup> with oxygen-want,<sup>2</sup> with falling body temperature,<sup>3</sup> and with interference with oxygenation, and its rapid disappearance on the provision of the missing vitamins, suggest that it is an emergency effort on the part of the adrenal glands. (b) The attempted exercise of an emergency function by the adrenal glands may be expected to occur in all conditions of alkalosis or of acidosis.

#### REFERENCES.

- <sup>1</sup> BRITISH MEDICAL JOURNAL, February 15th, 1919. Studies in Deficient Disease, London, 1921.
- <sup>2</sup> Proc. Phys. Soc., 1920 (May 15th). Journ. Phys., iv. Brit. Journ. Exper. Path., 1920 (August).
- <sup>3</sup> Kitasato: Arch. Exper. Med., 1921, iv. No. 3, pp. 207-216.
- <sup>4</sup> Keio Igaku (Keio Med. Journ.), 1921, Octo. 1. No. 10.

\* As adrenaline hydrochloride rapidly deteriorates in India on exposure to air this concentration of adrenaline will probably be found too high where fresher stocks of the drug are available. All my observations were made with stocks that had been in India for several years. It is to be emphasized that the effects of hydrogen ion concentration on the action of adrenaline or of epinephrin are demonstrable with such minimal amounts of these substances as exert any action whatever upon the enucleated eye.—R. McC.



## EMBOLISM OF THE RIGHT BRACHIAL ARTERY AS A COMPLICATION OF LOBAR PNEUMONIA.

BY

A. H. D. SMITH, M.C., M.B., Ch.B.,  
LLANELLY.

The rarity of embolism of a main arterial trunk as a complication of lobar pneumonia, and the unusual bacteriological findings on examination of the blood, prompt me to make a record of this case.

W. J., aged 39, an insured person who worked as a labourer in a tinplate works, on October 16th, 1922, felt chilly and had a rigor after having been exposed to cold and getting wet through during a drinking bout. On October 17th I found him complaining of pain in the right side of the chest. The temperature was 104°, pulse 110, and the sputum was rusty. The right upper lobe was found to be the site of lobar pneumonia. All over the rest of the chest were signs of chronic bronchitis. Crisis occurred on the ninth day; at no time was there any real cause for anxiety, and apart from a soft systolic bruit at the apex there were no physical signs or symptoms of any cardiac affection. After the crisis convalescence was uneventful until the fourth day, when he began coughing badly, expectoration was profuse, the temperature was elevated, and sweating was marked. There were signs of bronchitis over both lungs; over the pneumonic area in the right lung the breath sounds were cavernous, and there were abundant crepitations. Night sweating was profuse and occasionally delirium was marked. Tubercle bacilli were not found in the sputum, but the clinical picture and the facts which came to light in the family and personal history strongly supported the view that the patient was now suffering from an acute tuberculous infection of the right lung. I was informed that the patient had, after his discharge from the army, been under treatment at a military hospital for tuberculous disease of the spine. His only brother had died recently of tuberculous infection of the lungs. Examination of the heart during this period showed no abnormality save for the soft systolic bruit at the apex previously noticed.

This was the clinical picture up to November 9th. On November 10th, during my visit in the morning, the patient told me that during the night he had been seized with very acute pain in the right arm; examination of that arm, conducted with difficulty owing to the great pain caused by the slightest movement, showed no apparent difference from the other; the heat in both was equal; there was no swelling in the right arm and no difference in colour between it and the sound arm. There was, however, exquisite pain in the affected arm and paresis of the muscles. The hyperaesthesia was confined to the area from the wrist to the shoulder. There was almost complete anaesthesia in the tips of the thumb and fingers. The right radial pulse was absent both to the finger and to the stethoscope. Following the course of the radial upward no pulsation could be felt in the ante-cubital fossa. At the level of the posterior wall of the axilla, in the line of the vessel, a very tender lump about the size of a small hazel nut could be felt. The surrounding structures appeared normal. Above this level the vessel could be felt pulsating strongly. The radial pulse in the left side was present and bounding in type. An examination of the heart revealed nothing further than the soft systolic bruit already noted. I felt I was dealing with an embolism of the right brachial artery, and thought that the probable source was an infective endocarditis. The cardiac physical signs at this stage were, however, not in any way pronounced.

The right arm was wrapped in cotton-wool and immobilized. For the next three days treatment was expectant, and a careful examination of the arm and heart was made daily. The appearance of the arm never changed. Compared with the sound arm there was no difference in size, heat, or colour. The hyperaesthesia, however, remained marked, as did the anaesthesia of the tips of the thumb and fingers. The patient was profoundly intoxicated, delirium became marked, and night sweats became very heavy. The cough was less, but the physical signs in the lung were still those of acute phthisis. On November 11th and 12th there was no alteration in the physical signs in the heart. On the latter day he was seen with me by Dr. Samuel Williams, who agreed that the diagnosis was probably septic endocarditis following lobar pneumonia, and that the embolus was a result of the endocarditis. On that day definite signs of endocarditis were present in the shape of marked systolic and presystolic bruits at the apex. The murmurs were harsh and ran into each other. At the base of the heart a soft, high-pitched systolic bruit could be heard distinct in pitch from the murmur present at the apex.

On November 13th a blood culture was made and sent by hand to Dr. Sladden, pathologist, Beck Laboratory, Swansea General Hospital. At this time the physical signs were as on the previous day. The general condition of the patient was very poor indeed, and he might be described as being in a typhoid state with the low type of delirium. I was called hurriedly to see him about 10.30 that night. On my arrival a few minutes later I found he was dead. A few minutes prior to my arrival he had been talking quite sensibly to his friends. They said he seemed to fall off to sleep and then they found he was dead. I was unfortunately unable to get permission to perform a post-mortem examination.

I have recorded the case because embolism of a main arterial trunk as a post-pneumonic complication is unusual. Osler<sup>1</sup> records a case of embolism of the femoral artery as a

pneumonic complication and states that it is very rare. In his case the complication occurred during the height of the fever, and the limb had to be amputated. The patient recovered.

In the case here recorded the obstruction was evidently complete and sudden. At no time was there any sign of interference with the circulation such as might necessitate surgical interference. Apart from the paresis and the nerve symptoms the limb was apparently normal. The obstruction must have been below the circumflex artery, and the condition of the arm again demonstrates the wonderful collateral circulation which exists in the upper limb. Complete obstruction of a main trunk with so little interference must, I think, be a very rare condition. Other points of interest in the case are:

1. The absence of definite signs of endocarditis in the early stage of the embolus.

2. The difficulties of diagnosis owing to the clinical picture in the lungs, so suggestive of acute phthisis.

3. The result of the bacteriological findings of the blood. Dr. Sladden's report was as follows:

"A plentiful growth of streptococcal chains occurred. Fuller tests showed this to be a non-haemolytic strain with the sugar reactions of *Streptococcus salivarius*. It was not bile-soluble, and grew readily on ordinary broth medium. It was therefore not in any way related to pneumococcus as usually identified."

I had expected the blood culture to reveal the presence of pneumococcus. Were the endocarditis and embolus the result of pneumonia or were they independent of the primary condition? Unfortunately the sputum was not examined for the streptococcus which was found in the blood.

### REFERENCE

<sup>1</sup> Osler: *Principles and Practice of Medicine*, p. 93.

## THE BLOOD AS GUIDE TO EARLY DIAGNOSIS IN LEAD POISONING.

BY

ROBERT CRAIK, M.D. GLASG.,

EALING.

LEAD poisoning is commoner than is generally supposed, and it is useful for practical purposes to recognize four classes of cases. The industrial includes workers engaged in smelting or making white lead, etc. This class is invariably detected by experienced medical men at the works. In general practice cases are mainly occupational—painter, plumber, etc. Recently there have been more cases than usual in painters. The practice of moistening the sandpaper with oil is practically unknown in London, and it is fine dust arising from dry sandpapering indoors which does the damage. I have known a healthy man to contract acute plumbism in this way in three weeks. Painters often drink much beer, and in such cases constipation is not to be expected with the colic.

Criminal cases used to be frequent in the Midlands, but I have seen only one in London. Diachylon is taken to produce abortion early in pregnancy by women—generally married women. Symptoms are often vague or misleading: constipation, vomiting, even albuminuria and headache, may be attributed to the condition, and abdominal pain that would otherwise secure attention is minimized by the woman as she hopes it is the prelude to miscarriage. The gums may give no help as the patient may have artificial teeth. Further, slight pyrexia is not unusual and agonizing colic may be attended with urgent vomiting—not unlike that due to an acute abdominal lesion. Only early diagnosis can save these women from serious illness, and in no class is blood examination so helpful.

All other cases may be lumped together as domestic and arising from food, drink, etc. Recently there has been an outbreak in this district due to accidental contamination of beer. But of 9 cases seen since midsummer only 3 were due to beer alone, though in 3 others it was probably an important factor. In the remaining 3 beer could be excluded—in one the source remains unknown, but in two painters it was occupational. These two were severe and conspicuous examples of acute lead colic.

In 30 cases of all kinds I have seen wrist-drop only once, and the patient (potman) developed encephalopathy about a year later and died. Another case (criminal) developed the encephalopathic type, but recovered after a long illness. In 28 there was practically no obvious symptom after a



fortnight's treatment. The longer diagnosis is deferred the greater are the variety and the duration of the symptoms. To hesitate in the absence of wrist-drop is like waiting for locomotor ataxia before diagnosing syphilis. In 19 out of 20 cases the patient first seeks advice for abdominal pain, which may be severe colic or only vague discomfort, and it is only in occupational cases that lead is likely to be suspected. In the latter a blue line is seldom absent, but this is not conclusive evidence.

1. *Blue Line*.—In industrial cases this is practically always present, but it may also be found in healthy workers. It means deposit of lead on the gums and is acquired from dust. In occupational cases the line is of more importance and means faulty habits, which are sure to end in plumbism if they have not already done so. In domestic cases where lead has been ingested in minute quantities in beverages, even when symptoms of poisoning are present, this sign may be absent. It is generally rather faint, and I have known such a case still undetected a fortnight after admission as alcoholic neuritis to the ward of a teaching hospital. Blue line demands careful examination of the patient or worker, but diagnosis must always be independent of blue line, which remains only valuable presumptive evidence. All are agreed as to the importance of early diagnosis in syphilis, and this is not less essential in plumbism. In order to effect this, diagnosis must depend mainly on a clear conception of the importance of two factors—lead in the urine and punctate basophilia in the blood film.

2. *Lead in the Urine*.—We are assured that lead may be found in the urine of healthy industrialists. In them minute quantities are always present in the system, but satisfactory elimination by kidneys and bowel is said to prevent accumulation and poisoning. This can hardly be regarded as satisfactory, and in my opinion such cases require further investigation. In lead poisoning the metal is always present in the urine and remains for weeks or months after treatment is undertaken. In the case of suspicious symptoms examination of the urine affords valuable diagnostic evidence, or, alternatively, altogether excludes lead. It should be oftener employed.

3. *Punctate Basophilia*.—This sign is neglected because its significance is misunderstood. It is necessary to recall a few facts of haematology. Polychromasia is a sign of unusually active erythropoiesis, and is conspicuous in the blood of the newborn babe, where it is associated with nucleated reds. In adults polychrome erythrocytes are still readily attracted into the blood stream, and appear in minor anaemias of convalescents and even after moderate haemorrhage, whereas erythroblasts only appear in more serious anaemias or after severe haemorrhage. In the so-called pernicious anaemias a toxin is also exciting the marrow to pathological regeneration. The first indication of this is the appearance of punctated erythrocytes, which later on are associated with megaloblasts, giving a blood picture of anisocytosis, polychromasia, and normoblasts (normal regeneration), combined with poikilocytosis, punctate basophilia, Cabot rings, and megaloblasts (pathological regeneration). All these may appear fairly early in mild lead intoxication, but for some weeks there is usually only anisocytosis, polychromasia, and punctate basophilia. Thus lead acts directly on the marrow in a similar way to the toxin in a pernicious anaemia. In malaria at every paroxysm the marrow is excited in the same way, but the reaction is transient. With these exceptions, pathological regeneration is seldom seen, and it is safe to say that, in the absence of serious anaemia, punctate basophilia is more likely to be caused by lead than by anything else. Now, anaemia is never serious in the early weeks of lead poisoning. Basophilia is pathological, and demands investigation just as much as albuminuria or glycosuria. So long as it is present something is acting injuriously on the marrow, and if this is lead the urine will contain a trace of the metal even in the absence of corroborative symptoms.

As I have indicated, basophilia is only one in a series of biological reactions inevitably excited by small doses of lead. When diagnosis is early—whatever the treatment—the reaction usually disappears within three months, and it is interesting to watch the subsidence of the reaction in the blood film. Not much difference is seen for a month, but soon afterwards blasts disappear in mild cases and search for basophils becomes necessary, though these can usually be found for two months. With the help of the Clinical Research Association I have compared this with disappearance of lead from the urine. In a mild case due to beer basophilia was still seen fifty-two days after ingestion ceased, and half a pint

of morning urine gave a trace of lead. In a more severe case of painters' colic erythroblasts were found thirty-nine days after leaving work, but a chance sample of eight ounces of urine gave no result. On the fiftieth day there were easily found anisocytosis, polychromasia, and punctate basophilia, and, after a search, Cabot rings and one punctated erythroblast. The whole twenty-four hours' urine was collected for the same day and gave a trace of lead. Apparently these two signs disappear about the same time.

I have already pointed out how basophilia may be used to exclude lead poisoning (BRITISH MEDICAL JOURNAL, 1917, ii, p. 650). It serves another purpose in enabling one to follow the progress of a case. On finding brisk pathological regeneration in a potman some months after leaving work with colic and limp hands, I convicted him of continued indulgence. He disappeared for some months, to return with double wrist-drop, albuminuria, and brisk pathological regeneration. His protestations suggested to me that possibly a second unknown source of poisoning existed, and I advised him to leave the district. This he hesitated to do, and a few weeks after was taken, comatose and convulsed, to Isleworth, where he soon died. In conclusion, I suggest that diagnosis should depend, not on gross signs, but on appreciation of suspicious symptoms and investigation of blood and urine. Whereas examination of the urine is a tedious process, the blood film is quick, easy, and almost as reliable. I can testify that early diagnosis will avert gross symptoms, so that in a month Government referees will reject cases still showing blue line on the gums, punctated erythroblasts in the blood film, and lead in the urine.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### ULCERATIVE STOMATITIS IN CHILDREN, AND ITS TREATMENT.

DURING the war a form of stomatitis was described the causal organisms of which were the Vincent spirochaete and the fusiform bacillus; to this the name of "trench mouth" was given. This form of stomatitis has long been described in books on children's diseases under the term "ulcerative stomatitis." The treatment, however, which was extremely successful for "trench mouth" has not been applied, so far as I am aware, to children up to the present. This disease, which usually occurs after the primary dentition is well advanced, is common among the hospital class of patient, and is characterized by swelling, redness, oedema, and extreme tenderness of the gums round about the teeth. The gums may show actual ulceration. Those parts of the cheek which come in contact with the ulcerated areas may themselves show infection. The teeth are frequently carious; pressure on the gums may or may not cause pus to appear at their margins. The tongue is coated and the breath fetid; the temperature is generally raised to 101°; the child refuses food, and there may be swelling and tenderness of the lymphatic glands beneath the jaw at its angle.

Smears of the pus will usually show the fusiform bacillus and the Vincent spirochaete. The clinical picture is thus very like that of the so-called "trench mouth." The treatment which I have carried out in a large number of out-patients is as follows: The following mixture was applied to the mucous membrane of the gums, cheeks, and tongue at six-hourly intervals: liquor arsenicalis 2 drachms, vin. ipecac. 2 drachms, glycerin 2 drachms, aq. menth. pip. to 1 oz. As this mixture is poisonous, and could not be used as a mouth wash in small children, I ordered it in the following fashion: 15 drops diluted in 2 drachms of water were to be applied by means of a soft piece of muslin on the end of the finger or a camel's-hair brush. In children old enough to use this mixture as a mouth wash—that is, old enough to spit out the mixture after its application—a soft boiled toothbrush was used, a few drops of the mixture undiluted being applied to the gums by the toothbrush. The arsenic seems to be specific for the spirochaete and the vin. ipecac. for the fusiform bacillus.

In conjunction with this treatment, which was that recommended during the war for "trench mouth," potassium chlorate was administered, 12 grains in the twenty-four hours being given to children under 1 year, and 18 grains in the day to children under 2 years. In the administration of the potassium chlorate the child's meals were carefully



avoided, as it was found to tend to produce indigestion. Attention was paid to the general condition of the child, the diet being nutritious, and plenty of fresh air and fresh fruit were indicated.

The improvement with this treatment was rapid, the acute symptoms subsiding in thirty-six hours. There is, unfortunately, a tendency for this condition to recur. As it is extremely infectious, care should be taken to prevent other members of the family contracting the disease. Very often in my cases I found that one of the parents was suffering from the disease and had probably been the source of the infection.

DONALD PATERSON, M.B., M.R.C.P.,  
Physician to Out-patients, Children's Hospital,  
Great Ormond Street.

### ERYSIPELAS OF THE MOUTH.

Cases of erysipelas attacking the fauces are somewhat rare, and worthy of record.

Recently Mrs. L. was notified as a suspected case of diphtheria, but her throat had not been well seen by her medical adviser; he, however, gave her 2,000 units of antitoxin, and, as she was obviously very ill, requested her removal to hospital.

I saw her there; she had then been thirty-six hours ill, complaining of sore throat, a feeling of swelling in the throat, and difficulty in opening her mouth; the temperature was 104°; she was seven months pregnant. There was some enlargement of the cervical glands; her throat was congested and dark in colour; the fauces and tongue showed bullae. The next day the throat appeared somewhat better, the bullae on the tongue had burst, and ulcers to the number of about a dozen were counted on her tongue; there was some nasal discharge, and the temperature remained raised. When ill seventy-two hours the infection passed by way of lips and nose to the face, thence to the body, and finally ceased at the costal margins. Profuse desquamation ensued. The ulcers on the tongue gradually improved as the sloughs separated, and confluence followed; pregnancy was not interrupted, and there were no complications.

EUSTACE THORP, O.B.E., L.R.C.S., D.P.H.,  
Assistant M.O.H. Sunderland.

## Reports of Societies.

### THE PRESENT POSITION OF ORGANOATHERAPY.

At a meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on January 9th, with the President, Dr. W. LANGDON BROWN, in the chair, a discussion took place on the present position of organo-therapy.

Professor SWALE VINCENT began with a criticism of the groundless and fantastic theories which surrounded this subject. It seemed that neither the scientific discrimination of the medical profession nor the common sense of the general public could yet be trusted. The doctrine and practice of organo-therapy appeared to involve the therapeutic use of practically every organ and tissue in the body. Many foolish notions were abroad—one, for example, was that a preparation from the pancreas, tonsil, and duodenal mucosa, taken by the mouth, was a remedy for diabetes. A large number of substances were recommended for administration by the mouth, which, so far as could be discovered, produced no physiological effect of any kind when given in that way. He thought that when physicians insisted on giving substances by the mouth they should be called upon to defend their practice by proper clinical records of their cases. Substances which produced no effect when given by the mouth might have certain effects when given subcutaneously, but even then the effects were not specific, and were at best only temporary. In the whole province of therapeutics there were many fallacies and pitfalls, in particular the one expressed by *post hoc, ergo propter hoc*. It was truly said that it was a poor cure which never found its lucky patient. For various reasons, most of them obvious, treatment was often undertaken just at the time when things were at their worst, so that a turn for the better was put down to the credit of the treatment. Many patients recovered without treatment at all; when treatment was given it was by no means always certain that it had anything to do with the recovery, and in some cases the position might be that recovery took place

in spite of treatment! But it seemed clear that, if the value of a remedy was to be ascertained and demonstrated, something like a series of experiments must be carried out. It would be presumptuous on his part, as one not in practice, to point out how a clinical worker should conduct his experiments, but at any rate the necessity of adequate and rigid controls should be urged. The endless records of single cases alleged to have been cured by this or that drug were not worth the paper on which they were written. That was true of general therapeutics, and truer still of organo-therapy.

Passing to a more particularized review the speaker said that the value of thyroid preparations in myxoedema appeared to be established, and these preparations might be valuable under certain other conditions—in some cases of goitre, for instance, and in obesity. Many observers asserted that thyroid did good in quite a wide range of conditions, and it was, of course, conceivable that a drug which stimulated the chemical activities of the body might have many indications. Parathyroid had been used in different conditions, with very uncertain results; here he thought the most optimistic endocrinologist would make no very large claims. It had never been shown that treatment with pituitary extract had the slightest effect in remedying the symptoms due to pituitary insufficiency. The value of adrenaline medication bore a very problematic relation to the adrena function, and here again, as in the case of extracts of the posterior lobe of the pituitary, there was no such thing as substitution therapy. In Addison's disease adrenaline preparations did not seem to be of the slightest value. As for testicular and ovarian medication, it was doubtful whether such preparations produced any effect when administered by the mouth; when administered subcutaneously a mild stimulant or irritant effect might be observed, which, however, was not specific, but was produced by many other substances. It was generally recognized that the pancreas furnished an internal secretion the elimination of which might give rise to a condition resembling the disease known as diabetes, but the administration of pancreatic extract had not been proved to be of any value in that condition. During recent months, however, the investigations undertaken at the University of Toronto (BRITISH MEDICAL JOURNAL, November 4th, 1922, p. 833, and November 18th, p. 991) made it seem necessary to revise this judgement. It would not be wise to be too sanguine, but it was not out of the question that, sooner or later, there might be a preparation from the pancreas which would have the same action in diabetes as thyroïd had in myxoedema.

To sum up, if the search was for a true substitution therapy—the artificial replacement of an internal secretion—the reward was the solitary instance of thyroïd, though it might be that before long the pancreas must be added. There were also a few instances in which substances were valuable as drugs, apart altogether from any question of the internal secretions—for example, adrenaline. On no subject was such utter nonsense talked as on the internal secretions, and organo-therapy, or a large portion of it, might be defined as the application of this nonsense to practical medicine. In the meantime certain firms of manufacturing druggists were growing rich owing to the ignorance of the public and the lack of discrimination of the medical profession.

Professor G. R. MURRAY (Manchester) thought that a discussion on organo-therapy at the present time would serve a very useful purpose. Certain lines of treatment by this means were based on sound physiological principles, although, owing to the enthusiasm of speculative writers, a great deal of ephemeral literature had appeared on the subject, much of it of no value, and some of it positively harmful. The term "organo-therapy" might include the products of the secretory, excretory, and the incretory glands. The excretory glands, from the nature of their function, did not promise much help, though urea might be mentioned. The secretory glands were those which delivered their secretion through a duct to the surface of the skin or mucous membrane; the incretory or endocrine glands discharged their secretion into the blood, lymph, or cerebro-spinal fluid. He would confine his remarks to conditions in which the treatment was of value in clinical medicine. The first and most important use of the thyroïd preparation was to supplement a failing thyroïd gland, which, owing to fibrotic atrophy or other destructive lesion, could no longer provide even the minimum amount of hormone necessary. If a case failed to respond to the treatment it might be well to change the preparation, for he had come across preparations which had no activity at all, probably owing to some fault in the manufacture of the



particular sample, or possibly to the selection of the wrong gland—a contingency always to be borne in mind. When thyroid treatment was started there was a latent period of a week or more before any definite effect was observed. If any signs of hyperthyroidism were present, the use of thyroid extract was contraindicated, and this was an important point to observe before starting treatment in cases of simple goitre; as a rule, the pulse rate would give the indication. In simple obesity he had seldom found it beneficial unless combined with special dieting. In some menstrual disorders a beneficial action had followed quite small doses, and in tertiary syphilis also good results had been obtained. The function of the parathyroid glands had been under discussion for years; here he had had no personal experience. With regard to the suprarenals, it was known that Addison's disease was due to a destructive lesion of the glands, but the administration of whole adrenaline or any preparation of it was quite unable to revive the glandular function. He had never seen permanent improvement in Addison's disease by this treatment, though in other respects adrenaline presented an extremely valuable remedy on account of its action on the sympathetic nervous system. He had found it of value in the treatment of oesophageal spasm; it seemed as if the adrenaline was held up by the oesophagus, where it exercised possibly some local action, as very often immediately after a dose patients could swallow food with comfort. Extract of pituitary gland, given subcutaneously, was a valuable remedy. Its careful use had a well recognized place as a uterine stimulant in obstetric practice; it had been found useful also in the treatment of diabetes insipidus. Little evidence was available to show that either testicular or ovarian preparations had any value when taken by the mouth, and there was no clear proof that eunuchism could be removed by testicular preparations. The active principle of pancreatic secretion had long been sought, and the recent achievements of Banting and Best at Toronto were of great interest and encouragement. On the whole, it might be claimed that preparations of thyroid, parathyroid, pancreas, suprarenal, and pituitary glands were agents of value, though in other cases it could not fairly be said that it was known how to obtain or employ satisfactory preparations. The recent exploitation of organo-therapy was deplorable, because it tended to discredit the proper use of these substances.

In acknowledging the President's thanks for having come from Manchester specially to address the Section, Professor Murray said that he felt that the work of the pioneers in organo-therapy should always be gratefully acknowledged; he referred in particular to the work done by Sir Victor Horsley, who in the early days had shown the relation between thyroid and myxoedema.

#### *The Clinical Use of Parathyroid.*

Dr. W. R. GROVE (St. Ives) brought forward some clinical results of the administration of parathyroid, but he said that he did so with considerable trepidation after the remarks of Professor Swale Vincent. Nevertheless, his cases had been followed up very closely. His attention was drawn to parathyroid after he had been engaged over a long period in the study of calcium metabolism. In 1906 a colleague informed him of the good effect clinically of calcium salts in ulcers and other conditions. He confirmed these results in ulcers, and also in some eczemas. He also injected intramuscularly calcium chloride in single grain doses, diluted 1:100, for haemorrhages which could not be reached surgically. Therefore he came to the subject of organo-therapy already a firm believer from clinical evidence in the effects of the administration of calcium salts both by the mouth and intramuscularly. Dr. Vines of Cambridge, who knew of his interest in calcium metabolism, asked him to collaborate with him from the clinical side in certain investigations.

The first case taken was a woman, aged 55, prematurely old, with a large varicose ulcer of the leg. She was calcium deficient, and on calcium chloride being given intramuscularly at weekly intervals the calcium content of the blood increased, though it never reached more than 80 per cent. of the normal, and an improvement in the ulcer synchronized with the higher calcium content of the blood. The injections were stopped for three weeks while calcium was given by the mouth, and the ulcer then increased in size.

Some half-dozen other cases, all of them showing calcium deficiency, were by this time under treatment, and all of them improved with intramuscular injections, though they never reached normal, while calcium by the mouth was followed by no signs of improvement in the blood, and very little in the ulcer. It was in this series of cases that the administration

of parathyroid was then begun, in 1/10 grain doses daily. In every case the blood rapidly became normal, never taking more than a fortnight to do so, and the ulcers started healing. At the end of five weeks from the commencement of the parathyroid treatment the first and most obstinate case, in which the ulcer had completely encircled the leg, and which had gone on with varying results for two hundred days under calcium chloride treatment, was completely healed, and in the smaller ulcers in other cases the healing was still more expeditious. A number of related conditions had been tried and had yielded good results under parathyroid treatment. These included bed sores and severe burns. All diseases in the rheumatic group invariably showed calcium deficiency, and in every case of this kind treated there were undoubted signs of improvement after administration of parathyroid. A gumma of the face gave a remarkable reaction to parathyroid after the case had resisted ordinary antisyphilitic treatment for months. Another striking success was in a case of herpes zoster of the conjunctiva with iritis. In pernicious anaemia there was a hopeful field. He had also seen about a dozen cases of enlarged prostate, all with calcium deficiency, which had shown most striking results on treatment with parathyroid. One patient who had lived a catheter life for three months was able to do without the catheter, and was only disturbed once or twice in a night. It seemed to him that calcium deficiency was an index of the absorption of a toxin, and that many chronic diseases were due to the breakdown, in consequence, of the defences of the body, the controlling mechanism being situated apparently in the parathyroid glands. If the focus of the disease itself could not be removed, parathyroid was only an alleviative agent, but nevertheless a valuable one.

Dr. HOWARD VINES (Cambridge), who was asked to supplement Dr. Grove's account of his work, said that in all these cases in which good effects were observed in parathyroid treatment the underlying condition was sepsis, which accounted for a large number of the diseases set out in separate paragraphs in the medical textbooks. In three or four cases he did white blood counts during the period of parathyroid treatment, and found the polymorphonuclears go up considerably, along with the improvement in the patient's condition. Parathyroid brought about a stimulation of leucocytic activity; he did not suppose that this had anything to do with a direct action of the parathyroid substance on the leucocyte-producing centres, and it seemed to him a much more rational idea that it was brought about by the calcium of the blood plasma. Dr. Grove's statement of cases might sound as though a panacea had been discovered, but the story at bottom was simple: it was a matter of increasing the physical resistance to bacterial infection.

#### *The Action of Ovarian Extract.*

Dr. W. E. DIXON (Cambridge) gave an account of some work not yet published. He said that Harvey Cushing first made the observation that pituitary extract was secreted into the cerebro-spinal fluid. Thereafter three or four other observers stated definitely that they had not been able to find pituitary present in that fluid. Experiments on this point in his own laboratory were performed principally on dogs and on a few cats. A cannula was put into the cerebro-spinal canal high up, all the experiments in which the cerebro-spinal fluid was blood-stained were discarded, and the action on the guinea-pig was tested, every known test being made for pituitary. In the result they succeeded in obtaining pituitary extract in the cerebro-spinal fluid in practically every instance. Different specimens of the fluid yielded different amounts, which was not extraordinary, because the needs of the body would naturally determine the amount present. The object of the experiments was to determine what substances could increase the action of pituitary in the cerebro-spinal fluid. Here the experiments yielded a mass of negative results, and the only substance which invariably produced an increased secretion of pituitary immediately (the secretion only lasted from one to two minutes, after which the normal condition was resumed) was ovarian extract. The ovarian extract was boiled and filtered, and the filtrate injected into a vein. The cerebro-spinal fluid, which was being collected all the time, immediately after this injection produced an increase—in some cases a very large increase—of pituitary extract. Orchitic extract did not produce any effect, but extracts of duodenum or small intestine, boiled and filtered in exactly the same way, similarly increased the secretion of pituitary extract, though not immediately; there was a long delay—perhaps an hour—before any marked increase in the



pituitary secretion took place. One naturally looked to the alimentary canal for an explanation of this phenomenon. The first suggestion was that it might have something to do with facilitating absorption from the alimentary canal, but there was no increased absorption at all. The absorption remained quite constant, but he noticed that pituitary increased the tone of the whole intestine.

Dr. W. LANGDON BROWN said that the discussion had been most interesting, none the less because Professor Swale Vincent had opened it with a refreshing dose of scepticism. It was quite time that they should be reminded of the need for studying the underlying physiological basis for all this work, and should take a little more careful stock of the evidence for and against any particular diseases being associated with endocrine defects and of their possibilities of remedy by organotherapeutic means. Organotherapy was lagging some way behind the observations made in endocrinology. It must be admitted that the basis upon which the clinical observations had been made was in many instances not as satisfactory as could be wished. At the same time the observations which Dr. Grove and Dr. Vines had brought forward that evening showed that evidence was available by clinical means, apart from ordinary physiological laboratory experiments, which would meet all the tests that could be asked of it. The observations mentioned by Dr. Dixon were very important as showing that there was something in the ovary which definitely stimulated the pituitary gland. Therefore he did not think one could possibly take up so negative a position as Professor Swale Vincent had done. Professor Vincent had carried the negative position too far. The speaker went on to refer to the observations on glycosuria in pregnancy, where the blood-sugar curve, demonstrated by Mackenzie Wallis, had been shown to be exactly the same type of curve as the one given in pituitary lesions, suggesting again some connexion involving ovary and pituitary. He mentioned two cases in which he had used ovarian extract, and in which the evidence pointed to a definite effect.

A woman, aged 20, had an artificial climacteric induced by the removal of both ovaries and tubes for tuberculous disease. She began to put on weight, which was not unexpected, and she had choking, with quickening of pulse lasting about six minutes, and epilepsy. Her thyroid swelled up during the attack, and she passed a little sugar after the attack.

She was given ovarian extract, and whereas she had previously had three or four attacks a week she had had only one attack since last Easter. This patient was first observed under hospital conditions; she did not know what she was taking, and no attempt was made to suggest strongly that it was going to have a remarkable action.

The other case was one of thymic asthma. A number of remedies had been tried, and the attacks continued to be quite frequent. After ovarian extract was given they became less frequent, and were now rare.

He did not think there was any improbability in the supposition that some preparations of ovarian extract had therapeutic effects, but he himself had approached this question as a sceptic, and he still recognized that it was necessary to look to the basis of the clinical observations very thoroughly.

Professor SWALE VINCENT said that he had given in his paper a list of a large number of drugs which, he suggested, were useless or practically so. The only one in that list which had been challenged in the discussion was parathyroid, about which very little was known. He could not discuss the clinical evidence in its favour brought forward that evening, but his general thesis, which he still maintained, was that he would not expect anything to produce a pharmacological effect which had no physiological action. A man could not be cured by any means which would not also kill him. In the case of thyroid there could be "kill" as well as "cure." In the case of parathyroid he still—humbly, as became one not engaged in practice—reserved his opinion until a number of other cases were available. As for ovarian extract, this was the first time he had heard it authoritatively stated that ovarian extract had any effect which could not equally be got out of the big toe or any other part of the body. The President had hinted that he (Professor Vincent) did not give due credit to clinical observations. All he had said was that clinicians would have to be a little more scientific in the way they gave their evidence. Proper controls often were not taken, and the records furnished no idea of the precise conditions under which the treatment was given. He would not presume to deny that results followed

the use of ovarian extract. He only took the liberty of saying that they were not proven on the evidence which so far he had had an opportunity of examining.

### CHRONIC INTUSSUSCEPTION IN CHILDREN.

A MEETING of the Liverpool Medical Institution was held on January 4th, with the President, Professor J. HILL ABRAHAM, in the chair, when Mr. R. C. DUN read a note on chronic intussusception in children. He referred to ten cases, all of which were operated on and recovered. In no case was there any difficulty in reduction and no adhesions were found. The average age of the children affected was 5 years. The duration of symptoms was from four weeks to two and a half years. An abdominal tumour was felt in six out of the ten cases. Blood and mucus were passed per rectum in only two of the cases, and in no case was complete obstruction reached. In none of the cases was any definite pathological condition found which would account for the formation of the intussusception.

Mr. J. T. MORRISON, referring to two cases recently seen by him, said there were cases with borderline symptoms between the acute and chronic types. One such, a boy aged 18 months, having previously had a typical ileo-caecal acute intussusception, was again seized with a similar attack. Operation showed a pure colic intussusception easily reducible and without oedema or congestion. The other case, a boy aged 5 years, had symptoms of acute obstruction of a definite but not very severe type, necessitating immediate operation. There was no blood or mucus, but a vague tumour was present in the right side of the abdomen. Previous health had been excellent. At operation a very easily reducible intussusception of the ileo-caecal type was found. There was practically no oedema of the apex. During convalescence he had an attack of fever (104°) of one day's duration, with blood and mucus in the stools. Otherwise there were no further symptoms. Was this, he asked, an abortive attack of intussusception or merely an attack of enteritis?

### Night Blindness.

Mr. H. HAWARD BYWATER read a short paper on night blindness. He divided the subject into two groups: (1) the congenital and hereditary forms, (2) the acquired varieties. The first group comprised the rare congenital form with normal fundi, which was stationary, and the three hereditary conditions: (a) retinitis pigmentosa (and its non-pigmentary form), (b) retinitis punctata alba, and (c) gyrate atrophy of the retina and choroid (which were progressive). The second group comprised: (a) acquired retino choroiditis (syphilitic, which became stationary if treated), (b) epidemic night blindness (this, the most important form, might or might not be associated with xerosis of the conjunctiva), and (c) physiological night blindness of the one eye, as described by Thomson Henderson. After giving reasons why myopia and hypermetropia had difficulty at night, Mr. Bywater gave particulars of seventy cases of night blindness seen in Salonica by Major Usher and himself in 1917, with the tests applied. He mentioned that fourteen out of seventy were men who had useful vision only in one eye; he also described cases of the epidemic form occurring in miners during the last coal strike and xerosis in children. After briefly discussing the theories of night blindness he described experiments to prove that visual purple formation was carried out by the eye itself independent of the central nervous system. Changes in the visual purple appeared to be due partly to ultra-violet rays of greater length than 300 microns and partly by rays of the visual spectrum. Experiments to show the protection given by the media of the eye against the harmful rays of bright light were described; finally, the diagnosis and treatment of the different varieties were summarized.

Dr. A. E. BURNHOUGH considered the most interesting aspect of night blindness was the congenital stationary type—that in which night blindness existed along with no other apparent abnormality of the eyes. This was purely hereditary and occurred in families often throughout many generations. A very full account, giving very extensive family trees of affected families, had recently been issued from the eugenics laboratory of Professor Karl Pearson. A type had appeared in which the female members of a family escaped but passed it on to the males. The affection was supposed to be rare, and in its higher degrees he believed it was so, but he had come across many cases of modified congenital stationary night blindness, especially noticeable during the time of the lighting restrictions in the war.



Dr. T. W. WADSWORTH described a case of syphilis of the lung. The patient was aged 17 years, and complained of cough and slight expectoration for six months. She was poorly nourished, her fingers clubbed, incisor teeth notched, the Wassermann reaction positive, the sputum negative as regards tubercle bacilli. There was an area of dullness just below the inferior angle of the left scapula. The breath sounds were bronchial in this area, and there was pectoriloquy and crepitations. X-ray examination of the chest showed a shadow corresponding to the area found clinically. After treatment with iodides and mercury and an injection of 0.3 gram novarsenobenzol the physical signs cleared up, and x-ray examination of the chest demonstrated that the opaque area had almost vanished. From the evidences of syphilis, the absence of tubercle bacilli, and the response to treatment, the diagnosis was established.

Dr. A. DOUGLAS BIGLAND read a note on the diagnosis and treatment of migraine, in which he advocated the administration of calcium salts.

### DIATHERMY IN SURGERY.

At the last meeting of the Brighton and Sussex Medico-Chirurgical Society Dr. H. T. CUBBON read a paper on the use of diathermy in surgery. He gave a general outline of the physical effects produced by the passage of the diathermy current through the body, with special reference to the destruction of morbid tissue by the heat produced. Specimens of meat were shown in order to demonstrate this. Dr. Cubbon then gave a short description of the technique of a diathermy operation. The destruction of tissue by diathermy being the result of coagulation, there should be no haemorrhage; this was a great advantage to the patient and surgeon. The risk of haemorrhage was dealt with and the means of avoiding it by careful attention to technique.

The advantages of diathermy over ordinary surgical procedures were summarized and discussed under the following headings:

1. Lack of primary haemorrhage.
2. Absence of shock and pain.
3. Relief of pain in palliative operation.
4. Diminished risk of cell implantation.
5. Sterilization of the parts operated upon by the heat produced.
6. Firmer, denser, and more pliable scar from diathermy, with less tendency towards breaking down.
7. The method of choice in patients too old or feeble for operation by other methods.
8. The patient more willing to undergo further applications where necessary, because of the simplicity of the operation and the few after-effects.
9. Rapid convalescence.

The complications which might arise after diathermy operations were discussed; these included oedema and risk of obstruction in laryngeal operations and risk of secondary haemorrhage. Practically all cases of malignant disease involving the tongue, the floor of the mouth, palate, fauces, and certain parts of the pharynx, vagina, and vulva were suitable for diathermy. Fibromata of the nasopharynx, papillomata of the bladder, cavernous naevi of the tongue, lips, pharynx, and buccal mucous membrane were cited as non-malignant pathological conditions which could be destroyed by diathermy with excellent results. Dr. Cubbon added that warts and small pigmented areas of skin could be effectively destroyed by diathermy sparks; strictly speaking, this was not diathermy, but the sparks produced by the diathermy auto-condensation method were so much less painful than the older high frequency sparking that very often tissue could be destroyed without the use of a general anaesthetic. Most of the cases of malignant disease which had been operated upon by diathermy were those considered inoperable from the ordinary surgical standpoint. These cases had been naturally far advanced and cures could not be expected, but in spite of that the results had been distinctly encouraging. In operating on all early cases of malignant disease of the mouth and upper air passages diathermy, in view of its advantages, should be considered the method of choice. Diathermy was no more a specific for the cure of malignant disease than operation, but a combination of the two would be an immense help to the surgeon.

Mr. M. FITZMAURICE-KELLY showed four cases, all of which had been successfully treated by diathermy by Dr. Cubbon and himself.

Mr. ROBERT SANDERSON read notes of a case of subinvolution of the uterus, and of a case of malignant annular stricture of the colon.

## Reviews.

### THE ADMINISTRATION OF ANAESTHETICS.

THE fourth edition of Hewitt's *Anaesthetics and their Administration* was published in 1912 before the lamented death of its original author, and it is timely and fitting that the work should be brought up to date in view of the general advances made both in the scientific and in the practical part of the art of anaesthesia during the past few years. Dr. HENRY ROBINSON, who was also the editor of the last edition under the immediate personal supervision of the late Sir Frederic Hewitt, is now entirely responsible for the clinical chapters, and has almost entirely rewritten them. Mr. Digby Cotes-Preedy has again contributed the chapter on the medico-legal aspects of surgical anaesthesia, and Dr. A. J. Clark, Professor of Pharmacology at University College, London, has now undertaken the responsibility of revising the two chapters dealing with the physiology of anaesthesia.

The book commences, as formerly, with a chapter on the evolution of surgical anaesthesia; the second chapter is devoted to the properties and impurities of the chief agents capable of producing general surgical anaesthesia. The selection of anaesthetics, the extraneous circumstances of anaesthetization, and the use of morphine and other alkaloids in conjunction with anaesthetics are then considered. After accounts of the administration of the principal anaesthetics, mixtures of general anaesthetics are discussed; sequences and alternations of general anaesthetics are next described, and then local and regional anaesthesia. Spinal anaesthesia has a chapter to itself; minor difficulties in anaesthetization, the cause and treatment (preventive and immediate) of respiratory arrest and of circulatory failure, and the after-condition of the patient are discussed, and an adequate index has been provided.

The chapters devoted to the physiology of anaesthesia are a masterly synopsis of a difficult subject. Professor Clark has succeeded in making interesting a subject which tends to be "dry" as well as difficult. His explanations are clear and concise, and his illustrations equally clear and well chosen. After defining anaesthetics he discusses the six theories as to their mode of action, and comes to the conclusion that the drugs act by decreasing the permeability of the cells, though the exact mode of this action is still uncertain. He deals next with the absorption, excretion, and distribution in the body of anaesthetics, and, after touching on shock and its treatment, brings his excellent little monograph to a close by consideration of each of the principal anaesthetics in turn.

For the work of the general editor we have nothing but praise, even though we are inclined to quarrel with him over minor points. For example, on page 143 the case reported by Dr. Guthrie really has nothing to do with the question of nitrous oxide and ether in cases of cardiac affections mentioned in the previous paragraph, though the juxtaposition of the two paragraphs makes it appear as though there was some connexion. Again, he recommends on page 257 the addition of rubber cushions to Trewby's apparatus for combined nasal and oral administration of nitrous oxide and oxygen, thereby doing away with one of the claims the inventor made for his instrument, that of being readily cleansed even by boiling; it is an addition which is, in practice, rarely necessary if the nose and mouth pieces are properly made. It is also a blemish that the instrument figured is not the one used for nitrous oxide and oxygen administration as stated beneath the illustration, but the one for nitrous oxide and air. Omissions are few, but in a future edition it might be as well to figure the double bottle modification of Junker's inhaler, in which, no matter how the connecting tubes are joined up, chloroform cannot reach the patient in the liquid state.

The book is excellently printed on good paper, and the illustrations throughout are adequate and well reproduced. Altogether it can be recommended both to the practitioner and the student.

<sup>1</sup> *Anaesthetics and their Administration*. A textbook by the late Sir Frederic W. Hewitt, M.V.O., M.A., M.D. Fifth edition. Edited by Henry Robinson, M.A., M.D., B.Ch. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1922. (Demy 8vo, pp. xiii + 576; 83 figures. 30s. net.)



## SURGICAL ANATOMY.

THE second edition of the excellent *Manual of Surgical Anatomy*<sup>2</sup> by BEESLY and JOHNSTON differs only slightly from the first. The section on nerve injuries has been rewritten, and provides a useful summary of the recent advances in this subject; a few other additions and alterations in the letterpress and in the illustrations have been made. As was said in the review of the first edition, the authors have succeeded in compiling a full but concise account of the surgical anatomy required for the higher examinations; and the popularity of the book with students and graduates proves that it has fulfilled its purpose. The arrangement follows the plan of Cunningham's *Practical Anatomy*. The book is intended by the authors to be used in the dissecting room; but it will be found just as interesting and clear to read in the study. The sections on joints are really excellent, and the description of the anatomical relations of the joints in disease, and the various ways of surgical approach, is the most illuminating that we have read in a small textbook; we especially commend the pages dealing with the knee-joint and its derangements. The illustrations, many of which are familiar, are clear and to the point, and the printing is excellent.

The third edition of the *Manual of Surgical Anatomy*,<sup>3</sup> by Mr. CHARLES R. WHITTAKER of Edinburgh, has been considerably enlarged, and the number of illustrations has been more than doubled. Considerably more attention is paid to the anatomical descriptions, which are excellent, than to surgery. There is, indeed, throughout the book a lack of emphasis on the surgical applications to anatomy. The manual is full of tables and diagrams, all of which are clear and should prove useful. The print is large and clear, and there is an efficient index. This book should serve its purpose of helping the student in revising his work for his qualifying examination.

## VISCERAL NEUROLOGY.

THE first edition of Dr. F. M. POTTENGER'S *Symptoms of Visceral Disease*<sup>4</sup> was reviewed in the BRITISH MEDICAL JOURNAL in 1920 (vol. ii, p. 861). A second edition has now appeared in a somewhat expanded and modified form. Though for more than twenty years devoted to the study of chest disease the author pleads for the unity of medicine and deprecates specialism, whether of the laboratory, such as bacteriology, metabolism, and biochemistry, or clinically of particular parts of the body, and insists that the great requisite of modern medicine is accurate clinical observation and interpretation carried out with the same care that the laboratory worker has developed in his department of work. Emphasis is also laid on the need to pay attention to the individual sufferer and not only to the "disease which has the patient." In many respects this argument resembles that of Sir James Mackenzie, but Dr. Pottenger came independently to the conclusion that most symptoms are due to altered nerve and endocrine activity. Disease expresses itself physically and psychically: physically mainly by reflex action through the vegetative nervous system, some stimuli acting chiefly on the sympathetic and others on the parasympathetic division; psychological disturbance, depending on fatigue and irritability of nerve cells, occurs in both acute and chronic diseases and is shown by neurasthenia and psychasthenia.

A rational classification of the symptoms of inflammatory affections of the viscera is suggested under the heads of those due (1) to toxæmia, such as malaise; (2) to reflex action—for example, cough in pulmonary tuberculosis; (3) to the disease *per se*; and (4) those appearing when the disease is well established; this grouping emphasizes the unity of the body, the interrelationship of the various viscera, and the widespread disturbance that may follow a single stimulus. The visceral reflex is discussed and two chapters are devoted to reflexes, the afferent impulses of which course in the

sympathetic and in the parasympathetic nerves respectively. Stress is laid on the viscerotrophic reflexes, and as an example of those due to the sympathetic the muscular wasting of the chest wall in pulmonary tuberculosis is given. The interesting suggestion is made that tuberculous infection of the larynx, which is most apt to occur on the side corresponding to the lung mainly affected, is favoured by the parasympathetic reflex. The author describes the sympathetic system as protecting the individual against outward enemies, whereas the parasympathetic maintains the organism as an individual. The syndromes of these two portions of the vegetative nervous system are then briefly sketched. In the third part of the book, which deals mainly with the anatomy and physiology of the vegetative nervous system, the opinion is expressed that too much stress has been laid on the effect of adrenaline, atropine, pilocarpine, and other drugs in the differentiation of vagotonia and sympathicotonia. The second and larger part of this work deals seriatim with the nerve supply of the viscera and touches on the clinical aspects of the more important viscerogenic reflexes. The author has evidently worked hard at a difficult subject, and, though the book, as pointed out in our review of the first edition, is not attractive to read, it cannot fail to be useful as a source of reference.

## PHYSICAL METHODS IN THE TREATMENT OF CIRCULATORY DISORDERS.

PHYSICAL methods in the treatment of diseases of the circulatory system have never been so popular in this country as on the Continent or in America, though graduated exercises have been extensively used in the treatment of the effort syndrome. Drs. MATHIEU, RICHARD, and HARANCHIPIY, in their little book on the treatment of cardio-vascular diseases by massage, movements, and other physical agents,<sup>5</sup> state that, while many of the larger treatises on medicine recommend these methods, few give sufficient details, and the practitioner is thus apt to hand over his patients to those who specialize in this line. The book is intended to obviate this, and to suggest methods which can be adopted without the aid of a trained masseur or of any elaborate apparatus.

After a brief summary of the physiology of the circulation and the general effects which might be expected to follow from mechanical measures, the main portion of the book deals in detail with the technique and application of the various forms of massage, passive and active movements, hydrotherapy, electrotherapy, and of heat and light baths, in their relation to the circulation. The instructions are given in clear and lucid terms so that anyone making use of these forms of treatment will not be left in doubt as to the authors' intentions. In the concluding part of the book various cardiac and vascular disorders are discussed and the appropriate therapy suggested.

One hesitates to share fully the optimism which seems to be possessed by the writers in anticipating the results of their methods; but the book itself is well worthy of perusal by those who are interested in this branch of medicine, and fills a useful gap in knowledge.

## NOTES ON BOOKS.

THE issue of a fifth edition of Mr. CLAUD WORTH'S book on *Squint*<sup>6</sup> is sufficient evidence of its usefulness. It is deservedly well known as a clear and sufficient statement of the general conditions which bring about this deformity and detect of vision, and the means which may be adopted to correct it. This latest edition does not differ materially from the earlier. The author emphasizes his experience that "of the cases of squint in which efficient treatment is carried out from the first appearance of the deviation, only a small proportion will ever need operation. Operation is required in the majority of the neglected or inefficiently treated cases." He records an alteration in his methods: he now seeks to obtain the full effect he desires by advancing one muscle only, and considers that the combined operation, that of advancing one muscle with tenotomy of the antagonist, is unsatisfactory. He discusses newer methods, such as folding or reefing, and partial tenotomy, but is not favourably impressed by them.

<sup>2</sup> *Tratamiento de las Maladies Cardio-vasculaires par le Massage, le Mouvement et les Agents physiques*. By Drs. P. Mathieu G. Richard, and Haranchi. Paris: Librairie Octave Doin. 1922. (Cr. 8vo. pp. 147; 1 figure. Fr. 5.)

<sup>3</sup> *Squint: Its Causes, Pathology, and Treatment*. By Claud Worth, F.R.C.S. Fifth edition. London: Baillière, Tindall, and Cox. 1921. (Demy 8vo. pp. 232; 42 figures. 12s. 6d. net.)

<sup>1</sup> *A Manual of Surgical Anatomy*. By L. Beesly, F.R.C.S. Edin., and T. H. Johnston, M.B., Ch.B. Second edition. Oxford Medical Publications. London: H. Frowde, and Hodder and Stoughton. 1922. (Cr. 8vo. pp. xiv+551; 160 figures. 18s. net.)

<sup>2</sup> *A Manual of Surgical Anatomy*. By C. R. Whittaker, F.R.C.S. Edin., F.R.S.L. Third edition, revised and enlarged. Edinburgh: E. and S. 1922. (Cr. 8vo. pp. xiv+551; 160 figures. 18s. net.)

<sup>3</sup> *A Study of the Vegetative Nervous System in Clinical Medicine*. By F. M. Pottenger, A.M. Second edition. London: Henry Kimpton. 1922. (Coloured plates. 28s. net.)



It is but a little while since we noticed the second edition of *Tidy's Synopsis of Medicine*,<sup>7</sup> and now a third has appeared, testifying to the popularity of this book among students preparing for their final examination. The introduction of several new articles has added 30 pages to the work, which now consists of nearly 1,000 pages. In revising it for future editions Dr. LETHBY TIDY would, we think, be well advised to keep within that limit, since the book is not intended as a substitute for the larger treatises on internal medicine. One or two omissions, noted in our review of the second edition, have now been rectified, notably by the inclusion of an account of protein hypersensitiveness in relation to asthma and of Vincent's angina. Altogether, the work continues to deserve high praise for its comprehensiveness and accuracy and for the skill shown in arranging and compressing the material. Its success seems now assured.

When he has recovered from his surprise at being told in one and the same breath that while it is obvious that the same equipment is not suitable for all requirements, yet, none the less, an equipment can be, and frequently is, assembled which will answer all and every purpose efficiently and well, the dentist who wishes to take his own x rays will find the first four chapters of Mr. KEMPSTER'S *Dental Radiology*,<sup>8</sup> a most useful guide both as to outfit and practical working. It may, however, be pointed out that Figs. 16 and 18—"too high" and "correct" positions of tube—being printed the one across and the other along the long axis of the page, are not quite suitably arranged for comparison. A chapter is devoted to the interpretation of dental radiographs, but we fear that the dentist will not reap from its perusal as much benefit as he might reasonably expect. There seem to be too many examples of the same condition, and in too many cases we cannot make figure and description agree with each other (for example, Fig. 59.3, 61.4). The meaning of the diagrammatic figures of "pyorrhoea" on page 146 is not easy to discern. We cannot gather the difference between "periodontal thickening" and "pericemental thickening," either from letterpress or illustration. Perhaps in another edition the author will supply the deficiency of illustrations of such conditions as fracture, dislocation, foreign bodies, isolated foci of infection, exostosis, and necrosis. The two concluding chapters on localization and protection of the worker are brief but practical.

The *British Journal Photographic Almanac*<sup>9</sup> for 1923, edited by Mr. GEORGE E. BROWN, F.I.C. (the sixty-second issue), is on the same lines as those of late years. The advertisements of everything bearing on photography are such a feature of this annual that it may be truly said that nothing photographic is omitted; we should take it that every photographic firm and every photographic appliance is somewhere recorded in these pages. The list of photographic societies of the United Kingdom, it may surprise some to be told, contains the names of close on five hundred. The book proper is introduced by an article by the editor on "What camera and lens to have"; the advantages and disadvantages of all sorts of cameras are discussed and contrasted. Stated cameras, hand cameras, box cameras, reflex cameras, all are reviewed, as are plates as against film packs or roll films, the various types of lenses, their focal length, and so on; shutters, and various accessories. Shortly and concisely this article furnishes an amount of useful information which should be of the greatest help in "buying a camera." There follows an epitome of progress which deals with the events of the year, with apparatus and equipment, with lenses, and with photographic processes of all kinds. Finally, a large section deals with the formulae of developing solutions, fixing solutions, hardening and clearing solutions, negative intensifiers, and so on. No photographer, amateur or professional, can afford to be without this almanac; there is a good index, and the amount of information it contains on photographic matters is prodigious.

Dr. THOMAS S. CULLEN has collected and bound together reprints of papers by members of the Gynaecological Department of the Johns Hopkins Hospital and University published during the years 1916 to 1922,<sup>10</sup> and has provided a table of contents.

<sup>7</sup> *A Synopsis of Medicine*. By Henry Lethby Tidy, M.A., M.D., B.Ch. Oxon., F.R.C.P. Lond. Third edition, revised and enlarged. Bristol: John Wright and Sons, Ltd. London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd.; Toronto: The Macmillan Company of Canada, Ltd. 1922. (Cr. 8vo, pp. xv+585. 25s. ret.)

<sup>8</sup> *Dental Radiology*. By Christopher Kempster, M.R.C.S., L.R.C.P. London: The Scientific Press, Ltd. 1922. (Cr. 8vo, pp. 184; 78 figures. 10s. 6d. ret.)

<sup>9</sup> *The British Journal Photographic Almanac*, 1923. Edited by George E. Brown, F.I.C. Sixty-second issue. London: H. Greenwell and Co., Ltd. 1923. (Cr. 8vo, pp. 166; illustrated. Paper, 2s.; cloth, 3s.)

<sup>10</sup> *Collected Papers of Members of the Gynaecological Department of the Johns Hopkins Hospital and University, 1916 to 1922*. (Roy. 8vo.)

## THE MEDICAL RESEARCH COUNCIL.

### ANNUAL REPORT.

The annual report of the Medical Research Council for the year ended September 30th, 1922, has been issued this week.

#### Introductory.

The grant-in-aid at the disposal of the Council during the current financial year was £130,000, the same as in the preceding year; in this amount was again included the cost of the work of the Industrial Fatigue Research Board, and of the research work into mental disorders done on behalf of the Board of Control for England and Wales, and certain pathological inquiries conducted in Scotland for the corresponding authority there.

The Council has again been compelled to restrict very closely the work it undertakes or subsidizes at many points where increased development would have been highly desirable had funds permitted. Periodic conferences are now held at least once a quarter between representatives of the three departments chiefly concerned with the allocation of moneys voted by Parliament to scientific Development Commission, the Medical Department of Scientific and Industrial Research. The conferences are attended also by a secretary of the Royal Society, in so far as its interests, whether those in relation to the Government grant it receives for research or funds of other kinds, may be affected by, or have a bearing upon, policies or programmes of the three research departments.

Reference is made in the report to the International Conferences of the Health Section of the League of Nations<sup>1</sup> to further the establishment of an international system of common standards for estimating therapeutic serums and other substances used in medical practice or medical research which are susceptible of measurement only by indirect biological methods. Great Britain is alone among the great nations in having no system of standards and no machinery for selecting or adopting any standard of value for a given substance, but is still dependent on the United States or Germany. It is noted that as a result of the conference in Paris last November an agreement has been reached by which the standards formerly laid down for diphtheria and tetanus toxins (and antitoxins) by France, the United States, and Germany have been recommended for adjustment and general international adoption.

The Council has been able, speaking generally, to assist in a variety of ways the large body of research work done by devoted workers at many places. The report pertinently observes that "It is only by steady growth of the whole body of sound knowledge, through labours of which the methods and results are not easily understood and appreciated by the people, that practical fruit can be gathered from time to time in the better attainment of health under modern conditions of life and in the better control of disease. In maintaining and more effectively directing the support which they have been enabled to supply in aid of this scientific work the Council have again been under very heavy obligation for the abundant and ungrudging help they have received from the numerous scientific men who assist them in committees."

In a paragraph dealing with cancer the report states that the Council in framing its scheme of work has not encroached upon the work being done for the Imperial Cancer Research Fund and at the Middlesex Hospital, but has arranged schemes described in more detail below for the utilization at various selected hospital centres of the radium held by the Council for the Government.

The problem of the filter-passing virus is being investigated at the National Institute for Medical Research by biochemists, physicists, and pathologists, in association with work arranged at fever hospitals under the Metropolitan Asylums Board and elsewhere. Reference is made to the investigations in this direction by Dr. Gordon of St. Bartholomew's Hospital. With regard to influenza and common colds, it is observed that the latter not only regularly inflict widespread suffering and great economic loss, but have undoubtedly a very high mortality, though it be in large part concealed or indirect. One difficulty encountered in the laboratory investigation of influenza is the doubt whether the disease is transmissible to other animals than man; in this connexion the Council has made arrangements for an experimental study of distemper in dogs, which there is good reason to think offers

<sup>1</sup> BRITISH MEDICAL JOURNAL, December 17th, 1921, p. 1019; December 24th, p. 1080, and December 15th, 1922, p. 1160.



a close parallel to human influenza. Towards the cost of this investigation independent financial support is assured. This inquiry affords an illustration of the close relations between animal and human diseases. Studies of naturally occurring animal diseases have already assisted human medicine, and it is not to be doubted that their more regularized and systematized investigation by well trained and adequately paid research workers will produce results of value which at present can only be guessed. Another instance is afforded by tuberculosis; a committee of the Council has been working at improved methods for applying tuberculin tests in cattle. Again, the occurrence of the outbreak of botulism at Loch Maree last August has raised the question of its possible relation to grass sickness, which has been prevalent among horses in Scotland; work done in 1918 for the armies in France gave important guidance towards the provision of an antitoxin obtained from horses for the cure of grass sickness. The concluding paragraph of the report refers to the treatment of diabetes by extracts of pancreas, as described in our columns from the Physiological Department of the University of Toronto by Professor J. J. R. Macleod and Dr. F. G. Banting and his fellow workers. The Medical Research Council accepted the offer of the University of Toronto to control the patent rights in this country, and has taken measures for the encouragement and support of research work within the National Institute and at several hospitals in London and elsewhere with a view to making a supply of insulin available for use in this country as rapidly as possible, and promoting further improvements in its production and therapeutic use. "It must be gratifying," the report states, "to many that this success has come within one of the Canadian medical schools, of which the development and growth in recent years has been so notable, and that so conspicuous an achievement should have come from a group of young men whose eager military service during the war must at many points have brought handicap to their scientific work."

#### THE NATIONAL INSTITUTE FOR MEDICAL RESEARCH (HAMPSHIRE).

In the Department of *Biochemistry and Pharmacology* Dr. Dale and Dr. Lovatt Evans have completed their work on the influence of carbon dioxide upon the maintenance of normal blood circulation, and have shown that carbonic acid exerts a specific action on the tone of the vasomotor centres. Dr. Burn's work on the relation of the sweating produced by the drug pilocarpine to the integrity of the nerve supply of the sweat glands has shown that the diminution or suppression of the sweating response, which attends the degeneration of the sensory nerve fibres to the skin area in question, is the result of defective blood circulation, caused by the loss of sensory fibres, a conclusion which raises issues of great importance concerning the so-called "trophic" or nutritive influence of sensory nerves. Dr. Dudley's work, designed to isolate the active principles of the pituitary gland in pure form, has yielded valuable information about the properties of this hormone, but has led to the conclusion that the active principles cannot be directly isolated and identified in a pure form by the methods at present available. Dr. King has completed a study of stereo-isomerism in the cinchona alkaloids, and has been engaged in investigating the active alkaloid of poisonous toadstools.

The staff of the *Experimental Pathology, Bacteriology, and Protistology* Department has been increased by the appointments of Dr. P. P. Laidlaw and Dr. W. J. Purdy. Dr. Douglas, the director of the department, has invented a transparent medium for the growth of *B. diphtheriae* on which the colonies of this organism have a distinctive appearance, whereas other bacteria are inhibited. In conjunction with Mr. Barnard he has carried out some experiments which show that overdoses of light rays from a mercury-vapour lamp tend to allow the tissues of resistant animals to be invaded by bacteria. Other experimental work by Dr. Douglas appears to make it certain that a temperature of 65°C. for thirty minutes will kill the tubercle bacilli in naturally infected cow's milk.

Dr. Gye and Dr. Purdy have been studying the poisonous properties of colloidal silica, and Dr. E. H. Kettle of St. Mary's Hospital has been working with Dr. Gye on the effects of silica dust upon the tissues, with special regard to the problems of industrial tuberculosis. These researches have shown that the lesions caused by the silica provide a nidus in which the tubercle bacilli, protected from the bactericidal defences possessed by the normal tissues, can multiply and so initiate

progressive damage. Dr. Laidlaw has been studying the factors which favour the growth of pathogenic bacteria, with special reference to the stimulating constituent present in meat extract, which is believed by some to be allied to the vitamins.

Dr. Colebrook, whilst at the Institute, carried out some experimental work for the Committee on the Causes of Dental Disease, being a study of the artificial erosion of teeth, of the types of acidophile bacilli occurring in the mouth, and the micro-organisms actually found in carious teeth. Dr. Tytler completed some investigations of the conditions favourable to the growth of some haemolytic strains of streptococcus obtained from scarlet fever cases, and studied the stimulating effect of blood serum in increasing the rate of growth and final bacterial concentration, and found that solutions of either fresh or crystallized haemoglobin had an effect on growth more powerful than that of serum. Mr. Dobell, in the Department of Protistology, has been preparing for publication an extensive study of the coccidia, and has also been working at the theory and practice of staining spirochaetes and other micro-organisms with silver salts.

In the Department of *Applied Physiology* Dr. Hill and Dr. Campbell have been working at various problems of body heat and metabolism. They noted when observing the rates of internal chemical exchanges in children crippled by surgical tuberculosis and lying fixed in splints in bed at the Lord Mayor Treloar Hospital, Alton, that the beneficial exposure of the children, more or less nude, to the open air in summer increased these exchanges in metabolism on an average to about 40 per cent. above the standard basal figures for closed chambers. Working at Montana, Switzerland, Dr. Hill studied the results of exposure to the alpine open air under a variety of conditions.

At the Institute, Hampstead, a wind tunnel and revolving platform have been constructed by means of which Dr. Hill and Dr. Campbell have been able to determine the amount of cooling necessary for comfort during various degrees of muscular work; the frequency of the heart beat was much less when the body was adequately cooled. Dr. Campbell and Mr. Webster studied the metabolic changes taking place in individuals working at night and sleeping during the day and compared these with the normal routine. Air injected into the pleural cavity (as in the treatment of consumption by the production of artificial pneumothorax) was found by Dr. Hill and Dr. Campbell to alter in its composition, and the partial pressures of the gases in this air appeared to approximate finally to those in the tissues and venous blood and not to those in the alveolar air of the lungs. In the Department of *Applied Optics* Mr. J. E. Barnard has carried out some valuable work on microscope technique and has commenced an investigation of the structure of bacteria.

In the Department of *Statistics* Dr. Brownlee has been engaged in preparing an account of the data necessary for the statistical study of immunity and in investigating the relation of scarlet fever to rainfall. Dr. Young has worked upon the data of the statistics of epidemic infantile diarrhoea and extended the investigation to several towns in the provinces and abroad. Mr. Russell has been studying the relationship between weather and disease, and the Registrar-General's statistics of the incidence of cancer in different trades have recently been placed at the disposal of the Council and have been extracted by the clerical staff of the Statistical Department.

Many additions have been made to the Library during the year and the Council again draws attention to the fact that approved persons interested in medical research are allowed free use of the library by arrangement with the librarian. Eight numbers of the Special Report Series (Nos. 60-67) have been published during the year and three others are in the press, while two (Nos. 19 and 38) are being completely revised, brought up to date, and reissued.

#### EXPERIMENTAL MEDICINE AND THE RESEARCH WORK OF CLINICAL UNITS.

At *University College Hospital*, London, Sir Thomas Lewis and his co-workers have been studying the effects of certain drugs on auricular fibrillation, particularly with a view to ascertaining if the actions of these drugs can be explained on the basis of the theory that fibrillation is due to a "circus" movement in the auricle. In searching for a drug which would produce a notable prolongation of the refractory period of the auricular muscle, atropine was first examined, but it was found that the customary clinical doses are insufficient to produce a maximal heart reaction, but that when adequate



larger doses are given a very definite effect is produced on the fibrillating auricle. When the discovery of von Frey became known in this country attention was turned at once to the study of the alkaloid quinine, and von Frey's statements were confirmed. Like atropine, it was found that quinine lengthens the refractory period, and it has this action in conspicuous degree; given in therapeutic doses its action in this respect far surpasses that known in the case of any other drug. Another notable effect of quinine was discovered to be its paralytic effect on the vagus nerves due to an action on the ganglia of the vagus, and not upon the vagal endings. Clinical observations have been undertaken to ascertain the most suitable methods of administering quinine, its proper dose and rate of absorption, and allied questions.

In the medical unit of the hospital Dr. J. W. McNee has continued his work on diseases of the liver and on the metabolism of cholesterol.

At the *London Hospital* Dr. A. W. M. Ellis has completed some investigations on the subject of "bacteriophage" phenomena and Dr. J. R. Marrack has continued research work on nephritis.

At *St. Thomas's Hospital* the chief research undertaken during the last year was an investigation into the value of renal tests in genito-urinary surgery, and it has been shown that many of the dangers associated with this branch of surgery may be avoided or overcome by a judicious investigation beforehand of the renal efficiency.

At the *Royal Infirmary, Edinburgh*, Dr. Davies has studied the respiratory function in disease and has made a series of determinations of the basal metabolism in various pathological states. Mr. Harrington has investigated the occurrence and distribution of histamine in the human bowel.

Research work in professional practice has been encouraged and assisted in many places, notably at Norwich, Hull, Glasgow, Newcastle, and in London. Grants have also been made to the *St. Andrews Institute of Clinical Research*, where, under the direction of Sir James Mackenzie, important schemes of research into the early stages of disease are being pursued.

#### DETERMINATION OF BIOLOGICAL STANDARDS AND THE METHODS OF BIOLOGICAL ASSAY AND MEASUREMENT.

A standard test for arsenobenzol compounds has been evolved by estimating the curative effect of these compounds on mice infected with *Trypanosoma equiperdum*, and manufacturers have been enabled to modify their processes so as to produce neo-salvarsans which satisfy the tests now imposed.

The standardization of pituitary extract has been made possible by the work of Dr. Dale and Dr. Burn, who have indicated a method of comparison of a trustworthy standard of reference and of a method of comparison which, if faithfully observed, would suffice to eliminate any significant fluctuations in the activity of this extremely valuable but dangerously powerful remedy.

Dr. P. Hartley is continuing the work on the standardization of antidipteria serum, which was commenced by Dr. Colebrook.

The *National Collection of Type Cultures* has received during the year many valuable additions to the collection. Over 300 fresh types were received into the collection and over 2,500 cultures were distributed.

The production of standard cultures and serums for use in diagnosis of enteric and dysenteric infections has been continued at the Standards Laboratory at Oxford, and during the course of twelve months 297 orders for cultures and 116 orders for serums have been executed.

*The Sero-diagnosis of Syphilis.*—One thousand samples of blood from syphilitic patients and from controls have been submitted to examination by the sigma reaction of Dreyer and Ward and the orthodox Wassermann reaction, and the results of this trial will shortly be ready for publication. Work is being carried out with the object of producing standard antidyenteric, antipneumococci, and antimeningococci serums.

*Anthropometric Methods and Standards of Medical Measurements.*—The main object of this investigation has been the correlation of Professor Dreyer's "vital capacity" test for physical fitness with other measurements, and this work has been continued by Dr. F. G. Hobson at the University of Oxford. Dr. G. H. Hunt and Professor M. S. Pembrey have extended their observations upon the influence of muscular work upon the heart, especially in relation to the factors that influence the pulse ratio.

#### RESEARCH IN SPECIFIC SUBJECTS.

##### *Problems of Child Life.*

Under the heading of *Pre-natal Studies* the factors contributing to dead births and premature births have been examined by a large number of workers, and the combined results have been placed in the hands of a special sub-committee consisting of Dr. J. W. Ballantyne, Dr. J. S. Fairbairn, and Mr. Eardley Holland, from whom a report is shortly expected for publication by the Council. The toxæmias of pregnancy have been investigated by Dr. O. L. V. de Wesselow, who has shown that examination of the kidney functions appears to give information as to the course of the disease, which is of value to the clinician in determining whether induction of labour is necessary or desirable. Metabolism and general physiology in pregnancy and the lying-in period have been studied by a group of workers at the Royal Free Hospital and School of Medicine for Women. An inquiry into the influence of maternal nutrition upon the infant has been commenced at St. Thomas's Hospital under the direction of Dr. J. S. Fairbairn.

Under the heading of *Post-natal Studies* there is described an investigation carried out under the auspices of the Scottish Child Life Committee into the influence of various factors on nutrition and growth, both by the collection of records from child welfare centres and by the home visitations of special workers in the service of the Council. Many of the records received were unsatisfactory, but after a thorough weeding out of imperfect documents over 3,000 schedules, having over 5,000 height and weight records, have already been completed with sufficient accuracy. An analysis of these figures shows that no correlation is manifest between the nutrition of the child under 1 year and the size of the family, position of the child in the family, or number of persons per room. The suggestion is that irrespective of these conditions, even if unfavourable, the infant may still start life unhindered. "On the other hand," to quote the words of the report, "there appears to be an indication of a direct correlation between the condition of the child and the health of the mother during pregnancy. As regards the influence of feeding the information obtainable is not sufficient to allow a valid estimate to be made of the effect of this important factor because the data are not quantitative. All that could be done was to attempt to determine whether any differences in growth and nutrition could be found as between infants breast-fed for three months and over and those not breast-fed at all, or breast-fed only for a shorter period than three months. No correlation, however, could be established here."

The special visitors in the service of the Council obtained records of over 500 families visited in Glasgow and 220 in Dundee, and with the co-operation of Dr. Weir and other members of the anatomical staff of the University of Glasgow obtained records of about 4,000 school children. In order to express numerically the state of growth and nutrition it was decided to take height in inches as the measure of growth and height for age as the measure of nutrition. The results of this extensive inquiry may be briefly summarized as follows. Over 91 per cent. of the children were of the brown-haired or completely mixed type, and no notable difference in stature subsisted between the fair-haired and dark-haired groups. It has been established that the size of the offspring is related to the size of the parents, and the high proportion of stunted adults in Dundee gave an opportunity of investigating this. There seemed to be a direct correlation between the size of the family, the family income, and the air space per person, and the nutrition of the child.

Work on the metabolism of infants has been carried out by Dr. G. B. Fleming and Dr. J. A. Gardner.

##### *Rickets.*

Further experiments have been carried out by Professor Noël Paton and his associates to test the possibility that rickets may be an infectious disease, and to elucidate the modes in which dietetic modifications may cause or prevent the disorder. At the Royal Hospital for Sick Children, Glasgow, Dr. Galbraith has studied the results of different therapeutic measures in 47 cases of rickets, and an account of this work will be published in due course. Professor Mellanby, who, thanks to the co-operation of the University of Sheffield, now possesses exceptional facilities for studying this disease, has been more particularly concerned with the relationship of the antirachitic food factor to calcium and



phosphorus in the diet, with the relative rickets-producing effects of different cereals, and with the influence upon rickets of thyroid gland administered by the mouth.

#### *Accessory Food Factors (Vitamins).*

Dr. J. C. Drummond and Dr. S. S. Zilva have carried out further work on the nature of the substances giving its valuable therapeutic qualities to cod-liver oil, and endeavoured to trace the origin of the so-called vitamin A, which is held to be the active substance responsible for the beneficial effects obtained in the use of the oil. It has been shown that simple marine diatoms growing in an artificial inorganic medium can produce relatively large amounts of the vitamin. But the diatoms do not form the direct food supply of the species from which the liver oils are usually derived, and there are several stages through which the vitamin appears to be transferred. The minute animal organisms near the surface of the sea feed directly on the microscopic plants, and these in turn constitute the food supply of numerous small kinds of fish or the young of larger kinds. The fish from which the medicinal oils are derived feed chiefly on the smaller fish and store up the vitamin transferred in this manner. Dr. Zilva and Dr. Drummond have shown that there is very little loss of vitamin during the steaming processes, which are now generally employed by manufacturers, but there are wide variations in the vitamin values of different samples of cod or other fish liver oils, which may be due to the variations in the food supply of the fish, or to the seasonal variation in their physiological condition. The vitamin values for cow's milk and butter are known to be higher during grass feeding in summer than during winter feeding on roots, hay, and "concentrates"; by giving the cows cod-liver oil as a supplement to a diet of hay, roots, and cake mixture evidence of increased nutritive value of the butter was obtained.

Professor Korenchewsky, working at the Lister Institute, has made it clear from his extensive chemical and histological observations that vitamin A, or some other factor as yet not differentiated from it and of similar distribution in animal fats, exerts a controlling influence in the deposition of calcium in the skeleton. A deficiency of calcium and phosphates in the diet appears to play a contributory part. Dr. Goldblatt's experiments show a close correspondence between the amount of vitamin A in the diet and the calcium content of the skeleton.

An investigation of the values of different dietaries during the school age of life has been begun by Dr. H. Corry Mann. At a model village outside London where about 600 boys of the industrial class are housed in separate homes, each containing some thirty boys, three houses have been assigned for the work, and these are occupied by batches of boys between 7 and 12 years, and whose weights lie between 45 and 70 lb. Repeated clinical examinations are made, and notes are taken of general development at regular intervals. During a preliminary period of four months the progress of all the boys was watched while they were consuming the basic diet of the village. By means of food analyses an estimate has been obtained both of quality and caloric value of the individual rations eaten. After the four months on the basic diet a change was made, and two of the homes have since received additional items of food, the third home remaining on the basic diet as a control group of thirty boys. In one of the homes the additional item is fresh milk; and it is proposed to continue the investigation for at least two years, the progress of the boys being noted.

The work on deficiency diseases in Vienna has been continued during the past year with the joint support of the Medical Research Council and the Lister Institute by a staff of workers under the direction of Dr. Harriette Chick, the main object being to observe the part played by diet in the prophylaxis of rickets in young infants. The observations have been made upon nearly 100 young infants, who were placed in two groups upon two contrasted diets but under identical conditions of general management and hygiene. Diet I was high in calories, high in carbohydrates, low in fat, and low in vitamin A. Diet II was lower in total calories, lower in carbohydrate, richer in fat, and, as it contained a daily ration of cod-liver oil, much richer in vitamin A. The results of this observation on prophylaxis showed—

"1. That slight but definite rickets was developed with great regularity during winter upon Diet I, but not upon Diet II.

"2. That it was not developed in summer upon either diet.

"3. That the age of greatest susceptibility to the onset of rickets is during the first half-year of life."

A comparison was made of the effects of treatment of rickets with cod-liver oil, radiation from the mercury-vapour quartz lamp, and sunshine out of doors. The results as observed by systematic x-ray photography showed that deposition of calcium occurred consistently in the epiphyses of children under any of these three forms of treatment, while negative results were obtained in the control children. These results lead to the conclusion that quality of diet, especially absence of antirachitic element, is probably the most important factor in the causation of rickets in winter, and that sunshine may be the chief preventive factor in summer.

#### *Human Nutrition.*

Studies in human nutrition have been carried on in the physiology department of King's College for Women, under the direction of Professor V. H. Mottram. Miss Hartwell has shown that a diet rich in protein given to a nursing rat injures the health of the litter. These high protein diets are unsuitable only during lactation, and appear to be beneficial for growth, fertilization, or reproduction. The addition of milk in large quantities to the diet protects the offspring from the special danger from high protein diet during lactation. By a process of elimination this protective substance was traced to vitamin B. Miss Clifford's studies on the preservation of meat by various methods of cold storage have been chiefly concerned with the distribution of carnosine in the animal kingdom.

#### *Causes of Dental Caries.*

The Committee on the Causes of Dental Disease, under the chairmanship of Professor W. H. Halliburton, has initiated several investigations which are being carried out in different parts of the country.

#### *Disorders of the Cardio-vascular System.*

In addition to the work of Sir Thomas Lewis and his colleagues already referred to, many other researches have been assisted by grants from the Council, as, for example, the investigations on disordered action of the heart which Dr. H. J. Starling has been conducting at Norwich.

#### *Exophthalmic Goitre.*

At Sheffield Professor Mellanby has been making a closer study of the dietetic factors causing abnormal developments in the thyroid gland, and grants have also been made to Dr. G. S. Williamson at the Royal Free Hospital, London, and Dr. G. K. Stone at St. Bartholomew's.

#### *Disorders of the Respiratory System.*

Special attention has been paid to the clinical uses of oxygen by workers at Guy's Hospital, and Professor J. C. Meakins has continued his tests of the utility of the more portable forms of apparatus devised for the administration of oxygen in disease. Medical problems of high flying have been studied by Major H. F. Pierce, working at the University of Oxford.

#### *Disorders of the Excretory System.*

Work on experimental nephritis carried out by Professor J. Shaw Dunn at Manchester and Dr. A. S. Strachan at Glasgow has been assisted by grants from the Council.

#### *Disorders of the Nervous System.*

General neurological studies have been undertaken by Professor T. Graham Brown, Dr. Iry McKenzie, and Dr. J. P. Hettwer, and the special Committee on Nerve Injuries has been preparing data for a report on injuries of the spinal cord. A group of workers at the University and Western Infirmary, Glasgow, have continued their researches on that common and distressing form of progressive paralysis, disseminated sclerosis, and the pathological changes which take place in neuro-syphilis. Dr. C. De Fano has continued

Perdrau that the vesicular fluid from certain forms of skin affection (for example, herpes) contains a virus capable of producing a disease in animals which is transmissible from one animal to another and produces fatal lesions, in many ways similar to those of encephalitis lethargica. Minute bodies have been found in the vesicular fluid of herpes and in the brain tissue of infected animals, and it is possible that the smallest of these structures may represent the virus itself.



*Mental Disorders.*

At the University of Cambridge Miss L. G. Fildes has continued to receive a grant for whole-time research work in the causes of mental defect in children with the object of discovering what specific psychological characters exist which mark off a mentally defective from a mentally normal individual. Grants have been made to numerous other workers who are studying problems connected with mental disorders.

*Tuberculosis.*

From a study of another series of cases, 132 in number, of bone and joint tuberculosis, Dr. A. Stanley Griffiths has been able to show that the infection has been of bovine origin in rather more than 20 per cent. of the cases under 16 years of age, and 6.5 per cent. of the cases over 16. Dr. Inman has been working on the morphology and agglutinability of the tubercle bacillus, and Dr. Coulthard has completed an investigation into the complement fixation reaction in tuberculous cases.

The opsonic index in tuberculosis has been made the subject of a special study by Miss C. M. Acland, working with Colonel S. L. Cummins at Cardiff; and the work which Dr. Charles Miller and Dr. H. M. Turnbull have been carrying out at the London Hospital on the primary sites of infection in cases of children under 10 years of age is being continued. Dr. L. S. T. Burrell and Dr. A. S. MacNalty have prepared a report on the value of artificial pneumothorax as a method of treatment in pulmonary tuberculosis, with a discussion of the attendant dangers and difficulties, and of the groups of patients for which the method is suitable. Professor G. Dreyer and Dr. H. K. Ward are continuing their researches on the standardization of tuberculin. The importance of this work is made manifest by the report of the Tuberculin Subcommittee, which came to the conclusion "that until an accurate method of standardizing tuberculin is obtained, the administration of tuberculin can only be carried out empirically as a therapeutic measure, and the results in human tuberculosis cannot be evaluated or scientifically controlled." The greater part of the Tuberculin Subcommittee's work has been given to an investigation into the efficacy of the various tuberculin tests in cattle, and a full report on these inquiries will be presented at an early date. Grants have been made by the Council to research workers in different parts of the country who have been studying chemotherapy in tuberculosis, and records of the after-histories of sanatorium patients have been collected from special sanatoriums.

*Influenza.*

The Council has published the work of Professor James McIntosh on the etiology of influenza<sup>1</sup>; it has furnished a grant to Dr. P. Fildes for his work on the conditions of growth of *B. influenzae*; and Dr. Gordon's work on the presence of a filter-passing organism in the early stages of influenza<sup>2</sup> has been undertaken on behalf of the Council.

*Studies of the Streptococcus and Pneumococcus Group.*

Dr. Gordon has continued his study of the characters and clinical significance of pathogenic streptococci, chiefly by serological methods, chief attention having been given during the past year to non-haemolytic strains. In contrast to the striking uniformity which had been found to exist amongst the haemolytic streptococci when studied by serological methods, it has now been found that seventeen specimens of non-haemolytic *S. salivarius* recovered from endocarditis during the past year are separable into at least fourteen distinct serological types, and of three specimens of *S. faecalis* from similar cases all were found to be distinct serologically from one another. Dr. G. K. Stone has shown that while the complement fixation test is far more delicate than the agglutination test for identifying streptococcal infections, and has certain other advantages over it, it is less specific in the sense that infections by the three types—*S. pyogenes*, *S. salivarius*, and *S. faecalis*—are not differentiated so sharply or completely by complement fixation as by agglutination. Dr. R. R. Armstrong has been studying the serological types of pneumococci and the relative prevalence of the various types of infections in acute pneumococcal diseases in this country. Dr. J. F. Gaskell has been studying the modes in which the lungs offer resistance to infection, and concludes that the character of the lesion produced under different conditions of infection does not depend on the type of the infecting organism but upon its virulence.

<sup>1</sup> See BRITISH MEDICAL JOURNAL, July 22nd, 1922, p. 137, and August 19th, p. 303.

<sup>2</sup> See BRITISH MEDICAL JOURNAL, August 19th, 1922, p. 293.

*Arthritis.*

Dr. T. S. P. Strangeways and Major Horne, I.M.S., have received assistance in their work on rheumatoid arthritis. Mr. A. G. T. Fisher's work has shown that the earlier changes in the joints are primarily inflammatory rather than degenerative, and evidence has been added to that already pointing to the important effects of toxic substances derived from chronic infective foci in the alimentary tract and elsewhere.

*Malignant Disease.*

Grants have been made to Dr. James Young, for his work on the causation of cancer, and to Mr. A. N. Currie, who has been working at the significance of fat and lipochromes in the etiology of cancer.

*Radiology and Radiotherapy.*

The radium bromide held by the Council for research purposes has been allocated to different institutions, at each of which special investigations have been commenced in the treatment of disease by radiation.

*The Biological Actions of Light.*

Plans have been made for investigation of the specific effects of light and of its different constituent rays on the body fluids and tissues and their simpler components, and on bacteria and protozoa both within the body and outside it. Many of these investigations have already commenced at different centres.

*General Biochemical Researches.*

Under this head are included researches in bacterial chemistry, the oxidation in the tissues, responses to meals, metabolism in diabetes, efficiency of hepatic function, distribution of glycogen and other carbohydrates in the body, properties of haemoglobin, action of diuretics, and the uses of pituitary extract in childbirth. Researches in all these subjects, carried out by different investigators, have been assisted by grants from the Council.

*General Physiological and Pathological Researches.*

An account is given in the report of a large number of investigations in general physiological and pathological problems the expenses of which have been defrayed either in part or in toto by the funds of the Council.

*Experimental Epidemiology.*

The experiments which Dr. W. W. C. Topley and his co-workers have carried out on the problem of the spread of epidemics amongst mice have been assisted financially. His important observations on the course of events during the pre-epidemic phase of the spread of infection and on the effects of dispersal of the population have already been published.

*Meta-zoon Parasitology.*

The report mentions researches on "the structure and infections of lice and ticks" and "worm infections," towards which the Council has supplied grants.

*INDUSTRIAL MEDICINE AND INDUSTRIAL FATIGUE.*

The Council has provided expenses for researches on dust inhalation and pulmonary disease, miners' nystagmus, miners' "beat knee," "beat hand," and "beat elbow," ankylostomiasis in Cornish miners, and the incidence of occupational diseases. The unprecedented trade depression throughout the year greatly affected the work of the Industrial Fatigue Research Board, and has prevented the full development of the schemes foreshadowed in a previous annual report. On the other hand, advantage has been taken of this abnormal period to gain knowledge of the effects of short time and of the changes in the usual incentives in industrial work. Mention is made in the report of various investigations completed during the year or now in progress.

*CONCLUSION.*

In concluding this report the Council refers with gratitude to the generous gift of the Board of the Rockefeller Foundation of New York of 2,000,000 dollars to the Government for the purchase of a site and the erection of a building for a great school of hygiene in association with the University of London. Reference is made also to the important endowments to medicine and its allied sciences which have come recently from within our own country, and in particular to the gift of £100,000 made by the trustees of Sir William Dunn's residuary estate to the University of Oxford for the



building and maintenance of a new school of pathology; the trustees have also undertaken to provide funds for converting the present pathological buildings into an adequate school of pharmacology. Finally, mention is made of the important financial help recently given by the same trustees to the clinical units in St. Bartholomew's Hospital, St. Thomas's Hospital, and the London Hospital, for the construction and equipment of either new or improved laboratories.

Other important benefactions to medical science made in the past year to which the report refers include the sum of over £80,000 under the will of the late Miss Foulerton for the endowment of research work, at the discretion of the Royal Society, the gift of £20,000 by Lord Atholstan to the Imperial Cancer Research Fund, and £10,000 by Sir William Veno to the Cancer Research Department of the Middlesex Hospital. One gift which the Council considers to have special significance is that of the Panel Committee of Sheffield, which has contributed £1,000 to the University of Sheffield towards the provision and equipment of the Field Laboratories which have been erected by the university close to the city.

## Nova et Vetera.

### MEDICINE IN CHINA.

THE Chinese trace the beginnings of their art of healing to the legendary Yellow Emperor, who is said to have ruled about the middle of the third millennium before Christ.

#### *Legendary Origins.*

The Yellow Emperor was aided in his administration by a group of supermen, whose names are still current in popular tradition as pioneers of most of the sciences, arts, and crafts since practised by the race. One of his beneficent acts was to take counsel how to prolong the span of human life, since he was grieved at the many bodily ills afflicting his subjects. It is narrated that with the help of several of his physicians he succeeded in studying problems of public health to such good effect that the longevity of the people was substantially increased. At the present day there exist several medical treatises attributed to the Yellow Emperor. This association with his name can hardly be regarded as implying more than extreme antiquity for the notions recorded, yet there seems reason for believing that the oldest of the books was actually compiled several centuries before our era, and that it then provided a summary of medical knowledge handed down from the remotest past.

Several centuries earlier than the famous Alexandrian school of anatomy under the Ptolemys, a Chinese physician, named Pien Ch'iao, is reputed to have performed human dissections, and understood the function of blood vessels. His name is still connected with the elaborate pseudo-science of the pulse professed by Chinese leeches, and it may safely be concluded that his acquaintance with the structure of the body was very slight. Hua T'o, another doctor living some eight centuries later, has been called by Western writers the Asklepios of his race. This title, however, would be more appropriate to the physician hero-god Ch'i Po, who was the chief adviser of the Yellow Emperor in his hygienic reforms, while Hua T'o might suitably be termed the Chinese Hippocrates. Hua T'o is said to have used an anaesthetic agent for his surgical operations. The drugs employed cannot be identified with certainty; probably they were compounded of aconite, henbane, and datura. Hua T'o is renowned as the first to operate successfully on cataract. He ended his days A.D. 220 in prison, where he had been cast by the most powerful man in the empire, who had consulted him for violent headaches, and was advised to have his skull opened under an anaesthetic. The patient suspected in this the treacherous design of some enemy, and indignantly refused. He died the same year as the doctor from what appears to have been a cerebral tumour.

#### *Taoism and Alchemy.*

The foregoing scraps of legend and history are sufficient to suggest that the ancient Chinese were not far behind their Mediterranean contemporaries in medical knowledge. Questions about possible borrowing by the East from the West in those remote times await fuller investigation. On the other hand, our present knowledge makes it permissible to formulate a plausible enough theory showing China the mother of at least one of our own sciences. The names mentioned above are those of reputed exponents of a cult

embracing many activities besides the arts of healing and physical development. The cult of Tao appears early in the records of authentic history as concerned with a search for the Elixir of Life and the Philosopher's Stone. There are accounts of certain feudal princes dispatching expeditions under the leadership of its sectaries to bring back the magic agencies they believed were to be found in some mid-ocean paradise—the *Insula Fortunatae* of the Far East. In the fourth century B.C. the first band of venturers sailed from the coast of China, and it was followed by others. Emperors, in feverish pursuit of immortality, lavished riches and honours on Taoist charlatans. One in 133 B.C. gave his imperial sanction to alchemy, and we may infer from the passage recording the event that the art was then no new one. Taoist alchemists increased exceedingly, and for many centuries numbers of recluses carried out mysterious researches with the crucible in their mountain hermitages, or roamed the countryside plucking herbs from which to brew death-defying potions. A most voluminous literature is devoted to stories of those happy ones who thereby escaped the fate of ordinary mortals. Nevertheless, the truth-loving compilers of dynastic annals are fain to chronicle the demise of many as the result of drinking Elixirs of Life, and among the number are several emperors. Yet there is reason to believe that not a few Taoists trod a middle path between these two extremes, and thus acquired much knowledge of plants and minerals which was turned to useful purpose by the race.

Very similar on our side of the world is the tale of the pursuit of immortality and transmutation of metals. Striking resemblances are to be found between the writings of Western and Chinese alchemists—resemblances that extend even to the actual jargon that cloaks their mysteries. But the two schools are separated by differences of time, and to the Chinese the priority is undoubtedly due. The theory hinted at earlier in this article is that much of Western alchemy, the forerunner of chemistry, was derived from China, chiefly through Mohammedan intermediaries. Evidence of communication between the Chinese, Persians, Arabs, and even Greeks in Constantinople is ample enough to prove that opportunities were not lacking for the passage of the mysteries westward.

#### *Western Medicine in China.*

But whatever indebtedness there may have been on our side, the balance is surely now being adjusted. Western medical science has been carried to China both by men of our own race and by Chinese trained in our schools. Dr. Peter Parker opened an ophthalmic hospital in Canton in 1835, and not long afterwards a native, holding Scottish qualifications, started to practise among his countrymen in the south. Since then practitioners and teachers of many nationalities in increasing numbers have offered the benefits of Western learning to the Chinese. One of the most eminent medical men in the Far East is Dr. Wu Lien-teh, known to many in this country under the name of G. L. Tuck. After a distinguished academic career at Cambridge, Paris, and London, Dr. Wu returned to his native land and became a pioneer of public health administration. The immensity of the task confronting him can hardly be appreciated by those unfamiliar with the vastness of China and the complacency with which the greater part of its millions accept conditions little advanced during the sixteen centuries since the physician Hua T'o died in his dungeon.

#### *Plague Prevention To-day.*

The deadly outbreak of plague in Manchuria, 1910–11, profoundly stirred the apprehensions of Chinese and foreigners alike, and paved the way for the establishment of the North Manchurian Plague Prevention Service with headquarters in Harbin. Dr. Wu practically created this efficient organization, and a recent report, now before us, commemorates the tenth year of its existence under his able directorship.<sup>1</sup> This stout and well printed volume of 354 pages is far from being a mere matter-of-fact record of the doings during the last four years of the Plague Prevention Service formally instituted in October, 1912. It contains many articles on divers subjects of vital interest respecting the progress of Western medicine in China. For instance, there is an important memorandum outlining a suggested scheme of medical education, and there is a survey of the advances made since the establishment of the Republic in 1911. It may be noted,

<sup>1</sup> North Manchurian Plague Prevention Service Reports, 1915–1922. Edited by Wu Lien-teh, M.A., M.D. Cantab. Tientsin, 1922. (Pp. 354; 37 illustrations, 1 map, and 2 charts).



by the way, that this mentions the epoch-making event of a presidential mandate authorizing human dissection. Some of these articles have appeared before in various journals, but a great part of the clinical matter is published here for the first time. The second pneumonic plague epidemic in Manchuria, 1920-21, is admirably recorded, and of great interest, too, is an account of the cholera epidemic of 1919. A vast deal of laboratory research, including experiments on tarabagans, occupies an important section of the book. Further, the report is enlivened by numerous excellent illustrations not concerned solely with the manifestations of disease. All the contents are contributed by members of the Prevention Service staff, and we note that a large share comes from the pen of the editor himself.

Perusal of this book impresses one with the fact that the Plague Prevention Service has far more than justified its existence. The work it has achieved at the comparatively small annual cost of 60,000 taels (90,000 dols.) offers an object lesson of economical administration which might well be studied in some Western countries. It was Dr. Wu's earnest hope to expand this small but efficient service into a national Department of Public Health. The times have been against him, but if he achieve his ambition assuredly he will be regarded as no less a benefactor to his race than some of the illustrious personages we have named.

W. P. Y.

## WINTERING ABROAD.

### ITALY.

#### THE LIGURIAN RIVIERA.

THE frontier between France and Italy on the Mediterranean coast is a diplomatic line not marked by any prominent natural feature. What was said in general terms about the French Riviera in the article published in our issue of October 28th, 1922 (p. 815), applies likewise, in the same general way, to the adjacent places in Italy, though here also the particular character of the climate may be influenced by local topographical conditions. About thirty miles farther on, however, the coast takes a north-easterly trend, so that the places on this part of it, speaking generally, look south-east; behind all of them are hills near or not far back. These two facts may serve to account for the claim that the mistral is little felt, or altogether unknown, in this part of the Riviera, for the mistral is a north-westerly wind. The whole coast from the French frontier to Spezia is spoken of as the Ligurian Riviera, but it is divided into two at the head of the Gulf of Genoa, where the coast trends south-west, so that its general aspect is south-westerly. The part between the frontier and Genoa is known as the Western Italian Riviera (Riviera di Ponente), and the rest, to Spezia, as the Eastern Italian Riviera (Riviera di Levante). These two stretches of coast, therefore, look at each other across the Gulf of Genoa.

#### Riviera di Ponente.

It is claimed for the Riviera di Ponente that it has a dry and stimulating air, with abundant sunshine, and few wet days. The rainfall, though it does not differ greatly in quantity from that at the southern English winter resorts, occurs on many fewer days—five instead of fifteen. It is, of course, heavy while it lasts, but fogs and mists are infrequent. The disagreeable wind is from the east, but it is often possible to find a resort sheltered from that quarter. It is said that the drop in temperature at sunset is less than on the French Riviera. Great stress is laid on the dryness of the atmosphere, which is favourable to many conditions, including chronic bronchitis, but is often found not to suit persons of nervous temperament, who may find it too stimulating.

The places most frequented by visitors from this country are, taking them in order from west to east, Bordighera, San Remo, and Alassio. The first-named is a very pleasant place of residence; the old town clusters round a hill, the new runs westward, and consists mainly of a single thoroughfare parallel with, and close to, the shore. The place is well protected on the north and east, and its gardens are famous. It has many hotels, two casinos, an English club, a tennis club, and the ~~country~~ <sup>country</sup> affords many beautiful walks and ~~is~~ <sup>is</sup> modes in which the oldest and ~~most~~ <sup>most</sup> interesting section, and concludes that the Riviera di ~~Ponente~~ <sup>Ponente</sup> is the best resort of the infecting ~~area~~ <sup>area</sup> in two bays ~~and~~ <sup>and</sup> extends.

The eastern bay is the more sheltered, but both enjoy an equally large measure of sunshine. San Remo also has many hotels, an English club, and an English nursing institute. Its chief industry is the export of flowers; especially carnations, which are largely cultivated on the terraced slopes; a few miles away, at Taggia, there are violet farms. At Alassio the old town stretches along the shore, and visitors stay in villas or hotels on the slopes behind. It is considered to be one of the warmest resorts on this coast, and is a good centre for excursions along the seashore or into the hills at the back.

There are many other smaller resorts on the Riviera di Ponente. Ospedaletto, which lies between San Remo and Bordighera, advances the claim that it is the most sheltered spot on this Riviera and has the most equable climate. It is protected on the east, north, and west by hills. The hotels and villas are for the most part set a little back from the fishing village itself, on wooded slopes with many pine trees. The cultivation of flowers is the chief local industry. There are several good hotels and a casino. Diano Marina, between San Remo and Alassio, and Varazze, a good deal farther along the coast, are smaller places, but are well situated and have adequate accommodation. Lastly comes Pegli, a small town set under hills covered with olive trees, and woods of chestnuts and pine. It is a picturesque place, now almost a residential suburb of Genoa.

#### Riviera di Levante.

Passing to the Riviera di Levante the first resort is Nervi, about seven miles from Genoa. Here the mountains come down close to the sea, and the place is consequently very sheltered; it is therefore suited to those classes of invalids for whom a very mild winter climate is desired. It has several hotels, and is frequented chiefly by the sick rather than by the pleasure seeker. The gem of this part of the coast is the Portofino Peninsula. From the crest of the peninsula it is possible on a clear day to see across the bay, even to the headlands of the French coast, seaward to Corsica, southwards all along the coast to Spezia. To reach Portofino the visitor must leave the train at Santa Margherita, which is itself a good centre for walking excursions. Though it has the sun on it for a longer time it is not so well sheltered from the east as Rapallo, which is perhaps the best known resort on the Riviera di Levante. It has a casino and many hotels. Visitors are attracted especially by the picturesque coastline; to the east it rises in precipitous rocky cliffs; westward the coast is lower and is traversed by the road through Santa Margherita to Portofino. There are a number of small places beyond this before the naval port of Spezia is reached.

#### Journey: Cost.

The longer journey, with its increased cost, deters many British visitors from penetrating to the eastern part of the Ligurian Riviera. The cost of living in Italy, which was very low before the war, has increased very considerably since 1914; the increase is in fact even greater than in this country, but this is to some extent compensated by the present rate of exchange. Not a bad plan is to go first to one of the larger resorts and spend a week or ten days in looking about the neighbouring places. *En pension* terms for rooms, breakfast, lunch, and dinner, can usually be obtained at hotels for visits of not less than five days; but the actual rates of course vary according to the class of hotel selected. Visitors who know their way about will be able to find good accommodation at very moderate rates, when the exchange is considered, in the smaller hotels, and the cooking may be put down roughly as ranging from 60 to 40 lire a day. There is a tax on hotel bills varying from 1 to 12 per cent., according to the category of the hotel, but averaging perhaps 6 per cent. An addition of 10 per cent. is made to the account for service, and direct tipping is supposed to be eliminated. There is also a sojourn tax, similar to the "Kurtax" levied at German and Austrian resorts; it may be fixed on the basis of 10 per cent. of the price of the visitor's room, but in some places there is a charge of from 50 to 30 lire for the season.

With regard to the best routes to take to the selected resort information can be obtained from the Tourist Office of the Italian State Railways, 12, Waterloo Place, Regent Street, London, S.W.1, where advice will be given about the journey, as to the best way of transmitting funds to Italy, about the selection of hotels or pensions, and as to passports and visas.



## THE NAPLES RIVIERA AND SICILY.

A visit to the Naples Riviera involves a long railway journey, but the district, which includes all the resorts on the Bay of Naples, and the islands of Capri, Ischia, Procida, as well as Amalfi and Ravello, affords a considerable variety of climate, owing to the different situation and aspect of the various places. The climate of Naples itself is reputed to be dry, and the town is a good centre for excursions. The rainfall of Capri is low; the temperature is slightly higher than on the Ligurian Riviera, and the drop at sunset not marked. Sorrento, which has a fine casino and terrace looking over towards Naples and Vesuvius, is perched on rocky cliffs which rise to a height of about 300 feet. It faces north, and is therefore in midwinter rather cold for an invalid. Twenty miles away, on the Bay of Salerno, is Amalfi; it is reached from Sorrento by a road the beauty of which is far-famed. It faces due south, and the climate is described as bracing, with many bright clear days. Excursions may be made from it to Ravello, Salerno, and Paestum.

Sicily can be reached from Naples by a night journey, either by boat to Palermo (twelve hours), or by train to Messina, and then across the straits in half an hour. Palermo, the place most frequented, has an equable soothing climate, with a small range of temperature and little rain, except in December. There are good hotels at Palermo and also at Taormina, but full exploration of the island, with its many beauties and antiquities, should only be undertaken by robust persons willing to make the best of the local accommodation.

## MADEIRA.

Madeira is a place which had a great reputation as a winter resort in the mid-nineteenth century. Many consumptives went there only to die, and for this and other reasons its popularity waned; but it is now reviving. It can be reached by the boats of the Union Castle Line from Southampton, the average passage being three days and a half. The boats of the Yeoward Line and the Booth Line run regularly from Liverpool, and those of the Elder Dempster Line occasionally. The boats of the Booth and Elder Dempster Lines call at Lisbon and sometimes at Vigo. The island of Madeira lies in the Atlantic three or four hundred miles due west of Morocco. It is 32 miles long and 13 broad, and the interior is mountainous, rising to 6,000 feet. Funchal, the capital, lies on the south side of the island in a sheltered position, and is the place chiefly frequented by foreign visitors. We are informed by Dr. Geddes-Scott, who resides there, that the mean winter temperature is 62° F., and the diurnal variation averages 4° F.; the mean summer temperature is 77° F. The town slopes up gradually from sea-level to some 700 feet, but there are many villas (quintas) higher up. The average rainfall, the same informant tells us, is some 26 inches, falling mostly in November and December, and he lays stress on the absence of dust even in dry weather. In the spring the vegetation of Madeira is remarkable and the supply of fruit excellent nearly all the year round. There are several good hotels, and an international nursing home a little outside the town, overlooking the sea. Before making the journey a tuberculous patient should make sure of accommodation, as some of the hotels object to receiving visitors suffering from that disorder. With regard to the type of tuberculosis which does best in Madeira Dr. Geddes-Scott states that patients suffering from laryngeal tuberculosis often do remarkably well, as do cases of pulmonary disease with concomitant bronchial irritation, cough, and expectoration, even though hæmoptysis and high evening temperature be present. A patient with a hard dry cough and little sputum and not much elevation of temperature will probably do better elsewhere. Sufferers from chronic bronchitis can lead a healthy outdoor life, and asthmatics do well owing to the absence of dust. The water supply is now good, and the rate of exchange is favourable to the holder of English money.

THE *Archivos de medicina, cirugía y especialidades* of Madrid has offered a prize of 1,000 pesetas for the best unpublished work on natural science or medicine.

The Guild of SS. Luke, Cosmas, and Damian was established in 1900 to facilitate intercourse in the British Empire between Roman Catholic members of the medical profession and the clergy and others, for the study and discussion of medico-religious questions. The Guild has decided to issue a quarterly organ, *The Catholic Medical Guardian*, the first number of which will be published this month by Messrs. Barnes, Oates, and Washbourne, Ltd., at the price of 1s. 4d., post free.

## DANISH STUDIES OF THE INFLUENZA BACILLUS OF PFEIFFER.

INFLUENZA is so great a scourge, and its return is so assured, that all investigations tending to throw light upon its causation are worthy of attention. The recent discussion on the microbiology of influenza at the Annual Meeting of the British Medical Association at Glasgow<sup>1</sup> brought out the fact that notwithstanding the researches made during the pandemic of 1918, and smaller recurrences since that date, there is at present a lack of agreement concerning the primary infective agent of influenza. The available evidence in favour of Pfeiffer's bacillus as a prime factor, while convincing as regards the presence of an organism of this group in a large proportion of the cases, and also of its pathogenic significance, was not sufficient to carry conviction that the bacillus in question is the actual micro-organism concerned primarily in influenza. On the other hand, the evidence with regard to the presence at the onset of influenza of an organism smaller even than Pfeiffer's bacillus, and capable of passing through filters that hold up the latter, though promising, was admittedly incomplete, for our knowledge of these filter-passing micro-organisms is in such an early stage that some investigators have still to be convinced of the very existence of such micro-organisms. At the moment, therefore, the precise nature of the primary infective agent of influenza is uncertain, and consequently no secure basis has been established for achieving the specific diagnosis, prevention, and treatment of this disease on lines comparable to those available and already exploited with greater or less success in the case of pestilences such as plague, cholera, and infections of the enteric group.

In these circumstances a warm welcome is to be extended to the careful and systematic researches of Dr. Martin Kristensen,<sup>2</sup> of the State Serum Institute of Copenhagen, on the group of bacteria of which Pfeiffer's bacillus is the most important and best known representative. This monograph well maintains the high standard we have learnt to expect of work from Professor Madsen's well known institute. It is ably and critically written in the English language, and is subdivided into five sections, of which the first contains an excellent historical review of the literature concerning the characters and classification of Pfeiffer's bacillus, its occurrence and its relation to influenza. The remainder of the work is devoted to the author's own observations. Thus, Section 2 deals with the incidence of Pfeiffer's bacillus, as determined during four successive waves of influenza in Denmark, and also with its distribution in cases of whooping-cough, measles, tuberculosis, meningitis, and in healthy persons. Section 3, the largest and most important contribution, embodies the result of an exhaustive study of the characters of Pfeiffer's bacillus, and prepares the way for Section 4, in which that organism, now thoroughly defined, is contrasted with three other hæmoglobinophilic bacteria submitted to examination in the same manner. The important subject of technique and the conclusions reached by the author are contained in the final section, and the monograph ends with a list of references and three plates illustrating special points in the morphology and manner of growth of Pfeiffer's bacillus. That the scope of Dr. Kristensen's researches has been comprehensive will be realized when it is stated that they extended over a period of four years (1918-22); that this elaborate study of Pfeiffer's bacillus is based on the detailed examination of no fewer than 800 individual strains of that micro-organism; and that the investigation of the incidence of Pfeiffer's bacillus in the healthy Danish population alone involved the examination of over 2,000 persons. In the last direction the medical services of the Danish army and navy afforded him special facilities, valuable help which Dr. Kristensen gratefully acknowledges.

<sup>1</sup> BRITISH MEDICAL JOURNAL, AUGUST 19th, 1922, p. 291.

<sup>2</sup> *Investigations into the Occurrence and Classification of the Haemoglobinophilic Bacteria*. By Martin Kristensen, Chief of Department at the State Serum Institute, Copenhagen. Copenhagen: Levin and Munksgaard. 1922. (Sup. roy. 8vo, pp. 272; 3 plates.)



As a result of this extensive survey the differential value of the special morphological and cultural characters at present regarded as diagnostic of Pfeiffer's bacillus is upheld. The lowest amount of haemoglobin required to obtain growth was about the same for all the strains examined, and the dependence of Pfeiffer's bacillus on haemoglobin still persists after prolonged subculture. The hydrogen ion concentration giving optimum growth, the minimum temperature at which growth occurs, and the degree of resistance to desiccation were approximately the same for all the strains examined; so, too, were the inability to ferment glucose and the failure to exert proteolytic action on gelatin or serum. The majority of strains were destroyed by exposure for half an hour to 50° C., though a few resisted a slightly higher temperature. All of the strains were decidedly aerobic. The majority showed the well known symbiotic phenomenon—namely, an increase of growth around colonies of certain other bacteria—a point to which Kristensen devotes considerable attention and which he finds to be on occasion of definite diagnostic value. Serologically the work of previous observers was confirmed; as almost every strain of Pfeiffer's bacillus was found to differ serologically from the rest no progress could be made in defining this organism either with the agglutination and absorption test or with the complement fixation test. The only positive physiological character that was found to offer promise for this purpose was indol production; the majority of strains from cases of influenza gave a good positive result, whereas a considerable proportion of the strains from healthy persons were negative. But as this divergence could not be correlated with any other constant difference, indol production cannot be employed for splitting up the group now included under the name of Pfeiffer's bacillus. It is interesting to observe that Kristensen investigated examples of Pfeiffer's bacillus from cases of meningitis and found that there was no sufficient reason, serological or otherwise, for regarding these cerebro-spinal strains as different from ordinary examples of the Pfeiffer micro-organism recovered from mucous membranes.

Three organisms of the haemoglobinophilic group were differentiated by Kristensen from Pfeiffer's bacillus for reasons which may briefly be specified. In addition to its failure to grow on ordinary agar, or on agar enriched with ascites fluid, an important negative character of Pfeiffer's bacillus is its failure to haemolyse blood. This negative property, which is remarkably constant, at once distinguishes the true Pfeiffer bacillus from a definitely haemolytic organism closely resembling it in other respects, and occurring in a proportion of normal throats, but not in influenza. It is important to note that Bordet's whooping-cough bacillus, of which 75 strains were studied culturally by Kristensen, was found to be distinguished from Pfeiffer's bacillus not only by the well known circumstance that it grows on ascites agar, but also by the very significant fact that so far as Kristensen's somewhat limited serological studies of this whooping-cough organism went, all the strains of it examined were found to conform to a single serological type. A third representative of the Pfeiffer group present in blenorrhoea of the prepuce of dogs was also studied by Kristensen; while indistinguishable from Pfeiffer's bacillus in other respects, it possessed a higher resistance to desiccation, and was further differentiated by the circumstance that colonies of this dog bacillus were found to promote the growth of Pfeiffer's bacillus, a symbiotic property which colonies of the true Pfeiffer organism do not exhibit for strains of their own species.

The observations of Kristensen on the distribution of Pfeiffer's bacillus derive additional weight from the care with which he defined this micro-organism by the studies referred to. In cases of influenza he found the Pfeiffer organism most often in the first couple of days after the onset. In measles the incidence was similar to that found in influenza, while in whooping-cough he actually succeeded in demonstrating Pfeiffer's bacillus more frequently than in influenza. In a group of seven cases of phthisis with no symptoms of influenza he recovered Pfeiffer's bacillus five times, but he

was unable later on to detect it in five specimens of material from phthisical cavities. Among healthy persons Pfeiffer's bacillus was found to have a wide distribution; the incidence, however, was very variable, ranging in different groups from 8 to 100 per cent. He found that the incidence of Pfeiffer's bacillus in the general population of Denmark agreed excellently with that of influenza; as a direct consequence of each of the four epidemics a marked increase was observed in the frequency of the Pfeiffer organism in the population as a whole, followed by a sharp decrease. In military camps and barracks Pfeiffer's bacillus was more in evidence than in the general population. In persons who had recovered from influenza Pfeiffer's bacillus was found a little more commonly than in others, but it also had a wide distribution among the general population. Kristensen found that Pfeiffer's bacillus was present in the mouths of 5 out of 60 normal guinea-pigs that had recently arrived from Germany, but he failed to find it either in mice or in horses.

Kristensen does not regard Pfeiffer's bacillus as the primary infective agent of influenza. In the light of the whole of the available evidence his view of the activities of this micro-organism is as follows:

"Pfeiffer's bacillus is mainly adapted to living in the mucous membranes of the respiratory tract in man. In healthy persons it is able to exist for a time, but only with difficulty. Its ideal conditions for development are in mucous membranes already in a catarrhal state, but the nature of the infection producing the catarrh is a matter of indifference: it may be influenza taken in its widest sense, whooping-cough, measles, or tuberculosis. Its growth is also favoured, but to a less extent, by infections which involve a more limited area of mucous membrane—for example, angina, diphtheria, etc., or even catarrh produced by non-bacterial causes. The reason why Pfeiffer's bacillus occurs most constantly in whooping-cough and measles is on account of the wide distribution and endemic character of these diseases preparing the soil. The conditions are otherwise in such a pronounced epidemic disease as influenza. Consider such an epidemic in its very early stages. It spreads over a population the large majority of whom do not harbour Pfeiffer's bacillus. In the early cases Pfeiffer's bacillus is only exceptionally met with, but in those patients in whom it is present it will multiply rapidly and spread to others, and also to healthy persons who may become infected with influenza as well as with Pfeiffer's bacillus, or with Pfeiffer's bacillus without developing influenza, for under the new conditions the bacillus is likely to acquire an improved capacity of developing in normal persons. . . . In this manner the bacillus gradually spreads until it is present in almost every influenza patient and in a number of healthy individuals as well. Perhaps this microbe eventually acquires so great an increase in its vitality that it thrives not only in healthy persons, but also may be able by itself to produce infections resembling influenza. When the influenza dies out Pfeiffer's bacillus may exist in normal people for some months still, but as it is incapable of living for a prolonged period as a pure saprophyte it will, as before the influenza appeared, gradually be limited to occurring in endemic diseases."

The advantage of this conception is that, as Kristensen claims, it accounts for the whole of the observed facts; in particular it has the merit of explaining why in certain outbreaks of influenza Pfeiffer's bacillus has not been found when searched for by bacteriologists of great experience in the detection of this micro-organism employing technique that is above suspicion, as proved by the excellent growth of Pfeiffer's bacillus when material containing it is available. Should further investigations substantiate this wide view of the pathogenic significance of Pfeiffer's bacillus it may eventually become desirable, as has been suggested, to change its pre-war name of *B. influenzae* to that of *B. catarrhalis*. The observations of Kristensen, however, fully substantiate the frequency of the occurrence of this bacillus in cases of influenza, and demonstrate in a striking manner the close association between epidemics of that disease and the carrier rate of Pfeiffer's bacillus. Accordingly, the prophylactic use of a vaccine of Pfeiffer's bacillus obtains material support from these comprehensive and well planned studies of recent outbreaks of influenza in Denmark.



## British Medical Journal.

SATURDAY, JANUARY 20TH, 1923.

### THE INFLUENCE OF PASTEUR ON SURGERY.

IN an article in this column last week we endeavoured to give some general account of Pasteur's work, especially his earlier work with regard to crystallography and fermentation, and only brief reference was made to the manner in which the lessons to be learnt from his discovery of the specificity of micro-organisms, and his repudiation of spontaneous generation, were applied and extended by Lister to the prevention of wound infections. Pasteur had to meet very great opposition from many quarters, for he was proving that opinions held by the highest authorities in science were wrong; incidentally he upset the beliefs of the chief surgeons of the day, whose practical methods were based on tradition, which their clinical observations appeared to confirm. Pasteur's experiments, as all open-minded surgeons had to recognize, disproved ideas regarding fermentation that had been used to explain inflammation in wounds. Although they themselves did not undertake to cultivate the micro-organisms which occurred in infected wounds, they could not remain unconvinced when these micro-organisms were made visible to them under the microscope (the construction of which was just then greatly improved) and when Lister added demonstration to demonstration that if wounds were kept free from infection they healed speedily in a natural manner.

The most sceptical found it no longer possible to deny specificity, and gradually ceased to talk of dirt in terms implying spontaneous generation, or of the change of one species of micro-organism into another. The old constitutional pathology was reduced to a place of secondary importance. As Pasteur pursued his researches he supplied a new interpretation of the proverb that "the better is the enemy of the good." Lister began his improvements in surgery by seeking to prevent infection of wounds from the air, using chemical antiseptics for this purpose. Pasteur furnished his followers with methods by which the cause of the infection of wounds was traced to the patient's skin, the surgeon's hands and his instruments, as sources of more immediate importance, especially after improvements in sanitation had been made. Pasteur invented in the laboratory the methods of sterilizing fluid and solid materials which gradually were introduced into the practice of surgery. Die-hards had to yield to the fact that infection of wounds was preventable, even when the surrounding circumstances were unfavourable. Pasteur often quoted the remark made in 1667 by Robert Boyle, in his *Sceptical Chymist*, that he who could probe to the bottom of the nature of ferments and fermentation would probably be more capable than anyone else of explaining certain morbid phenomena.

The discovery of oxygen and its properties had supplied the basis of the explanations of fermentation current during the first half of last century. Liebig continued to use such vague phrases as that putrefaction was an inherent tendency to decay. Oxygen, he said, caused a change for which he proposed the term "eremacausis," a word recent dictionaries omit, but which he applied to the slow oxidation and combustion that goes on in the decay of organic compounds at ordinary temperatures. Berzelius explained fermentation as a catalytic process, a term not only vague but erroneous, for it meant a change in composition effected in a body by the mere presence of another which does

not itself undergo any change. Pasteur demonstrated that the decomposition was produced by micro-organisms which did undergo changes. In 1852 Billroth, one of the most prominent surgeons of the day, supported the hypothesis that infection of wounds was due to decomposing materials similar to vegetable poisons (belladonna, strychnine, curare) and to snake poisons. The arguments then used turned on simple methods of filtration and distillation involving a number of fallacies, procedures which Pasteur's manipulations and apparatus superseded.

Nothing was more difficult than to counter the tradition which put the constitutional causation of disease in the forefront, and at the same time ignored causation by contagion and infection. The history of the discovery of the cause of scabies may be recalled because the agent is just visible to the naked eye. Aristotle said (*History of Animals*, v, 31): "Of insects that are not carnivorous, but that live on the juices of living flesh, such as lice and fleas and bugs, all without exception generate what are called 'nits,' and these 'nits' generate nothing. When lice are coming there is a kind of small eruption visible, unaccompanied by any discharge of purulent matter; and if we prick an animal when in this condition at the spot of the eruption the lice jump out." Avenzoar described the little lice, or acari, which creep under the skin of the hands, legs, and feet, causing pustules full of fluid. The insect was drawn repeatedly and with increasing accuracy, and Galès in 1812 was given a prize for observing, through a watch-glass covering the acarus, the actual penetration of the cuticle. Unfortunately some drew cheesemites, or the *Acarus farinae*, and caused confusion. In spite of the numerous observations which had been made, Hebra in 1842, when describing his experience concerning 2,177 cases of scabies out of a total of 2,723 in his skin department, said that there was a special itch dyscrasia which resulted in the spontaneous generation of the insect in the lymphatics; two years later, however, he had reconsidered the facts and accepted the acarus as the cause of scabies.

The size of the anthrax bacillus facilitated its demonstration, for it was readily made visible under the microscope. The disease had long been known to be both contagious and inoculable, and that not only in cattle. Passing by earlier references, it may be noted that Saporita (1624) said that there was a form of carbuncle which frequently attacked butchers and their families, owing to contagion from the skins and offal of diseased sheep. Larrey noted its occurrence in a butcher's family at Paris, and among soldiers at Toulon who had been stung by flies. He was well aware that butchers, tanners, and cooks were more frequently attacked, yet he shut his eyes to the evidence of inoculation and assumed the cause to be foul air, change of weather and season, and the predisposition of the individual, both in men and animals. In 1838 Delafond saw little rods in the splenic blood, and this was again noted by Pollender in 1849 and confirmed by Davaine. Delafond carried out a number of inoculations on animals. Yet it was not until 1860 that Davaine, after reading Pasteur's paper on butyric acid fermentation, in which it was proved that organisms caused the fermentation, began to connect the rods with the cause of anthrax and to resume experiments on the subject. These in turn attracted the notice of Dr. William Budd of Bristol, who, at the meeting of the British Medical Association in London in 1862, described for the first time the occurrence of malignant pustule in England.

Lister, after his appointment in 1860 to be Professor of Surgery in the University of Glasgow and surgeon to the Infirmary, began to teach that the primary cause of suppuration in wounds was the decomposition brought



about in them in some way by the air, in contradistinction to the theories which referred to changes in the blood. The risk of infection through the air at first formed the basis of the practice of subcutaneous surgery. A crucial instance was the difference between a crush of the thorax causing fracture of ribs, pneumothorax, and surgical emphysema, and a penetrating wound of the chest. Following upon that a parallel may be drawn between the researches of Pasteur and the institution by Lister of his antiseptic system. Many surgeons of the first rank, however, continued to express satisfaction with what they called "cleanliness." Those who recall the controversy recognize that Lister directed the surgeon's primary attention to the methodical prevention of infection. At one of his demonstrations to the British Medical Association he said: "In order, gentlemen, that you may get satisfactory results with this sort of treatment, you must be able to see with your mental eye the septic ferments as distinctly as we see flies or other insects with the corporeal eye. If you can really see them in this distinct way with your intellectual eye, you can be properly on your guard against them; if you do not so see them you will be constantly liable to relax in your precautions."

Lister learned from Pasteur's experiments that putrefaction and fermentation were set up by minute living organisms, and that the idea that the cause lay with the oxygen or some gaseous constituent in the atmosphere was erroneous. Without neglecting precautions coming under the head of cleanliness, Lister directed his attention to the exclusion or destruction of living particles floating in the air. From that he developed his antiseptic system—the application of solutions of carbolic acid to the wound, the carbolized dressing for covering the wound, the steeping of the silk or catgut ligatures, the covering of the instruments in carbolic acid solutions, and the spray to protect from the surrounding air during the operation. Now Pasteur's researches least supported Lister as regards the spray and the application of carbolic acid to previously uninfected wounds, and as a matter of history these were the first parts of the system to fall into disuse.

Pasteur originated the researches which led up to the recognition of streptococci and staphylococci as the chief infective agents of wounds. He intervened first in the discussion as to the cause of the fatal kinds of puerperal fever, such as are now recognized to be set up by haemolytic streptococci. Semmelweis had made a statement of a limited character, that the infection was due to a miasma given off by lying-in women and their infants, particularly after death. It was "infant miasma" infecting the slight wound of his finger whilst operating on a newborn infant which started the deterioration of his health. There had been repeated discussions, in Paris especially, on the so-called epidemics in maternity hospitals, and at one of the debates on the subject in 1878 Pasteur interrupted the speaker, saying, "None of the things that had been enumerated caused the epidemics, but it was the nursing and medical staff who carried the microbe from an infected to a healthy woman." This was indeed a provocative statement, to which the speaker retorted that he feared the microbe would never be found. Pasteur thereupon drew on the blackboard the chain-like organism, saying, "There, that is what it is like." When visiting by invitation a lying-in hospital he declared that all the soiled linen should be put through a sterilizing apparatus. He pricked the finger of a woman suffering from puerperal fever and demonstrated the chain-like organism in the blood. A worker in Pasteur's laboratory suffered from boils; Pasteur isolated from the furuncle the

microbe by growing it in sterilized broth, and confirmed the observation in two other cases. He was present when Lannelongue, at the Trousseau Hospital, was operating on a little girl suffering from acute osteomyelitis. He took some of the pus and isolated the same organism as in the cases of furuncle. "It may," said Pasteur, "be affirmed at first sight that osteomyelitis is the furuncle of bone." Early in 1881 Ogston described in the *BRITISH MEDICAL JOURNAL* how he had found the staphylococcus in every acute abscess.

Then followed the International Congress in London in the summer of 1881, which marked the general acceptance of the researches of Pasteur, Koch, and others, expressed on behalf of surgeons headed by Lister, Lucas-Championnière, and Volkmann. The cultivation of micro-organisms on solid artificial media, and the demonstration of the organisms rendered visible under the microscope by staining, afforded indisputable evidence; in the surgical discussions on the same occasion the success of Lister's antiseptic methods was amply proved. Modifications subsequently introduced were founded upon the sterilizing methods invented by Pasteur. In 1878 he had recommended the flaming of instruments, the sterilizing by moist heat of tow, wool, and pads (used instead of sponges), of dressings and bandages, and the employment of water sterilized by boiling under pressure at 110° to 120° C. In 1882 Neuber of Kiel, among others, set himself to test the sterility of everything connected with surgical operations. The researches of Schimmelbusch and their practical application were fully demonstrated at the International Medical Congress in Berlin in 1890. The laboratory methods employed by Pasteur had become, and continue, an essential part of surgical apparatus.

On December 27th, 1892, Pasteur had reached his 70th year, and a great ceremony was held at the Sorbonne, when Lister delivered an address in French, which is to be found in full in Sir Rickman Godlee's *Life of Lister*. The account is illustrated by a photograph of the central portion of Rixen's picture representing the scene which followed: "M. Pasteur se lève pour embrasser M. Lister. L'étreinte de ces deux hommes était comme la représentation vivante de la fraternité de la science dans le soulagement de l'humanité."<sup>2</sup>

## WAR INJURIES AND LIFE ASSURANCE.

War casualties—both surgical and medical—have presented many problems to those responsible for the medical side of life assurance. In all such cases the difficulty lies in the attempt to steer an even course between two opposing interests—that of the proposer on the one hand, of the insurance company on the other. In the ultimate issue these interests tend to become identical: the prosperity of a company depends on the wise medical selection of its policy-holders, who, in turn, provided their policies are participating ones, profit by the company's prosperity. But when the medical assessor is confronted with an individual proposer in impaired health, his problem is as indicated—to advise terms of acceptance which, while giving the company reasonable protection, shall be equitable to the proposer. How is he to arrive at his decision? In theory he should have at his command the results of actuarial mortality investigations of groups of people suffering from the impairment in question. For example, to assess a case of "foreign body in the lung," he should have a mortality table showing the experience, in the form of the ratio of "actual" to "expected"

<sup>1</sup> *The Collected Papers of Joseph, Baron Lister* (Oxford: Clarendon Press, 1909), p. 258.

<sup>2</sup> Pasteur rose to embrace Lister. The embrace of these two men was, as it were, a living picture of the brotherhood of science in its effort to relieve humanity.



deaths in successive years, for a group all suffering from this condition and large enough to exclude the influence of accidental factors. In point of fact, for the great majority of impairments, such information is unavailable, and the assessment of the risk becomes almost entirely an empirical process, depending upon the experience and judgement—not infrequently also upon the prejudices—of the individual assessor. It is particularly in the case of war injuries that the data are so scanty: the number of cases of impairment of this type coming for insurance under normal peace conditions has been so small that the actuarial experience relating to them is almost *nil*.

It is not surprising, therefore, that the Assurance Medical Society has devoted considerable attention to the question, and its members have discussed the problems arising from the war on several occasions during the last four years. At a recent meeting papers on this subject by Mr. W. McAdam Eccles and Mr. G. E. Gask gave rise to an interesting discussion. The former, in his paper, "Further experiences of war wounds in general in relation to life assurance," makes an heroic attempt to classify all war injuries, according to their topography and chief features, and to indicate how these should be regarded for life insurance purposes. On the whole, his views appear to have been generally approved by the other members taking part in the discussion, though naturally there was some criticism on points of detail. At first sight, especially to those who have worked on Pensions Boards, some of his recommendations may seem a little unexpected, but the problems are, of course, fundamentally different in the two cases. The Pensions Board is concerned almost entirely with the man's capacity for work; the insurance assessor, on the other hand, has regard only to the "expectation of life." Hence a man who has been blinded by loss of both eyes is assessed for pension at 100 per cent., while, for life assurance purposes, he will be accepted, if well in other respects, with only a small addition to cover the extra risk of death from accident. Similarly with the loss of, or injury to, limbs. Thus, with an arm rendered useless through injury to its main nerves, Mr. Eccles rightly recommends acceptance at ordinary rates, as he does also in the case of loss of the whole of the arm, or of one leg from the knee downwards. For the loss of one leg through the thigh or hip, however, he suggests a load of 3 to 5 years' addition to the age. This is perhaps justified on the score of increased liability to accident, but, with the excellent artificial limbs now widely available, a good case might be made out for the acceptance at ordinary rates of all war cases of loss of one leg, provided that the general condition is good. To our knowledge such cases have been accepted by more than one company, and it is improbable that they will be called upon to repent their boldness. With the loss of both legs the case is perhaps rather different. Here Mr. Eccles advises an addition of from 3 to 10 years, according to the level of amputation. It has been suggested that, in addition to the risk of accident, there is a further danger of impaired health in later years owing to the more or less inactive life imposed by the disablement. In the case of many of the young soldiers who have lost two legs this hardly applies. Their activity is wonderful. Many of them, with two artificial legs, manage to walk quite well without even a stick, and with a barely perceptible limp. Such cases might quite reasonably be considered as ordinary risks, particularly for short-term endowment assurances.

One of the most interesting topics in connexion with war wounds is that of epilepsy arising from head injuries. Dr. Aldren Turner, in the discussion, threw valuable light on this somewhat obscure problem. He pointed out that most of the cases of traumatic epilepsy due to war injuries were of the "generalized" type—a general convulsion with loss of consciousness—as opposed to the

"Jacksonian"; if the latter developed as the result of a definite focal cortical lesion, it was usually amenable to surgical treatment. But traumatic epilepsy was, in any case, a comparatively infrequent sequel of gunshot wound of the head. The Ministry of Pensions records gave its occurrence as about 800 in 18,000 cases—that is, about 4.5 per cent. In most of these it developed within eighteen months of the injury, and in the majority of these there was evidence of some predisposing neuropathic history—personal or familial. Dr. Turner thought that, provided the fits occurred only at long intervals—one or two a year—insurance might be effected with only a small addition; if the fits were frequent—several in a month—the proposal should be rejected or, at least, heavily loaded. The outlook in the Jacksonian cases he regarded as more favourable than in the generalized ones, as, apart from the possibility of surgical cure, they exhibited a greater tendency to spontaneous improvement.

Mr. Gask's paper deals with "War wounds of the chest and their late prognosis in relation to life assurance." Its chief interest lies in the consideration of cases of a missile retained in the lung or mediastinum. If the missile is a smooth one, such as a rifle bullet or shrapnel ball, it is less likely to cause trouble than is a jagged fragment of shell. There have been several cases of haemoptysis due to ulceration from such a fragment five or six years after its entry. Such cases should therefore be taken only with a considerable loading, though it was agreed that there is no reason at all to suppose that the presence of these foreign bodies predisposed to the development of pulmonary tuberculosis. Both papers are of great interest and should be of real value to the medical officers of life insurance companies. We should like to give our hearty support to Mr. Eccles's suggestion that, in dealing with these war casualties, the offices should as far as possible give the benefit of the doubt to men who have been disabled in the service of their country.

## ETIOLOGY OF RICKETS.

ALL who are interested in the problem of the causation of rickets will be grateful to Professor V. Korenchevsky for his report on the etiology and pathology of rickets which has just been issued by the Medical Research Council.<sup>1</sup> It is a careful and reasoned summary of the extensive literature dealing with the causation of rickets, followed by an account of the results of his own researches. Those who have studied the literature on rickets will know that it is very scattered and extremely contradictory. In particular, failure to agree as to which bony changes constitute true rickets has been a frequent source of dispute in experimental work upon animals. Professor Korenchevsky gives references to about 400 investigations, and has analysed the results carefully and critically; in many cases where investigators have arrived at conflicting conclusions he is able to show that the experimental or clinical observations are not necessarily contradictory.

The chief points dealt with in the report are the histological changes in the skeleton in rickets and osteomalacia, calcium metabolism in normal and rachitic subjects and the effect of calcium starvation in producing rickets in animals, and the influence of the antirachitic factor and of light upon the development of rickets in animals and children.

The bony changes produced respectively by rickets and by calcium starvation are considered at length. Professor Korenchevsky has performed numerous experiments to ascertain the effect on rats of calcium



starvation, and the resulting bony changes are illustrated by forty-one figures of histological preparations. His conclusion is that "in some cases it may be possible, by calcium starvation, to produce a disease which clinically, chemically, macroscopically, and even histologically, may simulate rickets."

It is usually believed that calcium starvation causes osteoporosis, and that in rickets there is overgrowth of osteoid tissue. Professor Korenchevsky shows that the development of osteoid tissue depends upon the general rate of growth of the organism, and in particular upon the rate of growth of the bones, and that in a growing child rickets causes development of osteoid tissue, whilst if growth has been arrested rickets causes osteoporosis. These conclusions explain a large number of the discrepant results obtained in experimental work, for typical rickets can be produced only when, on the one hand, the deficiency in the diet is sufficient to interfere with the deposition of lime in the bones, but, on the other hand, is not sufficient to arrest growth. The evidence as to the changes in calcium metabolism in rickets is fully considered, and Schabady's view is accepted. This is that the initial change in rickets is a derangement of calcium metabolism, that there is a latent period in which the calcium metabolism is negative, but in which there are no demonstrable bony changes, and that during the later stages, when the bony changes are most manifest, the calcium metabolism is usually positive. The statement that the latent phase of rickets may arise during the first two months of life is very important, for it indicates that ante-natal factors are of importance in the causation of the disease. It is interesting to note that the normal breast-fed infant utilizes nearly 60 per cent. of the calcium in its food, whilst the rickety child may lose as much as one-third of the amount of calcium present in its body at birth. With regard to the influence of phosphorus metabolism upon rickets, the conclusion of McCollum and his co-workers, that the ratio between the amounts of phosphorus and calcium in the diet is of great importance, is quoted.

The influence of an antirachitic factor, possibly identical with vitamin A, upon the occurrence of rickets has been the subject of acute controversy. Professor Korenchevsky reviews the literature and also describes a series of his own experiments on rats fed on diets deficient in animal fats. He concludes that "the influence of animal fat is due to one or more active principles dissolved therein. The action is threefold: (a) to control nutrition and growth of the tissues (including cartilage and bone); (b) to control calcium metabolism and calcium deposition in the skeleton; (c) to maintain the appetite. These various actions are manifested in different degrees in individual experiments, and the disturbance of ossification is modified accordingly. . . . A deficiency of the antirachitic factor in the diet of the mother results in a marked aggravation of the skeletal disorders of the offspring kept on a diet similarly deficient." Professor Korenchevsky rightly emphasizes the important influence of the rate of growth upon the development of rickets, and holds that this factor helps to explain some of the discordant results obtained by different workers. The fact that ante-natal conditions may lead to the development of rickets introduces an element of complexity into this already complex problem. A worker in hospital he is hardly surprised to learn from a review of the literature that light produced fever and demonstrated the blood. A worker in Pasteur's laboratory the extraordinary factors appear to be every factor has v. Moreover, the

discovery of a new factor, such as the influence of a fat soluble antirachitic substance, often invalidates a large number of previous investigations made to determine the influence of other factors.

Professor Korenchevsky has summarized this large mass of confusing literature very clearly and very impartially, and his own experiments throw considerable light upon various important points. It is of course impossible in such a subject to produce conclusions that will meet with universal acceptance, but everyone will feel grateful to the author for having given an orderly review of a difficult subject.

#### VICTOR HORSLEY MEMORIAL LECTURE.

It will be remembered that a committee was formed in 1920 by the friends and colleagues of Sir Victor Horsley to take steps to commemorate his services to science and the empire by the foundation of a lectureship or scholarship bearing his name. The tragic circumstances of his untimely death while on service with the army in Mesopotamia, on July 16th, 1916, are still fresh in memory. He was a pioneer in the research work connected with the surgery of the brain and nervous system, and brilliantly applied his own observations to the alleviation of conditions due to lesions of the brain and spinal cord, especially those produced by tumours and trauma. He was also one of the earliest to study the relation of the thyroid gland to myxoedema, and his investigations of rabies were of the utmost value as proving the possibility of stamping out the disease in Great Britain. He gave time and energy freely to the British Medical Association, in the last reorganization of which he was a prominent figure. Subscriptions were received by the committee from all over the world, and a sum of over £1,000 was collected. The committee, over which Sir Charles Bellance, K.C.M.G., F.R.C.S., presided, and of which Sir Frederick Mott, M.D., F.R.S., was treasurer, resolved that the sum should be invested in the name of a board of trustees, who should triennially appoint a person to deliver a lecture in London under the title of the Victor Horsley Memorial Lecture. It was also decided that no limitation should be placed on the trustees as to the country or profession from which the lecturer should be appointed, nor as to the subject of the lecture. We are now informed by Mr. Edward Domville, who was one of the secretaries of the committee, that Sir Edward Sharpey Schafer, Professor of Physiology in the University of Edinburgh, has accepted the invitation of the trustees to be the first lecturer, and that the lecture will probably be delivered in the autumn.

#### VIRGINIBUS PUERISQUE.

The Board of Education is issuing at the close of this week the report of the Consultative Committee on Differentiation of the Curriculum for Boys and Girls Respectively in Secondary Schools.<sup>1</sup> The Committee, whose work was suspended during the latter half of the war, was reconstituted by Order in Council in July, 1920. Two questions were then referred to it for inquiry and advice: (1) Whether greater differentiation is desirable in the curriculum for boys and girls respectively in secondary schools. (2) What use can be made in the public system of education of psychological tests of educable capacity? The report now published sets out the results of the Committee's inquiries on the first reference. Among those who gave evidence were medical men and women, psychologists, schoolmasters and schoolmistresses, inspectors and representatives of examining bodies, bankers, business men, and employers. Among the appendices is a memorandum by Dr. J. G. Adams, F.R.S., Vice-Chancellor of the University of Liverpool, a member of the committee, on anatomical and physiological differences between the sexes. He considers that the facts justify the conclusions that "girls in general are not so strong physically as boys; that they are more highly strung and

<sup>1</sup> The Collected Papers of Joseph, Baron Listel Press, 1920, p. 256.



liable to nervous strain, which very possibly is associated with the fact that physiologically they are liable to heavier drains upon the circulating calcium of the blood; and that with their thinner blood, with lowered haemoglobin content, after puberty they are nearer to the threshold of anaemia." The recommendations of the Committee include some looking to further inquiries in several directions. Among these are the relative susceptibility of boys and girls to mental and physical fatigue, and the character of the games and physical exercises most suitable for girls of varying ages. It is further advised that research should be undertaken by psychologists and teachers on groups of boys and girls respectively, drawn from secondary schools of different types, in order to collect data in regard to the intellectual and emotional differences between the sexes in their bearing on education and as to the achievements of groups of boys and girls in the various subjects of the curriculum at successive stages of school life. It is also advised that further consideration should be given to the whole problem of the curriculum and organization of junior schools and departments, more particularly in its bearing on the future education of the pupils, especially in girls' schools. We hope to discuss the general features of the report in an early issue.

#### ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Among the duties cast upon a medical officer of health by successive orders of the Local Government Board was that of making an annual report to the local authority he served on the sanitary circumstances, administration, etc., of his district; the orders enumerated in some detail the information which the report should contain. It was for many years the custom of the medical officer of the Board at the end of each year to address a communication to medical officers of health drawing their attention to the requirements of the latest order and asking for such additional information as the advances in knowledge of public health might suggest. The Minister of Health has altered this procedure somewhat, and the Sanitary Officers Order, 1922, states that the report must contain such information as may from time to time be required by the Minister. In anticipation of the making of this order officials of the Ministry in 1921 conferred with the Society of Medical Officers of Health as to what information might most usefully be supplied. As a result it was decided that certain information which did not vary much year by year should only be inserted about every five years in what would be called a survey report. An agreement was also reached as to what might appear in an ordinary report. At the end of 1921 the Minister accordingly issued a circular in which he particularized the minimum information he considered desirable. A similar circular, dated January 10th, 1923, has been issued with reference to the reports for 1922. It does not differ very materially from the earlier document. It contains a statement not previously made which will be welcomed by medical officers of health, to the effect that the statistical information rendered by the Registrar-General will be distributed at the end of February or the beginning of March. If this promise is fulfilled a medical officer of health ought to find no difficulty in completing his report by the middle of April, and it is pointed out that the value of a report to all those concerned is greatly reduced if it is not completed shortly after the end of the year to which it relates. For many years it was the practice of the Home Office to ask medical officers of health to complete a table relating to the administration of the Factory and Workshop Act, 1901, in their districts. Although this table has been discontinued, it is still the duty of a medical officer of health under Section 132 of that Act to report specifically in his annual report on the administration of the Factory Acts in workshops and workplaces. The specific information now required in the annual report is included under the headings of: general statistics; number of cases of notifiable diseases occurring during the year; causes of sickness; summary of nursing arrangements, hospitals, and other insti-

tutions available for the district; laboratory work; number and details of sanitary staff; housing; and sanitary administration. Under this last heading the medical officer of health is asked for the first time to state what action has been taken with a view to smoke abatement.

#### ERYTHREDEMA OR THE "PINK DISEASE."

ATTENTION has recently been called by Zahorsky to the "pink disease," in a paper contributed to the *Journal of the American Medical Association* (December 9th, 1922). This condition, to which the names erythredema and acrodynia are also attached, is a rare one occurring in children, and was first described in Australia, where it had been recognized for some time before it was formally brought to the notice of the profession in a paper communicated to the Tenth Australian Medical Congress by Swift. The disease usually commences with an erythematous rash of varying character—measly, scarlatiniform, or resembling erythema multiforme. There are also other well marked features, the child becoming fretful, peevish, and unhappy. After a few days the erythematous rash may fade, but tends to reappear. Evidence of some general disturbance is found in the fever—not always present—nausea and general itching of the skin, which, from the consequences of scratching, may become infected by pus cocci. Perhaps the most characteristic features of the disease are the changes in the hands and feet. The hands especially tend to assume a swollen bluish-red appearance likened to raw beef.

#### LES MALADIES PAR CARENCE.

THE term "maladies par carence" has recently been introduced into French literature to denote the group of diseases which includes those known in England as deficiency diseases. "Carence" is an old-fashioned legal term meaning bankruptcy or deficiency, and is derived from the Latin *carere*, to be without, to be destitute of. Professor G. Mouton and Dr. Weill, who introduced the term to medicine, define it as denoting diseases which are not caused by infection or intoxication nor by actual starvation, but which are due to a lack in the food of some substance or substances, a certain minimal supply of which is essential to animal life or health. They emphasize the point that deficiency may be due not only to the lack of some essential substance, but also to the substance occurring in some physico-chemical condition in which it cannot be assimilated. This is probably true, but the distinction between chemical change and an alteration in physico-chemical condition is extremely difficult to establish when considering the absorption and utilization of food substances, and therefore this point does not seem to be of any great practical importance. The inclusion in a common group of all deficiency diseases is, however, a sound suggestion. The rapid recent advance in the knowledge of vitamins and the dramatic nature of many of the new discoveries have focused attention upon the effects produced by vitamin lack, and there is a danger of the term "deficiency diseases" becoming restricted to diseases due to avitaminosis, whereas it is important to remember that the body requires for purposes of growth and repair a certain minimal supply of a large number of substances, and that deprivation of any of these will produce disease. The most obvious example of essential substances which the body cannot produce for itself are such elements as iodine and iron. Knowledge of the power of the body to synthesize organic compounds it needs is limited; we know, for example, that it cannot synthesize certain amino-acids, such as tryptophane and tyrosine, although these are essential components of every cell, and probably there are many other substances of which this is true. If the body is deprived of any essential compound which it cannot synthesize, disease and even death must result, and therefore the possible number of different deficiency diseases is indefinitely large. The types of disease which the French writers include under the term "maladies par carence" are: (a) diseases such as hunger oedema, due to insufficient fats and proteins; (b) diseases such



as pellagra, due to lack of essential amino-acids; (c) diseases due to lack of essential elements—for instance, the endemic goitre due to deficiency of iodides; (d) diseases, such as beri-beri, due to lack of vitamins. Deficiency diseases are probably almost unknown in animals living in natural surroundings, for the process of natural selection ensures that only those types of animals exist that can obtain a satisfactory supply of all their essential food requirements from easily available sources. Deficiency diseases, therefore, chiefly occur in civilized communities, for civilization is an attempt on the part of man to modify his environment, according to his own ideas, and often in defiance of natural forces. The process of urbanization has gone farther in England than in any other community, and this has brought diseases due to vitamin lack into prominence, for a large urban community lives to a considerable extent on food which has been subjected to special treatment to permit of its being transported and stored, and such treatment usually results in the elimination of the vitamins, for they are easily destroyed. Other highly interesting types of deficiency diseases occur, however. The introduction of maize as a staple article of diet in many different regions of the world has been followed in nearly all these regions by the appearance of pellagra; this is believed to be due to the fact that the proteins of maize are deficient in certain amino-acids essential to human nutrition. The inland regions of the United States have been seriously troubled by the appearance of endemic goitre, due to the complete absence of iodides in the soil of these regions; this is a striking example of the unexpected results that may follow the settlement of mankind in a new region. The experience of the past century certainly suggests that fresh advances in civilization may easily entail new experiments in diet which may bring to light new deficiency diseases. The vitamins have been brought into prominence on account of their ready destructibility; if they were not so easily destroyed we probably should not know that they existed. There are probably large numbers of other equally important substances, traces of which are equally essential to life, of which we know nothing because we have not heretofore been so unfortunate as to eliminate them from our diet.

#### THE MICROSPECTROSCOPE FOR THE DETECTION OF BLOOD.

THE value of the microspectroscope in the medico-legal detection of blood was demonstrated by Professor Harvey Littlejohn at a meeting of the Medico-Legal Society on January 16th. The spectroscope was, he said, first used in testing for blood in a criminal case about sixty years ago; it enabled the absorption bands characteristic of the colouring matter in blood to be recognized. With the microspectroscope it was possible to prove the presence of blood by several tests, each corroborating the others. It was sufficient to take only one strand of the cotton, linen, or other fibre which bore the stain, and place it on a moistened microscope slide, when, with the microspectroscope, the two bands of oxyhaemoglobin—one fairly dark, almost at the red end of the spectrum, and the other less definite, nearer the orange—would be seen. Certain dyes, however, gave practically the same spectrum, and therefore this first result had to be corroborated. If a stain was fairly recent, ammonium sulphide might be used as a reducing agent, whereupon the two bands would disappear and their place be taken by one dark band. Having used the ammonium sulphide, a little caustic soda was added, whereupon the spectrum of haemochromogen—the most characteristic of all blood spectra—was elicited. If the small stain, instead of being on a fabric more or less transparent, was on a dark coat, the portion could be soaked in water, and the little hairs with blood particles clinging to them teased out. Having focused one of those hairs under a high power of the microscope, the spectroscope was brought into use, and the sequence of spectra again demonstrated. When the stain was old the

haemoglobin became transformed into methaemoglobin, which had a characteristic spectrum; but here again—following the use of ammonium sulphide and afterwards of caustic soda—possibly the second, and in any case the third in the series of spectra (that of haemochromogen) was obtained. Even from a single haemochromogen crystal the absorption band could be made out. It was possible to carry the test even farther. Having got the spectrum of haemochromogen, the ammonium sulphide and the caustic soda could be soaked out, and sulphuric acid added, giving another spectrum, and a very important one under certain conditions of blood examination, that of acid haematoporphyrin, consisting of one sharp band in the orange and another farther towards the purple. Then, washing the sulphuric acid away and adding caustic soda again, the spectrum of alkali haematoporphyrin was visible. Thus from one speck of blood it was possible to get four or five consecutive spectra, each of them characteristic. Professor Littlejohn added that certain microspectroscopes now produced were perfect instruments, but costly. With a minimum of adaptation, however, it was possible to use a small hand spectroscope; the object having been focused, the spectroscope was attached, making an arrangement capable, if not of the most delicate tests, at all events of some very useful ones. In a brief discussion following the demonstration, Sir William Willcox spoke of the value of the spectroscopic method as a confirmatory test, and Mr. Webster agreed, but thought the chemical test for haemin crystals, provided it was carried out with strong glacial acetic acid, the most important of all. Professor Littlejohn, however, expressed the opinion that the microspectroscope might well supersede all other tests. He regretted that the textbooks gave so little information about the use of the microspectroscope; the current edition of one well known work on medical jurisprudence did not even mention it, and other books gave no details.

#### DR. WALTER ELLIOT, M.P.

THE official announcement was made on January 15th that the Secretary for Scotland has appointed Captain Walter E. Elliot, M.C., M.P., to be Parliamentary Under Secretary for Health for Scotland, in the place of Mr. James Kidd, resigned. Mr. Kidd was one of the six members of the newly formed Government (including Sir Arthur Griffith-Boscawen, Minister of Health) who were defeated at the last General Election. Dr. Elliot graduated in medicine at the University of Glasgow in 1913, and obtained the degree of D.Sc. last year. He served with distinction throughout the war with the rank of Captain R.A.M.C. (Special Reserve); he was wounded in France and won the Military Cross with bar. He has represented the Lanark Division of Lanarkshire since the General Election of 1918, and during the past four years has done admirable work in the House of Commons, serving on many committees and ably representing the medical point of view. Since 1920 he has acted as private secretary to the Scottish Under Secretary for Health; he has been honorary secretary to the Committee of Medical Members of Parliament, and for some time Parliamentary honorary secretary of the Research Defence Society. In virtue of his new appointment Dr. Elliot becomes Vice-President of the Scottish Board of Health—a position of some immediate difficulty owing to the Board's attitude towards certain professional matters, more especially the salaries of public health posts in Scotland. That he will use his influence in the right direction may be predicted from the manner in which he has already handled medical affairs in Parliament and the readiness with which he has always put his help at the disposal of the British Medical Association.

IN response to the second appeal by the officers of the British Medical Association for funds for the relief of starving Russian doctors and their families £267 9s. 6d. has been received. The first appeal produced a total of £1,605. Further subscriptions of 5s., or multiples of 5s., are urgently needed. They should be sent to the Financial Secretary, 429, Strand, London, W.C.2.



## WAR MEMORIAL

TO

MEMBERS OF THE BRITISH MEDICAL ASSOCIATION WHO GAVE THEIR LIVES IN THE WAR,  
1914-1918.

It has already been announced that the Council of the British Medical Association has decided that the memorial to members who gave their lives in the war of 1914-1918 shall take the form of a Book of Honour to be placed in the library, a memorial tablet in the entrance hall, and a small book for issue to relatives describing the Book of Honour.

Mr. F. G. Hallett, Secretary of the Conjoint Examining Board in England, who prepared the illuminated testimonial presented to Sir Clifford Allbutt at the Annual Meeting last year, has generously undertaken, as a labour of love to the profession, to illuminate the roll and superintend the engrossing of the names. He submitted to a meeting of the special committee appointed to make arrangements for the memorial a sketch of the first page or frontispiece of the roll. This bears a very beautifully illuminated dedication, the phrasing of which is reproduced in the accompanying tablet.

The scheme of the illumination was greatly admired and Mr. Hallett was asked to complete it. He also submitted two specimens of a page of the names engrossed; one of these was unanimously preferred, and Mr. Hallett was asked

to arrange that the engrossment should be proceeded with as soon as the list of names could be completed. A list has been prepared which is believed to be complete, but it is of course very possible that some names may have been omitted. The first instalment is printed below, and it is hoped that members will be good enough to look through the list and notify any additions or corrections that should be made, and, in particular, will verify the correctness of the christian names, as in some instances difficulty has been encountered

in ascertaining them. Corrections or additions should be sent as early as possible to Mr. L. Ferris-Scott, Financial Secretary, British Medical Association, 429, Strand, London, W.C.2.

1914

Pro Patria

1918

## BRITISH MEDICAL ASSOCIATION.

ROLL OF HONOUR  
OF THE  
MEMBERS  
WHO GAVE THEIR LIVES FOR THEIR  
KING AND COUNTRY  
IN THE GREAT WAR

At the going down of the sun  
and in the morning we will  
remember them.

## THE ROLL OF HONOUR.

Ackroyd, Harold, V.C.  
Acland, John Henry Dyke  
Aitken, James  
Almond, George Hely-Hutchinson  
Anderson, George Grantham  
Annesley, James Ferguson St. John  
Armstrong, Arthur Keith  
Arthur, David  
Aspinall, William Robert  
Atkinson, Ambrose  
Atkinson, Charles Mason  
Austen, Thomas  
Austin, Elfred Chalmers  
Austin, John Henry Edward  
Ayre, Frederick John

Bailey, Guy Brooke  
Bailey, James Connor Maxwell  
Baker, Cecil Robert Moorshead  
Baldwin, Francis John Augustus  
Ball, Sir Charles Bent  
Ball, Malcolm Edward  
Barker, Arthur Edward James  
Barnes, Raglan Wykeham  
Barr, Hugh  
Batchelor, Ferdinand Campion  
Battersby, John  
Baxter, Alexander Kidd  
Beale-Brown, Thomas Richard  
Bean, Harold Knowles  
Bearblock, Walter James  
Begg, Charles Mackie  
Begg, Henry  
Beitby, Julius Henry  
Bell, Edward Augustine  
Bell, James Alexander Terras  
Bell, John Cunningham  
Benham, Charles Henry  
Benson, Alfred Hugh  
Bharucha, Rustim Hormasji  
Bingham, Frank Miller  
Bingham, John Warnock  
Birley, Hugh Kennedy  
Birrell, William George  
Blair, Edward James  
Blake, Cecil

Bostock, Robert Ashton  
Bower, William Charles Ernest  
Boyd, James Stanley Newton  
Bradley, Frederick Horsted  
Braide, George Frederick William  
Brice, Ernest  
Bridges, Roland Harley  
Brock, George Selby  
Brown, John Ritchie  
Brown, Bernard Score  
Brydon, John Earnsleigh  
Buckley, Llewellyn Alfred Henry  
Bullen, Norman John  
Burden, Clive Britten  
Burgess, James Alexander Stewart  
Burgess, Duncan  
Burnet, Robert  
Burnett, Maurice  
Buxton, Gurney White

Calvert, William Hall  
Campbell, Archibald Thomson  
Campbell, John  
Campbell, Roland Playfair  
Capps, Frederick Albert  
Carter, William Rudolph  
Channing-Pearce, Wilfrid Thomas  
Chaplin, Harold Garrett  
Childs, Letterstedt Frederick  
Chiles-Evans, David Brynmor  
Churchill, Arthur Lindsay Maury  
Clark, Sydney  
Clarke, Gother Robert Carlisle  
Clarke, John  
Cleland, Frank Lee  
Clemens, Frederick William Theodore  
Cocke, Robert Sturgeon  
Cockin, Reginald Percy  
Coghill, Harold Sinclair  
Cohen, Benjamin  
Collie, Mackintosh Alexander Thomas  
Collins, Henry Beale  
Collins, Reginald Thomas  
Compton, William Henry  
Conyngham, Cecil Tylour  
Corley, Anthony Purdon Hagarty  
Cowe, Archibald  
Cowie, Graham Robertson  
Cox, Edmund  
Craig, William Maxwell  
Crocket, John  
Croic, David Clement

Crombie, William Maurice  
Cropper, John  
Cross, John  
Cruckshaw, Malcolm Ogden  
Cummings, William Gordon  
Cuniffe, Ernest Nicholson

Dalby, Herbert Ernest  
D'Alton, Charles  
Daly, Thomas  
Dauber, John Henry  
Davie, James  
Davies, Frederick Charles  
Deane, Edward Wilkinson  
Deans, William Wilkie  
Delamere, Percy Herbert  
Demetriadi, Louis  
Deravin, Arthur Francis  
De Verteuil, Fernand Louis  
Dickson, Robert Cecil  
Donald, Robert  
Drennan, Robert Hugh  
Drury, Francis James  
Dudley, Samuel Robert  
Duggan, Charles William  
Duncan, Sydney Edward  
Dunkerley, Harold  
Dunlop, George Harry Melville  
Dunn, Arthur Gibson  
Dwyer, James Jameson

Eccles, Horace Dorset  
Edsell, George Alfred  
Elhott, John Forster  
Ellis, George Reginald  
Ellison, Samuel Charles  
Engineer, Gustaf Shapurji  
Eve, Sir Frederic Samuel  
Everett, William

Fairley, James Fairbairn  
Fearnside, Edwin Greaves  
Fedarb, Frederick  
Feldt, Thomas Joseph  
Ferguson, Philip  
Fisher, Edward Garlick  
Flashman, James Froude  
Fleming, Charles Christie  
Fletcher, Guy Verney  
Flux, George Belben  
Ford, Arthur Vernon  
Ford, Ernest George

Bonnycastle, Richard Henry  
Booth, Ainslie



Forster, Laura  
Fortune, John  
Fox, Arthur Claude  
Freeman, William Thomas  
Frew, Robert Dunlop Black  
Furness, James Collins

Gabbett, Pulteney Charles  
Gage, John Munro  
Gardner, Alfred Linton  
Garnet, Wade Shenton  
Gaston, James  
Gaunt, Eric Thomas  
Gavin, Neil Murphy  
Gavin, Noel John Hay  
Gem, William  
Geoghegan, Herbert Lyne  
German, Frederick Francis  
German, Hugh Bernard  
Gerrard, Percy Netterville  
Gibb, William Alexander  
Gibbons, Wilfred Ernest  
Giblin, Eric Louis  
Gibson, Benjamin Digby  
Gibson, Harold  
Goodden, Henry Wyndham  
Gorrell, Charles William Farran  
Gough, Bernard Bradley  
Graham, Stuart Millard  
Graham, Walter Ap Samuel James  
Graham, William  
Grandage, William Briggs  
Grant, Alexander William Harvey  
Grier, William  
Griffith, Harry Hunter  
Griffith, Harry Rathbone  
Griffiths, John Neville  
Guthrie, Thomas Errol

Hairsine, Owen  
Hall, Herbert Strange  
Hallaran, William  
Hamilton, Thomas William O'Hara  
Harding, Norman Ernest Jasper  
Harper, James  
Harris, Frederick William Henry Davie  
Harris, Hubert Alfred  
Harris, Joseph Cecil  
Harris, William Trengweath

Harrison, Everard  
Harrison, Frank Cecil  
Harrison, Stanley Sextus Barrymore  
Harrison, William Sandilands  
Harrisson, Damer  
Hartley, Arthur Conning  
Hartnell, Edward Bush  
Harty, James Johnson  
Harvey, Alfred Wallace  
Harvey, Gilbert Aberdeen  
Hawes, Godfrey Charles Browne  
Hawksley, Walter Linney  
Hay, William Stevenson Brown  
Hayward, Milward Cecil  
Heard, Francis George  
Heard, Geoffrey Richard  
Hearne, William Weston  
Hebert, Robert Francis  
Hefferman, Francis Joseph Christopher  
Henderson, Ronald Lennox  
Hensley, Ernest Albert William  
Hepworth, Wilfrid Joseph Harrison  
Heslop, Harold Linton  
Hewetson, Samuel William  
Hewson, Falkiner Melton  
Hick, Pantland  
Hilton, Albert  
Hitchin, George Robert  
Hobbs, Roland Augustus  
Hodson, Thomas George Smith  
Horton, James Henry  
Holmes, Charles James  
Holmes, Mathew  
Hopkins, Francis Gethin  
Horsley, Sir Victor  
Howard, Charles Reginald  
Huddart, Culbert Edmund Arnold  
Hudson, Ernest  
Hughes, Burroughes Maurice  
Hughes, Melville Rulo  
Hunt, Gladstone Montague  
Hunt, Tom Harold  
Hunter, Douglas William  
Hunter, Howard Tomlin  
Hutton, Frederick  
Hutton, W. A.  
Hyde, Patrick George

Iles, Charles Cochrane  
Impey, Elizabeth Stephens

Inglis, Elsie Maud  
Ingram, Thomas Lewis  
Ireland, Richard Alfred

Jack, William Boyd  
Jamieson, Herbert Mather  
Johnson, Frederick Miller  
Johnston, Alexander  
Jones, Henry John Rutherford  
Jones, John Laugdale  
Jones, Kingsmill Williams  
Jones, Raymond  
Jones, Thomas William

Keane, Edward Dawson  
Kellas, Arthur  
Kellie, Kenneth Harrison Alloa  
Kelly, Charles Patrick  
Keogh, John Ambrose  
Ker, Malcolm Albert  
Kerr, Eric John  
Kilborn, Rowland K.  
Kimbrell, Henry John Sullings  
Kirkland, Hugh Edward  
Kirkland, William Duncan  
Knaggs, Francis Henry

Lambert, Ernest Charles  
Lambert, Francis Courtenay  
Latham, Thomas Jones  
Lawrence, Henry Ruthven  
Lawrie, Edward  
Leckie, Malcolm  
Leigh, Benjamin Hilton  
Leon, John Temple  
Levick, Percy  
Lewis, Sybil Lonie  
Lewitt, Benjamin  
Linnell, Robert McCheyne  
Linzell, Stanley James  
Lister, Arthur Hugh  
Lister, C. R.  
Lobb, Francis Frederick  
Logan, Alfred Thomas  
Lodge, Alexander Graham Speirs  
Low, Alexander Petrie  
Loy, Martin William  
Lukis, Sir Charles Pardey  
Lukyn-Williams, Herbert Temple  
Luther, Guy Fitzmaurice John

## New South Wales.

### A PRACTITIONER DE-REGISTERED.

A MEDICAL practitioner who had held the appointments of physician to out-patients at the Royal Alexandra Hospital for Children and physician to the Tuberculosis Dispensary, and who had practised in Sydney as a physician for several years, was recently charged before the Medical Board of New South Wales. The charge was that he had made use of his official positions to induce the parents and guardians of the patients to place them under his care as private patients, on the ground that they were suffering from tuberculosis, and that they required special treatment with tuberculin injections, a course of treatment which, he said, they could not obtain at the public hospital. The case was heard before the Board sitting as an open court in accordance with the terms of the Medical Act. The Crown and the defendant were both represented by counsel, and the hearing lasted nine days. The Board subsequently held meetings *in camera*, and it was announced that the charge was held to have been proved, and the name of the practitioner was erased from the Medical Register. The case created a great amount of public interest as the charge had been made in the first instance in the columns of a weekly newspaper.

### ROYAL PRINCE ALFRED HOSPITAL.

The annual report of this institution shows that the past year has been notable for the large amount of work done; in every respect this exceeded the total amount reported for the previous years. The Parliamentary Public Works Committee has recommended the erection of a new veneer block in the lower part of the hospital grounds, at an estimated cost of £36,000. From the statement of receipts and expenditure it appeared that the deficiency (£4,854) was almost exactly the same as in the preceding year; the Board had been able to keep down the expenditure in all directions except in the wages bill, which had increased. The total receipts from donations, subscriptions, and from the auxiliary amounted to £12,660, as compared with £14,192 in the pre-

ceding year. Patients' contributions, however, had risen by £3,000, and the income received from the Government had increased from £50,920 to £52,200.

Mr. Oakes, the Minister of Health, said that in his opinion the present system of government, management, and control of public hospitals would have to be considerably altered in the future. The Government were doing something to assist this institution to carry its financial burden, but he hoped in the near future to ask Parliament for £500,000 to put the hospitals of the State, including the Royal Prince Alfred, on a better footing.

### PUBLIC HEALTH.

At a meeting of the Health Society, Dr. Harvey Sutton, Chief Medical Officer to the Department of Education, spoke of the lack of interest in the cause of the public health. Great Britain, in spite of the huge war debt, had increased the health vote sixfold, but in Australia practically the same amount was allotted as before the war. To preserve health was far more important than to cure disease, and to do this, education, co-operation, and economy were requisite. Efforts were being made in the public schools to teach children hygiene and physical culture. Dr. Sutton also referred to the fact which had been proved by statistics that 10 per cent. of the children of the State died before they reached the age of 5 years. Some means must be taken to prevent this waste of life. At present Australia was far behind Great Britain so far as health legislation was concerned—"in fact we were among the most backward people of the Empire."

### UNIVERSITY OF SYDNEY MEDICAL SOCIETY.

On October 18th a luncheon was held in the Union Hall, under the auspices of the Medical Society, in honour of the several retiring teachers who had been members of the honorary medical staffs of the Royal Prince Alfred and the Sydney Hospitals. The retiring teachers were Dr. F. Antill Pockley, Dr. G. E. Rennie, Dr. Hamilton Marshall, Dr. F. Hall, and Dr. Maguire. The toast of "Our Guests" was proposed by Dr. B. T. Edye, and Dr. Pockley replied. In the course of his speech he referred to his early days as a



student at Edinburgh, and remarked that he considered that the medical course was then, on account of the shorter period allowed for graduation, more arduous than the course in Sydney to day. Dr. Pockley bade farewell with the remark that he regretted that the Senate should insist upon the enforcement of retirement at the age of sixty. He considered that many a medical man might be of the greatest value as a teacher at this stage of his life.

#### CONTROL OF MATERNITY NURSES.

In the annual report of the Director-General of Public Health for the year ending June 30th last reference is made to the control of private hospitals, and the desirability of providing for the compulsory notification of puerperal fever is urged. It is stated that the average number of mothers dying annually from causes connected with childbirth is high in Australia as compared with other countries, and that in comparison with the other States of the Commonwealth New South Wales held an unfavourable position. This state of affairs is attributed to the fact that in this State there is no control over practitioners of midwifery: that any woman, however ignorant or untrained, may take up the work of a midwife, assume the title of "nurse," and incur no legal penalty. The report further states that in all probability outside the registered private hospitals very few of the maternity nurses practising in the country districts have had sufficient training to do justice to the heavy responsibilities they assume, and that even in the metropolis there are far too many untrained maternity nurses in practice.

#### LUNACY LEGISLATION.

In response to a public demand for some inquiry into the present lunacy laws of New South Wales, and the administration of them, a select committee was appointed by the Legislative Council to make inquiries. The first witness examined was Dr. Eric Sinclair, the Inspector-General of the Insane, who was asked to describe the present method of admitting and discharging patients and the methods of treatment; what defects there might be in the foregoing methods; and what improvements he could suggest in regard to existing conditions and accommodation. Dr. Sinclair stated that the method of admission adopted here was practically that in force in all English speaking countries; reactionary methods had been suggested, but the movement of modern thought had been in the direction of making admission to mental hospitals easier, rather than more difficult, so that the mental institution should be used for curative treatment rather than merely for detention only. In reply to a suggestion that there was in the public mind a suspicion that a person might be detained in a mental hospital as a result of collusion on the part of relations or others, Dr. Sinclair stated that there was no place in the mental hospitals for a person whose mind was not affected, that the relations of a patient could at any time obtain permission for a re-examination, and that the friends of a patient might petition a judge of the supreme court for a re-examination. The committee then adjourned, and it was subsequently stated that the Chief Secretary had decided to convert the present select committee into a Royal Commission. The actual composition of the Commission has not yet been decided upon, but there are to be representatives from both Houses of Parliament on it. The chairman has not yet been appointed.

## Ireland.

#### MEDICAL APPOINTMENTS IN ULSTER.

At a meeting of the Ulster Medical Society on January 4th Dr. John Campbell, M.P., read the report of a committee, appointed by the Society on December 15th, 1922, which had agreed to submit the following resolutions, to be laid before the Ministries of Home Affairs and of Finance of Northern Ireland:

1. That the two medical inspectors under the Ministry of Home Affairs should have salaries of £800 per annum, rising to £1,000.
2. That the Registrar-General should be a member of the medical profession, so that the notification of infectious diseases, the statistics of infantile mortality, the morbidity rates in disease, and the influence of occupation and environment upon the nature and incidence of disease, should receive the attention which only a medical man could properly give.

3. That salaries which were being paid to the medical officers in some of the unions in Northern Ireland were still very low, and the Ministry of Home Affairs should be requested to place the salaries of the medical officers in the various unions throughout Northern Ireland on a more uniform and equitable basis.
4. That the actual work of school inspection should be carried out only by full-time medical officers.

The committee recommended that a permanent Medico-Political Committee should consist of: (1) the Council of the Ulster Medical Society; (2) the Council of the Ulster Branch of the British Medical Association; (3) two members from each local medical committee in the six counties of Northern Ireland; (4) one member from the medical faculty of Queen's University, Belfast; (5) one representative from each Branch of the Irish Medical Association in the six counties.

## India.

#### LEPROSY IN INDIA.

The notable advances in the treatment of leprosy have given a great impulse to the campaign against that disease in India. An amendment to the Lepers Act now empowers the provincial governments compulsorily to segregate pauper lepers within their borders. Segregation, however, is hardly practicable, if it be true that the total leper population of India may be estimated, as the *Pioneer Mail* asserts, at from half a million to a million. A much more conservative estimate, that of the Census of 1911, puts the number of lepers in the Indian Empire at 109,094, but the officers of the Mission to Lepers consider this to be under the real number, which, in their opinion, is at least 150,000. In Madras, Bombay, and Bengal schemes for the provision of leper settlements are being considered by the provincial governments, while the governments of the Punjab and the Central Provinces are taking more definite action. Over 6,000 lepers are in the institutions controlled or aided by the Mission to Lepers, and another 2,000 are helped by the Mission in other ways. In Behar and Orissa, for instance, there are eight leper asylums in which there were, last year, 1,967 resident patients; the asylums are supported partly by the Government, partly by local authorities, and partly by the Mission to Lepers. The number of lepers in institutions is increasing, but this is considered to be due to the fact that lepers are now going to them more willingly for treatment.

#### CHEMICAL EXAMINATIONS IN THE PUNJAB.

Lieut.-Colonel J. A. Black, I.M.S., has written a pamphlet dealing in an interesting way with the work of the chemical examination department in the Punjab.<sup>1</sup> In contrast with Bengal, Bombay, and Burma, where the greater part of the chemical examiners' work is done on behalf of the Customs and Excise Departments, in the Punjab medico-legal investigations have always formed by far the larger proportion. In criminal proceedings the position of the chemical examiner is peculiar, for in the great majority of cases he is unable to attend personally (owing to the great distances), and his written evidence, upon which he cannot be cross-examined by the defence, must be accepted. He is compelled, therefore, to adhere strictly to a categorical statement of the results of his analysis, without expressing any opinion, and, as a result, any conflict of medical evidence is avoided. Lieut.-Colonel Black says that, while the incidence of crime, and particularly of poisoning, is far greater in India than in England, the general belief that poison in the East is a highly subtle art in which secret poisons defying detection are employed is without foundation. The would-be poisoner in India has recourse to the crude drugs obtainable from the bazaars or to the poisons growing at his door, poisons well known and used from time immemorial. Nor is any subtlety shown in the amount of poison administered, the work of the analyst being simplified by the fact that the amount usually given is far in excess of that necessary for the poisoner's purpose. In addition to the medico-legal side of his work, the chemical examiner analyses water and foodstuffs for local authorities and government departments, medicines and drugs for civil surgeons and others, and performs miscellaneous examinations of various kinds. The new Government laboratory at Lahore, where this work is

<sup>1</sup> *The Work of the Chemical Examiner's Department in the Punjab*. By J. A. Black, Lieut.-Colonel I.M.S. Lahore: Civil and Military Gazette Press. 1922.



carried out, was recently built and equipped at a cost of about one and a half lakhs of rupees, and is stated to be one of the finest laboratories in India.

#### EDUCATION FOR MEDICAL WOMEN IN INDIA.

It has been decided to establish separate institutions for the training of women medical practitioners in India, and accordingly it is proposed to rent suitable premises opposite the Gosha Hospital, Madras, for the establishment of a women's medical school in that city. The Government has been asked by the Minister of Education to grant an additional sum of Rs. 58,500 for this purpose. At the same time the Minister made the statement that, in 1920, the total number of qualified women medical practitioners in India was only 135 for a female population of more than 21 millions. It is hoped to have the new school ready for occupation July 1st.

## Correspondence.

#### NEW REGULATIONS FOR THE D.P.H.

SIR,—There are certain considerations arising from the new regulations of the General Medical Council for the D.P.H. which seem hardly to have been thoroughly understood by those who are chiefly affected, and which appear to me to deserve discussion.

The Council's new rules will apply after January 1st, 1924. They require that not less than two years shall elapse after obtaining a registrable qualification before admission to the final examination for a Public Health Diploma. The curriculum for the D.P.H. shall extend over not less than twelve calendar months. Six months' practical training under a medical officer of health is an important feature of the new scheme, and the time cannot be reduced by attendance at lectures or by a resident appointment at a fever hospital, as at present. The instruction is to include maternity and child welfare, venereal disease and tuberculosis, food, meat, and milk inspection, etc., all of them more particularly from the administrative standpoint. The examination will consist of two parts, Part 1 covering bacteriology, parasitology, chemistry, physics, meteorology, and climatology; Part 2 includes hygiene and sanitation, epidemiology and infectious diseases, sanitary laws and vital statistics, and public health administration.

At present a candidate may, if he satisfies the necessary tests, obtain a Diploma in Public Health within nine months of his name appearing on the *Medical Register*. It is proposed by the new regulations that this be no longer possible and that at least two years must elapse between the two events. It is obvious, however, that a candidate must give up his whole time to the new D.P.H. . . . twelve months is the minimum for the actual curriculum it will be by no means the maximum period for this.

It appears to me from reading the new regulations that any medical man who is ever in future to obtain a qualification in public health must obtain it in the period immediately succeeding his qualifying in medicine; in other words, he must make up his mind while still a medical student that he intends to make his career in public health. No longer will the general practitioner be able to work for his D.P.H. while actually engaged in general practice, as is often done nowadays by those within reach of the necessary facilities. What is to be the result? Is the part-time medical officer of health, who does such valuable public work in the small towns and rural districts, to be encouraged to hold his appointment without any special public health qualification? Or is he to be abolished and his duties merged in those of the full-time assistant medical officers of health for the county in which his area is situated?

At the present time there are in Great Britain rather under 1,000 full-time medical officers of health (and assistant medical officers of health), while there are over 1,200 general practitioners who hold part-time appointments as public health officers. Detailed statistics for the whole country are not available at the moment, but the following details for Wales for 1921-22 are interesting upon this point, and show the present tendency:

Of the thirteen county medical officers of health (each of whom possesses the Diploma in Public Health) twelve are also school medical officers. Only one officer gives his whole time solely to the duties of county medical officer of health. The remaining twelve are also full-time officers, but in addition to

school medical work they act in other capacities—for example, as medical officers for maternity and child welfare, for venereal diseases work, or under the Mental Deficiency Act, 1913.

In the county boroughs, municipal boroughs, urban and rural districts, 141 officers (21 of whom devote the whole of their time to the office of medical officer of health, or to that office and other duties of a similar nature) were in office at March 31st, 1922, 120 being also in private practice. Twenty-nine of these officers performed the duties of medical officer of health for more than one sanitary district. Each of three rural districts has two part-time medical officers of health. Thirty-three of these 141 medical officers of health possess a Diploma in Public Health in addition to the other statutory qualifications.

During the year there were two instances in which full-time service was substituted for part-time service.

My suggested remedy is that there should be two distinct grades of special qualifications in public health: one that should be held, as a rule, by the general practitioner who wishes to hold a part-time appointment (on the lines of the present D.P.H. regulations), and another, on a higher standard, which should approximate, not to the 1924 regulations for the D.P.H. of the General Medical Council, but to an even higher standard—similar to that of the B.Sc. in Public Health which is granted by certain universities. At Edinburgh University, merely to take an example, candidates for the degree of B.Sc. in Public Health cannot sit for the second (final) examination sooner than eighteen months after having taken their degree in medicine, nor sooner than six months after having passed the first examination for B.Sc. (public health). The curriculum necessary to take this degree ensures that a candidate must give up practically his whole time during eighteen months to working for the degree of B.Sc. in Public Health. For the present Diploma in Public Health of Edinburgh, on the other hand, the course of study extends over nine months; the curriculum is a comparatively full one, but it is certainly not necessary that a candidate should give up his whole time to the work, and it has frequently been obtained by general practitioners.

From the national point of view it appears to me better by far that the general practitioner should be encouraged to take an extra qualification in such a direction as public health, and hold the part-time post of M.O.H. in suitable localities, than that the public health should become more and more an affair of purely bureaucratic control.—I am, etc.,

Willesden, Jan. 11th.

W. PATERSON, M.B., Ch.B.

#### HOSPITAL POLICY.

SIR,—The question of the payment of the staffs of voluntary hospitals has been under discussion since December, 1920, and the formation of staff funds has been the approved policy of the Association since the Annual Meeting of 1921. It is not unreasonable therefore to suppose that in those areas in which the hospital staffs are really anxious to be paid some steps will have been taken to establish staff funds. At the Annual Meeting of 1922 the following resolution was carried unanimously:

"That when the Report on Hospital Policy comes before the Divisions for further consideration, statistics should be supplied showing the number of hospitals in which a staff fund has been established."

I would appeal to the Divisions and Branches of the Association to withhold their final decision on the question of payment of hospital staffs until they are in possession of this information. With all the available facts before them they will then have to decide whether it is possible or even desirable at the present time for the Association to legislate comprehensively on the subject.

If it is considered necessary to legislate for every kind of hospital patient it is to be hoped that the amendment of Paragraph 32 proposed by the Council (SUPPLEMENT, November 18th, 1922) is not the last word of the Association on the subject; the further amendment proposed by Dr. Rowland Fothergill in his letter published December 30th deserves careful consideration. The proposal to establish "token" payments is open to three serious objections—namely, (1) The average layman cannot understand the peculiar psychology of an "honorary" staff which demands "token" payments. (2) There are many honorary members of hospital staffs who have not the least intention of attempting to establish any such system, be the "hospital policy" what it may. (3) In the event of the State obtaining control of hospitals at some future date "token payments" would be a far worse handicap to the profession in the struggle for adequate remuneration than were the old "club fees" in the Insurance Act fight.



It is conceivable that Paragraph 33 of the existing hospital policy (BRITISH MEDICAL JOURNAL, SUPPLEMENT, October 7th, 1922) really meets all present requirements, and the much amended Paragraph 32 might safely be "scrapped." The Association would then be in possession of a policy capable of expansion in the light of future experience, and having the advantage at the moment of being comprehensible to the average layman and acceptable to the whole profession.—I am, etc.,

Bury St. Edmund's, Jan. 14th.

BERNARD E. A. BATT.

SIR,—For centuries mathematicians carried on an active controversy in the endeavour to solve the problem of squaring the circle; we bid fair to do the same in the attempt to find a formula that will allow hospital staffs to receive payment for their work and retain the title of honorary. In the narrowest meaning of the term it is probably not possible to find a solution, but payment in one form or another, generally under the name of an honorarium, has long been allowed—in many instances it has been an actual legal payment, certainly not intended to be a full discharge of the hospital debt, merely an acknowledgement, and it is generally agreed that, so long as a staff provide gratuitous advice and treatment for any fraction of their patients, so long may they, to use Dr. Hawthorne's words, "retain their honorary status"; so far, the proposal of the Hospitals Committee is a rational, if not a strictly logical, solution. The Committee's distinction between the classes from whose payments contribution to the staff fund is and is not to be asked is definite: on the one hand are those who directly or indirectly make some payment for services received, on the other those who neither directly nor indirectly make any contribution to the hospital's funds.

If we depart from this definition and attempt to separate those who in any way contribute, we can only do so by drawing quite an arbitrary line. Why should those who contribute anything from one shilling to twenty be exempt, but not those who pay a shilling more than the twenty (I am taking twenty as an average sum for maintenance)? and if the latter are to be assessed, is it to be only the amount in excess of that required for maintenance or the whole sum that is to be drawn on for the staff funds?

There is fairly general agreement that a percentage of the funds derived from a contributory scheme should be paid to the staff fund, but these schemes are largely made up of quite small individual payments. What does it matter whether the individual pays directly to the hospital or indirectly through such a scheme?

The multiplication of classes of patients is becoming such that bookkeeping would be practically impossible; the proposal to divide into two classes—those who pay something and those who pay nothing—is so much simpler as well as more logical that I hope the policy of the Committee will be maintained. Opposition to any innovation there must be, but the more logical and definite the proposal the easier it is to defend and to get accepted.—I am, etc.,

Bradford-on-Avon, Jan. 14th.

CHAS. E. S. FLEMING.

SIR,—I welcome the return of Dr. Hawthorne to this controversy, and prefer his resolution to Dr. Fothergill's, though I would accept either. It must now be obvious that the policy of the Council, which grew steadily more unpopular the better it was understood, has not been improved by mere application of a specious title to a fund the amount of which was no more determined before than it is now. An offering that is tainted at the source is not less repugnant because it is also mean. The plain fact is that the conception of an "honorary" staff whose services shall be unpaid only to those from whom it is found impossible to squeeze a penny, and who would levy toll on money contributed for the bare necessities of life, does not attract. In our private practice we do not do these things, and we desire no lower standard of ethics in our hospital work. Since it is inconceivable that proposals which their own promoters are still, after two years, ashamed to present to their own boards will be approved once this fact is realized, and despite repeated challenges it has not been denied, I will now endeavour to meet the objections which have been from time to time raised to that policy I would promote.

There are places, such as Leicester, where well paid workmen exploit the hospital, refuse almoners, and have paid

representatives on the board. Here the staff are entirely justified in assuming that such beneficiaries, even if they do not otherwise come into the "tariff" group, can pay more than about 30s. weekly, and therefore should be assessed in this class under our scheme. The full Leicester policy would, therefore, still survive in such places, and only there. In other towns, for example Bristol, doubts are entertained about the financial position of young consultants on the staff. Here if the "staff fund" under our scheme should prove inadequate, which has not yet been demonstrated, two courses are open—either to increase the staff, so as to allow more leisure to each for private practice, or to straightforwardly approach the board, state the position, and leave it to those whose business it is to control finance to raise the necessary funds. On the other hand, in a very large number of provincial and all cottage hospitals the juniors on the staff, being in general practice, not only require no such additional emolument, but mostly decline absolutely to beg money from the source suggested by the Council. Again there are hospitals largely supported by workmen's contributions. In these it will, I believe, be almost always the case that there is some definite financial arrangement between contributors and the board. Under my scheme such beneficiaries are assessed, and therefore the policy of the Council presents no advantage. As for manipulation of contributions, although approved societies have been paying for hospital in-patients for two years, and although the sum now allotted by them for such purpose amounts to £175,000 annually, no example of such manipulation can be produced by the Council, the solitary alleged instance being clearly one either of neglect at the hospital or of concealment by the patient. Even such occasional accident might be prevented by more care at the hospital, and an agreement with societies. Not only is there no foundation for the contention of the Council, but the Voluntary Hospital Commission has quite recently sent round a circular complaining that hospitals, even now, are neglecting to avail themselves of the fund freely and unconditionally offered by these societies.

I think I have dealt now with all objections, and commend to the earnest attention of all who would preserve our voluntary system and avoid a disastrous conflict with the laity the resolution of Dr. Hawthorne or of Dr. Fothergill, supplemented by my own amendments to Section VI, Paragraph 19, in confidence that these or others similar will be passed by a sufficient majority at the Annual Meeting at Portsmouth, and the unity of our profession be preserved.—I am, etc.,

Chichester, Jan. 13th.

G. C. GARRATT.

#### WOMEN DOCTORS.

SIR,—Such is the headline of a recent review in the JOURNAL, written by you probably with some distaste, in defect of an alternative; for it is not an elegant title. But the vulgar "Lady Doctor" is still worse, even intolerable. Some while ago I read in another journal a proposal that medical women should follow princesses, countesses, abbesses, actresses and conductresses, and call themselves, as with our allies the Italians, doctresses. Why not? Why make a single and inconvenient exception to a general rule? Signora Montessori has the becoming title of "Doctressa." The difficulty does not arise in France and Germany because of the general affix of Madame, or Frau.

The present indifference of title gives rise to confusion as well as to inelegance. A certain committee had gone far towards the election of a young woman—a "Dr. Wilson," let us say—as house-surgeon in a hospital where the resident staff occupied adjoining bedrooms. And often one finds oneself Dear Sirring a feminine correspondent. For women, unlike men, rarely write a Christian name in full—as, for instance, John P. Robinson—but are content with initials. We used to hear, by the way, of Dr. Euphemia Jones and Dr. Vanessa Smith, but this aid has now disappeared. Indeed some Christian names are indeterminate of sex. Perhaps while the doctorate is a new toy our feminine colleagues are not indisposed to a little camouflage, and to masquerade in names as in cigarettes. But as the novelty of "Doctor" wears off will it not be possible to follow the duchesses, and, instead of "Lady Doctor" or its like, to adopt the prettier name of Doctress?—I am, etc.,

January 11th.

GRAMMATISTA.



## TESTICULAR GRAFTS.

SIR,—In the autumn of last year I read that Docteur Voronoff had been refused a hearing at a Parisian Medical Society on the ground (which was false) that he had already communicated the substance of his paper to the lay press. Several weeks later I heard that the Surgical Section of the Royal Society of Medicine had negatived the proposal that Docteur Voronoff should be invited to come over to England and explain his theories and practice. I therefore determined to go to Paris and investigate matters for myself, saying that there must surely be something of unusual value in the work of a man who was thus being held in the background. I thought of Harvey and Lister. So, just before Christmas, I went. I was fortunate, for on the morrow of my arrival Docteur Voronoff operated on a human patient, into whose tunica vaginalis he anchored portions of the testicle of a chimpanzee, and on the following day he was sufficiently at liberty to spend a considerable time in showing me over his laboratory, explaining his experimental work and displaying his results.

To begin with, a word about the man. Sergius Voronoff, like Metchnikoff, is a Parisianized Russian. He is between 40 and 50 years of age, tall, lean, dark, with the gentle manners of his race. His wife, who recently died, was an American lady with a very large fortune. He holds the position of Director of Experimental Surgery at the Collège de France, a high-browed institution whose officials, being pure scientists, are not allowed to practise for profit. It is thus obvious that the main charge levelled against him—namely, that he is a species of charlatan who is out to exploit the dead or dying sexuality of the senile—is as baseless as it is base. His work is not only unremunerative, it is very costly, and the whole cost of this work is defrayed out of his own pocket.

Many years ago Leland put forward the theory that senescence was due to the dwindling activities of the thyroid gland. Experiments performed on animals convinced Voronoff that, although there was some truth in this view, it represented less than the whole truth. He therefore turned his attention to the only other endocrine which was as accessible as the thyroid to experimental research—namely, the male gonad. By a series of experiments on animals he showed that senescence can be delayed and senility rejuvenated by grafting young testicles into old animals. He also showed that a male animal castrated before maturity, which consequently failed to develop the secondary male characteristics, could be made to develop these characteristics by testicular grafting. Moreover, it became evident that such animals rapidly acquired the power of copulation, though not, of course, of reproduction. Into one normal young male goat he grafted an additional testicle, a third, with surprising results. The animal's horns grew to twice the length of the normal; so did its hair, especially its beard. It rapidly gave evidence of being grossly oversexed and became so combative and *méchant* that it had to be killed. The head and skin have been preserved, to convince the incredulous. Having thus satisfied himself by over 150 experiments of the potency of the gonadal hormone in rejuvenating old animals, Voronoff decided to turn his attention to human beings, in order to see whether in them the hormone acted in the same

way as it did in the lower animals. Into this part of the story I do not at present propose to enter. It is a fascinating story which ought to be, indeed must be, and shall be, told by Voronoff himself. There are, however, two points in connection therewith which may suitably be emphasized here. The one is that the only animals possessing a gonad which is up to the mark of being grafted into human beings are the anthropoid. Or is he to be preferably the chimpanzee. Chimpanzees are expensive, full-time assistants, from £100 to £150, and in all, which his area is situated. Voronoff the expense. At the present time there are a number of full-time medical officers (officers of health), while the tions who hold the officers. Def. available for 1921. operated upon by the cost of the human invalid Voronoff. storing the more sexual capacity. of which he points with the greatest sa. an author, prematurely senile, to fashion among certain ignorant people in all of the French as though they see only sexual element in any and every subject. The above has been to do something the and insular attitude, and to bring the really fine work of a wholly dis-

interested scientist who has conscientiously and generously laboured to increase our knowledge in a department of medicine which is of enormous and ever-growing importance. —I am, etc.,

London, W., Jan. 15th.

LEONARD WILLIAMS, M.D.

A review of a monograph by Dr. Voronoff, giving a detailed account of his theories and methods, was published in the BRITISH MEDICAL JOURNAL of October 21st, 1922 (p. 763).

## OPERATIVE TREATMENT OF FRACTURES.

SIR,—While quite appreciating several of Mr. Charles Firth's points in his interesting letter in your issue of January 6th (p. 43), I would like to say that I purposely made very slight reference to *plating*, or to the details of the *plating* procedure. Nor did I discuss the many different views as to the most suitable type of plates and screws. Probably enough has been written already on that subject. Laue's work, of course, still stands—as I think—unchallenged.

I did emphasize, however, the unsuitability of ordinary silver wire for the usual wiring procedures, and recorded in my paper how we had been led to seek for a material which would justify a larger application of the procedure of wiring. This material we found in the brass wire I referred to, and I can only repeat here what I said in my paper—namely, that we have found it reliable, capable of standing any of the ordinary strains, and pliable to work with. We do not find that it is acted on by the tissues to an extent that can matter.

*Per contra*, I think I may doubt the statement of Mr. Firth that the iron wire he suggests is "not acted on by any of the tissues." We have found steel pins much eaten away even in the space of a very few weeks. Iron must surely oxidize in the tissues.

In any case, the matter can be submitted very easily, and very simply, to the test, either of ordinary experience or of experimental investigation. I am quite open to try some of the wire Mr. Firth suggests if he will be good enough to send me some or to indicate where it may be procured. I beg to thank him for his interesting note.—I am, etc.,

Glasgow, Jan. 10th.

ARCHIBALD YOUNG.

## "ANGELS AND MINISTERS."

SIR,—I welcome the companionship of your leader if it be only for some of the way. We shall have a friendly journey up to this statement: "But entry into the House of Commons turns so largely upon the play of party politics, and the changes and chances of political life are so great, that when a Government has to be formed, a medical statesman of the first magnitude may not be at hand. Such a man may be amongst us to-day; yet when he went out of office it might be said with truth: 'Here was a Caesar! when comes such another?'" But unless the cheerful vigour so generously attributed to me can succeed in dissipating such fears and in making it plain that men of the medical profession are not less versatile than men in other professions, we part company at this "conclusion of the whole matter"—namely, at the doubt expressed whether the medical profession would be able to produce a continuity of medical statesmen of the first magnitude. My answer is that it can, otherwise our great profession is unworthy of its high calling and is in a parlous state indeed.

In casting doubts upon this crucial point your leader is leading the members of the Association and the general public to understand that the medical profession is so limited in resource that it cannot produce men capable of administering affairs which, under proper revision, would be essentially within its own province. Such an admission appears to me to be hopeless, derogatory, and entirely untrue, and never before has the intelligence of a responsible body of men been so grievously assaulted.

Why should your leading article fear that men taken from our own profession should fail, and yet give everyone the impression that no such anxiety is felt about the capability of men taken from other professions? Instead of fighting a fallacy this is to foster one that has prevailed too long.

Does your article desire to attribute to Sir Alfred Mond and Sir Arthur Griffith-Boscawen imperial powers of administrative intelligence denied to medical men? The article concludes with a quotation about Caesar; I will conclude with another which may be as apt and gives expression to my point: "Render unto Caesar the things that are Caesar's." —I am, etc.,

London, W., Jan. 15th.

G. LENTHAL CHEATLE.



## VITAMIN CONTENT OF CERTAIN PROPRIETARY PREPARATIONS.

SIR.—The article in your issue of January 6th on the vitamin content of certain proprietary preparations is so apt to produce a misleading impression in the minds of medical men who prescribe virol for their patients that I trust you will allow me space for a brief reply thereto.

The gist of the paper lies in the demonstration that "in none of the cases examined have the manufacturers succeeded in concentrating vitamins on a commercial scale."

As regards virol, nothing of the sort has been attempted and no such claim has ever been made. Vitamins are but one of the factors in diet; the equally important criteria of balance and digestibility have been considered in its composition.

The value of virol in regard to vitamins lies in the fact that it supplies them in a form suitable for infants and invalids, for whom a diet of "milk, butter, green vegetables, and fruit" would hardly be suitable. As regards milk, it will be noted that the addition of the daily adult dose of virol enables the quantity of the milk (where this is the only food) to be diminished by 17 ounces. This is of value in the numerous cases where it is desirable or essential to reduce the bulk of the fluid intake as far as possible, and constitutes a strong argument for its employment under these conditions.

Comparison is also made with cod-liver oil. It has never been contended that virol consists solely of vitamin-containing fat, and it is thought better to supply a smaller but still adequate proportion of vitamin A in a palatable and digestible form; the formula of virol has received clinical endorsement by the fact that it is used in more than 3,000 hospital and infant clinics. From the vitamin A content in the table the cod-liver oil used was presumably the crude oil, which, though doubtless palatable to a rat, would certainly be rejected by many children and invalids. If, however, it be replaced by some of the "refined" or tasteless substitutes, the prescriber is entirely ignorant of the vitamin content thereof. It is common knowledge, for instance, that "cod-liver oil" is often adulterated with cotton-seed oil, which contains no vitamin A whatever. Moreover, many patients are unable to digest cod-liver oil in any form whatever. In virol, on the other hand, the vitamin-containing fat is presented in a palatable and digestible form.

While welcoming the independent confirmation of the presence of vitamins A and B, we are anxious that it should not appear that we have claimed to supply these in a concentrated form. Virol is a food for use in certain conditions where ordinary diet is inapplicable, and is in no sense a drug.—I am, etc.,

London, W., Jan. 8th.

ARTHUR E. CANNEY,  
Managing Director, Virol Limited.

## Obituary.

ELLIS T. DAVIES, M.D., F.R.C.S. EDIN.,  
Liverpool.

We regret to announce the death of Dr. Ellis Thomas Davies, which took place at his residence in Liverpool on January 5th. During the past six years he had been suffering from bronchitis and emphysema, which restricted his medical work to a great extent, although he still saw many of his old patients down to a period shortly before his death. He was born at Caerwys, in Flintshire, in 1856, and after a sound general education became a student at Edinburgh. He graduated M.B., C.M. in 1877, and M.D. in 1884, and in 1894 he became by examination F.R.C.S. Edin., having previously, in 1893, obtained the diplomas of M.R.C.S., L.R.C.P. Settling down into private practice, he devoted special attention to obstetrics and gynaecology, and was attached to the Ladies' Lying-in Charity, the Liverpool Hospital for Women, and to the Samaritan Hospital for Women, where he held the post of honorary surgeon for some years. He was an active member of the North of England Obstetric and Gynaecological Society, and held the post of vice-president. Dr. Davies published many papers in the *Liverpool Medico-Chirurgical Journal* on diseases of women. These were without exception excellent records of a keen clinician and skilful surgeon.

Dr. Davies was for many years an active member of the Executive Committee of the Lancashire and Cheshire Branch of the British Medical Association; he had held the offices of vice-president of the Branch and chairman of the Liverpool

(Northern) Division. As a member of the Medical Institution he rarely missed its meetings and frequently spoke on subjects of gynaecological interest. A fearless critic, Dr. Davies did not hesitate to express his opinion on modern surgical methods, and on the results of the surgical treatment of cancer. He took much interest in the public life of the city and for some years occupied a seat on the board of the West Derby Guardians. In this capacity he brought to bear his vigorous criticism upon the needs of the sick poor. Dr. Davies was a man of vigorous action and earned the esteem of all those with whom he was brought into contact. He was a kind man, and many good actions he performed by stealth; the soul of honour, devoid of intrigue, he endeared himself to his patients and professional brethren, and his death has come as a sore blow to all his friends. When in committee meetings he may have failed to carry conviction, no rancour was left behind. The funeral took place on January 8th, and many personal friends and representatives of the institutions with which he was associated were present to honour his memory. He was unmarried, and leaves behind a brother, Dr. J. Twiston Davies, who is in practice in Wallasey.

Dr. WILLIAM CARMICHAEL STEEN died at Letchworth, Herts, on January 4th, in his 60th year. He was the eldest son of the late Dr. Robert Steen of the Royal Belfast Academical Institution. He graduated M.D. and M.Ch., R.U.I., in 1886, and practised at Orston Ferry, Lincolnshire, and at Belfast. For many years he was laid aside from active work by spinal caries. He bore his long illness with exemplary patience and cheerfulness under such suffering as would have disheartened a less brave man. Among his many occupations must be included the work that he did for the Braille Library for the blind. He not only mastered the difficulties of Braille and transcribed books by this method but was a recognized instructor in the subject. Dr. Steen was a member of the British Medical Association and was keenly interested to the last in the advances of medical science. He married in 1900 Margaret, youngest daughter of the late William Eaden Lilley of Cambridge, who survives him.

Dr. JOHANNES ORTH, Professor of Pathological Anatomy in the University of Berlin, died on January 13th. He was born in 1847, and was assistant first to Rindfleisch in Bonn, and afterwards to Virchow in Berlin. In 1878 he became professor of pathology at Göttingen, and succeeded Virchow at Berlin in 1902. He was a successful teacher, and the author of several textbooks.

## Universities and Colleges.

## UNIVERSITY OF LIVERPOOL.

THE following candidates have been approved at the examination indicated:

D.P.H.—Christine C. Abernethy, Esther Ashworth, A. E. I. Connolly, C. E. Freeman, A. Speight.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A QUARTERLY Council Meeting was held on January 11th, when Sir Anthony Bowlby, President, was in the chair.

Diplomas of membership were granted to 3 further candidates recently found qualified. Diplomas in Public Health were granted to 24 candidates. Diplomas in Tropical Medicine were granted to 13 candidates. Diplomas in Psychological Medicine were granted to 13 candidates.

## Lectures.

The lecture arrangements at the College for 1923 are as follows: January 29th, Professor R. L. Knaggs: Osteitis fibrosa. January 31st, Professor E. M. Woodman: Malignant diseases of the upper jaw, with special reference to operative technique. February 2nd, Professor C. A. Joll: The metastatic tumours of bone. February 5th, Professor H. E. Griffiths: The relation of diseases of the gall bladder to the secretory function of the stomach and pancreas. February 7th, Professor Geoffrey Keynes: Chronic mastitis. February 9th, Professor L. B. Rawling: Remote effects of gunshot wounds of the head. February 14th, Sir John Bland-Sutton: The Hunterian Oration. February 21st, Mr. R. L. Braithwaite: The flow of lymph from the ileo-caecal angle and its possible bearing on (1) the formation of gastric and duodenal ulcers, and (2) the cause of other types of indigestion. February 23rd, Mr. E. R. Flint: Abnormalities of the hepatic and cystic arteries and bile ducts. The lectures, which are free without ticket, will be given at 5 p.m., with the exception of the Hunterian Oration, which will be delivered at 4 p.m.



## LONDON HOSPITAL MEDICAL COLLEGE.

LECTURES on "The mathematical basis of physiological problems" will be given at the London Hospital Medical College by Dr. W. A. M. Smart, at 4.30 p.m. on January 25th, February 1st, 8th, 15th, 22nd, and March 1st and 8th. Attendance at this course is recognized in connexion with the B.Sc. (Honours) Degree in Physiology. Admission is free without ticket.

## Medical News.

A CONFERENCE of staffs of voluntary hospitals in London, arranged by the Metropolitan Counties Branch of the British Medical Association, will be held in the Council Room, 429, Strand, on Tuesday, January 30th, at 4 p.m. The business will include discussion of a report on the scheme of the Hospital Saving Association prepared by the Advisory Hospitals Committee; and the reply of the Hospital Saving Association thereon.

WE are informed by the Cremation Society of England (52, New Cavendish Street, W.1) that the total number of cremations in Great Britain during 1922 was 2,009, a net increase of 87 on the figures for the previous year. While in Greater London there was an increase of 123, there were 36 fewer cremations elsewhere, the crematoria at Birmingham and Sheffield alone showing any substantial improvement on the figures for 1921. Compared with the average of the preceding ten years, the figures for 1922 show an increase for Greater London of 36.33 per cent., and for the Provinces an increase of 18 per cent.

SIR ALMROTH WRIGHT, K.B.E., F.R.S., will give the Friday evening discourse before the Royal Institution of Great Britain on January 26th at 9 p.m., his subject being the machinery of antibacterial defence.

A POST-GRADUATE course on crime and punishment has been arranged for medical practitioners by the Faculty of Medicine of the University of Birmingham from May 7th to 19th inclusive. The course will consist of lectures on crime and punishment, mental defect, and insanity, together with demonstrations at the prison, at Barusley Hall Asylum and at other institutions. The fee for the course will be £5 5s. Further particulars appear in our advertisement pages.

THE Royal Microscopical Society has established a section to deal with the practical use of the microscope in connexion with industrial research. The first meeting will be held on Wednesday next at 20, Hanover Square, when Professor Frederic J. Cheshire, director of the optical engineering department, Imperial College, South Kensington, will take the chair at 7 p.m.

AT the annual general meeting of the Association of Economic Biologists, to be held at the Imperial College of Science on January 26th, at 2.30 p.m., Professor R. T. Leiper, M.D., will give an address on the study of helminthology.

LORD TREDEGAR has given a mansion, Cefr Mabry, near St. Mellons, about four miles from Cardiff, to the King Edward VII Welsh National Memorial Association; it is to be converted into a tuberculosis hospital at a cost of £41,000.

THE anniversary meeting of the Royal Anthropological Society will be held at 50, Great Russell Street, W.C.1, on Tuesday, January 23rd, at 8.15 p.m.

THE election to the vacant scholarship of the Grocers' Company for original research in sanitary science will take place in May next. The Company founded three scholarships, each of the value of £300 per annum, with an allowance to meet the cost of apparatus and other expenses; they are tenable for one year, but renewable for a second or third year. Applications must be sent in before April 1st to the Clerk of the Grocers' Company, Grocers' Hall, E.C.2, from whom a form of application and other information can be obtained.

DR. DAWSON TURNER and Mr. D. M. R. Crombie have each been awarded a Makdougall-Brisbane medal by the Royal Scottish Society of Arts for their paper on "An investigation of the ionized atmosphere around flames by means of an electrified pith ball."

A POST-GRADUATE course will be conducted in the ophthalmic clinic of the Hôtel Dieu, Paris, by Professor F. de Lapersonne, assisted by Dr. Terrien, Dr. Hautant, and others, commencing on Thursday, May 3rd, and extending over May and June. A special certificate from the Paris Faculty of Medicine will be given at the end of the course. The fee is 150 francs, and further information may be obtained from the Secretary of the Faculty of Medicine, Paris.

THE British Association for the Advancement of Science will meet this year in Liverpool from September 12th to 19th, under the presidency of Sir Ernest Rutherford. The presidents of the thirteen Sections include Professor G. H. Nuttall, M.D. (Physiology), Professor F. G. Donnan (Chemistry), Mr. P. E. Newberry (Anthropology), and Mr. C. Burt (Psychology).

## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, Attilough, Westrand, London; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), Articulate, Westrand, London; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, Medisecra, Westrand, London; telephone, 2630, Gerrard.
4. MEDICAL SECRETARY of the Irish Office of the British Medical Association, Dublin; telephone, 4757.
5. Rutland Square, Edinburgh; telephone, 4361, Central.

## QUERIES AND ANSWERS.

## INCOME TAX.

"B. H." enquires whether certain items are admissible expenses in respect of a medical superintendent of an infirmary under a board of guardians.

\*. \* Renewal of medical books, £4 8s. 9d.; professional society subscriptions, £7 7s.; medical journals, £2 2s. We regard these payments as incurred in order to maintain the professional competence of the officer, and therefore analogous to the expense of keeping a car or motor-cycle in a satisfactory state of repair; on these grounds we consider, and have always held, that these expenses should be allowed.

Accountant's fee for completing income tax return, £3 3s. The emoluments of an office are assessable under Schedule E, and the rule is that expenses to be allowable should be incurred wholly, exclusively, and necessarily in the performance of the duties of the office; in our opinion a claim for the allowance of this expense would not be well founded.

## LETTERS, NOTES, ETC.

## INTERNAL USE OF LIQUID PARAFFIN.

DR. JOHN P. (Blackpool) writes that for several years he has given up paraffin as a laxative, and that Dr. Dixon's 30th, 1922, p. 1283) are worthy of serious consideration. I have no facts (Dr. Brown continues) to prove that liquid paraffin is a serious factor in the causation of cancer. It is open to question whether it is a safe laxative for regular use in cases of habitual constipation. Personally, I think it is not. We have reliable and safe aperients in the natural aperient waters, which clear the alimentary canal and leave the mucous membrane clean and fit to carry on its many natural functions. Liquid paraffin coats the mucous membrane with a greasy, non-absorbable surface, and I consider this a serious objection to its use. I am opposed (he adds) to use of the very many coal-tar products if natural drugs can be used.

## VACANCIES.

THE Ministry of Labour for Northern Ireland is about to appoint, for the purposes of the Workmen's Compensation Act, 1926, two medical referees for the county and city of Londonderry, one for the county of Tyrone, and one for Belfast and the county of Antrim. Applications should be made to the Secretary of the Ministry, 7, Upper Queen Street, Belfast, not later than January 31st.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 32, 33, 36, and 37 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 34 and 35.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 19.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE  
BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	...
Each additional line	...	...	...
Whole single column (three columns to page)	...	...	...
Half single column	...	...	...
Half page	...	...	...
Whole page	...	...	...

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Letters should be delivered, addressed to the Manager, 429, Strand, London, W.C.2, later than the first post on Tuesday morning, and, if not paid for at the time, should be accompanied by a remittance.

NOTE.—It is against the rules of the Post Office to receive post restante letters addressed either in initials or numbers.



## An Address

ON

## SOME PROBLEMS OF PROSTATECTOMY.

DELIVERED BEFORE THE HARVEIAN SOCIETY,  
NOVEMBER 16TH, 1922,

BY

SIR JOHN THOMSON-WALKER, M.B., F.R.C.S.,

SENIOR UROLOGIST AND LECTURER ON UROLOGY, KING'S COLLEGE  
HOSPITAL; SURGEON TO ST. PETER'S HOSPITAL.

MANY patients are strangely unwilling to undergo any treatment as a preliminary to operation, partly owing to the desire to get the operation over quickly, and partly to lack of understanding of the gravity of the post-operation complications. The more one sees of prostatic surgery the more one is convinced that many of the complications which follow prostatectomy, some of which may be fatal, are avoidable by treatment before the operation. I will discuss two of these complications.

## 1. BOWEL COMPLICATIONS.

Post-operative distension of the bowel may occur in all degrees of severity, from a slight flatulent distension with difficulty in getting the bowels opened after the operation, to a prolonged distension of the bowel ending fatally from pressure on the diaphragm and interference with the heart's action. It occurs also in all degrees of acuteness or chronicity.

The most striking example of an acute case that I have seen was a man of 60 with a full abdomen and flabby muscles, from whom I removed an enlarged prostate and a bladder growth. The operation was simple, and there was little bleeding. Progress was normal until the fourth day, when there was a sudden pain in the epigastrium in the early morning. This disappeared, but reappeared later, and the abdomen commenced to swell up. The distension became so acute that the skin was tense and glazed. After two hours' acute distension the heart became embarrassed and the patient died. A doctor related a case to me of a woman, aged 50, who suffered from distension of the abdomen uncontrolled by treatment for seventeen years, with about six periods, lasting two or three days, of intermission, during which the abdomen became flaccid. The urine contained pus and blood. *Post mortem* both kidneys were septic and contained stones. This is an example of the condition in its most chronic state. Between these two extremes are the common types, lasting for a few days to ten days. The post-operative cases are usually controlled by treatment, but may cause much anxiety and are occasionally fatal. This post-operative distension in urinary surgery is not confined to prostatic and bladder cases, for it is not uncommon during the first few days after kidney operations, and may occur in septic kidney conditions without operation.

In looking for a cause for the condition we must remember that in kidney operations the colon is stripped from its attachment to the kidney and below this, and there is sometimes a good deal of trouble in separating adhesions at the extraperitoneal aspect of the colon. When we remember also that in septic kidney conditions perinephritis is constantly present, and that this must involve the contiguous wall of the colon, there is no difficulty in recognizing that a local paralysis of the colon is likely to occur leading to distension with flatus, which spreads to other parts of the colon.

In prostatic cases so simple an explanation is not possible. In most of those I have seen the colon was distended, and constipation and hiccups were frequent, but in some cases the stomach was the organ affected, and the distension affected the upper part of the abdomen; in these vomiting of coffee-ground material is usually a symptom. Most of these are cases of enlarged prostate with back pressure on the kidneys, and in some of them, such as that which I have described, uraemic symptoms actually appear. It is likely, therefore, that uraemia may have something to do with causing the condition. But there are cases that occur in younger men without sepsis or uraemia.

Two elements, I believe, enter into the causation: one is flatulent distension of the bowel from intestinal fermentation, and the other is exhaustion of the sympathetic nervous system resulting from uraemia, intestinal toxæmia, or shock. Recently it has been suggested that post-operative dilatation of the stomach is due to dragging on the mesentery by the

small intestine dropping into the pelvis after the removal of large pelvic tumours (Borchgrevink).

Having recognized that such a condition may complicate prostatectomy, is it possible to foretell its occurrence and do something to prevent it? It is, I believe, possible to do so.

There are two different types of patient that are liable to this condition—a thin type and a stout type. Imagine a thin man of 60 with a sallow complexion. He complains of prostatic symptoms; the prostate is enlarged, and there is a varying amount of residual urine. Further investigation shows that he suffers from flatulent indigestion after meals, and has to be careful about his diet; his teeth are probably decayed and there is pyorrhoea; the tongue is coated. The abdominal wall is thin, and should lend itself to easy palpation; but the bowel is full of gas, the percussion note tympanitic, and abdominal palpation is difficult. The other type is a stout, flabby man of 50 or 60, often of the Jewish race. He is fond of rich, fatty foods, and is immoderate in his indulgence in them. The abdomen is prominent, rounded, and tense; there is no pyorrhoea nor decayed teeth. When you meet with an enlarged prostate with either of these types you may expect post-operative trouble from the bowel.

How can we prevent this complication and how treat it when it occurs?

In all such patients I recommend a course of four or five weeks' bowel treatment after the teeth have been carefully overhauled. This question of teeth is very important; it affects not only the bowel risks but also the pulmonary risk. Oral sepsis is the cause in some degree, if not wholly, of the flatulent dyspepsia of the first type of case. It may take five or six weeks or even longer for the dentist to treat the oral sepsis, and there may be considerable difficulty in getting the patient to consent to the dental treatment.

All these intestinal-risk patients, however, do not have decayed teeth and pyorrhoea, and the second type very often have good teeth. The bowel itself must therefore be treated.

I do not presume to instruct such an assembly as this in the treatment of flatulent dyspepsia. Let me mention, however, the lines of treatment that have been most successful in the prostatic cases I have seen. They are the restriction of starchy foods and green vegetables in the diet, bowel antiseptic treatment and bowel tonic treatment, and the avoidance of saline purgatives. Abdominal massage and electrical treatment of the bowel are also useful when the bladder is not distended.

Now let us turn to the post-operative treatment. In the average patient the immediate preparation of the bowel for operation consists in giving a dose of castor oil two nights before the operation and washing out the colon on the morning of the operation. It is, I think, not unusual at present to avoid purgatives altogether before a surgical operation, on account of the bowel disturbance that may be caused. While this may occasionally be good policy where only twenty-four hours is given for such preparation, I cannot but feel that a prolonged and careful treatment of the bowel is a much sounder surgical proceeding and should always be aimed at. After the operation the bowel is left quiet for three or four days, and then a dose of castor oil is given. This is done in order to avoid straining after the operation, which sometimes causes bleeding.

If after the operation the patient commences to show distension of the abdomen or vomiting of dark coffee-ground material, a purge (castor oil) must be given at once. In some cases the stomach is distended and there is persistent vomiting. Here the stomach tube should be passed and the stomach washed out. Sometimes large quantities of dark brown fluid are removed, and the washing will have to be repeated.

Borchgrevink, who looks upon dilatation of the stomach after abdominal operations as due to dragging on the mesentery causing obstruction at the duodeno-jejunal junction, recommends the prone position and elevation of the pelvis; and operation has been recommended with the object of raising the intestines from the pelvis and relieving the drag on the mesentery, and also of removing adhesions. I have not met with a case of post-prostatectomy distension where this procedure held out any prospect of success.

The more common cases have distension of the colon and hiccups, but no vomiting. Pituitary gland is a good drug in these cases, and ergot and strychnine may also be given. A high rectal tube should be passed and the colon washed out, and a tube left for several hours at a time in the rectum. When the patient is stout he should be made to lie on his side,



instead of being propped up in a sitting position, as the passage of flatus is facilitated by this position. Various enemata are given—soap and water, ox-gall, turpentine. Care is necessary in giving enemata of turpentine in old feeble patients. In a hospital patient I once saw sloughing of the whole thickness of the rectal wall in a circular cuff following a large turpentine enema.

## 2. KIDNEY COMPLICATIONS.

Of all the risks to which the sufferer from enlargement of the prostate is exposed those connected with the urinary tract are the most common and also the most frequently fatal. These complications are, however, the most amenable to treatment before operation. They are sepsis and renal inefficiency.

I will discuss renal inefficiency. The patient who suffers from an enlarged prostate has reached the time of life when some interstitial change in the kidney is not uncommon, but apart from those changes which result from the effects of obstruction in the renal tissue it is rare to find a case where chronic nephritis causes anxiety in connexion with prostatectomy. Occasionally such a case is met with, and the condition is much less amenable to treatment than that in which there are kidney changes due to back pressure alone.

With the gradual increasing obstruction of an enlarged prostate residual urine accumulates, and the tension within the bladder, ureters, and renal pelvis increases. This produces interstitial nephritis, the extent of which varies with the duration and degree of obstruction. The renal function in such cases is impaired. The patient suffers from a series of symptoms which are characteristic of this type of kidney disease. There is lassitude, headache, thirst, and loss of appetite. The skin is dry, the complexion sallow, and the tongue is dry, red, and glazed. Constipation is a common feature. In more advanced stages there is loss of flesh, buccal dysphagia, occasional vomiting, and the patient is drowsy during the day and restless at night. The most advanced stage is complete anorexia, and there is frequent vomiting, constant drowsiness with restless delirium at night, and finally coma and death. Twitching of the muscles in a slight degree may be present, but is not a marked feature, and convulsions are absent.

Clinical symptoms are invaluable in the diagnosis of renal inefficiency, but there are cases where they are deceptive, and for over twenty years urinary surgeons have endeavoured to measure the renal function accurately by means of various tests. These have been very fully discussed of late, and I need not discuss them in detail.

The tests that I use at present in prostatic cases are the forced urea elimination test and the estimation of the blood urea. I have abandoned the colour tests in prostatic work, although I not infrequently use indigo carmine in kidney cases. The forced urea elimination is a valuable test of the renal function in these surgical cases, and comes nearer to demonstrating the full functional power of the kidneys than any other that we possess. The significance of the figures produced by this test is variously interpreted. The high figures require no discussion. A kidney which secretes 2 per cent. of urea and over is sound enough for any surgical procedure. It is the low figure that is of importance. What is the reduced urea concentration figure that becomes dangerous?

For some time I found in one of my hospitals that an able house-surgeon, keeping himself abreast of current opinion, was sending up a series of cases for bladder drainage by cystotomy as a preliminary to prostatectomy. These patients were then kept waiting for some weeks or months before the prostate was removed. This was on account of impaired renal function, the urea concentration being 1.4 to 1.6 per cent. Thus a very simple rule of thumb was developing—namely, urea below 2 per cent., drain the bladder and wait; above 2 per cent., single-stage prostatectomy. This arbitrary rule did not appear to me to be justified, and I decided that unless some other factor contraindicating operation was present I would operate in all cases when the urea concentration figure was above 1 per cent. The results have justified this procedure. This does not, of course, mean that all cases with a urea concentration above 1 per cent. are suitable cases for prostatectomy; there are many other factors besides this urea concentration figure to be considered.

In cases where the renal function is severely impaired the blood urea becomes an important indication of the renal function. As Maclean points out, the figures given as normal for the blood urea—namely, 20 to 25 per cent.—are too low in dealing with old men, and a blood urea of 40 to 50 per

cent. may be present without indicating serious impairment of the renal function. I recently operated on a patient whose blood urea was 58 per cent., and who had been refused a single-stage prostatectomy on this account. The patient was in other respects a healthy man, and I disregarded the high blood urea. Recovery from the operation was uneventful.

The blood urea is dependent upon other factors than the urea elimination by the kidneys, such as the amount and composition of the food, the condition of the liver, and the circulation. This test should therefore only be used in conjunction with the urea concentration test. If used apart from the latter it is apt to be highly misleading. A high urine urea with a high blood urea means that the kidneys are healthy, but the supply of urea is excessive. A low urine urea with a low blood urea may mean a lowered renal function. A low urine urea with a high blood urea is significant of serious impairment of the renal function.

It is not possible to take these tests at their face value and use them in rule of thumb fashion as indications as to whether prostatectomy should not be performed in a given case, or to base a prognosis upon them. We have to remember that these tests tell us only the reading of the renal function at the time and under the conditions that the test was made. This does not exhaust the possibilities of variation of the renal function.

There are two important factors to be reckoned with in estimating the value of a low renal function reading—namely, temporary depression and permanent reduction of the function.

Let us take a man with an enlarged prostate and chronic retention of urine with the bladder distended to the umbilicus. The various tests show that the renal function is very inefficiently performed. Now if the decision in regard to operation and the prognosis are based upon the figures shown by these tests, a totally erroneous view of the case may be obtained. A large part of the depression of the renal function may be temporary and due to causes that can with surgical judgement and care be eliminated. What proportion of the reduction of the renal efficiency is due to the existing obstruction and back pressure on the kidney and what to permanent reduction due to chronic interstitial nephritis the tests do not show us, and until this has been ascertained no true clinical picture of the case can be formed.

Another fallacy that has always attended the tests of the renal function is the difficulty in estimating the total functional power of the kidneys. There is a large amount of reserve power in the kidney that is not brought into action under ordinary conditions. In normal kidneys the reserve power amounts to over 50 per cent. of the total renal function. This part of the renal function may be gradually encroached upon by destruction of the renal tissue by disease and the tests of the renal function may show little change. It is this potential renal function that is so important in estimating the risks in a doubtful case.

Many years ago Albarran tried to estimate the reserve renal function by giving diuretics and observing their effect upon the renal function tests then in use. The method was not, however, successful. The forced urea elimination test comes nearer to estimating the reserve function than any other test that we possess.

The decision to operate or to refuse operation in a case of enlarged prostate with impaired renal function rests upon the judgement of the surgeon, and not on the dicta of the laboratory. What the surgeon requires is as accurate an estimate as possible of the renal function at the time of the test. This estimate is most usefully set out in terms of urea elimination and urea retention.

The compilation of formulae is, I think, unnecessary. Maclean uses a urea concentration factor, to obtain which he divides the figure of the urea in milligrams in 100 c.cm. of urine by that in 100 c.cm. of blood. This factor should normally be 60 to 80. When the urea efficiency is somewhat impaired it may be only 30 or 40. If below 20 the condition is generally bad, and if below 10 it is usually severe. I prefer the plain figures of the blood and urine urea with a note as to any likely fallacy that may have affected the individual figures.

When formulae are used various corrections and modifications begin to be added, each with a possible margin of error, until finally we get formulae like those of Koranyi or Ambert, so overburdened by corrections as to have little or no real clinical value.



It is not necessary for a successful prostatectomy that the renal function should be perfect or even approximately perfect. A reduced renal function may be quite adequate for the operation, and the laboratory figures of the renal function tests form only one factor in estimating the prognosis for operation among many, which include the general build and constitution of the patient, the weakness and soundness of other organs, experience of the operator, and, above all, those who will have the immediate care of the patient after the operation and the surroundings in which recovery from the operation will take place.

#### TWO-STAGE OPERATION.

The next question that naturally follows on the estimation of the renal function is whether a one-stage or a two-stage operation should be done.

The advantages claimed for a two-stage operation are: shock reduced; less haemorrhage; sepsis reduced; relief of back pressure; and time allowed for the kidneys to resume their normal function.

The disadvantages of the two-stage operation are: two operations and two anaesthetics; increased time in hospital or home; enucleation of the prostate more difficult owing to rigidity of the abdominal wall; post-operative hernia more frequent.

The two-stage operation has now become very common, and in some parts of America it is the only method practised in all cases.

The disadvantages of the two-stage operation are very obvious and are of such a nature as to appeal to the patient. There must therefore be some very definite advantages in the method before it can be adopted.

In the ordinary straightforward case the two-stage operation is certainly not safer than the one-stage operation. Shock is not a factor in uncomplicated prostatectomy. Rough handling, long exposure of the patient from unmethodical technique, and inadequate anaesthesia may produce it, but these are individual to the surgeon and will as likely attend a two-stage as a one-stage operation.

It is said by some surgeons that they get less haemorrhage in a secondary than in a primary one. Where there is severe cystitis and engorgement of the prostate and prostatic urethra from recent retention of urine this may be so; but in the average case, and in any case where adequate measures for the control of haemorrhage are taken, this is not so and no advantage from the preliminary cystotomy in this respect need be expected. In my own practice I select three very definite types of case for the two-stage operation. These cases form a small minority of the cases of prostatic enlargement, and my routine practice is to perform a one-stage operation.

The cases in which I prefer a two-stage prostatectomy are: (1) chronic urinary retention; (2) sepsis; (3) cases in which catheterization is difficult or impossible and some serious complication, such as bronchitis or pneumonia, is present.

#### 1. Chronic Urinary Retention.

This is recognized as a very dangerous condition. One-stage prostatectomy in these cases is a fatal operation, from suppression of urine due to the sudden fall in urinary pressure. Intermittent catheterization, followed by prostatectomy after some time, is more successful, but it is a dangerous procedure at the best. The danger lies in the introduction of sepsis. With the sudden fall in urinary pressure at the time of catheterization and the rise of pressure during eight or ten hours after the infection very readily ascends to the kidney, causing septic pyelonephritis.

If the bladder is drained it must be slowly emptied and when empty the pressure kept at zero by continuous drainage. This may be carried out by the retained catheter, and if it is possible I prefer it to a preliminary cystotomy, for the intravesical pressure can be let down very gradually, no anaesthetic is necessary, and there is no interference with what will later be the operative area. But the catheter drainage is not always possible. The patient is occasionally intolerant of the catheter, or the urethra may be unsuitable for the retained catheter, or clots or mucus from the bladder may persistently block the catheter. Cystotomy will then be necessary for the drainage of the bladder. This may be carried out under local anaesthesia or under gas and oxygen.

The length of the interval between the preliminary cystotomy and prostatectomy depends on the condition of the kidneys; of this the clinical symptoms and the urea tests

are the guide. The improvement may be rapid, and ten days may suffice for the kidneys to regain an almost normal secretion. On the other hand, weeks or months may elapse before the renal function has so far recovered that the prostatectomy may be safely performed.

#### 2. Sepsis an Indication for a Two-stage Operation.

The combination of sepsis and uraemia from back pressure is known as urinary septicaemia, and there are all degrees of severity of the condition. In some cases of enlarged prostate with urinary infection the bladder is the seat of the infection and the kidneys are very slightly involved. In other cases there is chronic septic pyelonephritis.

In any case cystotomy is the proper method of treatment. Catheter drainage is worthless, for the catheter becomes blocked with mucus and pus, the outlet is not sufficiently free, and the washing cannot be carried out in sufficient volume to be effective. Suprapubic cystotomy is performed and a catheter tied in the urethra. Continuous irrigation is installed and may be carried out for as long as necessary. Continuous irrigation for a week or ten days will clear up the cystitis which is not complicated by some local condition such as stone or diverticulum, or which is not secondary to renal infection. Even when pyelonephritis is present very definite improvement is noted in the renal symptoms when the cystotomy and irrigation are established.

If the renal infection is moderate a stage will be reached when it is safe to perform prostatectomy. But where serious bilateral pyelonephritis is present the preliminary improvement is not maintained, the urine contains a heavy deposit of renal pus, and the symptoms of urinary septicaemia gradually increase and the patient dies.

#### 3. Difficult Catheterization and Serious Complications.

The third indication that I accept for the two stage operation is when there is urgent necessity to relieve the bladder, but there is some complication which makes prostatectomy dangerous. There is no such thing as an urgent prostatectomy. The only urgency in a case of enlarged prostate is to empty the bladder and to provide for drainage. The permanent removal of the obstruction can wait until the patient is in a fit condition for a serious operation.

In most of these cases it is possible to empty the bladder by catheter, and in a case of enlarged prostate I have drained a bladder by retained catheter during the whole course of an attack of lobar pneumonia followed by septic arthritis of the shoulder-joint. But there are cases where it is not easy or possible to do this, either from the difficulty of passing the catheter or of retaining it. In such cases suprapubic cystotomy will overcome the difficulty and place the patient in a position to undergo treatment for the extraordinary complications. Apart from these classes of case I see no necessity to divide the operation of prostatectomy into two stages.

#### EARLY OPERATION.

Fortunately the cases in which a two-stage operation is necessary are becoming fewer than they were some years ago. The two-stage operation is almost always an attempt to repair the mistakes of earlier neglect or unskilful treatment.

In a previous address I ventured to recommend early operation, and was called to task for advocating operation on every old man with a slight increase in the frequency of micturition. This was quite a mistaken view of my meaning. What I suggested then and would like to insist upon now is that every old man with increased frequency of micturition should be carefully examined to see if this frequency is due to changes in the prostate which give rise to obstruction.

Frequent micturition in old men is too often looked upon as the physiological accompaniment of advanced age, and no examination is considered necessary. I believe that this symptom in old men is always the result of a pathological condition, and although the changes in the prostate which produce it do not in the majority of cases progress so as to cause obstruction, still there are a large number of cases where there is advancing obstruction and yet frequent micturition remains the only or the most prominent symptom. In the latter the obstruction may, from the neglect of this symptom, be allowed to advance to a dangerous degree.

#### Wherein lies the Necessity for Early Operation?

We have from time to time reports in the medical press by enthusiastic operators who have successfully operated upon old men of 80 or 90 years, and it is in the experience of all



urinary surgeons that prostatectomy can be successfully done in extreme old age. We know from experience that prosthetic patients who are desperately ill, sometimes apparently moribund, from renal failure due to chronic urinary obstruction or from urinary septicaemia, may with proper strategy in treatment and prostatectomy be restored to health in an almost dramatic manner.

But there is another side to this question. The dangers of prostatectomy in a man over 80 are, other things being equal, undoubtedly much greater than those of an average man of 60. We cannot therefore be indifferent to advancing age as an argument in favour of prostatectomy early rather than late.

Then in regard to the back pressure and the septic cases. The return to health, although dramatic, is at best a comparative one. A careful review of these cases after operation will show that the tale of sepsis does not usually cease with the recovery from the operation. There are still attacks of pyrexia from exacerbation of chronic pyelonephritis, and there may be recurrent attacks of epididymitis, although the continual absorption of toxins kept up by the obstruction has been eliminated by the operation. Even after the removal of the obstruction these patients are never in the condition of health that they would have been had they been able to avoid altogether the period, sometimes extending into years, of urinary sepsis and back pressure. There can, I think, be little doubt that the duration of life in these patients is shortened as a result of the permanent damage done during that time. It is to avoid this period of sepsis and back pressure that I advocate early operation.

It is a common argument that the catheter may first be tried, and then if it fails operation may be performed. Failure here means sepsis of a severe type, often with the inability on the part of the patient or the practitioner to pass the catheter, owing to the increased size of the prostate or the tortuosity of the urethra. When this stage has arrived the damage from sepsis has already been done and is in part, if not wholly, irreparable. Catheter life is commenced with the certainty that in the great majority of cases infection will occur, and the prognosis, immediate and remote, in a patient with enlarged prostate and urinary infection is infinitely worse than that in a patient with enlarged prostate without infection.

A second point in favour of early operation is the "silent" prostate with chronic urinary retention.

Cases are met with where a patient complains of nocturnal incontinence as the only urinary symptom, and on examination the bladder is found distended to the umbilicus. The minor symptoms of uraemia are often present but may have been overlooked. It is not infrequent to find in these cases that the prostate was examined some years previously on account of frequent micturition and was found moderately enlarged, but the symptom subsided and the patient noticed nothing further in regard to the bladder until nocturnal incontinence commenced. These cases are among the most dangerous and difficult to treat in prostatic surgery.

The only way to prevent the development of so grave a complication is to examine all cases of frequent micturition in old men thoroughly, and keep them under observation. If residual urine is found operation should be recommended.

A third reason why operation on an enlarged prostate should not be indefinitely delayed is that malignant changes may take place in a prostate the seat of simple enlargement.

We meet with this change in two forms. In one a large elastic movable prostate shows at one part, on rectal examination, a firm inelastic area on the surface of one lobe, often towards the base. On enucleating the prostate the capsule at this part strips with difficulty, and a layer of leathery capsule is left behind. On microscopic examination this part of the prostate shows malignant changes, while the rest of the enlarged gland shows the usual appearance of cystic adenoma.

The second type of case is where an enlarged prostate shells out satisfactorily and appears to be simple, but the pathologist reports that some part in the interior of the gland shows the histological changes of malignant growth. The number of these cases in the total number of prostatectomies is not great, but it is sufficiently large to make them a factor in advocating early operation. In 100 consecutive cases of prostatectomy for . . . of the prostate the pathologist reported that . . . of malignant change, and 14 were doubtful but were labelled "precancerous." Most of these were prostates of large size. In 11 there was nothing in the clinical examination to raise a suspicion of malignancy. In 4 there

was a small firm area in the region of the seminal vesicle on one side, and in one case the prostate was rather firm in consistence.

Early operation requires definition. I regard all cases of enlarged prostate when the gland is causing sufficient obstruction to produce residual urine of one ounce or more on several examinations as requiring operation. There are some exceptional cases where a large elastic prostate does not produce residual urine. In these cases I also advocate operation. In cases where frequency of micturition is the only symptom, and there is no residual urine and no prominent enlargement of the prostate I do not think operation is necessary.

#### TYPE OF OPERATION.

The operation that Freyer described was a blind operation. The bladder was opened through a small suprapubic incision and the prostate was pushed up by a finger in the rectum while the other hand pushed down the abdominal wall, and the prostate was reached and enucleated with the forefinger. Bleeding was controlled by washing through a catheter with silver nitrate solution. A large tube was placed in the suprapubic wound for four or five days and then removed and the wound allowed to heal.

While recognizing the success and wide application of this operation I have pointed out certain defects to which it is liable. To remedy these defects I have suggested and practise an operation so much modified that I think it may fairly be regarded as a different operation from that practised by Freyer.

The defects to which I have referred are:

1. Certain difficulties in connexion with the abdominal wall.
2. The method of controlling haemorrhage.
3. The frequency and persistence of sepsis.
4. Post-operative obstruction.

Watching Freyer for many years, and practising this operation myself, I have found that in certain cases a considerable amount of force is required to push the abdominal wall downwards towards the pelvis sufficiently far to reach the prostate. This is due either to the thickness of the abdominal wall or to rigidity from spasm of the recti muscles. A hard struggle on the part of the operator and deep anaesthesia are necessary to overcome this difficulty.

The method of controlling haemorrhage in Freyer's operation is primitive and unreliable, and would not be tolerated in any other operation of first importance. Even with every care sepsis was a frequent complication. I shall discuss sepsis later.

In a previous article I described 16 cases of post-operative obstruction following Freyer's operation. Such cases are of sufficiently frequent occurrence to demand some measure of prevention.

#### Open Operation

The operation I perform commences with a suprapubic incision sufficiently long to allow the right hand to pass completely within the muscular abdominal wall and sink into the pelvis. This entirely disposes of the difficulty of approach due to spasm of the recti muscles, and, further, it obviates the necessity for introducing the finger into the rectum, for the enucleating finger now reaches the apex of the prostate without difficulty.

I undercut the skin on either side of the wound for the introduction of supporting mattress sutures at the end of the operation.

The bladder is opened and the prostate enucleated with the gloved forefinger and removed from the bladder. A catgut stitch is placed in each lip of the bladder wound and the patient raised into the Trendelenburg position. The catgut slings are held up and my bladder retractor introduced. This gives a full view of this opening in the bladder base through which the prostate was removed.

All tags, folds of bladder mucous membrane, shreds and semi-detached plaques of capsule, or nodules of prostate and loose strips of urethra are carefully removed. The posterior lip of the opening is examined, and if a definite fold overhangs the prostate cavity a wedge with the base at the edge of the fold and the apex in the middle line is cut out of this.

A haemostatic stitch is introduced on each side of the neck of the cavity with special bladder needles, and a continuous suture of fine catgut is introduced from the right side round the posterior edge and finishing on the left side. This suture includes the mucous membrane of the bladder, the torn edge



of the sphincter vesicae, and the upper torn edge of the remains of the prostatic capsule if, as frequently occurs, this is defined.

Haemorrhage is usually controlled by these sutures. If it still continues, a spouting vessel may be seen deeper in the cavity, and this is clamped and crushed. If, as rarely happens, the bleeding continues, and if there is much venous bleeding from the ascending limb of the prostatic plexus in the anterior wall of the cavity, the catheter is drawn well into the bladder and the prostatic cavity packed carefully round this with iodoform gauze. A tube, rather smaller than the large Freyer tube is placed in the bladder. The retractor blades are changed and used to separate the recti and expose the anterior surface of the bladder. The bladder wound is closed up to the tube with a continuous suture. A small prevescical tube is introduced and the retractor removed. Two catgut mattress sutures are placed through the rectus sheath and recti, and a continuous catgut suture through the cut edge of this sheath.

The objects of this modification of the operation are:

1. To eliminate the difficulty of approach to the prostate.
2. To control bleeding.
3. To reduce sepsis.
4. To prevent post-operative obstruction.

#### SEPSIS.

I have elsewhere<sup>1</sup> discussed haemorrhage and post-operative obstruction, and will here deal more fully with sepsis.

We have long ago left behind the form of sepsis due to staphylococcal infection, where the wound became encrusted with phosphates and healing was delayed and difficult. These infections were undoubtedly due to insufficient preparation of the skin of the patient and of the surgeon's hands, or to instruments. The form of sepsis that occurs during convalescence and after prostatectomy is an infection with *Bacillus coli* or a mixed infection with *Bacillus coli* as the dominant organism.

I. One factor in its production was the rectal finger, combined with the difficulty of approach due to a small abdominal wound. Changing the enucleating hand when one hand has been used to push up the prostate from the rectum must be a dangerous procedure even where washing and a change of gloves has been made. Such a technique would never be tolerated in an intraperitoneal operation, and it ought equally to be abolished in an intravesical operation. Apart from the change of the enucleating hand, the subsequent steps of the operation necessitate the use of both hands, and the danger of infection is equally great at this part of the operation.

In addition to carrying infection there is, I believe, a danger of direct infection through the rectal wall and the wall of the prostatic cavity, due to damage done by forcible manipulation between the rectal and the enucleating finger.

The entire elimination of the rectal finger, and making an abdominal incision sufficiently long to give free access to the prostate so as to permit of gentle enucleation, is, I believe, an important means of prevention of sepsis.

II. A second factor in the causation of sepsis after the operation is the presence of partly detached shreds of mucous membrane and prostatic capsules, prostatic nodules, and strips of urethra. These necrose and form a culture ground for bacteria, and are often discharged some time after the wound has healed as phosphate encrusted masses. In the open operation they are completely removed.

III. There is a tendency for stagnant urine, blood clot, and mucus to collect in the prostatic cavity, and for infection to spread along the column of urine in the tube or alongside the tube from the skin after the operation.

The following measures are used to combat this source of sepsis:

A catheter is tied in the urethra with the eye in the prostatic cavity, and the cavity and bladder are freely irrigated through the catheter daily. Or the urethra and prostatic cavity and bladder are irrigated by Janet's hydrostatic method.

Should there have been sepsis before the operation, or anything to suggest that infection has taken place after the operation, continuous irrigation of the prostatic cavity and

bladder with antiseptic solution is carried out by connecting a reservoir to the catheter and draining the Hamilton Irving box into a pail. The continuous irrigation is continued for several days. As a routine a gauze bag filled with large boric acid crystals is placed in the Hamilton Irving box and renewed twice daily.

With this attention to detail infection has steadily declined in my cases.

IV. Before leaving this subject of sepsis I should like to say a word in regard to the persistence of sepsis which was present before the operation.

There are three important sources of persistent sepsis—namely, pyelitis and pyelonephritis, diverticulum of the bladder, and seminal vesiculitis.

Time does not permit me to deal with these fully, but a short reference may be made to seminal vesiculitis. I believe that in a large proportion of the cases where sepsis persists after prostatectomy this persistence is due to seminal vesiculitis. I have in a number of these prostatic cases removed the seminal vesicles through the floor of the bladder, and will describe the operation fully elsewhere.

It would prolong the prostatectomy too greatly to dissect the seminal vesicles in every septic case at the end of the prostatectomy, but I think the possibility of doing this should be kept in mind.

In two cases of prostatectomy with severe sepsis unaffected by any pre-operation treatment I incised the seminal vesicles through the floor of the bladder by an incision radiating from the centre of the posterior lip of the prostatic opening backwards and outwards to just internal to the ureteric orifice. In these cases I found the vesicles full of pus.

The question should, I think, be raised, in cases of sepsis persisting after operation in spite of energetic treatment, as to whether the vesicles are the source of the infection and if a transvesical operation for their removal should not be done.

#### ANAESTHESIA.

The patients who are submitted to prostatectomy present many difficulties to the anaesthetist, and I will not venture to encroach on his province.

I may, however, make some remarks from the point of view of the surgeon. A considerable proportion of the prostatic cases have a high blood pressure or some degree of myocardial change. Many have emphysema and some have bronchitis.

A pure ether anaesthesia is not suitable for these cases on account of post-operative lung complications. A mixture of chloroform and ether suits them better, but with this also one fears the possibility of post-operative lung troubles.

Gas and oxygen produces a rigid abdominal wall that interferes with the surgical manipulations. This is of less importance in my open operation, where the enucleating hand works inside the muscular abdominal wall and does not require to push it inwards to reach the prostate.

If gas and oxygen is used the patients should have a large dose of morphine, as they suffer greatly from pain on coming round at once at the close of the operation. Where the blood pressure is high, and especially in a case where there is a cerebral haemorrhage, gas and oxygen is an unsuitable anaesthetic owing to the rise of blood pressure it produces.

The anaesthesia which I prefer is spinal anaesthesia with a modified dose of stovaine and just sufficient C.E. to render the patient unconscious. This form of anaesthesia has less severe after-effects than any other, and my colleagues Dr. Hughes and Dr. Shipway have given it for me as a routine method for several years. The most potent objection to this form of anaesthesia is the fall in blood pressure, amounting to 20 to 40 mm. of mercury.

This fall is generally compensated by turning the patient into the Trendelenburg position, but the pressure may again drop at the end of the operation when the horizontal position is resumed. Where the arteries are very rigid and myocardial changes are present this fall in pressure may lead to circulatory failure during the twenty-four or thirty-six hours following the operation, and in such cases I think it is better to avoid spinal anaesthesia.

Local anaesthesia, even when thoroughly carried out, is not a satisfactory method for prostatectomy. The enucleation of the deeper part of the prostate and the tearing of the urethra cannot be carried out painlessly by this method.

<sup>1</sup> British Journal of Surgery, 1923, vol. vii, No. 28, p. 535; BRITISH MEDICAL JOURNAL, August 27th, 1921; Lancet, 1921, i, p. 1603.



## SURGICAL TREATMENT IN CASES OF PULMONARY TUBERCULOSIS.\*

BY

H. MORRISTON DAVIES, M.D., M.Ch., F.R.C.S.,

MEDICAL SUPERINTENDENT, VALE OF CLWYD SANATORIUM; CONSULTING  
SURGEON, UNIVERSITY COLLEGE HOSPITAL, KING EDWARD VII  
WELSH NATIONAL MEMORIAL ASSOCIATION, AND TO THE  
CITY OF LONDON HOSPITAL FOR DISEASES OF  
THE CHEST.

In considering the surgical treatment of pulmonary tuberculosis, the first point that must be discussed is why and when cases of tuberculosis of the lungs should be treated by operative measures. There are three reasons why surgical treatment may succeed in arresting the disease or in prolonging life when other means have failed.

1. If the resistance of the individual patient is such that it failed him only when extremely run down in health, and possibly badly nourished or suffering from great mental strain, the alteration of these conditions by general treatment alone will suffice to make his resistance adequate to deal with the tubercle bacilli, as long as the former bad circumstances do not recur. But if the resistance of the patient is sufficient only so long as the general health and fitness of the individual are really good, then each relapse from good health, every exposure to conditions not eminently suitable, will mean a relapse of the disease in the lungs and a spread of the tuberculous lesion.

It is extremely difficult (if possible) to increase the specific resistance of the patient to tuberculosis; it is a much more feasible proposition to lower the virulence of the tubercle bacilli and in this way *relatively* to increase the patient's resistance. The most efficient means we know of for reducing the virulence of these organisms is by rest—and in the lungs rest is obtained by immobilization by collapse.

2. As soon as the disease has passed beyond the early granulation stage fibrosis sets in and a completely new set of complications arise. The alterations in the bronchial tubes (the secondary bronchiectasis) are the most serious results of the fibrosis, since they in turn are responsible for the retention of secretions and so for the secondary infections. These are the mechanical factors which eventually prove more difficult to treat and a greater menace to life than the organisms which are the original cause of the trouble.

3. The formation of a cavity by the breaking down of a group of neighbouring caseating granulomata, aided probably by the action of organisms other than the tubercle bacilli, leads to a condition which is often disabling because of the retention of secretions, and is dangerous because of the risk of haemorrhage. These mechanical changes can be very little influenced by medical treatment; only the symptoms of the pathological conditions associated with them can be, for the time being, alleviated. By surgical treatment it is possible to collapse the lung, and whenever complete collapse is obtained then not only is that organ put at rest, but the ill effects of the excessive fibrosis are abolished; the shrinkage of this tissue can proceed without involving all the surrounding and adjacent tissues and structures; the dilated bronchial tubes are collapsed and the spaces which retained the secretions are abolished; cavities have their walls approximated and are no longer a source of danger and constant reinfection: they are no longer cesspools for organisms to flourish in and from which to pour out their toxins into the circulation. So far as the collapsed lung is responsible for the symptoms, the cough is abolished and sputum ceases, the fever due to the toxins disappears, and, if haemorrhage has been a symptom, the danger and fear of that too is done away with; this in itself is a great mental relief to some patients.

The general health of the patient can now improve. That, together with the diminution in the virulence of the tubercle bacilli and the relative increase in the resisting powers of the patient, will place him in a most advantageous position for encapsulating the organisms and for making him more secure against a possible renewal of the invasion.

When the collapse is incomplete it may be said that the

advantages obtained are proportional to the degree of collapse. It comes to this, therefore, that once chronic pulmonary tuberculosis has progressed and has caused a degree of fibrosis beyond what can be compensated for by compensatory changes in the remaining healthy lung tissue, the disease may be said to have progressed beyond the early stages, and that from that time onwards, if some permanent improvement is to be looked for, surgical treatment must be considered as an aid to medicinal and to the ordinary sanatorium measures.

Such are the reasons why surgical treatment must be regarded as such an important asset. Now comes the consideration as to when a case is suitable. The chief postulate is that the disease must be unilateral, or that, if there is disease in the opposite side, it is neither extensive nor acutely active; but there are certain exceptions to which I shall refer later. Surgical treatment is indicated—

(1) For the treatment of the primary condition (a) when, although the resistance of the patient is moderate, he must return to work under unfavourable conditions; (b) when the resistance of the patient is insufficient to deal with the tubercle bacilli even under favourable conditions of environment, etc., as is shown either by inability to arrest the activity of the disease or by repeated relapses; (c) when it is imperative to control the risks of infection, as in the case of a mother returning to her home or her children, and in the case of patients (doctors and nurses) whose work brings them into contact with other people who are in indifferent health or in ill ventilated buildings; (d) when it is imperative that the individual should return to work at the earliest moment possible.

(2) When the secondary complications (the mechanical factors) are so advanced that it is impossible to control the symptoms (secondary bronchiectasis and cavity formation).

(3) When it is necessary to control haemorrhage.

(4) When there is tuberculosis of the larynx, which organ is being continuously reinfected from the lung.

(5) When there is pneumonic tuberculosis.

Against these indications for treatment by operation must be placed certain contraindications which are additional to those imposed by the extent of the disease in the lungs. The most important are albumin or sugar in the urine, tuberculosis of the intestinal tract, chronic gastritis, gastroparesis, chronic intestinal stasis of an advanced degree, and (though mentioned last of considerable importance) the temperament of the individual. In an extremely nervous or highly strung person it is probably wiser not to attempt an artificial pneumothorax.

When I was discussing the extent of the disease with which operative treatment could be regarded as practicable under ordinary circumstances, I said there were exceptions. In some cases of fairly extensive bilateral active infection artificial pneumothorax can be attempted.

1. When the disease is very active, with marked secondary change on one side, the prognosis is very grave, because of the hopelessness of producing any lasting improvement in this lung; then, as a desperate remedy, pneumothorax may be attempted, even though there is acute active trouble in the other side, provided that lung has shown any signs of improvement with complete rest in bed, and is not extensively affected by secondary changes.

2. When the collapsed lung has responded to treatment but, later, activity develops, does not subside, or increases in the other lung, artificial pneumothorax may be attempted in this second lung also. In such cases a partial pneumothorax, equivalent to about one-third of each lung, is aimed at. The following is a brief account of a case so treated.

When first seen there was very extensive disease in the right lung, and there was some active trouble in the left also. Collapse of the right lung was undertaken in the first place because of the extreme gravity of the case. At first there was improvement, but this was followed by a serious relapse due to a sudden exacerbation of the disease in the left lung. Last Christmas I despaired of saving her life, but felt there might be a faint hope if a partial pneumothorax could be done on the left side also. I allowed a complete re-expansion of the right lung, and then produced a partial collapse of the left. This bilateral pneumothorax has been maintained ever since. She has since gained 2½ st. in weight, she runs a normal temperature, the last report of her sputum was negative, and she has been able to return home.

My experience is that bilateral partial pneumothorax is a quite justifiable procedure in such cases, as it is also in those in which one lung has been collapsed a year or more and then disease starts or recrudesces in the opposite lung. The lung first treated should be allowed to re-expand to about

\* Being part of a lecture delivered before the University College Hospital Medical Society, October 19th, 1921.  
1. To what extent chronic intestinal stasis and a partial failure of the endocrine glands may be responsible for weakening such resistance, or to what extent the remedying of these pathological states may increase it, I am not able to say, but there must be a great interdependence in the proper functioning of the various organs.  
2. In acute miliary tuberculosis, the fibrosis is insufficient to produce these secondary complications and death results from the acuteness of the tuberculous toxins.



so-thirds its bulk and then a similar degree of collapse of the second lung produced.

Until I began to discuss the very serious type of case for which operative treatment may have to be considered as the last means of saving life I had not particularized as to the method whereby the collapse of the lung should be obtained. For these severe cases I have, however, specifically referred to artificial pneumothorax, as that is the only method of intervention that can be attempted for them. Collapse can be obtained either by intrapleural or by extrapleural separation of the lung from the chest wall, or by letting the chest wall fall in with the lung. Intrapleural collapse of the lung by artificial pneumothorax is the simplest of all these surgical procedures, and is therefore the one which must always be attempted before any other method is considered.

Of the technique, of the difficulties, of the complications, of the variations which are found, making each case almost a law unto itself, I am not going to talk to night, as it is too vast a subject. I do, however, propose to discuss one complication—that is, adhesions—as I have had considerable personal experience in dealing with these, and it is a part of the subject which has been almost entirely neglected in this country except by myself. The type of adhesion under consideration is that which can be seen with the x rays stretching from the lung to the chest wall after partial collapse has been obtained. Such a band, by the pull it exerts on the lung, not only prevents that organ from collapsing to the required extent but tends to keep drawing it out again and to keep open the spaces, encouraging thereby the retention of secretions and the proliferation of the organisms of secondary infection.

These adhesions may be multiple or single, broad or fine. They may consist of fibrous tissue only or have fine blood vessels running along them. The lung at the point of their attachment to it may be drawn out into a cone, thus making the actual band look longer than it really is. The lung at this point may be apparently healthy, it may show tuberculous granulomata, or it may consist of a thin wall cavity. If either of the latter two pathological conditions exists, there is a considerable danger that the lung will rupture if too high a strain is put on it by producing too great a positive pressure in the pleural cavity. None of these details can be known without x rays, and it should be obvious therefore that attempts to collapse a lung without constant radiological control is risking disaster sooner or later. In nearly all the cases sent to me with complications to disentangle and treat, the trouble might never have developed had there been x-ray control.

Adhesions may be found between any part of the lung and the chest wall. By far the commonest position, however, is over the upper lobe, the parietal point of attachment being in the neighbourhood of the first, second, and third ribs. The second commonest site is between the mesial half of the base of the lung and the diaphragm.

Only the finest adhesions can be ruptured. If very fine bands are seen to be interfering with collapse and the lung at the point of their attachment is sound, it is justifiable to attempt breaking them by increasing the intrapleural pressure up to, but not beyond, 40 mm. of mercury. It may not be possible to raise the pressure so high—that depends entirely on the amount of pain and distress produced. One patient will complain of quite acute pain at a pressure equal to 10 mm. of mercury, and another tolerate one equal to 40 mm. of mercury or over, without even discomfort. The rupture will be felt by the patient, who will feel that "something has given way in his chest" and a sudden relief from discomfort or pain, if either were present immediately before. The operator will recognize the rupture by the sudden drop in the pressure and by the increase in the respiratory undulations.

If there is a single adhesion, too stout to rupture, and it can be seen that at its point of attachment to the lung that part of the organ is sound, then, unless rapid and complete collapse is imperative, an attempt can be made to stretch the adhesion by maintaining a steady high pressure in the pleural cavity. An adhesion which is more than about one-eighth of an inch in diameter will not stretch. If the band is too strong or there are more than one, the only treatment is by division. There are three ways of doing this: (1) by tenotomy without other opening through the chest wall than that made by the passage of the tenotome; (2) by the thoracoscope and electric cautery; (3) by thoracotomy and exposure of the adhesion. The first of these is my own method. It cannot be described

as a simple operation, yet in some cases it has proved extremely easy. Everything depends on the position of the adhesion and the possibility of being able to get the adhesion quite tight before attempting to cut it. It is essential for this method that a clear view of the band be obtained with the x rays.

The patient is placed with his back to the x-ray tube. The screen is swung so that it can be turned out of the way or brought in front of the chest and mechanically supported in any position desired. The line of approach to the adhesion is through the intercostal space immediately below the band. The tissues which the tenotome will traverse are anesthetized with 2 per cent. novocain. When this has been done and the cutting edge of the tenotome (which is of a special design) has been passed through the intercostal space into the chest the x rays are turned on and all other lights extinguished. The relationship of the point of the tenotome and of the adhesion can now be made out. The tenotome is pushed towards the adhesion and is moved up and down until it meets the band. The contact of these two can be both seen and felt. The edge of the knife is pressed on to the adhesion, which is then cut through by short sawing movements. If the band has not been made tight by a fairly high intrapleural pressure by an injection of gas a day or two beforehand difficulty will be experienced in cutting through it, as the fibrous tissue is very tough and resisting, and pressure serves only to displace the band downwards and to pull the lung downwards and outwards. The moment the adhesion is cut through the lung will be seen to drop mesially towards the mediastinum.

The opening made by the tenotome is so small that there is rarely more than a little surgical emphysema after the operation. Bleeding from the divided band is only rarely considerable; if it should occur, it will be checked by the increase in the intrapleural pressure. As an illustration that in a simple straightforward case the operation is not a serious one I have had one patient, a woman, who having had her band divided returned home (a distance of twenty-six miles) two hours after, and was at work two days later.

If the adhesion is a tough one some pain will be felt whilst pressure is being applied to it, owing to the pull of the band at its point of attachment to the parietal pleura.

The most likely complications are surgical emphysema and a small pleural effusion or possibly a haemothorax. Of more serious character are those which may result from the lung being injured in the division. This is likely to happen only if a cone of lung has been drawn out by the band and simulates a continuation of the mesial end. If a careful study has not been made beforehand, or if it is impossible to obtain a clear view of the whole length of the adhesion, then it may happen that this portion of lung tissue is cut and a traumatic pneumothorax or a haemopneumothorax or even a pyopneumothorax results. If any of these should happen, the increase in intrapleural pressure will force gas out through the incision in the pleura and produce a considerable increase in the surgical emphysema, whilst the possibility of infection must not be lost sight of.

Jacobaeus advocates the division of adhesions by the electric cautery. This necessitates two openings through the chest wall. Through the one is passed the thoracoscope—on the principle of the cystoscope—by which the adhesion is viewed, through the other the cautery. His results are extremely satisfactory. He is able to divide adhesions which might not be sufficiently visible to attempt by tenotomy, and he can work with a shorter interval of space between the lung and the chest wall. In the division, however, he is greatly hampered by the smoke from the burning of the adhesion, and has frequently to change the air in the pleural cavity so as to be able to see what he is doing. There is also considerable difficulty in retaining the cautery at the correct heat, and to prevent it getting caught by the charring of the tissues. The same complications as those mentioned above may follow on this method of division.

An adhesion which is not accessible for division by tenotomy can be exposed by opening the chest and obtaining direct access to it. This is of course a more serious undertaking, but is quite justifiable when collapse of the lung is essential in the treatment, and is seriously interfered with by a band. It is the method also which may be required when the lung has become torn alongside an adhesion in the case of a spontaneous pneumothorax. The opening cannot close because one side of it is held out by the adhesion and the other pushed away by the pressure in the pleural cavity. The opening even may be valve-like in character, giving rise



to an ingravescent pneumothorax.\* Such an accident may be further complicated by an effusion, at first simple but later infected by tubercle bacilli, by secondary organisms, or by both.

The thorax is opened as near to the adhesion as possible by an incision along an intercostal space, the tissues having been anesthetized by novocain. The ribs on either side are strongly retracted and the adhesion exposed and divided. The wound is then closed, care being taken to secure approximation of the parietal pleura. Should an effusion form after this it is advisable that the patient be placed so that the fluid does not come into contact with the wound. If the fluid is excessive it should be aspirated and replaced by oxygen.

There is one other matter in connexion with adhesions that requires mention. The base of the lung is not infrequently adherent either to the summit of the dome of the diaphragm or to the mesial part of the corresponding half of the muscle. Occasionally it happens that before the intrapleural pressure has been raised sufficiently to collapse the non-adherent part of the lung, the pull on the diaphragm causes distress to the patient, who may suffer from pain and an incessant dry irritating cough; also, if the collapse is on the left side, from vomiting as well. So persistent may these symptoms be, that either the pneumothorax must be abandoned or the diaphragm paralysed by dividing the phrenic nerve in the neck. This will cause complete relief and allow of greater compression of the base of the lung. It must be remembered, however, that the motor fibres to the diaphragm may enter the phrenic nerve through the nerve to the subclavius muscle. In such cases section of the phrenic in the neck is followed by no change in the diaphragm.

Extrapleural collapse of the lung is of value in certain types of cases only. When the disease is localized to one upper lobe and is resistant to treatment, or is advanced and is associated with secondary changes or a cavity, or is causing repeated haemorrhages, then if pneumothorax has been tried and been found to be impossible, local collapse of that lobe can be obtained by displacing the lung, together with the parietal pleura. Such displacement cannot satisfactorily be produced by gas, as there is no sac into which to inject it, and it is too rapidly absorbed by or dispersed through the cellular tissues from which the pleura has been stripped. The displacement has therefore to be maintained by some solid substance, such as paraffin wax or fat.

If the patient has plenty of fat to spare, this is the most satisfactory substance to use, as it is non-irritating and is sufficiently fluid to accommodate itself to the shape of the space into which it is packed.† Failing this, paraffin can be used, but it has the great disadvantage of being in some cases very irritating and of causing an extrapleural serous effusion, which, unless successfully tapped, will distend the wound, discharge through it, and in doing so carry away the paraffin with it. Moreover, when this happens there is the risk that the cavity will become infected.

The whole operation can be done under local and regional anaesthesia or under local anaesthesia with a little chloroform while the upper part of the parietal pleura is being stripped. An incision is made either over the anterior part of the second rib, part of which is removed, or through the anterior part of the second interspace when the ribs are not too closely approximated. The incision is carried down to the parietal pleura, which is carefully stripped away from the overlying tissues up to the apex, and in front and behind, until it is freed over the whole of the upper lobe. When this has been done it will be found that there is a partial collapse of the upper lobe carrying the pleura with it, the collapse increasing during inspiration and decreasing during expiration, whilst a cough will force the lung completely out again. The lung is kept displaced by a copper retractor, and into the space thus formed is put either a mass of fat from the abdomen of the patient or the paraffin. This latter should have a melting point of about 112°F., and be just sufficiently hot to be in a fluid state. It is most important that the patient should not cough from this moment until the wound is firmly closed, as otherwise the paraffin will be forced out and an indifferent collapse obtained. In suturing the wound the closest approximation of the edges must be secured.

Collapse of the lung, together with the chest wall, is a more serious operation and the change obtained is permanent. It is not an operation to advise until all other means have failed, and then only if the conditions and chances are favourable. The class of case for which it is suitable is more limited, and the contraindications are more numerous and more rigid. It is an operation directed to the treatment not so much of the tuberculous lesion as of the secondary complications of that disease. It is of value not for the acute active case but for the patient with long-standing chronic phthisis. Active disease must be, as far as is ascertainable, limited to the one lung, but the presence of a small amount of fibrosis in the other lung is not necessarily a deterrent.

There are two methods by which the lung and chest wall can be collapsed. It can be done either by rib mobilization or by rib resection. Until lately I have been a strong advocate of the former in preference to the latter, as I thought that the resection method was excessively severe. Recent experience has, however, now converted me to this one in preference to rib mobilization. Rib mobilization means two fairly big operations, and the patient is confined to bed usually for a couple of months. Rib resection means one severe operation only and a very much shorter time in bed. The results in both cases are equally good provided collapse of the apex is not essential.

In the operation of rib mobilization collapse is obtained by resecting portions of the posterior ends of the first nine or ten ribs at the first stage, and of the costal cartilages of the fixed ribs together with a wide section of the costal margin at the second stage. The resection of the portions of the first rib is extremely difficult, but unless this is done the result will be disappointing, as the falling down and in of all the other ribs depends very largely on the freedom of the first. As the result of this detachment of the ribs from their posterior and anterior points of fixation and support they drop downwards, they fall inwards, and they tilt downwards and inwards (bucket-handle action). By this change in position they diminish greatly the size of that half of the chest and collapse the lung to about one-third its original size in an adult, and even more so in a child.

The operation of rib resection is done through a single vertical incision extending from the apex of the axilla to beyond the eighth or ninth rib. It is done under a general anaesthetic (chloroform), but immediately before this is started I try to inject each of the first nine intercostal nerves with 5 minims of absolute alcohol close to the angle of the ribs. Even if one does not strike every nerve the shock is considerably diminished and so also is the after-pain.

The ribs having been exposed the periosteum is stripped off each in turn, starting with the fourth or fifth and working first upwards, up to and including the second, and then downwards to the eighth or ninth. The ribs are freed in front as far as the costo-chondral junction and behind to the angle. Each rib as it is freed is divided in the middle, the anterior half is bent forwards and will break off at its junction with the cartilage. The posterior half is then bent back and may snap at the angle. If it will not break as desired, curved bone forceps must be slid down the bone and the rib cut through as far back as possible. It is not feasible to reach the first rib through this incision, but the collapse of the lung and of the chest wall is not, in this operation, dependent on the freeing of it. In most cases sufficient collapse of the upper lobe will be obtained without it, but if it is necessary to get complete collapse of the apex (because, for instance, of a cavity) the first rib must be resected through a separate incision below the clavicle.

The wound is completely closed except for a drainage tube, which is left in for twenty-four hours. It must be remembered that the external surface of the pleura will secrete a serous effusion as well as the inner.

The deformity of the chest is considerable, the whole of the anterior and external aspect, and to a less extent the postero-external aspect, sinking right in. This, however, is not visible when the clothes are on, as these hang from the shoulder, which has been in no way affected.

I have done two cases in the last six weeks and neither of these has had any shock sufficient to give the least anxiety. In the second case, from whom I removed six ribs only, the total amount of bone taken away was almost 3 ft. 6 in. in length when the ribs were placed end to end. Both were up within a fortnight—the second on the tenth day—and the temperature was normal after the third day.

\* The "Spannungs-pneumothorax" of the Germans, in which air enters the pleural cavity from the lung with each inspiration, but cannot escape during expiration.

† On the Continent omentum, lipomata, and fibroids are kept in cold storage, after removal from one patient, in readiness for another.



## DAMAGED LUNGS AND BRONCHIECTASIS.

BY

CLIVE RIVIERE, M.D.LOND., F.R.C.P.,

PHYSICIAN TO CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST  
AND TO EAST LONDON HOSPITAL FOR CHILDREN, SHADWELL.

VERY commonly does it happen that some amount of permanent damage remains as the sequel to an inflammation, of whatever causation, in the pulmonary area; and the more severe and prolonged the attack the greater, as a rule, the disability. Lung tissue, air tubes, and pleura alike may be implicated in different degrees, the end-results showing themselves in fibroid lung, or simple bronchiectasis, or more commonly some combination of both these conditions. Such gross lesions as follow the textbook account under these headings are readily recognized and need no recapitulation. What I would here emphasize is the common occurrence of slighter degrees of damage, readily overlooked, but often the explanation of anomalous signs and symptoms at some later period. Mistaken as a rule for pulmonary tubercle, they present a ready pitfall, unless recognized, in the realms of diagnosis, prognosis, and also of therapy, for they are very amenable to well directed treatment. "Damaged lung" is the somewhat loose term that best covers, to my mind, the varied mixture of mild fibrosis and dilated bronchial tubes with which I am here dealing, but it is, of course, the bronchiectasis that counts—or rather "bronchiolectasis," for it is the small tubes which are generally implicated in these cases. It will be most convenient to consider the subject under separate headings in children and in adults, but it is in the early years of life that the majority of all cases originate.

*In Childhood.*

Many years ago I collected some 40 cases of pulmonary fibrosis and bronchiectasis in childhood for purposes of study and analysis. These, which included slighter cases of similar etiology, showed clearly the common origin of lung damage from the inflammatory lung diseases of childhood, particularly in association with the infective catarrhs of measles and whooping-cough. It is interesting in this connexion that American investigators have recently associated a definite thickening of x ray lung shadows after these two diseases. But bronchopneumonia stands out in childhood as the prime causation of lung damage, and this is found clinically at the bases of both lower lobes.

Bronchopneumonia—						Cases.
Simple	...	...	...	...	...	6
With whooping-cough...	...	...	...	...	...	5
With measles	...	...	...	...	...	3
						—14
Bronchitis—						
Simple	...	...	...	...	...	6
With whooping-cough...	...	...	...	...	...	3
With diphtheria	...	...	...	...	...	2
With measles and whooping-cough	...	...	...	...	...	2
						—13
Lobar pneumonia	...	...	...	...	...	4
Congenital atelectasis	...	...	...	...	...	2
						33

To these I should add, with further experience, two other causes in childhood—influenzal pneumonia and tuberculosis. Influenzal pneumonia leads very readily, as in adults, to fibrosis and bronchiectasis, and I have seen several cases which well illustrate this fact. The lung damage left after tuberculosis in early childhood will be an object of scepticism to many who still hold desperate views as to the mortality of the disease at this age period. The x rays have long convinced me of the recoverability of pulmonary tuberculosis even in infancy, and in such cases some signs of lung damage generally remain behind.

Let us now consider some common types of "damaged lung" in childhood.

First, there is the case in which the condition may be seen to develop after bronchopneumonia. The signs at the bases of the lungs, percussion impairment, and crepitations do not completely clear up after the child appears otherwise well and vigorous. A not uncommon sequel is a further attack, which may appear to be bronchopneumonia, but is somewhat milder than the original attack or than the usual course (very varied, by the way) of this affection. Sometimes repeated attacks supervene, and it is always wise when a case of bronchopneumonia is seen for the first time to inquire for former similar illness. A history of this, the mild course of

the illness in some cases, occasionally a slight clubbing of the nails also, may help us to suspect that an attack is occurring on the top of lungs already "damaged." These further attacks may amount to a mere acute catarrh of the dilated bronchioles, with some "congestion" of the surrounding lung, but no true pneumonic consolidation. In other cases a fresh bronchopneumonia occurs; the physical signs are very similar in both cases.

The second commonest simulation of "damaged lungs" in childhood is of pulmonary tuberculosis. Most of the cases are basal, and then the mistake is less likely to arise; but when a coughing child presents an area of impairment and crepitations at an apex, commonly the right, it is no wonder if he gets treatment for pulmonary tuberculosis sometimes for years on end. Only recently two such cases, which had been under prolonged treatment, were sent to me by a tuberculosis officer in the London district for comment and discussion. Such cases originate, I think, in apical lobar pneumonia, the right apex being the second commonest situation of the lesion in this disease in childhood (the left base being the commonest). The children are much less ill (often not ill at all) than they would be with tuberculous lesions of similar extent, and the history and course, if other points fail, should suffice to make clear their nature. The physical signs of a "damaged lung" in childhood necessarily vary with the case. Where there is much fibrosis this is indicated by marked dullness, feeble breath sounds, often with diminution of vocal vibration, and by contraction of the diseased area. Where bronchiectasis involves the larger bronchi, no added sounds may be audible or a few coarse râles are heard. It is where the smaller bronchial tubes, and these near the surface, are affected that the more typical signs—breezy consonating crepitations, sounding very superficial—are heard. In many cases these sounds may simulate pleural friction. Typically, as occurring after a protracted bronchopneumonia, they closely simulate, both in nature and in distribution, the physical signs found in this disease—the symptoms of illness disappear but the signs remain! When a lung from such a case can be viewed on the *post-mortem* table it shows a reticulated appearance from the development of numerous bronchiolar sacs.

Now the failure of bronchopneumonic signs to clear is no uncommon occurrence; many such cases of bronchiolectasis leave our children's hospitals, and it may well be asked what becomes of them. Some may, perhaps, be still recoverable; some, we have seen, return with recrudescences of catarrh; but there are others whose health does not appear to be prejudiced but who yet retain some damage to their lung bases and carry this presumably into adult life—where we shall meet them again farther on in this paper.

As to the symptoms of "damaged lungs" in children, these will depend on the amount and nature of the bronchiectasis. Some will have cough and nothing to show for it; others will bring up sputum, and occasionally blood, in varying quantities. But few appear to be really ill or toxic in their early years, apart from the severe febrile lung attacks to which a proportion of them are prone. The sallow skin, with wasting and foul sputum characteristic of bad cases of adult bronchiectasis, are much less common in childhood.

*In Adult Life.*

"Damaged lungs" in adult life are very commonly the inheritance of inflammatory diseases in childhood. Not to speak of marked and typical cases, we may meet with the conditions to which I would draw attention under very different circumstances.

First, there are cases where a "basal bronchitis," strictly confined to the broncho-pneumonic area, is found—generally as a chronic condition with exacerbations. My belief that these are cases of bronchiolectasis derived from a childhood bronchopneumonia is a mere pious opinion. I have no real proof to offer. May not they represent a proportion of those cases of unresolved bronchopneumonias which retained their damage with but little immediate ill health? The history of certain of them suggests that this is so. More likely still is this the case in many cases of so-called bronchopneumonia, apart from influenza, in adults. Influenzal bronchopneumonia must of course be given its due place, but I am myself doubtful of most of the so-called bronchopneumonias of other causation in adult life. In many such cases the signs and symptoms are much more suggestive of a severe catarrh in an old basal bronchiolectasis, and in such cases the signs will not completely clear up after the attack. They may, however, be slight and easily overlooked in the quiescent state,



where the dilated tubes are not close to the surface (this is illustrated by experience of less debatable cases in childhood). If a careful history of such a case is taken, with the assistance of an elder relative, a clear record of bronchopneumonia, sometimes repeated, in early life is not infrequently obtained.

It has already been mentioned in dealing with bronchiectasis in childhood that blood is not infrequently coughed up, and that, occasionally, in notable amount. This may occur in adult life also, and I have known it to occur in a patient who had lost all recollection of former chest disease, but who presented a well marked basal bronchiectasis, of which his female relatives were able to supply a perfectly clear account from his early childhood. The case was, of course, under dire suspicion of pulmonary tubercle.

In addition to damage from childhood infections, the lungs of adults are also very apt to suffer scarring from the results of recovered influenzal pneumonia and of tuberculosis. Basal bronchiectasis or bronchiolectasis, not infrequently double, is not uncommonly to be seen since the recent epidemics. Sometimes it gets forgotten until some acute exacerbation brings it once more to the notice of the medical attendant. Occasionally it has been so far overlooked that some fresh disease, generally tuberculosis, comes under suspicion when new symptoms arise.

The lung damage caused by the healing of tuberculous lesions is so large and varied a subject that I shall not attempt to touch more than one aspect of it here. I would only urge that some amount of bronchiectasis is the usual accompaniment of chronic tuberculous lung disease. The point I wish to call attention to is the presence of crepitations over the diseased areas in cases of arrested or healed pulmonary tuberculosis. Such an occurrence is not uncommon, and yet one finds but little reference to it in the literature. I have many cases under observation which have been long arrested, but where crepitations remain, and might cause anxiety in the mind of an uninitiated observer. In some of these cases there are but the dry crackles of expanding lung, but in others the crepitations are somewhat moist and are due, I feel sure, to dilated bronchioles over a contracting fibroid area—generally in the region of a deep contracting cavity. The diagnosis of "arrest" may be difficult where these are present—it is greatly helped, in my experience, by the absence, in these cases, of the "reflex bands of percussion impairment" which I have described elsewhere on more than one occasion.

In conclusion, I should like to insist on the point, which perhaps I have hitherto only implied, that fibrosis and bronchiectasis, and "damaged lung" in general, vary according to the severity of the inflammation which produced the condition. It is attention to the slighter grades for which I here plead—the textbook account of bronchiectasis applies to the few marked and uncommon cases, whereas the slighter forms are not rare and are seen at all ages. They do not provide us with "pints of fetid sputum which separates into three layers," but they provide us with a varying symptomatology, and with problems in diagnosis, prognosis, and treatment, which may be of vital importance to our patients, and not without moment to our own *amour propre*, and, incidentally, our reputation.

## REFERENCE.

1 St. Bartholomew's Hospital Reports, 1905.

## AN UNUSUAL CASE OF TYPHOID SPINE WITH SYMPTOMS OF SPINAL CORD AFFECTION.

BY

PROFESSOR H. TURNER,

ORTHOPAEDIC CLINIC OF THE MILITARY ACADEMY OF MEDICINE,  
PETROGRAD.

NUMEROUS clinical observations and pathological research of past years have brought convincing evidence of the fact that the infective agent of so-called acute internal disease may settle on different parts of the skeleton, bringing injuries to bone, cartilage, or component parts of the joints (Virchow, Rokitsansky, Ponfick). It is well known that even such exclusively internal diseases as influenza may involve the osseous tissue. The "amphibious" qualities of the pneumococcus are proved by every day's observation. Its nefarious rôle in the production of osteomyelitis and arthritis has been very often the cause of diagnostic errors. The ranks of specific "surgical"

microbes, as primarily defined by Ogston, W. Cheyne, Rosenbach, and others, have been gradually enlarged by the enlistment of many other pathogenic elements, which have come forward from the domain of acute infectious diseases such as those belonging to the multifarious group of typhus—that is, typhoid, recurrent, and typhus (spotted) fever. The widespread epidemic of these latter diseases, observed in Russia during recent years has given birth to vast material concerning this subject, and Russian literature, notwithstanding its internal difficulties, has been able to bring to light many of the surgical complications of typhus fever in general. Typhoid or enteric fever, with its stubborn bacteria, capable of retaining vitality in the organism for many years after the conclusion of morbid symptoms, stood foremost in this relation, although recurrent and spotted fever did not remain much behind in showing the same quality. Clinical observations on a large scale gave us the opportunity of confirming the findings of Ebermeyer, Fränkel, Quincke, and many others, who discovered typhoid bacilli in the vertebrae, ribs, sternum, and other bones of the dead body.

The special tendency of the spine to become the seat of infection, as explained by Fränkel's demonstrations of living typhoid bacilli in the cancellous tissue of the vertebral body, we have seen represented in the numerous cases of typhoid spine which came under our observation in the orthopaedic hospital of the Medical Academy. Experience has taught us to mark off these forms of spondylitis amidst the greater number of tuberculous cases, and generally there was not much difficulty in avoiding errors of diagnosis.

The involvement of the spine in the typhoid process takes place, with great probability, during the flourishing period of the disease, and must be of not very rare occurrence. The symptoms of this complication may pass unremarked on the background of the grave picture of the illness. A new wave of temperature, accompanied by severe pains in the back, may draw attention to the intrusion of the virus into the spine. The further progress of the complication may be very slow, not taking a malignant course. It seems as if bone tissue, especially the cancellous part of it, is not a suitable pasture for the typhoid microbe, the feeble pyogenic and destructive character of which has been proved by many communications. The symptoms of the infection may in some cases subside without having been clearly understood, natural curative forces having extinguished its continuance. But as in other parts of the body, and especially in the intestinal channel, the virus of typhoid fever, secluded in the vertebrae, may retain its vitality for months and years, only to regain force under convenient circumstances, trauma in any form being the auxiliary agent.

It may be stated that the pathological anatomy of typhoid spine in the different stages of its development is not founded on such abundant data as in the case of Pott's disease. The benign course of typhoid spondylitis allows the patients to evade further clinical observation, and the final changes in the vertebrae have to be studied on occasional findings in the anatomical theatre or on the shelves of museums. The examination of these specimens, and the interpretation of the pathological changes presented by them, are hampered by the want of clinical notes. It is not easy, therefore, to define clearly the type of typhoid or other infectious spondylitis among the multifarious pathological processes to which the spine is so conspicuously liable. Roentgen rays have done very much to help our advance in this difficult field. The findings seen on the plate, elucidating the origin of clinical symptoms, present themselves as useful guides in the examination of dry pathological specimens. Taking this course of study, I have been able to discern with a great degree of positiveness the doubtful cases of infectious spondylitis compiled by me in the surgical museum attached to my clinic. The general impression received from the examination tends to confirm the supposition that the process of typhoid spondylitis is actually a form of subacute inflammation involving the periosteum, ligaments, and vertebral articulations. Gibney's term, "perispondylitis," remains the most suitable for a brief determination of the pathological changes. The posterior lateral parts of the laminae are principally involved, their mobility probably influencing the exacerbation of the process.

This point of view may help to explain the frequent localization of the illness in the lower dorsal and upper lumbar regions. Ossification of the tissues adjacent to the bone brings firm consolidation of the laminae and locking of the joints. The massive layers of newly formed bone on the



outer surface of the posterior wall of the spinal channel are sometimes exceedingly imposing. Continuous or interrupted bridges are to be seen between the vertebral bodies. The intervertebral discs seem to undergo a process of atrophy, the intervals between the adjacent surfaces of the bodies becoming narrower. In some cases there is to be seen complete synostosis of laminae, articulations, and bodies. Two or more vertebral bodies become firmly and inseparably united. One of my specimens coming from a juvenile subject clearly represents the result. The vertebrae have been united in three pairs, beginning from the lower lumbar and ending by the twelfth dorsal. The next three dorsal vertebrae (9-11) are also firmly glued together, showing traces of heavy destruction of the bodies. And yet there is no kyphotic curve of the spinal process line. The fact of the vertebral bodies having been impaired in this case emphasizes the common assumption that the anterior cancellous part of the column may not be exempt from the destruction. It seems to confirm the investigations of E. Fränkel, who was able to cultivate typhoid bacilli procured from bone marrow squeezed out of the spongy tissue of the vertebrae after death. The paradoxical absence of kyphosis in such cases is easily explained by the effect of previous ankylosing periostitis binding together the posterior halves of the laminae and locking the articulations. The same interpretation may be accepted for the rare occurrence of grave spinal cord symptoms in typhoid affections; paralysis from cord compression is not spoken of.

The picture of typhoid spondylitis as represented by the Roentgen plates is very characteristic. Attention is drawn to the narrowing or partial disappearance of the intervertebral spaces and to the lateral protrusion of the contiguous edges of the bodies. Dense vertical shades on one or both sides of the middle line reproduce the massive bridges of newly formed bone by which the posterior parts of the column are soldered together. A scoliotic curve may be occasionally seen as the result of asymmetrical disposition of the disease.

As regards the clinical symptoms of infectious spondylitis, it may be said that they differ very much from those in Pott's disease. Acute excruciating pain in the back is the chief complaint. Every least movement exaggerates the sufferings; the undulations of a spring mattress may bring them on. The exact situation of the process may be easily determined by manual examination, although kyphotic projection may be absent. Digital pressure reveals intense pain in the lateral parts of the spine. The soft coverings of the region involved may be thickened and oedematous. In some cases several foci of the disease are to be found in different levels of the spine. Fever of an intermittent type generally accompanies the process in its initial stage. Tendency to suppuration or the formation of fistulae is very rarely observed, the diagnosis thereby being deprived of bacteriological proof. According to our clinical experience and the bacteriological findings of Quincke, E. Fränkel, and others, one must allow the assumption that the involvement of the spine in the typhoid process is a frequent integral part of the disease as a whole, the infection continuing to exist in a latent state. The awakening of the process is generally brought about by trauma, be it in the form of an early attempt to leave the bed or to resume physical work. Therein lies the explanation of the development of typhoid spondylitis some months or even years after recovery from the initial disease. The symptoms and clinical course of spondylitis produced by spotted or recurrent fever are similar to those above described.

The following case may be offered as an interesting addition to the general statistics of the subject:

L. M., aged 23, Red Army, infantry, admitted to the orthopaedic department May 21st, 1921. In November, 1919, he developed typhoid. In February, 1920, he began to suffer from pains in the back. Having re-entered service on August 12th after two months' leave he continued feeling the same pains. In December, 1920, he went through an attack of recurrent fever. Called up again soon after, he began to lose power in his legs in March, 1921. After a certain term of treatment in a military hospital he came under my care.

On admission his state was as follows: General health good. Robust complexion. Standing or walking absolutely impossible. Distinct signs of partial spinal cord compression in the form of a hile and patella clonus; Babinski's phenomenon; rigidity of muscles and weakness of the lower limbs; loss of muscular feeling in the toes; skin hyperaesthesia to pain on the level of the seventh to eighth dorsal segments, and hyperaesthesia to all kinds of sensation on lower down. State of atactic paresis of the lower limbs. No trouble of the bladder or rectum. Examination of the spine shows a not clearly defined swelling between the shoulder blades corresponding to the fifth to seventh spinous processes. The integu-

ments of the same region oedematous and reddened. Fluctuation distinct. Palpation of the diseased area of the spine inflicts great pain, especially in the lateral parts of the vertebrae. Vidal's reaction of the blood positive. Temperature between 38° and 39° C.

Patient complains of great pain in the back, especially with every movement. On opening the abscess under general anaesthesia, on May 25th, slightly odorous grey-green pus was found, from which a pure culture of typhoid bacilli was obtained in the bacteriological laboratory of the Academy. There was no doubt about the identification of the micro-organism, as it showed all the usual tests. The cavity of the abscess was found to be located to the right of the spinous processes, leading deeply towards the corresponding laminae. No denuded bone could be felt during the scooping out of its contents.

The subsequent course of the case long duration, spinal cord symptoms fistula, periodically closing and reopening containing the specific bacteria. Voluntary movements of the legs reappeared in July. The hyperaesthesia disappeared. Babinski's sign and clonus still persisted. By December, 1921, the patient was able to walk freely. At times he felt acute pains in the region of the operation. A probe periodically introduced into the fistula met with something hard resembling denuded bone. The attempts to extract the "sequestrum" were futile, although it seemed to be movable. On June 2nd chloroform was administered and the fistula cut open. With a strong forceps I extracted a foreign body, which proved to be the middle part of a penknife blade about 1 cm. square, thus astonishing my staff and myself. The patient being eager, still in a drowsy condition, to see the obnoxious bone which had troubled him for so long, the piece of metal was shown to him. His look seemed to wander as if trying to recollect some distant event. "Yes," said he, after a pause, "there has been an affair." The details of the adventure were obtained on the next morning. In the winter of 1918, before he entered service, he took part in a sleigh trip in company of his equa's containing representatives of his parish. Having the advantage of being able to play the harmonica, he was stabbed from behind by a jealous village comrade. The blade of the penknife broke into pieces on striking the vertebral laminae; its point probably penetrated the cortical layer of the bone and broke off. The small wound healed without any further trouble in a few days, and no subsequent attention was paid to the tragic event.

In need of a justification of my publishing the above case, I may point to the fact that it is the only positive one, according to my knowledge, in which typhoid spondylitis was complicated by suppuration. The bacteriological verification of the origin of the disease is also of singular interest. The previous trauma, which may have stimulated the onset of the suppuration, is also to be underlined. Symptoms of cord affection are a not very frequent concomitant in typhoid spondylitis.

The wound having healed in two weeks, the patient walked out of the clinic on June 29th, 1922, with some traces of nervous disorder in his legs.

## TREATMENT BY DIATHERMY.\*

BY

W. J. TURRELL, M.A., M.D. OXON.,

ELECTROTHERAPEUTIC PHYSICIAN, RADCLIFFE INFIRMARY, OXFORD.

THE title of this communication does not necessarily imply the adoption of any electrical method. It simply refers to treatment by penetrating heat. The subject consequently admits of division into two parts: (1) the therapeutic effects of heat penetration; (2) the most effective method of securing this penetration, having due regard to its safety, the ease of its regulation, and its capability of application to the body as a whole or any organ or part of the body.

As to the first part there can, I think, be no difference of opinion in regard to the great importance of heat as a therapeutic agent. Its value has, in fact, been admitted from the earliest times to which medical history extends, and probably no method of therapy has been more unquestionably or more universally adopted.

A variety of methods have been utilized for applying heat treatment—hot sand, hot bricks, poultices, radiant-heat baths, sun baths, paraffin baths, and many others too numerous to mention; but the therapeutic value of all these methods is distinctly and definitely limited, for the simple reason that their action is restricted to the surface of the body and the superficial tissues, and cannot be brought to bear directly upon the deeper organs and structures. They are consequently useless as agents for treatment by diathermy or heat penetration.

There is only one known method by which heat can be

\* A paper read at the annual meeting of the Oxford and Reading Branch of the British Medical Association, July 13th, 1922.



directly applied throughout the body as a whole or concentrated on any limb, on any organ or part of the body, and this is by the electrical method commonly known as diathermy, the outcome of the research of the distinguished French physicist d'Arsonval.

#### Mode of Action.

This fact well illustrates a very important point in relation to electrical treatment. In the past electrotherapy has been regarded by many patients, and, indeed, by some medical men, as an empirical and mysterious form of treatment passing all human understanding. In reality it is nothing of the kind; its value, on the contrary, rests upon the fact that it is often the best means by which some well established method of treatment can be carried out; as in the present instance, it is the most effective method of administering heat; in other cases it is the best method of producing muscular exercise, localized or general; or again, it may be the best means of effecting chemical or other changes in the tissues. I will endeavour, as simply and as briefly as I can, to explain in what manner this heat penetration is electrically obtained.

An electrical current may be in the form of what is termed a constant current—that is to say, a current which is maintained at a uniform strength, flowing in the same direction without interruption, reversal, or variation; such is the direct current, the D.C. of commerce. Or, on the other hand, it may be interrupted and its direction reversed at each interruption, as in the alternating current, the A.C. of commerce, with its usual periodicity of about fifty reversals a second.

Provided that the constant current is applied to the body very gradually no muscular contraction will be excited, but during the whole of its passage an acid such as HCl will be formed on the skin at the positive pole by what is termed electrolytic action, and an alkali such as caustic soda will be similarly formed at the negative pole. With the small constant currents usually applied in electrotherapy these phenomena will produce no bad results; but if a very strong current is applied these products will cause serious burns of the skin or subcutaneous tissues; the amount of current which can be safely applied is therefore insufficient to produce any very marked heating effects.

On the other hand, in the case of the alternating current, changing its polarity from positive to negative fifty times a second, the danger of such burning is absent as the alternating products neutralize one another. But at each sudden make or reversal of the current strong and painful muscular contractions are excited, and if a very strong current was employed the effects might even result in the death of the patient.

In 1888 d'Arsonval found that by increasing the number of the interruptions a second of a current at a given strength, the resulting contractions became more vigorous as the interruptions became more frequent; until a rate of interruption of from 2,500 to 5,000 a second was reached, when a further increase in the frequency resulted in a diminished vigour of the contractions. In December, 1895, using the apparatus of Hertz, d'Arsonval attained a frequency of interruption or oscillation of about a million a second, with the result that all contractions and sensation were abolished, and only the heat generated by the friction resulting from the oscillation of the electrical particles (the ions converging the current) remained. This constituted the discovery of high-frequency currents, and by subsequent improvements in the apparatus the frequency of the oscillations was further increased, yielding the diathermic currents of d'Arsonval.

I will merely state that in its main principles the apparatus is identical with the transmitting apparatus of wireless telegraphy, and it admits of the passage through the body with perfect safety of currents of 2 or 3 ampères—that is to say, a hundred times or more stronger than could be transmitted by the continuous or alternating currents. The only effect of the transmission of such currents through the body, apart from a probable stimulation of the tissue cells due to the perturbation excited by these oscillations, is the generation of heat of any desired amount within any organ of the body. According to the density of the diathermy current employed, this method of heat penetration may be utilized for either medical or surgical purposes.

When a diathermy current of moderate intensity is applied transversely through large areas of the body, or longitudinally through the limbs, the temperature of the body at first rises to about one degree above normal, and the pulse becomes accelerated about 10 beats a minute; then, as the heat-regulating centres come into play, the pulse becomes softer and fuller, the temperature returns to normal and will remain normal for the rest of the treatment, although it may be continued for an hour or more at the same intensity. By passing very large currents such as 17 ampères and over through the body a marked rise of the general temperature can be obtained, and if such currents are continuously administered for a considerable time, as has been done in experiments on animals, the action of the heat-regulating centres will be overcome, and the animals will die of hyperpyrexia.

A very small current, such as 300 ma., does not appear to call the heat-regulating centres into action to a relatively marked

extent, and consequently with small currents a relatively greater heating effect may be obtained. Thus it has been shown that on heating the stomach by a diathermy current of 300 ma. the temperature of that organ was raised to half a degree above normal, but, on increasing the current to ten times that strength, the temperature of that organ fell to only one-third of a degree above normal.

#### Medical Applications.

The importance of these experiments is that they show the immediate and consecutive effects of diathermy. The first effect is to raise the temperature of the part treated; the later effects are a relaxation of the tissues, a dilatation of the blood vessels, and consequently an increased blood supply to the part treated. In this way the therapeutic effects of diathermy are explained—namely, the lowering of the blood pressure, the relaxation of spasm with the relief of pain, and an improved nutrition of parts whose blood supply has been deficient.

Without attempting to formulate any new theory of pain, I should like to recall the intimate and causal relationship which exists between pressure and pain; it is by relieving spasm and pressure, and hence removing pain, that diathermy finds one of its most important indications in clinical practice. Neuritis, deep-seated pain such as that associated with dysmenorrhoea or the spasm of a ureter excited by the passage of a calculus, the hypertonicity of the lumbar muscles in lumbago or the neck muscles in torticollis, the muscular rigidity of local tetanus, the pain and tenderness of a recently strained ankle, and many other conditions too numerous to enumerate, are usually markedly relieved and often permanently cured by the application of this treatment.

The nutritional effect of the increased blood supply induced by diathermy is constantly seen in the improvement which takes place in wasted limbs and atrophic conditions treated by this method.

Hypothermic and marasmic conditions are much relieved and improved by generalized diathermy. Bergonié has advanced the ingenious theory that its administration in these cases affords what he terms a "supplementary ration of heat"—that is to say, he maintains that, as the greater part of the food taken is diverted to the maintenance of the body temperature, if heat is furnished to the body by diathermy the food previously diverted for this purpose would be utilized for the nourishment and building up of the tissues. Bergonié further points out that the custom of giving additional food, owing to the weakened digestive mechanism associated with these marasmic cases, merely serves to add to the troubles of indigestion to those already existing. Bergonié has published several cases in proof of his contention; moreover, the theory would appear to receive some support from the improved nutrition of rickety children exposed to the prolonged action of the sun bath; for such improvement may be partly due to the gradual action of the heat rays from the sun and partly due to the action of its actinic rays.

When we realize the very wide application of heat therapy it is not surprising to find that diathermy is continually extending its sphere of action. To mention only a few of the recently adopted indications, Professor Bordier, in the excellent and exhaustive volume on diathermy which he has recently published, draws attention to the great benefits attending the adoption of this treatment in certain cases of dyspepsia, and quotes a number of cases investigated by Setzu to show how it increases both the total gastric output of acids and of free hydrochloric acid. Setzu's carefully investigated cases definitely show how the secretion of a deeply seated organ may be increased by the administration of penetrating heat, and suggest a wide field for research on the effect of diathermy on ductless glands whose secretion has become deficient.

The special vulnerability of gonococci to high temperatures renders possible their destruction, or an impairment of their vitality, at temperatures obtainable from diathermy and their readily supportable by the tissues, and thus renders this treatment a specific in gonorrhoea and most of its complications. Many other conditions, such as asthma and uresorel pneumonia consolidation, will suggest themselves as especially suitable for gradual and prolonged diathermic treatment at low intensities, but time forbids me to deal further with the medical aspects of diathermy and I must pass on to its surgical side.

#### Surgical Applications.

In surgical diathermy the heat, which in the medical applications is distributed over a comparatively large area, is concentrated on one spot. It differs from the destruction of tissue by heated irons or the Paquelin cautery in that



when properly applied it effects the destruction by heat coagulation and not by charring or incineration.

Those who have used the Paquin cautery will remember how the charred tissues adhere to the blade of the instrument and become separated from the heated surface of the part treated, so laying open a bleeding surface. In surgical diathermy the instrument utilized is not itself heated; the whole of the heat being developed in the part treated; it consequently does not adhere to the tissues but comes cleanly away, leaving them undisturbed but firmly coagulated to a sufficient depth to prevent haemorrhage.

It is not claimed that surgical diathermy is an absolutely fool-proof method, for if it is applied incautiously in the neighbourhood of large vessels the wall of an imperfectly coagulated vessel may be laid open and fatal haemorrhage ensue. Such an occurrence has been recorded by Bordier and others in the destruction of malignant tonsils by diathermy. The risk of haemorrhage from surgical diathermy, if it is applied in a rational manner and with due regard to the anatomical relations of the part treated, is exceedingly small.

The methods of its application are threefold: the unipolar method, utilizing a small active and a large indifferent electrode; the bipolar method, using two small active electrodes; the indirect method, in which the patient, lying on a condenser couch attached to one terminal of the apparatus, and holding an electrode connected with the other terminal, is charged with a suitable diathermic current, which is tapped off to the body of the operator at the point to be destroyed.

For the destruction of most superficial growths, sufficiently removed from important underlying structures, such as large blood vessels, nerves, glandular ducts, etc., the unipolar method is usually the most convenient one. It is, however, difficult with this method definitely and accurately to restrict the depth to which the coagulating action of the heat will extend, and in the neighbourhood of important structures it is best to delimit the destructive action of the current by the adoption of the bipolar method. In this case two small active electrodes of the same size are applied to the surface of the part to be treated, and the destructive action is limited to a slight and readily recognized depth. The destructive action may, however, be still more effectively controlled by the use of electrodes provided with multiple points of the required length. These electrodes consist of small plates, from the under surface of which several needles project; by plunging each of the instruments, at a suitable distance from one another, into the growth to be destroyed, the action of the current reaches with certainty to the desired depth, and cannot extend more deeply.

The indirect method, which I introduced some years ago, is especially suitable for the treatment of small growths, naevi, papillomata, warts, urethral caruncles, epulides, etc. The advantages are that it is the most accurate method and the least painful; the instrument held by the operator is unencumbered with any wires, and as the amount of the current employed is registered by the ammeter of the apparatus before the treatment is started, the amount of current can be suitably adjusted

before the operation is commenced. If with the patient charge in the manner described a papilloma or other growth with a narrow pedicle be held by the operator by means of metal forceps, the narrow base of the pedicle will coagulate and the growth will painlessly separate.

Intra-vesical growths, haemorrhoids, superficial growths, malignant or otherwise, on the surface or within accessible cavities, lupus, moles, enlarged tonsils, naevi, and many other conditions are suitable for surgical diathermy; it is also a most delicate and efficient means of epilation. Speaking from my own experience, my greatest success with surgical diathermy has been in the treatment of haemorrhoids. Intra-vesical growths are best treated by a surgeon specializing in diseases of the bladder, as the cystoscope is a far more difficult instrument to use than the diathermy instruments; in fact, I am of opinion that all the more severe diathermy operations, such as the destruction of large malignant growths, belong rather to the surgeon than to the electro-therapist.

#### Concluding Remarks.

I have endeavoured to give a brief summary of the therapeutic action of diathermy. It is, of course, impossible to deal adequately with so large and important a subject in so brief a time; indeed, we have by no means as yet fully developed the therapeutic possibilities of heat penetration by electrical means. As Bergonié points out in his introduction to Bordier's book on diathermy, the end of the last and the beginning of the present century have given us the high-frequency currents of d'Arsonval, the x rays of Röntgen, the radium emanation of Becquerel and the Curies; but the period which has as yet elapsed since their introduction has proved insufficient to enable us to develop fully their methods of application or even to visualize fully their wide reaching and revolutionary effects.

Every new discovery in Medicine, whether electrical, pharmaceutical, or surgical, is invariably heralded as an era, and from its application miraculous results are predicted, which the lapse of time fails to justify. In the past, as Bergonié says, seen every illusion flourish and have heard every physical panacea preached. It is only by patiently and critically investigating the clinical action of these new methods and by carefully tracing out their fundamental basis that we are able to establish them upon a sure and lasting foundation. Working upon such lines as these, the modern school of electro-therapists, both in this country and abroad, may fairly claim to have placed the high-frequency currents of d'Arsonval upon the firm and far-extending foundation of heat penetration, and upon this basis to have secured for them an important and enduring position among the therapeutic methods of the future.

### The FitzPatrick Lectures

ON

## THE POST-HIPPOCRATIC SCHOOLS OF MEDICINE.

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS OF LONDON,

BY

R. O. MOON, M.D., F.R.C.P.

[Abstract.]

In my lectures in 1921 I endeavoured to show how Hippocrates had been influenced by the great Ionian philosophers who had preceded or been contemporary with him, and by the scientific and general intellectual atmosphere in which his writings had been composed.

Just as after the death of Socrates the essential unity of his teaching broke into a variety of schools—such as the Cynics, Cyrenaics, Megarians, and, in particular, the followers of Plato—so after the death of Hippocrates, medicine became split up into a number of sects, each at its best emphasizing some important aspect of medical truth, but each in turn, as is the habit of all sectarianism, running into strange extremes, and remaining incapable of grasping the Hippocratic system as a whole.

The post-Hippocratic schools of medicine, which were four in number—(1) the Dogmatists, (2) the Empirics, (3) the Methodists, (4) the Pneumatists—occupy perhaps a somewhat unimportant sphere in the history of medicine, but the great

philosophic schools of the Stoics, Epicureans, Sceptics, and Eclectics which influenced them, and of which, in a sense, they were the practical outcome, are famous through all time, and some attempt will be made to describe them when trying to explain their points of contact with medicine.

#### THE DOGMATISTS.

The school of the Dogmatists in its prime synchronized with the decline of Hellenic freedom and with the rise of the Macedonian hegemony. This school received its name from Galen, and, though not very happily chosen, it must be retained for convenience. If we were to call them "theorists" we should come nearer to the essential idea which they represented in the ancient world. To the modern mind dogmatism is suggestive of a certain degree of intellectual rigidity and aridity which were certainly not characteristics of this ancient medical school. But they suffered from what Bacon called that first distemper of learning, when men study words and not matter.

The most important member of this school, though not the actual founder of it, was Diocles of Carystus, who flourished soon after the death of Hippocrates. He was born at Carystus in Euboea (400 B.C.). The greater part of his life was passed at Athens, and with pride he was termed by his fellow citizens "a second Hippocrates." He was the first physician to write in Attic Greek, and his writings covered the whole field of medicine—namely, Physiology, Anatomy, Dietetics, Pharmacy, Pathology, Therapeutics, and Prognosis. He was first to isolate pleurisy from pneumonia, declaring that the seat of pneumonia was in the vessels of the lungs.

Speaking generally, in his dietetic writings Diocles adopted



the Hippocratic point of view, and laid down most minute directions for every hour of the day—for the morning walk, for sleeping, for working, for cleaning the teeth, and so forth. But the bond which specially united Diocles with Hippocrates was his recognition of the fundamental teaching of the great physician that it is impossible to understand the nature of the body without knowledge of the Macrocosm, which is so well exemplified in the Hippocratic treatise of airs, waters, and places. In the writings of Diocles, as in those of Hippocrates, we find an effort to bestow a continuous consideration on the climate, seasons, surroundings, and also the life habits of the sick.

Another distinguished member of the school of Dogmatists some sixty years later was Praxagoras of Cos. He was the son of Nicharchus and the teacher of Herophilus, also he was the father of the celebrated poet Theocritus, and the pupil of Diocles. It appears that Praxagoras was the first to discriminate between the arteries and the veins, and to use them for his teaching on the pulse, to which he attached the greatest importance, saying that the pulse in diseased conditions indicates the changes of the vital force. All mental diseases, he thought, originated in the heart; according to him epilepsy was caused by the destruction of the arteries through excess of phlegm. The nerves he seemed to have looked upon as the organs of sensation, but did not distinguish them entirely from the vessels and tendons; their origin he believed to be in the heart—doubtless because Plato had made the heart the seat of sensation. Unfortunately, he confused himself by taking the terminal branches of the arteries for nerves.

The school of the Dogmatists had a peculiar method of treating fever: first they caused a patient suffering from fever to be covered with a large number of clothes in order to produce heat and thirst; as the fever remitted the patient was given cold water to drink with a view to producing a sweat. If this did not come about the patient had to drink salt water, and this caused vomiting. When by one of these methods the fever was brought to an end, the patient was given roast pork and allowed to drink as much wine as he liked.

But the most distinguishing characteristic of the Dogmatists was that they had taken as their guiding motto the saying of Hippocrates that "the physician who is also a philosopher is godlike," and with commendable zeal they proceeded to earn this title by a careful study of the *Timæus*—the only dialogue in which Plato gives a concise explanation of his notion of the physical world and puts forward some definite anatomical and physiological ideas; but such subjects, we must realize, were certainly not of primary interest to Plato, who was far more concerned with metaphysics and the nature of ultimate Being, and so the dialogue is put into the mouth of a Pythagorean and not of Socrates, who also stood aloof from physical speculation, which in the *Phædo* he said he had renounced. Plato himself did not attribute any importance to his own guesses at science. He is not absorbed by them as he is by "the Idea of the Good," for he regarded speculation on physics as a rational pastime only. He would have thought it an impiety to rank physics first in the order of knowledge, as that would mean placing the body before the soul. In the dialogue of the *Timæus* there is much derived from Plato's theory of the universe and applied to man, as there is much in his theory of the universe which is suggested by man. The microcosm of the human body is the lesser image of the macrocosm; the animal, he imagined, acted as a sort of world to the particles of blood which circulate in it. Like Hippocrates, he believed in the *vis medicatrix naturæ*, and seems to have thought that physicians were more or less useless; we know that they as well as lawyers were banished from his ideal republic.

Now in trying to form an estimate of the science of the ancient world it is difficult to realize how great a thing it was to have framed a conception, however imperfect it might be, either of the human body as a whole or of the world as a whole. It is very doubtful whether the Egyptians or Babylonians ever formed such conceptions. General notions are notions which are necessary for the discovery of particular facts, the metaphysical for the physical. Before men can observe the world with any profit they must be able to conceive the world—the string is wanted no less than the individual pearls.

There is a passage in the *Laws* of Plato in which he described two kinds of doctors, and in the superior kind, who are the doctors of freemen, we can easily recognize the

prototype of the Dogmatist physician. The passage is as follows:

"And did you ever observe that there are two classes of patients in States, slaves and freemen? And the slave doctors run about and come to slaves and wait for them in the dispensaries—practitioners of this sort never talk to their patients individually, or let them talk about their own complaint; the doctor prescribes what he thinks good out of the abundance of his experience, as if he had no manner of doubt, and when he has given his orders, like a tyrant, he rushes off with equal assurance to some other servant who is ill, and so he relieves the master of the house of the care of his invalid slaves. But the other doctor who is a freeman attends and practises upon freemen, and he carries his inquiries far back and goes into the nature of the disorder [this, of course, is very like the method of the Dogmatist]; he enters into discourse with the patient and his friends, and is at once getting information from the sick man and also instructing him as far as he is able, and he will not prescribe for him until he has first convinced him; at last, when he has brought the patient more and more under his persuasive influence and set him on the road to health, he attempts to effect a cure. Now which is the better way of proceeding in a physician and in a trainer? Is he the better who accomplishes his ends in a double way, or he who works in one way and that the ruder and inferior?"

A few practical medical or semi-hygienic suggestions are worth mentioning while we are considering Plato; thus—Much sleep is not required by nature, either for our souls or bodies, or for the actions in which they are concerned. For no one who is asleep is good for anything any more than if he were dead; but he of us who has most regard for life and reason keeps awake as long as he can, reserving only so much time for sleep as is expedient for health, and much sleep is not required if the habit of not sleeping be once formed.

In the following passage from the *Laws* of Plato we have a good unconscious description of what would apply to the empirical school of physicians; they had not come into existence in the time of Plato, but we shall have to make mention of them presently. In speaking of the inferior kind of doctor who attends slaves, Plato says:

"Of this you may be very sure that if one of these empirical physicians, who practise medicine without science, were to come upon the gentleman physician, talking to his gentle patient and using the language almost of philosophy, beginning at the beginning of the disease and discoursing about the whole nature of the body, he would burst into a hearty laugh—he would say what most of those who are called doctors have at their tongue's end: 'Foolish fellow,' he would say, 'you are not healing the sick man, but you are educating him, and he does not want to be a doctor but to get well.'"

There is a fine passage in which Plato points out the impossibility of any art imposing upon itself universal rules:

"Let us put to ourselves the case of a physician who is about to go into a far country, and is expecting to be away a long time from his patients; he leaves written instructions for the patients or pupils under the idea that they will not be remembered unless they are written down. But what would you say, if he came back sooner than he intended, and owing to an unexpected change of the winds or other celestial influences, some other remedies happened to be better for them, would he not venture to suggest these other remedies, although differing from his former prescription? Would he persist in observing the original law, neither himself giving any new commandments, nor the patient daring to do otherwise than was prescribed, under the idea that this course only was healthy and medicinal, all others noxious and heterodox? Viewed in the light of science and true art, would not all such regulations be utterly ridiculous?"

So great was the influence of Plato upon the school of the Dogmatists that Dexippus of Cos, one of the immediate followers of Hippocrates, was induced to defend the absurd notion that liquids, or at least the more subtle parts of them, passed into the lungs, because this belief had been enunciated by Plato in the *Timæus*.

We have seen that Plato had a good many things to say about medicine, but he was not specially interested in it. The extraordinary interest of the modern world in medicine and disease is wholly alien to the Platonic conception of them. To Plato, as to the ancient world generally, disease was a tiresome and meaningless exception to the ordered regularity of a harmonious life which no philosophic mind would waste time in studying. The ordinary citizen ought to be healthy, sane, and strong, and the man who was properly occupied had "no leisure to be ill." Focused upon the State as the mind of the antique world undoubtedly was, the needs of the individual were less minutely considered than is the case with us, and not only sickness but also old age was apt to come off second best. With the increase of the apparatus of living and the general complexity of modern life, every aspect of existence is subjected to an almost



morbidly minute analysis. Among the ancients life was infinitely more simple than with us, but it must be confessed that to some extent the simplicity was purchased by ignoring some awkward facts, such as diseases and the discomforts of old age. The fact is that with regard to the solution of many difficult social problems the ancients had a genius for cutting knots which the modern world prefers to untie.

### THE EMPIRICS.

It is hardly surprising that the school of Dogmatists with their philosophical disquisitions and hair-splitting dialectics should have aroused the natural antagonism of the so-called practical man, who prides himself on his contempt for all theories. Accordingly, in direct opposition to the Dogmatists arose the school of the Empirics, and certainly as against the Dogmatists these reformers had a very definite case, but unfortunately, as happens with all reactions, they became characterized by the most extreme and even absurd views. The founders of this school were Philinos of Cos and Serapion of Alexandria (fl. 280 B.C.). They were the pupils of Herophilos and Erasistratus of Alexandria, whose names are well known to all students of anatomy, and they took Aristotle for their intellectual leader. As opposed to the Dogmatists they declared the attempt to search after the ultimate causes of phenomena entirely vain: at the same time they were active in endeavouring to elicit the immediate causes.

Serapion, in addition to writing with great vehemence against Hippocrates, was almost exclusively occupied in researches on remedies and entirely neglected diet; the remedies he made use of for epilepsy have a strong savour of superstition about them, for, apart from castoreum, he advised the brain of the camel, the heart of the hare, rennet from a seal, and the blood of the tortoise.

A special stimulus was given to this school by the immense commerce of the Ptolemies, which had brought to light a large number of new medicines, with which it was possible to experiment in a purely empirical fashion. Many physicians occupied themselves entirely in experimenting with new remedies without paying any attention to the theories of the Dogmatists. They are only known to us from their preparations of certain composite remedies. In those days it was the fashion for kings and princes to take an interest in medicine, as was the case with Attalus, King of Pergamos, and Nicomedes, King of Bithynia. Attalus cultivated in his garden various poisonous plants, such as aconite, belladonna, hemlock, and henbane, and tried the effect of antidotes, several of which became known by his name. More celebrated still was Mithridates, King of Pontus, who took a poison and an antidote every day to render himself immune to poisons.

The main intellectual support of the school of Empirics, however, was derived from the influence of Pyrrho (fl. 340 B.C.), the founder of the Sceptical school of philosophy, which was contemporary with the great philosophic schools of the Stoics and Epicureans. Pyrrho came from Elis, and first followed the profession of a painter, but is said to have been attracted to philosophy by studying the writings of Democritus. He accompanied Alexander the Great to India, and, according to a tradition, came in contact while there with the Sages of the East, from whom he seems to have carried away that strange impassiveness and detachment which he strove in after life to reproduce. He lived poor but universally honoured, and died about 270 B.C., when nearly 93 years of age.<sup>5</sup>

The philosophy of Pyrrho denied everything, because according to it there are equal reasons for the affirmative and negative in all propositions. We ought not, therefore, to maintain anything, not even our own experience. To Pyrrho it seemed impossible to know the true nature of things, for our perception only shows us things as they appear, not as they really are in themselves. The only correct intellectual attitude, therefore, which a man could adopt was one of "suspended judgement." This philosophy of doubt limited all investigation to the narrow sphere of sense knowledge. There was nothing absolutely new in this; the Eclectic school of philosophy in particular had given rise to Sceptics, and Parmenides as well as other philosophers had opposed the knowledge we get from our senses to that which we obtain by the power of the mind.

Put shortly, the view of the Sceptics was this: In the case of any given phenomenon we admit it as an appearance to ourselves, we do not make positive statements about the nature of external objects in themselves. "That honey is sweet I refuse to assert; that it appears sweet I fully grant,"

says Timon, the disciple of Pyrrho. Man, as distinguished from other animals, has in the sphere of phenomena a faculty of following the process of things and retaining it. In virtue of this he remembers what phenomena he has observed accompanying each other, what preceding and what coming after, so that when the first members of the sequence are presented to him the rest are revived. Thus the Sceptic did not refrain from inferring the existence of fire when he saw smoke, or the existence of a wound when he saw a scar,<sup>6</sup> but of course he had to see the smoke and the wound. Now this scepticism differed from modern agnosticism, as, according to it, you could only infer what you did not see from what you did see, consequently the theory of the existence of atoms and pores in the body was repudiated, because atoms and pores were things which could never come within the range of sense perception. Hence such an induction as Kepler's of the movement of the planets in an ellipse would have been impossible for this school; in fact the immense part which working hypotheses have played in modern science was far from the thought of the ancient Sceptic.

The early followers of Pyrrho consisted almost entirely of physicians, who gradually formed the Empirical school of medicine. They rejected all judgements which are not immediately derived from sensations, and, like Pyrrho, they confessed that they were completely ignorant of the essence of things, affirming further that the essence was impenetrable because it escapes the recognition of the senses.

They paid particular attention to the totality of symptoms without occupying themselves with the nature of disease or its causes; for, they said, medicine is concerned with the cure of disease, not with the cause; they did not want to know how we digest but what is digestible. In subjecting the art of observation to fixed and invariable rules they rendered science a more important service than most of the speculations of the Dogmatists. No attempt, however, was made to comprehend or search into the hidden causes of symptoms, but the whole art and science of medicine became for them reduced to a system of therapeutics and of therapeutics only.

In endeavouring to find out what particular line of treatment would get rid of a particular set of symptoms they employed three methods, which became known as the "Tripod of the Empirics":

1. A man's own chance observations.
2. Learning from his contemporaries and predecessors—history.
3. In the case of new and strange diseases drawing conclusions from those most similar to them—analogy.

Later on a fourth method was added called "epilogism." This was the process of inferring preceding events from the present symptoms.

The Empiricists resembled Hippocrates in paying great attention to clinical observation, and, like him, they were guided in treatment at the bedside almost exclusively by experience. Like him, too, the Empirics attached great importance to climate, and they went so far as to assert that remedies which were necessary at Rome would have no effect in Gaul, and that a line of treatment which might be useful in that country would be quite inapplicable in Egypt. Consequently they did not in medicine admit rules which had a universal application. In one respect they may be said to have surpassed Hippocrates in that they systematized the technique of medical procedure and sought to free clinical methods of thought from the subjectiveness of the individual observer.<sup>7</sup> Unlike Hippocrates, the Empirics made no attempt to reach general laws from isolated facts, but we feel some sympathy with them when in opposition to the Dogmatists they asserted that "the husbandman and navigator are not trained by disputations but by practice." The important question is not what causes disease but what dispels it. Diseases are not cured by talk but by drugs.

Perhaps the most celebrated representative of this school was Menodotus of Nicomedia (fl. first century A.D.), who was less intransigent than most Empirics, for he did not insist upon an inherent opposition between observation and reasoning, between facts and explanation, between mind and experience. He also seems to have recognized the value and purpose of a provisional hypothesis, but he did not hesitate to write with some violence against the Dogmatists, speaking of them sometimes as "mere followers of routine," at others as furious lions. In his eyes medicine had no other aim but utility and fame and could never aspire to the title of science. The other best known name belonging to this school is that



Heraclides of Tarentum, who lived in the early part of the second century B.C. In addition to his medical studies he devoted some time to the investigation of poisons and wrote much upon antidotes, of which opium and hemlock formed the base. He was the only member of the Empirical school whom Caelius Aurelianus of the Methodist school thought worth refuting. His treatment of madness was quite rational: he first put the patient in a dark room, bled him, purged him every day, and applied fomentations to the head. He wrote a book of prescriptions for soldiers, and also upon remedies for affections of the skin and falling out of the hair, and in fact gave rise to the art of cosmetics which became widely spread in Alexandria.

As we have said, the Empirics were indebted to the Sceptics for their intellectual background. As a school of medicine their existence continued for a considerable time even in the early part of the third century A.D., in which Sextus Empiricus flourished, a younger contemporary of Galen, and one who was himself partly an Empiric and partly a Sceptic, and it is from him that most of our knowledge of this school of medicine is derived. Sextus maintained that scepticism alone can make man happy, because it teaches that nothing is naturally good or bad. Like the Sceptics generally Sextus was disposed to consider phenomena true for practical purposes; he did not deny that some useful knowledge was traditional and might be communicated by speech or writing, for no man's sole experience is sufficient to give him all useful knowledge, but he rejected all scientific investigations of phenomena as idle inquiries. He did not realize that all scientific knowledge means the recognition of the interrelations of phenomena.

From what has been said it will be easily understood that the Empirical school was more satisfactory in practice than in theory. Attention was focused upon the requirements of the sick man, without elaborating any hypothesis as to the cause of his sickness. By keeping close to the facts, eschewing theories, and by the careful observation of symptoms, not only were useful contributions made to medical knowledge, but the imagination was held under some sort of discipline, prevented from running riot and indulging in the cruder forms of superstition. Collecting facts is always useful, but it is the beginning and not the end of medicine.

We have seen how one of the most powerful influences in giving rise to this school was the sceptical philosophy of Pyrrho, which attracted so many physicians. Scepticism in homoeopathic doses may often serve as a useful antiseptic, so to speak, to a dogmatism which is growing fixed in routine, but when pushed to its logical extreme scepticism tends to believe in its own sceptical disbeliefs. In a sense it is a sign of the world weariness and disillusionment which began to overtake Greek thought in the third century B.C. All extremes tend to produce their opposites, so that a period of Agnosticism is likely to be followed by an outburst of Gnosticism. The entire mistrust of the senses, and indeed of the reason, gradually urged the spirit to search for truth beyond the limits of natural knowledge to some possibly higher source transcending time and space, and this search, aided by impulses streaming in from the East, eventually found a resting place in the philosophy of Neo-Platonism. There is little doubt that the position of scepticism is one in which the human heart can never permanently acquiesce, and if, as was said by Vauvenargues with profound insight, "Great thoughts come from the heart," the intellectual part of man's being will remain equally unsatisfied.

## REFERENCES.

- <sup>1</sup> Plato, *Laws*, Bk. iv, 720. <sup>2</sup> *Ibid.*, Bk. vii, 803. <sup>3</sup> *Ibid.*, Bk. ix, 857. <sup>4</sup> *Politicus*, 295. <sup>5</sup> E. Bevan, *Stoics and Sceptics*, p. 123. <sup>6</sup> *Ibid.*, p. 126. <sup>7</sup> Neuberger. <sup>8</sup> Clifford Allbutt, *Greek Medicine in Rome*, p. 165.

(To be continued.)

It would appear from W. Bredt's Report for the year 1922 that the supply of quinine is much in excess of the demand. Although the stock of quinine sulphate in London fell during 1922 the price, which was 5s. 3d. at the beginning of 1920 and 3s. 5d. at the beginning of 1921, fell in 1922 to 2s. 1½d. The export of bark from East India, Java, and Africa fell from 2,647 packages in 1921 to 340 in 1922, and the exports of quinine from Java indicate a similar decline. The international stock of quinine at the end of the year appears to have been about 23 million ounces. All these facts must militate against the efforts of the Indian Government to extend cinchona cultivation and quinine manufacture.

## Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

**ALBUMINURIC RETINITIS AS A PROGNOSTIC SIGN.**  
The importance of albuminuric retinitis as a grave sign in prognosis is now well established. The occurrence, therefore, of a case of recovery of the retinae from the characteristic changes due to nephritis is worthy of record. One looks on the discovery of this fundal lesion as allowing but a short lease of life—in other words, a period of from six to twelve months at the longest. The case would seem to show that if the nephritis could be recovered from the retinitis might also be capable of cure.

A youth aged 15, rather big for his age, in October, 1914, had double pneumonia, with left empyema, which was opened and drained in the London Hospital, and from which he made a good recovery. About the beginning of May, 1915, his urine became black, like porter. There was no skin rash nor sore throat, and the condition was not scarlet fever. In June he was anaemic, with oedema of face and legs, which pitted on pressure; there was no desquamation anywhere. He had slight diarrhoea. The urine (specific gravity 1030) was dark red, solid with albumin on boiling, thick curds with nitric acid. Only about half a pint of urine was passed in a day; albumin amounted to 10 grams per litre. The oedema of the legs, scrotum, and body all ceased, and I admitted him into hospital, where, with a mixture of urotropine and the aid of Southey's tubes, the oedema gradually diminished over a period of some months.

By May 15th of the next year (1916) the boy looked well, and the oedema had all gone. He said, however, that he could not see clearly, and especially could not read. The urine still amounted to 3 pints daily (specific gravity 1015, albumin 9 grams to the litre). I found that he had marked albuminuric retinitis, especially in the right eye, which was the worst from the point of view of vision. There was a large white circular patch at the macula, surrounded by a typhoid-like ring, and also slight neuritis of disc, but no ye there was slight neuritis of the disc, a group at the macula, and from the macula to the disc. Shortly after this he went home with a prognosis as regards life of from six to twelve months at most.

I was called to see him again on September 15th, 1922. He had had during the previous week some abdominal pain with diarrhoea, some blood in the motions, and bleeding from the gums; there was no oedema, and no abdominal tenderness. His face was florid, his pulse slightly irregular; there were very marked large striae on the skin of the flanks, groins, abdomen, and sides of the thorax—evidences of his previous dropsy. The urine (specific gravity 1020) was full of albumin, 6½ grams to the litre. On September 20th the boy had uraemic convulsions and nose bleeding, and was admitted into hospital. The ocular fundi were examined, and were both normal. On September 22nd he had more convulsions, became comatose, and died.

Not having seen the youth from May, 1916, to September, 1922—as he had been living elsewhere—I cannot say how he had actually been in the interval of over six years, but his parents said that he had been apparently quite well, had worked hard, never complained, nor had had to lie up. He had recently become engaged to be married. One may presume at least that, although the dropsy had disappeared, the albuminuria persisted during this period of six years. But the most interesting points are: (1) the disappearance of such a condition as typical retinitis, and (2) the return to sufficient health to be able to work hard for over six years.

Enfield.

FRED. TRESILIAN, M.D., F.R.C.P.

## ATOPHAN POISONING.

In the *Epitome of Current Medical Literature* for January 1922 appears the abstract of an interesting paper by K. Schroeder, emphasizing the value of atophan in gouty conditions, and at the same time pointing out the liability of certain cases to develop toxic symptoms from the drug. The warning that the patient should be under close medical observation when taking atophan is most necessary, as the toxic effects do not appear generally to be well known. To the symptoms of atophan poisoning—general malaise, headache, gastro-intestinal disturbance, urticaria, albuminuria—it would seem that jaundice must be added, as its occurrence in the following case could scarcely be a coincidence.

A man aged 59, who had suffered from recurrent gouty manifestations for nearly twenty years, began to take 7½ grains of atophan (phenyl-chinolin-carboxylic acid) three times daily. At the end of twelve days he developed an urticarial rash and discontinued taking the drug. Three weeks later, the urticaria having disappeared, he thought it safe to resume, and took a further 7½-grain dose. On the following day the urticarial rash reappeared accompanied by intense pruritus; on this occasion he sought advice, and although no further atophan was taken the



urticaria proved most persistent, fresh patches occurring day by day with considerable gastric disturbance for ten days, when jaundice supervened. The jaundice was of moderate depth, but no tenderness nor enlargement of the liver was apparent. The jaundice did not clear for several weeks.

CECIL WORSTER-DROUGHT,  
M.D. Cantab.

London, W.

## Reports of Societies.

### THE NEW TRYPANOCIDAL REMEDIES.

A crowded meeting of the Royal Society of Tropical Medicine and Hygiene was held on January 18th, under the presidency of Sir JAMES CANTLIE, when communications were read by Dr. G. C. Low and Dr. P. MANSON-BAHR, of the Hospital for Tropical Diseases, London, on the treatment of human trypanosomiasis by the new drug known as "Bayer 205," and by Dr. C. C. CHESTERMAN of the Belgian Congo, on the action of tryparsamide in sleeping sickness. Some account of the earliest work on the former compound appeared in the BRITISH MEDICAL JOURNAL of September 23rd, 1922 (p. 569), and on the latter compound on December 16th, 1922 (p. 1183). The composition of "Bayer 205" is not known, but it is believed to be a dye containing amino naphthalene-sulphonic acid with complex formula. Tryparsamide is a pentavalent arsenic compound and a derivative of atoxyl.

#### "Bayer 205."

Dr. G. C. Low said that the first experience of his colleague and himself with regard to "Bayer 205" was in 1921, when Sir David Bruce, having received some samples of the drug from Germany, handed them over to Dr. C. M. Wenyon for certain experiments on infected mice, and some of Dr. Wenyon's supply was given to him (Dr. Low) to try on his first human case. At the same time Dr. Manson-Bahr was able to get in touch with Dr. Hennings, of Bayer and Company, the well known aniline chemists of Germany, who had continued to supply Dr. Manson-Bahr and himself with an amount of the drug adequate for the treatment of the cases of trypanosomiasis under their care. Acknowledgement was due to Dr. Hennings and the Bayer firm for their invariable courtesy. The drug had been used by Dr. Manson-Bahr and himself in nine cases, seven of which had recovered and two had died. Of the recovered cases five were present at the meeting. In eight of the cases the infecting agent was *T. gambiense*, and in one (a fatal case) it was *T. rhodesiense*. The patients were all Europeans, of a high educational standard, and able to express their feelings in a manner not easily obtainable among African natives. With their recovery there had been observed in them a return of those finer traits of character the loss of which was such a distressing feature of the disease among Europeans. In treating the cases usually 1 gram of the drug was given intravenously in a 10 per cent. solution of distilled water. He and his colleague were at first at a loss to know exactly what dose to inject, and the injections started very tentatively. Ultimately it was found most satisfactory to give a dose of 1 gram every week for ten weeks. These ten doses were regarded as the standard course, though in some cases they had been exceeded. In the majority of the cases a slight albuminuria, accompanied as a rule by the appearance of small granular epithelial casts, made its appearance on treatment, but so far as the work had gone at present "205" did not appear to lead to a chronic nephritis such as to endanger the life of the patient. In some cases an extensive erythematous rash appeared, together with pruritus, after injection. The limit of tolerance of the drug had yet to be discovered. In one case a dose of 2 grams in a single injection was well tolerated, and not followed by any grave disturbance, and in another an amount up to 6 grams in one week was injected intravenously with apparent safety.

The first of the cases he described was a man, aged 49, who showed the first signs of the illness while in Nigeria in July, 1921. He was sent home, when trypanosomes were found quite easily in the blood, and a lumbar puncture showed them to be present in the cerebro-spinal fluid as well. Some injections of "205" were given, but the drug was stopped owing to the condition of the kidneys, and antimony and atoxyl took its place. Later, from July to September, 1922, the full course of 10 grams of "205" was administered, with the result that the patient improved greatly, and he was shown to the Society a healthy man.

In three other cases the disease was contracted in Nigeria also, and the patients were sent home and put upon the course of "205," with the result that the various symptoms cleared up rapidly,

though albuminuria persisted for a long time in one case, and in another there was still a slight trace of albumin. These three men were present at the meeting.

Dr. Low also mentioned the case of a lady from the Congo who was sent home to England and admitted to hospital in December, 1921. She had been bitten by a tsetse fly, and had had fever with general malaise and body pains, and trypanosomes were found in the blood. Atoxyl treatment was started while she was in Africa, but without satisfaction, and on arriving in London she was put upon the course of "205," and left hospital in May last, apparently in perfect health, and no further signs or symptoms of trypanosomiasis had been noted.

Dr. MANSON-BAHR described one remarkable case with which he had had specially to do.

This patient, who also was present, was a man aged 37, who became ill while out in the Congo in January, 1920, when both the trypanosome and the malarial parasite were found in abundance in his blood. He left for England in March of that year, the trypanosomes meanwhile disappearing and reappearing in the blood stream in an irregular fashion. No marked diminution in their numbers followed treatment with atoxyl or galyi. When he arrived in hospital in May, 1920, his clinical condition was very poor. He suffered from drowsiness, from which it was difficult to rouse him, he was emaciated, mentally depressed, and subject to slight pyrexia. He stayed in hospital for eighteen months, and had his ups and downs on various forms of treatment, quite heroic drug therapy being practised, but he never actually made any progress until treatment with "205" was started on December 1st, 1921. From the first injection the trypanosomes disappeared from the blood stream, and had never been found since. He received ten injections, although it appeared that the first had cured him, and his condition during the whole of 1922 greatly improved, he gained weight, and now was quite well, physically and mentally.

Dr. Manson-Bahr alluded to another case—that of a lady missionary on the Congo—who had recovered, and then he turned to the more sombre side of the picture and detailed two cases which had terminated fatally.

In one of these a total dose of 18 grams of "205" was given without avail, and the end came with dramatic suddenness with a succession of fits epileptiform in character. In this case there was very strong evidence that the trypanosomes lying in the brain substance were not influenced by the intravenous injections.

The other case had a first course of 14 grams of the drug, followed by improvement and relapse, after which it was decided to push the injections, and the amount of drug was increased to 2 grams at each injection, and eight injections were given during the month of November last. Again there was improvement, but the trypanosomes reappeared, the patient lost weight, deteriorated mentally, and died on January 6th.

Therapia sterilisans magna, though desirable, was probably as unattainable in human trypanosomiasis as in syphilis. The best effect seemed to be produced by giving the first three injections at close intervals, and thereafter spacing out the remainder into gram doses once a week. The effect of the drug on the specialized renal epithelium needed to be watched. The significance of albuminuria with casts need not, however, be regarded as absolutely contraindicating the further use of the drug.

Dr. A. C. STEVENSON spoke on the pathological changes in the brain in one of the fatal cases. His conclusion was that the terminal stages of human trypanosomiasis were due to the invasion of the brain tissue by trypanosomes; that the presence of trypanosomes in the cerebro-spinal fluid was only of a diagnostic value, and had probably no influence on the course of the disease; and that the spread of the parasite to the extravascular tissues was primarily the result of migration of the trypanosomes through the vessels.

Dr. C. M. WENYON described experiments in which he had given to infected mice intravenous injections of the blood stream and cerebro-spinal fluid of patients who had received doses of "205." From his limited experiments it might be inferred that the intravenous injection of 1 gram of "205" in man caused the formation of a trypanolytic substance in the blood and cerebro-spinal fluid, and that this substance was still present a week after injection.

#### Tryparsamide.

Dr. C. C. CHESTERMAN then gave an account of some work he had carried out, mainly during 1922, at a hospital of the Baptist Missionary Society near Stanleyville in the Belgian Congo. Out of more than 300 cases diagnosed as sleeping sickness during this period 40 were selected because (1) the source of their infection was known, (2) they showed definite symptoms of nervous involvement and altered cerebro-spinal fluid, and (3) they would consent to remain in the lazaret where there was no possibility of reinfection during treatment. A course of eight weekly intravenous injections of tryparsamide was given, each injection in a solution made up with boiled rain water, of a concentration equal to 3 grams in 10 c.cm.



From the results in 24 cases which had received no previous treatment (except from the witch doctor), it was evident that if the maximum dose of tryparsamide which could be injected were given regularly and in sufficient quantity to patients who were even in the last stage of the disease there was every chance of reducing the cell content of the cerebro-spinal fluid to normal, and of removing, at any rate for the time, all symptoms with the exception of those due to the permanent damage sustained by the central nervous or other systems. In ten patients who had already received varying amounts of atoxyl or tartar emetic or other remedy without any great benefit, the clinical improvement following on the administration of tryparsamide was scarcely less striking, and good results also were obtained in six cases which had first been treated unsuccessfully by the intrathecal serum method lately described by Marshall and Vassallo in Uganda. He believed the action of tryparsamide to be superior to that of atoxyl, and that its action was gradual, so that there seemed to be a minimum total dosage, which was sufficient to render normal the cerebro-spinal fluid, of about 20 grams in an average sized and well nourished patient. Successful treatment seemed to depend on maintaining the maximum safe concentration of the drug in the system for from six weeks to two months. It seemed, therefore, impossible to escape the conclusion that the active trypanolytic constituent of tryparsamide found its way into the central nervous system. The maximum tolerated dose should not exceed 4 grams a week for a full-sized adult, and if given regularly for about eight weeks it was capable of completely removing the trypanosomes from the cell content of the cerebro-spinal fluid of even the most advanced cases. This change in the fluid was accompanied by a very marked clinical improvement, fully maintained for the period—eleven months or less—over which it had been possible to make observations.

Dr. NIRENSTEIN added some chemotherapeutical considerations, pointing out that tryparsamide differed from atoxyl, firstly in the fact that the arsenic was held in pentavalent combination instead of in the less stable trivalent form, and secondly that it contained the glycine group.

#### *Atoxyl and other Treatments.*

Dr. DERWISH gave an account of his inspection of the Yei sleeping sickness camp in Mongalla Province last summer, and stated the present condition of the patients who had been treated several years previously with antimony and salvarsan, antimony and atoxyl, and various combinations. Of twenty-seven patients treated with antimony and salvarsan (after an interval of not less than ninety-two months subsequent to all treatment), thirteen were in good condition, three in fair condition, and thirteen were dead. The results had not yet undergone the full test of time, and it was premature as yet to say whether the fall in mortality meant a long period of remission of the disease or a real recovery.

#### *Discussion.*

Professor SIMPSON said that he had no doubt that excellent results had been obtained with "205," but there was a serious drawback to the use of this drug, because quite a number of the patients had not only albuminuria but casts, which implied some kidney damage. It would be extremely unsafe, in his opinion, to use this drug on a large scale in Central Africa, though it was all very well to use it among Europeans in hospital under the care of skilled physicians. His own impression was that the problem had not been brought nearer solution than it was eighteen months ago, and the proper course would be to send out a commission of medical men and veterinarians to Africa to carry out experiments with the different drugs on a large scale over a long period. He believed that the salvarsanized serum method of Marshall and Vassallo still held the field.

Sir FREDERICK MOTT said that it seemed to him probable that when the trypanosomes were found in the cerebro-spinal fluid this was an indication that they were also in the brain substance. In that event it was very difficult, as also with the organisms of syphilis, to remove them. He was in Berlin when salvarsan was first introduced, and he recalled the enthusiasm with which it was anticipated that general paralysis would be cured, but this had not been possible. It was the same with trypanosomes: once they got into the brain the case would not be cured by any of these drugs.

Dr. ANDREW BALFOUR suggested that the problem of getting at these trypanosomes in the brain substance might be solved by combining with the trypanocidal substance some vector in

the shape of a dyestuff having a certain affinity with nerve tissue. In that way—it was only a hypothesis—it might be possible to reach trypanosomes deep in the brain.

In replying on the discussion, Dr. Low said that in Dr. Manson-Bahr's recovered case, shown that evening, in which there had been well marked signs of sleeping sickness, it seemed as though the brain must have been affected, and yet the drug in some way had penetrated. His own first case showed trypanosomes present in the cerebro-spinal fluid as well as in the blood. Dr. MANSON-BAHR combated the idea that "205" was necessarily a very toxic drug. It was an aniline product and contained no metal of any sort. From work on animals it was known to be also efficacious when given subcutaneously; probably the subcutaneous method would prove more efficacious because the drug was then stored up in the tissues. He thought that too much might be made of the occurrence of albuminuria in these cases. In some instances, even with massive doses, there was no albuminuria at all, and in others the effect on the kidneys was very transitory. It was not his view that this drug was going to be a remedy for every case; probably it was not as efficacious as tryparsamide, but it was more safe. Dr. CHESTERMAN said that, so far as conditions in Central Africa were concerned, the problem of dealing with native sickness could be met by a drug which would make it possible to sterilize the peripheral blood for a period of two or three months.

#### SPHENO-OCCIPITAL CHORDOMA.

At the meeting of the Pathological Section of the Royal Society of Medicine held on January 16th Professor M. J. STEWART and Dr. LE FLEMING BURROW (Leeds) described, and showed specimens from, a case of malignant chordoma of the base of the skull (spheno-occipital chordoma).

The patient was a man of 30, who after three years' service in France was invalided from the army for "phosgene-gas poisoning." When admitted to hospital on November 28th, 1921, he gave a three years' history of cough, headache, occasional vomiting, and unsteadiness in walking. A year before he had complained of failing vision, and was found to have optic atrophy, most marked on the left side. Recently he had complained of weakness in the legs and in the right arm.

When examined on November 30th he had blurring of speech, cyanosis, and laboured respirations, with dysarthria of paretic type. Examination of the cranial nerves revealed blindness and primary optic atrophy of the left eye, with early atrophy and diminution of the visual field on the right side. The left pupil was large and immobile. The left third, fourth, and sixth nerves were weak, but not completely paralysed, and the remaining cranial nerves appeared normal. He made considerable complaint of pain and stiffness in the neck, especially when the head was flexed on the chest, but while the cervical and upper dorsal vertebrae were held rigid there was no tenderness on percussion nor on palpation. The cerebro-spinal fluid was normal in all respects, but was under slightly increased pressure.

The patient's progress was steadily and rapidly downwards. The paresis of the legs and right arm increased, and was followed by loss of power in the left arm. The respirations were laboured throughout, and the patient finally died on December 5th, apparently of respiratory failure.

*Post-mortem* examination revealed the presence of an irregularly nodulated ovoid tumour springing from the central area of the base of the skull. It was completely covered by dura mater, and was not adherent to the brain. On its inferior aspect it had extensively infiltrated and destroyed the central portion of the base of the skull—namely, the clivus, pituitary fossa, and subjacent parts. It did not appear, however, to have invaded the nasopharynx. The tumour had led to great stretching, flattening, and distortion of the mid-brain, especially the pons and crura cerebri, the optic tracts and chiasma, and, generally, the structures forming the floor of the third ventricle. The pituitary gland had been completely displaced from its bed and was flattened out on the antero-superior aspect of the tumour.

The naked-eye and microscopic characters of the growth conformed to those of chordoma. The tumour was gelatinous, transparent, and very friable, especially in its deeper parts. Microscopically it was alveolar in structure, being broken up into masses of various sizes by narrow bands of fibrous tissue carrying the blood vessels. The alveolar masses were devoid of both vessels and stroma. They were composed of epithelial-like cells—spheroidal, ovoid, and polygonal—and everywhere mucoid degeneration was in progress. To begin with, small droplets of mucin appeared in the cytoplasm, and as the cell grew older these increased both in size and in number until the typical "physaliphorous" appearance was seen. The next stage in the evolution of the cell was that the mucin droplets were discharged, and might either flow together, forming homogeneous or granular masses of varying size throughout the growth, or might simply form a vacuolated, almost fibrillated, groundwork breaking up the tumour tissue into little groups of shrunken cells. Both the intra- and extra-cellular droplets gave the staining reactions of mucin (polychrome methylene blue, thionin blue, etc.).



The authors added that some 40 cases of chordoma of clinical interest were now on record, and were about equally divided between the two seats of election of this tumour—the spheno-occipital and sacro-coccygeal regions. The small hernial protrusions of notochordal tissue from the clivus, called by Virchow “*ecchondrosis physaliformis*,” were probably much more common than this, but could hardly be regarded as genuine neoplasms. Two examples of this condition had been met with in 150 specially investigated autopsies. Virchow wrongly regarded these nodules as cartilaginous, and his term was a misnomer; the condition would be more correctly designated “*ecchordosis physaliformis*.”

#### Classification of *B. diphtheriae*.

Dr. A. J. EAGLETON read a paper by Miss BAXTER and himself on the serological classification of *B. diphtheriae*. Beginning with a historical summary, Dr. Eagleton went on to describe the investigation, which he and Miss Baxter had carried out, of 358 strains of virulent *B. diphtheriae*. The strains had been derived from a wide “catchment” area. Three hundred and forty-two of the strains had fallen into one or other of ten clear-cut groups, and amongst the remaining 16 at least four serological varieties had been encountered. Dr. Eagleton did not maintain that strains examined by different observers in different areas would necessarily fall into the same ten types which he had found—on the contrary, he would rather expect to find a multiplicity of types in existence. Some evidence was brought forward of a structural similarity between strains belonging to the different types. It was hoped that work along these lines would prove of value to epidemiology in the future.

## CARCINOMA OF THE VAGINA AND CERVIX.

### Tumours of the Vagina.

A MEETING of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine was held on January 4th, with the President, Dr. T. WATTS EDEN, in the chair, when Mr. EARLEY HOLLAND showed a specimen of primary carcinoma of the vagina.

The patient was aged 46, had four children, and on examination a hard, circular, rough, friable growth was found on the upper third of the posterior vaginal wall; the upper edge of the growth was quite separated from the cervix. The cervix looked and felt normal, the uterus was normal in size and position, and there was no palpable evidence of other pelvic disease. Rectal examination did not reveal any infiltration of the anterior rectal wall, which could be moved freely over the posterior surface of the growth. At operation the whole of the vagina and uterus, together with the pelvic cellular tissue and iliac lymphatic glands, were removed, and the patient made a good recovery.

In such cases, owing to the close proximity of the posterior vaginal wall to the rectum, and to the very small amount of intervening cellular tissue, it seemed almost certain that permeation of the carcinoma cells into the anterior rectal wall must take place at a very early stage of the growth. The question therefore arose as to whether it was not also advisable to remove the lower part of the rectum, although the operation would then become an extremely severe one.

Mr. STEVENS showed a specimen of squamous epithelioma of the vagina.

On examination of the patient, a married woman aged 53, a large flat growth, about the size of a five-shilling piece, was found on the posterior vaginal wall; at first it was thought to be an extension from a cervical growth, but this was found at the subsequent operation not to be the case. The uterus and upper half of the vagina, with the whole growth, were removed by abdominal pan-hysterectomy, after isolation of the ureters. The patient made an uninterrupted recovery, and eight weeks after the operation received a large dose of x rays to try to prevent a recurrence. Up to the present time she had remained quite well. The growth proved histologically to be a squamous epithelioma.

Dr. HERBERT SPENCER showed a specimen of adenoma of the vaginal fornix simulating carcinoma of the cervix.

The patient, a multipara aged 44, had suffered from vaginal haemorrhage for nine months. On passing the finger into the vagina a brittle growth as big as a large duck's egg, which bled very freely, was found nearly to fill the vagina; a diagnosis of proliferating carcinoma of the cervix was made. At operation, however, the growth was found to be attached to the fornix of the vagina to the left and front of the cervix. The cervix itself was normal, except for two minute mucous polypi, which were snipped off. Radium was applied; in a fortnight the wound cicatrized. Subsequent microscopic examination showed the tumour to be benign; two and a half years after the operation the patient

remained quite well and the vagina and uterus were healthy. The occurrence of a large pedunculated, benign adenoma of the fornix simulating carcinoma was very rare, and he had not come across the record of a similar case.

Dr. RUSSELL ANDREWS said that fifteen years ago he had operated on a case of primary carcinoma of the upper part of the posterior vaginal wall, by removing the uterus and vagina by the vaginal route, and the patient had remained free from recurrence. He did not think that routine removal of the rectum was justifiable in cases of carcinoma of the vagina.

### Radium in Carcinoma of the Cervix.

Mr. A. H. RICHARDSON showed a specimen of a uterus removed for carcinoma of the cervix after radium.

Laparotomy was performed and an attempt was made to remove the uterus, but was given up on account of the fact that, on separating the bladder from the cervix, the growth was opened into. Three weeks later a quantity of friable growth was scraped out of the cervical canal and 100 mg. of radium was placed in the cavity and left in for thirty-six hours. Three months later the same amount of radium was again applied for the same time; two months later it was impossible to say, on examination, that there had ever been any growth, and it was decided to operate. The patient could not come into hospital because of domestic reasons. Six months later the operation was performed, and there was no difficulty in performing radical abdominal hysterectomy. The specimen was carefully examined by Dr. Dudgeon, who reported that microscopically he could see no growth, and that on microscopic examination of several different parts of the cervix he could find a small focus of a typical carcinoma in only one place.

The PRESIDENT and Mr. AUBREY GOODWIN showed two cases of carcinoma of the cervix treated by radium before operation.

*Case 1.*—An extensive friable growth covered the whole cervix and extended over the left and posterior vaginal walls for an area of about 2 cm.; the mobility of the uterus was impaired. The growth was scraped away with a sharp spoon, and into the large cavity thus formed 200 mg. of radium bromide was introduced and left for twenty-four hours. Nearly a month later no trace of the growth could be found on examination. Wertheim's hysterectomy was performed without difficulty. Examination of the specimen showed an extensive columnar-celled carcinoma of the upper part of the cervix, but the vaginal portion of the cervix and the vaginal cuff showed a healing, granulating surface with no malignant cells to be seen.

*Case 2.*—There was a large irregular friable growth of the cervix which practically filled the upper part of the vaginal canal, extending upon the vaginal wall for a short distance. The growth was scraped away and 160 mg. of radium bromide was introduced in three tubes and left for twenty-four hours. When the patient was examined fifteen days later no trace of growth could be found. The uterus was removed without difficulty by Wertheim's hysterectomy. Examination of the specimen showed that the cervix was hypertrophied and contained several hard whitish areas; microscopically, there was adeno-carcinoma of the cervix, including hyaline changes, with much round-celled infiltration of the growth.

The PRESIDENT thought that malignant disease would in future be treated by a combination of wide surgical removal of the growth with free use of methods of radiation.

Mr. SYDNEY FORSDIKE said that it was of small value to know the weight of radium used and the length of time for which it was employed unless the nature of the screens used was also known. It had been shown that the hard beta ray, plus the gamma ray, was approximately eight times as potent as the gamma ray alone. He believed that the best way of treating deposits in the cellular tissue and pelvic glands was with the hard x ray. Better results were claimed for the treatment of the local disease with radium alone. The question arose whether radium should not be used at an earlier stage of the disease.

Mr. GORDON LUKER said that for the past two years he had been inserting 50 mg. of radium into the cervical canal for thirty-six hours, from one to seven days before the operation. In nine cases followed up from nine months to two years there had been, so far, no local recurrence. In a few other cases another application of radium had been given three months after the operation. In doubtful cases he had seen the growth almost disappear, so that operation could easily be performed later.

Dr. DONALDSON stated that the subject of radium treatment for carcinoma of the cervix was being investigated by Dr. Canti and himself on behalf of the gynaecological department at St. Bartholomew's Hospital. So far fifty-five cases had been treated, and the majority were benefited for a time. In his opinion it was much too early to discuss the ultimate value of the treatment. The carcinoma could be destroyed



locally in the cervix, but the problem remained how to free the parametric tissues and glands. At present he was trying two methods: (1) deep radiation by the operation invented by Doel (of Ghent), (2) x-ray treatment. The most urgent need at present was a scientific basis for dosage. He was doubtful whether the biological effect was the same when the amount of radium was doubled and the duration of exposure halved. A chart of the histological findings, drawn up by Dr. Canti, suggested very strongly that the time factor and distribution of the radium were perhaps more important than the quantity of radium.

### X-RAY TREATMENT OF MALIGNANT DISEASE: CLINICAL RESULTS.

A discussion on clinical results of treatment of malignant disease by x rays took place at the Medical Society of London on January 22nd. It was preceded by an exhibition of cases.

Lord Dawson, who presided, said that the Council of the Society had chosen this subject for discussion, feeling that the progress made in radiotherapy was such that it would be useful to take stock of the position. It had been decided to narrow the discussion to true malignant disease—mainly carcinoma—and to concentrate it on the clinical results, avoiding as far as possible descriptions of technique.

Dr. ROBERT KNOX then read a paper in which, after citing cases in support of his conclusions, he said that he still felt, modern improvements in x-ray technique notwithstanding, that in all cases of malignant disease in which a complete surgical operation was possible operation should be the first procedure, but that afterwards the patient should have x-ray or radium treatment of the most thorough kind. These radiations were of great therapeutic activity, and were extremely helpful in the treatment of malignant cases, but up to the present there was no clear indication that they were in any sense a specific cure for these conditions. While the primary growth could be treated and apparently cured, recurrences were almost inevitable. These, if superficial, could be dealt with by the same agent, but the deeper metastases were beyond the reach of radiation. He mentioned a case of epithelioma of the tonsil and pharyngeal wall which showed a noteworthy result under x-ray treatment, but two years later there was a recurrence at the original site, and then the treatment by the same technique failed to produce any good effect, and was followed by much sloughing of the evidently devitalized tissues. Several cases of carcinoma of the oesophagus had done well for a time under radium or intensive x-ray treatment. He had had no good results in the limited number of gastric cases he had treated. Cases of rectal carcinoma improved as a result of deep radiation, but there were no cures, nor anything approaching cures. It was important in all cases to watch the skin carefully. In the radiologist's zeal to obtain a maximum effect the skin was often damaged. Severe burns had followed upon intensive treatment. Certain manifestations of overaction might be long delayed. In the treatment of carcinoma of the breast or chest wall the pleurae and lungs might be damaged; he had seen thickening of the pleura follow heavy x-ray treatment. On two occasions lately he had escaped disaster in the treatment of abdominal conditions by giving a short preliminary exposure to ascertain the patient's response to radiations. One patient, after a short exposure to the region of the epigastrium, suffered from troublesome vomiting, followed by a slow recovery, and in ten days' time had a sharp reaction with general malaise. Dr. Knox was now trying a method of dividing the total dose over six sittings, and found that, especially in breast cases, the result was satisfactory.

The essential feature of the new methods of intensive radiotherapy, known as Erlangen methods, Dr. Knox said, was the employment of a more penetrative ray and an increase of the initial dose. It would be some time before the results obtained by this method could be accurately appraised. The use of the more penetrating rays for a longer time did sometimes cause a rather quicker response, but the new method was attended by greater risk to the patient, and decidedly more discomfort, and in many cases, with patients already debilitated by disease, it was too dangerous to use. He emphasized the value of x rays in prophylactic treatment, where they rendered very useful aid to the surgeon. One patient whom he had seen that day had undergone the operation fifteen years previously. There had been a previous recurrence in which the masses yielded to intense x-ray

treatment, and the treatment in this second recurrence had been fair to be equally satisfactory. The recurrence was of carcinoma in the scar of the operation. In another patient, also seen that day, the operation had taken place twelve years previously. He strongly urged the general adoption of post-operative treatment by x rays or radium or both combined.

Mr. SAMUEL HANDLEY believed that in the treatment of cancer both surgery and radiotherapy were essential, and that each by itself was comparatively useless. He agreed strongly as to the value of prophylactic treatment by radiations. During the last fifteen years he had made it a rule that cases of breast carcinoma on which he had operated should have a subsequent course of treatment by x rays, and almost all the superficial recurrences just under the skin which had occurred in his experience were in the few cases which for one reason or another had escaped this prophylactic course. Surgeons ought to be very grateful to radiologists for the attempts they were making to deal with cases in which surgery was useless, though he could not help thinking that the claims made for the new methods of radiation in some quarters were excessive.

Dr. REGINALD MORTON said that it was less than the truth that 95 per cent. of the cases of malignant disease brought to the radiologist were brought to him only because they were too far advanced for any other measure. The question of the x-ray treatment of malignant disease resolved itself into one of dosage. It was well known that there were several ways of administering x rays. As between a fractional dose method and the administration of the full dose in a single sitting his preference would be for the latter. A great deal was heard about extravagant claims for intensive x-ray treatment, but it would be found that such claims were not made by the people really responsible for treatment by the Erlangen method. As to the dangers of this treatment, there should not be, with proper technique, any severe reactions on the skin. In any case, the reaction following overdose of the type of radiation now in use had little in common with the x-ray burn so rightly dreaded. In the course of his own work with intensive radiation during the last two years it had happened twice that a patient, unobserved, had made a movement during treatment, and got a double dose on a particular field. The patch was sore and unpleasant, but it healed up; it was quite a different lesion from the old-fashioned burn obtained with more or less unfiltered rays. A great deal had been heard lately about anaemia following radiations. He and a colleague had done many hundreds of blood counts on persons subjected to x-ray treatment, and it was very rare to find a case in which the red cells were reduced by more than about 5 per cent. The diminution of red cells was not found to anything like the extent sometimes suggested.

Mr. LOCKHART-MUMFERY said that his experience of the new Erlangen method amounted to only five or six cases. He had hoped a great deal from it, but he did not think it was going to be of very great assistance. X rays, like some other methods apart from operation, would occasionally cure cases of cancer. He had seen a patient cured of unquestionable cancer by arsenic, and two others cured apparently by colloidal copper. The truth was that the vitality of the cancer cell was rather below that of the normal cell; in carcinoma the margin was very narrow, in sarcoma rather wider. If, therefore, the cancer cell could be devitalized by any agent from whose poisonous action the normal cells were immune, the growth would be cured. Those who had been cured of cancer by arsenic were people who were tolerant of arsenic—a tolerance not shared by their cancer cells. X rays had the same result if a dose could be discovered which would kill the cancer cells in a given patient without harming the neighbouring cells. The whole problem was the gauging of the dose, which was extremely difficult. One of his patients, whose normal tissues were no doubt particularly susceptible to x rays, had died, following Erlangen treatment.

Dr. GILBERT SCOTT said that to tackle the problem of the treatment of cancer by radiation some technique must be devised which would not only destroy the primary tumour—on which all their efforts were apt to be concentrated—but would check the spread of the growth also. The fault of present-day methods was a too local application. His impression was that the destruction of the secondary cells required very small doses. With regard to blood changes, he believed that serious blood changes in patients receiving radiation treatment were a sign of overdose. He himself would not use the word "cure" in connexion with malignant disease; he had seen a recurrence in the sternum twenty-two



years after the removal of the breast. But the value of x-ray treatment should not be assessed merely on the ground of its capacity to kill a tumour; x rays, even when they effected nothing like a cure, often brought an immense comfort and relief to the patient.

Dr. DOUGLAS WEBSTER said that radiation might have one of three aims: (1) prophylactic, in collaboration with the surgeon; (2) palliative, in inoperable cases; (3) curative, in a very small number of cases of malignant disease, apart from superficial epitheliomata of the basal-cell type, where a good proportion of success might be looked for. An American radiologist recommended that in cases of superficial epitheliomata the patient after a clinical cure should report every six months for five years, so that any slight recurrence might be detected immediately. Spino-cellular epitheliomata were very much more resistant to radiation, yet many cases were reported cured. He gave some examples of the pitfalls and difficulties of the statistical method of approach. For example, in Frankfurt the death rate from cancer in 1918 and 1919 was given as 21 per cent., and about the same in Munich, but in Berlin, Leipzig, and Hamburg it was said to be about 60 per cent.

Mr. GORDON TAYLOR said that he believed in the prophylactic value of the post-operative treatment of cancer by x rays, and for the past twelve years all the breast cases on which he had operated had been so treated. He had gone farther and had introduced radium into the area at the time of the operation, but with unfortunate results. He placed radium (50 mg.) generally into the second and third intercostal spaces, and left it there for six or twelve hours, but about eighteen hours after the operation many of these patients suffered extreme shock, and there was no difference in his technique to account for it save the insertion of these tubes of radium.

Dr. J. E. A. LYNHAM gave some account of the results of the Erlangen method, with fractional doses, as employed at the Cancer Hospital. The results so far as they had gone had sufficed to show that the new treatment would be valuable in a certain number of cases. After the first dose he could nearly always tell, within a few days, whether or not the patient was going to do well under the treatment; patients who were going to do well looked and felt better from the start. Another point was that with the same set voltage, milliamperage, and distance there was a considerable variation in the skin reaction. The average patient got a very faint erythema, some patients got bronzing, and a fair number showed no skin reaction at all. It was not safe to base a deep-therapy dose on what appeared to him to be a widely varying factor. The impression must not be conveyed, in discussing the x-ray treatment of carcinoma, that there were good results in a large percentage of cases. But surgeons who spoke in a disparaging way about radiology lost sight of the fact that the radiologist usually had to deal with the failures and the hopeless cases. When the radiologist did see a case which was a good one for radiotherapy, but at the same time was operable, he always referred it first to the surgeon. The speaker did not believe in giving prophylactic doses until the patient had got over the shock of the operation; therefore six or eight weeks' interval usually elapsed before radiation was begun. He mentioned one case, obstinate to radiation, of which he heard that the nodules had disappeared in a remarkable manner following upon the patient's visit to Lourdes, but the disease came back again, and the patient died. The case suggested the power of mind over disease, and he thought there was a lesson in it for surgeons, who when they referred patients to the x-ray department might well do so in a tone, not of despair, as too frequently happened, but of hope and encouragement.

Dr. KNOX, in replying on the discussion, said that with the small quantity of radium used in Mr. Gordon Taylor's cases, and with the short exposure, he had never seen anything like the reaction of which Mr. Taylor had spoken. He deprecated, with some other speakers, the extravagant claims made for the Erlangen method. These claims were not made by those who were actually practising that method. He thought that x-ray technique was capable of much greater improvement, perhaps even of revolution. He had sometimes imagined that its future would involve the use of a whole battery of x-ray tubes, so that the patient would be, so to speak, exposed to an x-ray bath. Some such means of procuring a widespread action on the tissues was well worth investigating.

## PAROXYSMAL TACHYCARDIA.

At a meeting of the Medical Section of the Royal Academy of Medicine in Ireland on January 5th, with the President, Dr. T. GILLMAN MOORHEAD, in the chair, Dr. LEONARD ABRAHAMSON read a paper on two cases of paroxysmal tachycardia (with electrocardiograms). He remarked that the term "paroxysmal tachycardia" had been applied to various conditions differing essentially in mechanism. In dealing with a sudden acceleration of the heart rate, it was imperative to avoid confusion, to specify where possible the exact mechanism. Thus a case might belong to one of four groups: (1) paroxysms of simple or sinus tachycardia; (2) paroxysms of auricular fibrillation; (3) paroxysms of auricular flutter; (4) paroxysms of extra-systoles. Where the mechanism of a paroxysm was obscure the diagnosis had not been made, although one might be able to decide from certain clinical criteria, such as sudden onset of attack, unchangeable rate, and sudden termination, whether one was dealing with a paroxysm of abnormal tachycardia or with a paroxysm of normal tachycardia. The first case exemplified a paroxysm of extra-systoles.

The patient, a female aged 22, who presented a stenosis and regurgitation of the mitral valve, when first seen was suffering from a paroxysm of tachycardia, which had commenced abruptly on the previous day. Electrocardiograms showed a series of extra-systoles, rate 200 to 205 to the minute. Whilst the tracings were being taken the attack stopped abruptly with a long pause, but recurred in a few moments. The interparoxysmal period showed a large number of extra-systoles arising from different foci, some in the auriculo-ventricular node, with others in the auricle above the node; the paroxysm itself was believed to spring from a low level in the node.

The second case demonstrated a paroxysm of auricular fibrillation, rate 170 to 180, occurring in a male aged 58, the subject of advanced myocardial disease. The tracings were shown in order to demonstrate the difference in the mechanism of that paroxysm and of the preceding one. After the subsidence of the attack the patient developed a chronic auricular fibrillation.

The PRESIDENT said that he had recently seen a case in which the patient was immediately able to check the tachycardia by pressing deeply on each side of his neck.

### Milk Anaphylaxis.

The PRESIDENT read a note on milk anaphylaxis, using the latter term as signifying a special sensitiveness on the part of some patients to milk. He registered a protest against the almost universal and indiscriminate use of milk in cases of gastric disorder, and pointed out that in many cases the use of that fluid merely aggravated the condition which it was intended to cure. Cases illustrating his contention were reported, including one case in which, after two operations had been performed and nothing wrong had been found in the abdomen, relief was immediately obtained by stopping all milk food. On one or two occasions milk was given accidentally during the progress of the case, each time followed by the occurrence of acute gastric pain and vomiting.

Sir JOHN MOORE said that in cases of enteric fever he had often seen milk acting as a poison, and in such cases he had substituted whey and egg water; raw meat juice and port wine were also good substitutes.

Dr. L. ABRAHAMSON had known of a case of mucous colitis, which had been treated medically, x-rayed, and operated upon and was no better, having been on a milk diet for about two years. The patient was then put on meat juice, after which he made a complete recovery, while appendicectomy and other measures had done him no good at all. Dr. PERCY KIRKPATRICK said that Dr. Tweedy had regarded milk as the worst form of food which could be given to a patient suffering from eclampsia, as he regarded eclampsia as a form of anaphylaxis due to milk poisoning. Dr. T. J. D. LANE was of opinion that the great point in those cases was to find out, when milk disagreed, if it was due to anaphylaxis or not. If the patient gave an anaphylactic response to ordinary milk, and not to boiled milk, he thought that was a point in favour of anaphylaxis.

Dr. G. E. NESBITT, Dr. H. F. MOORE, Dr. KENNEDY CAHILL, Dr. R. J. ROWLETTE, and Dr. C. PILE also took part in the discussion.

### Renal Efficiency Tests.

Dr. G. E. NESBITT read a note on renal efficiency tests, and demonstrated three which he had found most serviceable—namely, the urea concentration test, the estimation of blood urea, and the excretion of phenolsulphonephthalein. He had followed, for the most part, the methods and technique recommended by Professor H. Maclean, and he could testify to their



excellence. It was only fair to say that any of Maclean's methods he had tried had been equally satisfactory. Acting on suggestions of Professor Caldwell he had made some minor alterations in the estimation of blood urea which he thought were decidedly advantageous; one was the addition of a side tube by means of which alcohol could be added at any time to control frothing, and another was the immersion of the blood tube in a jacket of warm water during distillation, which brought over the ammonia much more thoroughly and quickly. As regards the value of the tests, he thought that no just opinion could be expressed in a doubtful case of nephritis based on ordinary findings alone, nor should serious genito-urinary surgery be undertaken until the condition of the kidneys had been ascertained by some such means as these tests. Not the least value of the tests was the possibility of demonstrating sound renal function in cases which had been rejected for life insurance, or had been treated as chronic invalids on account of the presence of albumin and even casts in the urine.

Dr. H. F. Moore said that the tests should be carried out in conjunction with the ordinary physical examination of patients. Care should be taken to use an efficient colorimeter for the phenolsulphonephthalein test.

Dr. V. M. Sykes had found the curve of water excretion a very simple and reliable guide in these cases. Mr. C. E. Brewster had carried out a critical examination of the blood urea estimation in conjunction with Dr. Fearon with a view to the discovery of fallacies, and they had found several; Dr. Nesbitt, working independently, had come to the same conclusions. He thought the use of the warm water jacket was new and an important addition to the technique.

### "LUNG SPLINTING" FOR PULMONARY TUBERCULOSIS.

A MEETING of the Ulster Medical Society was held in the Medical Institute, Belfast, on January 4th, with the President, Professor R. J. JONESTONE, F.R.C.S., M.P., in the chair. Dr. S. H. STEWART read a paper entitled "Some preliminary observations on lung splinting in the treatment of pulmonary tuberculosis." He said that rest was a fundamental factor in the treatment of all forms of tubercle, and pointed out many facts drawn from different sources in support of that aphorism. The operation for letting in a gas to the pleural cavity and thus giving the lung complete rest was not always feasible. Dr. Stewart then demonstrated practically, on an assistant, his method of "lung splinting," and showed the mechanical reasons for the various adjustments. He gave notes of some cases which he had treated by the apparatus, with statistics taken before and afterwards. All the patients wore the apparatus without inconvenience, and were benefited.

The President asked whether pulmonary tuberculosis was always primary and whether x-ray examination had been made to ascertain the amount of diminution of movement.

Dis. HALL, RANKIN, CALWELL, TRIMBLE, McKISACK, BURNS, and FOSTER COATES joined in the discussion. The chief points raised included the question of tissue susceptibility, and whether movement acted simply as a mechanical distributor. It was pointed out that the meninges were the least mobile part of the body and yet tuberculous infection was always fatal, and that high altitudes involved increased lung action and yet brought cure. The suitability of the apparatus for girls of rather frail physique was questioned. Congratulations were offered to Dr. Stewart for the ingenious manner in which he had met the various difficulties and mechanical complications.

Dr. W. L. STONEY read a witty paper on "Some realms of gold untravelled yet by vaccine therapists," which was much enjoyed by the members, and the Chairman expressed the thanks of the meeting.

A MEETING of the London Association of the Medical Women's Federation was held on January 15th, with the President, Dr. LOUISA MARTINDALE, in the chair. Dr. ESTELLE COLE, in a paper on the psychology of Freud and its application, defined certain basic ideas of the Freudian psychology and the use of the terms "conscious," "pre-conscious," and "unconscious." She described the biologic non-moral aims of the individual as expressions of the unconscious. These aims, being in conflict with the morality of civilized society, were repressed, the continual warfare giving rise to "conflict." Dr. Cole emphasized the Freudian doctrine of psychic determinism, or the causal determina-

tion of ideas and symptoms, and discussed the wide interpretation of the term "sexual" introduced by Freud. She described the dream as the preserver of sleep, and argued that the pictorial representation, or symbolism, of the dream was not the confused jumble that it appeared on superficial examination. The Freudian method of analysis was then described, and a list of abnormal conditions benefited by analysis was given.

## Rebickus.

### SCIENCE AND HUMAN AFFAIRS.

There can be no more enthralling subject for study than the persistent progress of human thought through the ages. "Persistent" is the right word; it might even be amplified to "irresistible," for the more deeply the matter is pursued the more apparent does it become that the golden thread of progressive thought has never been broken, and that it traversed even the Dark Ages. This point is well brought out by Dr. WINTERTON C. CURTIS in his book *Science and Human Affairs*, the earlier chapters of which are devoted to the demonstration of this fact of continuity. The author is primarily concerned with the birth and growth of scientific thought and knowledge, and traces this development with a wealth of interesting and deftly used detail. He shows the gradual ascent of natural knowledge—that is, knowledge gained by observation of natural phenomena, fearless knowledge, neither mystery-ridden nor with knees bent in deference to false authority, but moving steadily forward with open eyes and open mind. So free a spirit must inevitably meet with obstruction, but, if it is truly scientific, it knows not despair nor dismay. From all its trials it has emerged with increased strength until to-day it finds some place in almost every system of Western thought, and is a part of every rational thinker's mental equipment.

The foundations of practical science seem to have been laid not later than 4500 B.C. in earliest civilized Egypt, culminating in the great Pyramid Age (3000-2500 B.C.). But the Egyptian, despite the wonder of his achievements, was limited in his thinking and had little power to generalize. It was left to the Greek to abstract and generalize, and to grasp the principles underlying the product of human eyes and hands; it was he who sowed the seed of modern scientific thought. The Roman period was more notable for practical accomplishment than advance in thought; and with the advent of the early centuries of the Christian era certain fundamental social changes, and antagonism to pagan culture, were responsible for the decline of science, which by this time had lost its initial impetus. But it survived the self-delusion and obtuse authority of the Middle Ages, and by 1450 had recovered its independence. Men awoke to the truths of natural science, and rapid advance became possible. In the succeeding centuries numerous societies and academies arose (the Royal Society of London was incorporated in 1662) which were not part of the formal educational system of the period. The isolation of scientific workers was thus ended and their solidarity established. Henceforward the march of science was steady and sure.

Dr. Curtis is a biologist, and his historical review of science in general, in Part I of the book, leads to an exposition of modern biological science in Part II. The cell doctrine, the theory of organic evolution, and the growth of zoology are discussed with the authority of an expert. The author lays stress on the many points of contact between biology and medical science. "The more scientific medicine becomes," he writes, "the greater will be its demands upon zoological science." This section of the book is rich in detail and does not admit of summary; it must suffice to say that it is the keystone of the work as a whole.

Part III is on the present importance of science, and it is here most particularly (though Dr. Curtis never loses sight of his main thesis) that the book lives up to its title. This part may be summed up as a plea for, and a justification of, the scientific spirit and point of view in all branches of human activity. The case is stated with manifest sincerity and conviction. The author has unbounded faith in the capacity of the scientific mind to secure ever-increasing benefits for mankind, to clear away the fog of speculative thought, to bring mystery into the open light of day, and to throw a beam into all dark places. He asks for more science in philosophy,

*Science and Human Affairs from the Viewpoint of Biology.* By W. C. CURTIS, Ph.D. London: G. Bell and Sons, Ltd. 1922. (Demy 8vo, pp. vi + 350; 30 figures. 15s. net.)



in law, in art, in sociology, and in education, believing that nothing but good can result. These chapters are provocative of thought, and are written with skill and breadth. They will no doubt excite opposition in the minds of many readers who have not had a rigorous scientific training. Dr. Curtis's plea for the open mind should disarm them. Wherever science is, he contends, there also is progress.

"The scientist believes that his rationalistic method offers a means of moving forward which sets no limit and sees no end. . . . New and more difficult problems arise from each problem solved. . . . Things undreamed of in our philosophy continually appear."

A remarkable and notable book, the product of prolonged thought and painstaking care in the selection and marshalling of material. It is worthy of a permanent place in the library of every thinker.

#### PSYCHOLOGY AND THE PARENT.

DR. H. CRICHTON MILLER has written a volume on *The New Psychology and the Parent*,<sup>2</sup> based on a course of lectures given in connexion with the Tavistock Clinic. He expresses his views clearly, and there is nothing in his book that the educated layman should fail to understand. He discusses the outstanding particulars in which parents are apt to fail in bringing up their children; explains his conception of the unconscious and the meaning of dream symbolism; and gives an account of his views as to the origin and function of the "herd" instinct. The concluding chapters dealing with the religious education and sex instruction of children will perhaps be of special interest to parents, because these questions are often felt by them to constitute a serious problem.

Dr. Miller's views approximate to those of the Zürich school, and his teaching is based largely on the assumption that the human being is endowed with ethical and religious instincts. Many psychologists would regard this assumption as more than doubtful, and the tendency in the volume to evaluate the various impulses of the human being gives rise to the impression that the New Psychology, as here outlined, has overstepped the legitimate boundaries of psychology and strayed into the regions of ethics and mysticism. Apart from any

seem to be a certain danger of ing the place of a spiritual director. He will tend to regard some forms of behaviour as "better" than others and judge his patients according to whether they are doing good to others or not. We would suggest that Dr. Miller exhibits this tendency when he expresses the view that the young man who becomes a scoutmaster is embracing magnificent opportunities for sublimating his social or parental instincts, whereas the young man who devotes all his spare time to golf is merely working off a certain amount of physical energy. We think it is justifiable to make the criticism that Dr. Miller is here assuming the parental attitude to the young man that he very properly warns parents against. Is he not tending to stand between the young man and self-realization—to obstruct his psychological freedom?

Though there is much in this book that is somewhat speculative from the standpoint of psychology it contains some excellent advice, and it may be safely recommended to parents and teachers.

#### TREATMENT BY SUGGESTION.

IN his modest volume on "*Suggestion*" and *Common Sense*<sup>3</sup> Dr. R. ALLAN BENNETT develops the view that no ailment, organic or functional, is beyond the reach of help by suggestion, provided that the patient is capable of exercising the requisite intelligence. The author is thus a firm believer in the value of suggestion, though he does not claim personally to have observed any more than its elementary applications. Theoretically, however, he would place no limitations on its possibilities as a therapeutic agent, and he can see no logical objection that can be brought against the assumption that laws exist permitting the readjustment of any relations disturbed by disease. In a thoroughly practical chapter Dr. Bennett states how he carries out the treatment of his cases by suggestion.

The author does not accept a mechanistic interpretation of life, and in the opening chapter he expounds his conception of the living organism as a self-directing unit, endowed with

<sup>2</sup> *The New Psychology and the Parent*. By H. Crichton Miller, M.A., M.D. (Edin. and Pavla). London: Jarrolds, Ltd. 1922. (Cr. 8vo, pp. 255. 5s. net.)

<sup>3</sup> *Suggestion* and *Common Sense*. By R. Allan Bennett, M.D. (Lond., M.R.C.P.). Bristol: John Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd. 1922. (Cr. 8vo, pp. 105. 6s. net.)

not only the power but with the will to develop. In the preface he explains that, acting on the advice of the late Dr. Charles Mercier, he decided to drop psychology and apply the principles of common sense to medicine. We do not think psychology is quite so remote from common sense as the author would seem to imply. Indeed, the sound and clearly expressed views as to the source of consciousness, and the function of the individual cell and its relations to the organism as a whole, contained in this volume embody in somewhat different language the most recent psychological teachings.

It may be that some readers of this volume will be unable to accept the beliefs of the writer in their entirety, but it is a book which can be safely recommended to the medical practitioner. It is clearly written, breathes a spirit of optimism, is free from technical phrases, and holds the attention of the reader.

#### HEREDITY IN MAN.

WE have received a copy of the first volume of a book on heredity in man by three German authors<sup>4</sup>; the intention seems to be that when complete it shall be a comprehensive treatise on general biology in its applications to medicine.

The subject of variation is dealt with in the first section by Professor Dr. ERWIN BAUR of Freiburg, who groups the principal causes of variation under three headings: (1) Para-variation, or variation by modification in idioplasmatic individuals who have grown up under similar external conditions; (2) mixovariation, resulting from the union of individuals who are not idioplasmatic; and (3) idiovariation, which is practically the same as what is generally known as mutation. The instances given in exemplification of the different types are mostly known to biologists. Professor EGGEN FISCHER discusses variations of the human body in different races of mankind from the anatomical and anthropological standpoints. Dr. FRITZ LENZ contributes two sections, which occupy rather more than half the volume. Dr. Lenz defines "illness" as the condition of one who lives on the limit of the possibilities of adaptability, and "perfect health" as the state of complete adaptability. The causes of illness are to be found neither exclusively in environment nor in heredity, though one or other of these usually predominates. The latter is considerably more evident in diseases of the mind than in other disorders; syphilis and alcohol occupy secondary, but nevertheless very important, positions. Dr. Lenz tentatively distinguishes as a true "mental" disease one of sufficient intensity to prevent a person from following his vocation, lesser degrees being regarded as "psychopathic." This is admittedly but a rough and ready division, but no idiosyncratic division is as yet possible. He agrees with Goddard that heredity is responsible for two-thirds of the cases of insanity, since in America alcoholism can be ruled out. Such a conclusion appears to be somewhat premature. Syphilis is stated to be less prevalent in America than in Europe.

Many mental diseases are dealt with, some at considerable length, from the standpoint of hereditary causation. The amaurotic idiocy which occurs sporadically amongst the Jews is considered to be homozygotic and recessive and therefore not a racial tendency. Schizophrenia or dementia praecox is regarded as the most important mental disease next to paralysis of syphilitic origin, and heredity is its only known cause. Rudin's analysis of cases is quoted, but the evidence as to whether this disease is of a recessive character or not is by no means conclusive. In discussing epilepsy reference is made to Steiner's statistics, which are held to show that there is a connexion between this disease and left-handedness.

Hysteria is defined by Dr. Lenz as a more or less unconscious and involuntary imitation of forms of illness; the patient need not necessarily have seen the form of illness which is imitated, but gives to it the form he imagines it would take. Hysteria is regarded as a form of mimicry, and analogies are drawn with types of mimicry among animals, such as insects feigning death, the hen partridge pretending she cannot fly in order to attract attention away from her young, etc. Such analogies appear to be rather forced, as the instances of mimicry given are clearly protective and the results of accumulative experience. It is difficult to believe this to hold good in hysteria; more particularly as the author limits the term to the involuntary imitation of forms of

<sup>4</sup> *Menschliche Erblchtheitslehre*. Band I. By Professor Dr. Erwin Baur, Professor Dr. Eugen Fischer, and Privatdozent Dr. Fritz Lenz. München: Lehmann. (Med. 8vo, pp. 305; 65 figures.)



disease; he proposes the word "orgoristia" for determined imitation and suggests that paranoiac-mental derangements are closely related.

The section of the book which deals with the relation of mental endowments and psychopathy is of considerable interest, though some of the generalizations verge on the humorous or the alarming. The mental condition of such men as Rousseau, Wagner, Nietzsche, Darwin, Mohammed, Napoleon, and others remarkable for great mental endowments, is discussed. Great poets, artists, philosophers, and politicians, in fact all with high mental abilities, with the exception apparently of research workers and discoverers, are, according to Dr. Lenz, the victims of orgoristia. Goethe's family is given as an example of the tendency to mental derangement in the other members of the family of talented persons. It is, as the author admits, a painful thought that the deeds and mental output of those whom we have been accustomed to regard as mental heroes should have sprung from a tainted stock. Perhaps Dr. Lenz is mistaken. As far as it is possible to understand the conclusions arrived at, they appear to be as follows: that, so long as the idea of disease is connected with the preservation of the individual we cannot acknowledge a connexion between genius and disease; but, if such idea be connected with the preservation of the race, the question at once assumes another aspect. The creative activity of the genius may help the life of the race, and, though it may injure individual preservation, be thus beneficial. A population of geniuses would be incapable of continuing to exist; but the sporadic occurrence of genius is of vital importance to the race in order that new avenues of life may be opened up. These later sections of the book make difficult but interesting reading, and may be taken to justify a hope that much may yet be done along this line of inquiry. The general impression left on the mind of the reader, unless he happens to be a supraltruist, will be that one would much prefer to leave the possession of genius to the other fellow.

#### A FRENCH TEXTBOOK OF NEUROLOGY.

A SERIES of manuals is appearing in Paris, under the general editorship of MM. Gilbert and Fournier, intended to form a library for the degree of Doctor in Medicine. We have before us the two volumes of this series devoted to the diseases of the nervous system.<sup>5</sup> The author, Dr. HENRI CLAUDE, is to be congratulated on the successful issue of his task. Into these two volumes, containing together some fourteen hundred pages, he has managed to compress a very full and fair account of the present state of knowledge. Diseases of the brain and of the spinal cord, the subject of the first volume, and in the second of the spinal cord, the system diseases, the diseases of the peripheral nerves and muscles, disorders of the sympathetic nervous system, and the various neuroses are considered.

The volumes as a whole may be recommended as a valuable and up-to-date textbook. The production of a single pen, it has gained by the absence of overlapping and inequality in treatment of different subjects, which is a common fault in some textbooks.

Probably the most valuable feature of the book, at least to the neurological student, are those sections which deal with general symptomatology and with the various syndromes or clinical pictures whose characters and interpretation are well described. There is, for example, an excellent account of aphasia and apraxia; a concise description of Wilson's disease and of other diseases of the corpus striatum is included. Though detailed criticism is impossible we may mention that the account of epidemic or lethargic encephalitis appears to us unsatisfactory and inadequate, especially in view of the increasing frequency and importance of its various sequelae.

The value of the volumes would have been enhanced had more space been given to anatomical and physiological descriptions, and particularly by the provision of more and better anatomical plates; the other illustrations are better and in many respects very valuable.

In conclusion, and from the point of view of the English reader, a tribute of praise and thanks is due to the author for a style and a diction which are both lucid and pleasant, and should go far to obtain for these volumes a wide circulation in this country.

<sup>5</sup> *Précis de Pathologie Interne. Maladies du Système Nerveux.* Vols. I and II. By Dr. Henri Claude. Bibliothèque du Doctorat en Médecine. Published under the direction of A. Gilbert and L. Fournier. Paris: J.-B. Baillière et Fils. 1922. (Post 8vo. Vol. I, pp. xi + 549; 79 figures; fr. 20. Vol. II, pp. xi + 880; 170 figures; fr. 30.)

#### THERAPEUTIC NOVELTIES.

THE thirty-fifth annual report of Messrs. Merck<sup>6</sup> of Darmstadt upon the pharmacological action of new drugs has been issued. These reports were printed in English as well as in German before the war; at present they appear only in German, but it is stated that next year an English edition will be produced.

The present volume mentions about 700 drugs, and gives about three thousand references, the great majority of the latter referring to work published in the year 1921. The references are obtained from about 400 journals published in about twenty-five different countries. These figures indicate the scope of the work and its value to anyone who wishes to find out quickly what has been written about some new drug.

The report commences with a special article of eighty-one pages on the chemistry of glucosides, dealing with the glucosides used in medicine other than the glucosides of the digitalis group. The rest of the work consists of short summaries of the literature which appeared in 1921 concerning the drugs dealt with; the summaries are uncritical, and hence the general impression given is that there exist a surprisingly large number of universal cures. This, however, is due to the poor quality of the literature dealt with, and is not the fault of the compiler.

The following are a few points worthy of mention: Two and a half pages are devoted to the new trypanocidal agent "Bayer 205," and fifteen references are given. No reference is made, however, to the new American arsenical trypanocide named tryparsamide. This suggests that the volume is more reliable for German than for non-German drugs. The subject of protein therapy occupies twelve pages, and seventy references are given; needless to say, the clinical effects reported are startling, and that cures of the majority of diseases are reported. The present state of this treatment is indicated, however, by the fact that there is no agreement as to whether the doses administered should or should not be sufficient to induce fever.

Some interesting references are given to the action of quinine upon the uterus. The conclusion arrived at is that quinine does not excite the normal pregnant uterus, and therefore will not act as an abortifacient in a healthy woman, but that it will excite the uterus in pathological conditions, and also will strengthen the uterine contractions in labour. The use of iodine as a general internal antiseptic is being revived, and it is even recommended as a specific in tuberculosis. Pregl's solution, which contains 0.04 per cent. iodine together with iodides and hypoiodites in watery solution, is recommended as a general disinfectant for local use and also as a general antiseptic for intravenous injection. Beneficial results are reported in encephalitis lethargica, disseminated sclerosis, tabes, epilepsy, arterio-sclerosis, puerperal fever, and other diseases. As already mentioned, the report gives non-critical summaries.

These are only a few haphazard examples of the subjects dealt with in the report, but they suffice to indicate the very large amount of information that has been collected; of the value of the information the reader must judge for himself.

#### THORPE'S DICTIONARY OF APPLIED CHEMISTRY.

THORPE'S *Dictionary of Applied Chemistry*<sup>7</sup> possesses all the merits befitting an encyclopaedia of chemistry. The new edition has reached the third volume; the subjects dealt with extend from Explosives to Kyrofin, which we are informed is the trade name for a substituted anilide used as an antipyretic; this is an example of the book's comprehensiveness, for the substance can have no interest beyond the historical fact that it appeared at some time among the synthetic products offered for therapeutic use. The appearance of a monograph on krypton demonstrates the same quality. The objection might be raised that a dictionary of applied chemistry should not include accounts of substances such as krypton, which have only an academic interest, but the fact that any observations on general chemistry may some day form a part of applied chemistry affords good reason for their inclusion. At the other extreme,

<sup>6</sup> *E. Merck's Jahresbericht über Neuerungen auf den Gebieten der Pharm.* 1921. XXXV Jahrgang. Darmstadt: E. Merck. 8vo, pp. 492.  
<sup>7</sup> *Thorpe's Dictionary of Applied Chemistry.* Vol. iii. By Sir E. Thorpe, C.B., LL.D., F.R.S., assisted by eminent contributors. Revised and enlarged edition. London and New York: Longmans, Green, and Co. 1922. (Med. 8vo, pp. viii + 735; illustrated. Vol. iii, £3 3s. net.)



monographs on materials like flax and hemp are not out of place, though they afford little opportunity for chemical discussion; their industrial importance justifies the description of their botanical origin, of the microscopic and physical characters of the fibres, and of the mode of preparation and uses of the products. It is pointed out that though water in which hemp has been steeped produces no evil effects on the health of the district, it destroys fish together with certain vegetable growths when allowed to flow into running water. In an interesting article of 300 words on flagstone we read the curious statement that one of the great factories of meat extract on the River Plate is flooded throughout with flags exported from Caithness. The discursiveness of the articles is further exemplified on page 461, where under iodine we find a list of some fourteen marine products, showing their content of iodine; among them are oysters with 0.00004 per cent. and mussels with 0.03 per cent.

Encyclopaedias are sometimes said to make pleasant fire-side reading on account of the wealth and variety of information given, but to be of no use for the thing wanted when occasion demands. The statement contains a certain measure of truth, but it admits equally of the construction that great services give rise to greater expectations. It is manifest, however, that the value of such a work would be greatly increased by the compilation of a supplementary volume containing a full index to incidental references, since a great number of these occur under headings not likely to lead to their immediate discovery. The subjects of greater importance receive appropriately extensive treatment, purely scientific matters being no less generously dealt with than those which have attained great industrial importance. There is a discourse on flame deserving to rank as a classical treatise written by one who is not only a successful research worker on the subject but also gifted as a writer. The article should be read by every student of chemistry. The same may be said of the article on hydrolysis. Many of the monographs contain sufficient matter to make separate volumes, notably those on explosives, fertilizers, fuel, gas, and glass. Coal gas is reviewed from many standpoints; of technological interest are the reviews of air gas, oil gas, and water gas; the substances used in gas warfare are noticed. The characteristics and the structural constitution of dyestuffs are reviewed as completely as it is possible to expect in a general dictionary of chemistry. The bibliographical references are sufficient to satisfy those who need further information than the text provides. The volume maintains the standard set in former editions and attains the full measure of improvement expected from revision.

### THE GOLD-HEADED CANE.

Dr. GEORGE C. PEACHEY's new edition of *The Gold-Headed Cane*<sup>8</sup> is an attractive work both in its form and in the matter provided by his introduction, annotations, and six fine photographic portraits of Radcliffe, Mead, Askew, William and David Pitcairn, and Matthew Baillie. This medical classic was first published anonymously, though now known to have been written by Dr. William Macmichael, Registrar of the Royal College of Physicians of London, in 1827, and passed into a second and much enlarged edition in the following year; it gave a pleasant gossipy account of the medical world in the times of the physicians mentioned above, and purported to be the memoirs of a gold-headed cane which was successively carried by those medical worthies. The third edition, in 1884, which brought the subject-matter down to the year 1858, was edited by Dr. William Munk, Harveian Librarian of the College, and added notes. In 1915 a fourth edition, with an introduction by the late Sir William Osler and a preface by Dr. F. R. Packard of Philadelphia, the editor of *The Annals of Medical History*, was brought out by the publishing firm of P. B. Hoeber of New York, and in 1920 a stereotyped issue of this appeared in this country from the Oxford University Press; this tastefully got up volume reproduced the text and illustrations of the second (1828) edition, and, like the previous editions, was an octavo.

Dr. Peachey's edition also follows the text and contains the illustrations of the second edition, but it is in quarto; his

notes are distinguished from those of the original by being in italics. His pleasantly written introduction etches in with a light hand the characteristics of the carriers of the gold-headed cane, and incidentally reveals the editor's knowledge and love of heraldry and bookplates. Among other happy touches he quotes the contemporary epigram on Francis Bacon's philosophy that "his works were like the peace of God which passeth all understanding." The additional notes show that Dr. Peachey obeys the injunction—more admitted than practised, it must be feared, by many of us—of verifying references, and by this process he throws polite doubt on some of the statements made current in this favourite classic. Further point and piquancy are thus added to the excellences of this edition, on which the editor must be heartily congratulated.

### NOTES ON BOOKS.

THE fifth edition of HEWLETT's *Pathology*<sup>9</sup> is characterized by the inclusion of certain sections—notably those on deficiency diseases, allergy, and blood-grouping—which did not appear in the last edition published five years ago. Short paragraphs have been added on encephalitis lethargica and herpes, containing a reference to the recent French work on the filtrable viruses encountered in these diseases, while a few lines on botulism have somewhat questionably been placed in relation to them. A helpful and illuminating page has been devoted to the reaction of the blood, with a table defining the exact meaning of such conditions as acidæmia, alkalaemia, alkalosis, and ketosis. The chapter on the ductless glands has been revised, and now furnishes a succinct and not too detailed account of the complicated series of changes dependent on alterations in the normal structure and function of these organs. It is perhaps unfortunate that the pancreas has not been included. There seems no reasonable doubt that diabetes mellitus is related to the internal secretion of this gland, and indeed it would have been well to have dealt with the whole subject of glycosuria in this chapter. Ehrlich's theory of immunity is still maintained in all its pristine magnificence; we imagine that its value for teaching purposes has been permitted to outweigh its inherent defects and misleading suggestions. The book is clear, concise, and comprehensive, and we wish it all the success that it deserves.

Marshal Catinot, in times so long ago as those of Louis XIV, asserted that "no man is a hero to his valet de chambre." But in these days when the valet is of little account, and the private secretary has assumed his more important and higher attributes, we find that a man may be a hero to his secretary. Mr. NEVILLE LANGTON has written a little book entitled *The Prince of Beggars*,<sup>10</sup> being some account of the beggings of Sydney Holland, Viscount Knutsford, during twenty-five years as chairman of the London Hospital. Lord Knutsford's interest in medical affairs may perhaps be traced to the fact that he is a grandson of a sometime distinguished member of our profession; he has himself played no small part in the affairs of so widely known a medical cosmos as the London Hospital. The beggar is honoured in the East and finds a place in the sun from which no one will dare to shift him; in our matter-of-fact West the beggar was a vagabond to be whipped at the cart tail, according to the direction of Tudor statutes still unrepealed. But there are beggars and beggars, and Lord Knutsford is one of the exceptional beggars whom we would not scourge but encourage. Mr. Langton's book is lightly written, and has many pretty stories within it incidental to begging. One of the best is that of an old lady who received an appeal for help for the hospital, in reply to which she wrote whole pages of religious advice, and woman-wise ended with a postscript, which ran: "P.S.—Prey without ceasing."

Dr. JOSEPH B. DE LEE of Chicago has issued the sixth edition of his *Obstetrics for Nurses*,<sup>11</sup> which first appeared in 1904. In process of time the book has undergone many changes, but the author states that it has not been necessary to make many alterations in preparing his new edition. The book is addressed to nurses, and appears well designed to meet their needs.

<sup>8</sup> *The Gold-Headed Cane* (by William Macmichael, M.D.). A new edition with an Introduction and Annotations by George C. Peachey. London: Henry Kimpton. 1923. 4Cr. 4tc. pp. xxiii + 157; 6 full-page photographs; 260 illustrations. 18s. net.

<sup>9</sup> *The Prince of Beggars*. By Neville Langton, Private Secretary to Lord Knutsford. London: Hutchinson and Co. 1922. (Cr. 8vo, pp. 224, 6s. net.)

<sup>11</sup> *Obstetrics for Nurses*. By Joseph B. De Lee, A.M., M.D. Sixth edition, entirely reset. Philadelphia and London: W. B. Saunders Company. 1922. (Post 8vo, pp. 525; 234 figures. 15s. net.)



SMALL-POX AND VACCINATION IN THE  
PHILIPPINES.

BY

JOHN C. McVAIL, M.D., LL.D., F.R.F.P.S.G.

I HAVE been asked by the Editor of the BRITISH MEDICAL JOURNAL to write about small-pox and vaccination in the Philippines, and, in order that I may be in a position to do so, have made myself acquainted with the Reports of the Philippine Health Service for the three years 1918, 1919, and 1920, together with various other relevant publications. A corresponding report for the year 1921 has not been obtainable—possibly it has not been issued—but some partial reports have become available.

The three annual Reports contain between them over 1,400 closely packed pages of miscellaneous material relating to health and disease in the islands, prepared under the direction of Dr. Vicente de Jesús, Director of Health. At the end of each there is a superabundantly long index, bewildering in its details, repetitions, and omissions, but the volumes are not prefixed by any table of contents to guide the reader in search of information. Some of the contributions are evidently by officers to whom English is a foreign language; they are not in the least to blame for that, but the meaning is occasionally obscure, and these matters are mentioned only lest the reviewer may anywhere have fallen into error. The reports have received attention in America and this country owing to their remarkable statistics of small-pox and vaccination. In reply to a question in Parliament Sir Alfred Mond, then Minister of Health, gave the following figures<sup>1</sup> of small-pox cases and deaths in the Philippines:

Year.	Cases.	Deaths.
1915 ... ..	6,265	216
1916 ... ..	2,520	554
1917 ... ..	542	255
1918 ... ..	47,363	16,447
1919 ... ..	65,180	41,408
1920 ... ..	10,448	4,386
1921 ... ..	1,823	790

*Population.*—By summation from different parts of the reports of figures which are not given in any one place, the population of the islands appears to be as follows:

(1) 1919 Report, p. 101, Provinces ... ..	8,934,448
(2) 1920 Report, p. 367, Manila ... ..	289,463
(3) 1920 Report, pp. 457-8, Mindanao and Sulu ... ..	512,907
	9,736,818

Luzon, the principal and most northerly island, contains the capital, Manila. Mindanao and Sulu are southern islands. There are thirty-six provinces in the northern islands and nine in the southern, but I take it, though the point is not clear, that the population under (1) above does not include that of the nine southern provinces, which I have added under (3). The Governor-General of the Philippines, Major-General Leonard Wood, M.D., in May, 1922, estimated the population at approximately 11,000,000.<sup>2</sup> The whole group of islands is situated south of China, east of Siam, and north of Australia. The temperature ranges from 90° to 100°.

After the war with Spain in 1898 the United States came into occupation of the Philippines, and in July, 1901, the military government was formally succeeded by the civil.<sup>3</sup> At the end of 1918 the Filipinos themselves took over entire charge, but transfer of control appears to have been in progress for some time previously.

It will be convenient to discuss the subject in respect first of small-pox and next of vaccination.

## I. SMALL-POX.

Small-pox is endemic in the Philippines. It is stated, on responsible authority,<sup>4</sup> "that during the Spanish régime and for some years after the American occupation more than 40,000 deaths from small-pox occurred annually in the Philippines."

In the Report for 1920 (diagram opposite page 216) the following small-pox statistics appear:

Small-pox.			
Year.	Deaths.	Year.	Deaths.
1932 ... ..	14,795	1912 ... ..	561
1933 ... ..	18,919	1913 ... ..	853
1934 ... ..	9,308	1914 ... ..	322
1935 ... ..	5,055	1915 ... ..	257
1936 ... ..	4,044	1916 ... ..	239
1937 ... ..	2,604	1917 ... ..	785
1938 ... ..	7,810	1918 ... ..	14,574
1939 ... ..	5,363	1919 ... ..	45,873
1910 ... ..	3,106	1920 ... ..	4,386
1911 ... ..	1,106		

It will be seen that the figures for the years 1915-20 have a general resemblance to those given by Sir Alfred Mond, but are not identical with them. While the disease is obviously endemic, the figures suggest that for a number of years prior to the epidemic of 1918-20 many provinces or islands may have had no small-pox, and in no year save 1919 is any approach made to the mortality of 40,000 said to have occurred under Spanish rule.

*Fatality.*

Following Sir Alfred Mond's figures, the percentage fatality in each of the seven years 1915-21 was 3, 22, 47, 34, 68, 42, and 43. With the exception of the first two, these rates are remarkably high, especially as they include both vaccinated and unvaccinated. But before accepting them certain points must be considered.

*Varioloid* in the Reports is often classed separately from variola, and shows a much lower fatality rate. In Manila (Report, 1918, p. 283) there were 1,326 cases of small-pox, with 66 per cent. of deaths, but besides there were 521 cases of varioloid with 11 deaths, or 2 per cent. In the same city in 1919 (p. 79), of 57 small-pox cases, 37 were fatal, but of 29 varioloid cases only one died. San Lazaro Hospital for infectious diseases has separate departments for small-pox and varioloid, as well as for varicella. In 1918 (p. 54) the hospital had 1,079 cases of small-pox with 528 deaths, whilst in 160 cases of varioloid there were only 11 deaths, and in 1919 (p. 37), though the numbers were quite small, the same kind of difference is recorded. These proportions are not maintained everywhere. In the southern islands in 1919 (p. 356) there were only 102 varioloid cases with 7 deaths, against 5,840 cases of small-pox with 1,466 deaths. It would appear, therefore, that here practically all variolous cases were entered as small-pox, and it is very notable that the fatality rate of 25 per cent. is much lower than the rates above given for Manila and San Lazaro Hospital.

Apart from statistics references to varioloid are few. Dr. Eugenio Hernandez, chief of the Division of the Provinces, says (1918, p. 116):

"Both virulent and mild small-pox types of the disease have been present during the epidemic. All cases of haemorrhagic type were fatal. Mild cases ... .. the latter the form was generally discrete small-pox or mild varioloid."

This is in accord with President Taft's reference, in an address to the Medical Club of Philadelphia in 1911, to the Philippines having been afflicted with "small-pox of all kinds ... in which the black small-pox of the most virulent type flourished before our coming." Of the southern islands in 1919 Dr. Jacobo Fajardo, Chief of Division, says (p. 355) that the varioloid fatality rate was 6.96 per cent. (102 cases with 7 deaths), and that:

"The majority of the cases were persons who had been vaccinated, but with negative results, although there were some cases with positive vaccination."

Apart from these observations, there is no explanation of how the word "varioloid" is applied, whether in the old sense of variola modified by vaccination; or to a mild type of small-pox breeding true, but running concurrently with the haemorrhagic sort; or whether the name was given to the milder cases of a common epidemic. But the existence of varioloid was looked on as a reason for pressing the practice of vaccination, and its separate classification seriously affects the value of the fatality rates.

*Domestic Treatment of Small-pox.*

Another question bearing on the fatality rates is the kind of service, medical and nursing, available in the Philippines. In 1919 (p. 192), in the Provinces 288 emergency hospitals,

<sup>1</sup> The Fight against Disease. April, 1922. Research Defence Society; Macmillan and Co.

<sup>2</sup> U.S. Public Health Service Weekly Report, September 22nd, 1922.  
<sup>3</sup> Philippine Journal of Science, vol. iii, September, 1928, p. 270.  
<sup>4</sup> Victor G. Heiser, M.D., Consultant in Health to the Governor-General of the Philippine Islands, and Charles M. Leach, M.D., Manila (Journal of the American Health Association, July 1st, 1922, p. 401).



including about 100 isolation houses, were established, and among 16,743 cases of small-pox received into them there were 4,706 deaths, or 28 per cent., as against 54 per cent. in cases treated at home. In 1920 (p. 226) 21 emergency hospitals were established in the Provinces, and the fatality rate in them was only 16.8 per cent., against 43.5 per cent. outside. There appear to be about 1,200 physicians and surgeons in the islands and 1,100 trained nurses,<sup>6</sup> or one doctor and one nurse to about 8,000 of population. In the public service (1919, p. 104) there is a doctor for every 34,440 inhabitants, and a nurse for every 69,414, "considering that midwives and dispensary attendants may perform the work proper of the nurses."

"The people themselves who have this meagre public and private medical and nursing service were described by Dr. Heiser when Director of Health" as "a weak and feeble race," "superstitious, content in ignorance and poverty, with habits "the antithesis of the simplest health doctrines and practices." Some fifty dialects are spoken by peasants who understand neither English nor Spanish. With such a population unskilled in mothercraft and in nursing and dieting of the sick, and very poorly provided with doctors and nurses, it is not surprising that the small-pox fatality rate of cases left at home was double that of the hospitals.

#### Notification.

A third question bearing on the fatality rate is the completeness or incompleteness of notification of the disease. Fatal cases would almost necessarily be known in connexion with death and burial, but mild cases might not be reported. "Many babies suffering from small-pox were concealed, and not discovered till the disease was well advanced" (1918 Report, p. 123, Provinces). Little reference, however, is made to the matter. The word "notification" does not occur in the index of any of the volumes. Any extensive evasion of intimation would misrepresent the facts in two respects—by understating prevalence and overstating fatality.

While the above considerations as to varioloid, domestic treatment, and notification compel the view that for purposes of comparison the fatality rates are far too high, they do not suggest what should be substituted for them; they, however, leave no doubt that small-pox in the Philippines has been a very fatal disease.

#### Epidemic Virulence.

It is of epidemiological interest to observe the increasing virulence of the disease from the beginnings of the recent epidemic until its culmination in 1919. Attention has already been called to the successive annual rates from 1915 to 1920, but that is not all. In the Report for 1918 (p. 7) the Director of Health notes that, although small-pox was reported in 1916 and 1917 from certain provinces, the other provinces and the city of Manila still enjoyed immunity.

"For the last two years, however," he says, "a notable increase in cases of varioloid had been noted, and this Service had pointed out that the immunity conferred to the population by the previous general vaccination had begun to wane."

Dr. Rosario, in reporting on Manila (1919, p. 78) makes a similar observation regarding variola. The small-pox epidemic began there in December, 1917, and was the first after nine years.

"The fatality rate had "been observed to be increasing from 10 per cent. in the former years, 16.13 in 1905-6, 25 to 50 per cent. in 1907-8 in the whole Philippine Islands, and 65.51 during the present epidemic."

#### II. VACCINATION.

An immense amount of vaccination has been reported in the Philippines since the islands came under the control of the United States.

There are references to general vaccinations in 1935-6 (1918 Report, p. 7) and in 1939-10 (1919 Report, p. 134). In a report belonging to the third quarter of 1907, issued by the Bureau of Health, Dr. Heiser states that more than two million persons had been vaccinated, and "in about another year it is hoped that the first complete primary vaccination ever attempted will be completed." In 1919 (p. 197) it is said that "more than ten million persons had been vaccinated, which constitutes more than the population corresponding to this division" (the Provinces). In 1920 (p. 260), owing to revaccination having been begun, the total number of persons vaccinated in the Provinces in the three years 1918-20 is stated at 13,699,974.

These vaccinations were in the course of, not before, the epidemic, but from 1914 to 1917 in the quarterly reports

<sup>6</sup> Public Health Reports issued by the U.S. Public Health Service, Washington, vol. 37, No. 38, September 22nd, 1922.

<sup>7</sup> Philippine Journal of Science, vol. v, 1910, p. 17a.

very many thousands of vaccinations, even hundreds of thousands in some quarters, were alleged to have been performed. The word "alleged" is used advisedly.

I proceed now to make some observations on vaccination in the Philippines as revealed in the Reports and otherwise.

#### The Attitude of the Filipinos.

Dr. D. A. Jugueta, chief of one of the vaccinating parties to be referred to later, writes (1919 Report, p. 217):

"Lack of co-operation on the part of a great many people as the result of ignorance and superstition constitutes the most serious drawback in the general vaccination." In the Provinces "a great many of these people show antagonistic spirit towards the work, and not only avoid vaccination when they can but often try to hinder the work of the party." Further, "a great many of them prevent the successful taking of the vaccine."

The last point will be mentioned again in relation to the island of Cebu.

#### Inefficiency of Vaccination Service.

The Reports contain much evidence and many complaints of the inefficiency of the service, and the incompetence, carelessness, and untrustworthiness of the local officers. Whoever was responsible for central supervision, whether United States or Filipino officers, it is important to bear in mind that for local service only the latter were available. Dr. Eugenio Hernando, chief of the division of the Provinces, in describing the organization of his department at the beginning of his report for 1919 attributes low efficiency to two main causes:

1. The small number of employees compared with the population.

2. "Because many of the sanitary inspectors are practically inefficient to discharge the duties as such; however, they are retained in the service for lack of better ones." About 90 per cent. of them were not classified in the Civil Service, and the standard of salaries did not attract better men. In 1920 (p. 19) Dr. Vicente de Jesus writes that "the lack of properly trained personnel is being keenly felt, especially outside of Manila"; in these outside areas even a not sufficiently attractive. Dr. Jaco southern division, writes in 1920 (p. 312) concerning Misamis of "the lack of instructions by the district health officer of said province to the sanitary inspectors and vaccinators, and the lack of supervision by him of their work."

Dr. J. D. Long (who succeeded Dr. Heiser as Director of Health) doubted, in February, 1918 (p. 193 of 1919 Report), whether annual systematic vaccination had been carried out, or that in certain localities the inhabitants had remained unvaccinated. In a circular to all district health officers in April he says that "it appears that some district health officers do not take the proper interest in a sanitary measure so necessary to protect the community," and he threatens severe punishment for negligence. A few months later (p. 195) he writes that, especially in the case of recalcitrant well-to-do persons, the necessary efforts are not made to carry out the provisions for vaccination.

Complaints of inefficient service are not confined to the prevention of small-pox. Concerning an epidemic of dysentery (1919 Report, p. 192) it is recorded that:

"The attention given by some of the health officers was so very little that" an admonitory circular was issued in July, 1919, stating "that district health officers and presidents of sanitary divisions are not paying due attention for the control of the said disease."

#### Falsification of Returns.

In the Report for 1919 on the Provinces (p. 204) it is complained by Dr. Hernando that:

"Sometimes reports are received stating that systematic vaccination has been completed in a certain municipality, and this appears to be true upon consulting the reports of vaccinators, but on several occasions a personal inspection in the municipality concerned disclosed the fact that 20 to 30 per cent. of the children were never vaccinated."

The volume for 1920 (p. 312) gives an illustration of this in the southern islands.

"In the reports of the district health officer it appears that 250,000 vaccinations were made, but subsequent investigations revealed that only 131,700 were performed."

This goes far to support the view vigorously expressed by Major General Leonard Wood, Governor-General of the Philippines, in April, 1922.<sup>8</sup>

"The record shows that vaccination has been steadily continued since 1913, but on investigation it was found that owing to the inefficient inspection vaccination consisted mostly in destroying the vaccine and submitting reports to the main office that it had been applied."

<sup>8</sup> U.S. Public Health Service Weekly Reports, September 22nd, 1922.



*Inspection of Vaccinations.*

Not nearly all alleged vaccinations were officially inspected. Of 414,410 in 1918 (p. 62) only 154,664 were seen again as to the result, though this was in Manila, where surveillances might have been assumed. In the Provinces in the same year, if the returns are to be believed, of 4,318,830 vaccinations 3,285,376 were inspected. In the southern islands the respective figures were 176,659 and 108,055. In April, 1918 (p. 194 of 1919 Report), Dr. Long pointed out that only 48 per cent. of vaccinations had been inspected. In 1919 in Manila there were recorded 360,712 vaccinations and 133,331 inspections, the corresponding figures for the Provinces (p. 476) being 7,277,481, and 4,867,646. The figures for 1920 (pp. 260 and 320) are similar, but those for Manila are notable—257,951 vaccinations and only 83,007 inspections.

These figures are quoted, not in criticism of the administration, for whom complete inspection may have been an impossible task, but only to emphasize the fact that as to millions of persons returned as vaccinated it is not professed that anything whatever is known as to success or failure.

*Negative Vaccinations.*

Where vaccinations actually were inspected the percentages of failures were extraordinarily high.

In the Provinces (1920 Report) in two and a half years from the middle of 1918, about 4,300,000 vaccine units "had been distributed" with an "estimated positive result of 77 per cent." In the year 1920 itself the total vaccinations (included in the two and a half years) were 3,222,460, of which 1,399,985 were successful, or 65.58 per cent. In the southern islands (1919 Report, p. 357) the positive results were 57.22 in 1918 and 64.93 in 1919, but sometimes they were only 10 to 15 per cent. (1920 Report, p. 24). In the Provinces the failure rate that year ranged from 21 to 78 per cent. in different provinces. In 1919 the figures were generally similar. In April, 1918, Dr. Long complained (p. 194 of 1919 Report) that the percentage of positive results was much less in the Provinces than in Manila. In 1919 (p. 476 and up to February, 1920, the total vaccinations for Manila and the Provinces were reported as 7,638,195, the inspections 5,000,974, the positives 3,310,932, and the negatives 1,690,045, or 33 per cent. In the following year, for the same areas (p. 418), the returns gave vaccinations 3,525,749, inspections 2,518,861, positives 1,468,944, and negatives 849,917, or over 36 per cent.

These figures, however, include all ages, and revaccinations as well as primary vaccinations, so it has to be considered whether much or all of the failure was not due to insusceptibility through previous vaccination. That explanation is advanced regarding Manila, where, of 154,644 vaccinations in 1918, no fewer than 85,085, or 55 per cent., were negative. Unfortunately its validity is very limited, as proved by the statistics of negative results in children under 1 year, where protection by previous vaccination would be negligible. In the capital, where, if anywhere, it might be expected that competent vaccinators would be available and lymph deterioration avoidable, there were 23,058 vaccinations of babies under 1 year in 1920. The results were inspected in 16,045 of these, and in the total inspected there were 26.6 per cent. of failures. The details are as follow:

Age.	Inspected.	Positive.	Per cent. Positive.
1-2 months...	9,768	7,461	76.38
2-3 " "	3,614	2,468	68.28
3-6 " "	2,335	1,621	69.42
6-12 " "	328	242	73.78

There is still, however, another possible explanation of failures under 1 year of age. Dr. Dalmacio A. Jugueta (1919 Report, p. 217), who had charge of a vaccinating party (to be referred to later) in the island of Cebu, gives the following percentage of positive results at different ages:

	Per cent.
From 0 to 1 month ...	59
" 1 month to 1 year ...	64
" 1 year to 5 years ...	66
" 5 to 10 years ...	59
" 10 to 20 years ...	56
Over 20 years ...	61

The failure rates therefore ranged from 34 to 44 per cent. Among infants they were 41 per cent. under 1 month and 36 per cent. between 1 month and 1 year. About infants Dr. Jugueta says:

"There are only a few mothers who are convinced and are willing to submit their babies to the vaccination, and since they only have them vaccinated to evade the law a great many of them prevent the successful taking of the vaccine, and thus the low rate of percentage of positives."

This is a relevant consideration, and may account in whole or in part for the percentage of failures being considerably

higher in Cebu than in Manila. But it is to be noted (1919 Report, p. 209) that only after three failures is a result to be recorded as negative.

For Manila of every 100 ultimately positive, 73 were so at the first attempt, 17 at the second, 6 at the third, and 4 after a fourth or further vaccination. On the whole the large proportion of ultimate failures in both Manila and the Provinces seems to point pretty definitely to inert lymph or incompetent vaccination. In the 1919 Report (p. 207) it is stated that "the percentage of positives among the groups by ages from 0 to 10 years cannot be given exactly, but it is estimated by several district health officers to be 80 per cent. of those who had never been vaccinated," as against a 60 per cent. average of positives. The 20 per cent. failure in the case of unvaccinated children once more suggests inert vaccine.

*The Vaccine used in the Philippines.*

Drs. Ashburn, Vidder, and Gentry state, on the authority of Dr. Ruediger, in charge of the serum laboratory, Bureau of Science, Manila, which is responsible for the supply of vaccine, that the strain of vaccine virus used at that time (1913) "was derived from a fatal case of human small-pox in 1908, having been passed first through monkeys, and from the second monkey to a heifer, and from the fifth heifer to man." Whether this lymph is still in use, or whether any fresh sources have been introduced, does not appear from the reports I have consulted. Vaccine, whatever its origin, is very likely to deteriorate in the Philippines. The temperature commonly ranges between 90° and 100° F. To many parts of the islands the distances are great, the roads and means of conveyance bad, equipment for preservation of lymph by storage in ice defective or wanting (1919 Report, p. 357), and the staff ignorant, indifferent, and inefficient.

Concerning its use in practice, I again resort to quotation:

Dr. Jacobo Fajardo, chief of the division of Mindanao and Sulu (the southern islands), says in the Report for 1918 (p. 211) that one of his difficulties was the "insufficiency and unsatisfactory kind of vaccine virus," and that as regards the Mohammedan population "after preaching the efficacy of vaccination against small-pox they allowed themselves to be vaccinated. With the virus supplied the vaccination did not prevent or attenuate the small-pox epidemic." Concerning an outbreak in Lanao, where there were 2,700 cases, he writes: "It would not have spread throughout the province were it not for the inactivity, or at least the weakness, of the vaccine virus."

Dr. Vicente de Jesús, who followed Dr. John D. Long as Director of Health, speaks in the 1920 Report of cases occurring "in the most remote barrios where vaccine virus could not arrive in good condition, but by the use of powdered dry vaccine in such places" the number of cases of small-pox was much reduced. In the same Report (1920) Dr. Fajardo is no less emphatic than in 1918. Concerning Misamis he writes: "The lack of instructions by the district health officer of said province to the sanitary inspectors and vaccinators, and the lack of supervision by him of their work, account in great measure for the unchecked spread of the disease."

It was here that the vaccine gave only 10 to 15 per cent. of positive results, notwithstanding resort to thermos bottles, banana leaves, etc., in substitution for ice. Dried vaccine, however, gave good results, but unfortunately the Bureau of Science "at best could fill only about 25 per cent. of the requisitions."

Suspicion arises as to the value of the vaccine used, even in the capital city of Manila.

Dr. Heiser (who, after ceasing to be Director became Consultant in Health to the Governor-General of the Philippines) and Dr. Charles M. Leach of Manila have stated recently that the successfully vaccinated in Manila were immensely better off than the others, in respect both of attacks and deaths, and there need be no doubt that even poor lymph was of great value compared with no vaccination at all. But the figures which challenge attention are those relating to attacks and deaths amongst vaccinated infants and children. Under 1 year of age there were ten attacks and four deaths; between 1 and 2 years twenty-one attacks and fourteen deaths; between 2 and 3 years ten attacks and three deaths; between 3 and 4 years eighteen attacks and eight deaths; and between 4 and 5 years twenty-one attacks and nine deaths. These figures in respect both of attacks and deaths are frankly impossible in the case of anything that in this country would be considered to have the remotest claim to be called successful vaccination.

*Duration of Vaccinal Protection.*

In a circular of instructions to district health officers issued on February 25th, 1918 (p. 193 of 1919 Report), Dr. John D. Long requested that, excluding children under 2 years of age who had at any time been vaccinated with



positive results, "all other persons should be revaccinated even though they have been vaccinated in former years with positive results, except those successfully vaccinated during 1917." Looking to the date of the circular, this instruction means in effect that the authorities could not rely on much more than a single year's protection from a vaccination as performed in the Philippines. On the same point reference may be made to an article<sup>9</sup> by Dr. Heiser in 1910, which shows that the difficulty about the shortness of immunity was no after-thought to account for the epidemic of 1918-20. At a time when the annual deaths from small-pox had fallen from 40,000 before and in the early days of the American occupation, and from the 14,000 of 1902 and the 19,000 of 1903 to 3,000 in 1910, Dr. Heiser, then Director of Health, said he had found that ordinary cow-pox was not as effective among dark as among white-skinned races. Among 100 vaccinated whites no case had occurred within five years after vaccination, whilst among Filipinos, "of whose successful vaccination within one preceding year there could be little doubt," many cases had occurred. Experience at Bilibid Prison supported this view. He was also careful to point out the position as regards lymph supply, especially for remote regions. Lymph would not keep for more than seven to ten days, whilst powdered vaccine and dry points had been tried with only (at that time) a small measure of success.

As regards the shortness of immunity conferred on natives by vaccination, one statement to the contrary requires to be mentioned. In the 1919 Report (p. 206) Dr. de Jesus writes:

"Many mothers who have been confined in small-pox hospitals with their children sick of small-pox were only once vaccinated, but vaccinated well, and not one of them developed infection of small-pox in spite of the great exposure to which they had been exposed."

Such immunity is often experienced in this country, but admission to hospital of a mother in such circumstances would depend on the recency of her vaccination or on her submitting to revaccination. Only if different vaccines of different value were in use, or if types of small-pox were totally different, can these statements of Dr. Heiser and Dr. de Jesus be reconciled.

In the 1919 Report (p. 193) it is stated, regarding the epidemic up to that time, that of 56,018 reported cases, 52,763, or 94 per cent., had never been vaccinated.

#### *Dried Vaccine.*

The prospects as regards remote regions are now better. The 1919 Report of the Health Service (p. 205) quotes an important report by the director of the Bureau regarding the preparation of dried and pulverized vaccine in the later part of 1919. Experiments were not finished by December 1st (the date of the report), but good results were being obtained.

"The vaccine showed first-class takes after being prepared and kept without ice for two months at room temperature." A parcel prepared on September 20th was shipped on November 1st by a boat which returned to Manila on November 24th. On the following day the lymph was tested on monkeys and showed first-class "takes" after having made a forty-day trip round practically the entire archipelago.

#### *A New Vaccination Scheme.*

While struggling with all their difficulties and disappointments, the Health Service is redoubling its efforts to rid the islands of small-pox. In 1919 (pp. 207-218) a new organization was established for "systematic and extensive vaccination throughout the islands and to obtain complete immunization of all the inhabitants for the next eight years." The scheme is twofold: first, "vaccination of all newborn and contacts of small-pox cases," and secondly, "intensive and extensive vaccination of all the inhabitants never vaccinated, or vaccinated with negative results, or vaccinated eight years ago." For the former purpose the regular and temporary sanitary personnel assigned to the provinces is relied on. For the second, six special vaccinating parties were organized to work independently of the regular staff. Each of the six parties consists of twenty vaccinators, with a doctor as chief. Three of the parties were allocated to Luzon and three to more southern provinces or islands. The vaccinators were given full written instructions, which, as the Report shows, were carefully prepared. But whether owing to inert vaccine or to habitual wiping away of lymph immediately after its insertion, as already described by Dr. Jugueta, or to insusceptibility due to previous vaccination, or to these

causes combined, the efforts of the vaccinating parties, as measured by case success, were far from reassuring. (It may be interpolated here that in this country Government lymph in the hands of public vaccinators has a case success of 99 per cent. and an insertion success of 96 per cent.)

A tabulation of the work done shows that in 1919, in 75 municipalities, with a total population of 800,495, there were performed 398,753 vaccinations, of which 145,551, or rather less than half, gave a positive result. In 1920 more than double the amount of work was overtaken. In 116 municipalities, with a population of 1,161,391, there were 550,855 vaccinations, with 345,366, or 36 per cent., of positive results.

The instruction is that no case shall be reported as negative excepting after three failures. No locality is to be considered "completely and positively vaccinated unless the total positives equal at least 75 per cent. of the total population."

But the statistics show that not one of the six parties succeeded, either in 1919 or 1920, in achieving anything like 75 per cent. of successes. Insusceptibility to vaccination owing to previous small-pox was only to be recognized as a reason for not vaccinating if the attack had occurred "during the preceding year"; that should account for some proportion of the failures.

It surely cannot be doubted that the members of the six vaccinating parties have, after all the past experiences in the Philippines, been sufficiently instructed in their work, and that its performance is being medically supervised. The regulations issued for vaccinators show that lymph conveyance and preservation are now receiving much attention. Portable ice boxes, we are told, are to be regularly used, and vaccinators are warned against exposure of the vaccine to the sun, or keeping it in the pocket of the operator. Dried lymph is being provided for remote districts. Even, however, if 100 per cent. of positive results were obtained from dried lymph, a question behind it all would be the efficacy of the lymph used in the Philippines against the strain of variola locally endemic.

#### *Manila in 1918.*

But to whatever degree the efficacy of the vaccine in use falls short, it is right to call attention to evidence by Drs. Heiser and Leach that where it gets a fair chance it is of real value in diminishing the risk both of attack and death. Drs. Heiser and Leach, in the paper already referred to, give various particulars regarding the prevalence of small-pox in Manila, where the disease could be kept under skilled observation. Of 1,326 cases in 1918, only 177 occurred among the successfully vaccinated, and of 999 deaths only 60, or 7 per cent., were in that class. In the city not a death had occurred from small-pox in the seven years prior to 1914, and in the population of the Philippines generally, instead of 40,000 deaths a year, there were only a few hundreds. But, they say:

"After 1914 general vaccination of newborn children and other unprotected persons was not effectively carried out," and "much of the vaccine was never applied or not until it had deteriorated. Minor health officials and vaccinators found it much easier simply to report vaccinations than actually to carry out the procedure. Quantities of vaccine virus were actually discovered in waste-paper baskets. . . ."

"Thus a huge unvaccinated population came into being, and it was only necessary for the ever-present spark to fall among them to start the conflagration."

When small-pox did come to Manila in 1918, no less than 67 per cent. of the cases and 75 per cent. of the deaths occurred in children under 4 years of age—that is, born since the practice of vaccination had been neglected, as explained by Drs. Heiser and Leach. But even so the attacks and deaths which they record amongst vaccinated babies are occurrences which ought to be unknown.

#### *SUMMARY.*

The available data appear to warrant the following provisional conclusions:

1. Small-pox in the Philippines is very severe in type, but its natural fatality rates are very considerably overstated by the exclusion of varioloid, the want of skilled treatment and nursing in the homes of the people, and, probably, incomplete notification of cases.
2. The published statistics of vaccination in the Philippines are quite unreliable owing to (a) domestic resistance to the operation, (b) inefficiency of the service, (c) falsification of returns, (d) insufficiency of inspection, and (e) the high percentage of negative results in inspected cases, even in infants.
3. The vaccine which has been used in the Philippines is subject to deterioration owing to climatic conditions, defective

<sup>9</sup> Unsolved Problems Peculiar to the Philippines, *Philippine Journal of Science*, vol. v, 1910, p. 174.



preservation and transit, and want of care by local officers. At least part of it appears to be inefficient or inert.

Much in this article has been said by way of raising questions rather than of stating conclusions, and much remains obscure which ought to be made clear as respects both small-pox and vaccination. From the point of view of epidemiology it is desirable to know what more may be ascertainable of the history of small-pox in the Philippines—its prevalence, its varieties, from black pox to varioloid, its fatality in the days of the Spanish possession and when the United States came into control. But the United States Public Health Service appears to be no longer responsible, the Filipino local government having taken over the administrative control. The whole subject calls for inquiry—not merely by study of the Reports, as in this article, but by competent visitation of the islands and skilled investigation of every essential detail. One body, the Rockefeller Foundation, seems in every respect qualified for the duty. It recently carried out through a specialist an examination of the health problems of Mauritius, a British possession much smaller and less important than the Philippines. The Rockefeller Foundation had already, in May last, entered on a medical survey of the Philippines, and though the Governor-General in mentioning this gives no details, yet it may be assumed that small-pox and vaccination must come under review.

## ANTHRAX CONTROL.

### INTERNATIONAL ADVISORY COMMITTEE.

We have received from the headquarters in Geneva of the International Labour Office, League of Nations, an account of the first session of the International Anthrax Committee held in London from December 5th to 14th, 1922.

The Committee was set up by the Third International Labour Conference with a view to studying thoroughly the problem of industrial anthrax, and more especially that of disinfection in the wool industry.

The Committee, which was to include experts appointed by the various importing and exporting countries, was composed as follows:

Australia, Sir Thomas Oliver; Belgium, Dr. Glibert; France, M. Boulin; Germany, Dr. Frey; Great Britain, Sir Wm. Middlebrook, Chairman of the Departmental Committee on Anthrax; Italy, Dr. Loriga; India, Colonel Hutchinson; Japan, Dr. Kawai; South Africa, Dr. Dixon; Spain, Professor Roca; Sweden, Mr. Ribbing; Observer for the United States, Dr. Dorset.

The Committee was charged with the duty of inquiring into:

1. The problem, in all its bearings, of the disinfection of wool and hair suspected of being infected by anthrax.
2. The most practical and effective methods of preventing infection among flocks.
3. To submit a report to the Governing Body in sufficient time to allow the latter to decide upon the necessity of including the question in the agenda of the Fifth International Labour Conference.
4. The possibilities of dealing with infection by anthrax from hides, skins, and other suspected animal products.

The preliminary work of the Advisory Committee was summarized in a documentary report of the Industrial Hygiene Section of the International Labour Office containing information from twenty-seven countries as to statistics and legislation regarding the danger of anthrax among human beings and animals. The report also contained an analytical chapter on disinfecting methods proposed and measures contemplated to combat the diseases among animals. Moreover, the Chairman of the Committee, Sir Wm. Middlebrook, distributed a pamphlet containing a brief survey on the development of the question and the results obtained in England during the last few years.

After full discussion the following resolutions were carried:

1. That hair used in the brush-making and upholstering industries shall be disinfected before the materials are handled industrially.
2. That wool and hair to be used in the textile industry shall be disinfected before the materials are handled industrially, except in the following cases:
  - (a) If the country of origin is included in the schedule of countries where the danger is slight.
  - (b) If the material to be imported has already been disinfected by a process recognized as effective.
  - (c) If wools and long hair have to be sorted before washing, unless these products are not included in the list of harmless products.
  - (d) In such other cases as may be determined by the Committee.

The experts who had come to give evidence at the request of certain members of the Committee agreed that the proportion of wool imported into England which does not require sorting before washing is extremely small, and that it is almost always this kind of goods which gives rise to the danger of anthrax amongst the workers; that if it is technically possible to sort the wools after washing, it would be bad from the commercial point of view. The list of countries where the danger is slight will be brought up to date each year by the Advisory Committee on Industrial Hygiene of the International Labour Office. In the same way the industrial processes of disinfection will have to be approved by the Governing Body of the International Labour Office in accordance with the opinion of the Advisory Committee on Industrial Hygiene, and eventually approved by the Health Committee of the League of Nations.

The Committee was of opinion that the best precautions against the spread of anthrax among flocks are at the present

1. Compulsory notification and official verification of cases of anthrax.
2. Inoculation of animals suffering from or suspected of suffering from anthrax.
3. Destruction of the entire carcass of any animals dead or suspected to have died from anthrax, and disinfection of the immediate surroundings of the place where the animal has died, as well as of the premises where it has been kept.
4. Preventive inoculation of animals against anthrax.

In regard to industrial anthrax generally the Committee adopted the following resolution:

The Committee is of opinion that in most countries the principal danger of industrial anthrax arises in the manipulation of hides and skins, and recognizes the impossibility of securing at the present time complete disinfection to protect against this danger. The Committee therefore recommends that regulations be laid down in the different countries having for their object the protection of the workers and the soil against infection by anthrax from hides and skins.

The Committee further suggests that the International Labour Office, in conjunction with the Health Committee of the League of Nations, should organize international research and invite nations and organizations chiefly interested to undertake such research in their respective countries. The Committee considers that in view of the fact that all countries using infected materials will benefit by the discovery of a satisfactory process of disinfection it is desirable that the governing body should take into consideration the possibility of finding grants in aid of research undertaken for that purpose.

The report concludes with some observations regarding the disinfection of horns, hoofs, and bones.

## ROYAL MEDICAL BENEVOLENT FUND.

At the meeting of the Committee held on January 9th 17 cases were considered and £250 voted to 13 applicants. The following is a summary of some of the cases relieved:

M.D. Brax., I.S.A., aged 62, married. Owing to chronic neurasthenia, bronchitis, and general weakness is unable to concentrate on work. Voted £26 in twelve instalments towards board and lodging.

M.D. Dublin, aged 61, married. Owing to severe nephritis with general arterio-sclerosis, has been unable to attend properly to his practice, and is now reduced to a small panel bringing in 5s. a week and private practice about the same amount. Voted £26 in twelve instalments.

Widow, aged 50, of M.D. Edin. who died in 1906. Applicant used to take rest as companion-help, but owing to ill health has had to give this up. The Guild has been helping to the extent of 5s. a week, and the Fund has now voted £12. Relieved five times, total £45.

Widow, aged 41, of M.R.C.S. Eng. who died in 1914. Owing to ill health applicant is dependent upon her mother, with whom she lives. Has been relieved by the Fund eight times to the extent of £103. Voted £18 in twelve instalments.

Daughter, aged 63, of F.R.C.S. who died in 1885. Through ill health has had to give up her profession as nurse. Only income £48 per annum, out of which she has to pay £26 for rent. Relieved twice before by the Fund, total £29; voted £18 in twelve instalments.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters Symonds, K.B.E., C.B., M.S., F.R.C.S., at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild is overwhelmed in these days of exorbitant prices for clothing and household necessities with applications for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles for the benefit of the widows and children who in happier times would not have needed assistance. The gifts should be sent to the Secretary of the Guild, 43, Bolsover Street, W.1.

A SPECIAL number of the *Zeitschrift für Hygiene und Infektionskrankheiten* has been dedicated to the bacteriologist Flüge, on the occasion of his 75th birthday, and a Flüge fund has been raised for the scientific investigation of tuberculosis.



# British Medical Journal.

SATURDAY, JANUARY 27TH, 1923.

## EDWARD JENNER.

It is a hundred years since the remains of Edward Jenner were laid to rest in a vault in the chancel of Berkeley Church. He died on January 26th, 1823, and was buried on February 3rd. He had been born in 1749 in the vicarage of Berkeley, and spent a large part of his professional life in his native village as a general practitioner—one of the most illustrious who has ever adorned the ranks of medicine. His great teacher and friend, John Hunter, wanted him to enter on a different career; but Jenner was a born naturalist, fond of a country life, so that even when, in the interests of vaccination, he was persuaded to take a house in London, he quickly repented, and later on returned to Berkeley.

The oft-told story of his great conception of preventing small-pox by means of cow-pox is classical in its simplicity and brevity. In his master's surgery at Sodbury he heard a countrywoman remark that she could not take small-pox because she had already had cow-pox. The little incident remained in the mind of the busy village doctor for many years, to be mused over, discussed with friends lay and medical, set aside and returned to with a curious mixture of perseverance and dilatoriness which was no doubt in his mind when he remarked in his *Inquiry* that people may not be aware "how often men engaged in professional pursuits are liable to interruptions which disappoint them almost at the instant of their being accomplished." Ultimately, however, in 1796, he put the matter to the touch—he inoculated with cow-pox, tested the effect by inoculation with small-pox, and found that immunity had been achieved. The rest of his life was devoted mainly to the promotion of vaccination.

Until after the end of the seventeenth century an attack of the disease itself was the only means of acquiring protection against small-pox. The price paid for this protection of survivors consisted in the death of those who did not survive, and disfigurement, blindness, and ill health amongst those who were not slain by the pestilence. But during the last three quarters of the eighteenth century the cost was lower to such as resorted to small-pox inoculation, though it is doubtful whether on balance inoculation did not do about as much harm by spreading the infection as it did good by protecting those who were inoculated. Then, at the end of that century, Jenner introduced vaccination, which protected the individual and was accompanied by no risk of conveying small-pox to others. Thus salvation was offered from the most terrible scourge which at that time afflicted humanity, and Jenner was directly responsible for saving more lives and averting more misery than it had fallen to the lot of any single human being to accomplish from the dawn of history to his day.

Jenner published his *Inquiry* in 1798, issued *Further Observations* in 1799, and *A Continuation of Facts and Observations* in 1800, besides various short papers in the *Medical and Physical Journal*; he wrote also an infinity of letters to correspondents. Briefly he held that the teats and udders of cows were subject to various eruptions, of which only one was the true cow-pox; that it was derived from an eruptive disease of the horse; that cow-pox was without general eruption and its accompanying infection; that the local vesications on the hands of dairy maids accidentally inoculated from cows

had a surrounding areola, and so were like a pearl on a rose leaf; that the axillary glands became affected, but that any indisposition accompanying the casual disease was due, not to the vaccine virus, but to subsequent irritation and inflammation, and was therefore accidental, not essential; that matter for inoculation, whether of small-pox, horse-pox, or cow-pox, should be used before becoming purulent, otherwise it might be specifically ineffective; and that when variolous matter was taken to test the success of vaccination the same rule should be observed.

Jenner was quite wrong about horse-pox (or horse-grease) being the only source of vaccinia, but the question was of no essential importance. In the present day Dr. Monckton Copeman, looking to the difficulties experienced in direct variation of bovine animals, has advanced the interesting speculation that much of the cow-pox in the prevaccination era may have been due to the transference to cows of matter from the hands of dairymaids engaged in milking whilst suffering from the slight eruption which commonly followed small-pox inoculation.

Jenner always kept in view, as a pole-star to guide him, the conviction that cow-pox was small-pox of the cow. This was hotly disputed in his own time, but has long ago been triumphantly proved and is now universally accepted. It gave him a wonderfully complete grasp of the principles and practice of his prophylaxis. When therefore Woodville, carrying on cow-pox inoculation in the very unsafe conditions of the Small-pox Hospital, seriously endangered the whole project of vaccination by reporting that in a large number of his cases there had occurred a general pustular eruption which he set down as belonging to the phenomena of cow-pox, Jenner tersely replied, "Where variolous pustules have occurred I believe variolous matter to have occasioned them"; Woodville soon came tacitly or explicitly to admit his error. For conducting safely and effectively the practice of vaccination, Jenner evolved and emphasized his "Golden Rule" to take lymph from the arm at an early stage, before the areola had appeared. This was at first not infrequently neglected, and sometimes the same vesicle was returned to again and again for lymph supply. In America the practice was extraordinarily bad, and when Waterhouse there wrote to Jenner that he had known of a shirt-sleeve stiff with purulent discharge from a foul ulcer being cut up into small strips and sold for kine-pox, Jenner replied that he longed for a speaking trumpet to carry on the wings of the wind across the ocean the message—Take the virus before the efflorescence appears.

But his doctrine was erroneous in one important respect. To the day of his death he held that the protection afforded by vaccinia was equal in every respect, including duration, to that of variola, whether natural or inoculated. When in the course of his later years post-vaccinal small-pox not infrequently occurred, his explanation was that second attacks of small-pox itself had exceptionally happened, and that so it must be with vaccination. But in Germany, where the influence of Jenner's views was no doubt less than in his own country, the need for revaccination began to be realized, and in the armies of various States compulsory revaccination of recruits was begun so long as from eighty to ninety years ago. In this country at that time it was coming to be thought that the original stocks of lymph might have deteriorated, and Ceely, Badcock, and others, adopting the policy of return to the cow, began their well known investigations. Since that time the need for revaccination has been everywhere accepted, and, in addition, new stocks of lymph can be established whenever and wherever it may be found desirable.



In the conditions of the present day we are finding that by concentration of effort, by what may be called intensive vaccination in a threatened area, it is often possible to counteract in great measure the effects of the public apathy, which is probably to be attributed to the less alarming types of small-pox and the longer intervals between epidemics in recent decennia. The groundwork is not nearly so good as before, but consists, first, in such routine practice of infant vaccination as still remains under the weak existing law, and secondly, in the very considerable amount of re-vaccination of male adults in the war, and of the public generally whenever there is threatened prevalence of small-pox. Even yet a considerable part of the population of the country is thus immune to small-pox, and the field for its spread is correspondingly limited. Another important present-day factor is that calf lymph is available on emergency to an extent altogether impossible when only humanized lymph was in use, and when its exiguous supply depended on the weekly vaccinations of the babies in a community. Also modern public health staffs, central and local, can, putting aside if necessary almost all other work, concentrate on the search for contacts, their vaccination and surveillance, and, if vaccination be too late, their isolation in hospitals established in well isolated situations. Isolation, however, is practicable only through vaccination. In its absence the attendants on the sick, unless indeed they had already had small-pox, would be infected by the patients. In their turn these attendants would become patients, and the disease would spread in ever-widening circles. If the whole population were protected by vaccination and revaccination small-pox hospitals would be needless; in the entire absence of vaccination they would be useless. In fact, it is Jenner who has made isolation available as a handmaid to vaccination. All this emergency effort, however, cannot but be accompanied by the toll which small-pox takes from those who are infected before they resort to the protective operation. So long as visitations of small-pox continue such loss will be an inevitable penalty for personal and national neglect.

The centenary of Jenner's death follows close on that of Pasteur's birth. Their lives overlapped by a month, Pasteur having been born thirty days before Jenner died. Their life's labours were closely related. Apart from variolation with its serious disadvantages, vaccination was the first example of the operation of the principle of individual immunization. For the greater part of a century it remained an oasis in a desert, and for long there seemed no prospect of its further application. Now, however, since Pasteur brought into existence the science of bacteriology, the sphere of immunization by different methods has been wonderfully extended, and the armamentarium of preventive medicine correspondingly strengthened. In a remarkable passage in one of his books Sir John Simon wrote that "if departed great benefactors of our race could now and then look down on the harvest fields where mankind age after age is gladdened by the fruits of their labour, they would in general find themselves less remembered than perhaps their terrestrial ambitions had desired"; but, he adds, "let the noble compensation be noted that often the thoroughness of a reformer's victory is that which most makes silence of the reformer's fame. For how can men be adequately thankful for redemptions, when they have no present easy standard, no contrast between yesterday and to day by which to measure the greatness of them?" That question applies specially to the case of Jenner, but neither Jenner nor Pasteur can ever be forgotten. It was, if we recollect aright, in an address at the centenary of the death of Robert Burns that Lord Rosebery, speculating

about the duration of personal fame, prophesied that if there were every hundred years a roll call of the famous departed, the "Adsum" of Burns would sound clear and strong all down the coming time. In the much more prosaic sphere of preventive medicine and the benefactions of science, so it will be with Edward Jenner and Louis Pasteur.

### THE INFLUENCE OF PASTEUR ON MEDICINE.

It is an appropriate coincidence that the centenaries of Jenner's death and Pasteur's birth should be celebrated at practically the same time in France. That his own nation should commemorate the centenary of Pasteur's birth as an occasion for every mark of proud respect for the great medical benefactor of mankind, who was well described as "the most perfect man who has ever entered the Kingdom of Science," is natural and right. But that our French friends of the Académie de Médecine, which has a special department organized for Jennerian vaccination, should have held a formal séance in his memory on January 23rd—three days before the anniversary of Edward Jenner's death at Berkeley, Gloucestershire, in 1823—calls for an expression of our sincere appreciation of their graceful action. Not only did the lives of these two famous men follow each other without a break, but the younger by exact laboratory methods carried on and greatly extended the bearings of his senior's clinical achievement, and with the generosity of a great mind fully recognized his predecessor's work, and did perhaps even more than justice to him by perpetuating the term "vaccine" in a much wider sense than its original and etymological application. Pasteur, in concluding the address he gave to the International Congress of Medicine in London in 1881 on vaccination in relation to chicken cholera and splenic fever (anthrax), said, "I must not end without expressing the pleasure I experience in remembering that it is as a member of an international medical congress held in England that I publish these most recent results of my experiments on the vaccination of a disease perhaps more terrible for animals than is small-pox for man. I have given to the term 'vaccination' an extension which science, I hope, will accept as a just homage to the immense services rendered by one of the greatest of Englishmen, Jenner. How great to me is the happiness to be able to honour his immortal name in this noble and hospitable city of London." From the results of his work on fermentation Pasteur became convinced that each form of fermentation is specific and due to a special organism; he then went on to show that the virus of an infection can be attenuated and employed as a vaccine to produce active immunity. In this short article the influence of Pasteur on medicine may be suitably considered as a pendant to the account in our last week's issue of his influence on surgery; and accordingly, although the important bearing of the principle of the specificity of disease (in which he took so great a part) on the outlook of medicine can hardly be exaggerated, attention will be mainly directed to the influence of his work on preventive medicine.

Long before the real recognition of bacteria Jenner noticed that cow-pox protected milkmaids from a somewhat similar but far more serious disease, variola, and, as stated in the article which precedes this, by inoculating a child with lymph taken from a cow-pock on the hand of a milkmaid, put this observation into practical use. Impressed with this idea of obtaining protection from a virulent disease by the production of a similar but slight disorder, Pasteur, dealing with the isolated virus of disease and not solely with its results, set to work to find a way of attenuating



the specific micro-organisms. This he accomplished by different methods in some of the comparatively few diseases of known bacteriology: in chicken cholera by prolonged incubation, in swine fever or erysipelas (rouget) by passing the virus through other animals, and in anthrax by cultivating the bacilli at a temperature higher ( $42^{\circ}$ - $43^{\circ}$  C.) than the optimum ( $35^{\circ}$  C.). In 1881, by inoculating animals with attenuated living cultures of anthrax bacilli, protection was obtained, and to this procedure, as it followed the lines of Jenner's vaccination with calf lymph, he applied the term "vaccination." This prophylactic vaccination, employed so successfully by Pasteur in the case of anthrax, was after a long interval practised by Haffkine (1895) against cholera, and on an even more extensive scale, and with great success, in protection against enteric fever by Sir Almroth Wright (1897). He, finding experimentally that dead cultures gave a protection quite as effectual as living cultures, used them to produce immunity—an innovation that rapidly found other applications.

In his work on the protective action of attenuated virus Pasteur was enormously in advance of his time, and indeed founded the science of immunity, established its practical application in obtaining protection against disease, and opened the way to the further development of specific curative treatment. In rabies, in which, as in small-pox, the causal organism has not been isolated, Pasteur was content to act on the assumption of its presence, thus anticipating and stimulating the discovery of ultramicroscopic organisms. He introduced the system of standardized vaccines in the prevention of hydrophobia during its long latent period—usually about six weeks—between the date of the bite and the onset of symptoms. By drying the spinal cords of experimental animals dead of rabies Pasteur found that the virulence of the emulsion made from them progressively diminished, so that after fourteen days their toxic properties were lost. Subsequently it has been thought, on the basis of Hoge's therapeutic success with diluted virulent emulsions, that the process of drying alters only the quantity and not the quality of the virus. However this may be, Pasteur obtained a series of emulsions of graduated strength from spinal cords that had been dried for varying numbers of days, and by injecting successively emulsions of increasing strength into persons bitten by rabid dogs produced an active immunity so complete that the mortality in these cases has never been more than 1 per cent. According to Calmette the former mortality of persons bitten by mad dogs was as high as 47 per cent., and when the bites were on the face 80 per cent., whereas between 1886 and January 1st, 1922, out of 44,817 persons treated by Pasteur's method at the Pasteur Institute, Paris, only 150, or 3 per 1,000, have died. The Pasteur Institutes all over the civilized world tell the same tale. The treatment, however, has no effect when the symptoms of hydrophobia have appeared, and is therefore prophylactic and not curative; it is, indeed, comparable to Jennerian vaccination, which, if employed within three days of the exposure to the infection of variola, will prevent the occurrence of that disease, probably because the incubation period of vaccinia (three days) is shorter than that (ten to twelve days) of small-pox. Nevertheless this treatment in hydrophobia differed from other prophylactic vaccinations which are undertaken with the object of obtaining in a healthy person such a degree of resistance that, if and when he is exposed to infection, disease will not follow or will take a mild form. For in the case of hydrophobia it was during the natural period of incubation that the process of immunization was carried out; and, indeed, this may be regarded as a step towards the curative vaccination therapy subsequently elaborated by Sir Almroth Wright. By establishing the existence of bacterial toxins Pasteur

cleared the way for Roux and Yersin's discovery of diphtheria toxin and so for that of antitoxic serums.

To Pasteur medicine, and particularly its real aim the prevention of disease, owes an immense debt for his demonstration of the universal distribution of bacteria, of the value of accurate sterilization, and of the fallacy of supposed spontaneous generation; for the introduction of an accurate technique, and perhaps above all for the example and inspiration of a thoroughly scientific method in medical work and research. Just as he confuted the hypothesis of spontaneous generation of bacteria, so he dealt with the prevalent conception of spontaneous morbidity so obstinately supported by Liebig. In the contrast between the state of national health and the prospect of life in the civilized world now and that existing fifty years ago, the influence of Pasteur is writ large; and, as Professor F. Widal\* said in his *éloge* on December 26th, 1922, at the Académie de Médecine, no science has ever experienced such a revolution as that effected in medicine by Pasteur's discoveries. In conclusion, it is fitting to quote from the Supplement to *Nature* of December 23rd, 1922, Professor William Bulloch's considered judgement: "When one calmly surveys the immense progress of medical science in the last fifty years it will, we think, be admitted by future historians that its progress and success were largely due to the work initiated with so much imagination and carried out with such incomparable skill by Louis Pasteur."

#### THE MODE OF ACTION OF TRYPANOCIDES.

As will be gathered from a perusal of the report published this week (p. 149), the discussion at the Royal Society of Tropical Medicine upon the new trypanocidal remedies brought out a number of points of great practical and theoretical interest as to the mode of action of trypanocides. The facts reported by Dr. Low and Dr. Chesterman showed that each of the new remedies, "Bayer 205" and tryparsamide, is a real advance on any previous remedy for the treatment of trypanosomiasis. Dr. Low described 8 cases of sleeping sickness (*T. gambiense*) treated with "Bayer 205"; 7 recovered. Dr. Chesterman gave an account of the treatment (Stauleyville) of 40 cases of sleeping sickness with tryparsamide. He expressed himself as satisfied that the action of the drug was superior to that of atoxyl or antimony. A warning note was sounded by Dr. Derwish, who said that cures could often be obtained with antimony and salvarsan, and that the length of time during which the new drugs had been on trial was really insufficient to estimate their effects on a disease so notoriously liable to irregular remissions as was sleeping sickness. The experimental and clinical evidence seems to point clearly, however, to the conclusion that the two new drugs are stronger trypanocides than any previously known substances, and that a real advance has been made in the treatment of sleeping sickness. The interesting theoretical point arises as to the nature of their mode of action. Ehrlich's theory of chemotherapeutics was simple and picturesque, and received great support from the fact that work on the lines suggested by his theory led to the discovery of salvarsan. This theory, which was a development of the side-chain theory, was that a drug could be likened to an arrow—the shaft or toxic nucleus was the substance which killed the trypanosomes, whilst side-chains or haptophoric groups served the purpose of the barb in fixing the toxophoric group to the parasite. All recent developments in chemotherapy, however, have tended to discredit this theory and to suggest that the process is much more complex. If Ehrlich's theory is correct the action of trypanocides *in vitro* should be roughly parallel with their action *in vivo*. This does not happen; even in the case of salvarsan its action *in vitro* is much weaker than that of numerous other arsenic compounds which are valueless as

\* Widal, F., *Bull. Acad. de méd.*, Paris, 1922, 3<sup>e</sup> sér., lxxviii, 642.



trypanocides; tryparsanide, which is a pentavalent arsenic compound, has very little action on trypanosomes *in vitro*, while "Bayer 205" also has a relative feeble action under the same conditions. This difficulty can be got over by supposing that the drugs are slowly changed in the body into an active compound; but all available evidence is to the effect that drugs in general, and arsenic compounds in particular, are removed from the blood stream very rapidly, and that an hour or two after an intravenous injection only a small fraction of the drug remains in the blood stream. On the other hand, Voeghtlin and Smith's work showed that the trypanocidal action of salvarsan did not commence for two or three hours—that is, not until most of the arsenic had left the blood stream. Some of the recent work on trypanosomiasis points, indeed, to a totally different conclusion as to the mode of action of trypanocides. Marshall and Vassallo found that serum taken from salvarsanized patients and injected intrathecally had a powerful curative action. The quantity of arsenic in such serum must be almost negligible, and any action the serum exerts must be due to some trypanolytic substance produced by the body. Dr. Wenyon, as will be seen, stated during the discussion on the papers by Low and Chesterman that from experiments on mice he had concluded that the intravenous injection of "Bayer 205" in man caused the formation of a trypanolytic substance, both in the blood and in the cerebro-spinal fluid, and that this substance persisted in the circulation and was present a week after the injection. These observations are of the greatest importance, for they provide direct experimental support for the view that the action of chemotherapeutic agents is not necessarily a direct one on the parasites, but that it is, in part at any rate, an indirect action. At present the general view appears to be that the drugs kill a certain number of parasites, and that the destruction of these parasites causes the formation of trypanolytic substances, which carry on to completion the work of destruction. It is obvious that this new view of chemotherapy is much more complex than Ehrlich's original side-chain theory, and a large amount of experimental work will be necessary before any certain conclusions can be reached. The elimination of an incorrect theory is, however, in itself an advance, and the new orientation of ideas should prove a valuable stimulus to research along the new lines indicated.

#### SMALL-POX AND VACCINATION IN THE PHILIPPINES.

In this issue Dr. J. C. McNeil presents his examination and analysis of the reports on small-pox and vaccination in the Philippines. He states briefly his provisional conclusions, but urges that further inquiry is necessary, not by study of documents, but by actual visitation and investigation, perhaps by the Rockefeller Foundation, which has recently engaged in making a medical survey of the islands. It may, however, be permissible to state the general impression made by the facts at present available. The United States authorities on taking over the islands in 1898 were enthusiastic in their desire to eradicate small-pox, which had been so terrible a scourge under Spanish rule. To that end they decided on a vaccination campaign which was to include the whole population of the Philippines; but the difficulties in the way do not seem to have been fully appreciated. Neither the military nor civil health service could undertake the actual work of wholesale vaccination; for every detail they had to rely on Filipino or native agencies. The population to be vaccinated was ignorant, superstitious and apathetic, or actively hostile. A large proportion of the available assistants consisted of men who were not even in the lowest rank of the civil service of the islands. They included uneducated, lazy, untruthful agents, who wasted the lymph supplied to them and fabricated returns showing huge numbers of vaccinations which had never been performed. The natural difficulties also were immense—difficulties of distance and defective means of travel to remote insular groups of natives living under the worst conditions and understanding neither Spanish nor English; difficulties also

of climate and transport; whilst failure of ice supply for cold storage tended to cause deterioration of vaccine, and local incompetence or carelessness favoured further deterioration. Though such conditions may not have been universal, an important initial question seems to have been the suitability of the strain of lymph to the type of small-pox locally prevalent, and the Director of Health called attention in 1910 to the short duration of immunity which he had observed in Filipinos as compared with white-skinned races. Of the vaccinations alleged to have been performed a large proportion were never inspected, and in those inspected the percentages with negative results, even in infants, was extraordinarily high. These, briefly, were some of the conditions under which the United States authorities laboured in their efforts to protect the Philippines from small-pox. The exaggerated, if not fictitious, reports which they received of vaccinations by the thousand, or the ten thousand, or even the hundred thousand, not unnaturally misled them, and at the same time there set in a great irregular decline in the prevalence of small-pox. The 19,000 deaths in 1903 fell to 9,000 in 1904, to 4,000 in 1906, to 3,000 in 1910, to 1,000 in 1911, and to a few hundreds annually from 1912 to 1916. Then, apparently under the soothing influence of this diminution in small-pox, the dishonesty of vaccinators and their subservience to local influence led to increased neglect of duty, so that in the capital city, Manila, supplies of lymph were thrown away, whilst the usual returns of vaccinations continued to be made. The awakening came with the epidemic of 1918-20. The reports show that a great new scheme of vaccination was set on foot, and was being actively carried out in 1919 and 1920. Unfortunately, however, those engaged in the new campaign seem to have met with some of the difficulties, though not all, which belonged to the earlier crusades. In this statement of the position there may easily be mistakes and misunderstandings, or even unintentional injustice, and we submit it with all reserve. Whether the survey on behalf of the Rockefeller Foundation, which was in progress in May last year, is yet complete we do not know, but pending a report by it an open mind must be kept on the whole question. Finally, it may be well to point out, though it ought to be unnecessary, that the question of small-pox and vaccination in the Philippines has no bearing on the security of this country unless by some remote chance the black or haemorrhagic strain of infection were implanted here. Britain and the rest of Europe have times without number had ample proof that small-pox, as it occurs with us, and whether mild or severe in type, is absolutely controllable by vaccination and revaccination.

#### VITAL STATISTICS OF PRUSSIA BEFORE AND AFTER THE WAR.

THE Prussian Statistical Department issued last year the second part of Vol. 10 of *Medizinisch-statistische Nachrichten*. It is a comparative study of the last complete pre-war and the first complete post-war year (1913 and 1919). Prussia is closely comparable with England and Wales in population, and as it has been exposed to different wartime and post-war conditions, it is interesting to compare the results. The estimated population of Prussia in 1913 at all ages was 20,596,269 males and 21,052,793 females. In the first completed post-war year (1919) the census showed a decrease in the males to 18,816,849 and females to 20,523,598. The mean age of males in 1913 was 26.6 years, and 28.7 in 1919. There was very little change in infant mortality, the death rate per 1,000 births in the first month of life was 48.7 for 1913 and 48.3 for 1919. The births numbered 1,209,385 in 1913 and 827,335 in 1919, giving rates of 29.0 and 21.0 per 1,000 living. In England and Wales the birth rates were 23.9 per 1,000 living in 1913 and 18.5 in 1919, and the death rates in the first month of life were 44.39 and 44.49 per 1,000 births. In both countries there was an increase in the deaths in childhood, but the third wave of the great pandemic of influenza in 1919 may be assumed to account for some increase. In Prussia the decline in infantile diarrhoea was



considerable; the mortality under 1 year was 134.6 per 10,000 live births in 1913 and 44.55 in 1919. Excluding typhoid fever and influenza, the infectious diseases showed a decrease. The number of deaths from scarlet fever in 1919 was less than half that of 1913, being 2,213 against 4,506. In England and Wales 2,103 deaths were registered in 1913 and 1,221 in 1919. The deaths from measles showed a greater decline, from 7,235 to 1,270. The figures for England and Wales were 10,673 and 3,563. There was little change in the deaths from diphtheria and croup, the actual deaths being 7,550 and 7,054, and the rates of mortality at ages up to 15 were 5.42 in 1919 and 5.20 in 1913 (mortality per 10,000 living). The figures for England and Wales were 4,494 for 1913 and 4,916 for 1919, and the rates of mortality under 15 years 3.84 and 4.36 per 10,000. In Prussia the death rates from typhoid fever increased from 0.34 to 0.74 (actual deaths being 1,433 and 2,911). There was a decline in the figures for England and Wales from 1,505 to 577 (0.41 to 0.16 per 10,000). The greatest increase in the causes of deaths was under the head of tuberculosis. The totals were 56,861 in 1913 and 85,936 in 1919, and the crude rate per 10,000 increased from 13.65 to 21.86. The rates for urban districts increased from 15.81 to 27.16 and the rural from 11.65 to 16.84. In England and Wales the total deaths were 49,464 in 1913 and 46,310 in 1919. "The special characteristic of the mortality from tuberculosis in the years under consideration and that which gives rise to the greatest anxiety is the increase of mortality at young ages. Despite the end of the war, the partial improvement of feeding, clothing, and heating, normal facilities for medical treatment, and above all the declining birth rate, which would give reason to suppose that more and better attention under the more favourable external conditions of a smaller family would lead to a decline of the death rate, the number of deaths has not in fact declined but increased, a result which is doubtless to be attributed to the aftermath of the hunger blockade." The statistics of pneumonia and influenza show the effect of the great pandemic in 1919. The deaths from influenza were 1,592 in 1913 and 29,141 in 1919. In England and Wales the figures were 6,337 in 1913 and 44,789 in 1919, but the two sets of figures are not comparable owing to the differences in tabulation. The total mortality from influenza and pneumonia was 53,094 and 85,990 in 1913 and 1919, and the corresponding figures for England and Wales were 44,002 and 83,909. The cancer rate shows very little change, 10.13 in 1913 and 10.03 in 1919 for 10,000 persons at ages 30 to 60, and for persons over 60, 54.16 and 51.14. In 1920 the rate increased to 10.22 (ages 30 to 60) and 55.05 (60 and over), the latter being the highest yet recorded.

#### THE EXCRETION OF VITAMINS.

ONE of the first facts established about vitamins was that they could pass through the animal body unchanged; all the evidence indicates that animals cannot synthesize vitamins, but must obtain them in their foodstuffs, and yet vitamins are excreted in considerable quantities in milk provided the cow receives an adequate quantity of them in her food. Less attention has been paid to the excretion of vitamins in the urine and faeces, but in the current number of the *Biochemical Journal* there is an interesting article by Dr. Van der Walle dealing with this question. He recalls that several observers have demonstrated the presence of the water-soluble antineuritic vitamin in the urine. He confirms this conclusion, and shows that the urine of men or dogs contains a substance which has a strong curative action upon pigeons suffering from polyneuritis. This substance is shown to possess properties similar to those of vitamin B, for it is destroyed by heat, and is adsorbed by animal charcoal; moreover, it is absent from the urine of dogs fed on a diet free from vitamin B. Other experiments were made to ascertain whether the antiscorbutic vitamin occurs in the urine, but the results were negative. These experiments are of considerable interest, for they suggest that it may be possible to determine directly by examination of the urine whether any

particular case of disease is actually suffering from a deficiency of vitamins in the food. Experiments on these lines might lead to a rapid extension of our knowledge about the influence of vitamin lack upon the occurrence of disease.

#### HYGIENIC METHODS OF INDUSTRIAL PAINTING.

OF the operations involved in the practice of industrial painting, that of dry rubbing down is most productive of dust. The process consists of rubbing a painted surface with an abrasive in order to smooth the surface before the application of a new coat of paint. What is commonly called sandpaper is used for this purpose; it consists of flint, emery, powdered glass, or some such material, fixed to paper or other fabric by glue. Large quantities of dust are produced in the operation, and this settles on the floor or on the painter's overall, where, being white, it is not detected, so that it often happens that a man wears an overall for days, apparently in a clean condition, but really impregnated with loose lead dust, some of which, when disturbed by his movements, enters the air and is breathed. In a paper read before the Royal Society of Arts on January 17th Mr. C. A. Klein gave an account of his investigations, which showed that the older—and consequently the harder—the paint film, the greater is the amount of small dust, and it can be detected at a distance up to ten feet from the surface at which it is created. Mr. Klein urged that a grave danger of lead poisoning attended the use of the dry rubbing down process, which should therefore be prohibited. In view of the prevalence of respiratory diseases among workers exposed to siliceous dusts, he had analysed paint dusts and found particles of abrasive material—sand, glass, and the like—to be contained in quantity. The increased death rate from phthisis among painters was emphasized in evidence before the Departmental Committee on the use of paints containing lead in the painting of buildings, and a higher percentage of deaths due to phthisis among painters than among occupied males generally was also shown in figures from the Netherlands and from America. Apparently it was not the lead itself which was responsible, and Mr. Klein suggested that there was a case for inquiry. Crystalline silica was regarded as the principal vehicle of dust phthisis, and his own investigations went to prove that the sharp dusts of abrasives which occurred in paint dust as breathed by the painter contained free silica in a size of particle which might be regarded as dangerous to the lungs. A wet process of rubbing down has been known for many years, but for certain reasons appears to be regarded by the trade as unsuitable for general application. Lately, however, a damp rubbing down process has been evolved in which the painted surface is damped by means of a wetted sponge, and then rubbed with ordinary sandpaper, followed by the use of a clean wet sponge to remove the paint and abrasive material in a dustless condition. The "dust figure" in this process has been shown by experiment to be negligible, and in the opinion of expert painters the surfaces obtained are smoother than those obtained by the dry process. The National Federation of Master Painters of Great Britain has expressed its approval. In America a new waterproof abrasive paper was said to be a distinct improvement on ordinary sandpaper for this purpose. Dr. T. M. Legge, the Chief Medical Inspector of Factories, who presided over the meeting, thought the new procedure very welcome, although on the administrative side he was a little doubtful about the possibility of securing its general adoption, in view of the fact that the painting trade, like all others, is largely governed by tradition. With regard to the question of fibroid phthisis in the house painter, Dr. Legge deprecated anything in the nature of a "stunt," such as that which took place a couple of years ago in connexion with the same condition among printers. It was very tempting to investigate the conditions of the atmosphere, to work out certain not too convincing statistics, and on finding silica dust in the air to say, without reference to the persons concerned, or any study of their particular cases, that as a form of phthisis was due to silica dust the phthisis occurring in the craft must be



due to this cause. He doubted whether the quite definite condition of fibroid phthisis had been found in the lungs of house painters any more than in those of men of other trades. Sir Kenneth Goadby, who also took part in the discussion, said that he was in some measure responsible for the initial suggestion that the silica dust in sandpaper might be associated with phthisis, if in fact the phthisis reached a high incidence, but there was not sufficient statistical evidence that house painters showed so large an excess of phthisis of a type which could be attributed to dust of this nature.

#### VIBRATING SENSATION.

When the foot of a vibrating tuning-fork is placed over subcutaneous bony prominences or surfaces, in many parts of the body, a peculiar vibrating sensation is felt. To this sensation the names of "vibrating sensation or feeling," "bone sensibility," and "pallaesthesia" have been given. A clinical lecture by Dr. R. T. Williamson of Manchester on the value of the vibrating sensation in the diagnosis of diseases of the nervous system was published in our columns in 1907 (vol. ii, p. 125). It was pointed out there that the method was a delicate test for detecting slight impairment of sensation. Dr. Williamson has given an account of his further observations on the subject in a paper recently published in the *American Journal of Medical Sciences*.<sup>1</sup> He has continued to employ the method as a routine, using a large tuning-fork seven and a half inches long (A. 440) with an oval metal footpiece. He finds that suitable points for testing the sensation are the inner surface of the tibia, the malleoli, the anterior superior iliac spine, the nail of the big toe, the sternum, and the styloid process of the ulna. Normally the vibrating sensation is felt on the points mentioned. In many diseases the vibrating sensation is lost when other forms of sensation (for touch, pain, temperature) are retained; and it is often the first form of sensation to be lost. In many diseases it is never lost even up to the end of the affection. For this reason Dr. Williamson believes the vibrating sensation is often of value in differential diagnosis; sometimes it is of service in the localization of spinal lesions. In multiple peripheral neuritis from alcohol, and in diabetic neuritis, loss of the vibrating sensation can usually be detected before loss of any other form of sensation. In these cases four valuable early signs are pain in the legs, tenderness of the calf muscles, loss of the tendo Achillis jerks, and loss of the vibrating sensation. In the differential diagnosis between peripheral neuritis and anterior poliomyelitis (acute or chronic) the vibrating sensation is often of service, since it is never lost in anterior poliomyelitis, but is usually lost very early in peripheral multiple neuritis, though at first other forms of sensation may be felt. In the diagnosis between anterior poliomyelitis and acute disseminated myelitis or myelitis not limited to the anterior horns, the vibrating sensation is of service; if lost the disease is not limited to the anterior horns of grey matter. In an early stage of combined postero-lateral degeneration or sclerosis the chief indications may be loss of the vibrating sensation on the legs, slight inco-ordination in walking, or affection of the muscular sense in the legs, and an extensor type of plantar reflex. In disseminated sclerosis, if sensation should be affected, the most common early form of sensory impairment is loss of the vibrating sensation. It may be lost on the legs, or on the legs and abdomen, or on the abdomen only. The abdominal reflexes are often lost and the plantar reflexes are often of the extensor type at this early period. In compression myelitis from vertebral caries, or tumour in the spinal meninges, at the early stage, if sensation be affected, the vibrating sensation is usually lost before other forms of sensation, and the same is true of Erb's form of spinal syphilis. The vibrating sensation is occasionally of service in the diagnosis between functional or hysterical anaesthesia and anaesthesia due to organic disease (and between functional and organic hemianaesthesia). When the foot of a

vibrating tuning-fork is placed at one point over a bone the vibrations are felt, not only at that point, but (though with diminishing intensity) at all parts. If one part of a bone, such as the sternum or tibia, be in an area of anaesthesia and another part not, then, if the foot of the vibrating tuning-fork be placed on the bone in the anaesthetic area, the vibrations, if not felt there, should be felt at the distant part of the bone, in the non-anaesthetic region. If this should not be so, then the case is one of hysteria or malingering.

#### INTERNATIONAL AIR CONGRESS, 1923.

An International Air Congress will be held in London this year, from June 25th to 30th, at the invitation of the British Government, under the presidency of the Duke of York, who holds the rank of Group Captain in the Royal Air Force. Lord Weir is vice-president of the Congress, and the Duke of Sutherland, Under Secretary of State for Air, is chairman of the main committee. The chief object of the Congress is to provide opportunities for the reading and discussion of papers on every aspect of air matters; it will be divided into four groups, each again divided into subgroups, which will meet simultaneously. Group A will deal with methods of research, aerodynamics, and similar subjects; Group B with fuels and lubricants, etc.; Group C will discuss air transport and navigation problems, under the heading of (1) technical aspects, (2) engineering problems, (3) commercial, legal, and financial problems, and (4) medical aspects; Group D will devote itself to airship design and the military utilization of civil personnel in machines. The reading of papers will occupy the Monday, Wednesday, and Friday of the week, while Tuesday and Thursday will be devoted to visits to various places of interest. The Air Ministry have arranged for an air pageant on Saturday, June 30th. Further particulars and a form of application for membership of the Congress may be obtained from Lieut.-Colonel W. Lockwood Marsh, general secretary of the Congress, c/o the Royal Aeronautical Society, 7, Albemarle Street, London, W.1.

#### THE INTERNATIONAL PHYSIOLOGICAL CONGRESS.

It has already been announced that the eleventh International Physiological Congress will be held in Edinburgh next July (23rd to 28th), under the presidency of Sir Edward Sharpey Schafer. The first meeting of the Congress was held in 1889, and it met in Cambridge in 1898; since then it has not visited Great Britain. The Congress met in Groningen in 1913, and not again until 1920, when it assembled in Paris. A meeting of the General Committee of Organization has been held this week in Edinburgh, under the presidency of the Lord Provost, who expressed his appreciation of the honour done to the Scottish capital by its choice as the meeting-place of the Congress this year, and the compliment thus paid to the worldwide scientific reputation of the University of Edinburgh, and in particular of its medical school. The Lord Provost said that the corporation of the city would extend a hearty welcome to the illustrious visitors expected, and expressed the expectation that the citizens would readily offer private hospitality. On the motion of the Principal of the University (Sir Alfred Ewing), seconded by Sir George Berry, M.D., M.P., the appointment of Sir Edward Sharpey Schafer as president, made at the Congress in Paris, was confirmed, as were also the appointments of Professor A. R. Cushny, F.R.S., as treasurer, and of Professors O. Barger and J. C. Meakins as joint secretaries. An executive committee was appointed on the motion of Professor G. L. Gulland, seconded by Dr. J. L. Ewing, and committees for hospitality and for making scientific and social arrangements were also appointed. The meeting was brought to an end by a vote of thanks to the chairman, proposed by Sir Edward Sharpey Schafer, who expressed gratitude to Lord Provost Hutchison for his sympathetic interest in the Congress and his cordial promise of co-operation. We understand that inquiries may be addressed to the assistant secretary, Miss Dorothy Charlton, at the Department of Physiology, the University, Edinburgh.

<sup>1</sup> Vol. clix, No. 5, p. 715.



## MURDERS.

THE White Paper (Cmd. 1787 of 1922) recording the number of cases of supposed murder in England and Wales in 1912, 1913, 1920, and 1921 (excluding cases of infanticide of children under one year by mother and deaths from illegal operations) is an interesting example of the fact that a popular impression may be altogether false. We think that anybody would have expected *a priori*—we certainly did ourselves—that the habituation of so many thousands of men to deeds of violence, the tale of horrors which were our daily fare for so many years, would be reflected by a sensible increase in the frequency of violent crimes after the war. But, so far as cases of supposed murder are concerned, the expectation is falsified. In 1912 there were 93 supposed murders, in 1913 there were 100, in 1920 there were 107, and in 1921 only 85. In 1921 a somewhat smaller proportion of persons were convicted, either of murder or a lesser crime, in connexion with the cases than in the other years. Thus in 1912, 38 persons were convicted of murder, 25 of manslaughter, and 2 of feloniously wounding—65 convictions with respect to 93 cases; in 1921, 23 persons were convicted of murder, 14 of manslaughter, and one of maliciously wounding—38 convictions for 85 cases; but in each of these years 7 suspects were found to be insane; 16 murderers committed suicide in 1912, and 22 in 1921; so that 88 out of 93 in 1912, and 67 out of 85 in 1921, may be said to have been accounted for—percentages respectively of 90 and 79. The net result is that neither in frequency nor in immunity from detection does the post-war experience of murder differ very much from that of pre-war times.

## PASTEUR—THE ARTIST.

At the celebration of the hundredth anniversary of the birth of Pasteur, which is to take place at the Royal Society of Medicine on February 28th, the President, Sir William Hale-White, will give a short address, and Dr. Gustave Monod, of Paris and Vichy, will read a paper, illustrated by lantern slides, on "Pasteur—the artist." Pasteur early showed a taste for drawing; his inclination in this direction was in fact a source of some anxiety to his father. He began to attempt portraits in coloured chalks: one of the earliest, done when he was a boy of about 13, was of his mother; it is said to be not unlike the work of a conscientious pre-Raphaelite. The reproduction we have seen in black and white in *l'illustration* is spirited. It shows a middle-aged woman, with sharp, alert features, wearing an old-fashioned frilled cap and check shawl. When, after his short experience in 1838 of the Lycée St-Louis, in Paris, he returned to his home at Arbois, he made a number of pastel portraits of local celebrities and friends of his family. Among the portraits he did at this date was one of his father, a sedate contrast to his mother; it shows a middle-aged man, with features not unlike those of his great son, wearing the stock and thick roll coat-collar of the period. Within a year, however, Pasteur had gone to the college at Besançon; he worked hard and took the degree of Bachelier ès lettres in August, 1840; and his artistic ambitions seem never to have revived.

We have to announce with very great regret the death, on January 23rd, of Dr. J. W. Ballantyne of Edinburgh, after a short illness, which necessitated an operation from which he did not rally. We intend to publish a notice of his life and work in an early issue.

THE Milroy lectures on canned foods in relation to health will be given before the Royal College of Physicians of London by Dr. W. G. Savage, on February 22nd and 27th and March 1st; Dr. Geoffrey Evans will deliver the Goniatonian lectures on March 6th, 8th, and 13th, on the nature of arterio-sclerosis; and Dr. Arthur J. Hall will give the Lumleian lectures on encephalitis lethargica (epidemic encephalitis) on March 15th, 20th, and 22nd. The lectures will be delivered at the College, Pall Mall East, S.W., at 5 p.m. on each day.

## England and Wales.

## THE HASLEMERE AND DISTRICT HOSPITAL.

The new hospital of thirty-five beds, for Haslemere and district, which has been built at a cost of £32,000, was formally opened on Saturday, January 20th, by the Lord Chancellor, Viscount Cave, in the presence of a large company. The hospital needs of the neighbourhood have hitherto been served by the Hindhead and District Cottage Hospital, with twelve beds, which was founded in 1897. In declaring the new hospital open, Lord Cave remarked on the wisdom of those who still favoured the maintenance of the voluntary hospital system. He disagreed altogether with the short-sighted view that all hospitals ought to be State institutions. He was well aware that the Poor Law infirmaries did much good work, but the fact remained that they could not deal with out-patients. Moreover, it was impossible to get in State institutions the same constant, thoughtful, daily care which was given by doctors and nurses alike in the voluntary hospitals of this country. The committee of inquiry of which he was chairman received evidence from countries in which the hospitals were entirely State institutions. It appeared from this that in such hospitals there was no one, apart from the patient's relatives, whose duty and pleasure it was to see him from day to day, to watch over his comfort, and give him that personal attention which meant so much to a sick person. Moreover, the voluntary hospitals in this country had the enormous advantage of being worked by the medical profession. He thought it was not generally realized to the full how much the public owed to doctors for the great voluntary work they gave to these institutions.

## THE NEW SPIRIT IN PSYCHIATRY.

The annual report of the Derby Borough Mental Hospital for 1921 reproduces the report of the Commissioners of the Board of Control on their visit of inspection to that institution towards the close of the year. The following observation of the Commissioners seems of general interest and worthy of quotation as a sign of the modern attitude towards the scope and purpose of a mental hospital:

"We are glad to hear that the committee's resolution to appoint a visiting dental surgeon, which was passed in 1914, but delayed in operation by the war, is likely to mature shortly; and we hope it may lead up to the appointment of other visiting specialists. We saw, for instance, among the thirty-six patients whom we found in bed, several cases for whom expert surgical opinion would be of value. The proximity of the institution to the well known general hospital in the town leads us to express the further hope that it may some time be found possible to institute out-patient work in mental disorders at the latter, and that for this purpose the experience of the medical staff here could with advantage be made available."

## Scotland.

## SCOTTISH POOR LAW MEDICAL OFFICERS' ASSOCIATION.

The annual report of the Scottish Poor Law Medical Officers' Association recalls that the Scottish Committee of the British Medical Association interviewed the Scottish Board of Health in regard to the question of tenure of office, but failed to move the Board. Attempts have been made to rectify the anomalous position of Scottish Poor Law medical officers for many years past, but so far without result. It is manifestly unfair that English Poor Law medical officers should have an appeal against injustice, and also that medical officers in the crofting counties in Scotland should have what amounts to similar protection, while medical officers in the rest of Scotland hold their appointments at the absolute caprice of the parish councils. The intention of the Association is now to approach the Council of the British Medical Association and to endeavour to obtain its assistance in approaching Parliament by a private bill. Some correspondence took place during the year in regard to Poor Law medical officers supplying drugs out of their salaries. The advice was given that the Scottish Board of Health did not approve of drugs being included in the salary of the Poor Law medical officer, and that to supply drugs out of the Poor Law medical officer's salary was illegal, except in cases where it was specifically mentioned in the agreement.



In no case during the year was it found necessary to take any action in regard to vacant appointments. A recent Act authorizes the granting of superannuation to all local government officials, including medical officers; it is contributory, but voluntary on the part of parish councils, and the report raises the question whether many parish councils will be likely to adopt the Act.

#### QUEEN VICTORIA JUBILEE INSTITUTE.

The Lord Provost of Edinburgh presided over the annual meeting, on January 16th, of the Scottish Branch of the Queen Victoria Jubilee Institute for Nurses. In regard to the financial position of the Institute, the Lord Provost said that it was a matter of grave anxiety for the council to report that there was a deficit of £6,125 on the ordinary revenue account for the past year. That had been met to a certain extent by a number of legacies and the proceeds of special appeals, leaving a net deficit of £1,213, and after the accounts were made up a grant of £2,000 was received from the Scottish Branch of the Red Cross Society. It was evident, however, that the regular occurrence of such windfalls could not reasonably be expected, and the state of the finances represented a serious position. Professor T. H. Bryce (Glasgow) emphasized the very extensive ramification of the work of the Institute throughout Scotland. They had now 341 affiliated nursing associations, of which 28 had been added during the past year. The Board of Health recognized that in the organization provided by the Institute there was a suitable basis for building up that national domiciliary nursing service at which it aimed. Sir Norman Walker said that domiciliary nursing properly carried out could prevent a great deal of disease, and that was one of the most important points of nursing work. They wanted to arouse a healthy conscience in every section of the community. Dr. Walter Elliot, M.P., the new Under Secretary for Health for Scotland, spoke of the importance of domiciliary nursing, for it was often the turning point between sending a patient to an overburdened hospital or keeping him at home. He was especially interested to find that the Institute had been able to work with the Scottish Board of Health. The essence of the preventive side of disease was voluntaryism and not compulsion. They could not carry out preventive work without the co-operation of the people in the home.

#### ROYAL GLASGOW ASYLUM FOR THE BLIND.

At the annual general meeting of the Royal Glasgow Asylum for the Blind, held on January 15th, Mr. Joseph Waugh, chairman of the managers, said that during the past two years they had had many meetings with the representatives of local authorities, the Scottish Board of Health, and others with a view to adjusting the conditions under which the duties hitherto performed by the managers would fall to be carried out by those who succeeded them in office. A Parliamentary bill had already been framed, and it was assumed that it would become law without opposition. This bill provided that the asylum would be handed over in its present complete and active state, that they should be relieved of every obligation, and that the whole future charges would fall on the public funds. They were interested in seeing that the work should be carried out efficiently, and they might rest assured that it would not be prejudiced by the proposed change of ownership and responsibility. Deaf and dumb institutions, associations to help the physically and mentally defective, and asylums for the blind were all means of educating the public mind in its duty and responsibility, and with society in a state of development it was inevitable that the time should come when it would not be possible by voluntary means to provide the money required for such vibrations. In agreeing to the transfer of the Royal Asylum it legs and abdomen, and because that was not true; they handed over reflexes are often a building or equipment in a high state of the extensor type at myelitis from vertebral meninges, at the early stage vibrating sensation is usually sensation, and the so.

syphilis. The vibrating in the diagnosis between fun- within the last year or so circulars and anaesthesia due to organ. Dublin asking the recipients to tional and organic hemianaesthesia; after paying for certain some charitable object. The weepstake, the object to be

benefited being a cancer fund. The subject was a matter of discussion recently in the Irish Free State Parliament. It was raised by a Labour member, who asked the Minister for Home Affairs to state what his intentions were with regard to exceptions under the Lottery Act, and to outline the policy of the Government, as there were people who believed that Ireland was a second Monte Carlo. In reply, Mr. Kevin O'Higgins said that early last year the Provisional Government had in several instances given undertakings not to enforce the law. The matter had been carefully considered with the view of ascertaining whether it would be possible to make exceptions in favour of sweepstakes for charitable purposes; he had come to the conclusion that there was no middle course, and about a month ago it was decided that no undertaking should in future be given not to enforce the existing law. Charitable institutions would have to find other means of support. The sweep evil, Mr. O'Higgins continued, was spreading. Things had got long past the stage of sweeps being run for charitable institutions. People went to an institution deserving of charity and said, "You could do with £5,000, and we could do with £10,000. Could we use your name for a sweep?" Mr. Gorey congratulated the Minister on making "a clean sweep of the sweep."

## Correspondence.

### TURPENTINE OR LEAD POISONING A CAUSE OF PUNCTATE BASOPHILIA.

SIR,—In the BRITISH MEDICAL JOURNAL (January 20th, p. 103), in an article on "The blood as guide to early diagnosis in lead poisoning," Dr. Robert Craik makes the statement:

"It is safe to say that, in the absence of serious anaemia, punctate basophilia is more likely to be caused by lead than by anything else."

It is not generally known, even by experts, that inhalation of turpentine vapour can also cause basophilia indistinguishable from that produced by lead. The only reference I have seen to this is in a Blue Book on lead poisoning by paint (Cd. 7882, 1921, p. 60), wherein Sir K. Goadby found in experiments on animals that "basophilia staining was found with both turpentine and white lead, and even the animals exposed to zinc oxide and zinc sulphide showed the presence of a few basophils in the blood."

Since painters are the most likely people to suffer from lead poisoning, and since in their work the effects of lead and turpentine (or its substitutes) cannot be disentangled, it is important to realize that basophilia may be produced by turpentine as well as lead, especially in legal cases.

Can basophilia also be produced by turpentine substitutes—for example, white spirit—which are cheaper and widely employed? I fancy this point has not been determined. But I investigated a year ago the comparative toxic effects of turpentine and white spirit (and paints) on vegetable plasm (moulds and bacteria). I concluded that the had slight toxic effects. Also from the available I thought that men working in these vapours were them at first, but soon became accustomed which their health was not appreciably affected produced by large or summated doses of the seemed to be similar on the kidneys, the the nervous system. In the two latter be a fat-solvent effect. But I have studying the effects on the health in varnish alone. Here the prob- by the effects of lead. If any paring the effects of turpen varnish workers I should be or publish the results.—I am,

Hull, Jan. 22nd.

Senior Pl.

### EFFECT OF ANAESTHETICS.

SIR,—The communication by Dr. (January 13th, p. 61) raises questions of inasmuch as there is a tendency to adv anaesthesia, particularly for operations on the I believe it is claimed that the resulting tranq patient offers advantages to the operator withou the anaesthetic risk. But the light ether anaesthesia in Bristol for many years past, as far as my experience.



affords all the tranquillity to be desired for the majority of cases, and appears to lessen the risks of post-operative pulmonary complications, and this, if true, is a matter of great moment.

Dr. McDowall states that the abolition of the bronchiole function must necessarily throw a greater strain on the alveoli and cause them to be exposed to particles which otherwise would not reach them. It seems to me that localized bronchiolar paralysis, so far from throwing a strain on the corresponding alveoli, results in their collapse, and the only particles that would reach them in consequence would be organisms which spread down from the paralysed bronchiole, no longer capable of contractions, expelling abnormal secretions. In 1903 I published an article "On the rhythmical contractions of the bronchiolar muscular coat as a factor in pulmonary disease,"<sup>1</sup> and I suggest the effect of anæsthetic bronchiolar paralysis is analogous to a similar condition induced by acute inflammatory myositis. The far-reaching import of rhythmical bronchiolar contraction in pulmonary pathology is perhaps somewhat underestimated.—I am, etc.,

Clifton, Bristol, Jan. 15th.

P. WATSON-WILLIAMS, M.D.

#### APITUITARISM AND THE ANENCEPHALIC SYNDROME.

Sir,—Dr. F. J. Browne's letter in your issue of January 13th has made quite clear that in his original article he included both hypopituitarism and apituitarism in his theory of the etiology of the anencephalic syndrome.

It is possible that Dr. Barlow's reference to "hypoplasia of the thymus" is a verbal error, for I believe it is generally recognized by those who have experience in ante-natal pathology that in the anencephalic foetus the thymus is more often enlarged than not. In eleven non-macerated specimens I found the ratio of thymus weight to body weight to be as 1 to 100, 131, 133, 145, 149, 158, 162, 170, 207, 230, and 318 respectively.

I regret that I did not make a microscopical examination of the tissue occupying the pituitary region. It is well, however, to remember that the histological appearance of a tissue is not always an indication of its functional activity; the pituitary cells found in Dr. Barlow's specimens may have been physiologically abnormal.

In the examination of my specimens I found all the characteristic abnormalities which have been grouped together as the anencephalic syndrome. Furthermore, I have noted that the percentage of other developmental errors, such as kidney deformities, in cases of anencephaly is higher than in non-anencephalic foetuses. I have also been able to confirm the observation of P. S. Abraham (1883) that the musculus sternalis is frequently present.

All will agree that the gross irregularities found in anencephaly are very generalized in distribution. In the ductless gland system alone three at least (pituitary, thymus, and suprarenals) are frequently abnormal, and I do not think that we yet possess sufficient evidence to prove that the pituitary gland is the ringleader.—I am, etc.,

Liverpool, Jan. 15th.

NORMAN B. CAPON.

#### ADDER BITE.

Sir,—The interesting account of viper bite by Dr. Bernard, and translated by Dr. A. S. Gubb of Algiers (January 6th, p. 41), recalls a personal experience some years ago at Platæa on the Grecian coast.

One night a brother officer was brought to me suffering from a recently inflicted bite of the left index finger by a two-headed viper, which a day or two before he had found ashore on the rocky soil, and had in the interim kept in a cigar box. At night in question, in attempting with his left index finger to feel the snake in its somnolent (hibernation) state, it suddenly bit and inflicted the injury as stated above. Two distinct wounds were to be seen on the pulp of the left index with but little bleeding or pain. I immediately placed the finger around the wrist and freely excised the area of the bites, applying potassium permanganate in powder. The patient was placed in bed, with frequent and regular doses of alcohol.

In the course of the next three days the left arm became extensively swollen and of a bluish tint, together with involvement of the scapular gland above the elbow and all the axillary glands. Temperature 101° F. From the fourth day the conditions noted gradually subsided, the alcohol being replaced by a diffusible stimulant mixture, and in less than three weeks both local and constitutional conditions were entirely recovered from.

<sup>1</sup> Bristol Medico-Chirurgical Journal, March, 1903, p. 1.

The snake was about two feet in length, of a greyish body with black patches, and two well marked horns surmounting its head.—I am, etc.,

W. EAMES,

Bournemouth, Jan. 14th.

Surgeon Rear-Admiral R.N. (retd.).

#### NYSTAGMUS.

Sir,—Is nystagmus occurring in miners an entity by itself, or is it the same as nystagmus occurring in people who are not miners? Dr. Lister Llewellyn says they resemble each other. It has always seemed to me that they are identical, even in their etiology. Common to all cases of nystagmus is imperfection or absence of retinal images. Exceptions to this rule are cases of labyrinthine origin, cases that are hereditary, and cases occurring as terminal manifestations of a general disease—that is, cases that are not peripheral but central in origin.

In your issue of January 6th you take notice of Mr. A. S. Percival's paper, "A neglected factor in the etiology of miners' nystagmus." Mr. Percival wrote: "I submit that, say, 5 per cent. of all children born have a predisposition to the disease, and if they have not this predisposition they will never acquire it." This submission, I presume, applies to nystagmus occurring in children.

During the last two years I have seen twelve children suffering from nystagmus. Eleven of these children had decided degrees of ametropia; five of them had hypermetropic astigmatism, two mixed astigmatism, and four myopia of 6 D. and upwards. (Other observers may be able to confirm or dispute this association.) Had the ametropia and the consequent defective vision from imperfect retinal images nothing to do with the production of the nystagmus in these cases? From observations made in Glasgow I found that only 10 per cent. of all cases of nystagmus were miners, and now I ask the question: Is the term "miners' nystagmus" not a misnomer?—I am, etc.,

Cambuslang, Glasgow, Jan. 26th.

J. A. WILSON.

#### VITAMIN CONTENT OF CERTAIN PROPRIETARY PREPARATIONS.

Sir,—The managing director of Messrs. Virol (Mr. A. E. Caune) complained, in a letter published in your last issue, that our article on the vitamin content of certain proprietary preparations was "apt to produce a misleading impression in the minds of medical men." We fail to see that he has proved this charge. Our aim, as he recognized, was to determine whether the proprietary preparations examined contained vitamins in a concentrated form. We found that they did not, but Mr. Caune has stated that "as regards Virol nothing of the sort has been attempted, and no such claim has ever been made."

We made no reference to any property of Virol other than its vitamin content, and therefore any discussion of its other virtues is beside the point. We cannot see that we have misled the medical profession in any way.—We are, etc.,

University College, London,  
Jan. 22nd.

KATHARINE H. COWARD.  
A. J. CLARK.

#### DANGEROUS DRUGS REGULATIONS.

Sir,—It is to be hoped that the paragraph on page 8 of the Times of January 13th will not escape the attention of the medical profession. It is headed "Dangerous Drugs Act—Right of Entry to Doctors' Houses," and sets forth the "means of inspection" approved by the Home Office, as follows:

"This, in the case of doctors and dentists, is to be carried out by medical officers of health, who will have the right of entry to premises without giving previous warning."

Surely no such insult has ever been offered to the profession as a whole. The thing is hardly credible, yet when one turns to the Memorandum on the Dangerous Drugs Act published in the BRITISH MEDICAL JOURNAL of the same date one finds the position to be as stated in the Times (see paras. 33-35 re inspection).

Is the profession to which one has devoted one's life fallen so low that one's stock of opium pills must be counted, one's tinctures and solutions sampled for analysis, and the ingredients of one's prescriptions disclosed at the demand of the medical officer of health (possibly a rival practitioner), entering one's private house in one's (probable) absence, and "without previous warning"? It is already ordained, while



we politically and journalistically are asleep. To this depth has the legislating mania of cranks and faddists reduced the once noble profession of the healing art, for the supposed benefit of a clique of degenerate addicts in the capital of the country, whose notoriety has aroused the maudlin sympathies of the newspaper-reading public.

Having no desire to be the first victim of the New Inquisition, I beg to subscribe myself by a *nom de plume*, but I will gladly volunteer to form one of the raiding party when inspection has to be made (without giving previous warning) of the house of the medical officer of health.—I am, etc.,

January 15th.

PRACTITIONER.

Since it affects part of our correspondent's argument we should point out that the *Times* was in error in stating that the inspection of registers and records will in future be carried out by medical officers of health. By reference to the full text of the memorandum published in our columns of January 13th (p. 69) it will be seen that paragraph 1 states "that it has been arranged that as a general rule this work shall be carried out in England and Wales by medical officers of the Ministry of Health, and in Scotland by medical officers of the Scottish Board of Health." Paragraph 31 states that the Home Secretary has authorized these officers, and apparently no other persons, to act as inspectors. We are informed that hitherto such inspection, at least in some districts, has been entrusted to police officers! We may add that the Council of the British Medical Association at its last meeting instructed the Medico-Political Committee to inquire into the working of the Dangerous Drugs Act so far as it affects medical practice.

#### CADET ORGANIZATION AND PREVENTIVE MEDICINE.

Sir,—In the daily round and common task it falls to my lot to observe scholars and adolescents from the anthropometric viewpoint. One fact stands out clearly—the evil influence exerted by the great war on the stamina of the 1905-8 age groups (1,600,000 lads). Rickets defect prevails in many children of the later groups. Overcrowding, faulty nutrition, absence of parental control, and State neglect have played their parts in this deplorable business.

Surely the time has arrived for the introduction of a universal cadet system, so that these 1905-8 age groups may benefit by discipline, games, and ten days' annual holiday camp. In the mother country Lord Haig's training area organization, at present in skeleton form, will serve us well, if made incarnate by these lads. The Australasian cadet costume, modified to suit our climate, affords an object lesson in cheap and hygienic clothing. For instructional staff, there already exists ample talent in this country.

Preventive medicine will never come into its own until we attain to a carefully planned routine for the guidance and kindly control of all our youths. The scrapping of the continuation schools renders an all-embracing cadet system imperative and urgent. No new Ministries are needed—the machinery is to hand. It rests with the members of our profession to insist upon its being set working, for we possess the confidence and affection of the nation in our exacting and dangerous calling, and our warnings will be heeded.—I am, etc.,

R. J. E. HANSON,

Surgeon Captain R.N.V.R.; Honorary Secretary  
of the Imperial Cadet Association,  
A.M.O. (Schools).

71, Pall Mall, London, S.W. 1, Jan 22nd.

#### Obituary.

HORATIO PERCY SYMONDS, F.R.C.S. EDIN.,  
Late Surgeon, Radcliffe Infirmary, Oxford.

We regret to record the death on January 16th of Mr. H. P. Symonds, formerly surgeon to the Radcliffe Infirmary, Oxford. He was born in 1851, the son of Mr. Frederick Symonds, a well-known surgeon in Oxford in his day. Horatio, who was the seventh of his line in uninterrupted descent to belong to the medical profession, was sent to Rugby under Temple, and from there went to study medicine at University College, London. In his student days he went out as a dresser to a field ambulance in the Franco-Prussian war in 1870. He took the diploma of M.R.C.S. Eng. in 1874, and held the post of house-surgeon to University College Hospital.

In 1878 he was appointed surgeon to the Radcliffe Infirmary, and in the same year he took the diploma of F.R.C.S. Edin.

He remained surgeon to the Radcliffe Infirmary for thirty-seven years, and was surgeon, and afterwards consulting surgeon, to Faringdon and Abingdon Cottage Hospitals, and to the Warneford Asylum, Oxford. He was also lecturer on surgery in the University. At University College Hospital he numbered among his friends Marcus Beck, and from him and Sir Rickman Godlee he was led to appreciate the value of Lister's teachings, which he at once applied when he entered upon independent practice. He kept himself acquainted with current surgical literature, and was always ready to put into practice new methods and ideas which commended themselves to his judgement. Not only was he a bold and speedy operator, but his surgical opinion was highly valued by his colleagues. Many of his house-surgeons will remember with gratitude the kindly help and encouragement they received from him and the opportunities he gave them of acquiring a practical knowledge of surgery. We are indebted to Dr. W. J. Turrell for the following:

"As house-surgeon of the Radcliffe Infirmary for two years during the early nineties, I was afforded an exceptional opportunity of forming an opinion of the value of Mr. H. P. Symonds's services to the hospital during a period when he was at the zenith of his powers as a surgeon. The chief impression left on my mind is the whole-hearted manner in which he devoted his life to surgical progress at a time when the recent introduction of antiseptics had so widely increased the scope and range of operative surgery. It was his quick appreciation of the possibilities opened up by the new methods and his careful attention to their most minute detail that gained for him his success as a surgeon, and enabled him to place and maintain the Infirmary in a leading and foremost position among provincial hospitals. His most striking characteristics were his punctuality, the rapidity with which he formed his decisions, the quickness with which he put them into action, and the precision with which he carried them out. His decisions, so rapidly formed, were strengthened by opposition and confirmed by contradiction, but were readily modified by tactful suggestion. He was always ready to try any new operation, instrument, or surgical method, adopting those which proved of benefit or utility, and quickly discarding those which failed to yield good results; in this way he instilled through the hospital a spirit of keenness and enthusiasm. As a teacher his example was invaluable; he was the kindest and most generous of friends, always appreciative of the work of others. The writer of this brief note is one among the many who will ever have cause to hold him in the most grateful and affectionate remembrance."

He was for many years an energetic member of the Committee of Management of the Radcliffe Infirmary; he attended regularly the meetings of the Oxford Medical Society and of the Oxford Division of the British Medical Association; in 1904, when the Association met at Oxford, he was president of the Surgical Section. He was surgeon to the Queen's Own Oxfordshire Hussars, and when the Territorial Force was formed became surgeon to the 3rd Southdown Hospital, with the rank of lieutenant-colonel. Soon after the war broke out, however, he was compelled greatly to curtail his activities owing to arthritis of the hip; the condition made rapid progress, and before long he was unable to walk—a great privation to him, as he had always been a man of very active habits. "All through his life," a writer in the *Times* (we understand Sir Herbert Warren) has said, "he had been a friend of the athletes. He had helped to train and advise many an Oxford eight, and year after year was to be seen stepping on the Oxford steamer at Putney to follow the race."

Mr. Symonds married in 1893 Miss Lecky, and leaves his widow and a son, Captain R. F. Symonds, who served in the war in the Oxfordshire and Buckinghamshire Light Infantry, to mourn his loss. The funeral took place on January 19th at Holywell cemetery, after a service at St. Giles's Church, which was very largely attended.

#### The Services.

##### FOREIGN DECORATIONS.

THE King has granted permission for the following recipients to wear the decorations conferred upon them in recognition of valuable services rendered during the war.

By the King of the Belgians.—Order of Leopold II. Cross of Commander: Dr. Alexander Granville, President of the Sanitary Maritime, and Quarantine Council of Egypt. Order of the Crown, Cross of Chevalier: Dr. Joseph M. Coplans.  
By the King of the Serbs, Croats, and Slovenes.—Order of St. Sava, Insigula of the Fifth Class: Mrs. Sophia B. J. Smith, M.D.



## VITAL STATISTICS FOR ENGLAND AND WALES, 1922.

We are indebted to the Registrar-General for the following statement regarding the birth rates and death rates and the rates of infantile mortality in England and Wales and certain parts of the country during 1922.

### ENGLAND AND WALES.

Birth Rate, Death Rate, and Infant Mortality during the Year 1922 (Provisional Figures).

	Birth Rate per 1,000 Total Population.	Death Rate per 1,000 Population (Crude Rate).	Deaths under One Year per 1,000 Births.
England and Wales ... ..	20.6	12.9	77
105 county boroughs and great towns, including London	21.5	13.0	81
155 smaller towns (estimated populations from 20,000 to 50,000 in 1921)	20.5	11.7	75
London ... ..	21.4	13.4	73

The death rate for England and Wales relates to the whole population, but that for London and the groups of towns to the civilian population only.

The birth rate of England and Wales as a whole is the lowest recorded except during the war years 1915-19, while the infant mortality is the lowest on record.

## Universities and Colleges.

### UNIVERSITY OF OXFORD.

THE electors to the Whitley Professorship of Biochemistry have appointed Dr. R. A. Peters to this chair. Dr. Peters is Fellow and Lecturer of Gouville and Caius College, Cambridge, and since 1919 has been Senior Demonstrator of Biochemistry in the University of Cambridge. He graduated in medicine in 1915 and proceeded M.D. in 1919. During the war he served with a commission in the R.A.M.C. (S.R.), being promoted brevet-major and winning the Military Cross.

### UNIVERSITY OF CAMBRIDGE.

CONGREGATIONS will be held during the Lent Term at 2 p.m. on February 10th and 16th and March 3rd and 9th.

A special syndicate to consider and report on the duties and responsibilities of the State Medicine Syndicate was appointed at a congregation held on January 20th. The members are: the Vice-Chancellor (the Rev. Dr. Pearce); Sir Hugh Anderson, M.D., Master of Gonville and Caius College; Dean, Professor of Pathology; Mr. William I. ... Professor of Civil Law; Sir F. J. M. Stratton, ... Mr. F. J. Dykes; and Mr. E. St. G. S. Goodwin and A. E. Clark-Kennedy have been approved for the degree of M.D.

The ... for the W. P. Surveyor.

The following medical degrees were conferred on January 20th:

M.D.—E. Beaton.  
M.B., B.Ch.—W. L. Berry.  
M.B.—S. P. Castell.  
B.Sc.—P. Verdon, H. A. A. Pargeter.

### VICTORIA UNIVERSITY OF MANCHESTER.

MISS MURIEL M. NUTT (Nat. Sci. Tripos Camb.) has been appointed Demonstrator in Bacteriology.

### UNIVERSITY OF EDINBURGH.

THE following have been appointed:—  
Materia Medica: Professor W. E. L. ...  
Midwifery: Professor Emeritus Henry Briggs (Liverpool).  
Professor Cossar Ewart has been reappointed a representative of Edinburgh University on the Council of the Scottish Marine Biological Association for the current year.

### UNIVERSITY OF ST. ANDREWS.

AT a graduation ceremony held on ... 19th Professor James Irvine presided. Stanley Allen, formerly of Edinburgh history. The following degrees were conferred:

M.P., Ch.B.—D. A. K. Cassells, Jean M. Davidson, W. S. D. Elder, M. A. B.Sc., Ruby N. Fergie, P. G. Grant, C. R. Henderson, Mary M. Jack, Norah M. Laidlaw, Grace B. McRae, Jean H. Merton, Janet L. A. Muirhead, M.A., S. S. Oslvie, A. B. Richardson, Nora A. M.D. Rodger, Jamiat Singh, Blanche D. S. Spence, W. A. Steel, W. Thomson, T. Wilson.  
M.D.—James Irvine.

### UNIVERSITY OF LONDON.

A COURSE of eight lectures on the physiology of the cortex as investigated by the method of conditioned reflexes will be given by Dr. G. Anrep, at University College, Gower Street, W.C.1, at 5 p.m. on Fridays, January 26th, February 2nd, 9th, 16th, 23rd, and March 2nd, 9th, and 16th. Attendance at this course is recognized in connexion with the B.Sc. (Honours) Degree in physiology. Admission to the lectures is free.

## Medical News.

AT the annual dinner of the Honourable Society of Cymmrodorion on January 19th, at which the Prince of Wales was the guest of the evening, he was presented with the medal of the Society and consented to become its patron. It was announced during the evening that Mr. Dan Radcliffe, shipowner, of Cardiff, had undertaken to present £50,000 in 3½ per cents., to the University of Wales in honour of the Prince, who is its chancellor.

THE next meeting of the Hunterian Society of London will be held at the Mansion House on Monday, January 29th, at 8.45 p.m., when the second Hunterian lecture will be given by Sir Berkeley Moynihan on the present position and treatment of gastric and duodenal ulcers. Discussion will follow.

THE festival dinner of the Royal Medical Benevolent Fund Guild will be held on Tuesday, January 30th, at the Hyde Park Hotel, London, with Lady Barrett, C.B.E., M.D., M.S., in the chair.

DR. MAJOR GREENWOOD, Reader in Medical Statistics in the University of London, will give a course of twelve lectures in the Department of Applied Statistics at University College, Gower Street, W.C., on the application of biometric methods to the study of nutrition, including history, theory, and experiment, on Mondays, at 5 p.m., beginning on February 5th. Miss Elderton, Galton Research Fellow, will also give an elementary course of twelve lectures on statistical methods on Thursdays, at 5 p.m., beginning on February 8th. The fees for the courses are one guinea each.

THE Maudsley Hospital of the London County Council will be opened formally on Wednesday, January 31st, by Sir Arthur Griffith-Boscawen, Minister of Health.

THE fifth annual reunion dinner for overseas medical officers, West Lancashire area, will be held on Thursday, February 8th, at 7.30 p.m., at the Exchange Station Hotel, Liverpool. Tickets may be obtained from the honorary secretary, Dr. J. W. Burns, 49, Rodney Street, Liverpool.

A SERIES of lectures in midwifery subjects will be given at Queen Charlotte's Hospital, Marylebone Road, N.W., by the members of the hospital staff at 5 p.m. every Thursday from February 1st to March 8th inclusive. These lectures are intended for students and practitioners, and are free.

THE King has granted to Dr. Leonard Bousfield, chief sanitary officer, Sudan Government, and Dr. Vincent S. Hodson, director, Civil General Hospital, Khartoum, his permission to wear the decoration of the Order of the Nile (third class) conferred upon them by the King of Egypt in recognition of valuable services rendered.

SIR NORMAN MOORE, Bt., M.D., who died on November 30th, 1922, left estate valued at £18,785.

THE Fellowship of Medicine has arranged a further series of post-graduate lectures, open to members of the profession, to be given, by the kind permission of the Royal Society of Medicine, at 1, Wimpole Street, during February and March. The opening lecture on Wednesday, February 7th, at 8.30, will be given by Mr. J. P. Lockhart-Mummery on diverticulitis, and others will follow by Dr. G. A. Sutherland, Mr. Cecil Rowntree, Dr. George Riddoch, and Mr. A. J. Walton. A course of six lecture-demonstrations on certain diseases of children will be held during February at the Children's Clinic, Western General Dispensary, Cosway Street, N.W.1, on Tuesdays and Fridays, at 5 p.m. The first will be given on Tuesday, February 13th, by Sir William Bayliss on "The physiology of digestion," and others on related subjects by Dr. Bernard Myers will follow, the concluding lecture on Friday, March 2nd, being devoted to "The nervous child, as seen in general practice." The fee for the course is one guinea; full particulars of both courses can be obtained from the Secretary to the Fellowship of Medicine, 1, Wimpole Street, W.1.

IN honour of St. Apollonia, who, we are informed, was recently "installed as the Patron Saint of Dentistry," the organization called the Ivory Cross has arranged to hold a banquet at the Hotel Victoria, London, on February 9th. Tickets (price one guinea) can be obtained on application to any member of the Dental Committee, or at the offices of the Ivory Cross, 10, Henrietta Street, London, W.1.



Dr. J. M. H. MacFieon has been appointed consultant physician for diseases of the skin to the Metropolitan Asylums Board in succession to the late Sir James Galloway.

Dr. J. A. Ewan, on the occasion of his retirement from the office of medical superintendent of the Kesteven Asylum after twenty-six years' service, has received a public presentation.

An extraordinary general meeting of the London County Westminster and Parr's Bank, Ltd., will be held on February 1st, when it will be proposed to change the name to "Westminster Bank Limited." The proposal will have to be confirmed at another meeting, to be held on February 16th.

The London Gazette publishes a correction of the Christian names of Dr. David Watt Torrance, medical missionary, Scottish Hospital, Tiberias, upon whom the O.B.E. was conferred in the New Year's honours.

Dr. Charles Vaillant, the Paris radiologist, who lost both arms as the result of x-ray burns, has been promoted to the rank of Commander of the Legion of Honour.

Dr. G. M. Yevers, a Beit Memorial Research Fellow and assistant helminthologist at the London School of Tropical Medicine, has been appointed Superintendent of the Zoological Society's Gardens, in succession to Mr. R. I. Pocock, F.R.S. Dr. Yevers has been honorary parasitologist to the Society since 1921.

A PUBLIC lecture on psychotherapy and religion, arranged by the Guild of Health, will be given by the Rev. L. W. Grensted, Principal of Egerton Hall, Manchester, at the Central Hall, Westminster, on Wednesday next. The chair will be taken at 8.15 p.m. by Dr. William Brown. Admission is free; a collection will be made.

## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the British Medical Journal alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the British Medical Journal are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the British Medical Association and British Medical Journal is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the British Medical Journal, Aitology, Westrand, London; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), Articulate, Westrand, London; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, Mediscera, Westrand, London; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: Baerilus, Dublin; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: Associate, Edinburgh; telephone, 4361, Central).

### QUERIES AND ANSWERS.

DRS. LIBA ZARCHI and CLARA SEGAL (London) ask for advice in the treatment of a woman, aged 62, who for fifteen years has suffered from persistent headaches, occurring nearly every day and lasting about twelve hours. They are not of the migraine type, but are accompanied by great depression and abdominal distension. Treatment by sodium luminal in 1-grain doses has produced no benefit.

#### DULL HAIR.

"O. P. Q." asks for suggestions for treatment in the case of two fast-growing girls, ages 12 and 17, whose hair is dull and lifeless in appearance. There is no dandruff at present, and careful brushing and washing are practised by the mother. He asks if a course of thyroid in fractional doses would be of service. The general health is good.

To a not inconsiderable extent the condition of the hair depends upon the general well-being, and as in the cases quoted there is rapid growth of the two girls the defect of the hair is to some extent dependent upon the strain put upon the body generally by this cause. When there is, in addition, dandruff—and this condition or the causes producing it have a detrimental effect on the hair—resorcin should be used as a local application. The following formula is suggested: Resorcin 1 drachm, sp. rosmarini 1 drachm, ol. ricini 1 drachm, tr. guilaine 1/2 oz., and water to 6 oz. A thorough washing of the scalp once every ten to fourteen days with a solution of green soap (sapo molis B.P.) is an advantage. It is doubtful if thyroid would prove of much assistance.

### TREATMENT OF INFANTILE PARALYSIS.

"P." describes a case of infantile paralysis involving both lower limbs from the buttocks downwards. The child is now 2½ years old; the paralysis came on suddenly about eighteen months ago. Massage and electricity have been used, and celluloid moulded splints applied. There is a slight return of movement in a few of the toes. "P." asks for advice as to treatment and prognosis.

We referred this inquiry to Mr. Muirhead Little, who writes in reply: "The only treatment I can suggest is the use of apparatus (splints, etc.) for the purpose of preventing the formation of contractions, massage to improve the nutrition of the parts, and the encouragement of any slight movements which are now possible by means of assisted exercises. Electrical treatment is not likely to be of any use. The most that can be hoped for in such a case is that the patient may be able to get about on crutches with suitable walking instruments."

### INCOME TAX.

"G. S. K.'s" car transactions have been as follows:

	Car.	Motor Cycle.
Original cost ... ..	£ 470	£ s. d. 70 0 0
Sold in 1921 for ... ..	160	30 0 0
In 1921 a similar car would have cost ... ..	650	74 10 0
New car bought (presumably in 1921) for ... ..	340	
Replaced by car costing ... ..	233	

We advise "G. S. K." to claim that the car and motor cycle should be regarded as one group or set of professional means of locomotion, and to calculate the replacement costs accordingly, thus:

Total original expenditure ... ..	£470 + £70 = £540
Deduct total amount received ... ..	£. 160 + £30 = £190
	£350

The total amount actually expended was £340 + £233 = £573, which, allowing for the increase in prices generally, does not indicate any improvement of the motor equipment as a whole, and therefore the whole of the £350 is allowable as a professional expense.

### LETTERS, NOTES, ETC.

#### DETERMINATION OF SEX.

Dr. R. A. PARKER (East Kew, Victoria) writes: Dr. R. W. Marsden, in your issue of September 30th, 1922 (p. 616), draws our attention to this subject by referring to a "surmise" of his own.

In a country district of Australia, where I formerly practised medicine, it was found by some of the residents who kept cows that if a cow fell in calf on the occasion of the first time of bulling after parturition the result generally was the birth in nine months' time of a bull calf, but that if a calf were born as the result of conception occurring at the second time of bulling, then the calf was a heifer. If conception occurred on the odd times of bulling a bull calf resulted, but if on the even times of bulling then a heifer calf was to be expected. Such a method would tend to lead to the production of about equal numbers of males and females, with a somewhat higher percentage of males as the result of more frequent conception at the first time of bulling.

Might this idea not be applied to menstruation? The production of twins of opposite sex makes this or any other theory difficult of explanation. The fact that uniovular twins are of the same sex perhaps lends support to the above idea; but where more than one ovum is shed such ova may individually each only have the power of attracting either a male or a female producing sperm, and thus twins of opposite sex may result, although heredity on the paternal side appears to be a factor.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 34, 35, 38, and 39 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 36 and 37.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 22.

### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under ... ..	...	...	0 9 0
Each additional line ... ..	...	...	0 1 6
Whole single column (three columns to page) ... ..	...	...	7 10 0
Half single column ... ..	...	...	3 15 0
Half page ... ..	...	...	10 0 0
Whole page ... ..	...	...	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive postage letters addressed either in initials or numbers.



## The Cameron Prize Lecture

ON

## MICROBIC TRANSMISSIBLE AUTOLYSIS.

GIVEN BEFORE THE UNIVERSITY OF EDINBURGH, 1922,

BY

PROFESSOR JULES BORDET.

DIRECTOR OF THE PASTEUR INSTITUTE, BRUSSELS; NOBEL LAUREATE.

AMONG the discoveries which in the course of recent years have most attracted the attention of biologists is the so-called phenomenon of bacteriophagy, or, as we should preferably say, the phenomenon of microbic transmissible autolysis. From the historical point of view it ought to be recalled that we are indebted to an English scientist for the first observations on this subject. Having inoculated vaccinia on agar media Dr. Twort observed the development of a micrococcus which occasionally showed a translucent or transparent change, starting as clear spots at the margin of the colonies. Under the microscope nothing but small granules could be seen in these glassy areas. Some of the colonies showing such a degenerative change could not be subcultured. Moreover, when a pure normal culture of the micrococcus isolated from vaccinia was touched with a small portion of a glassy colony the growth at the point touched soon began to become transparent or glassy; many of the micrococci were killed and replaced by fine granules. Killed microbes were not affected. When diluted with a large volume of water the transparent growth was found to pass through the finest porcelain filters, and one drop of the filtrate, deposited on the surface of an agar tube, was sufficient to make it unsuitable for the micrococcus—that is, the micrococcus inoculated on the surface would start to grow, but would soon become dotted with transparent points. Such a disease of the micrococcus could be conveyed to fresh cultures for an indefinite number of generations. Twort also made similar observations as regards microbes isolated from the intestinal tract of several patients.

One or two years later the Canadian bacteriologist, d'Herelle, took up the subject again. His fundamental findings are closely similar to those of Twort, but he made many complementary and interesting experiments. When a mixture of broth and faeces from patients recovering from dysentery is incubated for about twenty hours and subsequently filtered, a clear fluid is obtained, possessing the wholly unexpected property of clarifying a thick suspension of dysenteric bacilli. Furthermore, a trace of such a suspension which has thus been rendered clear, added to a second suspension of the same micro-organism, brings about the same effect, and so on. Similar results have been obtained by d'Herelle for other intestinal micro-organisms, provided, however, that the faeces came from individuals who had recently suffered from a disease of the digestive tract or who had been associated with such patients. For example, d'Herelle obtained fluids exerting a lytic influence on a micro-organism belonging to the group of the *Bacillus coli*, and which afterwards was very frequently made use of by ourselves in our own experiments.

It is thus very easy to obtain an indefinite quantity of lytic fluid, working, for instance, on the *Bacillus coli*. One has but to add some drops of a previously lysed *coli* broth culture to a rather thick suspension of the same microbe in broth. After several days in the incubator the now clarified suspension is heated at 58°. This temperature kills the microbes, but does not affect the lytic agent, which is only destroyed at from 67° to 70°.

To make apparent the presence of the lytic principle in a given liquid we have at our disposal two or three slightly different methods. We may add the investigated liquid either to a turbid suspension in broth of *Bacillus coli*, in which case the principle is detected by the supervening clarification, or to sterile broth which has been freshly inoculated with one drop of *Bacillus coli* culture, in which case the bacterial multiplication is prevented, the broth preserving during one, two, or even more days, when inoculated, its original limpidity. Another very simple and striking method of detecting the lytic power consists in depositing a droplet of the lytic fluid on the central part of a nutrient agar surface which, one hour before, has been inoculated at many points with *Bacillus coli*. The tube being subsequently kept in the incubator a microbic layer soon appears and thickens over the

whole surface, except at the points which have been touched by the lytic droplet, where, the growth having been inhibited, the surface remains bare. However, some colonies may appear later on this bare spot, consisting of resistant micro-organisms, but the aspect assumed by the tube is nevertheless quite demonstrative.

How is the lytic power to be interpreted? Since the lysis is capable of being indefinitely transmitted from one bacterial suspension to another, it cannot be doubted that the principle governing the process is regenerated while acting. A very simple and easy explanation has been afforded, and is still vigorously defended by d'Herelle, who considers the causative factor of the lysis to consist in a living organism, an invisible filtrable virus, which can live as a parasite in the inside of various bacteria, thus finally disintegrating them. The first hint of this theory had been put forward by Twort, but he suggested it as a mere possibility, without being convinced at all of its correctness.

According to this hypothesis the bacterium which shows the lysis, being merely the prey of a virus, only plays a passive rôle and takes no part in the determination of its own lesion. With my co-worker Ciuca I offered a quite different interpretation. We think that the lytic phenomenon, instead of being due to the agency of an invisible parasite, is in reality an autolysis, a process of autophagy. According to our conception the microbic lysis may be regarded as the consequence of a nutritive vitiation of the bacterial metabolism, primarily induced by some external disturbing influence. This vitiation would have as an effect the production of a lytic chemical principle, a very active the lysis, and, moreover, capable of the same vitiation to new microbes belonging the lysis brought into contact with them. Among the microbes thus touched, a certain number are not immediately destroyed, and even—being still capable of multiplying before undergoing the lytic process—reproduce the lytic substance. Thus the vitiation can be unceasingly propagated, the lytic principle arousing in the living microbes the elaboration of a new amount of the same principle. If a comparison could help to the understanding of the phenomenon, we could perhaps detect a real similarity with the process of blood coagulation. Under certain circumstances—namely, when protected from the contact of foreign solid bodies such as glass, for instance, when kept in a vessel coated with oil or paraffin—a plasma may be kept fluid during a very long lapse of time without any appearance of clotting. But, if to such a fluid plasma even a slight quantity of serum is added, obtained from a previous and normal blood coagulation, the mixture quickly solidifies and liberates by the very fact a new amount of the coagulating principle, the thrombin. Thus the addition of thrombin induces the production of thrombin. Similarly, when subjected to the influence of the lytic principle, the microbe—at least, after a certain interval, during which it may be still capable of multiplying—not only shows the lytic lesion, but also, in consequence of being touched by the lytic principle, reproduces this. Assuredly, the comparison is not perfectly adequate, since the plasma cannot, whereas the microbes can, multiply, but the analogy still may be easily grasped.

Since, according to the theory, the principle is liberated by the microbes themselves, it may be anticipated that a very abundant regeneration of principle will not occur unless the microbes present be sufficiently numerous. In other words, where only a very small number of microbes are added to broth containing the lytic principle, the reproduction of the latter will be very weak if all of the microbes perish at once. As a matter of fact, unless the microbes be already very numerous at the very onset of the experiment—that is, when they are brought into contact with the lytic principle—the amount of the latter only increases considerably as a result of a certain multiplication of the microbes. But we must add that as a general rule this multiplication does take place. To be sure, when the amount of lytic principle, mixed with the microbes, is very large in proportion to the number of germs, the bacteria are, as may be expected, rapidly damaged, their multiplication being thus strongly inhibited. Still, in such cases one may frequently observe, after two or three hours at 37°, a very faint and transient opacity, which soon after wholly disappears. There are reasons to believe that in any case, when the germs are not numerous from the outset, a certain multiplication is requisite for an abundant regeneration of the principle. I shall refer to this notion again, when I shall have to deal with the resistance of the microbes and the changes that







adherents to the invisible parasite theory that this virus, being of frequent occurrence and widely distributed in the natural media, the possibility could not be excluded of its having penetrated into the humours, exudates, or abscesses, and afterwards been extracted by the investigators. Whatever may be the plausibility of such an objection, it must be confessed that it is very hard to remove it entirely. At any rate, the hypothesis of the invisible virus would be wholly refuted, and, on the other hand, the autolytic theory would be wholly unquestionable if certain facts, recently pointed out by several observers, were regularly confirmed. For instance, it has been asserted that the lytic power may start under the influence of bacterial antagonism, in a liquid containing merely two microbial different species such as *Bacillus coli* and dysenteric bacillus, or *Bacillus coli* and staphylococcus. Some observers even believe that the lytic agent may appear in a pure culture, kept during a long lapse of time under certain conditions. However, such findings are not sufficiently controlled to be unanimously accepted. Such being the case the question is not settled, and therefore we cannot avoid comparing both theories in the light of the firmly established facts, and discussing the data that can be alleged in favour of each of them.

When a tube containing some cubic centimetres of sterile broth and a moderate quantity of lytic fluid—for instance, 1/100,000 c.c.m.—receives one drop of fresh normal *coli* culture, only a very faint and evanescent turbidity occurs after two or three hours, which is frequently overlooked. Practically the liquid keeps clear and remains such during two or three days or longer. This fact would be easily understood if due to a chemical substance—to a sort of antiseptic which, naturally, could not act otherwise than distributing its hindering influence over all of the germs present. Such being the case no wonder if all the microbes are equally touched. But were the lysis the consequence of a parasite penetrating into the bacteria and disintegrating them, then it should in all probability be expected that at least some bacteria would escape and develop normally. To be sure, as I mentioned before, a transient opacity is frequently observed, but even when quite easily perceptible it disappears as a rule very rapidly afterwards, almost suddenly. The capacity of attacking almost simultaneously the totality of the developed germs could hardly be ascribed to a living virus.

It may be mentioned besides that the phenomena observed are entirely the same, whether the lytic fluids under experiment be quite fresh or previously kept during some months. The inhibitive influence exerted on the growth is identical. One can hardly believe a virus to be always ready to attack the bacterium however long may be the lapse of time during which it has been starved—that is, has not been supplied with the living bacteria representing its necessary food. When kept inactive during a long period, the virus in all probability should require an appreciable delay before eliciting again its normal aggressive abilities.

It has been unquestionably ascertained that the lytic agent does not multiply in the absence of bacteria—in sterile broth for instance. Neither does it multiply when brought into contact with killed bacteria. It may assuredly be granted that bacteria when chemically modified by sterilization may no more represent an available food. But why does the virus still not develop when mixed with living *Bacillus coli* suspended in physiological salt solution? In such a medium the lysis does not occur nor the lytic power increase. But both phenomena soon appear if some meat extract or peptone is added to the salt solution suspension, a possibility of growing being thus afforded to the *Bacillus coli*. This corroborates the notion that a certain growth of the bacterium is necessary to the operation and to the reproduction of the lytic principle, and consequently does not plead in favour of the virus theory. In fact, though not representing indisputable proofs against it, these findings at any rate tend to show that the lysis is in reality the final consequence of a vitiated bacterial evolution occurring at a certain moment in the course of the bacterial life. Most probably the fact that a sudden dissolution of the microbes may be observed after a stage of multiplication must be similarly interpreted. Thus a certain period of bacterial multiplication, however short it may be, appears as a condition necessary to the reproduction of the lytic agent. When the broth shows a weak acid reaction, or only a very slight alkaline one—a condition which is not favourable to the lysis—waves of multiplication, as Gratia pointed out, may be observed, separated by periods of partial lysis, whereas the activity of the liquid increases as a consequence of the periodical destruction of the more sensitive micro-organisms.

Another fact which must be borne in mind is that the lytic agent, which is not impaired by time, is also capable, as Kabeshima first pointed out, of withstanding the contact of substances endowed with antiseptic properties—such as acetone, ether, sodium fluoride. Of course, it could be offered as an explanation that the immediate cause of the lysis, which is thus resistant to the antiseptics, is not the virus itself, but an actively dissolving substance elaborated by it. But chemicals like chloroform, which do not destroy the lytic property, leave also quite unimpaired the capacity of the lytic agent to multiply in the presence of the sensitive bacteria.

There is a fact upon which d'Herelle always very strongly insists. When a small quantity of lytic fluid is added to a bacterial suspension, a droplet of which is, after a short interval, floated on an agar tube, the microbial layer which develops is not continuous, but shows translucent disseminated spots where an obvious lysis occurs, such clear spots being more numerous the larger the amount of lytic fluid added to the suspension. According to d'Herelle, these spots represent colonies of bacteria which are infected by the virus. The bare fact that the number of spots is in connexion with the quantity of lytic fluid made use of is not to be doubted, but does not force upon our acceptance the conclusion that the lysis is due to a virus. Another quite plausible interpretation consists in assuming that all of the bacteria are not equally endowed with the capacity to anchor very rapidly the lytic principle. Then clear spots appear only at the spots where such bacteria have been deposited, and which have absorbed a sufficient quantity. Of course, a larger number of bacteria will absorb rapidly the principle if the latter is not much diluted. It has been proved that the bacteria, even when killed, possess the property of absorbing the principle from the surrounding medium. We know that in a suspension all of the germs present are not equal respecting their sensitiveness, which in all probability depends on their ability to absorb rapidly the principle. As a confirmation of the interpretation just suggested, and which has been defended, especially by Gratia, it may be shown that the number of clear spots appearing in the experiment quoted above is in connexion not only with the concentration of the lytic principle, but also with the sensitiveness of the bacteria. The same amount of the same principle gives less numerous spots when the resistance of the culture used has distinctly been raised. By adaptation the resistance of a bacteria may increase to such an extent that there is no production of spots even under the influence of a large amount of a very powerful principle.

Experiments performed concerning the antilytic serums obtained by Ciuca and myself do not readily agree with the virus theory. When intravenously injected into a normal rabbit, the lytic agent may be detected in the blood during a rather long lapse of time—twenty hours at least. But if the rabbit has previously received under the skin or elsewhere several injections of the same fluid, the latter injected into the blood immediately disappears and cannot be recovered. This is due to the fact that the immunized rabbit has elaborated an antibody which at once neutralizes the lytic factor. Such an immune serum, mixed with broth containing the lytic principle in suitable amount, abolishes its activity, the *Bacillus coli* subsequently added being thus allowed to grow without being affected and without reproducing the lytic agent. The latter cannot be recovered, even when passages (in the presence of *Bacillus coli*) are subsequently performed from broth to broth, by which passages the antibody is more and more diluted, so that it could no more neutralize the lytic agent had the latter been reproduced. Were the lytic agent a virus, the antibody could not work like that unless endowed with strong antiseptic properties towards it. But the serum shows the same properties when previously heated at 56°—a temperature which, as is well known, destroys, as a rule, the bactericidal activity.

The study of the antilytic serums procured furthermore interesting information as regards the specificity of the lytic agent, an aspect of the problem which obviously is in close connexion with the above discussed theories. As many writers have pointed out, a lytic principle acting on the *Bacillus coli* acts similarly on closely related species, such as the dysenteric bacillus, several paratyphoid or even typhoid bacilli. But it does not work on widely different micro-organisms, such as the staphylococcus. Conversely, a principle lysing the staphylococcus does not react with *Bacillus coli* and similar microbes. Thus Gratia and Jaumann found that an antilytic serum appropriate to the *coli* lytic



principle does not neutralize in the least the staphylococcal lytic principle, and vice versa. This result cannot be brought into harmony with the view of d'Hérelle, that there exists only one type of lytic virus capable of adapting itself to different bacteria. Were such an opinion correct one and the same antilytic serum should annihilate this virus whatever might be the bacterial species under experiment. On the other hand, the result agrees with the opinion that the lytic principle is in reality derived from the bacteria themselves. In fact, principles elaborated by widely different bacteria should likewise be distinct and distinguishable by means of the corresponding specific serums; such is, indeed, the experimental result.

When two conflicting theories are to be tested, it is convenient to follow them in their logical consequences under certain experimental conditions. For example, what is likely to occur when an extremely slight amount of lytic principle is mixed with a very large quantity of living *Bacillus coli*? Logically, if the agent be not a virus but a substance, it may be anticipated that in such a case it will not be regenerated. The very slight amount of lytic agent will indeed be distributed between so many microbial individuals that each of them, being not sufficiently touched, will not reproduce the principle. This is exactly what is shown by the adequate experiment—the principle wholly disappears and cannot be recovered. Were the principle a virus, it could not be satisfactorily explained why this living being cannot multiply under such conditions, when a large number of microbes are present—that is, when the virus is supplied with a large quantity of food. Of course, in a control experiment, the same amount of principle is mixed with a rather thin bacterial suspension; then its quantity obviously increases.

But what shall we observe if, in a similar experiment, the number of the microbes, although still considerable, is somewhat lessened, the dose of principle remaining the same? Then the quantity of principle absorbed by each microbe, although still very slight, is somewhat larger than before. Then the influence of the principle will be not strongly, but perceptibly, felt, the consequence being that the microbe, moderately touched, reproduces a principle which, correlatively, is endowed only with a moderate potency. The principle is reproduced, but the properties of this reproduced principle are not identical with those of the original principle. And the difference is not of a quantitative but of a qualitative nature. The new principle thus obtained may be unceasingly and very abundantly regenerated by means of passages through successive bacterial suspensions, but it shows special characteristics, and henceforth keeps them permanently. It is a weak principle. When added to broth inoculated with *Bacillus coli* it only prevents the growth during a short period; the liquid becomes turbid after some hours, and the opacity is not markedly clarified afterwards. The weakness of such effects is not due to the fact that henceforth the liquids obtained only contain a slight amount of lytic agent. Those liquids, indeed, still work when extremely diluted. In this respect the new principle is in no way different from the strong original principle. But it works always feebly, even when present in a large dose. It actually is attenuated.

Quite similar results are obtainable by means of somewhat different procedures. For instance, if a droplet of strong lytic principle is deposited on an agar surface which has just before been inoculated on all of its points with *Bacillus coli*, the spot touched by the lytic fluid remains bare, whereas around it a normal abundant growth occurs. But after several days one may perceive that through a slow process of diffusion traces of principle invade the margin of the thick bacterial layer, thus causing there a faint clarification, a partial lysis. Of course, the amount of principle thus brought by diffusion into this zone is extremely slight in proportion to the number of microbes. Now, if some of the latter germs are removed by means of the platinum needle and inoculated into broth, a very weak principle is obtained which subsequently remains such when reproduced. Were the lytic agent a parasite, it would appear that among those parasites only the less virulent ones are capable of penetrating gradually into the bacterial layer surrounding the clear spot. This is not very likely.

A weak principle may yet be obtained even when the amount of principle is somewhat larger in proportion to the number of microbes, provided that the contact of the microbes with the surrounding fluid containing the principle be only very short, a condition which is easily performed by removing after a proper interval a droplet of the mixture and spreading it on an agar surface. Some translucent spots showing a

partial lysis soon appear, from which a culture giving a weak principle may be obtained.

Without dwelling longer on the details, we may state that from the primary strong principle new types of principle may derive, different as regards the energy of their action, and that the virus theory does not account readily for the occurrence of such modifications, the conditions under which they appear being taken into consideration. From this point of view, as well as in many other respects, the virus theory is open to criticism. But far from asserting that the problem is solved, I frankly confess that the other views, even the one which I deem the most probable, still lack indisputable demonstration. Many efforts will still be necessary; the mystery is not disclosed. I hope that this interesting problem will attract the attention of many biologists, especially of British scientists, since the study of the subject originated in your own country.

## MALIGNANT DISEASES OF THE BREAST:

WITH SPECIAL REFERENCE TO THE SUPRACLAVICULAR  
EXTENSION OF THE OPERATION.

BY

CHARLES A. MORTON, F.R.C.S.,

PROFESSOR OF SYSTEMATIC SURGERY IN THE UNIVERSITY OF BRISTOL;  
CONSULTING SURGEON TO THE BRISTOL GENERAL HOSPITAL AND  
THE CHILDREN'S HOSPITAL; EXAMINER IN SURGERY  
TO THE UNIVERSITY OF BIRMINGHAM.

In 1902 I published, in the *Bristol Medico-Chirurgical Journal*, a paper on "The results of operation in 54 cases of cancer of the breast." The paper I now publish is based on a study of all my cases of operation for malignant tumours of the breast (including the first series of 54). Of the 251 cases, 242 were cases of glandular cancer, and most of them were of the scirrhus form; 3 were cases of the very much less malignant duct cancer; and 6 were cases of sarcoma. In order to ascertain the late results I have investigated the records of 120 consecutive cases, operated on during the ten years preceding October, 1921, so that any non-recurrence would have extended over at least three years.\* There were 120 operations for ordinary glandular cancer of the breast in this period—October, 1908, to October, 1918. The 120 cases do not include one case of duct cancer which I operated on during this period, for the reason already mentioned.

### How the Investigation was Conducted.

I found in my records of these 120 cases a note as to the late results in 66. I wrote to the remaining 54 (or their doctors) to inquire as to the late results. What I have endeavoured to discover is the proportion of cases with local recurrence, because it is only this form of recurrence which could be prevented by a more extensive operation. I regard as local recurrence—recurrence in the pectoral region† (including that area of the chest wall), the axilla, the supraclavicular region, and growth attached to, but not starting in, the sternum, and even growth in the skin of the back of the chest, on the side of the operation. I have never seen any recurrence towards the upper abdomen. Recurrence in the other breast, or the opposite supraclavicular region, or axilla, or one in the mediastinum, I have not regarded as a local recurrence, as no operation short of removing both breasts, or the fatty and glandular contents of both axillae, and supraclavicular regions, could prevent it.

I have been able to trace the late results as to local recurrence as above defined in 80 of the 120 cases. Of the remaining 40 cases some died with distant metastasis without local recurrence before the end of three years after the operation, others died also during this period of intercurrent disease, and in some cases the cause of death was unknown. In many cases, as I expected, the post office returned my letter of inquiry, as they could not trace the persons to whom they were addressed. This of course most often happened with the earlier cases in the ten years' series. But I was glad to find that a considerable number of those of whom I had no note of late results did receive my letter of inquiry, and were able to reply that they had been free from recurrence for many years. And I am grateful to several medical men

\* The statistics on which this paper is based were prepared early in 1922.  
† By pectoral region I mean not only the area originally occupied by the breast, but the infraclavicular, the lateral aspect of the chest below the axilla, and the region over the sternum.



I have investigated the position of all the local recurrences I have myself observed and noted in the 185 cases of cancer of the breast included in the present series. I find that recurrence has been most frequent in the pectoral region (31 instances). In 8 the recurrence was in the skin of this region, but this skin may have been dragged into the exact position in which it was left after the operation, after its extensive undermining, to close in the large gap left by the removal of skin around the growth. Yet it was skin from some part of the pectoral area, defined in the comprehensive way I have done in the earlier part of this paper. In 26 cases growth recurred in the deeper parts of the pectoral region; in 15 of these it was not fixed to the chest wall, and in 11 cases it was so attached (ribs or intercostal muscles). In 8 additional cases, not included amongst the pectoral ones, it was attached to the sternum. There were 20 cases of supraclavicular recurrence—two-thirds of the number of pectoral ones. I was surprised to find that even with the very complete axillary clearance there were as many as 7 axillary recurrences. One of these was in the skin (which may not have been originally axillary skin) and 6 in the deeper part of the axilla, but these did not appear to be glandular. There were two recurrences in the skin of the back, between the scapulae, and one in the latissimus dorsi muscles. In no case did I ever meet with a recurrence in the downward direction—that is, between the original position of the breast and the upper abdomen—and I have never made a practice of any special clearance of the tissues in this direction. In my first series of 54 cases (not included in these 185) I did not specify the exact locality of the recurrence, but I said: "The great majority of the recurrences have been in the skin, subcutaneous tissue over the great pectoral muscles, or in the surfaces of the muscle itself." That corresponds to the result of my investigations in these 185 cases—that most of the recurrences are in the pectoral region, but there has been no recurrence in the remains of the pectoralis major or in the minor. In this first series I also noted occasional recurrence in the supraclavicular glands, and I wrote: "The fact that



in several cases the supraclavicular glands were involved: points to the advantage of a systematic removal of the glands from above the clavicle at the first operation, as Halsted now does, even though they cannot be felt to be enlarged."

I have further investigated the exact position of the pectoral recurrences which were not in the skin, to see if they frequently took place in any special locality, that could in the future be even more thoroughly cleared out than is done at the present time, or which would make it desirable to leave a tube of radium in the special locality, as has been advised should be done in the upper interspaces close to the sternum, a part which has been considered specially liable to recurrence. I have not found recurrence specially common in any particular area of the pectoral region, and indeed have only twice met with growth in the upper intercostal spaces close to the sternum. The following list will show the exact locality in the pectoral region in which growth recurred. It does not include growths on the sternum. Recurrence might be in any part of the skin; in the deeper parts it was situated as follows:

- 1, Deep tissue of chest wall just below axilla.
- 2, Two small subcutaneous nodules just below the inner end of the clavicle.
- 3, Deeper tissues in various directions.
- 4, Nodule attached to first rib just below clavicle, but only attached to rib by scar tissues, and easily dissected away.
- 5, Cartilage of third rib (and sternum).
- 6, A few subcutaneous nodules just under clavicle.
- 7, Diffuse subcutaneous recurrences.
- 8, Subcutaneous tissue.
- 9, Second and third interspaces close to sternum (and over sternum); this was removed, but it was necessary to resect the second costal cartilage, and it recurred again in six months.
- 10, This was not a recurrence, but an extension of the disease found at operation and not removable; it was in the intercostal muscle of the first interspace close to the sternum. An overlying nodule of growth attached to the first rib was removed and disclosed the deeper growth.
- 11, Nodule in intercostal space where nipple had been, and shot-like nodules in deep tissue below inner end of clavicle (removed).
- 12, Nodule under remaining strip of great pectoral, below clavicle and towards axilla.
- 13, Nodule just below clavicle, fixed to ribs.
- 14, Nodule fixed to fifth costal cartilage at junction of sternum.
- 15, Nodule on third rib close to sternum.
- 16, Nodules in region of scar, some movable, and others fixed to ribs.
- 17, Nodules fixed to chest wall under scar.
- 18, Diffuse nodules in pectoral region, some fixed to chest wall.
- 19, In subcutaneous tissues of pectoral region.
- 20, Nodule fixed on chest wall between third and fourth ribs, below axilla.

#### Mortality in the 248 Cases.

Four patients died from the operation (1.6 per cent.), and two not directly from the operation but within three weeks of it. Of the deaths due to the operation one was from sepsis in the wound. This was certainly most regrettable, but, as usual when sepsis does occur in a wound that should run an aseptic course, it was impossible to detect the flaw in the antiseptic precautions. It was a hospital case. Another of the deaths was due to an obscure condition. There was marked pyrexia, which commenced the day after the operation, and redness and swelling of the skin of the loin appeared, and the patient died on the fourth day. The wound was opened up and examined after death, and there was no trace of suppuration in it. There was one death from the anaesthetic (ether). The patient ceased breathing while I was making the first incision, and the pulse, which up to that time had been good, also failed. At the necropsy the heart was found to be the seat of fatty degeneration and there was emphysema of the lungs and granular kidneys. She was aged 66. The fourth case was a very remarkable one. The patient had great deformity of the chest, from scoliosis, and she became very cyanosed during the anaesthesia, but improved with the administration of oxygen; but the cyanosis recurred after the operation without any physical signs of disease in the chest, and proved fatal at the end of the second week after the operation, when the wound had soundly healed. This case should more correctly be regarded as a death from the late result of the anaesthetic than from the operation—if, indeed, it was really the result of either.

Of the two cases of death within three weeks of the operation, but not directly due to it, one was a woman aged 72 who died on the tenth day with primary cardiac failure, after the wound had healed. Valvular disease and degenerative changes in the heart muscles were found *post mortem*. In the other case, a woman of 62, death occurred on the nineteenth day after the operation from an obscure abdominal condition. The wound had soundly healed.

#### THE SUPRACLAVICULAR EXTENSION OF THE OPERATION.

Since I began to clear out the supraclavicular space in 1902, I have removed the fatty tissue and contained glands from

this region in 126 cases in which no glands could be felt there before operation, and in 10 cases, or 7.8 per cent., I discovered and removed cancerous glands, or at any rate cancerous nodules. This is a slightly lower percentage of cases with cancerous growth than I gave in my letter to the *BRITISH MEDICAL JOURNAL* (1921, i, 173) for the smaller number of 30 cases. I was not at that time able to search through a larger number of my records, but took 30 consecutive cases, and in these 30 cases I found 3 of supraclavicular growth, undiscovered until the supraclavicular region was opened up. A more extended search through my records (126 cases) reduced the percentage from 10 to 7.8. In one case, in which I found cancerous glands above the clavicle, I was doubtful as to their presence before operation, and therefore I have not included it amongst the 10.

In one case in which the supraclavicular space was cleared out, although the disease recurred in the other supraclavicular region, after first recurring elsewhere, yet it did not do so on the side where the supraclavicular region had been cleared. This was in a case in which the growth recurred on the sternum, and in the upper intercostal spaces on the side of the original operation, and in the other breast, and the supraclavicular region of that side. In several cases in which the supraclavicular region was cleared out at the primary operation, although a few small glands appeared there later on, yet the proportion of the recurrence then was very small compared to the recurrence elsewhere. This was so in one case of extensive recurrence in the opposite axilla and supraclavicular region, and in the pectoral region on the side of the primary growth, but only one small gland could be felt in the supraclavicular region of that side. In another case in which the growth recurred two years and three months after the operation as a mediastinal growth, and in the opposite supraclavicular region, it did not recur in the supraclavicular region on the side on which the supraclavicular tissue had been removed at the breast operation. In a third case there was recurrence, a year and nine months after operation, on the sternum and in an intercostal space in the pectoral region on the side of the primary growth, and in the supraclavicular glands on the opposite side, but not in the supraclavicular region on the side which had been cleared out at the last operation.

But when the tissues of the supraclavicular space have been cleared out, even in cases in which no growth is found there, as well as those in which cancerous glands or nodules have been removed from this region, yet growth does recur there. Out of the total of 126 supraclavicular extensions of the operation, 90 were in the 120 cases specially investigated as to recurrence. In 6 of these cancerous growth was discovered to be present above the clavicle before operation, and in the remaining 84 cases it was not discovered before operation. Out of these 84 cases, in 20 growth recurred above the clavicle. This seems very discouraging to those of us who perform the supraclavicular extension of the operation, but it is not really as bad as it seems, for if the 20 cases are analysed it is found that in 13 out of the 20 the growth was either removed (5) or was almost certainly removable (8), and could have been removed but for irremovable recurrence elsewhere; and in some of the remaining 7 cases the recurrence could, I think, possibly have been removed. So that the important fact which is evident is that in 7 of the 20 cases there was a supraclavicular recurrence which was very likely not removable, but even if so, no doubt most of the growth could have been safely removed, and a buried tube of radium might very probably have removed what was left. In the cases in which the growth could almost certainly have been removed it recurred in the form of small movable glands. In one of the cases in which it was removed I had to remove the lower end of the internal jugular vein with it, as it was firmly attached to it.

#### Analysis of Recurrent Growth in the Supraclavicular Region.

1. Some hard growth above clavicle.
2. Deep fixed growth.
3. Fixed deep nodules.
4. Cancerous gland, size of small marble, easily removed.
5. Very extensive, but just removable.
6. Small nodules which probably could have been removed except for irremovable recurrence elsewhere.
7. Nodule attached to internal jugular vein, but excised with portion of vein.
8. Hard fixed mass.
9. Several small glands which could probably have been removed, and would have been but for recurrence elsewhere.
10. Only one small gland, which could certainly have been removed, but recurrence elsewhere.
11. Growth that was removed.
12. Nodules which could probably have been removed, but recurrence elsewhere.
13. Several hard glands, probably removable, but recurrence elsewhere.

\* By recurrent growth.



14. Numerous small hard glands, possibly an extension of axillary growth, of which there were suggestive signs and symptoms; probably removable.

15 and 16. Fixed nodule behind inner end of clavicle.

17. Deep nodule, removed.

18. Very small and very slowly enlarging glands, that could most certainly have been removed.

19. Two small removable glands, but recurrence elsewhere.

20. Gland, size of small marble, under outer border of lower end of sterno-mastoid; could quite possibly have been removed.

The question arises: Can we, during the performance of the axillary part of the operation, obtain any indication as to whether or not there is cancerous growth present above the clavicle? I have examined my records of 20 cases in which growth was found above the clavicle at operation (10 in which it was not detected before operation, and 10 in which it was), and I find that I have noted that in 13 of these cases one or more glands of the subclavicular group—the glands lying above and internal to the inner border of the pectoralis minor, just below the clavicle, and around the commencement of the axillary vein—were obviously to the naked eye cancerous. In the other 7 cases my notes do not say if this was the case or not; in all these cases but one, however, there was extensive affection of the other axillary glands, and probably the subclavicular group were also affected. In some of these cases the growth had actually invaded the axillary vein, and a portion of the vein had to be removed with it. But in one case, though a typical small hard cancerous gland was found above the clavicle, there were only a few cancerous glands in the axilla, and those were of no great size. On the other hand, I have met with at least two cases in which there was a cancerous gland in the subclavicular group, and none above the clavicle. But it is certainly a significant fact that in 13 of the 20 cases in which I found growth above the clavicle the highest axillary glands were affected, and may have been in 6 of the other 7. Halsted, however, has said:—

"The axilla affords no criterion from which we might draw inferences as to the condition of the supraclavicular fossa. Sometimes with an axilla which is involved chiefly in the lower or arm part, and apparently not at all in the upper or subclavian part, we have a neck involved solely at the junction of the internal jugular and subclavian vein."

He also says:

"It sometimes happens, on the other hand, that the neck is not involved although the axilla is a solid mass of cancer. Hence it would appear that for the present our rule should be to operate on the neck in every case."

Professor Rodman of Philadelphia, in a paper he read in this country in 1904,<sup>2</sup> refers to a set of lymphatic vessels described by Poirier and Cunéo, which drain the upper part of the breast, and pass directly over the clavicle, emptying into the supraclavicular glands, and he says that in all cases in which cancer affects this part of the breast, if situated near its margin, the supraclavicular region should be explored.<sup>3</sup> Dr. Willy Myer of New York, writing in the *Annals of Surgery* in 1918 (vol. lxxviii, p. 22), says he is guided as to whether to clear out the tissue above the clavicle or not by an immediate microscopic examination of the highest infraclavicular glands—the glands lying "very near the angle, between the subclavian vein and the chest wall." If on microscopic examination there is evidence of cancerous infection in these glands, he then clears out the tissue above the clavicle. But he regards, as Professor Rodman did, the situation of the growth in the upper part of the breast as an indication for the supraclavicular extension of the operation, but only if it involves the skin. It seems to me we must be very careful how we are guided by the presence of what may seem to be cancer elements in the glands, remembering the misleading findings in cancer of the rectum, which seemed to indicate at one time that the growth involved such a considerable length of the bowel that it was necessary to excise a very great length of it.

I cannot help thinking that the pathological findings of cancer in 5 out of 6 of the supraclavicular glands examined in Mr. Parry's cases<sup>4</sup> does not indicate that in 5 out of 6 cases cancer would have developed in those glands. If so, only 1 out of 6 cases in which the supraclavicular extension of the operation is not performed would be free from supraclavicular recurrence. Halsted, who first practised the supraclavicular extension of the operation, had a very thorough microscopic examination made of the tissue removed from the supra-

clavicular region. Indeed he says: "Only those familiar with the work can understand the amount of labour implied in the statement that a given mass of fat does not contain a cancer alveolus."<sup>5</sup> And yet he found no evidence of cancer in 30 out of 67 cases. But the remaining 37 did not certainly contain cancer cells, for he says that in 14 out of the 67 the exhaustive examination of the tissue had yet to be made to determine this, and that in 14 cases glands were detected in the supraclavicular region before operation; so we must deduct 28 from the 37, and this leaves only 9 cases in 39 in which, with the most exhaustive microscopic examination of the tissue, and without any enlarged glands being palpable before operation, cancer elements, or more fully developed growths, were present, or rather more frequently than 1 in 5 cases.

Having regard to my own experience of finding a cancerous gland or glands (macroscopic) in the highest (subclavicular) group of axillary glands in 13 cases in 20 in which the supraclavicular glands were also infected, and possibly (even probably) in 6 of the other 7—but certainly in these 6 very extensive axillary gland infection—I should be inclined to limit this extension of the operation to cases in which cancerous glands are found in the subclavicular group, or to cases with very extensive gland infection, even if the subclavicular group were not involved; but looking at Halsted's experience (as quoted), which does not refer to very marked axillary involvement, I should hesitate to limit the extension of the operation to the supraclavicular region only to such forms of axillary involvement as my own experience teaches me are usually associated with supraclavicular growth. In cases of small growths in the breast with very slight axillary gland enlargement, as found on opening the axilla, I have in some cases abstained from extending the operation to the supraclavicular region; but even in cases in which only the lower axillary glands were markedly enlarged or hard, and certainly in cancerous infection of the subclavicular group, from which efferent lymphatic vessels pass to the supraclavicular glands, I shall continue to perform the supraclavicular extension of the operation. It seems to me that if by an extension of the operation—which in the majority of cases does not add to its risk—actual growth can be removed, it is better to do so rather than trust to burying in the part a tube of radium; and tubes of radium would have to be much more plentifully distributed about the country than at the present time if that is to become the routine operation for the hundreds of cases of cancer of the breast that are operated on. If, however, the condition of the patient is such that an extension of the operation is contraindicated, then the burying of a tube of radium may be indicated. I must confess that I have in some cases abstained from performing the supraclavicular extension of the operation, when the growth has not been advanced or the axillary infection marked, if the patient has had a very short fat neck, for in this condition the clearing out of the tissue in the supraclavicular region is by no means easy, and there is also a great difficulty in keeping the bandages which fix the neck dressing in good position.

It might be thought that, recognizing the fact that I have had 20 cases of recurrence in the supraclavicular region after clearing it out at the primary operation, I should abandon the extension of the operation. But we must remember that in 5 cases the recurrence could be removed, and in 8 other cases it was almost certainly removable, and would have been removed but for the presence of irremovable growth elsewhere, and that quite possibly in some of the remaining 7 cases it might have also been removed. So that the really important fact to recognize is that in 7 cases there was recurrent growth doubtfully removable. But this fact would not prevent me from undertaking an extension which, in suitable cases, hardly adds an appreciable increase of risk. We must remember the undoubted fact that occasionally the surgeon leaves behind cancerous growth which would be visible and palpable if he explored the supraclavicular region, and could be quite easily removed. I therefore still think that the supraclavicular extension of the operation should be carried out as a routine procedure, and only omitted if there is some special contraindication to it, unless the growth is very small and the axilla remarkably free from secondary growth.

Unfortunately, it is only too evident that when the surgeon does clear out from the supraclavicular region all the fatty tissue and glands he can find, yet he leaves microscopic elements of cancer which eventually cause a recurrence in a good many cases. The lesson from this is that it is most important to make the clearance as thorough as possible.

<sup>2</sup> I have not been able to verify this reference. I think it possible it refers to the paper by Poirier and Cunéo, *op. cit.* p. 115 from the upper



I have always dissected away the tissue as far inward as the internal jugular vein where it lies under the lower end of the sterno-mastoid, drawn up the fatty tissue from under the clavicle, and removed the pad of fat lying under the inner border of the trapezius. It is not an easy dissection, as the space in which to work is so small. Before I finish the dissection I push up the tissue lying deeply beneath the clavicle into the supraclavicular space, with a finger in the cleared-out axilla to bring into view any fat or glands lying there.

#### *The Extent of my Present Operation for Cancer of the Breast.*

When I published the first series of 54 cases of this operation<sup>1</sup> I did not remove the great pectoral muscle but dissected away the pectoral fascia only. I recognized that it was not easy to do this thoroughly as it was so intimately attached to the muscle, and, in order to make sure of its complete removal, in 1902 I excised the sternal portion (or the greater part of it) as a routine proceeding. I have never removed the pectoralis minor as a routine proceeding, for I see no object in doing so, though of course it is most important to take away the fat and glands lying above its upper border just under the clavicle (the subclavicular group). I have occasionally divided or removed it in cases of very extensive axillary growth, in some of which it was necessary to excise portions of the axillary vein with the growth, because division or removal of the muscle gives the best possible access to the whole course of the vessels. But if the pectoralis minor is retained it is, of course, important to spare also the internal anterior thoracic nerve, which supplies it.

In my first series of cases I was very fortunate in being able to trace every case but one. I had 30 cases in the 54 three years or longer after operation, and 9 had no recurrence, or almost 1 in 3, or 30 per cent. This is not as good as in my last series, but it must be remembered I was more fortunate in tracing my cases in the first series than in the last. Possibly the better results in the last series may have been due to the complete removal of the pectoral fascia with the muscle, possibly also to a more extensive removal of the surrounding skin and subcutaneous fat, though this seems doubtful, but certainly, I think, to the routine removal of the supraclavicular glands. In my first series of 54 cases I had no death, but I can confidently say no death in the later series was due to the supraclavicular extension of the operation.

As I have already stated, in dealing with recurrence I do not carry my incision towards the abdomen in order to remove the upper part of the sheath of the rectus or the fascia over the external oblique muscle. I have never seen a recurrence in this direction. Nor have I adopted the method of first clearing the axilla, and then later removing the breast and surrounding tissue. It seems to me that the chest wall, left exposed by the removal of the breast and surrounding tissue, can always be covered with a towel wrung out of hot saline while the surgeon is clearing the axilla; and I do not see any very decided advantage in dividing the small branches from the axillary artery which supply the breast before removing it. It is not as if one could tie one large vessel in the axilla, and thus render the removal of the breast almost a bloodless operation. The largest vessels are the perforating branches of the internal mammary artery, which are divided in the removal of the great pectoral muscle. I always begin the axillary clearance by dissecting out the fat and glands around the axillary vein above the upper border of the pectoralis minor, and as I do not remove, or even divide, this muscle in most cases, the space is best reached after the breast and great pectoral muscle have been removed.

I do not find the operation I practise, even when to it is added the supraclavicular extension, though a lengthy proceeding, a shock-producing one; only very seldom has the patient suffered from shock, even with this extensive dissection. I have had no fatality from shock in the 251 cases. In a woman of 79 for whom the complete operation for cancer of the breast was performed on one side, and an innocent cyst was dissected out of the other breast, there was no shock, and it was also absent in several women over 70 years of age. In one case, in a woman of 66, I removed both breasts, both great pectoral muscles, and cleared out both axillae at the same operation, without shock.

None of the 120 specially investigated cases were treated by x rays after operation, and yet 46 per cent. were free from local recurrence after three years, and 30.2 per cent. after five years. This compares well with the statistics of a series of

cases treated by x rays, referred to in the BRITISH MEDICAL JOURNAL (1921, ii, 411). This treatment by x rays seems a most reasonable method, for if x rays can cause the disappearance of cancer nodules, as I know from my own experience they can, how much more likely are they to destroy those cancer cells lying in the tissues which will ultimately grow and form a recurrence? But as far as the statistics quoted in the BRITISH MEDICAL JOURNAL indicate, cases not treated by x rays seem to remain as free from recurrence as those treated by it.

#### REFERENCES.

<sup>1</sup> *Annals of Surgery*, 1903, vol. xxviii, p. 573. <sup>2</sup> BRITISH MEDICAL JOURNAL, 1924, ii, p. 825. <sup>3</sup> *Ibid.*, 1921, i, p. 93. <sup>4</sup> *Annals of Surgery*, November, 1888, p. 571. <sup>5</sup> *Bristol Medico-Chirurgical Journal*, 1902, p. 305.

### CATARACT EXTRACTION FOLLOWED BY SYMPTOMS SUGGESTIVE OF SYMPATHETIC OPHTHALMIA.

BY

FREELAND FERGUS, M.D., LL.D., F.R.S.E.,

CONSULTING SURGEON, GLASGOW EYE INFIRMARY.

ON the same evening I happened to read two very suggestive papers: the first was that of Sir William Willcox which appeared in the issue of the BRITISH MEDICAL JOURNAL of January 13th, entitled "The clinical, pathological, and radiological aspects of inspection of the teeth and gums"; the other was by Professor Trug of Montpellier, entitled "Deux nouveaux cas d'ophtalmie sympathique," which appeared in the *Archiv. d'Ophthalmologie* for July, 1922.

Those two papers recalled to my memory a case which was under my care a few years ago.

The patient was a man well on in middle life who consulted me for defective sight. I found him to be highly myopic, and in each eye there were slight corneal opacities. In addition, however, he had a well marked cataract in one eye, and I advised extraction of the lens. He agreed to this and was admitted to a nursing home. On testing the eye by cultures on serum agar—a practice which I have invariably followed since 1891—I found no growth, and after a few days of systematic douching of the eye I extracted the lens. The operation passed off well, there being a slight escape of vitreous but no other untoward event. The eye was dressed in the usual manner with sterile cotton-wool and a roller bandage for the first few days, and after a period of fully a fortnight he was allowed to go home, wearing dark glasses and with instructions both to himself and to his medical attendant that the eye was to be bathed with sterile saline.

After the lapse of nearly three months I was informed by the medical man in charge that the other eye had become inflamed. I at once went to see him and found that there was a mild irido-cyclitis with adhesions of the iris to the lens capsule and a few deposits on the posterior surface of the cornea. All such inflammations are invariably the result of infection, and therefore the question at once arose as to the source of the infection in this case. I was satisfied that nothing had been introduced at the time of the operation. Everything had been carefully sterilized and no growth had been found on the culture media. On investigating matters I found that his mouth was in a deplorable condition. A number of the teeth in both jaws were much decayed and there were the usual symptoms of pyorrhoea alveolaris. It seemed to me that that condition might be the *fons et origo mali*.

He was at once removed back to the nursing home and each jaw was thoroughly cleaned; all the teeth were removed and a potassium chlorate wash prescribed. The symptoms at once began to ameliorate, and in the course of a few weeks he was able to go home entirely relieved of all acute symptoms and with good useful vision in each eye. That is some years ago, and there has been no recurrence of the acute symptoms; the only indication of the disturbance is the presence of one or two insignificant synechiae which were not broken down by the use of atropine.

Now I do not consider that this was in any true sense of the term a case of sympathetic ophthalmitis, although it presented the usual features of that disease, and I have no doubt would have ended in complete loss of vision had the source of the infection not been discovered and removed. I regard true sympathetic ophthalmitis as almost certainly due to a definite specific micro-organism which has not yet been discovered. Hence wounds, especially those which have severe wounds of the eyeball not followed by a terrible disease, and in other cases we find it following a trivial injury. Such anomalies seem to me to depend on the absence or presence of a specific micro-organism.

Broadly speaking, septic accidents after cataract and other operations on the eyeball seem to me to be readily divisible into two groups. In the first I include suppurations, which mean the introduction of some pyogenic organisms at the time of operation or before the wound has healed.



Personally I have not seen a suppurative, much less a panophthalmitis, after cataract extraction since 1891, when I had the case which made me adopt the practice of testing the conjunctiva before operating.

The second group consists chiefly of cases of extraction followed by iritis or irido-cyclitis. These, no doubt, may be due to something introduced at the time of the operation, but I am strongly of opinion that for the most part they are due to such sources of infection as obtained in the case above described, and in addition to examining the conjunctiva I have come to the conclusion that no case of cataract extraction should be undertaken till the operator is satisfied that there is no acute septic condition of the mouth, of the auræ, of the nasal cavities, of the ethmoidal cells, and of the frontal and sphenoidal sinuses.

I have not much hope from drugs, except in the presence of syphilis, in the treatment of such cases. Atropine should certainly be used, but probably the best line of general treatment is biological, as by suitable serums and vaccines, together with the removal of the source of infection. I use atropine regularly, but not indiscriminately, for it is liable to do damage by interfering with drainage, and thus may cause the retention of toxins.

## "TETANISM" IN MENINGITIS.

BY

H. BATTY SHAW, M.D., F.R.C.P.,

PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL, AND TO THE BROMPTON HOSPITAL FOR DISEASES OF THE CHEST;

AND

CYRIL DEE SHAPLAND, M.R.C.S., L.R.C.P.,

LATE HOUSE-PHYSICIAN, UNIVERSITY COLLEGE HOSPITAL.

The following case contains much that is of interest, especially from the point of view of diagnosis.

E. P., a married man, aged 37, was a mattress manufacturer, a business which brought him into contact with feathers. Although feeling far from well for a week or so at the end of October before coming to London from his place of business in the country, severe illness only commenced in London on November 1st, 1922, with sharp pain in the left side of the chest, and a shivering attack. Dr. Charles Dixon of Acton attended him and found him looking very ill and suffering from left-sided pneumonia; the fever persisted for six days, a pseudo-crisis occurring on the fourth day, the true crisis on the sixth. On November 4th, as the pulse was so weak, the patient had been given three separate hypodermic injections of 1.60 grain of strychnine sulphate; on November 5th two such injections, and on November 6th one.

From the patient's temperature reme . . . his pulse was 70 to 80, and 15th he was seized with acute pain in the right side of the abdomen, evidently due to colitis, for he passed slime and membranous material shortly afterwards for twenty-four hours. On the following three days his temperature rose to a maximum of 101°. On the morning of Sunday, November 19th, he complained of stiffness of the jaw and neck, which he attributed to sitting in a draught. The next day, however, the spasm of the neck and jaw muscles was much more marked, and, as tetanus was suspected, he was admitted to University College Hospital (November 20th).

When seen at 2.15 p.m. on that day his condition was grave. The temperature was 97°, pulse 164, and respirations 26. He lay on his back in bed with his neck held rigid; the angles of the mouth were drawn outwards, and his face presented the typical risus sardonicus; the masseters were in a condition of tonic spasm, producing absolute lockjaw; the accessible muscles of the neck were rigid, and the recti abdominis were in such a state of tonic contraction that a remarkable "statuesque" appearance was given to the anterior abdominal wall. The musculatures of the upper and lower extremities were not affected. He was quite conscious, and the reflexes were normal; although unable to speak, he conversed quite rationally by means of "hand" signs. At 5 p.m. lumbar puncture was performed, and 10 c.cm. of perfectly clear fluid was withdrawn, following which 6.5 c.cm. of a sterile 25 per cent. solution of magnesium sulphate were injected intrathecally. Examination of the fluid revealed no abnormalities microscopically, nor was any growth obtained on culture.

As it was impossible to feed the patient by the mouth a nasal catheter was passed at 5.30 p.m., but in spite of the fact that 14 grain of morphine and 1.120 grain of atropine had been given an hour previously, a violent spasm was produced directly some milk was given by this method, and was repeated at a second attempt.

Between 12 noon and 12 midnight the patient received 9.500 units of antitetanic serum subcutaneously. When seen at midnight (November 20th-21st) his jaw was partially relaxed, he was sweating profusely, the axillary temperature had risen to 104.3°, and the pulse to 130. He was kept under morphine during the night, but in spite of this the spasms of the neck and facial

muscles became more severe, and he died in a sharp spasm at 8.45 a.m. on November 21st.

The autopsy was delayed until thirty-three hours after death, because, despite the fact that there was no trace of any wound or abrasion, it was considered advisable to report the case to the coroner as one of tetanus. The left lower lobe was intensely congested and showed signs of delayed resolution of the former pneumonia; there was a small patch of fibrinous pleurisy at the right base posteriorly; elsewhere there were signs of broncho-pneumonia. The arachnoid and pia mater looked more opaque than normal, and were adherent to the dura-mater; along the lines of the cortical vessels was a greenish-yellow exudate; microscopical examination showed the presence of an intense infiltration of the meninges with polymorphonuclear leucocytes. A streptococcus was grown from the meninges, and also from the heart blood. There were no other *post-mortem* findings of note; the stools yielded no signs of the tetanus bacillus, nor was this organism discoverable in the meninges, lungs, or colon.

This case can be viewed from many different clinical points of view.

1. The case might have been one of meningitis, against which were the facts that the spinal fluid was normal; the patient was perfectly rational and conscious, and did not complain of headache or photophobia; there was no vomiting, nor were there any ocular palsies.

2. The tonic contractures might have been due to the effect of strychnine injected during the pneumonia.

3. The case might have been thought to be one of tetanus, and that the infection had taken place at the time of hypodermic medication; or one of so-called visceral tetanus, which is said to occur in patients who present no sign of external wound or abrasion.

With regard to the first possibility, at no moment did it occur to us that the patient could be suffering from any form of meningitis, or even of meningism, nor are we aware of any systematic account of tetanus, except one, in which meningitis is put forward as a condition to be diagnosed from tetanus. The late Sir G. Sims Woodhead, in vol. i of Allbutt and Rolleston's *System of Medicine*, stated that basal meningitis may sometimes be mistaken for tetanus. But had we thought that spinal meningitis might be present the negative findings of the spinal fluid excluded this, and the complete absence of cerebral symptoms excluded the cerebral form of meningitis. So far as we can find in the literature there is no description which says that the tetanus bacillus may produce meningitis, nor do we know of any observation which could give information as to the effects produced upon the meninges when intrathecal medication with magnesium sulphate is practised.

Mr. C. J. Fuller, clinical clerk, fortunately called to mind the details of a case which was similar to the present one. It was reported by Dr. L. S. Fry in the *British Medical Journal* of January 14th, 1922 (p. 56), as one of meningitis simulating tetanus. The case was under the care of Dr. W. Collier in the Radcliffe Infirmary, Oxford. In correction of the report by Dr. Fry, Dr. W. T. Collier informs us that a few organisms were found in the meningeal pus—including a very small Gram-negative bacillus and Gram-positive diplococci, and on cultivation a Gram-positive diplococcus grew; smears from the vesiculae revealed no pus cells or gonococci, nor were gonococci found in the meningeal exudate.

It is thus clear that meningitis may provoke tonic spasm of the facial muscles, producing risus sardonicus, of the muscles of the neck and of the abdominal wall; that the spasm may be constant, lasting for hours and even days; and that the spasm may become increased by irritation such as is produced by nasal feeding, etc., the patient remaining conscious throughout the illness. Such features have been held in the past to constitute a clinical picture of undoubted tetanus; this view must be abandoned. It appears to us that no reliance can be placed upon an exclusive clinical picture of tetanus, because the disease may be accurately imitated by meningitis. It is very convenient to speak of the clinical condition . . . . .cribe those cases which, though close . . . . .are shown to be quite free from any . . . . .inges. As a result of the experience gained by a study of Dr. W. Collier's case and our own it would seem advisable to coin an expression—"tetanism"—to fix the identity of those clinical conditions which simulate the very special form of toxæmia produced by the growth of *Bacillus tetani* at some spot remote from the central system, and which may be dependent upon meningitis developed as a result of infection of the central nervous system by organisms quite different from *B. tetani*.



## DIAPHRAGMATIC HERNIA OF THE ENTIRE STOMACH.

BY

J. GRANT ANDREW, M.B., C.M., F.R.F.P.S.G.,

DOCKENMOUTH;

FORMERLY VISITING SURGEON TO THE VICTORIA INFIRMARY AND VISITING SURGEON, BELLAHOUNSTON HOSPITAL, GLASGOW.

In the *British Journal of Surgery* for July, 1921, there is published a very full and interesting communication on injuries of the diaphragm, with special reference to abdomino-thoracic wounds, by C. W. Gordon Bryan, of St. Mary's Hospital, London. In this article all that has been written on the subject of diaphragmatic hernia has been reviewed, including a case of diaphragmatic hernia of the entire stomach and great omentum published by me in the *BRITISH MEDICAL JOURNAL*, 1919, ii, 412.

The following case is worthy of being put on record, as it presents some features differing from the cases already published:

On May 17th, 1921, Private R. P. was admitted to Bellahouston Hospital, Glasgow, under my care. He was wounded on September 2nd, 1918, in the left lower chest wall by a portion of an explosive shell which penetrated both the chest and the abdomen. At the casualty clearing station the foreign body was removed, and he was told that the spleen was so severely damaged that it had to be excised. He was discharged from the army on May 31st, 1919, with the wounds completely healed. He worked for nine months thereafter, but had to cease work on account of increasing weakness and of pain after food followed by vomiting. During the following year he was treated for gastritis.

On admission to the hospital he complained of pain in the epigastrium immediately after taking food of any kind, liquid or semi-liquid, and of vomiting of the food fifteen to thirty minutes after. He stated that he had vomited everything that he had taken during the last three weeks before admission, and that the vomiting had relieved the pain. His general condition was bad; he was very emaciated and exhausted, and weighed only 6 st. 7 lb. His face was earthy in colour, his cheeks were sunken, and the tongue was coated and dry. There was a healed indrawn scar in the lower left lateral chest wall, and the appearance as if a portion of the ribs had been removed. He suffered also from cough and had a muco-purulent expectoration. The percussion note was dull at both bases, though slightly tympanitic at the left base. Respiratory murmur, vocal resonance, and vocal fremitus were diminished at the right base and completely absent at the left base. Crepitation was audible at both apices. The abdomen was scaphoid in shape, and rigidity of the abdominal wall made palpation difficult. The stomach outline was impossible to make out by percussion. Pain, tenderness, and rigidity were most marked in the left hypochondriac region. As he vomited everything, even diluted milk, a few minutes after swallowing—the recumbent position made no difference—he was fed by the rectum. Nothing was given by the mouth. His pain lessened, the vomiting ceased, and his general condition slightly improved.

On May 27th, 1921, the abdomen was opened by a paramedian incision above the umbilicus. The entire stomach was found to have disappeared through a hole in the diaphragm; the cardiac and pyloric ends of the stomach met at the opening. The cardiac end appeared pouched as if the liquid nourishment had lodged there before its expulsion. The spleen was absent. The left rectus muscle had to be divided for better exposure. The stomach, which was adherent to the edges of the opening, was separated with some difficulty and drawn back into the abdominal cavity. The walls of the stomach were greatly atrophied, but bore no evidence of having been wounded; no cicatrization was visible on the serous coat. The gap in the diaphragm measured  $2\frac{1}{2}$  by  $2\frac{1}{2}$  inches, and was situated between the fibres arising from the left external and internal arcuate ligaments, and extended up to the left leaflet of the central tendon. The edges of the gap were firm, hard, and almost tendinous in character. As he was very collapsed, no attempt was made at this operation to close the opening in the diaphragm. The pleural cavity was lightly packed with flavine gauze and the ends of the packing were brought out at the upper part of the abdominal wound. As the defect in the diaphragm was closed by the packing the stomach could not for the present find its way back to the pleural cavity. The abdominal wounds were closed by through-and-through stitches. After a few days of liquid diet he was put on light solid food and relished everything he got. He had no discomfort after food and the cough became less troublesome.

It was decided (June 10th, 1921) to make an attempt to close the opening in the diaphragm from the thoracic side. An osteoplastic flap was reflected upwards, dividing the sixth, seventh, and eighth ribs in two places. This flap was temporarily stitched backward on to the thoracic wall and gave a very good exposure of the pleural cavity with its packing. The gauze was removed and the cavity disinfected. Two flaps of thickened pleura were then dissected from the undamaged portion of the diaphragm and reflected over the gap, completely closing the opening. Though the lung was collapsed it was seen to inflate partially during deep inspiration, and we decided to employ deep breathing exercises as soon as it was practicable. The osteoplastic flap was replaced in position, the periosteum of the opposing ribs stitched together, and the wound closed except for a few strips of gutta-percha tissue

for drainage. He stood the operation very well. His convalescence was uninterrupted. Both wounds were completely healed at the end of three months. The note at the base of the left lung had become slightly resonant in tone as if some expansion of the lung had occurred.

I wrote to him in December, 1922, and he answered that he was quite well except that he could not digest heavy food, and that his weight was 8 st. 2 lb.

Almost all the chronic cases published have an insidious onset. This man was wounded in September, 1918, and was operated on in May, 1921, two and a half years from the date of his wound. His symptoms were gradual in onset, probably becoming worse as more and more of the stomach passed into the pleural cavity. As in my previous case, he was treated for gastritis and the condition was not recognized until his admission to hospital. The situation of the wound and the experience gained in my former case led me to think of diaphragmatic hernia as a possible diagnosis. He was too ill to be submitted to a ray examination and, moreover, would have vomited the barium meal. His general symptoms were similar to those published in other cases—pain immediately after food or drink, and relieved almost at once by vomiting, followed naturally by extreme emaciation, anaemia, and constipation. The intestines in this case were empty and their walls greatly atrophied.

To have attempted reduction of the hernia and repair of the defect in the diaphragm at the same sitting would have been to court disaster. The abdominal route of exposure at the first operation enabled us more readily to free the stomach from its attachments to the opening in the diaphragm and to examine its condition. In my former case I closed the opening in the diaphragm from the abdominal side; in the present case this would have been a matter of great difficulty. If the case be chronic and the operation of reduction of the hernia and closure of the opening can be done at the same time the thoracic route of approach has many advantages. The thoracic route is well spoken of in the article by Bryan already referred to.

I thank the Ministry of Pensions for permission to publish the case and Dr. William Cunningham, now of Monkseaton, Northumberland, for his able assistance at both operations.

## HYDATID CYSTS OF LIVER

ASSOCIATED WITH GALL STONES AND EMPYEMA OF GALL BLADDER AND PLEURA: RECOVERY.

BY

MABEL L. RAMSAY, M.D., F.R.C.S. EDIN., D.P.H. CANTAB.,

AND

H. F. VELLACOTT, M.C., F.R.C.S.

THE case which is here reported is that of a lady who was first seen in April, 1910; she was then aged 43, and has remained more or less under medical care and treatment for the past twelve years.

## History.

When first seen she was suffering from a burning sensation shooting up to the throat and vomiting a fair quantity of acid fluid. In aspect she was a soft flabby-looking woman, and stated that she had never been very strong.

Examination showed some tenderness in the epigastrium and also in the right hypochondrium. A provisional diagnosis of gastric ulcer was made. Under dietetic and medicinal treatment the attack gradually subsided in nineteen days.

In August, 1911, she had a similar attack, this time vomiting blood. Under the same treatment the attack subsided in ten days. At this time she was also suffering from nervous symptoms attributable to climacteric changes, and required treatment until February, 1912.

In February, 1913, she had a third attack of pain, referred to the right side of the chest. Breathing was painful, but no evidence of pleurisy was found. In July, 1913, the uterus was curetted for menorrhagia. In May, 1914, she was treated for the fourth attack of pain and vomiting, which lasted a week. In June, 1916, she had a fifth attack, lasting fourteen days.

Between June, 1916, and June, 1919, she had repeated attacks of gastric pain and vomiting, each attack lasting ten to fourteen days. Thereafter she steadily improved in health, but always had to be careful of her diet for fear of so-called indigestion. At this period gall stones were suspected to be the cause of her repeated attacks of abdominal pain and vomiting. Examination of the abdomen always revealed the presence of marked tenderness in the epigastrium and some tenderness over the site of the gall bladder. On February 9th, 1922, during the night two urgent messages were received to attend this patient, who is now aged 55, but it was not possible to see her until 8.30 the next morning. On arrival at her



house she was found to be collapsed with severe abdominal pain, which, she said, began in the right hypochondriac region, radiating across the abdomen and up to the right shoulder-blade. She had had several loose motions and vomited several times, mostly a bile-stained fluid.

Examination showed marked tenderness at the level of the tenth rib on the right side, and palpation caused pain to be felt in the back. There was a sensation of a tumour in the region of the gall bladder, but this was somewhat indefinite owing to the thickness of fat of the abdominal wall. There was no jaundice; no tenderness over the appendix. The breath sounds over the chest were normal. Temperature 99°, pulse 100.

A provisional diagnosis was made of a distended gall bladder (probably mucocele) with passage of gall stones into the common duct. Operation was advised, but the patient decided to wait events for a day or so. She was therefore treated on February 11th and 12th with fomentations and bromides, with no relief to symptoms of pain. Temperature 98°, pulse 100.

On February 13th, finding she was not improving, and before agreeing to an operation, she desired a consultation, and accordingly was seen by Mr. H. F. Vellacott. He agreed with the diagnosis made and advised immediate operation. The patient now agreed to submit to operation and was removed to a nursing home.

#### First Operation.

The same day, at 4 p.m., an operation was performed, Mr. H. F. Vellacott assisting. Dr. Rosa Bale gave the anaesthetic, first inducing with chloroform, followed by ether. An incision was made splitting the right rectus. On opening the peritoneum a large distended gall bladder was exposed and found to be full of small calculi (135 were subsequently removed). The gall bladder was adherent to the colon, from which it was freed. No stones were found in the common duct. As some difficulty was experienced in removing some stones in the cystic duct the gall bladder was opened. On opening the gall bladder a number of stones were removed and at the same time the liquid purulent contents came away together with the whole lining of the gall bladder, which was gangrenous—in fact the examining finger went through the necrotic muscular and serous coats of the gall bladder. The gall bladder was then resected, the cystic artery being tied separately. The appendix was then sought for and removed. The stomach, which was very much distended, was examined for gastric ulcer, but none was found. The wound was stitched up, a tube and gauze drain being put down to the site of the stump of the cystic duct.

*Progress.*—The patient made a rapid recovery, and was digesting an ordinary diet at the end of a week. She left the nursing home at the end of four weeks, having had a normal temperature for three weeks. The only complication was a slight abscess, which healed up when some calgut came away. Whilst in the nursing home a report was received from the night nurse that the patient had had a rigor on the seventeenth day after her operation, and some vomiting; the temperature was 99°, pulse 100. Under treatment of hot drinks and a dose of aspirin the attack subsided, and it did not recur again. Not much notice was taken of this attack at the time, as the wound was healing well, and the general condition was otherwise quite good. It was regarded as of nervous origin. She left the nursing home on March 11th.

After being at home convalescing for three weeks, an urgent message was received on April 1st, seven weeks after the operation of cholecystectomy, because the patient had had a rigor, and also complained of excruciating pain in the right shoulder and neck; she was aching all over. Temperature 103°, pulse 110. Examination of the chest revealed nothing. The abdominal wound showed no tenderness. As influenza was in the house the attack was thought to be influenzal.

The next day the pain was in the left side of the chest. The following day the pain radiated down the right arm and right side of the neck (phrenic nerve pain). Examination of the chest revealed nothing.

On April 9th, examining the chest daily, it was noted that there was gradual diminution of breath sounds and increasing dullness up to the level of the seventh rib posteriorly. After the original rigor the temperature ranged from 99° to 99½°; the pulse, however, was very quick—110, 120, 140, at times, accompanied by profuse perspiration. A diagnosis of subphrenic abscess was made.

On April 11th Mr. Vellacott again saw the patient and he performed an exploratory puncture, first in the tenth intercostal space, and, nothing being found, then posteriorly near vertebra, and pus withdrawn—the first: syringful being pure pus and the second of a tomato colour. The patient's condition was very grave, and she was again removed to the nursing home.

On April 12th her condition rapidly became much worse and pain was very severe. She was gravely collapsed. Temperature 105°, pulse 120 to 133.

#### Second Operation.

Under gas and oxygen, given by Dr. Rosa Bale, Mr. Vellacott resected the tenth rib. After sewing the pleura to the diaphragm an incision was made into the liver. Large quantities of dark blood and clots escaped. The abscess was not at first found. Sinus forceps were pushed into a large abscess in the right lobe of the liver, and about three pints of pus were evacuated. A large drainage tube was put in. Examination of the pus revealed the presence of numerous cysts.

A diagnosis was made of hydatid cyst of liver, and Dr. Wordley, pathologist to the South Devon and East Cornwall Hospital, reported that he had found numerous hooklets.

*Progress.*—The patient was very critically ill for the next fortnight, but the tongue began to clean and appetite slowly came

back. On April 21st it was necessary to aspirate the right base, and about 8 ounces of serous fluid were withdrawn. The wound discharged large quantities of pus and fragments of cysts and cyst wall. It was treated by frequent irrigations of Dakin's fluid (two-hourly). Her general condition, however, was not satisfactory; she had an irregular temperature—102° to 103°—with a rapid pulse of 120 to 130, and a respiratory rate of 30 to 50. Dullness of lung increased and fluid was diagnosed as present up to the level of the sixth rib. Believing she was going to die, and wishing to be at home, she refused to remain in the nursing home, and was consequently removed by ambulance to her own home on May 3rd. That evening the temperature was 103°, pulse 126, respirations 40.

On May 4th she permitted an aspiration, and 40 ounces of purulent dark bile-stained fluid were removed. This gave some relief. Examination of the fluid by Dr. Wordley showed no hooklets to be present. She consented to be operated on again.

#### Third Operation.

On May 5th, under gas and oxygen administered by Dr. Rosa Bale, the third operation was performed, assisted by Mr. Vellacott. The eighth rib was resected and from the pleural cavity a few ounces of pus were drained. Considering her grave state she stood this operation very well. A large tube was left *in situ*. That evening the temperature fell to 97.6°, pulse 110, respirations 25.

From this date she began rapidly to improve and the temperature never rose again. The pleural sinus was healed six weeks later and the lung had recovered from its collapse. By June 14th she was able to be out of bed, and ten days later to go for a drive. The sinus in the liver is now reduced to about 1½ in. and admits a fine probe. Some pus still discharges at times, but it is lessening. She is able to perform some of her household duties and goes out for walks daily.

A large measure of the success attained in this case was due to the patient being given gas and oxygen (Boyle method) by Dr. Rosa Bale, which thereby reduced the severe shock of the last two operations. The original source of infection has not been ascertained.

## THE RADIATION OF PAIN IN LESIONS OF THE FALLOPIAN TUBE.

BY

MAURICE MARCUS, M.B., B.S. LOND.,

LATE HOUSE-PHYSICIAN, KING EDWARD VII HOSPITAL, CARDIFF.

THE physical signs of diseases of the Fallopian tube have been described with great minuteness, but less attention seems to have been paid to a description of the subjective symptoms, and particularly of the radiation of the pain which occurs in these conditions.

The pain arising from an affection of the tube is rarely distinguished from that due to involvement of the neighbouring parietal peritoneum. Thus, as symptoms of salpingitis, are mentioned pain and tenderness on pressure in the iliac fossa, in the mid-line in the hypogastrium, and also posteriorly in the loin—that is, the pain of salpingitis is confused with that due to the local peritonitis. But the Fallopian tube, like other hollow viscera, reacts to disease by pain which is referred to the skin over an area dependent upon the spinal segments from which it receives its innervation. From a consideration of the cutaneous hyperaesthesia in a case in which the tube was involved, Head<sup>1</sup> considered these to be the eleventh and twelfth dorsal and first lumbar segments. This view appears to admit of some modification, for in the cases described below of various lesions of the Fallopian tube the pain complained of was felt in an area wider than that governed by these three segments. It was felt in the loin, in the iliac fossa, and was said to pass down the anterior surface of the thigh to the knee. This distribution appears to be peculiar to the Fallopian tube, and its recognition may be of value in arriving at a topographical diagnosis.

*Case 1.*—A married woman, aged 21, complained for some time of pain "like a toothache" of great severity in the left iliac fossa. She suffered also at times from pain of slighter intensity round the umbilicus and in the right iliac fossa. At operation (by Dr. Tenison Collins) there was found a large left-sided hydrosalpinx and cystic ovary, and a long appendix.

The following cases show the typical radiation of pain down the thigh.

*Case 2.*—A married woman, aged 22, complained for a year of irregular menstruation, menorrhagia, metrorrhagia, and dysmenorrhoea. She suffered from pain in the right iliac fossa, which passed down the front of the thigh as far as the knee (information volunteered); occasionally pain was felt also in the small of the back. The pain was very severe, shooting in character, and sometimes lasted for the whole day. Pain was also felt in the



left iliac fossa, but this was not so severe nor did it radiate elsewhere. She had had two miscarriages. On examination (by Dr. Tenison Collins) the uterus was found to be anteverted, the right tube was very much thickened and extremely tender on palpation, and there was shortening of the right broad ligament. The left tube was thickened, but not to such a degree, nor was it so tender.

**Case 3.**—A married woman, aged 40, suffered from abdominal pain for nineteen years. A week before admission to hospital she complained of very severe pain which started in the right iliac fossa and passed down the right thigh to the knee. She was tender over the whole of the lower abdomen. At operation (by Professor Ewen Macleann) free purulent fluid was found. The right tube was thickened and distended with pus. There was a condition of general inflammation in the pelvis, involving the appendix and the left tube, which was secondary to the right tube.

**Case 4.**—A married woman, aged 45, multipara, had her last menstrual period six weeks previous to admission. Two weeks before admission to hospital, for one day, she passed blood, pale in colour, per vaginam. Four days after this, while at stool, she complained of a sudden agonizing pain in the left iliac fossa, and a little way down the left thigh. Below this point, down to the knee, she felt a sense of numbness. On the following day she passed blood and clots from the vagina. At operation (by Dr. Tenison Collins) a ruptured left tubal gestation was found.

**Case 5.**—A female patient, aged 50, admitted to hospital as an emergency case, complained of severe pain in the hypogastrium, in both iliac fossae, and down the anterior surface of both thighs, the pain being most severe in the left iliac fossa. At operation (by Mr. H. Geary Grant) a bilateral salpingitis and diverticulitis was found. The left tube was the more inflamed, and had given rise to the diverticulitis (sigmoiditis).

**Case 6.**—A married woman, aged 26, complained of dysmenorrhoea, metrorrhagia, and leucorrhoea for the last three months. Nine days before admission to hospital she felt a sudden pain low down in the right iliac fossa, passing down the right thigh on the anterior and outer side of the limb to the knee. She complained of a burning pain on micturition since the onset of the pain; she vomited for the first time five days after the onset of the attack. On examination, a tender fluctuating lump was felt in Douglas's pouch on the right side. At operation (by Dr. Tenison Collins) a right pyosalpinx was found, much pus escaping; the left tube was inflamed.

In spite of the difference in character of the lesions—namely, acute salpingitis, pyosalpinx, and ruptured tubal gestation—the pain complained of in these cases had as a common feature its origin in the iliac fossa and radiation down the anterior aspect of the thigh to the knee. The uniformity of this distribution is against the hypothesis of an "overflow" of the stimulus from the tube through the last dorsal and first lumbar spinal segments to the lower lumbar segments; it suggests rather that the Fallopian tube is represented in the spinal cord by the eleventh and twelfth dorsal and first, second, and third lumbar segments, the first three lumbar posterior roots innervating the area of the skin from the groin to the knee, on the anterior aspect of the thigh.

#### Summary.

Lesions of the Fallopian tube cause pain which, arising in the iliac fossa, is referred down the front of the thigh to the knee. This distribution of pain is significant of an involvement of the tube, and appears to be of diagnostic value. It suggests, further, that the tube is represented in the spinal cord by the eleventh and twelfth dorsal and the first three lumbar segments.

In a note contributed to the *Lancet* the above observations were used to establish a differential diagnosis between appendicitis and inflammation of the right tube, the difference being that the pain of appendicitis starts usually round the umbilicus, and, felt later in the right iliac fossa, does not pass below the groin.

I wish to thank Dr. Tenison Collins, Professor Ewen Macleann, and Mr. H. Geary Grant for permission to publish these cases, and Dr. Alexander Hastings for allowing me to use his notes.

It was decided (June 1922) to open the diaphragm, vol. 16, Part 1, pp. 89, 101. 2 Marcus, M.: opening in the diaphragm, vol. 16, Part 1, pp. 89, 101. 2 Marcus, M.: flap was reflected upwards, ribs in two places. This flap was reflected on to the thoracic wall and gauze of Natural Science and pleural cavity with its packing. The gauze was cut 5th to 7th, cavity disinfected. Two flaps of thickened pleura were dissected from the undamaged portion of the diaphragm and reflected over the gap, completely closing the opening. Though the lung was collapsed it was seen to inflate partially during deep inspiration, and we decided to employ deep breathing exercises as soon as it was practicable. The osteoplastic flap was replaced in position, the periosteum of the opposing ribs stitched together and the wound closed except for a few strips of

## A CASE OF RITTER'S DISEASE.

BY

RONALD McD. CAIRNS, M.B., Ch.B.,

SENIOR HOUSE-PHYSICIAN, ROYAL INFIRMARY, LEICESTER.

The following case of an exceedingly rare disease seems of sufficient interest to warrant its being placed on record:

The mother, a primipara, had always enjoyed good health and presented no abnormality throughout her pregnancy. The child, a male, was born after a somewhat difficult labour, which demanded instrumental interference, but at birth the baby appeared perfectly normal and did not exhibit any cutaneous abrasions, and incidentally the skin, in general, was quite healthy.

The child thrived, but on the seventh day my attention was attracted by a flaccid bulla, about two inches in diameter, resembling the lesion in pemphigus foliaceus. It had arisen during the night, was situated in the left pectoral region, and but for the fact that the surrounding skin did not exhibit any local reaction it looked suspiciously like the blister from a scald, but no history of exposure to heat could be obtained. The temperature was normal and there were no constitutional symptoms.

On the following day the lesions had spread; they involved practically all the left pectoral area and extended over the left shoulder. The bulla had burst, exposing a hyperemic dermis and large pieces of the affected epidermis were peeling off. Under the remaining raised edges of the skin there were small collections of serous effusion, showing a very slight degree of turbidity.

There was still further extension on the ninth day, the method of spread consisting of the actual increase in size of the existing affected areas and the formation of new bullae. The left upper arm, practically as far as the elbow, was now involved, but between the lesions patches of comparatively normal skin still showed. The child was irritable, crying almost continuously, refused both breast and artificial feeding, and was obviously wasting, but the temperature was still normal and the motions regular and normal.

On the tenth day hyperemia of the skin over the nape of the neck and the occiput appeared, and by evening a bulla had appeared in this position. This formed a marked contrast to the primary blisters, which had shown no initial reddening, nor a reaction areola. The new bladder-like swelling contained seropurulent effusion and the fluid in the other lesions was assuming this character also. The right side of the chest and right upper arm became affected on this day. The elbows were practically clear, but the hands, particularly the dorsal aspects, and the wrists showed the typical bullae. There were, in addition, a few reddened patches on the cheeks and brow, one in the neighbourhood of the umbilicus, while below the knees the affected skin was being shed in large moist flakes. Almost all the surface of the back had desquamated, and in the arm in particular, but to a certain extent in all the larger lesions, the exposed dermis was acutely inflamed, yet exhibiting no signs of necrosis, being quite dry in the centre, with no appearance of any exudate.

On the following day, the eleventh, and the fourth day from the onset of the disease, the child died. The affected parts had still further progressed and the child was very much wasted, death evidently being due to marasmus. Even up to the end there was no fever, but on the last day the temperature was subnormal.

The bowels were regular throughout and no internal complication arose. Ung. hydrarg. ammon., caron oil, ung. sulph., arsenic, and soothing baths were all tried, but proved equally useless in attempts to arrest the progress of the disease. The mother made an uninterrupted recovery.

This disease has been variously described as Ritter's disease, dermatitis exfoliativa neonatorum, and pemphigus neonatorum, and Ritter von Rittersheim, Elliot, and others have described this non-contagious affection. In founding institutions on the Continent it is comparatively common, nearly 300 cases occurring in the founding asylum at Prague during a period of ten years, but down to 1900 no cases had been recorded in this country. Recently, however, I believe, one or two isolated cases have been noted.

The etiology is most obscure. Some regard it as a form of pemphigus foliaceus, some consider it impetiginous, others attribute it to some abnormal condition of the maternal milk, while still others look upon it as an exaggeration of the natural exfoliation of the newly born. Sepsis has never been found to be responsible. It usually occurs between the first and third weeks of life, but occasionally the onset is delayed until a month or even five weeks after birth.

The condition presents such a typical and unusual picture that little difficulty is experienced in diagnosis. Treatment, beyond the protection of the blebs by powders and the prevention of secondary infection by suitable dressings and soothing baths, appears to be unavailing.

In Ritter von Rittersheim's series the mortality was practically 50 per cent., but some place it at an even higher rate. The sporadic cases certainly appear to be more fatal.

I much regret my inability to obtain a post-mortem examination and a bacteriological report on the exudate exuded from the unbroken bullae.



## The FitzPatrick Lectures ON THE POST-HIPPOCRATIC SCHOOLS OF MEDICINE.

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS  
OF LONDON,

BY  
R. O. NOON, M.D., F.R.C.P.

[Abstract.]

(Concluded from page 145.)

### THE METHODISTS.

THE school of the Methodists seems in a sense to occupy an intermediate position between the opposing schools of the Dogmatists and Empirics. This name of Methodist is doubtless more familiar to English ears as the sobriquet jestingly given by a Christ Church undergraduate to the small group of friends who gathered round the brothers Wesley in Oxford in the middle of the eighteenth century on account of their regular manner of life and behaviour. The name as originally given had of course reference to intellectual and not moral qualities. In any case it was not very appropriate, though the founders of the school did perhaps commit themselves to a more definite and precise theory of disease than either the Dogmatists or Empirics.

This school reduced medicine to very simple terms, which may remind us in some ways of homeopathy, for in therapeutics they adopted the principle of "contraria contrariis curantur," which is analogous though antagonistic to the system of Hahnemann. According to the Methodists the body consisted of atoms and pores, a doctrine derived from Epicurus. To the atoms they paid but little attention, concentrating themselves on the pores. Now these pores were said to be either in a state of too great contraction or too great relaxation.

The foundation of the school of the Methodists synchronized with the migration of medicine from Alexandria to Rome as the centre of intellectual activity, and the entry of Greek medicine into Rome had been accomplished by the well known and popular physician Asclepiades of Bithynia, who had adopted the doctrines of atomism from Democritus and Epicurus. Themison of Laodicea (fl. 50 B.C.), a pupil of this Asclepiades, founded the school of Methodism. Though, like his master, he followed the doctrines of atomism, unlike Asclepiades he concentrated his attention entirely on the pores, paying hardly any heed to the atoms. For the Methodist generally, acute disease was a state of contraction (status strictus), while a chronic disease was a state of relaxation (status laxus). As regards therapeutics, there were for the Methodists only two indications: (1) to relax the pores when there was a constriction, (2) to constrict them when there was a relaxation. What could be simpler? Among the therapeutic agents which were thought to have the desired effects were:

#### Relaxing Agents.

1. Venesection; but they practised this with caution, because "bleeding" tended to draw off the finer, the more vital atoms first, leaving the coarser ones behind.
2. Cupping; of this they made frequent use—sometimes they would cover nearly the whole body with cupping glasses, as they paid no attention to the part affected.
3. Softening plasters.
4. Warm drinks.
5. Diaphoretics.
6. Warm air.
7. Sleep.
8. Exercise carried to the point of fatigue.

#### Constricting Agents or Astringents.

1. Darkness.
2. Cool air.
3. Cold water and acid drinks.
4. Decoction of quinces.
5. Powdered chalk, lead plaster.
6. V.

During the first three days of an illness they enjoined strict abstinence; then they administered food only every other day. Remedies were not given till the third day. During the days of abstinence the patients only washed their mouths with water and drank a little; apart from this they were covered with plasters and wool steeped in warm oil if the disease was one in which the pores were contracted, and in

cold oil if the disease was one in which the pores were relaxed.

By means of these summary methods of diagnosis and cure the Methodists thought they could dispense with all further research. They made no inquiry into causes whether remote or proximate, for, from the moment the causes had produced their effect—that is to say, from the moment the disease was formed—it was this, they said, which one had to cure. It was from the disease itself, they said, its nature, character, and cause, that one had to find the indications for treatment, and not from anterior circumstances, which had no influence; and the nature of the disease consisted in having the pores too much constricted or too much relaxed.

The best known member of this school, and by some regarded as the real founder of it, though an absolute charlatan, was undoubtedly Thessalus of Tralles. He was the son of a weaver, which occupation he followed in his youth, and had enjoyed none of the elements of a liberal education; from this resulted the pride of ignorance and scorn for the observations of his predecessors. He considered that medicine could be learnt in six months. He reversed the famous aphorism of Hippocrates that "Life is short and Art is long" by saying that "Art was short and Life was long"! On a monument in the Appian Way he styled himself "Conqueror of Physicians," and he wrote to the Emperor Nero saying that his medical predecessors had contributed nothing to science—the kind of statement which Nero might well have appreciated. So little did he know of Greek that he accused Hippocrates of causing the death of his patients by overfeeding them.

"I have," said Thessalus, "founded a new sect, which is the only true one, being obliged to do so because none of the physicians who have preceded me have found out anything useful for the preservation of health nor for banishing diseases, and Hippocrates himself has uttered many harmful maxims on this subject."

By dint of great flattery Thessalus insinuated himself into the houses of the great. According to Galen, who was, however, the bitter enemy of the Methodist school, the manners of Thessalus were submissive and slavish, very different from those of the ancient physicians, the descendants of Aesculapius, who gave commands to their patients like a general to his soldiers or a prince to his subjects. Thessalus, on the contrary, obeyed his patients like a slave his master: if his patients wished to bathe he let them do so; if they wanted to take ice or snow he gave it them. Naturally Thessalus attracted a large number of pupils, mostly from the artisan class, who were anxious to become doctors in six months; he himself wrote five large volumes which would require almost that length of time to read through.

Of a far higher calibre was Soranus of Ephesus, who may be regarded as one of the chief ornaments of the Methodist school. He came to Rome in the time of Trajan and Hadrian (fl. A.D. 93-138). He was the first of the school to offer a plausible reason for the rejection of the use of purgatives—namely, that they got rid indiscriminately of humours which were wholesome and those which were vicious. He always used venesection in pleurisy, because it clearly arose from a status strictus. He wrote a book on gynaecology which showed that he had a wide knowledge of anatomy, a subject as a rule despised by the Methodist school, and his ideas on anatomy seemed to have been based on human and not merely on animal dissection, as had been the case with most of his predecessors. The great theologian Tertullian spoke of him as "methodicae medicinae instructissimus," and his reputation lasted well on into the Middle Ages.

We should know but little of the Methodist school were it not for the writings of Caelius Aurelianus, who lived in the fifth century; he was a native of Sicca, in Numidia, but practised and taught in Rome. Like most other members of the Methodist school his education had been very imperfect, and this perhaps explains the barbarism of his style and his complete ignorance of the Greek language. On the other hand, no ancient author has more clearly set forth the diagnosis of each disease, and it was a fortunate circumstance that in the Middle Ages the monks selected him before all others for their guidance in the treatment of disease.

As examples of acute diseases which depend on constriction, Caelius Aurelianus gives us (1) madness, (2) lethargy, which involved a stronger constriction than madness, (3) catalepsy, (4) pleurisy and pneumonia, (5) tumours. Chronic diseases depending on constriction were (1) headache, (2) giddiness, (3) asthma, (4) epilepsy, (5) jaundice, (6) obesity, (7) suppression of the catamenia, (8) melancholy, (9) paralysis, (10) phthisis, (11) colic.



As an example of acute disease caused by relaxation he gives cholera, and of chronic diseases haemoptysis and diarrhoea, excess of the catamenia, and wasting.

Since these two general states of the body were sufficient to guide the physician in the knowledge and treatment of disease all etiology became superfluous, for there is no object in knowing the cause of constriction, for instance, so long as we are able to cure it.

The Methodist school certainly possessed the merit of endeavouring to cure disease by the simplest measures, such as air and food. In order to make use of air for the purpose of relaxing the pores they put their patients into rooms which were very light, moderately warm, and large. When, on the other hand, they wanted to have the constricting effect of air they placed their patients in rooms which were dimly lighted and very cool. They also paid great attention to posture in bed, and considered the sort of covering patients ought to have, whether they should sleep on a mattress or on a bed of feathers, whether the bed should be large or small, and its relation to the windows. In a word, they were most particular about all such things as other physicians passed over more lightly.

The school of the Methodists was astonishingly successful, at least in gaining students, partly, no doubt, because their system could be acquired in a very short time; in fact, it demanded the minimum amount of knowledge, and so it satisfied the natural appetite of the human mind for generalizations, which the Empirical school had done nothing to supply. Finally, it occupied an intermediate position between Dogmatism and Empiricism, appearing to unite the advantages of both schools without the inconvenience of either.

The philosophy which had most influence upon the school of the Methodists, and which in fact formed their intellectual background, was that of Epicurus. He was born in the island of Samos about 342 B.C., some two hundred years later than Pythagoras. At the age of 18 he went to Athens and began life there as a teacher of grammar, until his attention was drawn to philosophy, owing, it is said, to the inability of his teachers to explain what Hesiod meant by chaos. At the age of 35 he purchased for 80 minae his famous garden in Athens, and there he taught for the remainder of his life, till his death at the age of 72. Epicurus was one of the most prolific of Greek writers, and is said to have written some three hundred volumes. He prided himself on being self-taught, and boasted that he was entirely independent of all his predecessors, yet it is quite obvious that he was largely indebted to Aristippus and the Cyrenaic school of pleasure on the one hand and the atomic theories of Democritus on the other. He took no part in political affairs, his maxim being "to live secluded." The main purpose of the philosophy of Epicurus was the moral life; thus, physics were regarded as merely ancillary to ethics, which were the beginning and end of the Epicurean teaching. Thus he regarded philosophy as part of the daily business of speech and thought with a view to securing a happy life. According to Epicurus it was not necessary to have read deeply or thought profoundly; literature and education were often more of a hindrance than otherwise.

The popular conception of Epicureanism as encouraging an unrestrained luxury, and teaching unwise facts, and is due to or to show us the kind of life advocated by Epicurus. In writing to a friend he says: "For myself I can be pleased with bread and water, yet send me a little cheese in order that when I want to be extravagant I may be." He is also responsible for the saying, "It is more blessed to give than to receive." To Epicurus the world presented itself as a mechanism, and within the limits of this mechanism it was the business of man to arrange his life as well as he could, but it was not necessary for him to know more of this mechanism than that on which his own weal or woe depended. So long as one realized that everything had natural causes it mattered little what the causes were. He adopted the atomic theory of Democritus because this harmonized best with his ethical individualism.

Although the doctrines of Epicurus never took so great a hold upon the ancient world as Stoicism, yet his immediate disciples adopted and followed his teaching with scrupulous conscientiousness, and they became devoted to their master in a way which has been hardly equalled in ancient or modern times. They are said to have committed his works to memory; they had his portrait engraved upon rings and

drinking vessels, and they celebrated his birthday every year. Athens honoured him with bronze statues, and the number of his pupils and friends is said to have exceeded the population of whole cities.

It is well to remember that at the time when Epicurus was living at Athens the Grecian world had seen the downfall of Thebes, the exile of Demosthenes, and the shipwreck of the whole Hellenic State system. Political freedom having to a large extent disappeared, the philosophers endeavoured to establish an internal freedom based upon ethical principles and to maintain it in spite of outward oppression. It was this inward freedom which the Epicureans no less than the Stoics set themselves to supply.

It is not to be imagined that the average physician of the Methodical school busied himself much about the Epicurean or, indeed, any other philosophy; but he was none the less surrounded by it, as the ordinary man is enveloped in the atmosphere, about the weight and composition of which he is not concerned to inquire. What we have specially to note is that the Epicurean philosophy, by its close concentration on the moral life of man, together with its inadequate and most superficial way of dealing with physics, helped to promote the decidedly crude and superficial way of regarding disease which we have seen to be characteristic of the school of the Methodists.

### THE PNEUMATISTS.

Though in some ways the least influential and certainly the most short-lived of these post-Hippocratic schools of medicine, their very name has a certain fascination about it which draws one's thoughts to the schools of philosophy.

The Pneumatists may be regarded as an offshoot of the Dogmatists, who began to take on this name when the sect of the Methodists was at its zenith. Physicians who did not want to follow the Methodist school embraced that of Pneumatism so as to have solidly established principles which they might oppose to the Methodists. For, unlike the Methodists, the Pneumatists believed much in dialectic and regarded it as indispensable to the perfection of science. The name "Pneuma" was given by them to what they regarded as an active principle which was the determining factor of health and disease. Platonic theories had already laid the foundation of the doctrine of this aerial substance, but Aristotle gave the first clear idea of it when he described the way in which the pneuma is introduced into the body and the circulatory system.

The doctrine was still further developed by the Stoics, and they exercised a great influence over the Pneumatists and so upon the further evolution of medicine. They were of opinion that the aerial substance passed from the lungs into the heart and arteries and was then disseminated throughout the body. The Pneumatists maintained their theories with the greatest enthusiasm and pertinacity; Galen says of them that they would rather have betrayed their country than abandoned their doctrines.

The founder of this school was Athenaeus of Attalia in Cilicia, who practised in Rome in the reign of Claudius, about the middle of the first century. In his teaching Athenaeus maintained that the pneuma was the World Soul, the living Self-consciousness, and who was also the creator and framer of all matter. Its unhindered movement was in the last resort the cause of all physiological and pathological happenings. As a Stoic Athenaeus adopted all the doctrines of the Peripatetic school, but he developed the theory of the elements more or less after the manner of the Methodists.

It was from this school that there emanated some curious teaching about the pulse at different ages; thus, in the newborn the two short syllables of a verse—a short systole and a short diastole; in older persons the pulse is like a trochee, while in still older people the pulse with a long systole and long diastole becomes like a spondee.

Far better known than Agathinus was his disciple Archigenes of Apamea, who practised medicine at Rome in the time of Trajan, and enjoyed among his contemporaries a great reputation which endured for several generations. Like the Stoics Archigenes placed the seat of the soul in the heart, which not unnaturally made the explanation of the sensory nervous system a matter of considerable difficulty for him. His doctrine of the pulse was famous in antiquity, and he described eight different kinds of pulse according to its size, force, velocity, frequency, fullness, regularity, equality,



and rhythm. Each of these species was divided into several varieties.

Archigenes made use of a large number of drugs, mostly of a mild variety, preferring mild laxatives to drastic purgatives. At the height of the disease he had recourse to warm fomentations, especially to sponges soaked in warm water, in order to lubricate the pores and favour coction. He gives an excellent account of dysentery, which he attributed to ulceration in the large intestine, and he prescribed for it preparations of opium and astringents. He further described the signs for recognizing an abscess of the liver, and explained its formation and termination. With regard to insanity, Archigenes, like most Greek physicians, showed remarkable enlightenment. Seeing the priests of Cybele scampering and flagellating, and cutting themselves after their manner, he said, "They are insane; do not leave them to those bloody gods of the East; send them to me." His treatment of the maniac was to feed him up and soothe him with music. On the other hand, so little consistent is the mind of man, he sometimes in his treatment had recourse to amulets and other methods of superstition.

Of the same school and about contemporary with Archigenes was Aretaeus of Cappadocia, to whom we are indebted for some of the best medical writings which have come down to us from antiquity. In all probability he flourished in the second half of the second century of our era and was contemporary with Galen. Unlike the Empirics, Methodists, and most other Pneumatists, he paid great attention to anatomy, and his knowledge in this department was far superior to that of his predecessors; thus he thought the lung was insensitive, made of some substance like wool, provided with a very small number of nerves, and entirely devoid of muscles. On the other hand, the pleura was endowed with a high degree of sensibility and was the seat of the pain in inflammation of the chest, when the patient experiences keen suffering. It was, he said, in consequence of the insensibility of the lung that phthisical patients retained so much hopefulness as they approached the end of their existence. He credited the heart with far greater pathological significance than any other author, and syncope, of which he gives an excellent description, he considered to be a cardiac affection.

Aretaeus in his dignity, integrity, and love of his art, was a true disciple of Hippocrates. He differed from Hippocrates in thinking that the physician should attend even cases of incurable disease, though he might be able to do nothing but express sympathy. Next to Hippocrates he was the best observer in antiquity, and seems himself to have seen nearly all the diseases of which he gives so clear and graphic a description. Like Hippocrates, too, he laid stress on individual differences of constitution and of climate and on the changes of the seasons. Like the rest of the Pneumatist school he often derived diseases and their symptoms from the temperature of the elements; among others, he found in cold and dryness the causes of old age and of death—indeed he made various chronic affections issue from the cold and damp. The liver he thought to be the organ assigned by Nature for the preparation of the blood, and, like the rest of the ancients, he made this viscus the seat of desire.

We have seen how the Dogmatists were influenced by Plato, the Empirical school by the Sceptics, the Methodists by the Epicureans, and now, finally, it was the most fashionable philosophy of the Roman world—namely, Stoicism—which exercised most influence over the school of the Pneumatists. The whole idea of the *Pneuma*, at least the elaboration of it, was, of course, Stoic in origin. No doubt the Hippocratic idea of innate heat was something of the same nature, and the same idea in later times may be found in the *Archæus* of Van Helmont, though that was perhaps a more mystical conception, and even indeed in the *élan vital* of Bergson. But the Stoics, like the Epicureans, were not primarily interested in physics or in theories about the *Cosmos*, nor did they have any high opinion of medicine, for their essential aim was to find some philosophic basis for the guidance of everyday life—how, in fact, life was to be lived rationally and nobly in the world; unlike the monastic ideal of the Middle Ages, which was rather how life was to be lived out of the world. Zeno, the founder of the Stoic school of philosophy, some three hundred years before the epoch we are now considering had endeavoured to discover for men a way of escape from fear and desire by adjusting their wills to everything which might befall them. "I am happy," he said, "when I do not want things to be any other than they are."

According to Zeno the world was governed by the same divine reason which dwells in the breast of each individual, and the universe, animated by this reason, was striving to realize values which the human reason would appreciate as good if it could but know the whole. Human reason coincided with the universal reason which governs nature, and this indeed, according to Zeno, was the source of the moral law. To establish a physical basis for his ethics Zeno went back to Heraclitus and believed that all individual things in the world are only oppositions of one and the same thing, and that there is but one law which governs the course of nature and ought to govern the actions of man. The ultimately real was regarded by the Stoics as corporeal, and spoken of as warm vapour or fire, for it is warmth which begets, enlivens, and moves all things.

The essential aim of the Stoic physics was to show that the power operating in the universe was rational; Zeno believed in a rational process controlling the world. When Zeno said, "God is body," he showed his repugnance to any teaching which would dissolve God into an abstract idea; it was the crude expression of an intense conviction that God was real, was indeed concrete. For the Stoics the universe was a living being, and we should therefore regard their doctrine as pantheistic rather than materialistic. Chrysippus, a successor of Zeno, was of opinion that without the study of physics it was not possible to distinguish between good and evil, yet, as a matter of fact, the Stoics did not really go very deeply into the question of physics and investigation of nature.

As we have seen in the case of the Epicureans, so too with the Stoics the free and purely scientific contemplation of the world which characterized the old Ionian philosophers had disappeared coincidentally with the loss of political freedom due to the rise of the Macedonian hegemony, and the chief value of philosophy was sought more and more in the refuge with which it provided men against the miseries of life. The concentration, then, of Stoicism upon conduct and the moral life is perhaps its chief title to fame. It cannot therefore be said that the Pneumatist school of medicine received any great stimulus to the investigation of nature from the Stoic philosophers, but what it did receive was a belief in a rational principle pervading nature—that, indeed, nature is governed by rational laws, to which it is the business of man to accommodate himself. Such a belief was undoubtedly a source of stability to the intellectual life of those physicians among the Pneumatists who unconsciously followed the Stoic teaching and raised them to a loftier mental standpoint than that occupied by the Empirics and Methodists.

In the long run the belief in reason can hardly fail to have a favourable influence on the progress of medicine, and therefore the Stoic philosophy offered this indirect help to medicine. But Stoicism, in ordinary parlance, calls up the vision of rather hard, unamiable people, indifferent to all outward things, careless alike of the major and minor aesthetics of life, and clad in an impenetrable carapace of spiritual pride. This picture of the Stoics has been drawn by all the world's satirists from Horace onwards. Yet it is not a true picture till we come to the later phases of Stoicism, when that philosophy was passing into the unpleasing eccentricities of the monastic ascetic. The earlier Stoics, with whom we are more concerned, busied themselves but little with physics and the structure of the external world, but they were not averse from a life of action, they maintained an ideal of civic virtue, and had not learnt to be indifferent to the welfare of the State, even though a somewhat abstract cosmopolitanism was teaching them to transcend the limits of nationality. The medical school of Pneumatists seems to me to have been exceptionally free from the taint of charlatanism and to have maintained an ethical standard distinctly above the average of the profession in their day. Is it unduly fanciful to imagine that the noble moral grandeur which characterized the great Stoics, such as Seneca, Marcus Aurelius, and Epictetus, may have instilled itself into the physicians of the Pneumatic school?

A CONGRESS of French-speaking neurologists and alienists will be held at Besançon in August under the presidency of Dr. Henri Colin. The subjects to be discussed will include psycho-analysis, crimes resulting from narcomania, and nervous trouble resulting from supernumerary ribs.

A SOCIETY has been organized at Copenhagen to endow Pasteur scholarships for Danish medical men who desire to take courses of study at the Paris Pasteur Institute or at similar institutions in other countries; Dr. S. P. L. Sorensen was elected president of the society.



## Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

## ACUTE OEDEMA OF THE CERVIX.

THE following case may be of interest in connexion with the report of the Edinburgh Obstetrical Society (BRITISH MEDICAL JOURNAL, January 6th, p. 18).

On December 4th, 1922, I was called to a young married woman aged 28 (her first child); she had been in labour for six hours. Examination showed a single pregnancy at full time in the left occipito-anterior position. On vaginal examination the os was dilated to the size of a five-shilling piece, and the membranes were bulging; the anterior lip of the cervix was swollen but was not lower than the posterior lip. One and a half hours afterwards the head was on the perineum, and the child (weighing 6½ lb.) was born without any difficulty twenty minutes later. As haemorrhage was profuse and continuous I endeavoured to express the placenta, when the large oedematous anterior lip of the cervix protruded. It was the size of a large orange, and instead of the placenta a large clot, as big as a foetal head, was expressed. As the haemorrhage still continued I removed the placenta manually without difficulty, when the haemorrhage ceased and the uterus contracted down. From the size of the anterior lip of the cervix I was surprised that there had been no arrest of the head.

The puerperium was slightly protracted but was uneventful; two weeks afterwards the anterior lip was still to be seen within the vulva, but four weeks from the date of birth it had receded, was patulous, and was about half an inch lower than the posterior lip. I notice that the reported cases are all multiparæ. This patient aborted two years previously at the tenth week; she was then in a weak and anaemic condition, but responded well to treatment. I had never previously seen the condition, and although recognizing it to be rare I was unaware that it was so rare as stated.

J. A. MCKINNON.

Ipswich.

## ERYSIPELAS OF THE MOUTH.

THE case of erysipelas of the fauces published in the JOURNAL of January 20th (p. 105) reminds me of a case I saw some years ago. The interesting point in it, apart from the comparative rarity of the condition, was the spread of the infection to the face by way of the Eustachian tubes.

The patient, Mrs. H., seven months pregnant, when seen was complaining of sore throat and swelling of the neck. On examining her throat I thought she was suffering from diphtheria; I also noticed that the fauces were more of a dusky red colour than usual. The report on the swab was, however, negative. In about three days' time both ears became affected with erysipelas, the infection evidently having spread from the throat by way of the Eustachian tubes. From the ears the infection gradually spread over the whole face, and was of so severe a nature that for eight days she was quite unable to open her eyes.

The patient made a good recovery and had a perfectly normal confinement at full term.

Kempston, Bedford.

GEORGE BUTTERS, M.B.

## FRACTURE OF THE NECK OF THE RADIUS.

FRACTURE of the neck of the radius is sufficiently uncommon to warrant the following record of a case.

On August 14th, 1922, a girl, aged 12 years, fell off a pony. The right upper extremity was pinned between her back and the ground. When seen on August 16th there was much pain and swelling. The elbow had been vigorously rubbed with some liniment. Crepitus was felt, but the site of fracture was uncertain. A skiagram showed a fracture of the neck of the radius, with slight ulnar displacement of the lower end of the upper fragment.

The limb was put on an internal angular splint in semi-pronation. On August 23rd passive movements of flexion and extension were commenced. On September 7th general passive movements and massage were instituted. On September 18th the patient was allowed to ride. Examination on September 29th revealed complete and perfect recovery.

Burton-on-Trent.

H. D. O'SULLIVAN.

## Reports of Societies.

## BONE-GRAFT SURGERY.

At a meeting of the Edinburgh Medico-Chirurgical Society on January 17th, with the Vice-President, Sir DAVID WALLACE, in the chair, Mr. A. E. MORISON read a communication on the principles of bone-graft surgery. In a large proportion of cases, he said, the two points requiring special consideration were the presence of latent sepsis and of scar tissue. He emphasized the importance of elimination of latent sepsis. As regards the detection of this, his experience was that the employment of radiant heat was the most reliable and constant guide; he used a 2,000-candle power lamp applied to the seat of injury for increasing periods of five to fifteen minutes each day, the course of exposure lasting ten days. His custom was to carry out the operation in two stages. At the first the scar tissue was widely excised, the ends of the bone examined, the wound treated with alcohol, bipped, and then closed with silkworm sutures; when the radiant heat test was negative the second part of the operation was performed. While the test was still positive autogenous vaccines were employed. Further, before operation was undertaken free movement in the joints and tendons of the affected limb must be secured and the patient accustomed to the retentive apparatus and the attitude of the limb to be adopted later. The fibula, the antero-internal surface of the tibia, and the crest of the ilium were useful sites from which to transplant bone. Where a bridging graft was employed the length of the graft should be three times that of the gap. In removing the graft the periosteum was cut with a knife and the bone with an Albee saw kept cool with saline; the periosteum was retained in all but intramedullary grafts. Mr. Morison then proceeded to describe the various types of graft suitable for different cases. The indications of the inlay—intramedullary "cricket-bat," "cricket-bail" and "wedge-shaped" varieties—were fully discussed. Methods were described of fixing the graft by absorbable sutures, such as catgut and kangaroo tendon, and by non-absorbable sutures, such as wire. The use of split pins, bolts, and metal bone plates was fully dealt with, and other details of technique were given.

The paper was discussed by Professor CAIRD, Mr. MILES, Mr. SCOT SKIRVING, Mr. MERCER, and Mr. SHAW.

## "Occupation Cure" in Neurasthenia.

Dr. A. J. BROCK then read a communication on the "occupation cure" in neurasthenia. Experience proved that in most of the psychoneuroses the mental factor should be considered first, although all psychological phenomena were doubtless accompanied by physical and chemical changes in the nervous tissue. The mind foolishnesses of everyday life were dealt with by moral means; why not then also severer phenomena of the same kind? The renewed interest in psychology which centred round Freud might be compared with that which a century ago found its chief spokesman in Gall, at a time of social and mental stress resembling the present. Gall, like Freud, emphasized subconscious trends, but through undue importance being attached to cerebral localization of the "propensities" and through general oversystematization at the hands of Gall's followers his teaching lost repute and degenerated into phrenology. In Edinburgh George Combe, in particular, developed the educational side of Gall's psychology. Freud had recently re-emphasized the subconscious; his stressing of sexuality and psychological determinism applied mainly to pathological cases. For a complete hygiene of mind the psychology of Freud must be supplemented by that of a vitalist such as Bergson. Coué had lately demonstrated another prevalent pathological condition—the extreme suggestibility, hypnotizability, even gullibility, of the popular mind. As regards treatment, apart from cases with definite complexes, needing psycho-analysis, there were many patients with merely a diffused fearfulness or tendency to worry; these dreaded exerting themselves (ergophobia) and should by ergotherapy be stimulated to strengthen their wills. Their work should be congenial, and, man being a sociable animal, their work must be related to that of their social milieu. Education, by divorcing the child from its environment and presenting knowledge as unconnected school "subjects," predisposed to mental dissociation. The programme of the Regional Survey Association found a basis for correlation of all subjects of study in the individual's immediate environment, and hence should appeal to the medical



re-educator no less than to the teacher. Education being preventive mental medicine, co-operation between doctors and educationists was urgently needed.

The paper was discussed by Drs. BLAIKIE, GARDINER, RITCHIE, STEVENS, and WALKER.

#### Clinical Cases.

The following clinical cases were exhibited: by Mr. D. P. D. WILKIE, a case of pseudo-coxalgia or osteo-chondritis deformans juvenilis; by Dr. FERGUS HEWAT, a case of mediastinal tumour; by Dr. ALEX. GOODALL, a case of progressive muscular atrophy in a boy; by Dr. W. T. RITCHIE, a case of muscular dystrophy.

### THE FRACTIONAL TEST MEAL IN GASTRIC AND DUODENAL ULCER.

A MEETING of the Manchester Pathological Society was held on January 17th, with the President, Professor SHAW DUNN, in the chair, when Mr. E. F. GUY read a paper entitled "The fractional test meal and the information obtained from it in ulceration of the stomach and duodenum." His paper was based on an analysis of 60 cases from a surgical clinic, in 36 of which the presence of an ulcer had been confirmed at operation. He had found a hyperacid resting juice in duodenal ulcer, with a continued high acidity persisting after emptying of the stomach. On the motor side there was "hurry," emptying taking place in less than the normal two and a quarter hours. In gastric ulcer, particularly in ulcer of the body of the stomach, the acidity was generally low and emptying was delayed. Blood might be present in both duodenal and gastric ulcer. With pyloric ulceration stasis was a prominent feature even when the pyloric ring was free, with an acidity which rose to a high level during the digestion of the meal. The resting juice in this category was low and the after-secretion not commonly very acid. Mr. Guy showed charts of cases before and after operation, demonstrating that the amount of reduction of acidity was not constant, but depended on the character of the gastric secretion before operation. Even after pylorotomy the acidity might remain high, and after this operation emptying was often very hurried.

Mr. GEOFFREY JEFFERSON, on whose cases these tests had been carried out, said that he thought the charts showed in concrete form facts of which they had before been clinically aware. For instance, the commonly excellent results following gastro-enterostomy were explained by the improvement in the rate of emptying of the stomach, and the acid secretion accompanying ulcer in this situation was not of a character likely to lead frequently to after trouble. In duodenal ulcer the relatively high acidity which remained after gastro-enterostomy no doubt accounted for the troubles (including secondary ulceration) which sometimes followed. The method yielded valuable information in cases where operation had not given a perfect result.

#### Specimens and Cases.

Dr. T. M. BRIDE showed four specimens of sarcoma of the choroid, two pigmented and two non-pigmented. He estimated the frequency of the condition as 1 in 3,000 cases examined, and asked for information from the members on the late results of those cases. Dr. CORSAE STURROCK mentioned two cases that he had seen where death occurred from secondary deposits in the liver within two years after enucleation of the eyeball.

The President and Dr. BOSDIN LEECH described an unusual case with post-mortem findings clearing up the diagnosis. It concerned a boy, 3 years of age, who had dullness of the left chest and dyspnoea of a stridulous kind. This continued for two and a half months, the temperature remaining normal, until the child died rather suddenly. Examination by Professor Shaw Dunn revealed a minute piece of fish bone embedded in the right side of the larynx. There was perichondritis and absorption of cartilage cells. The afebrile course of the consequent bronchopneumonia was remarkable.

Dr. ARNOLD JONES showed a case of cavernous haemangioma of the vocal cord in a man 45 years of age. This he removed successfully by the indirect method. He remarked on the rarity of the condition, there being apparently only 73 cases in the literature.

Dr. HILLYARD HOLMES showed the kidneys from a case presenting signs which led to the diagnosis of "essential haematuria." Urinary bleeding was severe and the patient died in a uraemic state. At autopsy small granular kidneys

were found, and Dr. Holmes remarked on this fact as being a likely explanation for many cases of so-called "essential haematuria." Dr. Holmes showed also a ruptured aneurysm of the middle cerebral artery in a non-syphilitic man of 38. Professor SHAW DUNN said that aneurysms were a commoner cause of cerebral haemorrhage in young people than was generally recognized; they might occur in childhood, and he commented on the peculiar fragility of the cerebral vessels as a class.

Mr. E. E. HUGHES showed some curiously shaped calculi found by chance in the bladder of a man of 65 at necropsy.

### INFLUENCE OF INTESTINAL BACTERIA UPON THE THYROID GLAND.

At a meeting of the Cardiff Medical Society on January 16th, with the President, Professor EWEN J. MACLEAN, in the chair, Mr. D. J. HARRIES read a paper entitled "The influence of intestinal bacteria upon the thyroid gland." He first drew attention to Professor Kendall's discovery that thyroxin was a tri-iodo-tri-hydro derivative of tryptophane, an amino-acid normally produced in the intestine during digestion of proteins, and then gave a short account of the normal flora of the intestine, dividing it into two main groups—(1) fermentative and (2) putrefactive. Both groups were normally present in the human intestine; in lower animals it was possible to destroy the putrefactive group by administering carbohydrates, especially lactose and dextrine; but unfortunately this was not possible in a healthy human being.

In a series of experiments on guinea-pigs Distaso and Harries had shown that the presence of indican in the urine depended on the presence of putrefactive organisms in the intestine, and that the disappearance of the latter coincided with the disappearance not only of the indican, but of all the organic sulphates, from the urine. This was important, as it explained the sympathetic symptoms in exophthalmic goitre. In another series of experiments the speaker had shown that in exophthalmic goitre the indican and other organic sulphates in the urine diminished as the symptoms increased, and they ultimately disappeared in serious cases, and only reappeared during recovery from the disease. In ordinary parenchymatous goitre there was no diminution, but often an excess, of indican and all organic sulphates. In those cases any diminution in the indican suggested the onset of exophthalmic symptoms. Parry Morgan's recent work on some of the speaker's cases agreed with the results obtained by Distaso in lower animals. He found very few colonies of putrefactive organisms on media inoculated with faeces from exophthalmic goitre cases.

The treatment of goitre cases was next considered in detail, and the choice of diet in particular cases was gone into. It was pointed out that partial thyroidectomy in exophthalmic goitre reduced the symptoms by diminishing the size of the gland and therefore its capacity for manufacturing thyroxin from the tryptophane absorbed; the amount of tryptophane absorbed depended, naturally, on the food taken and on the amount converted into indole and skatole by the putrefactive organisms in the intestine. The prognostic value of the urine examination for indican was also emphasized, as its absence in early cases of exophthalmic goitre was of grave significance. The methods for re-establishing a putrefactive flora in exophthalmic goitre were dealt with, and the suggestion was put forward that the difficulties might be due to a temporary immunity against the particular group required.

The following general conclusions were drawn: (1) Exophthalmic goitre was believed to be due to the excessive absorption of tryptophane from the intestine; this in turn was traceable to the absence of the indole producers from the intestine. (2) The absence of indican from the urine indicated the absence of indole producers from the intestine. (3) In exophthalmic goitre the early disappearance of indican from the urine was of serious prognostic importance. (4) Operative treatment had a definite place in the treatment of exophthalmic goitre. Medically, much could be done by suitable dietetic measures. (5) Diffuse parenchymatous goitre was characterized by an excess of indican in the urine, suggesting an excessive destruction of tryptophane. If this excess gave place to a diminution or complete disappearance of indican, that suggested that the case was assuming the exophthalmic form. (6) Myxoedema was due to atrophic changes in the thyroid gland, which lost its capacity for dealing with the circulating tryptophane, whether that substance was excessive, deficient, or normal in amount. Tho



disease was thus compatible with the presence or absence of urinary indican.

In the discussion which followed Dr. PRICHARD mentioned a case of exophthalmic goitre which improved very much after an attack of acute rheumatism. Professor E. J. MACLEAN mentioned the possible connexion between eclampsia and intestinal bacteria, and drew attention to the good results obtained by intestinal lavage. Dr. PARRY MORGAN mentioned the feasibility of influencing the flora by administering the required organisms in keratin capsules by the mouth.

Dr. H. A. HARRIS then gave a lantern demonstration of the cytology of tumours, illustrated in addition by numerous sections. The points of the differential diagnosis of benign, borderline, and malignant growths were presented. He further showed examples illustrating the presence of nucleolar fragments in the cytoplasm of mitosing cells in malignant tumours, a phenomenon confined to cancerous and sarcomatous growths, and hitherto undescribed.

Dr. J. W. TUDOR THOMAS presented a case of endothelioma of the orbit.

The patient was a young woman of 27, who gave a history of having had something wrong with the right eye since childhood, and that during the last two years the eye had become pushed forward. She complained of diplopia and occasional pain in the eye. A diagnosis was made of orbital tumour, probably a fibrosarcoma, and seven months ago the tumour was removed through an incision in the line of the eyebrow. It was firmly attached to the roof of the orbit, and appeared to be growing from the orbital periosteum, extending well behind the eye. The tumour was about the size and shape of a small pigeon's egg, and on microscopic examination was found to be an endothelioma. The patient now had no diplopia, and the eye gave her no trouble; it had returned to its normal place in the orbit, and was practically of similar appearance to the other eye.

### CHRONIC DUODENAL ILEUS.

A MEETING of the Midland Medical Society was held in the Medical Institute, Birmingham, on January 17th, with the President, Dr. PERSLOW, in the chair, when there were forty-five members present.

Mr. SKYMOUR BARLING read a paper on chronic duodenal ileus, and gave clinical histories of seven cases of the condition. In two of these the condition was caused by narrowing of the duodenal lumen by the invasion of the wall of the bowel by growth or inflammation, while the symptoms of the other five were due to obstruction at the crossing of the mesenteric root and the superior mesenteric vessels. After pointing out the similarity in the symptoms of these two groups of cases, the relationship of the condition to the etiology of acute gastro-duodenal ileus was considered. Diagnosis of the chronic condition could be made in a certain number of cases by a consideration of the clinical and radioscopic picture, but its mimicry of the symptoms produced by chronic appendicitis and gall stones and chronic duodenal and gastric ulcer was often very close. The disease must, he said, be regarded as a clinical entity to be considered whenever a case of chronic indigestion was being investigated, and when laparotomy was performed in such cases the routine examination should include the third part of the duodenum and the site of crossing of the vessels.

Mr. DINGLEY showed a specimen of the condition, which he had recently met with, and described two similar cases. Dr. T. L. HARDY described the results of gastric analysis by the fractional test meal method in some of Mr. Barling's cases. He stated that occasionally the diagnosis might be inferred from the chemical examination alone. Mr. BILLINGTON considered that the slighter degrees of the condition were not rare, and stated that in his opinion the mobility of the right kidney was occasionally responsible for it.

Mr. J. B. LEATHER showed a child of 12 years who had lost a considerable part of both hands and one foot as the result of syphilitic disease of the bone. Mr. SAMPSON said that he had seen similar loss of tissue as the result of obliterative endarteritis. Mr. ROSE thought that in this case Roynaud's disease could not be excluded.

Dr. A. P. THOMSON related the history of an obscure case of prolonged pyrexia, and showed a temperature chart (prepared in the manner suggested by Professor Arthur Hall of Sheffield) to illustrate the characteristics of the continued fever. The history was that of a previously healthy woman, aged 39, who eight months ago was seized with an illness which had since run a curiously intermittent course, corresponding with the intermissions of her temperature. While under observation in the hospital she had had bilateral effusion of blood in

both pleural cavities, and the spleen and liver for a time had been enlarged and hard. Physical examination and all ordinary clinical methods had yielded nothing on which to base a diagnosis. The most suggestive feature was the relapsing nature of the fever. Dr. Thomson thought that the case in all probability was one of Hodgkin's disease showing the Pel-Ebstein syndrome.

Dr. RUSSELL, for comparison showed a chart of a case of the Pel-Ebstein syndrome who had died under his care. Dr. ALFRED PINNEY mentioned that von Sieglar described two cases of undoubted Hodgkin's disease in which effusions of blood had occurred in the pleura and peritoneum, and he stated that in these cases it had been found that the effused blood showed a marked eosinophilia. Dr. NELSON considered that in spite of negative blood cultures septicaemia could not yet be excluded.

### DIET AND PREVENTIVE MEDICINE.

At a meeting of the Society of Medical Officers of Health held on January 19th, with the President, Dr. T. EUSFACE HILL, in the chair, a paper, followed by a discussion, was read by Professor E. MELLANBY of Sheffield University on diet as an important factor in preventive medicine.

After referring to the triumphs of preventive medicine in other directions he suggested that the study of diets might throw some light on the epidemiology of certain diseases not now well understood. Much of the food of the working classes was deficient in fat-soluble vitamins. They were not particularly fond of green vegetables, milk, cheese, or eggs. Their diet consisted largely of bread, butcher's meat, potatoes, margarine, jam, tea, and coffee. He urged that greater attention should be paid to pre-natal diet, and instanced an experiment he had made with a bitch who was deprived in the last month of pregnancy of fat-soluble vitamins. All the puppies died within eleven weeks of their birth. Deprivation during the whole of a second pregnancy was followed by abortion at eight weeks. In another pregnancy, when fed with cod-liver oil in addition to ordinary diet, she bore a litter of seven puppies, all of whom did well. The female, Professor Mellanby considered, had a great power of sacrificing her own tissues for the benefit of her offspring, but there must be a limit to this power, hence the importance of pre-natal diet. He was of opinion that the problem of defective teeth would be solved by greater attention being paid to the diet of children, and that the decline in infant mortality was largely due to the instruction in infant feeding which formed so large a part of infant welfare work. He concluded his paper by advising a greater consumption of cod-liver oil, which was the cheapest form of vitamins. Milk should form a larger part of our diet than was at present the case. The same advice applied to green vegetables, and especially raw salads. As a rule diets were rich in phosphorus but deficient in calcium, and the remedy might be found in the addition of about 2 per cent. of calcium carbonate to butter.

The PRESIDENT said that his experience in the county of Durham was that the number of rickety children had considerably decreased since the introduction of dried milk. In view of the importance attached to calcium it would be valuable to know whether in areas where the water supply was rich in that mineral that fact counterbalanced the butter deficiency in it.

Dr. JAMES WHEATLEY considered that researches into the influence of diet were among the most important means of improving the health of the nation, as well as the easiest. Pressure should be brought on the Government with a view to suitable propaganda. Professor Mellanby's researches once again emphasized the value of cod-liver oil and milk at welfare centres. Dr. E. H. T. NASH raised the question of the purity of cheap cod-liver oil; he was informed that on many fishing boats the crews added the livers of herrings and other fish to the liver baskets.

Dr. W. J. HOWARTH asked whether the reduction of infant mortality was due to pasteurization or dried milk. Cod-liver oil had been regarded almost as a specific for tuberculosis and such cases benefited also by milk, butter, and sunshine. From a farming experiment he had carried out he got striking results by feeding the sow in pig with cod-liver oil, milk, yeast, lemons, etc. The young at birth were in excellent condition, and when the litter was disposed of they were about three weeks in advance of others of the same age as a marketable commodity. He inquired whether there was any truth in the statement sometimes made that the refining of cod-liver oil resulted in its deterioration as a foodstuff.



A MEETING of the Bath Clinical Society was held on January 5th at the Royal United Hospital, with Mr. MUMFORD, the President, in the chair. Mr. F. FRASER showed: (1) A case of old osteomyelitis in which the growth of the tibia had ceased, with the result that the tibia had outgrown and distorted the leg considerably; the orthopaedic proceedings necessary to correct the deformity were described. (2) A child sent in as an "acute abdomen" and proved to be a case of double pneumonia and of acute pneumococcal peritonitis, with complete recovery. (3) A case and specimen of abdomino-perineal removal of the rectum and sigmoid. The patient a month after the operation was remarkably well. Dr. R. G. GORDON showed a case of malignant disease of the right testicle growing up the canal. Mr. A. L. FULLER showed a specimen of a left broad ligament dermoid with torsion of the omentum and separation of the tumour from the uterus by torsion. Dr. W. P. KENNEDY showed an x-ray plate of the cervical spine showing fracture of the body of the third cervical vertebra. Dr. V. COATES showed a plate of the sella turcica in a case of acromegaly. Dr. R. G. GORDON showed a photograph and radiogram of nodes in an early case of rheumatoid arthritis. Dr. RAY EDRIE read a paper entitled "Romance and the pharmacopoeia," dealing particularly with the career of Dr. Thomas Dover (1660-1742), famous for his powder and notorious for his piracy on the Spanish Main (see BRITISH MEDICAL JOURNAL, February 18th, 1922, p. 280).

ON January 24th Sir DYCE DUCKWORTH delivered an address to the Cambridge University Medical Society on "The essential equipments for the best pursuits of modern medicine." Sir Dyce Duckworth referred to the ever-increasing number of years which the modern student must devote to securing an adequate knowledge for ordinary practice. The best physicians, he said, were those who had cultivated breadth of mind, and this was most easily attained from a comprehensive classical or mathematical preliminary education. The perfect practice of medicine consisted of science and art, but the combination of these two received inadequate emphasis in lectures and at the bedside. Sir Dyce Duckworth then discussed some of the recent discoveries of modern medicine—in particular, vaccine treatment of various morbid conditions—and suggested that the student would do well not to accept such novelties too hastily. Those who knew French or German, and had an opportunity of spending some time at Continental or American clinics, were very fortunate. In his concluding remarks the lecturer said that the best practitioners were certainly those who regarded their profession as a noble and honourable one, and strove on all occasions to take a high line of conduct in their duties, however humble their patients might be.

## Reviews.

### COLLOID CHEMISTRY.

THE pursuit of knowledge in the realm of colloid chemistry has gained fresh impetus from the publication of LOEB'S *Proteins and the Theory of Colloidal Behaviour*.<sup>1</sup> The book is founded on Loeb's own experimental work, which has led to conclusions that would explain in a very simple manner a number of forms of colloid behaviour which have hitherto remained a source of perplexity or have been accounted for by far-sought explanations. He considers that in the experimental work of other investigators there has been a tendency to neglect the effects of hydrogen ion concentration in the liquids subjected to experiment, and he has sought methods by which the effect of this factor could be controlled. They led him to the conclusion that the combination of proteins with acids and bases is fully obedient to stoichiometrical laws. This paved the way to the further conclusion that only the valency of the ion and its sign of charge participate in determining the physical properties characteristic of colloids. Loeb accordingly interpreted the experiments of Ostwald and Fischer differently from Zsigmondy. Their experiments on the relative efficiency of different ions were made without regard to hydrogen ion concentration. Hence, Loeb argues, Ostwald's experiments only proved that acetic and boric acids are weaker acids than nitric, and not that the acetate and borate anions have a greater depressing effect on the swelling of gelatin than the nitrate anion. Similarly Fischer's work, he thinks, only proved that citrates and acetates are buffer

salts, not that the acetate and citrate anions have a greater depressing effect on the swelling of gelatin than the chloride and nitrate anions.

Loeb entertained as possible the hypothesis that the behaviour of proteins under the influence of electrolytes might be explained by Donnan's theory of membrane equilibrium. His work having been specifically directed to test this view, Loeb has attacked the problem of colloidal substances from a new standpoint. His results appear to lead to the conclusion that two data of classical chemistry suffice to explain colloidal behaviour both qualitatively and quantitatively; these are the stoichiometrical law and Donnan's theory. The text of the volume contains the evidence for this view. The swelling of gelatin is explained simply by the consideration that the forces of cohesion between the gelatin molecules produce the conditions of a liquid enclosed by a surface which acts as a membrane boundary exhibiting the Donnan effect. The potential differences demanded by the Donnan theory, vainly sought by Ehrenberg, have, Loeb contends, now been found. A full account is given of the author's experimental, work beginning with the preparation of proteins free from ionogenic impurities. The methods adopted show no defects in principle, and the tabulated results agree with the demands of theory. Further, it was found that what had been done with gelatin could be repeated point for point with crystalline egg albumen and other proteins. If this be accepted, then the adsorption theory, the aggregate theory, and the hydration theory become unnecessary, and the Hofmeister ion series loses all validity.

Loeb holds that the suggestion that the laws of classical chemistry must be replaced by other laws peculiar to colloid chemistry has no foundation, and claims to have succeeded not only in satisfying the postulates arising from his own views but to have adduced experimental confirmation of the falsity of views conflicting with his own. The manner in which he writes compels trust in the author's experimental work. While advocating his conclusions in a convincing manner, his discussion of subjects which admit of controversy is both temperate and fair. Having regard to the radical character of the conclusions reached, it is hardly to be expected that they will be accepted by everyone without demur. They will doubtless be submitted to searching criticism, both reasoned and experimental; but unless the author has erred fundamentally the work will mark a distinct stage in the progress of knowledge in this realm of study.

Sir WILLIAM BAYLISS, in his book, *The Colloidal State in its Medical and Physiological Aspects*,<sup>2</sup> gives a very clear and concise account of those features of colloidal chemistry which are of particular interest in medicine and physiology. Colloidal chemistry is a difficult subject because many of the fundamental principles are still matters of dispute, and unfortunately those problems which are of chief interest in physiology happen to be the most complex and obscure portion of the subject.

Sir William Bayliss states the salient facts as simply and as shortly as possible, and readers will be agreeably surprised to discover how much of colloidal chemistry can be explained without the aid of an extensive special terminology, and also without the use of mathematical formulae. He pays considerable attention to the properties of protein solutions, and it is interesting to note that he does not accept a large proportion of the theories recently expounded by Loeb.

Loeb's book reviewed above has attracted a good deal of attention. In his view the behaviour of proteins can be explained by ordinary chemical laws, so that there is no need to accept the occurrence of such special processes as adsorption, etc., which most workers have found it necessary to assume in order to explain their results. This, if true, would result in a very great simplification of the whole subject. Bayliss, however, considers that the theory is still not proven, and states:

"The work of Loeb has undoubtedly brought to light many important facts under the particular conditions of his experiments, but there are reasons for doubt as to whether all the properties of proteins can be explained by combinations with acids or bases in equivalent proportion, apart from changes in physical state or adsorption."

The whole subject of colloidal chemistry is fascinating, and since the animal body is composed of colloidal solutions, it

<sup>1</sup> *Proteins and the Theory of Colloidal Behaviour*. By J. Loeb, member of the Medical Research, New York. London: 1922. (Demy 8vo, pp. xi + 232. 15s. net.)

<sup>2</sup> *The Colloidal State in its Medical and Physiological Aspects*. By Sir William M. Bayliss, F.R.S., Publications, London: Henry Frowde, pp. 95; 12 figures. 6s. net.)



a knowledge of the special laws governing colloidal reactions is essential for the understanding of physiological processes. The subject is, however, comparatively new and has been veiled from the common view by a complex terminology and the extensive use of mathematical formulae. As a result, there has been a tendency to regard colloids as something rather mysterious. This book by Sir William Bayliss appears therefore very opportunely. Anyone with a slight knowledge of general chemistry can understand the arguments, and can learn what are colloids, and what are their chief special properties. It is to be hoped that the book will be read widely by medical men; from it they will learn that when a drug is prepared in the colloidal state it does not necessarily acquire any special therapeutic qualities.

### FOOD, HEALTH, AND GROWTH.

We welcome the introduction into this country of the little volume, *Food, Health, and Growth: A Discussion of the Nutrition of Children*, in which the Lane lectures, delivered by Dr. Emmett Holt, at the Medical School of the Leland Stanford Junior University, in San Francisco, in December, 1920, are reproduced. Although the title might well have been "Food in relation to health and growth," for it is almost exclusively devoted to food considerations, its designation will probably attract many readers. This is most fortunate, for a considered and authoritative pronouncement on food questions is greatly needed at the present moment, owing to the tendency among the lay public, and, indeed, among members of our own profession, to lose all sense of proportion in appraising food values since the new discoveries in relation to the accessory factors have brought the vitamins into so much prominence.

Dr. Holt's eminently sober judgement on these matters will help to restore equilibrium and to assign to each food factor, whether primary or accessory, its due place in the economy of nutrition. A very considerable share of the available space is devoted to questions of quantity as measured in calories—the only possible units in which quantities can be expressed accurately. It is all the more regrettable that in the appendix at the end of the book the tables of calorie values are so badly arranged and inaccurate. In some cases these values are given for ounces of food, in others for slices (ginger bread, sponge cakes, etc.), in others in spoonfuls (butter, sugar, etc.), and yet in others in such undetermined measures as sticks (celery) or leaves (lettuce).

Dr. Holt emphasizes very strongly the large calorie requirements of boys and girls at or about the time of puberty, but he appears greatly to exaggerate their needs, and to place too much reliance on Rubner's unsubstantiated formula, which requires 500 calories for growth in the 16th year of life, during which there is an average increase in weight of about 14 lb. This means that to secure this small increment in bodily weight about 650 lb. of solid meat must be consumed, a very extravagant allowance. There can be no doubt that the large appetite of boys at this age has a physiological basis, but it may represent a demand for some food, and not for an energy-producing food, which could be more economically supplied without having to rely on the large consumption of foods in which the required element or elements is poorly represented.

The author pays considerable attention to the connexion which certainly exists between nervous symptoms and under-nourishment; he perhaps rather exaggerates the relation of mental defect to underfeeding; he says, "When large groups are considered feeble mental capacity goes with small bodies," and although he supplies substantial evidence in favour of the view that good nutrition is an essential for the best school work, in claiming that mental defect and incapacity are due to bad nutrition he may be putting the cart before the horse, or confusing causes and effects.

It is noticeable that in his very full account of the factors which are essential for good nutrition Dr. Holt pays so little attention to considerations of digestion or to the conditions of malnutrition which may result from food which, otherwise blameless as regards calorie value, balance, and vitamin content, is incapable of adequate digestion. The quality of digestibility is at least of equal moment with a correct balance.

In a book so excellent and free from blemishes the reviewer is grateful to find even one in Dr. Emmett Holt's

position open to criticism, for excess of praise is no recommendation. We strongly advise all those who wish to acquaint themselves with the present position of knowledge with regard to food and nutrition to purchase this little book and to read it carefully.

### THE ART OF SPEAKING AND SINGING.

CONVICTION is the goal of the speaker. Gabbling, mouthing, ranting, drawling, affectation, or sing-song cannot be convincing; the idea to be expressed must first of all be made part of the speaker, and in its expression every movement must be so controlled that it exactly harmonizes with the idea. Dr. H. H. HULBERT has written a book entitled *Eurhythm: Thought in Action*, and in it expounds the principles of controlled expression, and the means whereby this art may be cultivated. The theories he advances are the outcome of practical work carried on for years in connexion with the vocal therapy of London County Council teachers, and during the war in connexion with the physical therapy of injured soldiers. His book was begun in 1911, and finished in 1921, so that every point has been carefully thought out, well deliberated upon, and carefully expressed. In successive chapters the author deals with self-control, discipline in games, the poise of the body, the appreciation of the beautiful, the art of expression, and then develops his thesis in the more detailed examination of the central apparatus of speech, the sounds of the English language, breathing in voice production, and the general hygiene of voice-users. Finally, a number of exercises for the practice of eurhythm are given. Dr. Hulbert rightly calls attention to the heavy work of teachers in voice usage, and the frequency with which this has to be done under unsatisfactory conditions. The voice-user's arch-enemy is noise; bad discipline in the classroom, traffic outside, reverberations through ill constructed floors, all make the task of the teacher unnecessarily heavy and increase the liability to breakdown. The chapter on "Hygiene for voice-users and ordinary health exercises" is excellent, and good scientific common sense. It is possible that some may argue that the attention which the author has given to physiological processes has made the book unduly long for his purpose in view, which is the instruction of the layman who is a voice-user; but if his effort secures due respect for that most human of attributes, intelligent speech, then there is not a word too much. The book is well illustrated and arranged.

### INTOXICATIONS: DEFICIENCY DISEASES.

THE twenty-second volume of the *Traité de pathologie médicale et de thérapeutique appliquée*, edited by Professor E. SERGENT and Drs. L. RIBADEAU-DUMAS and L. BABONNEIX, deals with intoxications, deficiency diseases (*maladies par carence*), injuries by physical agents, and the effects of injuries upon diseases. The textbook is well illustrated, the printing is good, and the articles as a whole are written in a clear and readable style, such as one usually finds in French scientific literature.

The chief articles are those upon drug habits by Dr. Legrain and the article upon deficiency diseases by Professor Mouriquand. Dr. Legrain writes eloquently and at length (169 pages) on the evils of alcoholism. He deals very fully with its effects upon the reproductive organs, and upon offspring. He has examined the voluminous literature, and gives a good summary of the case against alcohol. The evil effects produced upon the offspring when either parent is under the influence of alcohol at the time of conception are vividly described. The psychological changes produced by alcohol are described at length, and the stages of intoxication and subjective feeling at the various stages of intoxication are detailed. We are surprised, however, that no reference is made to the numerous researches that have been conducted to analyse the effect of alcohol upon psychological reactions. Similarly nothing is said upon the action of alcohol as a food, or upon the effect of alcohol on the functions of digestion, respiration, and circulation. The article would have been improved if more space had been devoted to a consideration of the ascertained facts about the action of alcohol upon the body, and space for this could profitably have been

<sup>1</sup> *Eurhythm: Thought in Action*. The Principles and Practice of Vocal and Physical Therapy. By H. H. Hulbert, M.A., Oxford, M.R.C.S., L.R.C.P., etc. London: Novello and Co., Ltd. 1922. (Sup. roy. 8vo, pp. 159; 45 figures, 9s. net.)  
<sup>2</sup> *Traité de pathologie médicale et de thérapeutique appliquée*. Published under the direction of E. Sergent, L. Ribadeau-Dumas, and L. Babonneix. Tome xxii. Intoxications. Paris: A. Maloine et Fils. 1922. (Demy 8vo, pp. 553; 31 figures, 2 coloured plates. Fr. 28.)

<sup>3</sup> *Food, Health, and Growth: A Discussion of the Nutrition of Children*. By J. Emmett Holt, M.D., LL.D. New York: The Macmillan Co. 1922. (Cr. 8vo, pp. viii + 273; 21 figures. 7s. 6d. net.)



obtained by omitting some of the eloquent descriptions of the evils of alcoholism, which, although true, would seem to be more suited for prohibitionist propaganda than for a scientific textbook. The articles upon etherism, morphinism, and cocaineism, by the same writer, are open to the same criticism that too little definite information is given as to the exact effects upon the mind and body which abuse of the drugs produces.

Professor G. Mouriquand has written seventy pages upon *Les maladies par carence*. The term is a comparatively new one, and under this heading are included the diseases which are produced by a deficiency in the diet of some constituent essential to health. The chief diseases described are beri beri, pellagra, and scurvy; the full account given of these diseases is supplemented by some very good illustrations. The author classifies *Les maladies par carence* as follows:

1. Diseases due to chemical deficiency (*carence chimique*), which include diseases due to the following causes: (a) vitamin lack—for example, beri-beri, xerophthalmia, and perhaps rickets; (b) lack of amino-acids (for example, pellagra), lack of essential mineral salts, and lack of essential metals; (c) lack of carbohydrates and fats.

2. Diseases due to physical deficiency (*carence physique*). This deficiency is stated to be due to some alteration in the food, caused by sterilization or desiccation, producing some important change in its molecular texture. Scurvy is described as a disease of this type.

This classification is to be commended in that it associates diseases due to vitamin lack with the other types of deficiency diseases. The author's views upon the causation of scurvy, however, differ from those commonly accepted in this country. Under the heading "Avitaminose C" he merely states, "Vitamin C is absolutely hypothetical. It would represent, as we have seen, in the mind of certain authors the antiscorbutic vitamin. Nothing has been less proved. Scurvy is above all things—for the present at least—a lack of fresh food [*carence de l'aliment frais*], and it is not possible to give a more exact definition."

These sweeping statements appear very difficult to justify. Scurvy is not simply due to lack of fresh food, since it can be prevented or cured by the juice of citrus fruit which has been preserved for more than a year. The usual view is that the antiscorbutic vitamin is an unstable substance which is very easily oxidized. This belief is supported by a large volume of evidence, and there seems no valid reason to assume that the change which destroys the antiscorbutic value of food substances is of a physical rather than of a chemical nature.

In addition to the articles already mentioned there are numerous others of interest in the book, in particular that by Professor Chiray upon local internal disorders revealed or aggravated by injuries; it gives a clear account of the medico-legal problem of the influence of injuries upon the development of diseases such as tubercle of the joints, etc.

## NOTES ON BOOKS.

THE volume of *Persian Sketches*,<sup>6</sup> by the Anglican Bishop in that country, consists of short descriptions of life on the road, and in the villages and towns, written with a genial humour which withstands even a very thorough looting by highwaymen of the caravan with which he was travelling. We have entertaining accounts of the muleteer and the servant, and of their special brand of honesty, of the merchant and of the hakim, whose profession was, until recent tendencies produced some changes, usually hereditary; the old hakim seems still much in the stage of Master John Arderne, but without his surgical enterprise. A Government medical college now exists in Teheran, and it is, the author says, becoming difficult for a Persian to get a licence to practise unless he possesses the diploma of that college or some recognized qualification. All the new doctors, it would seem, should find plenty to do, for venereal diseases are rife, tuberculosis is making extraordinarily rapid progress, "especially among nomads," opium smoking is becoming very common, and child marriage is the rule, though a public opinion against it is growing. The conditions of child labour in the carpet factories have been terribly bad, but there is a promise that ventilation shall be improved and overcrowding diminished, that the minimum age of workers shall be 8 for

boys and 10 for girls, and that no child under 14 shall work more than eight hours a day. Bishop LINTON is sympathetic towards the Persian, recognizes his good qualities, reminds us of some of our own industrial shortcomings, which we began to remedy less than a century ago, and demands that we shall not pass the Persian by, pharisaically, on the other side. Sir PERCY SYKES has written a short preface in which he says that Persia is at the parting of the ways, and that she can only find the right road if the grandees reform themselves, renounce their privileges and pensions, and get rid of their hordes of idle retainers. He praises the missionary effort, British and American, especially the schools, but does not minimize the change that must come over the mind of the Persians if their country is to be saved from ruin.

Dr. MAURICE LETULLE's book on the physical examination of the chest and abdomen, first published in 1913, has recently reached its third edition. It is a very full and practical handbook,<sup>7</sup> differing from other works of the same kind chiefly by the free use of skiagrams, which are explained by diagrams on the opposite page. It contains also a number of sketches illustrating the relative positions of the physician, and patient. The British reader will be struck by the large amount of space given to immediate auscultation of the lungs and the heart, with the physician's head on the patient's chest, and by the summary way in which the binaural stethoscope is dismissed; all the illustrations of mediate auscultation show the wooden stethoscope in use; it is merely said that flexible stethoscopes, "single, or even binaural," are sometimes used.

A review of the first edition of the book by Professor ZINSSER of Cologne on syphilis and syphilis-like diseases of the mouth<sup>8</sup> appeared in these columns ten years ago, and shortly afterwards a notice of the English translation. A third edition has now been produced. As before, there are chapters describing syphilis primary, secondary, tertiary, and congenital, and two more chapters devoted to the differential diagnosis of secondary and tertiary syphilis of the mouth. Attention was called to Professor Zinsser's views on syphilitic affections of the teeth on a previous occasion. The great feature of the book is the atlas, chiefly of coloured plates, the number of which has been increased in this edition; they include lifelike representations of every kind of syphilitic affection of the lips, teeth, palate, tongue, and fauces. There are also coloured plates showing every disease of the mouth which could possibly be mistaken for syphilis. This should make the book of interest to all, but particularly to dentists, to whom these conditions are of special importance.

Professor OTTO FOLIN, who holds the chair of biological chemistry in Harvard Medical School, has issued a third edition of his *Laboratory Manual of Biological Chemistry*.<sup>9</sup> It was prepared for the use of medical students in that school. The text is printed on one side of the paper only, so that notes can be made on the other page. The new edition has been revised and many new methods introduced.

<sup>7</sup> *Inspection-Palpation, Percussion, Auscultation: Leur Pratique en Clinique médicale*. By Maurice Letulle. Third edition. Paris: Masson et Cie. 1922. (Crown 8vo, pp. 344; 133 figures, 12 plates. Fr. 14 net.)

<sup>8</sup> *Syphilitische und syphilisähnliche Erkrankungen des Mundes. Für Ärzte, Zahnärzte und Studierende*. Von Dr. Ferd. Zinsser. Dritte erweiterte Auflage. Berlin and Vienna: Urban und Schwarzenberg. 1922. (Sup. roy. 8vo, pp. viii + 134; 71 plates. The price should be ascertained from a bookseller.)

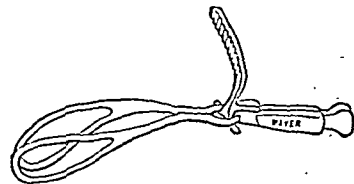
<sup>9</sup> *Laboratory Manual of Biological Chemistry*. By Otto Folin. Third edition. London and New York: D. Appleton and Company. 1922 (Demy 8vo, pp. ix + 309; 7 figures. 12s. 6s.)

## MEDICAL AND SURGICAL APPLIANCES.

### An Aris-Traction Lever.

DR. E. W. FARMER (Levensham) writes: Having on several occasions had reason to be dissatisfied with Le Page's tractor because of its insecure hold on the

midwifery forceps, I designed one which appeared to me to be likely to secure a better hold, and to be easier of application. The force is exerted on the shanks of the forceps, not on the handles, so that the leverage is in the more correct axis,



and the instrument is consequently more efficient. Messrs. Mayer and Phelps, of New Cavendish Street, have made from my model an instrument which I have had occasion to put to practical use; it answers my expectations in every way.

<sup>6</sup> *Persian Sketches*. By the Right Rev. J. H. Linton, D.D. With a foreword by Brigadier-General Sir Percy Sykes, K.C.I.E., C.B., C.M.G. London: Church Missionary Society. 1923. (Post 8vo, pp. viii + 139; illustrated. 2s. 6d.)



## THE MAUDSLEY HOSPITAL.

## OPENING CEREMONY.

The Maudsley Hospital was formally opened on January 31st by the Minister of Health, Sir Arthur Griffith-Boscawen, who was received by Mr. Francis R. Anderton, chairman of the London County Council; Mr. David Cawdron, chairman of the Mental Hospitals Committee; Mr. E. Sanger, chairman of the Maudsley Hospital Subcommittee; Sir Frederick Mott, director of the Pathological Laboratory; and Dr. E. Mapother, superintendent of the Maudsley Hospital. Mr. Cawdron gave a short review of the history of the hospital and described the functions it was designed to fulfil. After the Minister of Health had declared the hospital open he made a tour of the building, visiting the out-patients' rooms, the rooms reserved for the use of private patients, the wards of the hospital, the garden, the nurses' home, and the pathological laboratory.

The hospital has been erected on a site at Denmark Hill, four and a half acres in extent, opposite King's College Hospital; the pathological laboratories and the administrative offices are in the front, the wards in a lengthy building at a right angle to the main block. The wards and corridors are airy and well lit, and the designers of the hospital have been successful in getting rid of any suspicion of "asylum" atmosphere. Each ward consists of a dormitory, sitting-room, and dining-room, and in the lower wards the beds can be wheeled out on to commodious verandahs; there is ample locker accommodation—the patients wear their own clothes—and special provision is made for treatment by continuous baths, which have been found beneficial in early cases of mental disorder. Each ward has a small library and a piano, there is an abundance of comfortable chairs, brightly coloured cushions, and cheerful hangings, and the many pictures throughout the institution have been chosen with unusually good taste.

The Maudsley Hospital is the first institution to be established in this country on the lines of the neurological and psychiatric clinics of the Continent and America, which are designed for the combined treatment and investigation of organic nervous disease, neuroses, and incipient psychoses. It represents the first provision made by a public body in England for the treatment of early and recoverable types of mental disorder entirely on a voluntary basis and apart from certified cases. The London County Council did not take this step on its own initiative. It was stimulated by the urgent representations of the late Dr. Henry Maudsley, who backed his opinion by making during his lifetime a donation of £30,000 towards the cost of building, and left a further £10,000 by his will for the purposes of the hospital. The hospital bears the name of Dr. Maudsley, and its foundation was made possible through his generous gifts, but it is allowable to doubt whether Dr. Maudsley's scheme would ever have been realized but for the untiring perseverance, in face of much discouragement, of Sir Frederick Mott; it was through him that Dr. Maudsley, some fifteen years ago, made his offer to the London County Council, but there was much delay, largely unexplained and not altogether creditable to the County Council, in finding a site and building the hospital.

By slow degrees, however, the project advanced, but the building was still unfinished at the outbreak of war. In 1915 the War Office approached Sir Frederick Mott, who was in charge of the neurological department of the 4th London General Hospital, and the erection of the Maudsley Hospital was then soon finished by the London County Council; it was taken over by the War Office in 1916 as a neurological hospital. The pathological laboratory of the London county mental hospitals was transferred from Claybury to the Maudsley Hospital, and, both during the war and since, the routine and research pathological work of the mental hospitals has been carried on there. During the war many distinguished foreign neurologists, including Professor Marinescu of Bucarest, worked in the laboratory. After the war the Ministry of Pensions occupied the hospital for some eighteen months, and since the Ministry gave it up it has remained empty until the present.

The hospital buildings have been renovated and completely furnished, and now await patients. There is an out-patient department, where a fee of 2s. is charged for each attendance; this may be remitted wholly or partly if the patient cannot afford it. The accommodation for in-patients is of two kinds; there are six wards, containing a total of 144 beds—72 for each sex—in dormitories and separate rooms; there are also thirteen private rooms for female patients, a special dining-

room, sitting-room, and garden being associated with these rooms, for which an inclusive charge of 6 to 7 guineas a week is made. Patients with a legal settlement in the county of London are required to contribute according to means, while those without such legal settlement cannot be received into the hospital unless they are prepared to pay the full maintenance rate of £5 a week.

In making his gift Dr. Henry Maudsley had three main objects: The early treatment of cases of mental disorder; the promotion of exact scientific research into the causes and pathology of mental disorder, with the hope that much might yet be done for its prevention and successful treatment; and the provision of an educational institution in which the best clinical instruction should be available. Dr. Maudsley believed that the establishment of such a hospital in London was vital because of the association it could have there with the university, the general hospitals, and the medical schools. The study of insanity has, up to the present, remained to a great extent an isolated branch of medical research, and it was believed that if this defect were remedied a closer acquaintance with the peculiarities of mental and nervous diseases would become more common, and many cases which now find their way to the workhouse or the asylum would recover, under suitable treatment, without needing confinement in an institution.

The treatment of the nervous and psychological cases to be admitted to the Maudsley Hospital will be under the control of the medical staff, which consists of the superintendent, Dr. Edward Mapother, and four whole-time medical officers; with the voluntary help of a considerable number of qualified medical men and women as clinical assistants. There will thus be ample provision for the detailed investigation which is the foundation of any adequate treatment of mental or nervous disorder. Such investigation will be greatly facilitated by the fact that the hospital is associated with the pathological department of the London county mental hospitals, under the direction of Sir Frederick Mott. The services of consultant specialists will be available for patients suffering from surgical, gynaecological, and obstetrical conditions, and disorders of the eye, ear, nose, and throat; a dental surgeon will also attend. Particular care has been devoted to the selection of the nursing staff, which consists of a matron, an assistant matron, seven sisters, eighteen nurses, twenty-one probationers, and twelve male nurses; all the nursing staff, except the probationers, possess a certificate of general hospital training for at least three years at a nursing school; the nursing of the male patients will be carried out almost entirely by women.

Treatment as an in-patient will be entirely on a voluntary basis; every patient before admission will be required to sign a formal application which will intimate his right to leave the hospital within twenty-four hours of giving notice of his desire to do so. No patient will be admitted under certificate or will be certified in the hospital either for retention there or for transfer to a mental hospital elsewhere. Given the essential willingness to undergo treatment, good prognosis as to recovery is the main feature constituting the suitability of cases for admission. In fact, cases without such a prognosis will be admitted only on account of difficulty of diagnosis or exceptional scientific interest.

It should, however, be realized that while the provision of the Maudsley Hospital marks a great advance, yet the present laws as to the treatment of mental disorders prevent full advantage being taken of it. Admission as an in-patient is restricted at present to those able and willing to sign a formal application to be admitted to the hospital for treatment. Cases from such temporary mental conditions as acute delirium or puerperal fever cannot express in writing a desire for treatment, and are therefore debarred from entering the Maudsley Hospital as in-patients; similarly with children, those suffering from adolescent mental disorder cannot be received for treatment, simply because they cannot express in writing a desire to be so treated. As cases under certificate are not to be received, this also means the exclusion of some cases of the most suitable class for teaching and for treatment to recovery, and until there is a reform in the law providing for reception, without certification, of certifiable cases, subject to proper safeguards, the work of the hospital will be seriously hampered. Perhaps the experience which is to be gained at the Maudsley Hospital may hasten the legislation that is urgently required in order to give those afflicted persons who are in the early stages of mental disorder the benefit of modern advances in psychiatry.



## British Medical Journal.

SATURDAY, FEBRUARY 3RD, 1923.

### MICROBIAL TRANSMISSIBLE AUTOLYSIS.

THE phenomenon of the sudden dissolution of bacteria when brought into contact with tissue fluids would probably not have attracted attention outside the narrow circle of those whose business it is to study bacterial activities but for the dramatic theory propounded by Dr. d'Herelle, of the Pasteur Institute, to explain this rapid destruction of bacterial cells. He claimed to have discovered the existence of ultramicroscopic parasites of bacteria, and suggested therefore that these organisms, hitherto considered to be amongst the lowliest forms of life, are preyed upon by even lowlier forms, and become the victims of infective forces which invade and dissolve the cells. Not only was this idea foreign to current conceptions of bacterial existence, but it also postulated the existence of hitherto undescribed manifestations of life, and therefore made the problem of bacteriolysis of interest to all biologists. Thus a simple observation of factors influencing the metabolism of bacteria, such as is frequently recorded in bacteriological literature and rarely penetrates beyond the seclusion of the laboratory, has been brought to the notice of all branches of science and has been led unexpectedly into the arena of world-wide controversy.

The whole question was debated at length at the Microbiology Section of the British Medical Association meeting at Glasgow, and the opening papers and subsequent discussion were printed in full in this JOURNAL. At that meeting we were fortunate in having present both Dr. d'Herelle, who came over especially from Paris, and also Dr. Twort of the Brown Institution, as well as other laboratory workers from the Continent and from this country who have been devoting themselves to the study of this difficult problem. It became obvious at that meeting that more extensive research would be necessary before any definite opinion could be formed as to the validity of any particular theory, and until we are equipped with more accurate knowledge judgement must be reserved. But though no altogether satisfactory explanation has yet been adduced, the facts of the case are beyond dispute and have been verified by numerous investigators.

In his studies on filter-passing viruses Dr. Twort noticed a peculiar change in appearance of the colonies on agar of a micrococcus recovered from calf lymph, so that some colonies assumed a glassy or transparent aspect; this change began as clear spots at the margins of the colonies. Films made from such colonies showed that the organism had lost its characteristic morphology and nothing but small granules could be detected; moreover, subcultures from such altered colonies often failed to develop. It was obvious that some change had taken place, and, though Dr. Twort hesitated to give any confident interpretation of the phenomenon, he suggested at the time that it might be due to "an acute infectious disease of micrococci." This pronouncement, however, did not arrest attention outside technical circles, and his observations, in so far as they concerned this particular phenomenon, passed practically unnoticed. Interest was reawakened by the researches of Dr. d'Herelle two years later. He filtered a watery suspension of faeces from a case of dysentery through a porcelain filter and observed that a drop of this bacterial filtrate when added to a broth culture of the dysentery

bacillus (Shiga) causes the turbidity to disappear, and on examination it was found that a very large number of the bacteria had been dissolved. Then he observed that a drop from this lysed culture added to another broth culture of the same organism induced a like change in this, and a drop from the second culture produced the same result in a third, and so on indefinitely. Obviously the lytic agent had multiplied, since the drop added, for instance, to the tenth tube of the series represented but a minute fraction of the original drop from the filtrate, but it yet induced the same change with equal rapidity. Dr. d'Herelle thereupon declared that these results could only be explained on the supposition that the lytic principle was a living agent, and, since this lytic property was possessed by filtrates, and such fluids revealed no living cells by microscopic examination, he propounded the theory that bacteria might become parasitized by ultra-microscopic filtrable viruses which attacked them, and multiplied within their cytoplasm, so that the cells ruptured and were dissolved. He named the infective agent "the bacteriophage." D'Herelle has defended his hypothesis against considerable opposition, and has within the last three years amassed a volume of experimental evidence in support of his views.

Professor Bordet, the director of the Pasteur Institute at Brussels, whose researches in kindred problems have given him a world-wide reputation, quickly brought his critical faculties to bear on this important theme, and found himself at variance with the doctrine of the bacteriophage. He injected the colon bacillus into the peritoneal cavity of a guinea-pig, and, a few days after the last injection, collected a few drops of the leucocytic exudate by puncturing the abdominal cavity; he found that this exudate might be capable of inducing the transmissible lytic property when mixed with a trace of a culture of the colon bacillus. But this experiment did not always succeed, and, although it has often been found that pus is endowed with lytic properties, it was not possible to explain the phenomenon as due to a ferment secreted by the leucocytes. The explanation offered by Dr. Bordet in his recent Cameron lecture in Edinburgh, which we publish to-day, attributes the lytic phenomenon, not to the agency of an invisible parasite, but to a process of transmissible autolysis which is a direct consequence of a "nutritive vitiation of the bacterial metabolism, primarily induced by some external disturbing influence." This vitiation results in the production of a lytic chemical principle capable of communicating the same vitiation to new microbes belonging to the same species when brought into contact with them. The bacteria thus affected are not immediately destroyed, but are still capable of multiplying before they undergo the lytic process, and so of reproducing the lytic substance. Some disturbing influence is necessary to cause this nutritive vitiation of the bacterium in the first place; but, after the appearance of the lytic agent, no interference is necessary, since the reproduction of the principle requires only the presence of living microbes which, having absorbed a sufficient quantity of it, liberate fresh quantities of the same agent at a certain stage of their evolution. Some cells become more and more resistant to the action of the lytic principle, and it may be that the transmissible autolysis is evolved for the benefit of the species, so as to favour the development of more hardy strains, and that it actively contributes to the appearance of new races of the microbe and allows the phenomenon of mutation to be more readily elicited. It certainly would assist us to understand this remarkable behaviour of bacteria if there were proof that some advantage was gained by the cells which suffered these disturbances.

Professor Bordet's general review of the subject shows clearly that the various facts observed can be explained



as readily (if not more readily) by the theory of transmissible autolysis as by the postulation of the bacteriophage. It was pointed out during the discussion on this subject at Glasgow that we ought to hesitate before entertaining any theory which is "contrary to the naturalness or likelihood of things," and this conservative attitude makes us incline more to the explanations of Bordet than to the doctrines of d'Horelle. Other theories have also been advanced to explain the bacteriolysis, but none of them have found so many adherents as the two we have considered here. It would be well if all the champions of different theories observed the same moderation, the same restraint, and a similar diffidence to that exhibited in this scholarly review by Bordet. We note that the theory of transmissible autolysis is put forward as the one which the author deems to be the most probable, but he admits it still lacks indisputable demonstration. It will serve as a working hypothesis, and until further knowledge is gained it will act as a guiding principle in research.

### GALEN.

ONE wonders whether any man's fate has been so strange as that of Galen. He made no overwhelmingly great impression upon his contemporaries, but that has been the fate of many literary giants; a thousand years after his death his influence was enormous, and that, again, has happened to others. But nearly two thousand years after his death his fame has almost evaporated, and in this he is exceptional; a circle of readers won with difficulty is usually not broken. Aristotle can count on some thousands of readers, Hippocrates upon some hundreds, Celsus on at least as many; but no complete text of Galen has even been printed for close on a hundred years, and, with a single exception, no English printer has reproduced in our generation one of the noble translations into Latin which occupied most of the life of Ianaeus. To a graduate not of Oxford but of Edinburgh we owe the only attempt yet made to show the mettle of the old dictator. Dr. A. J. Brock was contributing to a series of translations meant for the general reader, so that he naturally chose a text which was not of wholly professional interest. *De Temperamentis*, *De Febrium Differentiis*, and *De Sanitate tuenda* are, to the medical reader, more interesting than Galen's treatise on the *Natural Faculties*, but they would not interest at all a non-medical reader, while any intelligent man can find much in the treatise selected by Dr. Brock upon which it is profitable to meditate.

Fuchs said that Galen's immortality was due to his realization that the physician is the servant of nature. Dr. Brock has expanded this formula, which is too general to be helpful, and finds in Galen these six characteristics: (1) the high ideal which he set before the profession; (2) his insistence on immediate contact with nature as the primary condition for understanding disease; (3) his broad outlook; (4) his appreciation of the unity of the organism and the correlation of its parts; (5) his realization of the inappropriateness and inadequacy of physical formulae as explanations of physiological activities; (6) his sense of the dangers which would beset the art of medicine were it to be the prey of mere competing specialists—his belief that the whole was more than the mere sum of its parts.

If, as we may reasonably hope, the precepts and examples of such scholars as Dr. Brock lead to a revival of critical interest in the writings of Galen, we think that the state of his reputation in the twentieth century might have given him, could he have foreseen the future,

more satisfaction than his dictatorship in the fifteenth century. Galen, like the rest of us, was a complex character. He had plenty of common vanity, much combativeness, very little tolerance of others' opinions; Dr. Brock's remark, that "Galen uses what we should call distinctly immoderate language towards those who ventured to differ from the views of his master," is certainly not an over-statement. Yet, when the worst is said, the truth—or what we take to be the truth—remains that Galen was the greatest physician whose name has come down to us; he was a far greater man than Sydenham and not inferior to Harvey. He was greater than Sydenham because his outlook was broader and his courage higher. One smiles nowadays at the rashness of a Spencer or even of a Buckle in essaying to cultivate a field too wide for a single labourer. They were narrow specialists in comparison with Galen. Nor was Galen a mere scholar and compiler; his positive contributions both to anatomy and physiology would have made the spiritual fortune of a smaller man. In all his writings, for instance in the *Natural Faculties* (see p. 59 et seq. of Dr. Brock's edition), one finds passages which show the difference between the mere compiler and the experimental philosopher.

But we are afraid that the modern world will never understand how great Galen really was, because his literary powers were not of the first order. In one sense Dr. Brock is certainly right in saying that "Galen is a master of language." In another, and much more important, sense he is, we think, altogether wrong. The great masters of literature have had the gift of selection, the instinct to recognize what special matter, valuable in itself perhaps, should be left out so that the general impression desired to be conveyed is not weakened. Galen had not this gift, and until someone endowed with a rare and precious quality interprets Galen to the modern world, Galen will continue to be no more than a shadow of a name. There is no necessary connexion between such a power of writing and classical scholarship, so that the issue of further translations of Galen's work, of the same standard as Dr. Brock's, is a preliminary condition of understanding. When this condition has been fulfilled Galen's interpreter may appear. Until that time Dr. Brock's volume will hold the field, and anyone who has read it will at least forbear to speak contemptuously of those who styled Galen their master.

### AN INSTITUTE OF ANIMAL PATHOLOGY.

THE Council of the Senate of Cambridge University has presented this week its report on the offer of the Ministry of Agriculture to establish in Cambridge, in connexion with the Schools of Agriculture and Medicine, a research institute for the study of the pathology of animal diseases. The Ministry, with the concurrence of the Development Commissioners and the Treasury, offers to provide, in the first instance, a capital sum of £30,000 for investment by the University, subject to certain conditions for the establishment of a professorship of animal pathology. The Development Commissioners are not in a position to recommend any assistance towards expenditure on the study of animal diseases from funds other than the Corn Production Acts Repeal Act Fund, which is expected to be exhausted in or about 1927. But the Treasury would afterwards be prepared to consider the provision from the Exchequer of funds for carrying on schemes initiated from the Corn Acts Repeal moneys. The Minister of Agriculture, having no doubt that his successors would share his view of the paramount importance of the institute and its work, expresses the hope that the risk which the university is asked to take will not appear unreasonable. Having considered the whole matter,

<sup>1</sup> Galen on the *Natural Faculties*. With an English translation by Arthur John Brock, M.D. [Loeb Classical Library]. London: Heinemann, 1916. (10s. net.)



the Council of the Senate records its opinion that the pathology of animal diseases is a suitable subject for scientific study, and that its inclusion is desirable in the University of Cambridge, which already possesses strong schools of medicine and agriculture. It accordingly recommends that the offer of the Ministry of Agriculture and Fisheries be accepted, subject to a proviso that the University shall have no obligation to continue the institute after March, 1927, unless satisfactory financial provision for its maintenance be forthcoming from the Government or from other sources. We need scarcely add that the foundation of a chair of animal pathology at Cambridge, with an institute for research in animal diseases, has the warm support of the Regius Professor of Physics, Sir Clifford Allbutt, and of the Drapers Professor of Agriculture, Mr. T. B. Wood. The former, we may suppose, will regard it as a step towards the establishment of an institute of comparative pathology which he has advocated for many years past. The field awaiting such an institute is very wide, and its value to medicine, veterinary medicine, agriculture, and horticulture, would be incalculable. Meanwhile much good must come from the foundation of an institute of animal pathology in close liaison with the school of medicine.

#### INDIAN SERVICES.

THE Government of India has decided, in reply to a resolution in the Council of State, to appoint a Royal Commission on the Services in India. The terms of reference have not been settled, but the Government states that they will be wide in their scope. "The Commission will be required, having general regard to the necessity of maintaining a standard of administration in conformity with the responsibilities of the Crown for the government of India, and to the declared policy of Parliament in respect of increasing the association of Indians in every branch of the administration, and having particular regard to the experience now gained of the operation of the system of government established by the Government of India Act, to inquire into the organization and general conditions of service, financial and otherwise, of the superior Civil Services in India, and the best methods of ensuring and maintaining satisfactory recruitment of such numbers of Indians and Europeans respectively as may now be decided to be necessary in the light of the considerations above referred to." The step now taken has been in contemplation for some little time. The present Secretary of State for India was known to be in favour of it, and his predecessor recently pointed out the urgent need for a comprehensive inquiry. The proposal does not seem to have had a favourable reception in India, and the Indian Assembly has passed an adverse resolution, in spite of a strong speech by Sir Malcolm Hailey, who said that Indians now desired an Indian scale of pay, holding that an Indian, in his own country, should not draw the same pay as a European from England. Some provinces had already demanded that men of the province should be appointed for work in the province at provincial rates. He went on to point out that recruits were unobtainable in England, and that Parliament had the duty to see that services required to carry on the administration should have men of the same independence and character, and the same sense of duty as they had had in the past. The only body that could authoritatively settle this big question was a Royal Commission, which would have to determine the numerical proportions of Europeans and Indians. One of the services affected by existing conditions is the Indian Medical Service, and it is to be assumed that the personnel of the Royal Commission will include a member of scientific distinction acquainted with the needs of medicine and biology. The Indian Medical Service is one of the key services—some have said the key service—of British administration in India. During the war vacancies were filled by direct appointment, and this policy is being pursued. The Secretary of State has recently announced his desire to appoint immediately

thirty European officers on special terms. This announcement has raised opposition in the Indian Assembly, and the future is far from clear. The career open to European officers in the Indian Medical Service is already restricted and the development of the idea of provincializing the superior services must have the effect of still further curtailing the opportunities of European medical officers. Among the inducements offered by the Secretary of State in advertisements with regard to special recruitment in 1922-23 is that increased opportunities are now afforded for research; reference is made to the special School of Tropical Medicine in Calcutta which has been brought into existence mainly by the exertions of officers of the Indian Medical Service, and particularly those of Sir Leonard Rogers, and it is also said that the "founding of a Research Institute in Delhi is in progress." A sum had been put aside to build such an institute, but one of the recommendations of the Inchcape Commission is that the grant for research shall be cut down. We understand that in consequence the building of the institute has been postponed indefinitely, and that it is even doubtful whether it will ever be erected.

#### THE OLD AND NEW PHRENOLOGY.

THE Henderson Trust of the University of Edinburgh was founded by William Ramsay Henderson, who believed that in phrenology there was an unexplored and interesting field for scientific research. He died in 1832, and his trustees have endowed research in the structure and functions of the nervous system, and have encouraged the excellent work on the anthropometric survey of Scotland. A lecture under the auspices of the Trust was given at the University of Edinburgh on January 26th by Dr. G. Elliot Smith, F.R.S., Professor of Anatomy at University College, London. He began by praising the action of the Henderson Trust, and expressed the opinion that the investigations it was promoting were bound to lead to valuable results such as the founder of the Trust clearly contemplated when he made his bequest. The subject of Professor Elliot Smith's lecture was the old phrenology and the new; he observed that though Dr. F. J. Gall did not use the term "phrenology," he was responsible for inaugurating the remarkable doctrine to which the word was applied by his collaborator, Spurzheim, a century ago. In the light of recently acquired knowledge we were in a position to appreciate the far-reaching influence of Gall's work upon the interpretation of the anatomy and physiology of the brain, and to judge of its worth in a more dispassionate manner than was possible in the nineteenth century, when the mere mention of phrenology was enough to raise violent gusts of controversy. If Gall's actual writings—and not merely what other people attributed to him—were studied, and due attention paid to the befogged state of knowledge and opinion regarding the nervous system when his work was done, it had to be admitted that posterity had failed to give any adequate general recognition to the importance of his positive contributions to the knowledge of brain anatomy, and to the great influence his work effected in clearing away much that was nebulous, and even fatuous, in physiological theory and psychological speculation. He inaugurated the new era of cerebral localization and identified the area of the left side of the cerebrum, injury to which caused a loss of speech or inability to name things. If he was led into error in working out the details of his applications of the principles of localization, the psychological doctrines which then prevailed were to blame rather than Gall himself. The lecturer then proceeded to examine the factors that determined the variations in the relative development of the different parts of the brain, and the dominant influence of the brain in determining the size and shape of the skull. He showed from skulls that the development of the brain from the lowest stages to that of modern man was chiefly in the frontal region. An examination of the skulls of famous musicians had shown that there was a distinct area of abnormal development above the ear and that the frontal development was sometimes below the average. In ancient Egypt the religious



revolution of Akhenaton was connected with the peculiar physical type of that famous Pharaoh. Egypt lost her empire, and when she recovered her strength in the nineteenth dynasty the great Pharaohs were found to have very strong faces and well developed skulls. To illustrate this point the lecturer showed a picture of Seti the Great, to whose tomb the Tutankhamen relics, recently unearthed, are being carried. Studies he had made when in Egypt afforded evidence that the weakness of the twentieth dynasty was accompanied by peculiarities in the skulls of the late Rameses Pharaohs.

#### THE VIRUS OF INFLUENZA.

A RECENT outbreak of influenza in South Africa afforded to Sir Spencer Lister, the well known bacteriologist, an opportunity of making some important observations which he describes in the *South African Medical Record* of November, 1922. He recalls that when influenza made its appearance in Johannesburg during the pandemic of 1918, Pfeiffer's bacillus—relatively absent in that community before the outbreak—was found by him in no fewer than 53 out of 56 cases dying with pulmonary complications; but his attempts to detect a filter-passing virus either by experiment or by culture failed. It is the more interesting, therefore, to learn that in this recent outbreak he has succeeded in satisfying himself of the presence of an anaerobic filter-passing organism similar to that defined by the careful studies of Olitsky and Gates in New York, and confirmed by Gordon in the London outbreak during the early months of 1922, as reported in our columns on August 19th, 1922. By sowing in Noguchi medium the filtered nasopharyngeal washings taken within thirty-six hours of the onset of influenza Lister succeeded in obtaining a culture of the filter passer in 5 out of 15 cases. His comments on the case with which the presence of this very minute organism may be overlooked without unusual concentration of gaze and accurate focusing. The stain which he found most successful for demonstrating the presence of the organism in films was Loeffler's alkaline methylene blue, the latter a specimen of Grubler's pre-war stock. The size of the organism was 0.15 of a micron, which is smaller than the organism found by Gordon, who estimated it to be 0.2 of a micron in diameter—a difference probably to be ascribed to the different methods of staining, as the latter observer employed prolonged staining in Giemsa's solution; he has seen preparations of Lister's organism, and agrees that it is identical with that observed by him in films of the nasal secretion and in cultures from the London cases. Lister has taken matters a stage farther than previous investigators by carrying out a preliminary experiment on human volunteers with cultures of this filter-passing organism. Sixty c.cm. of a culture in the second generation were divided into three portions—one-third was placed in a spraying bottle, one-third passed through a Berkefeld V filter and the filtrate placed in a second bottle, and the remaining third treated for half an hour to 56° C. and placed in a third spraying bottle. Six individuals were then sprayed with the unaltered culture, seven received the filtrate, and six the heated culture, about 1.5 c.cm. being sprayed into the nose and throat of each volunteer. The only one of these nineteen volunteers who complained of any discomfort had received the unaltered culture, and developed a typical attack of uncomplicated influenza beginning nineteen hours after spraying. The minute bodies were observed in smears of his nasal secretion, and a nasal washing was filtered through a Berkefeld candle. This filtrate on cultivation in Noguchi medium gave in five days a profuse growth of the organism. Two other individuals also in this first group that received the unaltered culture had a slight rise of temperature, and one of them showed a well marked leucopenia. Although, as Sir Spencer Lister is careful to point out, this result is not sufficiently conclusive to establish the filter passer as the cause of influenza, it is distinctly encouraging, and further reports of his enterprising investigations will be awaited with interest.

#### INSULIN.

THE many problems of physiological and therapeutic interest raised by recent investigation in Toronto of the internal secretion of the pancreas are beginning to attract attention in France. Dr. Gustave Monod, who has often acted as intermediary between the British and French professions, brought the subject before the Paris Therapeutical Society recently, and at the meeting of the Académie de Médecine on January 16th a short discussion followed a paper by M. Léon Blum of Strasbourg on the treatment of diabetes mellitus by insulin. Dr. Blum prepared insulin in accordance with the methods described in our columns by Macleod, Banting and his colleagues, and used it in two cases. Both patients were put on strict diet for a period, but continued to pass a considerable quantity of sugar in the urine; in both cases injection of the insulin M. Blum had prepared was followed by disappearance of the sugar. When the injections were discontinued the sugar and the accompanying symptoms returned. As for the practical value of the treatment, Dr. Blum arrives at a conclusion almost identical with one of those reached by Banting and his colleagues—namely, that in the present stage resort should be had to insulin in cases of diabetes in which it is essential to produce a rapid effect—such cases, for instance, as those of threatened gangrene or when a surgical operation is contemplated. In commenting on Dr. Blum's paper, Professor Achard related certain experiments he had undertaken at various times, and in particular some recent investigations by his pupil Gardin, hitherto unpublished. He prepared an aqueous decoction of pig's pancreas in a slightly acid medium, which was neutralized before injection into a vein. In all the cases treated the amount of sugar diminished and the respiratory quotient increased. In two other cases evidence was obtained that the extract given by the mouth at the same time as a dose of sugar increased the respiratory quotient, thus proving that it caused immediate combustion of sugar. Professor Achard expressed the opinion that the administration of the hormone of the pancreas would probably be a very useful method of treating diabetes, especially cases attended by severe acidosis. Professor Gley, after reviewing the situation and relating some early experiments of his own, concluded by saying that the great merit of his own, and his fellow workers was that they had succeeded in obtaining active extracts direct from the animal pancreas and had carefully studied the physiological effects of these extracts.

#### PHYSIOLOGICAL EFFECT OF HIGH ALTITUDES.

MR. J. BARCROFT, F.R.S., communicated to the Royal Society on January 18th a paper discussing the observations made in the Andes on the effect of high altitude on the physiological processes of the human body. He began by enumerating the three principal factors which appear to have a positive influence in acclimatization. The first is the increase in total ventilation, which usually raises the alveolar oxygen pressure ten or twelve millimetres higher than it would otherwise be; the second is the rise in the oxygen dissociation curve so that at any oxygen pressure the haemoglobin will take up more oxygen than before; and the third is the rise in the number of red corpuscles, and correspondingly in the quantity of haemoglobin. These factors, though they were provisionally treated as independent variables, are not so in reality, for blood can be made artificially to resemble high-altitude blood by shaking out the CO<sub>2</sub> and then withdrawing a portion of the plasma, so that the blood is richer in corpuscles. Such blood has been found to give, at the alveolar CO<sub>2</sub> pressure of the Andes, a reaction which is apparently almost unchanged, or even more acid, as measured by the ratio of combined to free CO<sub>2</sub>; a more alkaline reaction by the platinum electrode; and an oxygen dissociation curve which rises apparently out of proportion to the change in reaction. Herein, Mr. Barcroft believes, is the essence of the acclimatory process. The possibility of the oxygen dissociation curve altering owing to a specific loss of CO<sub>2</sub> could be ruled out. There was an



increase in the haemoglobin value of the blood and in the red cell count in all cases. On making the ascent there was a marked increase in the number of reticulated red cells; after the descent these cells fell to below their normal percentage. In the natives the ratio of reticulated to unreticulated red cells was not greatly increased, but the absolute number of reticulated cells per cubic millimetre was about 50 per cent. greater than normal. This was held to point to a hypertrophy in the bone marrow. There were no nucleated red cells. The increase in red blood corpuscles was such as to cause an absolute increase in the amount of oxygen in each cubic centimetre of blood in the majority of cases, in spite of the decrease in saturation. A number of mental tests of the ordinary type were performed at Cerro and at sea-level. These revealed no particular mental disability in the Andes, but, in the opinion of the observers themselves, as well as in that of psychologists who had been consulted, had shown rather that these tests were inadequate than that the mental efficiency was unimpaired. A number of tests were made to discover whether the pressure of oxygen in the blood was or was not higher than that in the alveolar air. In all cases they were so nearly the same that the passage of gas through the pulmonary epithelium was attributed to diffusion.

#### ZINC POISONING.

A sudden outbreak of illness which occurred recently amongst the inmates of a large institution near London indicates that danger may arise from the use of galvanized iron vessels for cooking purposes. About 400 persons were served at tea with hot stewed apples. The remainder of the meal consisted of bread and margarine and tea. Within a few minutes more than 200 of whose who partook of the stew complained of dizziness, sickness or a feeling of sickness, colic, and tightness in the throat. There was some diarrhoea, but no double vision. The medical officer at once administered doses of bismuth and chalk mixture, and within a short time most of the sufferers had recovered and were able to take supper at 7.45 p.m. Only ten persons were at all seriously ill, and all of them were able to carry out their ordinary work next day, so that obviously the effects of the poisoning soon passed off. The apples were freshly gathered and were stewed in large galvanized iron "skeps," which were placed in iron steamers. The skeps were used because it had been found on a previous occasion that the apples became black if placed directly in the steamers. A chemical examination of some of the stewed apples remaining over from the meal showed that they contained 7 grains of zinc, expressed as zinc oxide, in the pound; this is equivalent to 25 grains of hydrated zinc sulphate to the pound. Taken internally zinc sulphate is very slowly absorbed, and any effect it produces is probably due to its local action on the alimentary canal. The dose mentioned in the *Pharmacopoeia* is 1 to 3 grains. Its emetic effect is probably to be attributed to its irritating action on the stomach. The emetic dose given in the *Pharmacopoeia* is 10 to 30 grains. Each person consuming the stew may be assumed to have taken 18 to 20 grains of zinc sulphate. As it is well known that vegetable acid can act on metals the cause of the outbreak hardly seemed in doubt from the first. Galvanized iron vessels are seldom or never used for domestic cooking, but the incident here related shows that managers of institutions should recognize the risk and prohibit the use of galvanized iron vessels for containing food materials, which are commonly acid, and therefore capable of dissolving zinc.

#### DENTAL PRACTICE IN EGYPT.

THE Dentists Act of 1921, prohibiting the practice of dentistry by unregistered persons and establishing a Dental Board and a new and much expanded *Dentists Register* for this country, has had its counterpart in Egypt. The last annual report of the Egyptian Department of Public Health mentions the introduction of a new law giving greater powers for dealing

with unqualified dental practice, which was gradually becoming a serious public danger. The penalties under the old law, it is said, afforded an insufficient deterrent to a gradually increasing horde of ignorant charlatans who found in the practice of dentistry a lucrative source of gain. Just as in this country, the new Egyptian law makes a distinction in favour of those unqualified practitioners who through long practice had acquired a certain empirical knowledge of the art. It was felt that "to remove suddenly what had previously been an accepted means of livelihood would have entailed a considerable hardship upon many individuals whose claims to dental knowledge were sufficiently justified to remove them from the category of those who constituted an actual danger to the public." Certain transitory clauses were therefore included providing for the grant of a modified form of permit to such as could prove that they had been actually in continuous practice as dentists for at least ten years before the promulgation of the law, and who could sufficiently justify their claims to be allowed to practise their art by passing a special examination held by a board of examiners constituted for the purpose. This rigorous condition—much more exacting than the corresponding conditions laid down in Clause 3 of the British Dentists Act—is no doubt explained by the differences between unqualified dentistry as practised in Egypt and in this country. We learn that considerable difficulty was experienced in deciding upon the claims submitted with regard to length of practice. The nature of the difficulty may be guessed from the following discreet sentence: "In many cases the Committee formed to inquire into these [claims] was placed in the position of having to view with considerable suspicion some of the documentary evidence submitted." In the outcome 218 candidates were admitted to the technical examination, of whom 25 were rejected because they could not satisfy the examiners that they possessed sufficient practical knowledge to justify permission to continue their calling. To guard the primitive-minded people of Egypt from being practised upon by incompetent persons must be no easy task in these days of political uncertainty.

#### ERYTHREDEMA OR THE "PINK DISEASE."

THE abstract of Zahorsky's paper on the "pink disease" in the issue of January 20th (p. 123) has aroused considerable interest, and has called attention to a paper by Dr. W. E. Hume of Newcastle published in this JOURNAL on September 2nd, 1911. This author collected and described a series of cases of general oedema in children following gastro-enteritis. In the thirteen cases classified by him, in nine diarrhoea and vomiting is recorded; oedema, universal or limited to the hands or feet, was present in every case, and cyanosis of the extremities, slight or marked, in ten cases. The ages of the patients varied from 13 months to 4 years. These cases differ from those described by Zahorsky in the absence of the striking and usually early erythematous eruptions and of the severe pruritus, and in the presence of the initial diarrhoea and vomiting which are almost constant features in Hume's series. The swollen and cyanotic condition of the hands and feet was apparently similar in both series.

#### POST-GRADUATE EDUCATION IN LONDON.

THE Fellowship of Medicine has invited representatives from the staffs of the hospitals interested in the establishment of a scheme of post-graduate education in London to a conference, to be held, by kind permission of the Royal Society of Medicine, at 1, Wimpole Street, on Thursday, February 8th, at 5 p.m. The object with which the conference has been arranged is to afford an opportunity of discussing how far the Fellowship of Medicine can continue to promote the cause of post-graduate instruction and hasten the time when a permanent and comprehensive organization in London is an accomplished fact. Larger schemes, in which the University of London and the University Grants Committee are interested, are, we believe, under consideration, but in the most fortunate circumstances it must be some considerable time



before they can come into effect. The Fellowship of Medicine was founded to help medical visitors to London, more particularly on the social side. London is not inhospitable, but its hospitality is patchy. The Fellowship owed much to the initiation of Sir William Osler, who had also taken the lead in founding the Post-Graduate Medical Association. The two bodies have been amalgamated and have kept the flag flying since the beginning of 1919. The combined body deserves, perhaps, more credit for this than it has received; it may, we hope, be enabled to continue its work of co-ordination and propaganda.

#### THE CIVIL PROFESSION AND THE MEDICAL SERVICES.

A discussion on co-operation between the medical services of the civil and armed forces in peace and during war will take place at the meeting of the War Section of the Royal Society of Medicine on Monday, February 12th, at 5 p.m. The subject will be introduced by Surgeon Commander R. J. McKeown, O.B.E., M.B., R.N., and Surgeon Commander A. Gaskell, C.B., R.N. The discussion will be opened by Air Commodore D. Munro, C.S.I., F.R.C.S., D.M.S., R.A.F., and continued by Major-General C. E. Pollock, C.B., C.B.E., D.S.O., D.D.G., A.M.S., Sir Crisp English, K.C.M.G., F.R.C.S., and others. The subject, it is believed, will be of interest to all medical men, and visitors, whether members of the Section or not, will be welcomed.

We have to announce with deep regret the death, on January 28th, after a long illness, of Dr. James Ritchie, professor of bacteriology in the University of Edinburgh. We hope to publish an account of his career in an early issue.

### NoVA et VETERA.

#### DR. THOMAS SHORT: AN EARLY MEDICAL STATISTICIAN.

"Dr. THOMAS SHORT," wrote Dr. Creighton, "a man of great industry, about the middle of last century obtained access to a large number of parish registers, and worked an infinite number of arithmetical exercises upon their figures. His abstract results or conclusions are colourless and unimpressive, as statistical results are apt to be for the average concrete mind; nor can they be made to illustrate the epidemic history of Britain with the help of his companion volumes—*A General Chronological History of the Air, Weather, Seasons, Meteors, etc.*—for these extraordinary annals are for the most part loosely compiled from foreign sources, bringing into one focus the most scattered references to disease in any part of Europe, and that too without criticism of authorities but often with surprising credulity and inaccuracy. That so much statistical or arithmetical zeal and exhaustiveness (in the work of 1750) should go with so total a deficiency of the critical and historical sense (in the work of 1749) is noteworthy, and perhaps not unparalleled in modern times."

We are not in a position to rebut Dr. Creighton's charges against the *General Chronological History*, never having seen a copy of that rare book; we will, however, roundly assert that *New Observations, Natural, Moral, Civil, Political, and Medical, on City, Town, and Country Bills of Mortality*, if unimpressive are certainly not colourless. Dr. Thomas Short's arithmetical exercises led him to rather gloomy conclusions, which he stated in very vigorous terms. The birth controllers of the period are informed that

"If Whoredom be a Fault, Suicide is a far greater Crime: by Suicide is meant, not only the Destruction of real Beings in the Womb, Birth, or immediately after; but all nefarious Practices used by wicked Wretches to prevent Conception from their carnal Gratification."

Short was an adherent to the House of Hanover, and was glad to be able to point out that by their accession "Industry was promoted and Trade vastly increased, to the Accumulation of Riches."

But unfortunately there were other effects:

"For the Truth of these sad Effects, I might appeal from the Registers, to the City Table of Casualties, and see which Periods have produced most hereditary Gouts, venereal Taints, in which are most Apoplexies, or violent Deaths, either by the Executioner, or the Wretches' own butcherly Hands have been most employed, Drunkenness and Swearing most common. I might appeal further to the Death of Infants then and now, whether 30 or 47 per cent. are the greater Numbers; and whether 2 of 17 that died of the Small-pox, or 4 in 21 be the most, or one of 35 that died then of Convulsions, or 9 of 35 that die now of them."

Short's medical philosophy was iatro-mechanical rather than Galenical and—*horresco referens*—he was jocular at the expense of Sydenham. He has a chronology of epidemics and we read: "61 to 64, Sydenham's depuratory Fevers, which, however, in 65 depurated to the fatallest Plague ever the Metropolis felt." But the general opinion of his colleagues was much the same as Sydenham's, as the following remarks show:

"Some take in a larger Circle of Medicines, but from some false Idol (as Bayliri terms it) or others may prescribe in such a random, tumultuous Way, as rarely succeeds well. Others may imagine, that keeping steadily to the same Intentions in the same Diseases, at all Times, will be equally successful at all Times. . . . is more false: Others have a dextrous Smatch of the Gout, Fever, Scurvy, or Hippo in all Diseases; others will relish nothing but what is the Product of the Furnace, by Crucible and Retort; or believe nothing but what they see with their own Eyes, or hear with their own Ears, as though all were Liars but they, and thereby give suspicion that they themselves are such."

As a statistician, Short's place in order of merit, as in time, is after Graunt and before Heberden. He had neither the originality nor concentration of Graunt, but his industry was, as Creighton said, immense. He has collected data in some instances ranging over a full 200 years, from the first introduction of parish registers by order of Henry VIII's minister Cromwell. He has compared the results in parishes in different soils and at different elevations, he has correlated mortality with air temperature and barometric pressure and printed all his evidence. Of course, the chief difficulty of interpretation is the absence of a census record. Thus Short always used the ratio of christenings to marriages as the just measure of fertility; no other measure was available. But naturally it is only correct when the frequency of marriages and the population "at risk" are constant. The ratio will understate the gross fertility if marriages are increasing. It would not be safe to infer from his data that the population was more prolific in his second period (roughly the 100 years down to his time) than in the first period (the middle of the sixteenth to the middle of the seventeenth century) because the ratios of christenings to weddings were respectively 4.3 and 3.99. At the same time it is proper to notice that there is a high correlation between his ratio and more exact measures even in a rapidly increasing population.

Thus in England and Wales in the years 1871, 1881, 1891, 1901, and 1911, the ratios of births to marriages were 4.2, 4.5, 4.0, 3.6, 3.2. The legitimate births per 1,000 married women aged 15 to 45 were 288.4, 284.9, 263.8, 234.2, 196.2. Turning the two series into percentages of the first figure of each we have 100, 107, 95, 86, 76: 100, 99, 93, 81, 68.

The inference Short would have drawn from the former series would not be substantially modified by the latter. The same kind of criticism applies to reasoning from the ratio of burials to christenings and is here rather more formidable because of the consequence of migration or, as Short termed it, export. He dealt with the latter point very ingeniously, and proposed a method of computing the number of imports. His method may be shown by an example. It depends upon the assumption that 57 per cent. died before attaining the age of 20. One of his tables gives 211,233 baptisms; he deducts 57 per cent. and is left with 98,071 (so he says, but it should be 90,830, we think). But the table gives 136,942 married, but all which, he says, is 38,867 more than the survivors, per cent. the survivors to 20 do not marry; an allowance of 5 per cent. for the celibates reduces the married survivors to 129,972. Subtracting this from the numbers married he gets a balance of 43,963 for imports and unregistered births. Of course, he had no means of measuring the age distributions in the parishes, but he was fully aware that

"It is Idleness or Ignorance to estimate the Healthiness of a Place, from its having a few old People; for such Places are inhabitable, where some Constitutions (especially such as are in them) will not weather out Life to old Age in any Soil Situation."

With that sensible remark we take leave of Dr. Thomas Short, whose book contains more wit and much more wisdom than many newer treatises.



# The Jenner Celebrations.

## PARIS.

### THE CENTENARY OF JENNER AT THE ACADEMIE DE MEDECINE.

[FROM OUR PARIS CORRESPONDENT.]

THE meeting of the Académie de Médecine on January 23rd was devoted to the praise of Jenner. The famous Salle des Pas Perdus presented an unwonted aspect; it echoed to the feet of many visitors, for there was displayed in it a collection of all that could be got together in the way of documents concerning Jenner and the beginning of vaccination. The magnitude of the collection was all the more remarkable because the Jenner exhibition in London must have prevented the loan of many interesting objects. Apart from some valuable relics kindly lent to the British delegates the exhibition was entirely the work of the Continental admirers of the great man: books, portraits, medals, china, caricatures, all were to be seen; Dr. Cumston had brought from Geneva a unique example of the famous engraving by Scriven after the portrait by J. R. Smith—unique because it was in colours. The special numbers of the *BRITISH MEDICAL JOURNAL*—the Jenner Number, 1896, and the Vaccination Number, 1902—were given a prominent place. Dr. Vitoux, the well known Parisian collector, exhibited some autographs, one of them showing that the *crise des logements* even then needed a preventive vaccine:

My dear Madam,

I am at length in London but have not yet been able to get apartments, except at au hotel. When I have, you shall again hear from me.

Imperial Hotel, Covent Garden.

Edw. Jenner.

Now the meeting opens; the president, Professor CHAUFFARD, and the committee enter, wearing plumed cocked hats and regulation embroidered coats. The Minister of Hygiene represents the Government of the Republic, and Lord Crewe, the British Ambassador, is represented by the First Secretary to the Embassy. A large number of foreign guests have accepted the invitation to France, and in the foremost seats we see the delegates of Belgium, Canada, Greece, Holland, Italy, Peru, Portugal, Rumania, Sweden, Switzerland, Czechoslovakia, Tunis, and Turkey. Need I add that our English friends were represented? I need not, for the representatives are at home in Paris and belong to the academic family; Dr. R. O. Moon representing the Royal College of Physicians of London, Sir Ronald Ross, K.C.B., the Ministry of Health, and Sir St. Clair Thomson and Sir Almroth Wright the Royal Society of Medicine.

Professor CHAUFFARD gave a short and charming address, in which he traced the history of the fight against small-pox and described what manner of man Jenner was. Then Dr. CANUS, Directeur de l'Institut Supérieur de Vaccine, dealt with Jenner's work from the scientific point of view. This was the *plat de résistance* of the occasion. Then came Professor TEISSIER, who in vivid and eloquent words related the share of French science and of the Académie de Médecine in the dissemination of knowledge of the new methods. He quoted some striking figures. During the war of 1870-71—a short war, with relatively few men engaged—the French army had 200,000 cases of small-pox, and nearly 30,000 deaths from that cause. During the recent war, with an army of our million men, mobilized for four years and a half, only our cases occurred, and these four imported. Dr. JEANSELINE sketched the progress of vaccination in the French colonies, describing it as an agent of civilization; and Professor ESRIER recalled the part played by Genevese physicians in the propagation of vaccination.

Dr. SOUVENS, the annual secretary of the Académie, read a paper on small-pox in London, prepared by Dr. BLAXALL, and expressed his regret and that of the audience that the thor had been unable to read it himself.

Sir ST. CLAIR THOMSON, in the name of the Royal Society of Medicine, won the heart of the audience with a spirited Thomsonian speech delivered in the purest Parisian French. He presented to the Académie de Médecine a fine engraving of Jenner, the gift of Dr. Walter S. A. Griffith, and also the picture of the twenty-one founders of the Medical Society of London with the portrait of Jenner in the background. He pointed out how Jenner was the precursor of Pasteur, just as Pasteur opened the way to Lister.

Professor ACHARD, secretary-general of the Académie, then read the following address of gratitude and sympathy, signed by the President of the British Medical Association and the Chairman of Council, in the name of the 24,000 members of the Association.

#### TO THE ACADEMIE DE MEDECINE

On the Occasion of its Celebration of the Centenary of Edward Jenner's Death.

The British Medical Association has heard with great pleasure that the Académie de Médecine is about to celebrate the centenary of the death of a great Englishman, Edward Jenner. The Association desires to express its warm appreciation of this act of spontaneous generosity. The Association does not forget the graceful words in which a great Frenchman, Louis Pasteur, in his address to the International Medical Congress in London in 1881, referred to Jenner: "I have," he said, "given to the term 'vaccination' an extension which science I hope will accept as a just homage to the immense services rendered by one of the greatest of Englishmen—Edward Jenner." The British Medical Association has over 23,000 members who are practising medicine in all parts of the British Empire. Each one of them, wherever his lines may be cast, is, alike in his conception of the principles of medicine and in his daily application of these principles to the alleviation of suffering and the prevention of disease, under an immense debt to Pasteur. The British Medical Association is proud to know that Pasteur himself desired to associate with his own great achievements the name of Edward Jenner.

Signed on behalf of the Association,

WILLIAM MACEWEN,  
President.

R. A. BOLAM, M.D.,  
Chairman of Council.

January 19th, 1923.

Professor Achard concluded by showing a number of lantern slides illustrating the life and work of Jenner.

In the evening a banquet was held to which your correspondent was specially invited. Our visitors received a most cordial welcome, and when Sir Almroth Wright, Sir Ronald Ross, and Dr. Moon in succession rose to address the company in French each one of them was greeted by a *ban* given vigorously in the French fashion.

That the centenary of the death of Jenner and of the birth of Pasteur should have fallen almost at the same time seems providential; these two benefactors of mankind succeeded each other in time as they did in genius. It is impossible to put into dry words the atmosphere which pervaded the day. The symbolic significance of the presence of representatives of so many countries coming together in France to render homage to a great Englishman appealed alike to eye and heart. We live in difficult times, but if we know how to lift ourselves high enough we shall breathe a purer air. Jenner, Pasteur—these names arouse in us the highest kind of enthusiasm; they shine upon the peoples like the sun, which has no regard for frontiers. The relations of our two great masters, like the relations of our two races—I borrow here from Sir St. Clair Thomson's peroration—may they not be expressed in these two lines from Shakespeare:

"Are we not made as notes of music are,  
For one another, though dissimilar?"



## LONDON.

## COMMEMORATION AT THE ROYAL SOCIETY OF MEDICINE.

The centenary of the death of Edward Jenner was celebrated at a special meeting of the Royal Society of Medicine on January 26th, when the President of the Society, Sir WILLIAM HALE-WHITE, delivered an address. The members of the audience, on arrival outside the building, were diligently plied with antivaccinationist leaflets—in the circumstances a grotesque misdirection of energy.

On the platform William Hobday's portrait of Jenner, which has been presented to the Society by Dr. W. S. A. Griffith, was displayed. The portrait, painted in 1821, represents Jenner seated, dressed in a cloak, with a fur collar, one arm resting on a volume lettered "John Hunter," while a paper relating to vaccination lies on the table.

## JENNER: NATURALIST, PATHOLOGIST, AND COUNTRY DOCTOR.

ADDRESS BY SIR W. HALE-WHITE.

Sir WILLIAM HALE-WHITE devoted his address to a delineation of Jenner's personality, and not an appraisalment of his great discovery, which he judged to be unnecessary before such an audience. He remarked that it was fitting to commemorate the centenary in the Royal Society of Medicine, because Jenner was one of the foundation members of the former Medical and Chirurgical Society, and contributed two papers to the first volume of its *Transactions*.\*

Jenner was born at Berkeley, in Gloucestershire, in 1749. He was the son of Stephen Jenner, vicar of the parish, who had been tutor to one of the Earls of Berkeley. His father died soon after Edward's birth, and the boy was brought up by his brother, also a Rev. Stephen Jenner. At 8 years of age he went to school at Wotton-under-Edge, and later to a tutor at Cirencester. After a pupilage to Mr. Ludlow, a practitioner at Sodbury, in Gloucestershire, Jenner came to London at the age of 21, and for two years resided in the house of John Hunter. "Nothing could have been more fortunate, for both men were enthusiastic naturalists, always observing, inquiring, and speculating." On Hunter's recommendation Jenner was appointed to examine and prepare the specimens of natural history brought back by Captain Cook in 1771; he declined the offer of the post of naturalist to the expedition which sailed in the following year.

*The Soul of a Naturalist.*

After Jenner's return to Gloucestershire many letters passed between the two until Hunter's death in 1793. All Jenner's letters had been destroyed, but from Hunter's it was evident that Jenner made many observations for Hunter on the hibernation of animals. In one letter Hunter thus disposed of Jenner's disappointment in love:

"I own I was glad when I heard you was [to be] married to a woman of fortune; but let her go, never mind her. I shall employ you with hedgehogs, for I do not know how far I may trust mine. I want you to get a hedgehog at the beginning of winter and weigh him; put him in your garden, and let him have some leaves, hay, or straw to cover himself with, which he will do; then weigh him in the spring, and see what he has lost. Secondly, I want you to kill one at the beginning of the winter to see how fat he is, and another in the spring to see what he has lost of his fat. Thirdly, when the weather is very cold, and about the month of January, I wish you would make a hole in one of their bellies, and put the thermometer down into the pelvis, and see the height of the mercury."

Probably no other disappointed lover had been bidden to seek solace in hedgehogs! Many other letters of Hunter were concerned with these animals, and, indeed, nine-tenths of the letters were taken up with requests for specimens or for experiments in natural history. That Jenner had in him the soul of a naturalist was shown by the fact that one of Hunter's letters began: "I do not know anyone I would sooner write to than you; I do not know anybody I am so much obliged to." It was Hunter who stimulated Jenner to study the habits of the cuckoo, on which subject Jenner sent a communication to the Royal Society in 1788.

*The Complete Country Practitioner.*

When Jenner took up general practice in Berkeley (in 1773) his talents gained him confidence and esteem, and his practice

and reputation rapidly increased. A patient in the Gloucester infirmary requiring an immediate operation, and neither of the surgeons being available, Jenner, sixteen miles away, was summoned, and performed the operation successfully. He was disappointed by the uncertainty of the action of tartar emetic, and published an improved process, which led Hunter to write: "I am puffing off your tartar as the tartar of all tartars. . . . Let it be called Jenner's tartar emetic." In 1777 Hunter wrote to Jenner, saying that he was ill, and Jenner, suspecting that he was suffering from angina pectoris, visited him and found the surmise correct. He wrote to Heberden to say that, as a result of *post-mortem* examinations, he had come to the conclusion that angina pectoris was due to disease of the coronary arteries, but that he hesitated to make his opinion public or to tell Hunter for fear of distressing his friend. This was the first account of the association of diseased coronary arteries and angina pectoris. In a letter to Dr. Parry of Bath Jenner gave a quaint account of his first case:

"I was making a transverse section of the heart pretty near its base, when my knife struck against something so hard and gritty as to notch it. I well remember looking up at the ceiling, which was old and crumbling, conceiving that some plaster had fallen down. But on a further scrutiny the real cause appeared: the coronaries were become bony canals."

He read a paper on this subject before a society of doctors, called the "Medico-Convivial," which met at a country inn at Rodborough. Another paper of his was on heart disease occurring during rheumatism. Jenner was popular with his fellow doctors and with his patients. He frequently spent days in the houses of particular friends, especially if any of them were ill, carrying on his practice from his temporary quarters. Educated people loved his conversation, and he used to encourage those whom he liked to ride with him on his rounds. When he left a patient's house often some of the family would ask permission to ride home with him even if it was midnight. His range of conversation was vast; he was often witty, was fond of epigram, and was no mean poet; also he could sing and play the violin and flute.

In 1788 Jenner married Miss Catherine Kingscote, and in the following year his son Edward was born, John Hunter standing as godfather. In 1792 the fatigues of an ever-increasing practice had become so great that Jenner resolved to practise solely as a physician, and accordingly he obtained the M.D. degree of St. Andrews. His friend Gardner thus described his appearance at this time:

"His height was rather under the middle size, his person was robust but active and well formed. In dress he was particularly neat. . . . He was dressed in a blue coat and yellow buttons, buckskins, and well polished jockey boots with handsome silver spurs, and he carried a smart whip with a silver handle. His hair, after the fashion of the times, was done up in a club, and he wore a broad-brimmed hat."

"Everything we know of him," said Sir William Hale-White, "indicates that he was usually cheerful and sociable, very occasionally he was depressed, and we find him complaining that he was an example of the sin of indolence. Many busy people, being aware how much there is to do in the world, at times blame themselves for this."

*The Great Discovery.*

When as a youth Jenner was an apprentice at Sodbury, a young woman came to his master's house, and on small-pox being mentioned said at once, "I cannot take that disease, for I have had cow-pox." That remark set Jenner thinking, and afterwards he talked about it to Hunter, who characteristically told him, "Don't think, but try, be patient, be accurate." When he went into practice he discussed the question with other doctors, who were sceptical, for they said that cow-pox often did not protect from small-pox. This difficulty Jenner overcame by finding that the eruptions on the udders of cows were not always true cow-pox, and that the vesicles of cow-pox were not equally virulent at all periods of their development. By 1780 he believed he was in sight of a means of completely eradicating small-pox by inoculation with cow-pox. In 1789 he inoculated his eldest son with swine-pox matter; subsequently variolous matter was inserted, and again in two subsequent years. None of these three small-pox inoculations caused small-pox in the child. In 1796 matter was taken from the hand of Sarah Nelmes,

\* "Distemper in dogs" and "Two cases of small-pox infection communicated to the foetus in utero, under peculiar circumstances," both contributed in 1805.



who had been infected with cow-pox by her master's cows, and inserted into the arm of James Phipps, aged 8 years. Two months later variolous matter was taken immediately from a small-pox pustule and carefully inserted by several incisions. Days of the intensest anxiety to Jenner dragged by, but James Phipps did not have small-pox. Jenner wrote to his friend Gardner on July 19th, 1798:

"As I promised to let you know how I proceeded in my inquiry into the nature of that singular disease the cow-pox, and being fully satisfied how much you feel interested in its success, you will be gratified in hearing that I have at length accomplished what I have been so long waiting for, the passing of the vaccine virus from one human being to another by the ordinary mode of inoculation.

"A boy named Phipps was inoculated in the arm from a pustule on the hand of a young woman who was infected by her master's cows. Having never seen the disease but in its casual way before—that is, when communicated from the cow to the hand of the milker—I was astonished at the close resemblance of the pustules, in some of their stages, to the variolous pustules. But now listen to the most delightful part of my story. The boy has since been inoculated for the small-pox, which, as I ventured to predict, produced no effect. I shall now pursue my experiments with redoubled ardour."

In 1798 Jenner published his famous little book, called for short the *Inquiry*. It contained the record of numerous cases. Some of them showed that persons who had had cow-pox did not get small-pox either when exposed to it or when inoculated with it; some showed that if a person had had small-pox he was protected against cow-pox; some that those inoculated with cow-pox were immune to small-pox inoculations, and others again that material taken from the cow-pox pustule in the human being might be used to inoculate other human beings, who were thus equally protected from small-pox.

#### World-wide Progress of Vaccination.

After the publication of his book Jenner's correspondence left him little time for practice. Most of his contemporaries in the profession saw that a great discovery had been made, though there were a few who gave trouble, for Jenner wrote: "Brickbats and hostile weapons of every sort are flying thick around me"; and, "I am beset on all sides by snarling fellows." The *Inquiry* found its way to the Continent in 1799. The day on which the boy Phipps had been vaccinated—May 14th—became an annual festival in Berlin. The French Government offered vaccination gratuitously to all who could not pay for it. Thanks to Lettsom, vaccination made its way to America. Jenner himself offered a thousand guineas towards the cost of getting vaccination to India, but he was not called upon for this money, because De Carro of Vienna had already been the means of introducing it there. By decree of the Dowager Empress of Russia, the first child in Russia to be vaccinated was named Vaccinoff, and provision was settled on her for life.

Meanwhile, such was Jenner's occupation with journeys, correspondence, and his own practice, that his practice disappeared. He ought to be rewarded by Parliament. A petition accordingly was presented, and was referred to a committee, which advised a grant. The sum of £10,000 was voted in the House of Commons. Other honours were heaped upon him, but what he appreciated most was the praise of members of his own profession. Sir W. Hale-White gave an account of Jenner's appearances during a long debate, occupying several successive nights, in the Physical Society of Guy's Hospital. On entering the theatre he was constantly received with universal and rapturous applause. A pamphlet by John Birch, surgeon to St. Thomas's Hospital, and an opponent of vaccination, was interesting in this connexion:

"The anniversary of Mr. Guy's Hospital was held in 1802, where I expected to meet the professors, the medical gentlemen, and the students on the same terms as usual. What was my surprise to find that the sole business of the meeting was to begin a canvass for names to a Petition to Parliament in support of Dr. Jenner's bill. I refused to sign it. My surprise was increased after dinner to find that toasts and songs and compliments from one professor to another in honour of vaccination were the order of the day."

Jenner's friends thought that he would make a handsome income if he settled in London, and consequently he started practice at Hertford Street, Mayfair, but it was a failure. Most persons seemed to consider that as he had a grant he was the servant of the public (although the grant was not paid for two years, and when it was paid £1,000 was deducted for expenses). After a fair trial, he relinquished the London practice and returned to Berkeley, becoming again the village doctor. The London experiment had been costly, and his supporters brought before Parliament the question of a further

grant. The Royal College of Physicians, on the instruction of the Government, reported on the subject of vaccination in 1807, under the signature of Sir Lucas Pepys, the President, and stated that the truth of the practice "seems to be established as firmly as the nature of such a question admits." As a result of this report the Chancellor of the Exchequer proposed a grant of £10,000, which, by amendment in the House, was raised to £20,000, with the fortunate condition for Jenner that it was to be free of fees.

#### Jenner's Last Twenty Years.

Jenner now lived at his house, "The Chantry," in Berkeley, doing the work of an ordinary country practitioner. In the garden was an arbour in which he used to vaccinate the poor gratuitously. Sometimes he visited Cheltenham and Bath, occasionally he had the opportunity of seeing celebrated visitors to his neighbourhood. He was as eager as ever in the study of nature; a charming note of his described how moths fed upon the night-blowing primrose. He also did much work on the migration of birds. "In no wise was he puffed up with his fame. He remained a simple, unostentatious man, a friend of his neighbours, whom he liked to meet at dinner. He freely gave of that most valuable of all commodities, his time; he was assiduous as a magistrate, he would listen to all callers, rich and poor, at whatever time they came to him. He was particularly cordial to all his fellow practitioners, and especially liked talking with the younger of them. His kindness to the poor was continual. Phipps (the subject of his vaccination experiment) became very ill; therefore, as he lived in a miserable place, Jenner built him a comfortable cottage, himself stocking the garden with shrubs and flowers. One of the villagers showed considerable ability, whereupon Jenner took him to a 'Musick Meeting' at Gloucester. Indeed, as far as we can gather, he led the happy life of the perfect country doctor."

His fame continued to spread. Diplomas, honours, and addresses were awarded to him to the number, according to Baron, of forty-seven. The freedom of the City of London and of five other cities in the kingdom was presented to him. He received an honorary degree from the University of Oxford. He was made physician-extraordinary to the King. One great distinction was his unanimous election as a Corresponding Member of the National Institute of France; later he became one of its Foreign Associates. One interesting tribute came from the Indians of North America, to whom Jenner had sent his book. The chiefs held a meeting to thank him, and in their reply said:

"We shall not fail to teach our children to speak the name of Jenner, and to thank the Great Spirit for bestowing upon him so much wisdom and so much benevolence. We send with this a belt and a string of wampum in token of our acceptance of your precious gift; and we beseech the Great Spirit to take care of you in this world and in the land of Spirits."

Such was the gratitude of mankind to Jenner that he attained an influence throughout the world such as had never been acquired before or since by a private individual. His name was enough to obtain the release of some Englishmen imprisoned by Napoleon and by other monarchs. Those who travelled abroad were able to dispense with passports if they took a certificate by Jenner. The European inhabitants of India gave him £6,000 in their gratitude. Many medals were struck in his honour and many statues set up. Of his various portraits that by Hobday was considered the best, and by the great generosity of Dr. W. S. A. Griffith it had been presented to the Royal Society of Medicine. On looking at Hobday's portrait no one would be surprised to learn that Jenner was liable to apoplexy. His first attack took place in 1820, his last and fatal attack on January 26th, 1823.

"Usually," said Sir W. Hale-White in conclusion, "when a really great discovery is made it is attacked by ignoramuses, fools, knaves, and cranks. In their day they had their fling at Jenner, but I have not alluded to them, for time and Jenner's fame have cast them into obscurity, where they had better stay. Nor have I given any proofs of the efficacy of vaccination; this has been done over and over again. . . . Rather have I tried to delineate the quiet, retiring country doctor, fond of poetry, music, and painting, beloved by those who knew him, quite unspoilt by fame such as has fallen to very few, a great naturalist, the friend of Hunter, a man who would have been known as a pioneer pathologist if he had published his observations, who by patient thought and observation, extending over many years, arrived at a discovery which not only told us how to banish one of the greatest scourges of mankind, but the principle of which has since been applied so successfully to other diseases."



Sir ANTHONY BOWLY proposed a vote of thanks to Sir William Hale-White for his address. Without entering too deeply into statistics, Sir William had made plain the ravages of small-pox in the pre-vaccination era. At a time when the population of England was only about seven millions the deaths from small-pox were said to amount to 44,000 a year. It was evident also from the way in which Jenner's discovery was acclaimed in all countries that the disease must have been extraordinarily prevalent almost all over the world. Sometimes, when he looked at pictures which illustrated society beauties of 150 years ago, he thought there was not much to be said for their features; but the explanation probably was that the population was so largely pockmarked that almost any woman who had an unsullied complexion was distinguished among her sisters, and, given passable charms, ranked as a beauty. Sir William Hale-White had alluded very briefly to the fact that the British army was spared small-pox in the late war. One of the striking things in the medical history of the war was that there was hardly a zymotic disease which did not make its appearance at one time or another in one part or another of the war area of France and Belgium; but there was only one case of reputed small-pox, and that turned out not to be small-pox at all. When the North Midland Division came out to France it was discovered that it included 8,000 unvaccinated men. These men had come from areas, like Leicester and Derby, where there had been much antivaccination propaganda, and the authorities had a good deal of anxiety before these men were put into the line. It was supposed that the order for vaccination might give trouble, but actually there was none; it was put to the men that it would be assumed by the command that anybody who was afraid of being vaccinated was afraid of fighting; whereupon all the men were vaccinated. Pasteur was born a month before Jenner died; it seemed as though one great spirit had handed on the torch of science to another great spirit; and the greatness of mind of a great man was brought out in Pasteur's statement that to Jenner and not to himself should be given the credit for the discovery of the attenuated virus. It was at Pasteur's request that the name of "vaccine," instead of some new name, was given generally to the matter introduced in preventive inoculations against other diseases.

Dr. R. J. REECE, C.B. (Senior Medical Officer, Ministry of Health), seconded the vote of thanks, and referred to the fact that the Section of Epidemiology and State Medicine, of which he was president, awarded a Jenner medal on occasion to distinguished epidemiologists. Dr. Reece mentioned that his father was vaccinated by Edward Jenner himself.

The vote of thanks was accorded by acclamation.

### THE JENNER MEMORIAL MEDAL.

THE Jenner Memorial Medal here illustrated was founded by the Epidemiological Society at a meeting held on May 15th, 1896, one hundred years and one day after the date on which Edward Jenner performed his first vaccination. The desire of the society was to commemorate a discovery attended with such brilliant results in the direction of preventive inoculation and to promote epidemiological research.

The award of the medal was not to be restricted to British subjects. An appeal was made to the profession to contribute to the cost, and subscriptions were received from all parts of the world. The medal was designed by Mr. Allan Wyon, F.S.A., under the advice of a committee, of which Sir Shirley Murphy was president. On the obverse of the medal is a three-quarter face portrait of Edward Jenner, with the inscription "Edward Jenner, M.D., F.R.S., born 1749, died 1823," and on the reverse a representation of the earth,

such as is engraved on the diplomas of the society, surrounded by the following inscription: "Centenary of Vaccination Celebrated 1896. For Work of Great Merit. Epidemiological Society of London. Venienti Occurrite Morbo." The name of the medallist and the date of the award are inserted on the rim of the medal. Since the Epidemiological Society has been merged in the Royal Society of Medicine the medal has been bestowed on the recommendation of the Section of Epidemiology and State Medicine.

The persons the pre-eminence of whose work in the prevention and control of epidemic disease has been recognized in this way are: 1898, Sir William Henry Power, K.C.B., F.R.S.; 1902, Professor A. Laveran; 1912, Sir Patrick Manson, G.C.M.G., M.D., F.R.S.; 1921, Sir Shirley Murphy, K.B.E., F.R.C.S.; 1922, John C. McVail, M.D., LL.D., F.R.F.P.S.G.

### THE JENNER RELICS.

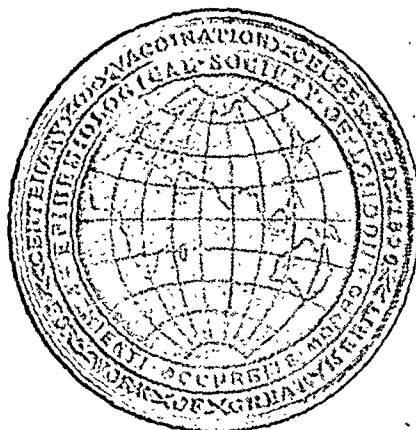
Mr. C. J. S. THOMPSON, of the Wellcome Historical Museum, kindly placed on view a collection of relics and exhibits connected with Jenner. They included many articles of much personal and historical interest. Among personal belongings there were Jenner's walking-stick, eyeglasses, snuff-box, seal with crest, medicine cabinet, cupping glass, vaccine points cut from a quill, lancets, visiting book, note-book, and prescription book. The walking-stick has at the top the old-fashioned cavity for camphor, protected by a perforated screw lid. There were also medals (one presented

to Jenner by Sacco), diplomas, addresses, holograph letters, and portraits. Two locks of his hair were preserved—one, at 55 years old, dark brown, the other, taken at his death, mixed with grey but by no means white. Neither seemed to correspond very closely with the colour of hair in the Hobday portrait exhibited in the lecture hall. Many old books relating to small-pox and vaccination were on

view. His own works of course were among them, and included both editions of the *Inquiry*, the first dedicated to Dr. Parry of Bath, and the second to the King. Other writers represented were Dimsdale, Haygarth (his *Sketch of a plan to exterminate the small-pox*), Aitken, Willan, Moore, Ceely, and Bousquet. The coloured caricatures and cartoons of the early controversies made a large display, and illustrated the old predictions about the human countenance being changed by vaccination into the visage of a cow, and the new and undreamt-of diseases produced by cow-pox.

The exhibition was particularly rich in illustrations of the day-to-day appearances of the development and decline of the vaccine vesicle. Among them was a copy of the plate in Aitken's little book which was sold in thousands and helped to teach the profession the characters of the vaccine vesicle as distinguished from the "mother pustule" of small-pox inoculation with which they were already familiar. The exhibits included the original Kirtland plates lent by Dr. G. W. Collins, who, between thirty and forty years ago, found them on an old bookstall. They were reproduced in the Jenner Number of the *BRITISH MEDICAL JOURNAL* in 1896, and for convenience the Wellcome Exhibition has placed the reproductions in framed cases so that the whole course of vaccinia and inoculated variola can be contrasted from beginning to end. The differences between the two processes are so great as to be unmistakable.

The Jenner relics and exhibits shown at the house of the Royal Society of Medicine have now been removed to the Wellcome Historical Exhibition, 54a, Wigmore Street, where they will remain on view for a time, along with many articles which were too bulky for conveyance to the special display on the occasion of Sir William Hale-White's address.



THE JENNER MEMORIAL MEDAL: FOUNDED 1896.



## MOTOR NOTES FOR MEDICAL MEN.

BY H. MASSAC BUIST.

## THE SCOTTISH MAJORITY MOTOR SHOW.

THE Majority Exhibition promoted by the Scottish Motor Trade Association, which was opened by the Duke of York at Kelvin Hall, Glasgow, on January 26th, is, of course, not so representative as those in London or Paris, because the only building available is quite inadequate to serve the purpose. The English and French displays are chiefly manufacturers' exhibitions promoted to afford an opportunity of meeting agents and motor traders from all quarters of the globe. By contrast the Scottish show is primarily a display for the purpose of enabling agents to meet their clients. Hence relatively few manufacturers have taken stands, though the exceptions include Arrol-Johnston, Argyll, Bean, Beardmore, Clement-Talbot, Citroën, Daimler, Darracq, Humber, Lanchester, and Vulcan. There are even two London coachbuilders, each of whom has taken a stand—namely, Barker and Co. and Windover; both display large cars, such as Rolls-Royce and Daimler types, equipped with their special town carriage coachwork. For the rest, the well known manufacturers prefer to be represented on the stands of their various Scottish agents. In some cases this is an advantage, as instance the wide variety of Wolseley, Sunbeam, Chevrolet, Vauxhall, Crossley, Overland, Humber, Standard, Hillman, Austin, Citroën, and other popular types of vehicles illustrated in notable variety by reason of one or other of the leading agents in practically all the big Scottish centres being appointed by these firms; each is showing some particular type. In this manner one Scottish agent is able to assist another.

Even so, however, the space problem is very acute despite the cutting down of the circulating avenues and the ingenious use of odd corners of the building. The reason is not surprising. Apart from the eminently international character of the exhibits, they are not confined merely to passenger cars and accessories for them, but embrace, besides, the largest lorries and the smallest motor cycles. The result is a wide recognition of the fact that, though the temporary building, which is little better than a war time shed, provides greater accommodation than any pre-war exhibition building either in Glasgow or in Edinburgh, nevertheless it is wholly inadequate to the purpose of Scotland's motor exhibition. There is therefore afoot a movement to the end that the Glasgow Corporation should erect on the present site of a building that shall be worthy of the country and which shall give the facilities so urgently needed for the promotion of various trades in an age in which it is becoming increasingly gainful to promote annual exhibitions of the wares produced by the leading industries.

## CHIEFLY CONCERNING THE GAELIC INDUSTRY.

For the visitor to the London motor shows in November there is nothing new in the present exhibition, which closes at Kelvin Hall, Glasgow, on the night of Saturday next, February 3rd. Nor are all the novelties introduced in London to be found there. On the contrary, the display represents approximately half the new classes of vehicles seen in London. Nevertheless, a better selection it would have been almost impossible to make. There are complete novelties in chassis and body construction, such as the Lancia-Lambda model displayed in Kelvin Grove. The Scottish passenger car industry, too, is well represented on various stands by Arrol-Johnston, Argyll (introducing a new 11.4-h.p. single-sleeve valve engine model), Beardmore, Galloway, and Rob Roy cars. One impression the visitor gets is somewhat unexpected—namely, that a greater proportion of the exhibits at this show than at either London or Paris consists of the larger middle size, and even of the largest cars. It is not to be inferred from this, however, that the motor trade in Scotland is concerned in any less proportion with the newer small car movement than is that in the south. It is merely that, having a limited space at disposal, agents for given builders prefer rather to show the most impressive vehicles of those makes in their space than the smaller standardized types. For one thing, this gives a greater element of variety to the display because, generally, the more expensive cars are available in chassis form, whereby the individual coachmaker is enabled to present new ideas in bodywork. Many of the leading agents in Scotland came

into the motor business because they were old-established coachbuilders. For the rest, undoubtedly buyers in Scotland are no less interested than those in London in the evolution of small cars standardized with bodies complete. In this connexion the advent of the standardized 11.4-h.p. Citroën chassis, with which the Sabará was crossed, with British-built bodies for passenger road service, is proving of interest. In a larger class, but low in price, is the 23.8-h.p. Treasury rating Dodge car shown on Stand 44 by Messrs. John Croall and Sons, the Edinburgh agents, this being one of the four most remarkable types of cheap cars made by the American industry. The particular examples shown take the form of a five-seater saloon, and of a touring type. But the average medical man will be more interested in the £375 all-steel Dodge coupé; I made trial of it lately, and it proved a quite extraordinary car on the through drive, alike for traffic and in climbing rises. It has three speeds forward; but in practice two only are used, because one invariably starts on the second gear and passes almost immediately into the direct drive if the engine is warm. The electrical engine starter on this car is capable of turning the crankshaft in spirited fashion, with the result that there is no difficulty in getting the engine going in cold weather. The accommodation provided by the coachwork, and the completeness of the equipment, as well as the finish in the matter of window furnishings, and so forth, will repay study on the part of the medical man wanting one of the larger middle sized classes of coupé. It is not a small car, but a full scale one, though the price is more akin to that of the small classes.

## MISCELLANEOUS EXHIBITS.

Dealing in alphabetical order with the exhibits, and omitting the names of the stands on which the various examples are to be found, one notices that the overhead-valve engine Gwynn-Albert types, including the 8-h.p. 2.3-seater and the 11.9-h.p. all-weather models, figure in various parts of the building, as do examples of the 18-h.p. 6-cylinder overhead-valve engine Armstrong-Siddeley type, which has made the most striking performance in R.A.C. certified trials of any vehicle during the last twelve months, the Dewar Trophy having been awarded in respect of one of these performances. Of entirely new cars introduced at Olympia, the 18.50-h.p. 6 cylinder overhead-valve engine Aster chassis is notably low in price, and is the first type made by a firm of over a score of years' experience of specializing on engine production; hence the exhibit is exciting considerable interest. The Austin series is attracting attention by reason of the price of the 12-h.p. and of the 20-h.p. types, and of the novelty of the 7-h.p. two-seater. The Bean doctor's coupé is appealing to business men, too. It is a very serviceable, handy little car with pliant suspension and four speeds forward, the body accommodation being amply large enough for those of more than average stature, and the controls being easy and on the normal side of the driver—namely, the right. The low price of the 6-cylinder Buick models, and the great improvements made in the coachwork this year, are matter of favourable comment, as is the extraordinary value for money provided in the Chevrolet proposition. The new 12.14-h.p. four-seater Crossley is welcomed as bringing this make within a lower purse range than hitherto, a remark which also applies to the introduction of the new 16-h.p. and 12-h.p. Daimler 6 cylinder models, which are represented with special coachwork on quite an extraordinary number of stands.

## NEW TYPES AND FAMILIAR MAKES.

De Dion Bouton and Renault, who from early days have done perhaps more than any other makers, certainly on the Continent, to make motoring a practical proposition for medical men, bring forward their newest models, which are both reduced as to price and, in the former case especially, developed mechanically along lines that bring them quite up to date. The way in which these makers have stood hard use in the past is a great point in recommending them to notice on the present occasion. The very interesting Enfield-Allday car, which made a great reputation by its performances, alike in the hands of the public and in competition, last year is regarded as an outstanding example of the efficient small car class. The Hillman, a pioneer of British small cars, makes a favourable impression by reason of the new 11-h.p. types, numerous represented in Kelvin Hall, being equipped with excellently designed all-weather bodies. The pioneer of the cheap 4-cylinder water-cooled British cars, Humber, this year introduces engines with part overhead and part side



valves; the 11.4-h.p. and the 15.9-h.p. 4-cylinder models are supplemented by a popular 8-h.p. type marketed at £275 complete. By reason of its sweeping series of victories in competition this year, as well as the prices and long proved wearing qualities, the 10/15-h.p. and the 15/20-h.p. Fiat models are proving a great attraction; while the new 6-cylinder type with front-wheel brakes and overhead-valve engine is regarded as a pioneer design of the period and a moderate-priced proposition among the large cars. In the last class the Napier town carriage and the latest Rolls-Royces constitute outstanding features of the exhibition.

The reduction in price of the 12 h.p. Rover standardized coupé as developed since last season makes it a very attractive proposition; the 8-h.p. model is now introduced with a dickey. The bodywork of the Standard car, a specialty of which is the amplitude of the accommodation, including length of leg room, is being commented on favourably. The increase in the engine size of the 14-h.p., overhead-valve, 4-cylinder Sunbeam renders it even a more remarkably lively car than it was last year, when it had no rivals, while it is proportionately as cheap to buy and economical to run. The new 14-h.p. side-valve engined Vauxhall, now in production, is very interesting; with Princeton touring body the price is £595 only, complete.

A novelty to the Scottish motorist is the 14-h.p. side-valve engined Wolseley car, which is to be described as a family carriage, having the same class of chassis as the luxurious 15-h.p. overhead valve engined type. The former is very cheap at £525 complete. Likewise the reduction of £90 in the price of the 10-h.p. overhead-valve engined model of this make brings it within the purse range of a class hitherto unable to consider it.

Take it for all in all, therefore, this is an eminently satisfactory exhibition, and one which has so far proved of great service to those interested in motoring north of the Tweed.

## England and Wales.

### CENTRAL MIDWIVES BOARD.

At the meeting of the Central Midwives Board for England and Wales held on January 25th, with Sir Francis Champneys in the chair, charges against two midwives were considered. One was cautioned and put under probation for three and six months' reports, and the other was removed from the roll and prohibited from practising in any capacity in connexion with childbirth. Communications were read from the Queen Victoria's Jubilee Institute for Nurses and from the Ministry of Health announcing the re-election, as representatives on the board, of Miss Rosalind Paget by the former institution and of Miss Haydon and Miss Le Geyt by the Ministry.

Business dealt with by the Standing Committee included the following resolution from the local supervising authorities for the county of Southampton, Surrey, Ipswich, Great Yarmouth, and Southend-on-Sea:

That the Central Midwives Board be urged to consider the desirability of making a rule prohibiting the application or administration by a midwife of any drug (for example, pituitrin or ergot) other than a simple aperient, before the birth of the child, except under the direction, in each case, of a registered medical practitioner.

It was agreed to reply that the Board has always declined to schedule drugs except in so far as stated in Rule E19, and sees no reason to depart from its practice in this respect. A communication was read from the Public Health Committee of the Bethnal Green Borough Council calling attention to the fact that midwives are apparently allowed to perform the minor operation of stitching the perineum without calling in medical aid, and expressing the opinion that midwives should not be permitted to perform this operation. In reply to this the Board stated that it has already expressed the view that any case of ruptured perineum which requires stitching is a case of "serious" rupture within the meaning of Rule E20 (3).

### THE LIVERPOOL MEDICAL INSTITUTION.

The annual meeting of the Liverpool Medical Institution, at which the report of the council and the treasurer's accounts were received, took place on January 25th. The total number of members and associates was stated to be 459, which was larger than in any previous year; deaths and resignations numbered 22. It was noteworthy that there was a considerable increase in the number of recently-qualified

men and women who had joined the Institution. The financial statement was agreed to be satisfactory, notwithstanding the increased expenditure in maintenance. The Endowment Fund, instituted in 1920, which remained permanently open for additions to the funds of the Institution by donation and legacy, amounted to £4,523. Reciprocity had been effected between the library of the Institution, the medical library of Liverpool University, and that of the Tropical School of Medicine, so that members could make use of all three libraries. Dr. Thomas Clarke and Mr. Robert Craig Dun were elected vice-presidents; and the following were elected members of council: Drs. A. Douglas Bigland, Robert A. Hendry, H. Leith Murray, G. F. R. Smith, R. G. Wills, and Frederick P. Wilson, to fill the six vacancies. With the object of bringing the Institution into closer relationship to all permanent correspondents were appointed by the council to the same number of districts in and around Liverpool.

### THE LIVERPOOL CITY CORONER'S REPORT.

During the past year 1,453 cases were reported to the city coroner of Liverpool, inquests being held in 938 cases. Suicides numbered 70, which was the highest number recorded since 1897, when it reached 73; gas poisoning was the method adopted in 13 cases. In 17 non-suicidal cases accident was found to be the cause of death; 10 accounted for 10 deaths only, less than half the number in 1921. In 1899 the coroner's record of deaths from excessive drinking numbered 242, and during the past eight years the number of similar deaths had very considerably diminished. In the past twenty years the diminution of deaths from suffocation of children (overlying) has been remarkable. Before 1898 these cases averaged 180 a year; in 1921 only 9 cases came before the coroner, and in 1922 there were 12. As a rule the cases were quite unconnected with alcoholic indulgence, and it would be a matter of interest to ascertain in all such cases whether status lymphaticus was the cause and what the condition of the thymus was. Inquests were held on the deaths of 39 newly born children, and fatal street accidents to the number of 69 came before the coroner.

### MANCHESTER ROYAL INFIRMARY.

In the annual report of the Manchester Royal Infirmary the Board of Management directs special attention to the finances, pointing out that annual subscriptions for the past year have been increased by £1,275; actually £1,784 new money was obtained by the canvassers and collectors, but against this sum had to be set withdrawals in consequence of death or other causes. The total ordinary income amounted to £88,037, and the total extraordinary income to £11,332; the total ordinary expenditure amounted to £110,540, and the total extraordinary expenditure to £11,295. The total ordinary income of the Barnes Convalescent Hospital, Cheshire, amounted to £5,397, in addition to the contribution by the Royal Infirmary of £6,352; the total expenditure for the year amounted to £11,749. The income of the Royal Infirmary, with its Central Branch, and the Barnes Convalescent Hospital, excluding legacies and donations for endowment, fell short of the necessary amount by £12,465, and it has been necessary to realize some of the capital available for general purposes. The Infirmary received £10,775 on account of the apportionment of the Government grant of £500,000 to the voluntary hospitals of Great Britain. The enlarged activities of the Committee of the Hospital Sunday Fund resulted in a very appreciable increase in the sum allotted to the Infirmary during the past year, and the creation of the Manchester, Salford, and District Joint Committee of Hospitals and Saturday Fund Representatives was an important step towards the systematic development of collections from working men by way of deductions from wages. An agreement, which was arrived at last April, recorded the determination of the hospitals and the Saturday Fund to work together in order to raise funds to be apportioned on defined and equitable terms. Contributions by patients were £615 less during the year; the decrease is attributed to the prevalent and prolonged unemployment. Contributions from approved societies, on the other hand, made their first appearance in this report. It will be remembered that an audit of the funds of approved societies disclosed a very material surplus, and a portion of this surplus became available for distribution to the voluntary hospitals. The amount received in respect of the maintenance of pensioners showed a large reduction, and it is stated that next year the



amount from this source will be negligible, as practically no pensioners are now being sent for treatment in the Infirmary. When the new infirmary was opened in 1908 accommodation for x-ray work was provided in the basement for what was then a comparatively small department; its growth during the past fourteen years justified the decision to provide more room, and two handsome donations made it possible for the department to be re-established, with the most modern equipment, in what was known originally as the Teaching Block. The Board of Management acquired during the year from the Committee of the Manchester and District Radium Institute the research laboratory installed when the institute was accommodated in the Infirmary. Funds are in course of being raised for a new home for nurses, which, when completed, will accommodate 200 persons; the cost, it is estimated, will be approximately £100,000.

## Scotland.

### VETERINARY SCIENCE AND PUBLIC HEALTH.

Dr. WALTER ELLIOT, M.P., Parliamentary Under Secretary to the Scottish Board of Health, delivered an address, entitled "Some aspects of veterinary science in relation to public health," at the annual meeting of the Scottish Metropolitan division of the National Veterinary Medical Association at Edinburgh on January 24th, with Mr. W. W. Peggie, the president, in the chair. Dr. Elliot said that during the war the veterinary profession of Great Britain was responsible for the transport overseas of fifteen million living animals. That no epizootic had attended so great a movement of animals showed how far veterinary science had gone in grasping the lessons of bacteriology and putting them to practical application. While human medicine was turning very largely to the preventive side, in veterinary medicine, so far, cure had bulked more largely than prevention. The economic loss from animal diseases, resulting in rise in price to the consumer and the weakening of the public health in this country from the excessive cost of the fuel food needed to maintain energies, was one of the immediate aspects in which veterinary science touched the public health of the country. In the twenty years before the entry of live animals was prohibited in this country pleuro-pneumonia and foot-and-mouth disease killed off 800,000 animals, and in the twenty years subsequent only 2,000. That was a triumph for preventive medicine, and a triumph for veterinary science cogently applied by means of legislation.

### GLASGOW STUDENTS' INFIRMARIES DAY.

In aid of the infirmaries and hospitals of Glasgow the students of Glasgow University and of most of the colleges of the city organized a fancy dress procession on January 23th. The procession eventually broke up into collecting parties, which spread over the whole of Glasgow and its suburbs, to form another procession later in the day; in the evening three dances were held. A magazine entitled *Ygorra Special* was published, which consisted mainly of contributions in prose and verse reprinted from the *Glasgow University Magazine*. These many methods of raising money proved highly successful, the total of the day's collection amounting to over £6,800.

### GREENOCK EYE INFIRMARY.

At the forty-second annual meeting of the Greenock Eye Infirmary on January 25th it was stated that the trustees were strongly of opinion that greater facilities for the treatment of eye diseases were still required, and that it was necessary to initiate a building scheme which would bring the Eye Infirmary up to modern requirements. A scheme for the extension of the Infirmary at a cost of £1,950 had accordingly been framed. During the past year the number of patients attending the dispensary for the first time was 4,001, and the subsequent attendances amounted to 9,411; the daily average was 64.4 patients for the 203 days on which the dispensary was open. Accidents occurring principally in the engineering and refining industries, had been treated. In the minor department 217 cases were treated, an increase of fifteen.

### CENSUS OF SCOTLAND, 1921.

#### County of Forfar.<sup>1</sup>

The county of Forfar, north of the Firth of Tay, had on the census day a population of 281,417, but this included the city of Dundee, separately reported on. Excluding Dundee, the county inhabitants numbered 116,413. In the decennium there was an apparent decrease of 11.7 per cent., but in reality the decrease was only 2.2 per cent., the difference being due to extension of the boundaries of Dundee several years ago. The male decrease has been 3 per cent. and the female 1.6. From 1801 to 1881 there was a continuous increase, but in the last forty years the total has fallen from 126,121 to 102,737, the fall including the transfer of population to Dundee. Exclusive of Dundee there are seven burghs in the county, the largest being Arbroath (19,496), Montrose (10,979), and Forfar (9,587). The urban population has appreciably diminished since 1881, an exception being Carnoustie, a golfing resort. The rural population is 42,639, and has slightly increased since last census. The parishes number no fewer than 53. Excluding Dundee, the proportion of females to males is 117.8 to 100; the average age of the male population is 30.6 and of the female 33.8. Of children under 15 years, 88.3 per cent. had both parents alive, 6.6 per cent. had lost their father, 3.5 per cent. their mother, and 0.6 per cent. both parents. Of males aged 15 and upwards, 41.3 per cent. were single, 52.3 married, and 6.4 widowed or divorced; the corresponding percentages for females were 45, 42.9, and 12.1. Gaelic speakers numbered 323, all bilingual. Again excluding Dundee, the average number of persons per house was 4, and the number of persons per 100 windowed rooms was 115. Since 1861, when there were 163 persons per 100 rooms, there has been a steady diminution in density. Living in one roomed houses there were 4.9 per cent. of the population, in two-roomed houses 28.1, in three-roomed houses 29.4, and in four roomed houses 11.5 per cent. Of males aged 12 years and upwards, 90 per cent. were in remunerative occupations, and of females 36.2 per cent. Of occupied persons 19.8 per cent. were employed in agriculture, 15.4 in textile industries, 10.5 in personal service, and 8.7 each were working in metals and in transport and communication.

#### County of Inverness.<sup>2</sup>

This central Highland county has, with its islands, a larger area than any other county in Scotland, and is exceeded in England only by Yorkshire. Its total population, however, is only 82,455, its maximum of 97,799 having been reached in 1841, since when the tendency has been irregularly downwards. Of the total population 29.2 per cent. is burghal, and 70.8 extra-burghal. Inverness—the capital of the Highlands—had a population of 20,944, an intercensal decrease of 5.7 per cent.; the only other burghs are Fort William (1,913) and Kingussie (1,272). Of the total population of the county, 27,924 was insular, this being less than at any previous census. The largest island, Skye, has 11,031 inhabitants, or less than half its population in 1841; the next largest are Harris, 3,918; South Uist, 3,235; North Uist, 2,579; Barra, 2,180; and Benbecula, 1,116. The total number of inhabited islands is 46, of which 10 (including two lighthouse islets) show an intercensal increase. At the census the average number of persons per house was 4.83, and per 100 windowed rooms 101, being a steady improvement since 1851. Of the total population, 2.1 per cent. lived in one-roomed houses, 15.9 in two-roomed, 25.4 in three-roomed, 14.9 in four-roomed, 12.6 in five-roomed, and 9 per cent. in six-roomed. The proportion of females to 100 males was 109, the average male age being 32.4, and female 34.5. Of children under 15 years 7.7 per cent. had lost their father, 4.4 their mother, and 1.8 both parents. Of the male population aged 15 and upwards, 51.4 per cent. were unmarried, 43 married, and 5.6 widowed or divorced, the corresponding figures for females being 47.9, 38.5, and 13.6 per cent.

Speakers of Gaelic in this county numbered 39,892, or 48.4 per cent. of the population, against 70.9 per cent. in 1881, when the first Gaelic census was taken; by 54 per cent. of the population Gaelic is the only language spoken. In the islands Gaelic speakers prevail much more than on the mainland, and 16 per cent. of the island population speak Gaelic only, the percentage being very high in childhood.

<sup>1</sup> Thirteenth Census of Scotland, Volume I, Part 17. Price 8s. 2d. post free: H.M. Stationery Office, 23, Firth Street, Edinburgh.

<sup>2</sup> Vol. I, Part 18. 7s. 2d. post free. Obtainable as above.



69.2 in the age group 3 to 4, and 22.9 in the age group 5 to 9 years. Of males aged 12 years and upwards, 87.7 per cent., and of females 27.2 per cent., were in remunerative occupations. Of occupied persons in the county of Inverness and its islands 27.6 per cent. were employed in agriculture, 15.2 in personal service, 9.2 in transport and communication, and 7 per cent. in commerce. Fishermen numbered 4.2 per cent.

## Correspondence.

### SMALL-POX AND VACCINATION IN THE PHILIPPINES.

SIR,—Will you permit me to congratulate Dr. J. C. McVail upon his instructive analysis of small-pox and vaccination in the Philippines, published in the *BRITISH MEDICAL JOURNAL* (January 27th, p. 158)? With your permission and indulgence I should like to add something about the period which immediately followed the departure from those islands of the Spaniards in 1898.

As a medical officer with the United States troops I served in the Philippines up to 1903, and I returned for a second tour in 1910, and left again in 1913. I only mention these personal items to bring out a point which I regard as very important in this connexion—namely, that vaccination was very successful in the Philippines when performed properly and conscientiously. Before the American occupation there had been an annual small-pox mortality of something like 40,000. I well remember that the natives regarded the disease with about as little fear as we did an ordinary cold, and that in our campaigns we constantly found instances without the slightest attempt having been made at isolation; also, the proportion of natives one saw with pock-marked faces was painfully large.

In 1902, the backbone of the insurrection having been practically broken, and when medical officers could be spared for the work, an energetic vaccination campaign was inaugurated which extended throughout the principal islands. At the same time all discovered cases were isolated.

How well this work succeeded—and this is the true practical demonstration of the value of vaccination in the Philippines—is shown by the statement that "the 19,000 deaths in 1903 fell to 9,000 in 1904, to 4,000 in 1906, to 3,000 in 1910, to 1,000 in 1911, and to a few hundreds annually from 1912 to 1916." Can anyone doubt that this remarkable decline was due to the campaign of vaccination inaugurated in 1902?

Upon my return to the Philippines in 1910, instead of finding almost every other native pock-marked, as I had in my first tour of duty, I rarely saw a face deformed by these unsightly scars among the younger generation—that is, among those who were of the age to have profited by our early vigorous vaccination onslaughts.

But how are we to account for the sudden jump in 1918 to 14,574, and in 1919 to 45,873 deaths? The Rockefeller Foundation survey now being made will no doubt elucidate the matter, but one is inclined to think that in considerable measure changed conditions of government will prove the key to the solution of this mystery. As the islands became more peaceful there was a gradual transfer of government into the hands of the natives themselves, and a consequent withdrawal of Americans, and with them practically all their medical men, military and civilian. The supervision, direction, and execution of vaccination and other sanitary undertakings were assumed by the Filipinos themselves, and one is inclined regretfully to conclude that the work was no longer of a sufficiently high standard to continue the successes obtained by their predecessors.—I am, etc.,

H. M. COREX.

Manchester, Jan. 30th.

### NYSTAGMUS.

SIR,—Dr. J. A. Wilson kindly refers (January 27th, p. 171) to a small paper of mine on miners' nystagmus, but he has misunderstood me when I speak of a predisposition to the disease in children. I was not referring to children occurring in children, but to the miners who will develop later under appropriate conditions in those predisposed to the complaint.

It is important to distinguish between the various forms of nystagmus.

I. *The vibratory form*, in which the movements have the same to and fro velocity; there are two main varieties:

(1) The rotatory form, from two and a half to six oscillations a second, which, as far as I know, only occurs in miners' nystagmus.

(2) The slow wandering searching movements seen when the eyes are blind or nearly blind.

II. *The resilient form*, in which a comparatively slow movement occurs in one direction, followed by a rapid jerking movement in the opposite direction, or in some cases by a rapid oscillation. This form is seen in some nervous diseases such as disseminated sclerosis, Friedreich's ataxia, as well as in vestibular nystagmus.

Finally, nystagmus may be acquired or congenital (that is, beginning at any rate in very early life); in congenital nystagmus—for example, that due to albinism—the patient never complains of the movements of objects.

Now miners' nystagmus is acquired, is always of the vibratory form, and may be either rotatory or oscillatory in character. It is rarely found except among pitmen, hewers, deputies who have been hewers, and stonemen working underground. But it has been found in ceiling paperers, accountants who use very large ledgers, and others who work in a very good light. My personal feeling is that the exciting cause is, as the late Dr. Snell was always urging, maintaining the eyes for long periods in a strained position (usually obliquely upwards), and that deficiency of light is only a contributory cause. Since only a small percentage of pitmen acquire the disease, and since these, after recovering from all their symptoms on leaving their underground work, will, in my experience, always have a recurrence of the disease on their return to hewing, I contend that ultimately the disease depends upon an idiosyncrasy or a predisposition with which they are born. One may call it a congenital inadequacy of the fixation centre to withstand long-continued strained positions of the eyes, but I have laboured this point elsewhere.—I am, etc.,

A. S. PERCIVAL.

Newcastle-upon-Tyne, Jan. 28th.

### TURPENTINE OR LEAD POISONING A CAUSE OF PUNCTATE BASOPHILIA.

SIR,—In a letter in your columns (January 27th, p. 170) Dr. F. C. Eve refers to my paper on "The blood as guide to early diagnosis in lead poisoning." His experience does not enable him to dispute or corroborate the truth of my statements, which are inferences from facts stated in the paper. As, however, he suggests that the presence of turpentine (or its substitutes) seriously interferes with diagnosis of plumbism in painters, his eminence as a physician demands consideration of this point.

Dr. Eve states, "It is not generally known that inhalation of turpentine vapour can also cause basophilia indistinguishable from that produced by lead." But surely no one expects that basophilia produced by lead is different from that produced by any other poison or toxin. We cannot distinguish enlargement of the spleen due to malaria from that due to typhoid, but this in no way lessens the importance of splenic enlargement as a sign of disease. As I tried to explain, basophilia means that something is acting injuriously on the marrow, and if this is lead the urine will contain a trace of the metal even in the absence of corroborative symptoms.

In his last sentence Dr. Eve asks for information as to the effect of turpentine vapour in varnish workers, so I infer that he knows nothing personally of its effect in man or animals but only in vegetables. In short, he derives his information from a Blue Book wherein it is stated that in experiments on animals "basophilia staining was found with both turpentine and white lead, and even the animals exposed to zinc oxide and zinc sulphide showed the presence of a few basophils in the blood." In accepting unreservedly this uncorroborated statement, Dr. Eve has forgotten that there is no evidence whatever that it applies to man under working conditions. Till Dr. Eve has investigated the point among the varnish workers at Hull I venture to hope he will accept my statements.—I am, etc.,

ROBERT CRAIN.

London, W., Jan. 28th.



### THE DIAGNOSIS OF INDEFINITE MASSES IN THE BREAST.

SIR,—The paper by Mr. Duncan Fitzwilliams in your issue of January 20th (p. 94) is such a valuable contribution to the only reliable method of dealing with this type of case—namely, by close co-operation between the clinician and the pathologist—that I venture to make some remarks thereon from the point of view of the histologist.

The problem before the pathologist is not only to diagnose established carcinomata and to estimate the degree of malignancy thereof, but to detect the precancerous stage of chronic mastitis. Now, this cannot be done by any "few minutes" method, even when this is available, as it fortunately seldom is. Careful fixation and the examination of serial paraffin sections are essential for accurate work.

For the purpose of this note I have examined my own records of the last 600 specimens of breast tissue sent for histological examination, and I find that 24 per cent. were examples of chronic mastitis, 10 per cent. precancerous stages, 44 per cent. established carcinomata, 2 per cent. sarcomata, and 20 per cent. non malignant conditions other than inflammation; nearly all of these were fibro-adenomata, a condition which, as far as we know, does not become cancerous. In other words, in about one-third of the cases which would be roughly diagnosed as chronic mastitis definite precancerous changes were seen.

The main problem for solution in consultation seems to me to be what to do with the histologically precancerous breast. Is there a stage in which removal of the breast alone suffices? Many surgeons, to my knowledge, cut the Gordian knot by performing the radical operation, and it is difficult to raise any valid objection to this from the pathological point of view. They say, in fact, that nowadays the resulting disabling is so slight with the modern technique that it is better to be on the safe side and remove the lymphatic area also. Is this the accepted surgical teaching? Were the advantages of the preliminary operation advocated by Mr. Fitzwilliams, followed by histological examination, more commonly recognized in general practice, I feel sure that there would be fewer deaths from cancer. The practitioner who takes upon himself to decide by inspection and palpation alone that a lump in the breast is not malignant incurs a very great responsibility.—I am, etc.,

A. KNYVETT GORDON, M.B., B.Ch.Cantab.

London, W.C., Jan. 29th.

### OCCIPITO-POSTERIOR PRESENTATIONS.

SIR,—I have read with much interest Mr. Comyns Berkeley's address on "Some practical difficulties in obstetrics and gynaecology," as published in the *JOURNAL* of January 20th (p. 89), and, while I am in entire agreement with most of it, there is one part with which I entirely disagree—namely, his treatment of occipito-posterior presentations.

The treatment he seems to advocate as a routine is manual rotation of the child, and, while one must respect the views of so eminent an authority, I am strongly of opinion that such treatment is both unnecessary and risky. The picture he draws of cases that are not diagnosed or are not rotated manually is to my mind entirely wrong, and its dangers are greatly exaggerated. My experience of these cases is just the reverse, and I believe that they do far better if left alone as far as possible. They are usually associated with uterine inertia, and I believe that the proper course is to treat this by giving sedatives, etc. After a period of rest the uterine contractions become strong; this causes flexion of the head and the occiput rotates forwards. During a fairly extensive experience of such cases in recent years, both in private practice and as medical officer to an institution, I cannot remember a single case in which rotation has not taken place. At times I have applied axis-traction forceps when the head has been down in the vagina and, if it has not rotated previously, it has done so as soon as traction has been applied.

With regard to rupture of the perineum also, my experience does not agree with Mr. Comyns Berkeley's, for I have found that it has been less frequent in such cases than in occipito-anterior cases, probably owing to the fact that the child's head has undergone greater moulding and that the maternal soft parts have had more time to relax. Although such cases frequently last two or three days, I have no experience of children being born in a state of asphyxia or suffering from intracranial injury.

Manual rotation requires skill and is not without its dangers, and I have little doubt that, were it generally adopted, it would mean a considerable increase in the number of cases of sepsis.

Occipito-posterior presentation in my experience occurs in about 20 per cent. of all cases of midwifery, and therefore to advise as a routine practice a procedure which involves such obvious risks is a matter for grave consideration.—I am, etc.,

Wolverhampton, Jan. 28th.

W. R. SOMERSET.

### TREATMENT OF TUBERCULOSIS OF THE CERVICAL GLANDS.

SIR,—In your issue of November 4th last (p. 858) Dr. John Fraser, in his paper on treatment of tuberculous cervical glands, evidently assigns a most unimportant part to x rays, and would limit this agent to the lymphoid type only. Even Sir Herbert Waterhouse does not favour this treatment apparently, and states that he has never seen a cure by x rays. However, many writers elsewhere are quite convinced of the superiority of such irradiation in treating almost every case to other methods of treatment. Thus Boggs, who has had a very extensive experience in this direction (*Amer. Journ. Med. Sci.*, July, 1921, clxii, 90), sees good reasons for coming to the following conclusions:

1. Radium and the x ray will cure more cases of tuberculous adenitis than any other method. Roentgenotherapy will cure over 90 per cent. of these cases.

2. Surgical treatment is always contraindicated in every case of tuberculous adenitis.

3. Those who still hold to radical operation will find the responsibility hard to shoulder with the ever-increasing recognition of the fact that tuberculous adenitis can be cured without it.

4. Hard fibrous nodules following roentgenotherapy seldom contain any tuberculous foci, but it may be permissible to remove these through a small incision as with a foreign body.

No doubt the failures referred to in the *BRITISH MEDICAL JOURNAL* may be attributed to rays of insufficient penetration or faulty technique. My own experience is limited, but a patient treated by myself on July 19th last is instructive. Glands had been removed from her neck two years previously, and these had recurred on both sides. As the result of a single irradiation they almost disappeared, although a small superficial gland has since appeared. She has now had a single larger dose and it is expected that she will be free from further trouble. Incidentally the ugly scar due to the operation has become soft and supple and scarcely noticeable.—I am, etc.,

Melbourne, Dec. 20th, 1922.

H. FLECKER, F.R.C.S.

### HOSPITAL POLICY.

SIR,—Dr. C. E. S. Flemming's letter (January 20th, p. 129) calls for brief reply. Patients are sent to hospital, not because they cannot be accommodated or maintained at home, but because they cannot be treated there. If while in hospital they are able to pay only for that which they must anyhow obtain when at home, and which it is no function of the staff to provide, their claim upon the latter is not impaired. If, however, they can, in addition, pay something for treatment, the position is radically changed, and lay boards will readily appreciate the distinction, which is not "arbitrary" but logical. What these boards assuredly will not recognize is an "honorary staff" who reject a pauper because he is too poor, and a man who, while he is in hospital, scrapes together a shilling a week, because he is too rich. Would Dr. Flemming himself approach any hospital board with such a proposal? So far from being more defensible and acceptable than our plan, as he maintains, no evidence is produced that a single member of the Council or Hospitals Committee, save Dr. Clarke, whose position is exceptional at Leicester, has dared to bring his policy before the lay board of his own or of any general hospital, or would stand any chance of success if he did. Why should we be called upon to do what they lack either courage or skill to achieve themselves? Let them set the example, and report results, or abandon a vain project.

As regards the bookkeeping difficulties anticipated by Dr. Flemming, he is presumably unaware that the policy I advocate has been working, with the aid of almoners, quite successfully in the Bristol hospitals for a year and a half. Further, at Leicester, where the plan he commends has, in the absence of almoners, been equally successful, the bookkeeping entailed is far more complicated than at Bristol, because contributors to the staff fund are there graded into three classes, each of which furnishes a different percentage to the fund.



In fact, their plan is in no way more simple than ours. It is evident, therefore, that the fears of Dr. Flomming in regard to bookkeeping are as groundless as those of the Council in respect to manipulation of funds. I have not so far encountered any objections to our plan which will bear examination, whereas the dangers attaching to his proposal are so obvious and insurmountable that scarcely anyone has attempted to overcome them.—I am, etc.,

Chichester, Jan. 28th.

G. C. GARRATT.

### PENAL DISCIPLINE.

SIR,—Since I have been travelling and have missed Sir Wemyss Grant-Wilson's somewhat belated criticisms (BRITISH MEDICAL JOURNAL, December 16th, 1922) on points in my book, *Penal Discipline*, perhaps you will be good enough to allow me this somewhat belated, but earliest possible, reply.

Sir Wemyss's first point is to contradict my statement that the Borstal girls were put in irons. He does not appear to know that the use of the instrument of restraint known as the "body belt" is officially and rightly classed as irons, as the prisoner's hands are restrained in ordinary steel handcuffs. My figures are from the official returns of girls put in irons, and the body belt used during my service was mainly of my own design. This form of restraint was suggested by me some years ago, as a modification of the more severe forms of restraint which were applied to violent women in local prisons. The ordinary handcuffs, worn for hours, or days, or nights, are a cruel form of restraint, especially for stout women and girls. They contract and fix the chest, make deep breathing difficult, and certainly never calm an excited woman, who has every need of sufficient oxygen. They render sleep almost impossible and compress the axillary and mammary tissues painfully. They give rise to filthy scenes.

The belt is put on loosely round the hips so that the hands in the handcuffs passed through the belt hang by the sides. The belt can be rotated through a quarter of a circle, and one hand can just reach the mouth, so that prisoners can attend to their own needs. They cannot, however, injure themselves or anyone else. This restraint is, however, provocative of more excitement and is not to be defended in any conditions now prevailing in prisons. I discouraged its use on the dreadful cases we used to have in local prisons, and many matrons learnt to do without it. Its use had decreased in local prisons almost to vanishing point during my service, when it was adopted *de novo* in Borstal institutions. But for a number of years Borstal institutions also managed without it.

I have never seen any change in the character of inmates committed either during or after the war which could possibly have made this form of restraint necessary or advisable. The majority of girls who broke out did so under the irritation caused by report and punishment. So well is this form of outbreak known to occur among those who suffer from hysteria, as also the tendency to self-mutilation, that it is the rule, after an award of punishment, to return the prisoner to a cleared cell. This form of outbreak hardly ever happens now in local prisons, and ought not to happen in a Borstal institution.

As regards the girl restrained eight times who later "committed suicide" by setting fire to herself at Rampton, although Sir Wemyss is "asking for it," I am not the person to tell your readers her history. Why does he not do so himself? I will merely remind him that she was a girl of inferior surroundings and education to other inmates and that she had had a very good record in a reformatory school. She showed no signs of hysteria until she came under penal discipline. When under penal discipline she became unmanageable, she was certified as "feeble-minded" or its equivalent, and sent to Rampton. Here she committed the act which caused her death. She is an outstanding instance on my side of the argument, which I refrained from quoting myself.

Girls who have led "irregular lives" are not necessarily excitable under detention, if suitably treated, and I cannot agree with Sir Wemyss Grant-Wilson that their restraint is ever a "necessity."

In the sense that I have used the word "repression" in my book it stands for an unconscious process. It cannot be "learnt" by any of us. The *direction of instinct* is a very different matter, can be learnt, and does not lead to nervous explosion. But it can never be taught under penal

discipline, nor through restraining an hysteric as an angry and dangerous animal when once repression has done its work.—I am, etc.,

Küssnacht, Zürich, Jan. 22nd.

MARY GORDON.

### FEES IN COURT CASES.

SIR,—In the London papers of January 19th a case is reported in which a medical witness, on entering the witness box, stated that he had been subpoenaed but had not had his fees guaranteed. Counsel immediately asked him: "Are you a Scotsman?" and later the judge is reported to have said: "He seems to me to be about as greedy a doctor as I have come across. He must have his fees."

One cannot be long in practice without feeling the inconvenience of court cases which interfere with one's work and generally involve some pecuniary loss also. Unless the doctor is to be exploited, there are many points in the legal side of medical practice which must be learnt, although not taught at hospital; and it is surely very unfair that invidious remarks should be made in such a case as this, in which *the fees had to be allowed*, and in which the witness was correct in asking that they should be, immediately on entering the box.—I am, etc.,

Sevenoaks, Jan. 24th.

J. FINLAY ALEXANDER.

### VITAMIN CONTENT OF CERTAIN PROPRIETARY PREPARATIONS.

SIR,—May I be allowed space for a brief reply to the letter by Miss K. H. Coward and Professor Clark in your issue of January 27th (p. 171)? I would like to repeat that what I wrote was that their article in your issue of January 6th was "apt to produce a misleading impression" in regard to Virol. This it does, in my view, by classing Virol with preparations whose advertised claims in regard to vitamin concentration were not supported by the results of their investigation, and by the concluding statement that "no advantage is to be gained by trying to obtain these substances in the form of drugs"; no such attempt having been made in the case of Virol, which is a food.—I am, etc.,

London, Jan. 29th.

ARTHUR E. CANNEY,  
Managing Director, Virol Limited.

### STATE HOSPITALS.

SIR,—I am anxious to profit by all *bona fide* criticism of Poor Law hospitals, so I have been considering the remarks of Viscount Cave as reported briefly in your issue of January 27th (p. 169). He speaks of State hospitals "where there was no one, apart from the patient's relatives, whose duty and pleasure it was to see him from day to day, to watch over his comfort, and give him that personal attention which meant so much to a sick person." Can you suggest what official of a general hospital Lord Cave had in mind?

Connected with this hospital there are visiting and resident doctors, a matron, assistant matrons, sisters, nurses, probationers, chaplain, and welfare visitors. It is the duty of these officers to give the patients "constant, thoughtful daily care," and I think they perform their duty fairly well. In addition members of the board and various philanthropic ladies pay frequent visits and contribute to the comfort of the patients.

I cannot find the blank in the staff that Lord Cave refers to.—I am, etc.,

HENRY H. MACWILLIAM,  
Senior Medical Officer, Walton Infirmary, Liverpool.  
Liverpool, Jan. 29th.

At the International Exhibition of Photography, Optics, and Cinematography, to be held at Turin in May and June next, prizes will be given for various kinds of films—among others, films of scientific subjects.

The announcement is made from Canada that 2,715 claims have already been received for the prize of 100,000 dollars offered by Lord Atholstan of Montreal for the discovery of a cure for cancer; claims have come from forty-one different countries. It is pointed out, however, that claimants must satisfy a recognized medical faculty or leading medical society in his or her own country first that there is some scientific basis to justify the experimental investigation of the professed cure, and that any cases said to have been successfully treated were in fact cases of cancer.



## Obituary.

JOHN WILLIAM BALLANTYNE, M.D., F.R.C.P.E., F.R.S.E.,  
Physician Royal Maternity Hospital, Edinburgh, and Ante-natal  
Department; Lecturer on Midwifery and Gynaecology to  
Women Students, University of Edinburgh.

THE death of Dr. J. W. Ballantyne in Edinburgh on January 23rd came as a shock to his colleagues, few of whom knew of his illness. About ten days previously he had been compelled to take to his bed with one of his periodic attacks of influenza, but there were no symptoms to cause any anxiety until the day before his death. Very suddenly he was seized with violent abdominal pain, which laparotomy within two hours proved to be due to a ruptured appendix. Never very robust in the last few years, and weakened by ten days of illness, the scales were from the first heavily loaded against his recovery, and he died within twenty-four hours of the operation. In him the world loses a man posterity will regard as one of the makers of modern medicine, and the Edinburgh school one of its most renowned ornaments.

John William Ballantyne was born in June, 1861, at Eskbank, Midlothian, where his father was a nurseryman and seedsman. After a period at Bonnington Park School, Peebles, he passed to George Watson's College, Edinburgh, where he completed his school education. He passed through the medical curriculum at Edinburgh University, and graduated M.B., C.M. in 1883, winning as a fitting crown to a distinguished undergraduate career the Buchan Scholarship in Midwifery and Gynaecology. This scholarship carried with it the privilege of acting as house-surgeon to the University Ward for Diseases of Women, then under the charge of Professor A. R. Simpson, and the association with Simpson thus begun was to prove one of the strongest formative elements in Ballantyne's life and career. From the Royal Infirmary he passed to the Royal Maternity Hospital during Simpson's term, and after some months spent in visiting the medical schools of Berlin, Munich, and Göttingen he was appointed by the Professor as both his private and his university assistant. Ballantyne became by examination M.R.C.P. Edin. in 1887,

and in the following year was elected to the Fellowship. In 1889 he graduated M.D. with a thesis on "Some anatomical and pathological conditions of the newborn infant in their relation to obstetrics," for which he was awarded a Gold Medal and the Gunning-Simpson Prize in Midwifery.

After five years as University assistant Ballantyne ventured forth into the Extramural School as lecturer on midwifery and diseases of women in the School of Medicine of the Royal Colleges. For twenty-six years he taught faithfully and successfully both men and latterly women students, until in 1916, on the admission of women to the University classes in medicine, he was called back to the academic fold as lecturer on midwifery to women students. This appointment he held with acceptance to the time of his death.

In 1920 Ballantyne was appointed assistant physician to the Royal Maternity Hospital, and four years later he succeeded his friend, the late David Berry Hart, as physician. In this capacity he served for the full period of fifteen years, retiring in 1919. Meantime in 1901 the Hamilton Bed was endowed in the hospital for the "purpose of the treatment of the diseases peculiar to, or accidental during, pregnancy." (Previously only women whose confinements were imminent were admissible to the hospital.) This event, which may be taken as marking the

beginning of that care of the expectant mother which Ballantyne did so much to develop and popularize, was the response on the part of a generous and anonymous donor to Ballantyne's urgent and telling plea published in this JOURNAL. Before long the single bed had to be expanded to a ward, as doctors and nurses and even patients themselves gradually in increasing numbers realized the value of pre-maternity care. Ballantyne fostered this part of the hospital work with enthusiasm, and organized a system by which women in the "district," suffering from diseases incident to pregnancy, were visited by specially trained nurses, and if necessary brought into the hospital. The work developed rapidly, and in April, 1915, the first pre-maternity and infant welfare centre was started in the hospital under the name of "Infant and pregnancy consultations for expectant mothers." In 1917 the ante-natal department of the hospital came under the administrative and financial care of the municipality, and Dr. Ballantyne was appointed "extra-physician in charge of the ante-natal department." Two years later a department

for the treatment of venereal disease in pregnancy and labour was started, and to the charge of this also Dr. Ballantyne was appointed by the city authorities. In addition to these purely professional duties in the Maternity Hospital, Dr. Ballantyne interested himself deeply in all its affairs. For two years (1908-10) he acted as its honorary secretary, and subsequently became secretary to the medical board with a seat on the board of management, thus forming a direct link between directors and staff.

The promise of the researches embodied in his M.D. thesis matured in the publication between 1892 and 1895 of his two volumes on *Diseases of the Foetus*. Inevitably he found himself, in his search for causes, thrust back to the study of earlier stages of ante-natal life. Embryonic conditions were therefore dealt with in his *Teratogenesis* (1897), and included in his classic volumes on *Ante-natal Pathology and Hygiene* (1902-4). In all this Ballantyne was doing work of a pioneer type in that he not merely collected laboriously and summarized all the work previously done on the subject, but attempted to produce order out of chaos and establish a really scientific classification of, and nomenclature for, the innumerable varieties of embryonic and foetal deformities and diseases.

In 1902 the Royal College of Physicians of Edinburgh recognized this in the award to him of the Collen Prize "for the greatest benefit to practical medicine in the previous four years."

Elected a Fellow of the Edinburgh Obstetrical Society in 1883, Ballantyne passed through the various offices of secretary, editor of *Transactions*, and vice-president, and was elected to the presidential chair in 1906-7. From the first he was a prolific contributor of scientific papers, and a fluent participator in the discussions of the Society; to his industry it is indebted for the complete index of the *Transactions* of its first twenty-one years, by which means many interesting, valuable, and historical papers have been rendered more accessible.

Ballantyne's writings soon rendered his name familiar to workers in midwifery and gynaecology, not only in his own country, but all over the world. This was seen in the honours which he received. He was invited to act as examiner in Aberdeen University in 1895-99, in Edinburgh University 1901-5, and at his death he held similar appointments in the Universities of Glasgow and Liverpool. He was an honorary Fellow of the Glasgow Obstetrical and Gynaecological Society and of the American Association of Obstetricians and Gynecologists; an honorary member of



DR. J. W. BALLANTYNE.

Photograph by]

[Scan Watson, Edinburgh.



the American Child Hygiene Association and of the *Sociedade Scientifica Protectora da Infancia* (Brazil). In 1910 he was chosen Vice-President of the Section of Obstetrics and Gynaecology at the Annual Meeting of the British Medical Association in London. Besides the professional activities, Ballantyne took an active interest in all that affected the welfare of his school. He was one of the first to see the value and importance of post-graduate teaching, and was convener of the committee to which the establishment of the now famous post-graduate courses in Edinburgh was attributable. He was also an active working member of the General Council of the University.

The British Medical Association held an important place in his interest, and characteristically he took his full share of the local work as a member of the Branch Council and of the Executive Committee of the Division. For some years up to his death he had acted as Edinburgh correspondent to this JOURNAL, and in other ways he contributed to it to an extent which only the Editor could reveal. Those, however, who could recognize his unsigned writings will recall with pleasure many of his short annotations on, for example, "Medical Terms in the New English Dictionary," and on many other antiquarian and philological points touching upon medicine.

Ballantyne's industry was phenomenal. Probably a week-day never passed without his writing something for publication, and his total output would do credit to a journalist who had no other interests or occupation. He was the author of some ten scientific volumes, including besides those already mentioned *Diseases of Infancy*, 1891; *Essentials of Obstetrics*, 1901; *Essentials of Gynaecology*, 1906; and *Expectant Motherhood*, 1914. He edited two issues of Green's *Encyclopaedia Medica*; of the same publisher's *Dictionary of Medicine*; and of the *Quinquennium of Medicine and Surgery*. He founded and edited during the two years of its existence the journal *Teratologia*. He acted as subeditor for Scotland of the *International Clinics*, and in addition to all this he published between four and five hundred articles in medical and other journals.

Moreover, his writing was habitually on a high level of literary excellence. His sentences were poured out with not merely fluency and ease of style, but at times with the cumulative force of a torrent, sparkling with a freshness and variety of apt and illuminating imagery that is most unusual in medical papers. Doubtless this was due in no small measure to his extraordinarily wide reading and the possession of a wonderfully retentive memory. His mind was a positive encyclopaedia which he could, as it were, open at the desired page on a moment's notice. This extraordinary breadth of culture marked him as the natural successor to Berry Hart in the office of librarian to the Royal College of Physicians. This office he adorned, and he enjoyed to the full the privilege of supervising the affairs of that fine collection of old and new books. His own private library was also a reflection of his mind and of the immense scope of his knowledge. His rooms were packed with books on every conceivable subject—medicine, history, biblical study, ethics—and a noble collection of the classics of many languages and of different eras. He is said to have had some eight editions of Boswell's *Life of Johnson*—a man whom he resembled in his omnivorous reading and insatiable thirst for knowledge. Lighter literature he did not eschew either, and when in the vein he could write admirably in a facetious style. Perhaps the most outstanding example of this is his inaugural address to the Edinburgh Obstetrical Society in 1906 on the "Future of obstetrics," in which he humorously recorded an imaginary conversation with the President of the Society in 1940 (its centenary year). Like a positive Jules Verne, he describes many imaginary changes in the obstetrical world of that day, several of which are now accomplished facts or well on the way to be so. So successfully did he combine instruction with light humour that this paper became one of the best known of his writings, was translated into several foreign languages, and proved a most effective instrument of propaganda in favour of ante-natal care.

This almost uncanny power of prevision was one of Ballantyne's striking characteristics. By nature and temperament he was a scholar rather than a practitioner. He lived in the main outside the dust and turmoil of the arena of practice, and so was perhaps enabled to see farther and more clearly into the future than those who are harassed and burdened by the cares of practice. Worldly advancement, moreover, was not his ambition: his aim was service to his fellows, and in that he spent himself lavishly.

Ballantyne's greatest claim to fame and remembrance will

undoubtedly prove to be his pioneer work in seeking to establish ante-natal pathology on a scientific basis, and still more the practical application of that in the foundation of clinics for expectant mothers. It is instructive to observe how rich a harvest in practical benefit to humanity is now beginning to be reaped from the apparently arid and stony fields in which for so long he ploughed a lonely furrow. For years when he first began to preach the value of ante-natal supervision and care he was as "a voice crying in the wilderness," but by sheer persistence he won a hearing, and a great deal of the modern development of midwifery along preventive lines is the direct outcome of his labours.

No account, however brief, of Dr. Ballantyne's life could possibly be regarded as even remotely adequate which did not touch reverently upon that aspect of his life which bulked so largely in his own mind—namely, his religion. At an impressionable age he was, as we have seen, brought into close association with Professor A. R. Simpson, for whom he conceived a boundless admiration and affection. Simpson's well known evangelicalism could not fail to make a deep and lasting impression on such an ardent and faithful disciple. Moreover, this was the period of Henry Drummond's brief but brilliant lay ministry among the students of Edinburgh University, and Ballantyne was one of those who early fell under the spell of his vivid spirituality. It is, then, small wonder that he became a man of deep and sincere religious life. His faith was childlike in its perfect simplicity and in its immanence in all the innumerable activities of his life. It produced in him a beautiful charity of disposition, which enabled him to suffer long and yet remain kind, and it endowed him with the quiet confidence and endurance in the face of a lack of recognition in his early years, which we can now see to have been necessary to the fulfilment of his destined work. In a man of such colossal industry it was inevitable that his religious life should manifest itself in activity as well as in quiet, contemplative study. Only a few of the outlets for this activity can be mentioned. During his tenure of office at the Royal Maternity Hospital he conducted a short service for the patients every Sunday afternoon; and he loved nothing better than addressing Brotherhood meetings. He served his church also loyally in more ordinary paths. For many years he was an elder in St. George's U.F. Church under his cherished friends, the late Dr. Alexander Whyte and Dr. John Kelman, and he even found time to act as session clerk. For many years he was a director of the Edinburgh Medical Missionary Society, and from 1907 to 1912 was its president, taking an active share in its work and contributing liberally to its support. Much of his time and thought was occupied by the cause of foreign missions, and he served on various committees of the U.F. Church dealing with them. It is credibly said that he never allowed a Sunday to pass without writing a letter of encouragement and friendship to one or more foreign missionaries. The unselfish thoughtfulness of such an act speaks volumes.

In 1889 Dr. Ballantyne married Miss Emily Rosa Mathew, daughter of the late Mr. George Mathew, Worsted Lodge, Cambridgeshire. No children were born to them, and his wife predeceased him in 1914.

On Friday, January 26th, he was buried in the beautiful Dean Cemetery, Edinburgh, in presence of a very large number of friends and colleagues, representatives of the multifarious interests of a life of ceaseless service.

R. W. J.

We are indebted to Sir HALLIDAY CROON, emeritus professor of midwifery in the University of Edinburgh, for the following tribute to Dr. Ballantyne:

In common with my colleagues I received a very great shock on hearing of the unexpected death of my old friend, John William Ballantyne, as the result of gangrenous appendicitis. He was one of my earliest pupils in the Extra-mural School here, and he and I have been associated together in the Obstetrical Society, in the Maternity Hospital, and for the last seventeen years as colleagues in the University. Very early in his career he identified himself with the department of obstetrics, becoming assistant and university tutor with Sir Alexander Simpson, and to this branch of medicine he had devoted himself exclusively ever since.

All through his life the striking feature about him has been his endless perseverance and concentration on anything he undertook, and this is conspicuously borne out in the characteristic enthusiasm with which he devoted himself to the somewhat obscure and unremunerative work in teratology.



on which subject his writings and communications are exhaustive; indeed, his enthusiasm carried him so far that he published a journal on teratology. The whole question of monsters was an open field to him, and his minute and accurate knowledge of their classification and anatomical relation was absolutely unique.

It is to his endless credit and to that of the school to which he belonged that he laid the foundations of ante-natal pathology, and he stood out, *facile princeps*, as the greatest living authority on this subject; as a matter of fact he developed the whole department and brought it nearly to perfection in Edinburgh. He had entire charge of the ante-natal clinic in the maternity hospital, and the devotion, care, and time that he bestowed on that clinic only those who were his immediate colleagues can ever know. In the successful development of this clinic he was frequently brought into very delicate relationships with his colleagues, and his infinite tact and judgement were recognized by all of us in the hospital.

His powers of application and devotion to work were colossal. My association with him during the last seventeen years was very close and intimate, as we met every day, lecturing as he did to the women students, who were entirely under his care as far as obstetrics were concerned, and we shared class assistants, tutors, servants, diagrams, museum, and apparatus in common. During all those years we never had a misunderstanding or friction of any kind whatever, and I shall never forget our daily interviews in the University retiring room. Of these causeries I retain a vivid recollection. They were not always medical, being more often political, social, or religious; but this thing I will say, that I never remember Ballantyne saying or hinting an unkind thing of any human being. No one could be in daily association with him as long as I was without recognizing that he seemed removed from the petty cares of this world, and in his company one felt lifted into higher environment. He never cultivated practice very much, and was at his best always in his library, where he spent long hours daily. His literary output was stupendous. Apart from his original work in teratology and ante-natal and obstetrical research, the mere editing of two editions of the *Encyclopaedia Medica* was an undertaking sufficient to have occupied half a lifetime.

He brought permanent and world-wide reputation to the Edinburgh School to an extent that is not realized either by the public or the practitioners of medicine, but I can safely say that no foreign visitor ever came to Edinburgh who did not wish specially to be introduced to and know Ballantyne personally. He led a very simple life, very seldom dined out, was a member of no club, and social entertainments did not appeal to him very much. It is characteristic of him that at one time he was a great smoker of strong and unattractive tobacco, and one day while walking with a friend was taxed on the subject; he threw his pipe and pouch of tobacco over the dyke and never smoked again.

His integrity of character and abounding humanity were the special features of his life. *Integer vitae scelerisque purus*. He shone specially as a secretary: his minutes were always monuments of accuracy and care, and to that work he grudged neither time nor trouble. Religion was to him a natural secretion, an integral part of his being; like the circulation of the blood, it performed its function without attracting any special attention on his part to itself.

Ballantyne was a really learned man; he had intellect, energy, and literary skill, and these gifts he loyally and ungrudgingly gave in the service of his school of medicine and mankind. I shall ever remember him as a kind and conscientious colleague and a considerate friend.

Dr. B. P. WATSON, professor of midwifery and diseases of women in the University of Edinburgh, has been good enough to send the following:

The medical profession the world over mourns the death of Dr. J. W. Ballantyne. By his voluminous writing he was known to everyone who has any pretence to special knowledge in midwifery and gynaecology, and his persistent efforts on behalf of the expectant mother and his constant advocacy of adequate ante-natal care brought his name prominently before every practitioner. When he began his work in ante-natal pathology he was regarded by many as a pedant engaged in researches which could never have any practical clinical application. It is one of the happiest thoughts of him, now that he has gone, that he lived to see his work appreciated at its full value, both from the purely scientific standpoint and from the point of view of its practical application. I know

that this was an intense satisfaction to him, and that he felt it was ample reward for his many years of hard and otherwise unremunerative scientific work.

To those of us who knew the man as well as the scientist his loss is great indeed. In his younger days he was a keen golfer and tennis player, but these sports he sacrificed for the sake of his work, and for many years he found his only relaxation among his books. His library was large; it contained the best books in all branches of literature, and he knew every one. There was no apparent arrangement, but he could put his hand on any book or hunt out any article at a moment's notice. Many of us, when engaged in research, have availed ourselves of his unique knowledge of medical literature. It did not seem to matter how obscure the reference, or how long since the article appeared—Ballantyne would be sure to know of it and be able to produce it.

He was loved by his students, and by none more than the women, whom he taught first in the Extramural School and latterly in the University. After they graduated many of them corresponded with him and put before him for solution the difficulties they met with in practice or in the mission fields of India or China where so many of them went. He loved to think that so many of his students had taken up missionary work, for he had that simple faith which made him throughout his life a true Christian. His relations with his colleagues were always of the pleasantest nature. I shall never forget his kindness to me personally. I knew him first as my teacher in the Maternity Hospital, and his were the first congratulations cabled to me on my appointment to the chair of midwifery in Edinburgh. The Edinburgh Medical School can ill spare such a man at this time, for he was one of those who was recognized everywhere as a leader in midwifery, and so helped to maintain the tradition of which we are so proud.

Dr. JAMES YOUNG, assistant physician, Royal Maternity Hospital, Edinburgh, with which institution Dr. Ballantyne was so long connected, writes:

The death of J. W. Ballantyne has removed from us one of the noblest of minds and one of the masters of modern medicine. Ballantyne's claim to recognition amongst the makers of medicine rests on two solid foundations—his investigations on ante-natal pathology and his pioneer efforts to direct attention to the value of ante-natal supervision. It is probably right to say that he was the founder of the science of ante-natal pathology, and his two large volumes remain to the present day the classics in this subject. The dominating passion of his later years had its natural origin in these preliminary scientific labours, for by them he was led to a recognition of the immense wastage of child life that could be prevented by proper supervision of the carrying woman. His was an imagination that kindled into flame at the thought of big service to his fellows. During the past twenty years his life was illumined by this thought, and his untiring advocacy by speech and writing of the need and place of the ante-natal clinic carried conviction almost as much by his transparent sincerity and high sense of duty as by the brilliance of his exposition. For long he faced apathy and even opposition, but the efforts of his detractors only served to increase his zeal, and beyond the days of temporary hostility and indifference he kept a vision of the permanent assurance of his work.

Of Ballantyne as a man it is difficult for those of us who loved him to speak adequately. I have known him for nearly twenty years, and during the latter part I have grown to value his friendship as one of the richest things in life. Charity, sincerity, and simplicity, linked with a firm religious faith, were the secrets underlying a life of unusual charm and sweetness. I have seen him hurt by unjust criticism, but I have never known him to utter one uncharitable word, and I believe his soul was unable to harbour an uncharitable thought. To outsiders he might seem to possess small vanities, but those who knew and loved him saw them rather as the little self-protections against the world which a heart childlike in its simplicity and more sensitive than rugged had all unconsciously woven round itself.

He was an untiring writer. Much that came from his pen bears the stamp of the master. Much has probably small permanent value and stands merely as the record of a mind teeming with ideas and consumed with the desire of expression. Ballantyne's religion was the driving force of his life. He loved to tell of the help he derived from prayer in any of life's great decisions, and into his work he carried the spirit of the true missionary.



Dr. F. J. BROWNE, who worked with Dr. Ballantyne in the ante-natal department of the Edinburgh Royal Maternity Hospital, writes:

The death of our beloved chief has come as a stunning blow, overwhelming in its tragic unexpectedness. At the moment the sense of personal sorrow and loss overshadows all, and it is difficult to write or even to think of aught else. On Monday morning, January 15th, he had performed a Caesarean section with his usual skill (he had never lost a patient after this operation) although even then he was not feeling well. How little we thought, as he afterwards said his usual cheery "good-bye," that he had gone out for the last time from the department that had meant so much to him, which he had organized and staffed, and of which we know he was so proud. When we think of him it is not yet as the great pioneer of pre-natal care, though we know of his greatness, and had a jealous care for it, confident that the day would surely come when fairly but universal recognition would be his. We think of him rather as he came at his morning and evening visits—enthusiastic, kindly, simple; then his ward round, when no patient was overlooked, but each received an encouraging word; and afterwards the almost daily conference with his staff on matters of administration and details of treatment, at which the suggestions of even his most junior resident were received with consideration; and then those more confidential, because more leisurely, evening talks after the work of the clinic was over for the day. Much was said then that cannot be told. Many were the confidences freely exchanged; wise the advice freely given; but amidst it all there was no unkind or uncharitable word spoken by him, nor would he allow it without gentle reproof in others. For actions or words that appeared somewhat harsh or unkind he invariably sought and found some extenuating circumstance. This, I think, is the memory of those conversations that will most remain. Lately he was much gratified by the appreciation of his work that was shown on many occasions by his colleagues and in the medical press of this and other countries, and about a month ago said to me that it appeared to him now that if he was remembered it would be by his work on ante-natal care rather than by his earlier work in otology.

Those who were most intimate with him are aware how little even all his scientific work and voluminous writings circumscribed his activities and how varied was his interest and profound his learning. He loved old books and rare editions, of which his own library contained many examples. How he found time to indulge these tastes must seem a mystery until it is known that 6 a.m. in winter and summer was a usual hour for commencing work. From then till 10 a.m. was done most of the work of the *Encyclopaedia Medica*, the ninth volume of the new edition of which he had almost completed at the time of his death. Only a few nights previous to his fatal illness I found him at a late visit hilarious as a schoolboy over the parody by Kipling and Graves of the fifth book of the *Odes of Horace*. He could never be prevailed upon to take a holiday, and for the last two weeks we had thought he looked tired. Once or twice, too, he had recently complained that he was feeling the strain of his literary work.

When all this is written, how bald it seems, and how little it expresses the vivid, strong, and varied personality that we were privileged to know! What were his outstanding characteristics as he appeared to us? Simplicity, kindness, intense energy and enthusiasm, cheerfulness, industry, thoroughness. He had the power of eliciting in an unusual degree the affection as well as the respect of those who were privileged with his friendship. To them especially the loss of his guiding hand appears irreparable, but his memory will remain an inspiration. And they believe that he has lit such a torch as shall never be put out.

#### HUNTER F. TOD, M.A., M.D. CANTAB., F.R.C.S. ENG.,

Surgeon to the Ear, Nose, and Throat Department, London Hospital.

We regret to announce the death, on January 23rd, of Mr. Hunter Finlay Tod, the distinguished aural surgeon, at the age of 52, after a long and painful illness gallantly endured. Hunter Tod was the second son of the late Mr. David Tod, J.P., of Eastwood Park and Hartfield, Renfrewshire. He was born in 1871, and was educated at Clifton College, Trinity College, Cambridge, and the London Hospital. He graduated B.A. (with first-class honours in natural science) at Cambridge in 1892, M.A., and M.B., B.Ch. in 1896, and M.D. in 1907. He gained a

surgical scholarship at the London Hospital in 1895, in 1896 he took the diplomas of M.R.C.S. Eng. and L.R.C.P. Lond., and in 1898 became F.R.C.S. Eng. He spent a year on the Continent studying in the special clinics of Berlin, Vienna, Leipzig, and Halle, working for a considerable period under Killian and Jensen in Berlin. After holding the post of resident medical officer at the Throat Hospital, Golden Square, he was appointed surgeon to the throat and ear department of Paddington Green Children's Hospital, and subsequently assistant aural surgeon to the London Hospital.

At the time of his death Hunter Tod was senior surgeon to the ear, nose, and throat department of the London Hospital; he had held this appointment for twenty years, and his term of office had recently been extended for another five years. He was lecturer on aural surgery at the London Hospital Medical College, which owed much to him for his keenness in organizing and improving the teaching of that subject. He was also consulting surgeon to the West Herts Hospital. He was president for the present year, and a former vice-president, of the Section of Otology of the Royal Society of Medicine; and was vice-president in 1910 of the Section of Otology at the Annual Meeting of the British Medical Association. He was formerly examiner in otology at the Royal Army Medical College, and had been a member of the Special Aural Board of the Ministry of Pensions.

He was the author of many contributions to the literature of otology, the published results of his experience of intracranial complications being particularly noteworthy. His excellent little book on *Diseases of the Ear* was issued in the Oxford Medical Manual Series in 1907, and went into several editions; he contributed special sections on "Diseases of the external ear and tympanic membrane" to *Albutt's System of Medicine*, and on "Operations upon the ear" to *Burghard's System of Surgery*.

Hunter Tod was of small size and light build, but had played half-back at rugby football for his college at Cambridge, and, as a student, for the London Hospital. To the end he was excellent company, and his more intimate friends, who knew him affectionately as "Jinks," loved the air of jesting self-assurance which he habitually assumed towards them. He was a man of confident and optimistic outlook and a surgeon of great patience and gentleness. As a consultant his opinion was widely sought and highly valued, and his skill as an operator, particularly in the performance of mastoid operations, was recognized and admired by his colleagues. It has been stated, on good authority, that he was the first surgeon in this country to perform the now everyday operation of true submucous resection of the nasal septum.

He leaves a widow, who is the eldest daughter of Dr. Stanley Rendall, of Aix-les-Bains, and one son and three daughters. A memorial service was held on January 26th at St. Marylebone Parish Church, which was attended by a large number of his colleagues and friends.

A colleague at the London Hospital writes: Hunter Tod was connected with the London Hospital for close on thirty years, having come there as a student on leaving Cambridge. After a short time on the assistant staff he served as senior aural surgeon for over twenty years, and there also he died. He was thus in every sense a "London" man, and his affection for the hospital and his loyalty were amongst the main-springs of his life. His zeal for his own special department was unbounded, and he was tireless in his efforts to extend its scope and promote its efficiency. Indeed, his incessant demands for an increase of beds became almost a standing joke between him and his colleagues when the members of the staff sat in council. Others are more competent to speak of his skill as an operator in his chosen branch; but as one who only came in professional contact with him over cases on the boundary-line between medicine and surgery, the writer can testify to the general trustworthiness of his opinion and the soundness of his judgement. Yet it is probable that he did not always get full credit for his extensive and accurate knowledge. Like one of the characters in *The Wrong Box*, he thought that there was "nothing like a little judicious levity." This humorous way of looking at things, along with a certain flippancy of manner, at times tended to conceal from those who did not know him well his great reserves of clinical experience. But it was just these characteristics which most endeared him to his friends. He derived from his Scottish birth a dry sense of humour and a gift of delicate sarcasm, while his English education had smoothed away the surface asperities apt to be met with in those who come from north



PSYCHOLOGICAL MEDICINE.—Mary R. Barker, S. Blanton, N. H. Clubbala, J. Gifford, G. W. Greene, F. H. Guppy, E. L. Hopkins, P. D. Hunter, P. McLuskie, N. W. Maxwell, N. Roberts, W. D. Sammon, C. E. A. Shepherd.



## Council and Committees.

Dr. W. S. Lazarus-Barlow, Sir John Broadbent, Dr. T. W. Eden, and Sir George Newman were elected Councillors, on the nomination of the Council, to take the places of Drs. Lauriston Shaw, Copeman, Chaplin, and Blacher, who retired by rotation. Dr. Herbert Spencer and Dr. Raymond Crawford were elected members of the Library Committee, on the nomination of the Council, to take the places of the late Sir Norman Moore and the late Sir James Galloway.

## Appointment of Delegates.

Sir William Hale-White and Dr. R. A. Young were appointed as representatives to a conference summoned by the University of London concerning the courses of instruction provided by medical schools.

Permission was granted to the editor of the *Lancet* to reproduce the portraits of certain physicians in a publication intended to celebrate the centenary of that journal.

The President was appointed a delegate to attend the celebration, on June 5th to 7th next, of the 803th anniversary of the foundation of St. Bartholomew's Hospital.

Dr. R. O. Moon was appointed to represent the College at the celebration of the centenary of Jenner by the Académie de Médecine.

Sir Francis Champneys was appointed, on the nomination of the Council, a representative of the College on the Central Midwives Board.

## Lecturers.

The President announced that the Council has appointed Lieut.-Colonel William Glen Liston, C.I.E., M.D., to deliver the Milroy lectures in 1924.

On the recommendation of the President it was resolved that the appointment of the Lloyd-Roberts lecturer be made by the Censors Board.

The Committee of Management reported that Mr. H. J. Waring had acted as Visitor of the Board at the Examination of the Egyptian School of Medicine, Cairo, in January.

## Regulations for the D.P.H.

The Committee of Management presented new regulations for the D.P.H. England, in conformity with the resolutions and rules framed by the General Medical Council, to come into force on January 1st, 1924. The Committee presented a report criticizing the action of the General Medical Council.

The report pointed out that in the new resolutions and rules of the General Medical Council no provision is made for candidates in the army to receive instruction in the duties of a medical officer of health under a sanitary staff officer in the Royal Army Medical Corps having charge of an Army Corps, District, Command, or Division, such as was formerly provided for in the regulations. The report continued:

"The committee have already called the attention of the General Medical Council to the hardship to officers of the R.A.M.C. in being deprived of this opportunity of studying for the diploma, when, at the request of that Council, the Committee expressed their views on the advisability of revising the regulations. Further, it appears that under the new regulations, the instruction under a sanitary officer in India, in the Colonies, and the Colonies will be no longer acceptable, the interpretation of the new rules by the General Medical Council, the whole course of training under a medical officer of health must be given under one and the same officer in one and the same area, and must cover all the subjects mentioned in Section II, paragraph II 4 (a) to (f), and it is improbable that these conditions can be fulfilled elsewhere than in this country. The Committee are of opinion that the new regulations cause a distinct hardship to officers in the R.A.M.C. and to Indian and Colonial doctors, and they recommend that the Royal Colleges should again draw the attention of the General Medical Council to this undesirable aspect of the new regulations."

The report was approved.

## UNIVERSITY OF OXFORD.

The following degrees were conferred in the present term on Saturday, 8th, and Saturday, March 24th. In Natural Science are announced 3th, at Keble College; March 20th, at Merton, Exeter, New, Brasenose, Corpus Christi, and Wadham Colleges.

Robert d'E court Atkinson, B.A., has been elected to a Research Fellowship at Hertford College.

At a congregation held on January 25th, the degree of bachelor of medicine (B.M.) was conferred on D. S. Davies.

A pamphlet of 16 pages entitled "Information concerning the school of medicine, medical degree, and post-graduate medical study and research" is available from the Press and sold by the Clarendon Press, Oxford, price 1s. net. Leaflets of the examinations and the Diploma in Public Health and the Diploma in Tropical Medicine can be obtained by applying to the Dean of the Faculty of Medicine, Museum, Oxford.

## UNIVERSITY OF CAMBRIDGE.

Under the recent arrangement for the interchange of teachers Dr. Friedrich Zscholke, professor of zoology and comparative anatomy in the University of Basle, has commenced a course of

sixteen lectures on the European fauna. The corresponding exchange lectures at Basle will be given next term by Mr. J. T. Saunders, demonstrator of animal morphology. At a congregation held on January 26th the degrees of Bachelor of Medicine and Surgery (M.B., B.Ch.) were conferred on N. G. Thomson.

## UNIVERSITY OF LONDON.

A MEETING of the Senate was held on January 24th, when the Vice-Chancellor (Mr. H. J. Waring) was in the chair. Sir George Newman, M.P., was reappointed representative of the General Medical Council for 1923-24. The meeting was presided over by the Vice-Chancellor.

D.Sc. IN EMBRIOLOGY.—G. S. Sansom, University College, for a thesis entitled: Early Development and Placentation in *Arvicola (microtus) amphibius*, with special reference to the Origin of Placental Giant Cells.

D.Sc. IN PHYSIOLOGY.—G. V. Anrep, M.D., University College, for a thesis entitled: The Metabolism of the Submaxillary Gland.

In some copies of the *BRITISH MEDICAL JOURNAL* of December 30th, 1922, p. 1282, the asterisk did not show against the name of Miss Edith M. Hall, indicating that she had been awarded the University medal in Branch IV (Midwifery and Diseases of Women) of the M.D. examination of the University of London.

## CONJOINT BOARD IN SCOTLAND.

The following candidates have been approved at the examination indicated:

FINAL EXAMINATION.—Medicine: J. S. Bizzett, E. T. Hall, J. J. Mann, J. H. Murray, R. M'D. McKinnon, C. C. L. Spurring. Midwifery: J. S. Bizzett, D. G. Coultis, J. J. Mann, J. H. Murray, C. C. L. Spurring. Medical Jurisprudence and Public Health: J. C. Colvin, D. G. Coultis, J. G. Currie, J. Dey, D. K. Fisher, M. Goldberg, C. M. Hinds, O. ap Vychan Jones, R. F. Kerr, L. A. Moody, W. Melrose, A. Menzies, J. P. T. Mills, J. G. O'Kieffe, G. M. Rose, J. J. du Pré de Roux, R. D. Seogi, H. Sen.

The following candidates, having passed the Final Examination, were admitted L.R.C.P.E., L.R.C.S.E., and L.R.F.P. and S.G.: D. Gold, T. C. H. Neil, C. J. B. Fox, J. M. Crombie, E. Brazao, Annie F. Perry, Hilda Page, Johannes J. Malan, Katherine M. Celan-Jones, B. McLaughlin, J. E. Rodrigo, I. S. K. Bain, et Saled et Gohary Sheir.

## SOCIETY OF APOTHECARIES OF LONDON.

The following candidates have passed in the subjects indicated:

SCIENCE.—G. G. Brown, M. P. Parker, R. F. A. Philpott, H. M. White. MEDICINE.—B. Basuny, H. A. Daly. FORENSIC MEDICINE.—H. J. Adams, B. Basuny, C. S. Laurence. MIDWIFERY.—B. Hart, W. M. Jones, C. S. Laurence.

\* Section I. † Section II.

The diploma of the Society has been granted to Messrs. G. G. Brown, M. P. Parker, and R. F. A. Philpott.

## Medico-Legal.

## AN ACTION FOR NEGLIGENCE.

A CASE of importance to the medical profession came before Mr. Justice Rowlatt and a special jury.

The plaintiff, Miss Coleberd, claimed damages against Dr. P. A. Colmer of Yeovil, alleging negligence in setting a fractured forearm. It was alleged that defendant failed to set the bones in apposition, that he set them out of alignment, and did not take reasonable care to see that they were set so as to unite. In consequence there was marked displacement of the lower fragments, and the bones failed to join properly. An operation subsequently became necessary, at which the bones had to be sawn through and reset with plates and screws. It was complained that Dr. Colmer neglected to make an x-ray examination of the arm, and that plaintiff's recovery had been unduly and unnecessarily prolonged. Compensation for loss of employment, and special damages of £21 18s., were claimed. The defence was that there had been no negligence.

Mr. Rayner Goddard conducted plaintiff's case, and defendant was represented by Mr. J. A. Hawke, K.C., with whom was Mr. G. D. Roberts (instructed by Messrs. Hempsen, solicitors to the Medical Defence Union).

Mr. Goddard, in opening, said it was alleged that by reason of the defendant's neglect of what were in some respects elementary precautions, plaintiff, a young woman of 26 with her living to get, suffered from a broken arm for some three or four months—a much longer period than would have been the case had proper treatment been applied at an earlier date. The accident occurred on June 9th, 1921, and both bones of the left forearm were fractured. Dr. Colmer was sent for, and, after applying a temporary splint, removed Miss Coleberd to his surgery, where he set the arm. There were no complications, and it appeared to be a simple fracture. Altogether she paid sixteen visits to Dr. Colmer, and at the end of the sixth week, when the splint was taken off, it was obvious that the broken bones had not united. The complaint was that he neglected to have an x-ray photograph taken in order that he might see the condition of the bones after the setting. The bones did not unite, and she consulted a surgeon in Yeovil who had the arm x-ray photographed, the girl having then to undergo two operations. She had now a fair arm, although she was unable to do anything like hard work.



Plaintiff's cross-examination denied that she had jolted the arm, and that the arm had been set.

Mr. A. J. Colmer, on to the Bournemouth hospital, stated that plaintiff consulted him and brought x-ray photographs, which disclosed the bones overlapping at the fracture. From his observation they must have been in that position for some three months. Judging from what he found, proper treatment had not been afforded the arm. It was a difficult fracture to set, and in his opinion nothing could have been more helpful than the taking of an x-ray photograph to see that the setting was satisfactory; he regarded that as a routine practice nowadays. When the arm did not mend he thought it amounted to a lack of reasonable care not to have taken an x-ray photograph. He did not agree that Miss Colebird was a bad bone-forming subject.

Mr. Maillie, of the Bournemouth hospital, gave evidence that he did not think the arm had been put straight by manipulation. In his opinion the deformity had only been of one month's duration.

Mr. Hawke, addressing the jury, said it had been suggested that Dr. Colmer did not know his job to the extent expected of the ordinary medical practitioner. He had a large practice in Yeovil, which he had carried on for a great many years, after succeeding his father, and there had never been a breath of suggestion against his professional character or competence. Expert evidence would be called on the question of x-ray examination, also to show that the girl was unusual in her absence of bone-making capacity.

Dr. Colmer gave evidence describing his treatment of the case, and stating that he did not consider an x-ray examination necessary after he had set the arm. The girl's home was ten miles from Yeovil, and he suggested she should be attended by the doctor in her own locality, but she expressed preference to remain under his treatment. On July 22nd he found there had been no union of the bones—the first case of non-union in that position he had had in the whole of his professional experience. The girl was in a bad condition of health, and he prescribed a tonic to improve her general health and bone-making capacity. On August 19th when he again removed the splints the bones seemed to be united, and he told plaintiff what a straight arm she had. He instructed her to keep the arm in a sling, and get some massage treatment. On August 27th the arm was in good condition, but on September 9th, when next he saw Miss Colebird, he found there was a good deal of swelling in the tissue around the seat of the fracture. It suggested to him that there had been some violence. Feeling the bones with his fingers he found they were not in alignment, and he reapplied the splints after putting them in alignment. In cross-examination he denied that plaintiff had ever raised the question of an x-ray examination. There was an x-ray apparatus at Yeovil hospital, but he did not think it necessary to put plaintiff to the expense of undergoing that examination, which would have cost two guineas.

Mr. H. R. Unwin, assistant surgeon to the Yeovil hospital, stated that he examined plaintiff's arm on September 19th in consultation with Dr. Colmer and found it perfectly straight, but there was no union of the bones. He considered the treatment had been correct, but suggested that the ends of the bones should be rubbed together, thus encouraging union. He also agreed with Dr. Colmer that the girl should endeavour to regain better general health before any operation was carried out.

A nurse gave evidence that she was engaged to give massage and did so for eleven days between August 28th and September 8th. During this time she noticed nothing abnormal. On September 9th she got the patient to see her doctor because deformity and swelling had suddenly appeared.

Mr. T. H. Openshaw, C.B., consulting surgeon to the London Hospital, stated that he was the first surgeon to use the x-rays when introduced into this country. It was not usual to take an x-ray photograph of a limb in "this nature. One could get out using the x-rays for examination to advise massage, as Dr. Colmer had done in this case. He saw no reason why Drs. Colmer and Unwin, in consultation, could not find by manipulation whether the bones were straight. If plaintiff had been operated upon immediately she might not have got such a good arm as she had at present. His theory was that she was a bad bone-maker.

Mr. Goddard: Do you say an x-ray examination was not necessary in this case?

Mr. Openshaw: Yes. It would have prevented this case being brought. You would not have a leg to stand on if there had been an x-ray examination by the defendant.

Mr. Richard Warren of Weston-super-Mare, formerly surgeon to the London Hospital and examiner in surgery at the Universities of Oxford and Cambridge, stated that after hearing the evidence he could not criticize Dr. Colmer's treatment in any way up to the time the girl went to the seaside.

His Lordship, summing up after counsel had addressed the jury, said the patient of an ordinary general practitioner was entitled to expect fair skill from her doctor, but not such great skill as one might expect from a specialist in Wimpole Street. The jury must not suppose because this had been an unfortunate case, and there had not been such a cure as in most fractures of the kind, that the doctor ought to be mulcted in damages. If a doctor made a mistake, and it was not due to want of reasonable skill and care, that was a misfortune. One could not expect infallibility in doctors more than in any other professional men. It was for the jury to say whether they thought Dr. Colmer had been guilty of negligence. If they found for the plaintiff it was a case for moderate damages.

After an hour's retirement the jury returned a verdict for the defendant, and judgement was entered accordingly.

## Medical News.

At a joint meeting of the Darlington Division of the British Medical Association and the North of England Branch of the Veterinary Association to be held at the Greenbank Hospital, Darlington, on Friday, February 9th, at 4 p.m., there will be a discussion on tuberculosis in milk. It will not be confined to disease, but will also cover the conditions to which milk is subject before it reaches the consumer. Professor Goffin, the chief veterinary officer for Edinburgh, will put forward the veterinary view, and the medical aspects will be presented by one of the local tuberculosis officers.

The announcement that Sir Richard Douglas Powell, consulting physician to the Middlesex Hospital, will give an Emeritus lecture on Friday, February 2nd, reaches us late. The lecture, which will deal with aortic regurgitant disease regarded specially from a prognostic and life assurance point of view, will be given at 3 p.m.

THE Fellowship of Medicine and Post-Graduate Medical Association has arranged a course of seven practical lecture-demonstrations on certain diseases of children, to be held during February at the Children's Clinic, Western General Dispensary, Cosway Street, N.W., on Tuesdays and Fridays, at 5 p.m. The first on February 13th and the last one on March 6th will be given by Sir William Bayliss and the other five by Dr. Bernard Myers, whose concluding lecture will be devoted to "The nervous child as seen in general practice." The fee for the course is one guinea; copies of the syllabus can be obtained from the Secretary to the Fellowship of Medicine, 1, Wimpole Street, W.1.

THE meetings of the Zoological Society of London for scientific business will be resumed on Tuesday, February 6th, at 5.30 p.m. Attention is called to the great increase in the cost of paper and printing, which renders it necessary that papers should be condensed and limited as far as possible to the description of new results. Dr. R. W. A. Salmund has been appointed honorary radiologist to the Society.

THE Dental Board of the United Kingdom announces that the third series of the prescribed examination under the Dentists Act, 1921, will be held during April next. The closing dates for entries are as follows: for examination at London, March 6th; at Manchester, March 21st; at Edinburgh, March 30th. Notices will be sent to those whose names have been entered on the list of candidates. It is important for those whose names are entered on the list of practitioners of less than five years' standing to bear in mind that there will only be two more opportunities for them to present themselves—namely, April and July of this year. Letters relating to this subject should be addressed to the Secretary for Examinations, 44, Ballan Street, W.1.

REPORTS received from the Red Cross in Russia indicate that there are now some 3,000,000 cases of malaria in the republic west of the Ural mountains. In Georgia one-half of the population are affected, and at the village of Sambourdale, near Tiflis, two-thirds of the total population have died of malaria. Many of the malaria cases are malignant, and the disease is particularly prevalent in the Volga region, where the famine has been so severe, and in the Caucasus. The Russian Medical Aid Committee has received an urgent request for quinine in large quantities, and would be glad to receive contributions addressed to Mr. A. Baker, Treasurer, Medical Aid Committee, 68, Lincoln's Inn Fields, London, W.C.2.

COLONEL R. H. ELLIOT'S book on *Tropical Ophthalmology* has been translated into French by Dr. Coutela of Paris and Dr. Morras of Rabat. The volume is published by Masson et Cie. Dr. Francisco Maria Fernandez has also prepared a Spanish translation, which is published by the Twentieth Century Press, Havana.

THE Royal Society of Medicine announces in our advertisement columns that the William Gibson Research Scholarship for medical women will be awarded in June next to a qualified medical woman selected by the Scholarship Committee. The scholarship is for £250 for two years. Further particulars can be obtained on application to the Secretary of the Society, 1, Wimpole Street, W.1.

Dr. John Craig Crawford and Dr. Josephine Letitia Denny Fairfield, both of the Middle Temple, were called to the Bar on January 25th.

A WINDOW in memory of the late Dr. Hayes Newington has been erected by the members of his family in the Ticehurst Parish Church, Sussex.

SIR ROBERT ARMSTRONG-JONES, C.B.E., M.D., has been appointed a Deputy Lieutenant of the county of London.



A BANQUET was held recently in Paris to celebrate the jubilee of the well known Paris medical journal *Progrès Médical*; Professor Richet presided, and the history of the journal was reviewed by the present editors, Dr. Loeper and Dr. Genty.

THE death is announced of C. P. Goerz, the founder of the firm of optical instrument makers known especially for its field glasses and cameras.

THE firm of William Helnemann announces in our advertisement columns to-day a plan, new to this country, of introducing its medical and surgical publications to country practitioners who, because they reside far from booksellers' shops and medical libraries, have no opportunity of seeing the latest medical books. It will meet also the difficulty encountered by practitioners in towns, owing to the fact that ordinary booksellers are indisposed to stock medical books. The plan is to offer general practitioners the opportunity of seeing the medical books of the firm on approval for a week without any expense to them.

A GIFT of over 100,000 dollars from an American lady, Mrs. Guggenheim, has enabled the Vienna faculty of medicine to open new and well furnished quarters for students of medicine who are unable to work at home owing to lack of fuel and books. A condition of the gift is that absolute freedom from racial and religious prejudice should prevail.

A CONGRESS of Social Hygiene will be held in Paris from December 18th to 23rd, 1923.

## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 422, Strand, W.C.2, on receipt of proof.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 422, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Artiology*, Westrand, London; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand, London; telephone, 2620, Gerrard.
3. MEDICAL SECRETARY, *Mediscera*, Westrand, London; telephone, 2633, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Itacitus*, Dublin; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate*, Edinburgh; telephone, 4261, Central).

## QUERIES AND ANSWERS.

### INCOME TAX.

"E. C." holds a salaried appointment and has claimed to deduct £25 expended on coaching and university fees for the Diploma in Psychological Medicine.

The claim is not good in law; the expense cannot rightly be said to be incurred wholly, exclusively and necessarily in the performance of the duties of the appointment, although they were incurred in connexion with the professional work. There is some parallel between such expenditure and the capital outlay incurred in getting together or improving the equipment of a general practitioner.

"C. S." inquires (1) what is the legal authority dealing with the right of deducting expenses from public salaries, and (2) whether pay earned as a locumtenent is "casual" and therefore not assessable?

(1) Schedule E, Rule 9 of the Income Tax Act, 1918, provides that expenses incurred wholly, exclusively, and necessarily in the performance of the duties of the office or employment can be deducted. There has, so far as we are aware, been no case before the courts dealing in this connexion with subscriptions to professional associations or payments for professional periodicals. (2) Tax is chargeable in respect of "every employment by retainer in any character whatever, whether such retainer shall be annual or for a longer or shorter period," etc., etc. Case 11, Schedule D, now transferred to Schedule E under the Finance Act, 1922. We are of opinion that "casual" earnings as a locumtenent are chargeable to tax.

## LETTERS, NOTES, ETC.

DR. C. E. BEGG (Bath) writes to state that the respiratory sounds can be well heard through a jacket of antiphlogistine spread a quarter of an inch thick on ganges tissue and applied direct to the skin. The fact is, he thinks, not well known.

### "WHAT ABOUT RIBS?"

IN one of his essays Mr. E. V. Lucas says that when he goes on a railway journey he makes a point of selecting from the bookstall periodicals which have nothing in common with the ordinary routine of his life, and in which he finds much amusement and refreshment. Among his favourites are the domestic journals published in the interests of music-hall artists. So, too, when the eye is perhaps a little fatigued by the serious medical journals of many nations, comic relief is found sometimes in such periodicals as *The Abolitionist* (an antivivisection organ) or *The Vaccination Inquirer*. To them must now be added another periodical, *The Journal of Osteopathy*, which though apparently not new, is new to us. Passing over the "professional cards" (among which one notes a specialist in "official surgery") and an advertisement of *Right Living*, "the aristocrat of osteopathic literature"—which has a cover that "looks like leather," and "will not be dated"—we are arrested by nine and a half pages of a "symposium" entitled "What about Ribs?" Osteopaths from far and wide have sent in their comments on some remarks made in a previous issue of their journal. O. A. Porter writes: "I wish I could be sure in the diagnosis and treatment of ribs. They surely exist, but I have seen very few where I felt reasonably sure of my diagnosis and less in which I was sure of correction." O. B. Gates writes: "I say ribs are very important and should be adjusted whenever out of line, which is very frequent indeed." Fred Taylor writes: "I am strong on ribs, and believe we overlook many rib lesions. I agree they are hard to reduce." S. B. Kiblinger writes: "Ribs cause lots of trouble, as do the vertebrae. I find many cases where the ribs are wholly at fault." G. C. Wilke writes: "Ribs are hard to adjust, and most of us don't adjust them either. All severe heart conditions, that I have found due to lesions, were due to rib lesions. A very important subject." E. C. Murphy writes: "I fix ribs." Ernest Fessenden writes: "Ribs are hard, especially when the one affected is over the heart, and patient thinks he is dying of heart trouble. Ribs, I find, must be fixed independently of the vertebrae. When you do fix this 'heart disease' your reputation is made." Harry Sinden writes: "Ribs are a cinch. But be sure the pelvis is straight before you attempt to correct any rib lesion." Edith W. Pollock writes: "Why can't any osteopath adjust rib lesions? I didn't know they couldn't. The ones who can't, would better go back for a P.G. course in technic or brush up on anatomy, and think." That, however, is the point. Are people who can write such arrant nonsense capable of thinking?

### HICCUP.

DR. H. J. FARNON (Reigate) writes: In the JOURNAL of January 13th I was interested in finding a reference to Mr. Money's remedy for hiccup—namely, drinking out of the opposite side of the glass. It so happened that a few months ago I had an attack of hiccup which lasted three days continuously. In desperation I tried this humorous remedy. Lying across the bed on my abdomen I bent my head downwards over the edge of the bed almost to floor and in this attitude I managed to perform the feat of drinking water from the far side of the tumbler. I have not hiccuped since. I consider that it is the attitude of head downwards rather than the cessation of breathing which is the effectual item of this cure.

LIEUT.-COLONEL G. T. LANGRIDGE, R.A.M.C., ret. (Bournemouth), writes: Over forty years ago my wife saw the method used by a young artillery officer, a guest at her father's house. He was attacked by hiccups at dinner, and drank out of his finger bowl in the manner described, and they ceased at once. It made an impression on her, and I have seen it often used by friends and have never known it to fail.

### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 37, 38, 39, 42, and 43 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 40 and 41.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 37.

## SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	20 0 0
Whole page	...	...	20 0 0

Advertisements should be delivered, addressed to the Manager, 422, Strand, London, not later than the first post on Tuesday morning. If not paid for at the time, should be accompanied by a cheque.

NOTE.—It is against the rules of the Post Office to receive postage letters addressed either in initials or numbers.



## A Hunterian Lecture

ON

SOME PROBLEMS OF GASTRIC AND  
DUODENAL ULCER.DELIVERED BEFORE THE HUNTERIAN SOCIETY OF LONDON,  
JANUARY 20TH, 1923.

BY

SIR BERKELEY MOYNIHAN, Bt., K.C.M.G., C.B.,  
F.R.C.S.SENIOR SURGEON, LEEDS GENERAL INFIRMARY; PROFESSOR OF  
CLINICAL SURGERY, UNIVERSITY OF LEEDS.

A BACKWARD look over a few years in the course of a man's life may be of great value. It is very necessary for the surgeon, whose opinion and whose practice can rarely stay unchanged. For he is one who must always be in eager search of a sounder judgement, or a better method; reluctant to abandon any well proved conclusion or trusted procedure, he will yet remain quick to give the fullest consideration to all the lessons that increasing experience may seem to teach. To review our own work is a very stern and salutary discipline. It will make clear the need to correct the impressions, often vague and sometimes very treacherous, which have been gained rather than the occasional dramatic occurrence than from the tranquil observance of a daily and placid routine; it may confirm our faith in convictions which have slowly grown, and strengthened almost imperceptibly; it will lead us to test once again an opinion not quite so impregnable as we had thought. The correlation of many incidents, apparently unrelated at the scattered times of their occurrence, will provoke a new inquiry or reveal a truth which lay buried deep. From a long array of cases we can glean knowledge that the single case can never disclose. The years certainly teach much that the days never knew.

For the purpose of this address I have passed in review my experience during the last ten years in the treatment of diseases of the stomach and duodenum. The literature of this subject is already formidable in volume, but unhappily its value is by no means proportionate to its bulk. The foundations of physicians and surgeons are not wholly to blame. We have come into a deceptive inheritance; a large part of what we thought was gold has proved to be tinsel, the authority of a great name alone bestowing any interest upon it. Here at least we may agree with Damascenus, that "without exquisite knowledge, to work out of books is most dangerous."

In the older literature there is, however, much of great value. Matthew Baillie, Craveilhier, Brinton, and a very few others may be read with interest and profit to-day. After them came a host of authors nearly all of whom taught what has proved to be rank error in connexion both with gastric and duodenal ulcer. Gastric ulcer was held to be a common disease, diagnosed with ease if certain symptoms were present. Of duodenal ulcer almost nothing was known; its occurrence was held to be very rare, its diagnosis difficult or unattainable. In the literature of the hour a great deal has still to be taken on trust. And we shall never arrive at the truth about these diseases until we refuse to accept anything on trust—until we decide, for example, that when we speak of a case of "gastric ulcer" we really do know that an ulcer is present. Not all even of the surgical literature of to-day will stand that simple test.

A definition of terms is necessary. I hold that a "chronic ulcer," whether of the stomach or of the duodenum, is a visible and palpable lesion which has existed for months or years. In it are seen clearly the evidences not only of destruction but of stubborn defence; there is a crater of varying size; in depth the ulcer involves at least the muscular coat, and may extend completely through all the coats, an acute perforation being prevented only by the firm adhesion of the ulcer to a neighbouring structure, which then forms its base. Such an ulcer is the cause of symptoms the chief character in which is the tendency to show intervals of freedom between attacks of pain. The cause of the symptoms is not the ulcer alone, for in the intervals of freedom the inert crater of an ulcer is still to be seen; and open ulcers are found *post mortem* in those not known to be suffering immediately before death from any symptoms of dyspepsia. It seems possible that an ulcer in the perfectly callous state does not provoke any symptoms until the time when there is renewed activity in the ulcerative process at a

part of the circumference of the crater. Activity and apathy of the ulcer are in this way the cause of exacerbation and remission of the symptoms. Transient attacks may be due also to the development of a number of acute ulcers round about the chronic ulcer or in an area of the stomach apposed to it. The breaking down of a healed scar has been seen in a small number of cases. Acute infections elsewhere may rouse activity in a dormant ulcer. The term "acute ulcer" is used to describe a condition in which chaps, fissures, erosions, or extensive surface destructions of the mucosa, or even of deeper layers, are found. There is often clear evidence of an impediment to the vascular supply resulting in a defenceless area, of which the gastric juice makes haste to take advantage. The ulcers thus arising develop rapidly often as terminal events, in consequence of a very heavy infection or a grave toxæmia, and they probably heal very rapidly. Their clinical importance is generally apparent only when hæmorrhage or perforation occurs, though a profound dislike of food, severe epigastric pain and vomiting controlled with difficulty, are to be attributed, in cases of acute septic disease, to the gastric erosions which are found on *post-mortem* examination. Acute ulcers are multiple; it is possible that a chronic ulcer begins in one of the acute ulcers that refuses to heal. We do not know any clinical symptoms which indicate the transition from an acute to a chronic ulcer, assuming such a change to occur. It is the chronic ulcer in the stomach or in the duodenum which is the cause of severe, protracted, and recurring attacks. It is with chronic ulcer alone that the following remarks are concerned.

The number of cases here reviewed is 718. These were as follows:

- 531 cases of duodenal ulcer (men 433, women 98).
- 164 cases of gastric ulcer (men 83, women 81); in 152 cases one ulcer was present, in 12 cases two or more ulcers.
- 23 cases of gastric and duodenal ulcers together (men 10, women 13).

In the total number of cases of gastric ulcer (187) a duodenal ulcer was found therefore in 12.3 per cent.

The last death from any operation for duodenal ulcer occurred in 1912; there have been over 500 consecutive cases without a death. Among the total number of patients operated upon for duodenal ulcer there were 6 who later developed jejunal ulcers. The mortality in cases of gastric ulcer, and gastric and duodenal ulcer, treated by gastrectomy is 1.6 per cent. A few cases have been treated by other methods to be mentioned later. In every case included in this review an ulcer has been seen and demonstrated. It is an essential preliminary to call attention to this fact, for so much of what is written is based upon opinions as to what may be present rather than upon certain knowledge of what in truth is present.

There is creeping into the literature of this subject the term "juxtapyloric" as applied to ulcers. It is an entirely unnecessary term; its use indicates loose thinking and will lead to great confusion. An ulcer is either in the stomach or in the duodenum. In the series of cases which I am now reviewing there have been three only in which there was any doubt as to the exact position or origin of the ulcer. The pyloric vein or veins and the pyloric white line indicate with quite sufficient clearness the separation between the stomach and the duodenum. A duodenal ulcer is almost always half an inch or more from these landmarks, though it may extend up to them, or even beyond them into the stomach. A gastric ulcer is very rarely within an inch and a half of the pylorus; it is with the fewest exceptions two inches or more from the pylorus, and is oftenest found on the lesser curvature or the posterior surface or both. A pyloric ulcer, an ulcer beginning exactly at the pylorus, is excessively rare. "Pyloric stenosis" is virtually always duodenal stenosis. For the term "juxtapyloric" there is no justification; its use betrays a lack of knowledge of the conditions found when the parts are inspected during life; it is a peg upon which to hang the half-truths.

The chief clinical symptoms of ulcer of the stomach are pain, vomiting, and hæmatemesis, and of these the really important one is pain. The supremely significant feature with regard to the pain is its punctuality. In the same patient after the same meals it appears with the most exact regularity after the same interval of comfort. If a breakfast is taken at 9 a.m. and pain appears at 10 a.m. on one day, the same breakfast on all other days will be followed by the same hour of comfort and the same appearance of pain at the same moment. A time-table of one day, then, fits any other day.



Far less attention than it merits is given to a searching analysis of a day's routine. A patient will not seldom tell you he can "set his watch" by the time incidence of his suffering. The periodicity of the pain is, of course, altered by variations in the quantity and quality of the food and by the irregularity of meals. A point which is well worth attention concerns the rhythm of the pain. In cases of gastric ulcer the pain which, after an interval, follows the taking of a meal gradually disappears before the next meal. In cases of duodenal ulcer the pain continues until the next meal, or until food is taken to give ease to a wearisome pain. The rhythm of gastric ulcer is "food, comfort, pain, comfort," and then again food, comfort, pain, comfort; of duodenal ulcer it is "food, comfort, pain," and then again food, comfort, pain—a quadruple rhythm in the former disease, a triple rhythm in the latter. In my series of cases pain appeared within one and a half hours in 3 cases out of 5 of gastric ulcer, and after two hours in 4 cases out of 5 of duodenal ulcer. Seasonal variations are common in duodenal ulcer, less noticed in cases of gastric ulcer. The occurrence of haematemesis is often held to indicate with great probability the presence of a gastric ulcer. Haemorrhage in formidable quantity cannot occur apart from a considerable lesion of the stomach, oesophagus, or duodenum. In the stomach such a lesion may be a chronic ulcer or an "acute" ulcer. In years gone by, when operations were performed as mistaken efforts at resuscitation in cases of copious haematemesis, the mucous membrane was often seen to be studded with tiny points from which blood was steadily trickling—the stomach "wept blood." The blood came from multiple points of acute ulceration. If a patient has so large a haematemesis as to cause death, and if the cause of the bleeding is the erosion of a vessel in a gastric ulcer, a chronic ulcer will be found far more often than an acute ulcer. So many cases of haematemesis are due to the toxæmia of appendicitis or other grave infections, to cirrhosis of the liver, and to splenic anaemia, that no hasty conclusions as to the presence of a chronic gastric ulcer may be drawn from the occurrence of this symptom. In cases of duodenal ulcer both haematemesis and melaena may occur; the latter is almost invariably in excess of the former in quantity and frequency.

A very close scrutiny of all the details of the clinical history allows a diagnosis of duodenal ulcer to be made with a considerable degree of confidence. There should always be hesitancy in making a diagnosis of gastric ulcer. A duodenal ulcer is far more common than a gastric ulcer, and therefore when an "ulcer history" is elicited, a suggestion that the ulcer lies beyond the pylorus has the greater chance of accuracy, since probability is the very guide of life. But there is more to be considered than that. There are so many conditions having their origin elsewhere, within the abdomen or outside it, that are expressed in terms of gastric discomfort that even the most searching analysis of all symptoms may leave us unconvinced that a structural lesion in the stomach is present. I may perhaps sum up my experience of the clinical diagnosis of these two conditions by saying that when, with great confidence, I make the diagnosis of duodenal ulcer from the clinical history alone, I feel wounded and amazed if I prove wrong; whereas when, with a sense of pride in my courage, I make the diagnosis of gastric ulcer, I feel very contented, even a little elated, if I prove right. We turn, therefore, eagerly in all cases of gastric ulcer to other methods of examination in the hope of greater enlightenment.

Of all ancillary methods of diagnosis that of the radiologist should be of greatest value. In the diagnosis of gastric ulcer it has pride of place; in competent hands it is far more accurate than any other method of diagnosis, clinical or chemical, or than all other methods combined. It is, indeed, so trustworthy that unless a diagnosis of gastric ulcer made upon clinical evidence is confirmed by the radiologist it should rarely, if ever, be accepted. There are, indeed, only two certain and unequivocal methods of making a diagnosis of gastric ulcer—that of the radiologist and that of the surgeon. Unless a gastric ulcer is seen we can never be quite confident of its presence. We must walk by sight and not by faith. I think it is quite true to say that no merely clinical diagnosis of any condition is so apt to be fallacious as is that of "gastric ulcer." Yet cases are met with very frequently in which this diagnosis has been made upon the flimsiest clinical evidence. When such a diagnosis becomes the warrant for medical treatment, when such treatment is expanded into a "system," and when the statistical results of such systems

are offered for our consideration and respectful admiration, we cannot but feel aghast at the mountain of falsity which looks so imposing and is in truth so unreal. Until we have learnt far more than we know at present, might we not resolve to apply the term "gastric ulcer" only to the cases in which the diagnosis is certain, and to judge of the efficacy of therapeutic methods, and of the pathological destiny of the lesion, only in such proven cases?

The radiological evidences of an ulcer have been fully described by Carman and others. The niche or accessory pocket has been well seen in exactly one-third of our cases; the abiding spasm of a zone of the stomach, the "notch" on the greater curvature, seen with or without the crater, indicates just as certainly as the niche the presence of an ulcer. The condition of the stomach in respect of its general muscular tone is now always observed; it is interesting to find that the orthotonic, the hypotonic, and the hypertonic types occur with exactly equal frequency in cases in which a gastric ulcer has been proved to exist. In cases of duodenal ulcer an orthotonic condition was found in 44 per cent., a hypotonic in 24 per cent., a hypertonic in 32 per cent. Deformities of the duodenal bulb are as certain an evidence of ulcer as are the niche and notch in cases of gastric ulcer. When stenosis has resulted from the firm healing of an ulcer, whether in the stomach or duodenum or both, the radiological examination reveals the clearest proof of the conditions present.

An additional method of inquiry which we follow in the great majority of cases consists in the examination of the gastric contents by the fractional method of Rehfuess. In my earlier experience I had several hundreds of cases examined after an Ewald test meal, but I found that so little helpful information was given at so great an expense of time and trouble, both to the patient and to ourselves, that I was glad to abandon the procedure altogether. The new method, which we have used for over a year, is more rational and has been most informative. The following table shows the results obtained, the classification of the six grades of acidity being that suggested by Dr. J. R. Bell of Melbourne, to whom I am indebted for a part of this work.

Results of New Method of Examination of 110 Cases of Ulcer.

	Gastric Ulcer (39 Cases).		Duodenal Ulcer (71 Cases).	
	No. of Cases.	Per Cent.	No. of Cases.	Per Cent.
Achlorhydria ... ..	5	13.1	4	5.5
Hydrochlorhydria ... ..	6	15.7	3	4.1
Low normal ... ..	7	18.4	9	12.8
Normal ... ..	13	34.2	4	5.5
High normal ... ..	6	15.7	17	24.2
Hyperchlorhydria ... ..	2	5.2	34	48.5
Curve with terminal ascent	1	0.2	21 (in 45)	46.6
Stomach empties—				
Within 2 hours ... ..	7	18.6	20	28.5
Between 2 and 3 hours ...	12	31.5	35	50.0
Over 3 hours ... ..	18	47.3	16	22.8

It will be noticed that only 20 per cent. of the cases of gastric ulcer show a high normal curve or hyperchlorhydria, whereas the percentage of such changes in cases of duodenal ulcer is 72.7. The most characteristic feature of the chart ulcer is 72.7. The most characteristic feature of the chart ulcer is the "terminal ascent," yet this was present in less than half the cases. Delay in emptying the stomach was conspicuous in both groups. The rapid emptying of a hypertonic stomach when the test meal showed hyperacidity or a high normal curve was found in 6 cases of duodenal ulcer, and in one case where there was a small gastric ulcer high on the lesser curvature.

To compare with this table I show another compiled from the records of patients referred to me as probably suffering from gastric or duodenal ulcers. In none was any ulcer discovered, in 2 cases a hypertonic stomach emptied rapidly and the Rehfuess chart indicated hyperchlorhydria, in one a similar gastric condition was associated with a low normal type of acidity.



23 Cases of Chronic Infection within the Abdomen, including Cases of Appendicitis, Tuberculous Disease of Intestine or of the Mesenteric Glands, all Clinically Resembling Gastric or Duodenal Ulcer.

	Cases.	Per Cent.
Achlorhydria ... ..	3	13
Hypochlorhydria ... ..	8	34.7
Low normal ... ..	5	21.7
Normal ... ..	6	26
High normal ... ..	7	4.3
Hyperchlorhydria ... ..	1	4.3
Curve with terminal ascent ... ..	3	13
Stomach empties—		
Within 2 hours ... ..	4	17
Between 2 and 3 hours ... ..	12	52
Over 3 hours ... ..	7	31

Let us assume that a diagnosis of gastric or duodenal ulcer has been made with great confidence. The question will at once arise as to the method of treatment that has now to be adopted in order to relieve the patient of his symptoms, and finally to remove the grave peril to his life which the disease undoubtedly threatens. There has been great strife between physician and surgeon over this matter—strife in which I must confess to the most languid interest. I claim that I rarely offer advice to patients. My endeavour is to present a case for consideration, to discuss the probabilities of diagnosis and the reasons for and against any method of treatment, whether medical or surgical. Being a physician doomed to the practice of surgery, I feel no desire to press one method or another, and I most earnestly seek to put the whole problem before the patient as I should put it before myself or before anyone near and dear to me. I ask a patient to assume—what may prove to be inaccurate in the case now for discussion and decision—that my diagnosis is right, and that he has an ulcer in the stomach or in the duodenum. The relative advantages of medical or surgical treatment are then to be considered.

In all the cases that come for judgement symptoms have been present for years. During the last ten years the average duration of symptoms has been seven and a half years in cases of duodenal ulcer (excluding the perforation cases, when the duration is shorter), and nine and a half years in cases of gastric ulcer. Every patient has been treated by a medical man in one or in many of his "attacks"; medical treatment has helped greatly to relieve the pain and to curtail the attacks, but a period of repose has been followed at greater or less length by one of renewed and perhaps fiercer activity. Medical treatment, then, has failed in its essential aim, the permanent healing of the ulcer. And there is some reason to fear that it will inevitably fail in a majority of the cases. Anyone who knows the appearance which a chronic ulcer of the stomach or the duodenum presents at the time of operation will realize how considerable an event it must be for sound healing to take place, and how prone the large and deep scar which so results may be to break down under a provocation that the normal stomach would perhaps easily resist. That healing does sometimes take place is shown by the discovery of sound firm scars in the *post-mortem* room. It is evident that to ensure complete cicatrization of the ulcer the greatest care must be exercised from the first, and be scrupulously and unremittingly continued over a prolonged period.

The medical treatment of these conditions is too often haphazard and perfunctory. So far as hospital patients are concerned I think it is hardly possible to ensure that they shall receive adequate treatment over a sufficiently long period. No hospital can afford to keep them as in-patients, and as out-patients they prove careless, and are unable to observe, or wilfully disregard, the instructions as to rest and diet that are given to them. In private practice few patients seem willing to surrender themselves whole-heartedly to treatment, and especially to what appears to be a wearisome prolixity of supervision long after symptoms have completely disappeared. I should suppose that a great many weeks in all cases, and perhaps many months in some cases, must be passed in bed, on a restricted diet, appropriate drugs being duly administered, before an ulcer with a large surface, a deeply excavated crater, and a hard unyielding edge, can have any chance to heal.

It is important to remember that the subsidence of symptoms often noticed very shortly after treatment has begun does not indicate the healing of the ulcer; for every surgeon knows, as I have said, that in operating after an "attack" has subsided, an open ulcer crater may be found. Treatment must therefore continue long after all pain has disappeared. In the operation I sometimes practise for irremovable gastric

ulcer—that is, gastro-enterostomy combined with jejunostomy—the patient is fed through a tube which passes directly into the jejunum, and no smallest quantity of food, solid or liquid, is given by the mouth. The healing of the ulcer is watched by screen examination with the x rays. It is always very slow—it has varied from six months to three and three-quarter years. A longer period, we must suppose, will be demanded if food even of the blandest kind is taken by the mouth, for the contact of food with the raw surface of the ulcer, the retention of particles of food in recesses of the crater, and the active movements of the stomach, especially if the ulcer is adherent, are all incidents likely to retard the deliberate processes of healing.

Before treatment begins a general survey of the patient must be made, especially in reference to the existence of sources of infection in the mouth and the accessory sinuses. I never operate upon a case of gastric or duodenal disease until the dental department is satisfied that there is no infection remaining in the mouth; a great deal may require to be done before this result is assured, but whether we regard the risk of the anaesthetic or the diet after operation, it is a most essential preliminary.

Most of the "systems" of medical treatment have as a very essential part the administration of alkalis. The "Sippy" method includes the frequent administration of alkalis by the mouth, and the practice has been carried to an extreme which in a very few instances appears to have been harmful. It is interesting to note that in nearly 50 per cent. of our proved cases of gastric ulcer the Rehfuß chart has shown a subnormal curve, in nearly 35 per cent. a normal curve; in only 5 per cent. was hyperchlorhydria present. Has the practice of the administration of alkalis originated in a desire to neutralize the "acidity" of which the patient sometimes complains, although it may chance that he has an amount of free hydrochloric acid less than the normal? Or is it based upon the chemical examination of the stomach contents of patients who are only said to have "gastric ulcer," and not certainly known to have one? The great discrepancy which exists between the alleged frequency of gastric ulcer in practice and the known rarity of the disease upon the operation table is a reason for accepting the diagnosis with most cautious hesitation in large numbers of cases. If that hesitation is justified, much of the medical treatment of "gastric ulcer" is being applied to quite different diseases. I would like to ask whether an "acid" treatment of gastric ulcer would not be more rational than an "alkaline" treatment. The cells of the gastric mucosa are born, live, thrive, and, in due course, perish in an acid medium. In cases where a gastric ulcer has been proved to exist a diminished acidity is far more common than an increased acidity. If the result of the administration of the alkali is to provoke a later acid response (this is certainly true of sodium carbonate in particular) then the treatment is rational; but this, I understand, is not the ground upon which the alkaline method is based. And I would further ask why the medical treatment, including the giving of alkalis, is the same in cases of duodenal ulcer as in cases of gastric ulcer. The chemical conditions in the two diseases are quite dissimilar.

#### VALUE OF MEDICAL TREATMENT.

The position with regard to the value of medical treatment appears, then, to be as follows:

##### I.

Medical treatment, scrupulously undertaken, will almost invariably and with great rapidity cause an alteration in the gravity of the symptoms; the patient will quickly lose the severe pain from which he has suffered, and will begin to wish for, and find himself freely able to take, those simple foods which are most easily digested and easily propelled. The "attack" may be brought to an end within a very few days in the case of duodenal ulcer, and within two or three weeks even in the case of those most recalcitrant gastric ulcers which have intermittently caused symptoms for many years. So far as I have been able to tell from an examination of the specimens removed by operation symptoms disappear as soon as an ulcer shows any evidence of healing; the ulcer, though still large and unhealed, becomes "latent."

Medical treatment must, however, necessarily be carried out, not only in ignorance of the exact conditions present in any ulcer, for not even the most expert radiologist can tell us all that we are eager to know, but also in ignorance of the associated and possibly causal infections present within the



abdomen. In this series of 718 cases I have removed the appendix 307 times, and the gall bladder 23 times. In more than 50 cases the gall bladder, or the appendix; or both, had been previously dealt with by operation. In many of the cases in which I have removed the appendix I have felt that its obvious and sometimes gross disease antedated the development of the ulcer or ulcers in the stomach or duodenum, and I have consequently regarded it as a primary source of infection. An occasional case has seemed to give support to the view of Arbuthnot Lane, that the colon plays a part in the causation of gastric disease; and in a few cases the very loose and overfull ascending colon has tempted me to follow the practice of Waugh and to fix this part of the bowel by his method to the posterior abdominal wall.

The interrelationship of abdominal disease is, as yet, rather a matter of confident surmise than of certainty. The tenacity with which some surgeons hold their extreme views upon this subject often seems in little proportion to the evidence they adduce in support of them. Convictions masquerade as truths. The strength of a man's conviction may display only the defect or weakness of his knowledge. Our acquaintance with the so frequent associated disease in the appendix, with the mimicry of the symptoms of ulcer by a diseased appendix, with the "pyloric blush" which is caused by a lymphangitis spreading to the stomach from other parts, with Wilkie's work on retrograde embolism in the cecum, with Braithwaite's on the lymph drainage of the ileo-colic angle, and so on, leads to a realization of the truth that medical treatment can do nothing to inform us upon many of the relevant matters which it is most desirable, indeed essential, that we should know. If it is necessary to clear away oral sepsis before commencing medical treatment, it cannot surely be a matter of negligible importance to allow the persistence of any infective lesion within the abdomen; for this, too, may be a primary or at least a contributory causal agent. It is therefore as a method of temporary solace, of postponement of discomforts or of impending dangers, rather than as a means for our enlightenment or for the cure of the patient, that medical treatment claims our appreciation, and on these restricted grounds it most warmly merits all that we can find to say in its favour.

## II.

Medical treatment, however loyally followed during an "attack" and for weeks or months after the symptoms have passed away, seems quite powerless to prevent recurrence of symptoms in a very large number of cases. So far as the patients who come to hospital are concerned the constant feature in their clinical history is the presence of "attacks" followed by periods of remission. In my present series there must be not less than one hundred patients who have submitted to a series of "treatments" involving rest in bed from four to six weeks on more than two occasions; there is not one who has not had medical treatment on several occasions, and, weary and disheartened, many of them turned only at a late hour to a surgeon for relief. A very distinguished surgeon has said that he rarely operates upon a patient whose ulcer has not been "cured" nine times. The cure which follows such treatment may last from a few months to a few years. There must be cases in which a recurrence never takes place, but although I have made a long search which cannot be called desultory among many patients, I have not met with half a dozen of whom this can truthfully be said. And the discovery of the scar of a chronic ulcer in the stomach or duodenum of a patient during the performance of an operation for disease elsewhere in the abdomen is excessively rare, as all surgeons know.

In the "recurrent attacks" the catastrophes which we dread so much may make their sudden appearance. If haemorrhage occurs we may be gravely perplexed as to what it is best to do. If we adopt medical treatment, rest in bed, abstinence from food, administration of an alien serum, intravenous injection of calcium chloride, or the direct transfusion of blood, the haemorrhage may be arrested and the patient recover sufficiently to brave the risks of operation. But in spite of all that can be done, or indeed before there is a chance to do anything, the patient may die. Last year I was consulted by three patients suffering from duodenal ulcer, all of whom had undergone prolonged medical treatment. Because of family or weighty business reasons they all desired to postpone operation. If I am asked in such cases to sanction delay I protest that I am a surgeon, not a prophet, and that I cannot foretell the risks that lie ahead and may be imminent. The three patients died of haemorrhage before

any surgeon had the chance to help them. If I am to find three patients who have died under my care after operation I have to go back many years and search nearly a thousand records.

With the help of Professor M. J. Stewart I have obtained a record of the cases of gastric and duodenal ulcer which have died in the Leeds Infirmary in the years 1910 to 1921 inclusive. Of gastric ulcers there were 75 in which death was due to haemorrhage or perforation and peritonitis. These grave catastrophes may occur in connexion either with "acute" or with "chronic" gastric ulcers. There were 61 deaths from perforation—in 60 cases the ulcer was of the chronic type, in one it was acute. There were 14 deaths from haemorrhage—in 13 cases the ulcer was of the chronic type, in one it was acute, and was a terminal condition in a case of advanced cardiac disease; the haemorrhage was not the only or chief cause of death. Deaths from these emergencies occur, therefore, comparatively rarely in cases of "acute" ulcers. It is the chronic ulcer in an acute phase that at last bleeds or perforates, and causes death. The patients with this type of ulcer have, almost without exception, undergone treatment not once or twice only, but many times. It is true that the treatment has often been brief, and that it has ceased rather in consequence of a patient's negligence than because the medical attendant had sanctioned its omission. The warning to every patient that the checking of the symptoms does not mean closure of the ulcer is very necessary.

During the same period there have been 129 cases in which death was directly attributable to haemorrhage from a duodenal ulcer or from perforation. There were 12 deaths from haemorrhage; in all the ulcer was of the chronic variety. There were 117 deaths from perforation. In 12 of these there was an acute ulcer; in 4 of the 12 chronic ulcers also were present, and in each case it was the chronic ulcer which had perforated, the acute ulcer being merely incidental. In the remaining 105 cases the ulcer or ulcers were of the chronic type. Perforation, therefore, is found here also far more commonly in cases of chronic ulcer. A full clinical history is not always to be obtained, for even nowadays patients are brought in a moribund state to the hospital two, three, or four days after the catastrophe has occurred. But the records show that the very great majority of patients had undergone treatment, for longer or shorter periods, on a number of occasions. The full mortality of surgery is known, but all is not yet disclosed of the death rate among patients "cured" of their attacks who die months, or it may be years, later in the acute emergencies from which there is no time to rescue them.

## III.

In cases of gastric ulcers treated medically we cannot afford to neglect a consideration of the problem of carcinomatous degeneration at the edge of a simple ulcer. Opinions upon this matter appear to be irreconcilable, in consequence, I believe, of different aspects of the total volume of evidence being alone considered by each of the contending parties. I can only speak of cases that I see, and these are, of course, largely, but by no means exclusively, a very special group in which all efforts other than those a surgeon can make have been exhausted. I operate upon rather less than half the cases sent for operation, so that I may lay claim to some knowledge of cases that are labelled "medical."

Of the cases of cancer of the stomach that I see upon the operation table a steady average of two out of three give a past history that is extremely suggestive of gastric ulcer. That such a history is apt to prove fallacious or misleading no one knows better than I do, but before I admit the history as probably indicative of ulcer I sift it very carefully and discount it as much as possible. In some such cases an ulcer, apparently of the usual chronic type, may be entered the time of operation. No slightest suspicion may be entertained as to its malignancy from any naked-eye examination that is made. Under the microscope early malignant changes at one edge only of the ulcer are found. This has been the case in 18.5 per cent. of the supposed chronic ulcers. In other cases a chronic simple ulcer is seen, one edge of which is thickened, upraised, red, and softer than the normal rigid, steep or overhanging edge. This part shows carcinomatous changes. In one case there were two such patches at opposite edges; one showed columnar carcinoma, the other scirrhous. Again, there are cases of duodenal ulcer where the symptoms are often unequivocal and persistent, on and off, for years, in which a new and more formidable menace has lately appeared. At the operation a very old duodenal ulcer is seen



to have lately transgressed the line of the pylorus, and the gastric edge of the ulcer is found to be malignant.

In a long series of cases of gastric ulcer treated by gastrectomy, in which the pathologist has reported an absence of malignant disease, two patients have died of "recurrent" cancer with growth in the stomach or its glands, and the liver. Ulcers of the stomach, we are told, which exceed a certain size, roughly 1 inch in diameter, are always malignant. Does this mean that a simple ulcer never grows so large, or that a simple ulcer of such a duration as to grow to such a size inevitably degenerates to malignancy? When resection of the stomach is performed for frank carcinoma of the stomach, plain for anyone to recognize, the disease will probably have invaded a large part of the stomach. Every trace of an original chronic ulcer, if such there were, will then be overlaid by growth and be quite unrecognizable. If patients die of carcinoma of the stomach without operation the disease will be so advanced that there is little chance to discover any evidence of earlier disease. On the question of the incidence of cancer in ulcer *post-mortem* evidence is therefore of the slenderest value. It is in the examination of specimens of gastrectomy performed in the early stages of carcinoma that the only trustworthy evidence can be obtained. Is there any surgeon who finds that cases of this type are sent to him too early?

I do not profess to give any figures, but the cumulative effect of the evidence I have offered makes me acutely anxious as to the destiny of any patient suffering from gastric ulcer. If we regard the change from a simple disease to a malignant one as possible, even if infrequent, the method of gastrectomy in cases of chronic gastric ulcer clearly has advantages which no other operation can claim. Its mortality is much less than the mortality from that form of cancer of the stomach which proves fatal after gastro-enterostomy alone has been done for the supposed simple chronic ulcer in which the cancer has already started to grow, or in which it grows later when the ulcer refuses to heal. It is perhaps worth while to recall the fact that the real chronic ulcer is a rare disease. If gastric ulcer is considered a common disease—if, that is, the clinical diagnosis alone is accepted—the proportional incidence of carcinoma among such cases is certain to be very small.

#### IV.

Finally, the question may be asked whether, in the case of a gastric ulcer, medical treatment does in truth often attain its paramount object, the permanent healing of the ulcer. The answer is not so simple as it may seem. Before we can give that answer we must know, of any case—first, that an ulcer has without doubt been present, and the evidence of this must not be merely clinical; secondly, whether a radiological examination which confirmed the diagnosis now shows that the ulcer is healed; and thirdly, that the healed ulcer has not broken down again some months, or years, later. Is this evidence forthcoming even in a small number of cases? Of the supposed healing of a fictitious ulcer we have abundant evidence; but of testimony that fulfils the essential conditions I have mentioned there is almost none. Yet I most respectfully submit that if it is claimed that medical treatment can lead to the healing of an ulcer in the stomach nothing less than this degree of proof ought to be offered for our consideration.

The dangers of medical treatment, therefore, are very formidable. The mortality is far greater than with surgical treatment. It is probable that only the most serious cases are submitted to operation, yet the number of deaths occurring after operation is quite insignificant compared with the number of those who die without the chance of benefit by surgery. The deaths which occur unhappily with such great frequency from hæmorrhage or from perforation, whether patients are operated upon as the twelfth hour is almost striking or not, are deaths which have not been prevented by the medical treatment, which almost all the patients have had intermittently for months or years. A patient is just as dead if he dies after medical treatment as he is when he dies after surgical treatment. If he dies after an operation surgery will probably get the blame, and may occasionally deserve it. If a patient suffering from a gastric or a duodenal ulcer is treated medically on one or numberless occasions and dies from hæmorrhage or from perforation, such treatment must take the blame for its failure to prevent a fatal termination. The mortality is the mortality of medical treatment just as certainly as the mortality following an operation is the mortality of surgical treatment.

If, therefore, the physician claims these cases as "medical"

rather than "surgical," it is his plain duty to recognize that, whether we regard the risk to life, or the continual return of suffering, medical treatment is at present a far less effective and definitely more dangerous undertaking than any operation which the surgeon may practise. I say this not to encourage the physicians quickly to relinquish these cases to the surgeon, but rather to suggest that medical treatment should be raised to a general level of efficiency and of safety corresponding to that which surgical treatment has now reached. The occasional discovery of the scars of chronic ulcers of the stomach or duodenum in the *post-mortem* room makes it probable that even the most obdurate ulcers can sometimes be induced to heal, and perhaps to remain long healed.

#### SURGICAL TREATMENT.

The operative treatment of chronic gastric ulcers has passed through many phases, and there appears to be little chance of general agreement upon this matter even at the present time. The operation first to be practised was gastro-enterostomy, and in a very large number of cases the results have been good. But to satisfy the demands which the surgery of to-day must be fully able to meet, the results have not been good enough. A reference to the table of gastric analysis will show that in rather more than half the total number of cases there is a little delay in the emptying of the stomach. It is now well known that an ulcer on the lesser curvature of the stomach, far away from the pylorus, may be associated with so considerable a degree of spasm at the pylorus that the gastric contents are unable to escape at the normal rate. In such cases gastro-enterostomy will permit of easier drainage of the stomach, and according to its advocates will "give rest" to the ulcer. The objections to gastro-enterostomy, however, outweigh all its trivial advantages. The simplicity of the operation is one of its greatest dangers; for the operation is practised far too frequently by inexpert surgeons. It is performed when no ulcer is present, the lesion primarily responsible for the gastric symptoms being overlooked; it is performed in place of more appropriate operations, and is followed perhaps by temporary relief, when they would result in "cure"; its performance, in the hands of some of its warmest advocates, has a mortality as high as that of more radical operations, and is followed in too large numbers by the development of cancer in the ulcer which the operation fails to remove. The operation is believed to have a "physiological" effect, and this is supposed to have a beneficent influence upon the healing of the ulcer; no adequate evidence has ever been offered that tempts me to indulge my credulity so far as to accept either of these fictions. Gastro-enterostomy acts mechanically and in no other way.

The operation has been combined with excision of the ulcer, or, as by Balfour, with destruction of the ulcer by cautery. Clean excision of the ulcer by the knife appeared to be a method full of promise. I practised it many times, and discarded it in consequence of the large proportion of cases in which the ulcer recurred. Balfour's operation has the great advantages that it destroys the ulcer completely, and that it destroys also, because of the selective action of heat upon the cancer cells, any early malignant degeneration that may have set in at the margin of the ulcer. Balfour, whose opinion always carries great weight, has pleaded for this operation with eloquent cogency (*Annals of Surgery*, 1921, lxxiv, 448), and all those who practise it at the Mayo Clinic are well satisfied with it. I practise it very rarely, reserving it exclusively for ulcers of small size high up on the lesser curvature, associated with pyloric spasm and gastric retention. Ulcers in this position are sometimes most inaccessible, and are apt to form adhesions to the pancreas or any near structure. The removal of them by gastrectomy would mean that the whole stomach would be sacrificed—a grave measure out of all proportion to the needs of the case. I therefore in such instances choose either Balfour's operation, or more often and by preference the method of gastro-enterostomy in Y combined with jejunostomy. This latter method has been most valuable in cases of extensive indurated inaccessible ulcers, firmly grown to the diaphragm or liver or pancreas. In such cases, especially if hæmorrhage has occurred, or if there is a profound degree of inanition, a resection of the stomach would be sometimes impracticable, and always a most formidable or highly dangerous procedure. The complete rest to the stomach which the operation of jejunostomy affords gives fullest opportunities to the ulcer to heal. An examination by the radiologist from time to time will show that, unhappily, the



In a case of insomnia our procedure may be simple enough, but it may, on the other hand, involve much patience and the exercise of considerable self-confidence and analytical powers of no mean degree.

In the light of present-day knowledge we may assume that the area of conflict and unrest is in the cerebral nerve centres. When these centres are unstable through inherited defects we must regard the case as capable of only partial relief, whether our remedies be psychological, physical, or chemical. We may discover that a hypersensitive condition of the cortex has been brought about by fatigue, arterio-sclerosis, excessive or diminished blood pressure, toxins or excitants of various kinds—alcohol, tea, coffee, etc. Here, of course, we try to remove the causes. In high blood pressure a hot foot-bath, or a whole body bath with or without mustard dissolved in it, gives considerable relief; mustard packs to the lower limbs and abdomen may draw the blood from the brain and give a good night's sleep; massage with brushing of the body is also of use. In these cases of high blood pressure the condition of the bowel must be carefully watched and constipation prevented. Suitable intestinal antiseptics may be indicated. Where the brain unrest is due to psychic disturbances, such as a sense of loss, material or spiritual, fear, rage, hate, the treatment will depend on the severity of the case and its duration. Generally, a change of air and scene should be recommended before drugs are given.

A stage is reached in a large number of cases of insomnia such as the foregoing in which no external treatment, no change of surroundings, will avail, and we find the patient going from bad to worse, often rapidly. It is in such a case that the psychotherapist is seen at his best. If he is a student of comparative religions he may bring solace to the Roman Catholic by encouraging him to repeat certain formulas, by counting beads, and indulging in religious exercises that have a strange but potent sedative action. Patients of the reformed faith may find happiness in contemplating the promises of the gospels, the fatherhood of God, and the brotherhood of man. Others, with or without the religious sense, may find escape from the brain storms by reading books that amused or edified them in the happy days of their youth—a revisiting, as it were, of old intellectual pastures associated with the pleasantest period of life.

It is always wise to reassure such cases. Many are really drifting towards the borderland of insanity, and we must try to arrest in them all sense of fear and despondency. In some cases we advise them to sit up late, play patience, or picture puzzles. Here is a remedy I have found useful: Get the patient to switch on the light and carefully write down on a piece of paper the ideas disturbing him. This often succeeds in breaking up a disturbing train of thought. Auto-suggestion in some cases is invaluable, and hypnosis often breaks the vice if it be not too long established.

Maccenas had a physician, Musa, who, as a remedy for the terrible insomnia of his patient, recommended him to live in a villa close to a cascade. The monotony of the waterfall was the only remedy that enabled the care-worn statesman to get some sleep. Our own Wordsworth had much the same experience.

Most people suffer from insomnia psychic in origin, at some time of life, and, as every man can best sit on his own hat, so most people have a way of their own for dodging unpleasant ideas, and what helps one person may not help another.

We have all, I dare say, met cases of psychic origin where, despite every artifice, the demon of insomnia had the best of it. Then comes the time for judicious drugging and external treatment. For the pressing need of sleep I have found that an hour's gentle massage at bedtime, immediately preceded by 3 grains of veronal and at the end of the massage period 10 grains of aspirin in hot milk, gives good results. Massage sometimes irritates, and when this is so must not be continued. Reading by a nurse is sometimes a fair substitute, provided her voice is soft and manner of reading monotonous.

In cases of weak heart 25 grains of chloralamid in an ounce of brandy may be given instead of the veronal, repeating the dose in three hours if necessary. With all its drawbacks I have found paraldehyde in 2-drachm doses with yolk of egg very effective in bad cases. Others doubtless have found other drugs quite as good.

When the insomnia is due to cerebral unrest originating at a distance from the cortex and with the impulses conveyed thereto by the nerves of sensation or those of the special senses the remedies are obvious. We remove when possible the causes of pain, the sources of cold, heat, sounds, and so on; and of course in actual painful conditions, in cases not

complicated with renal or bronchial defects, opium will suggest itself.

A case of insomnia that impressed me greatly was one due to neuralgia of the extremities. Luminal in 5-grain doses was the only drug that not only relieved the pain but gave several hours of refreshing sleep. The drug can be given dissolved in hot water or in a cachet. It is best to begin with doses of 2 to 3 grains and repeat three or four hours later in the night if necessary. Cases of insomnia due to pain require careful watching. Many such patients in time lose the sense of pain measurement, and undoubtedly exaggerate the degree of pain felt in order to get stronger and stronger remedies. It is an unsafe policy to leave drugs likely to poison within the reach of such patients.

For some time I have been interested in Professor Langley's researches into the sympathetic nervous system, now known amongst physiologists as the vegetative nervous system. An authority on the subject tells me that he believes that during sleep afferent impulses proceed towards the central nervous system along the vegetative nerve paths, just as they do during wakefulness. We are hardly guilty of forcing our imagination if we assume that herein may be found a new field for inquiry. I submit as a hypothesis that may explain a certain type of cerebral unrest not otherwise accounted for, that, unperceived by the individual, certain impulses from the thoracic, abdominal, or pelvic vegetative nervous system do reach the brain cells and upset the physiological processes there that otherwise would make for repose and sleep. One is more confirmed in this point of view by remembering how sleep may be brought about by remedies directed to relieve certain thoracic, abdominal, and pelvic conditions in which no actual pain is felt—for example, certain types of heart affections, indigestion, gastric and intestinal in origin, and pelvic irregularities, and so on. Anyone who has studied the calming effects on the central nervous system brought about by correcting the functional diseases indicated must be driven to the conclusion that here we may sometimes find the real cause of disturbed sleep. The phenomenon of nightmare must not be lost sight of in the light of this theory.

It is well to bear in mind that where the disturbance is not due to the nerves of common or special sensation we may find the vegetative nervous system at fault, and if so our prognosis is good. In quinine hydrobromide Dr. Langdon Brown believes we have a drug with specifically sedative action on the sympathetic nervous system.

In the foregoing remarks I have tried to pigeon-hole, as it were, the causes that give rise to sleeplessness. The nerve cells, then, may be disturbed by psychic forces within them, by forces chemical and physical around and penetrating them, by disturbing forces that sweep along the afferent nerves of general and special sensation, as well as those silent and unperceived impulses that proceed along the sympathetic nerve paths. The cell having been disturbed, sleeplessness ensues.

I think a close analysis of the causes of sleeplessness will help us to make fewer mistakes in treating the condition, and at any rate it is worth while to aim at isolating as far as we possibly can the chief factor at work in any given case. Often acting alongside this chief factor may be found other subsidiary and less aggressive influences at work. The latter we must deal with in turn; but the wolf nearest to our patient's heels is the most dangerous, and we will do wisely to destroy him first.

## REFERENCE.

1 *Journal of Experimental Medicine*, vol. ii, p. 313.

## INSTRUMENTS LEFT IN THE PERITONEAL CAVITY:

### AN ANALYSIS OF 44 UNPUBLISHED CASES.

BY

CLIFFORD WHITE, F.R.C.S.,

SURGEON, SAMARITAN HOSPITAL FOR WOMEN; GYNAECOLOGIST,  
METROPOLITAN HOSPITAL.

My interest in cases in which solid objects have been unintentionally left in the peritoneal cavity was aroused by having on two occasions to operate for their removal; perhaps I may mention that in both cases the foreign body had been left in the abdomen by someone else. The notes of the two cases mentioned are as follows:

## CASE I.

A patient, aged 50, was sent to me because her doctor had found a sharp foreign body in the canal of the cervix. She had consulted



him on account of constant pelvic pain. The history given was that nineteen years before she had had a laparotomy performed, in the country, for a "tumour," but no details could be obtained. Seven years after this she was delivered of a full-time child without difficulty, and had had moderate health except for one attack of severe abdominal and pelvic pain, which subsided under treatment with hot fomentations. The abdominal pain, with nausea and vomiting, gradually increased in severity for several years, and for these symptoms she had a second operation performed in hospital in the country, eighteen months before I saw her. She was informed that the adhesions in the lower abdomen were so dense that nothing could be done, and therefore the operation was abandoned and the abdomen closed. The pain and sickness increased, and six months later an offensive vaginal discharge commenced. There was frequent desire to defaecate, and frequency of micturition.

When I first saw her she looked toxicæmic and wasted. The abdomen was distended, and there was a tender mass below and to the left of the umbilicus. A hernia of the old laparotomy scar was present. On vaginal examination a pointed metallic instrument could be felt protruding through the cervix for 4 cm. from the external os. The body of the uterus was bulky, and situated in the middle line. There was a mass on the left of and above the uterus, continuous with the tender area on the abdominal wall. An x-ray photograph showed a Spencer Wells hæmostatic forceps, with the handles towards the left iliac fossa and the points in the cavity of the pelvis.

It was obvious that any attempt to remove it by traction on the pointed end would lacerate the uterus severely, and possibly also damage the ureters. I therefore opened the abdomen, and was faced by a mass of very dense adhesions. The forceps was found above the level of the bladder reflection: the points had penetrated the wall of the pelvic colon, and were lying inside the lumen of the gut. The forceps was removed and a panhysterectomy performed, in order to get rid of the infected uterus and to give free drainage to the faecal abscess that the forceps was lying in. Owing to the large deficiency in the gut wall, and the infiltration of the surrounding tissues, it was difficult to suture the hole in the colon, but finally the edges were united, and it was not thought necessary to do a colotomy. Large drainage tubes were inserted through the vagina and through the abdominal incision.

The patient stood the operation well, but a faecal fistula formed at the end of a week and was still discharging six weeks later. She then commenced to have peculiar attacks of collapse with cyanosis, loss of consciousness, and vomiting. The first attack came on after eating eggs which had been sent to the hospital, and she stated that she had never been able to eat eggs, as they had previously affected her in a similar manner. It was suggested that the attacks were anaphylactic in origin. In one of these attacks the patient died some six weeks after the operation.

This case is interesting because of the extrusion of the forceps through a tough, thick-walled organ like the uterus, and I have found no record of any other case in which this happened. It is also uncommon because of the long period that the foreign body remained in the peritoneum. It must have been left there either eighteen months or nineteen years before, and the longer time is suggested by the history that the pain persisted and increased after the first operation and was unchanged by the second, and also by the existence of dense adhesions at the second operation.

#### CASE II.

The second case was one in which a bone penholder was passed into the vagina by a patient who was unable to withdraw it. It remained in the peritoneal cavity from the morning of January 2nd until the afternoon of January 5th, 1915. Even under anaesthesia no scar could be found in the vaginal vault, or on the fundus of the uterus when the abdomen was opened. The penholder, with the ink stains still showing well, was found entirely wrapped up in omentum. I ligatured off the omentum containing the penholder and closed the abdomen. The patient made an uninterrupted recovery.

In discussing these two cases with my colleagues, I found that few of them had had experience of a similar accident, nor could I find much about it published, except one very valuable article by Crossen, and a few cases that had been published because they had given rise to legal proceedings.

In considering a question like the present, where negligence on someone's part comes in, it is obvious that the great majority of cases that are not the subject of legal action will never find their way into the literature at all. To get details of the unpublished cases I sent inquiries to surgeons in all parts of Great Britain. No names were asked for, but in order to obtain full, although anonymous, records, I posted printed inquiry forms with printed reply envelopes.

I wished primarily to find out what risk there is to a patient if an instrument is allowed to remain for about five or six days in the peritoneal cavity. Such a question may be of importance if the loss of the instrument is not noted until the patient has recovered consciousness or is already suffering from such a degree of shock from the operation that reopening the laparotomy incision may be attended by grave risk, and if it is desired to confirm the diagnosis and locate

the instrument by radiography before proceeding to open up the incision. Secondly, I wished to ascertain after what interval of time the foreign body usually commences to cause symptoms, if its loss is not noted. Thirdly, what its usual effect is on surrounding viscera.

Crossen gives a short tabular summary of 50 cases that he collected from the literature from 1880 to 1907. In these 50 cases the articles left behind were as follows: Forceps 41, drainage tubes 3, rings 2, Nélaton catheter, glass irrigator, scissors, "piece of instrument," and pair of spectacles, 1 each. The total of 51 instruments in 50 cases is explained by two pairs of hæmostatic forceps being left in one patient.

Many of the cases abstracted by Crossen are incomplete, and essential details are lacking, but an examination of his collected cases shows that some 24 either certainly or probably lived, 13 died, and in 13 the details are inconclusive. The time the foreign body remained in the peritoneal cavity in the cases that recovered varied from a few hours to ten and a half years, but it is of interest that in only 7 out of 24 was the period over one year.

The foreign body was removed by a subsequent laparotomy in 10 cases; removed through a sinus or abscess in 7 cases; passed spontaneously per rectum in 4 cases; removed by colpotomy in 2 cases; and once was found in the bladder. In two of the fatal cases and in four others it was stated that serious damage resulted to surrounding viscera.

In answer to my inquiries, I received details of 39 cases, including a few in which foreign bodies had been passed into the peritoneal cavity either per vaginam or per rectum. There are three specimens bearing on the subject in the museum of the Royal College of Surgeons, making 44 with the two cases already recorded in detail above.

The foreign bodies found comprised 29 artery forceps, 2 retractor blades, 2 glass rods, 2 bone knitting-needles, 2 hairpins, and 1 drainage tube, 1 towel clip, 1 uterine dilator, 1 piece of needle, 1 pin, 1 bone penholder, and 1 stone.

Of the 44 patients 11 died, giving a mortality of 25 per cent. In these 11 fatal cases the foreign body is stated to have been present for the following periods: Several years (3 cases); seven years (1 case); two years (1 case); one year (1 case); five months (1 case); three weeks (1 case); and twice "unknown."

In all cases, except those where the details are wanting, severe ulceration or erosion of the surrounding viscera was present.

Among the 33 patients who recovered cases are included in which the foreign body remained in the peritoneal cavity for seven, twelve, fifteen, and (probably) nineteen years. Of the 33 cases, 26 were treated by a second operation, and in the remaining 7 the instrument was passed through a sinus or per rectum. The operations were performed within a few hours in 5 cases, within forty-eight hours in 4 cases, within a few weeks in 8 cases, and in the remaining 9 during periods ranging from six months to many years.

A consideration of the details of the cases seems to show that, as would be expected, the best result is obtained by an immediate removal of the foreign body, if the patient's general condition will permit of a second operation. But if the loss of the instrument is not noted at once, or if the patient's general condition contraindicates an immediate second operation, there does not seem to be any grave risk in leaving it inside for a few days. A solid metal instrument does not seem to cause the onset of peritonitis so rapidly as a blood-soaked gauze sponge; and a consideration of the cases indicates that the viscera do not suffer any severe damage within a few days. A striking fact is the protective action of the omentum in surrounding the foreign body and shutting it off from the rest of the peritoneal cavity.

The frequency with which this accident occurs came as a surprise to me. I received by post details of 39 fresh cases and fifty-one forms were not returned to me at all, in spite of the fact that I especially asked for the form to be returned with a negative on it and sent a stamped addressed envelope to ensure its remaining anonymous.

It seems reasonable to think that a large proportion of those fifty-one unreturned forms must have given details of fresh cases if their recipients had returned them at all. Again, it should be noted that only surgeons at the larger hospitals were circularized, and if the records of cases operated on in cottage hospitals and naval and military hospitals could be obtained it is probable that the numbers would be again increased.

Most of the cases where any date was given occurred within the last fifteen years, so that my inquiries show that,



roughly, at least 40 of these accidents have occurred in 180 months. It is therefore desirable to consider what can be done to diminish the risk of this accident.

I have deliberately avoided all reference to sponges and swabs, and definitely asked that these should not be included in my inquiry form. But it is worth while emphasizing the protection given by the use of six or twelve yard rolls of gauze for packing off intestines and sponging, instead of using large numbers of small pieces of gauze. In having a large number of swabs counted by an assistant or nurse, the usual margin of human error exists, and this can be avoided and time saved by the use of rolls of gauze as continuous sponges.

Regarding instruments, the same principle can be applied, and the number of instruments in use, especially Spencer Wells forceps, can be reduced to a minimum, an extra supply in a separate package being kept for emergencies. Also, any instrument brought near the abdomen while the peritoneum is open should measure six inches in length, although an exception to this rule must be made in the case of needles.

To conform so far as possible to this ideal I never use towel clips; it is quite easy to fix all towels by two stitches, one at the pubes and one at the upper end of the incision. Again, it is quite easy to fix efficiently the rubber sheeting, towel, or whatever is used to protect the edges of the abdominal wall by pieces of sheet lead, 3 inches broad and 12 inches long, which can be bent round the edge of the wound. This method has long been used by Oldfield and other members of the Leeds school. The use of a Reverdin needle not only saves time but largely reduces the number of small needles in use. A Reverdin needle of suitable shape can be used satisfactorily except at the bottom of a deep wound.

In the Trendelenburg position instruments tend to roll down towards the incision, and the use of an instrument tray (such as that suggested by Bouney) with a large flange will prevent this.

While operating, all haemostatic forceps should be replaced by ligatures as soon as possible, instead of leaving them hanging on the bleeding points at the edges of the wound or within the peritoneal cavity. Any instrument that has loose parts that are liable to become detached should be avoided.

#### *Details of 44 Cases in which Instruments were Left in the Peritoneal Cavity.*

In the following list the details are given so far as possible in the words used by the reporters of the case, in the following order: The kind of instrument, the position in which it was found, the nature and date of the first operation, the symptoms produced by the foreign body, the treatment adopted and the condition of the viscera disclosed, together with any note of special interest (for example, the presence or absence of a sinus in the abdominal wall), whenever such details have been reported.

1. Short Spencer Wells forceps. Among small gut. Hysterectomy, several years before. Symptoms unknown. Enterostomy. Gut ulcerated. Whole of forceps lying in cavity of gut. No external sinus. Death.
2. Short Spencer Wells forceps. Laparotomy, several years before. Symptoms unknown. Enterectomy and anastomosis. Gut ulcerated. Whole of forceps lying in cavity of gut. No external sinus. Death.
3. Small Spencer Wells forceps. Among intestines. Ruptured gastric ulcer, many weeks before. Symptoms: Faecal fistula in caecal region. Extraction through fistula. Ulceration of ascending colon. Death from peritonitis.
4. Small Spencer Wells forceps. Partly in peritoneal cavity and partly in bladder. Ovariectomy, five months before. Symptoms like stone in bladder. Laparotomy. Bladder perforated and very dense adhesions present. Point of instrument seen during cystoscopy. No external sinus. Death from peritonitis.
5. Spencer Wells forceps (6-inch). Among small gut. Laparotomy, several years before. Symptoms: Acute obstruction. Resection of gut. Two or three adjacent coils of small gut ulcerated. Ring carcinoma of pelvic colon also found and so colostomy was done at the same time. No external sinus. Death.
6. Artery forceps (5-inch). Among small gut. Gastro-enterostomy, two years before. Symptoms: Pain, increased by taking food. Double resection of small gut. Gut perforated. Instrument detected by radiogram. No external sinus. Death.
7. Spencer Wells forceps. Position not given. Appendectomy. Date, symptoms, and treatment not given. Probably no sinus present. Death.
8. Spencer Wells forceps (5-inch). Among small gut. Ruptured ectopic, three weeks before. Symptoms: Fever, pain. Mass in pouch of Douglas. Resection of small gut. Intestine damaged. No external sinus. Death.
9. Spencer Wells forceps (4-inch). In left half of pelvis, handles pointing downward. Ovariectomy, seven years before. Symptoms:

Fever, emaciation. Discharge from faecal fistula in left iliac fossa for six months. Sinus explored and instrument removed. A portion of one handle of the forceps could not be found. Death.

10. Towel clip 3 inches long. Position not stated. Laparotomy, one year before. Symptoms unknown. Found at autopsy. Royal College of Surgeons Museum, 2393 I.

11. Hairpin. Lower abdomen. Possibly passed per vaginam. Symptoms: Pelvic peritonitis. Laparotomy for purulent peritonitis. No obvious damage to viscera. Death. Royal College of Surgeons Museum, 2343 I.

12. Spencer Wells forceps (3-inch). Below umbilicus in middle line. Ovariectomy, six weeks before. Symptoms: Point of forceps palpable through scar. Removal by laparotomy. No damage to viscera. Forceps found wrapped in omentum. No external sinus. Uneventful recovery.

13. Small Spencer Wells forceps. Position unrecorded. Removal of tumour (probably renal), eighteen weeks before. Symptoms: Rectal pain and sinus. Passed spontaneously per rectum. Recovery.

14. Spencer Wells forceps. Upper abdomen. Ovariectomy, several weeks before. Symptoms: Hard mass in upper abdomen. Laparotomy. Adhesions but no erosion of viscera. No external sinus. Recovery.

15. Spencer Wells forceps (5-inch). Pelvis. Salpingo-oophorectomy, seven years before. Symptoms: Abdominal and rectal pain. Passed spontaneously per rectum. Ulceration of rectum. Recovery.

16. Small Spencer Wells forceps. Pelvis. Panhysterectomy, a few hours before. No symptoms. Removal per vaginam. No damage to viscera. Radiogram taken. Recovery.

17. Artery forceps (5-inch). Among intestines. Caesarean section, forty-eight hours before. No symptoms. Removal. No damage to viscera. Radiogram taken because instrument missed after operation. No external sinus. Recovery.

18. Spencer Wells forceps (7-inch). Upper abdomen. Radical cure of ventral hernia, four months before. Symptoms unrecorded. Enterectomy. Ulceration of bowel. No external sinus. Recovery.

19. Artery forceps. Pouch of Douglas. Ovariectomy, six hours before. No symptoms. Removal. No damage to viscera. Instrument missed after operation and palpated by bimanual examination. Recovery.

20. Spencer Wells forceps (9-inch). Pouch of Douglas. Subtotal hysterectomy, seven years before. Symptoms: Pelvic pain. Extraction per vaginam. Ulceration of vagina. Points of forceps palpable on vaginal examination. No abdominal sinus. Recovery.

21. Small Spencer Wells forceps. Pelvis. Ileo-colostomy, six months before. Symptoms: Left iliac pain. Passed spontaneously per rectum. No abdominal sinus. Complete recovery.

22. Spencer Wells forceps. Attached to omentum. Ovariectomy, twenty-four hours before. No symptoms. Removal. No damage to viscera. Loss of instrument noticed soon after abdomen closed. Recovery uneventful.

23. Kocher's artery forceps. Among small gut. Operation for perforated duodenal ulcer, three weeks before. No symptoms. Removal. Suture of bowel. Two inches of instrument lay inside lumen of gut. Instrument only discovered by accident during radiogram of bismuth meal. No sinus. Complete recovery.

24. Spencer Wells forceps (8-inch). Lower abdomen. Hysterectomy, twelve days before. No symptoms. Removal by laparotomy. No damage to viscera. Forceps missed after operation, but patient too ill for immediate search to be made. No sinus. Radiogram on tenth day. Uneventful recovery.

25. Artery forceps (6-inch). Pelvis. Ovariectomy, nine months before. Symptoms: Febrile convalescence, recurrent abdominal pain, rectal pain and discharge. Passed spontaneously per rectum. Rectum ulcerated. No abdominal sinus. Recovery.

26. Small Spencer Wells forceps. Right iliac region. Removal of broad ligament cyst, ten days before. No symptoms. Removal. No damage to viscera. Forceps missed three hours after operation. Radiogram taken. No sinus. Recovery.

27. Spencer Wells forceps (8-inch). Pelvis. Salpingectomy, four years before. Symptoms indefinite. Removal. Severe adhesions present, but no erosion of viscera. Abdomen examined on account of haematemesis, and forceps felt through wall of lower abdomen. Radiogram taken. No sinus. Recovery.

28. Artery forceps (5½-inch). Pelvis. Hysterectomy, a few hours before. No symptoms. Removal by laparotomy. No damage to viscera. Forceps missed two hours after operation. Recovery.

29. Artery forceps (4½-inch). Lower abdomen. Ovariectomy, four hours before. No symptoms. Removal by laparotomy. No damage to viscera. Forceps missed three hours after operation. Recovery.

30. Flange of a Berkeley retractor. Lower abdomen. Hysterectomy, twenty-four hours before. No symptoms. Removal by laparotomy. No damage to viscera. Instrument missed after operation. Radiogram taken. Recovery.

31. Blade of retractor 3 inches long. Loin. Hysterectomy, fifty-four hours before. No symptoms. Removal by laparotomy. No damage to viscera. Radiogram taken. Recovery.

32. Artery forceps. Lower abdomen. Laparotomy, twenty-four hours before. No symptoms. Removal by laparotomy. No damage to viscera. Recovery.

33. Drainage tube 2½ inches long. Partly in bladder and partly in peritoneal cavity. Hysterectomy, twelve years before. Symptoms: Leucorrhoea for twelve years, cystitis for three weeks. Removal by suprapubic cystostomy. Ulceration of bladder. No abdominal sinus. Recovery.



34. Glass rod 4 inches long. Recto-vesical pouch. Colostomy, four and a half months before. Symptoms were referred to a large wound in the buttock. Removal during an operation for excision of rectum. Dense adhesions but no serious erosion of viscera. Recovery.

35. Flanged glass tube 2 inches long. Under right rectus muscle. Operation for relief of ascites fifteen years before. No symptoms except ventral hernia. The tube is still there and the patient in good health. The ascites is cured. No external sinus present.

36. Hairpin (straightened). Passing from rectum and transfixing the Fallopian tube. Possibly passed into rectum, about two months before. Symptoms: Dysmenorrhoea, rectal pain. Removal by laparotomy. Peritonitis round tube. Ulcer in rectum. No abdominal sinus. Recovery.

37. Bone knitting-needle 5 inches long. Left iliac fossa. Pushed through uterus, fifteen months before. Symptoms: Abdominal pain, increased by movement. Removal by laparotomy. Knitting-needle surrounded by omentum. No damage to viscera. Radiogram taken. No sinus. Recovery.

38. Uterine dilator 8 inches long. Below liver. Pushed through uterus four days before. No symptoms. Removal by laparotomy. No damage to viscera. Radiogram taken. No sinus. Recovery.

39. Bone knitting-needle 10 inches long. Pouch of Douglas. Possibly pushed through vagina. Symptoms: Intestinal obstruction. Removal by laparotomy. No damage to viscera. No sinus. Recovery.

40. Piece of steel needle, 1 cm. long. Appendicectomy two years before. Symptoms: Persistent abdominal sinus. Sinus opened up and needle removed. Recovery.

41. Pin. Back of broad ligament. No previous operation. Possibly swallowed. No symptoms. Removed during ovariectomy for ovarian cyst. Slight adhesions, but no damage to viscera. No sinus. Recovery.

42. Stone. Lower abdomen. Stone was accidentally forced through the rectum three days before. Symptoms: Pain. Removal by laparotomy. Recovery. Royal College of Surgeons Museum 2310 I.

43. Artery forceps (4½-inch). Left iliac fossa, perforating uterus. Two laparotomies, one eighteen months, the other nineteen years previously. Symptoms: Pain, diarrhoea, leucorrhœa. Removal by abdominal hysterectomy and suture of colon. Severe ulceration of colon present. No abdominal sinus. Radiogram taken. Sudden death six weeks later, as recorded in detail above. Royal College of Surgeons Museum.

44. Bone penholder 5 inches long. Above umbilicus, wrapped in omentum. Pushed through vagina three days before. Symptoms: Pain. Removal by laparotomy. No damage to viscera. Uneventful recovery. University College Hospital Museum.

## REFERENCE.

<sup>1</sup> Crossen: *Amer. Journ. Obstet.*, 1909, vol. i; and also *Operative Gynecology*, 1915, p. 589.

## THE TREATMENT OF TRYPANOSOMIASIS.\*

## (A FURTHER REPORT.)

BY

CLAUDE H. MARSHALL, M.B., B.S.LOND.,  
SENIOR MEDICAL OFFICER, UGANDA;

AND

S. M. VASSALLO, M.D., D.T.M. AND H.,  
MEDICAL OFFICER, UGANDA.

CONFRONTED by the problem of the treatment of trypanosomiasis in the field, and at the same time precluded from access to any reference library, the present writers endeavoured to evolve a working hypothesis which would explain the relapses so characteristic of the disease, and on that hypothesis planned a method of treatment which at the time they thought novel, and details of which have already been published in two previous articles.<sup>1</sup> Briefly the procedure comprised an attempt to sterilize the blood stream by the intravenous injection of arsenical compounds and an immediately subsequent attempt to sterilize the central nervous system by the intrathecal injection of salvarsanized serum. When holiday leave, however, afforded opportunity of consulting the literature on the subject it became evident that similar hypotheses must have been adopted by several previous workers, notably Balfour, Van Someren, Thiroux, D'Aufreville, and Reichnow, even as far back as 1906, and the evolution of the idea can be followed by the following references.

Thiroux<sup>2</sup> suggested that the absence of trypanosomes from the blood of certain patients was due to the presence of specific antibodies; and conversely, the presence of trypanosomes in the cerebro-spinal fluid was due to the absence of such bodies.

Thiroux and D'Aufreville<sup>3</sup> conjectured that serotherapy would not give good results in meningeal trypanosomiasis

unless the antitoxin was injected into the spinal canal and cerebral substance, as had been done in tetanus.

Balfour (1903) in a memorandum, "The treatment of sleeping sickness," presented to the Sudan Sleeping Sickness Commission, drew attention to the treatment of cerebro-spinal meningitis by intrathecal injection of immune serum, and suggested a combined therapy for sleeping sickness, the trypanosomes being attacked in the blood by some of the more promising of the chemical trypanocides, and in the cerebro-spinal fluid by the injection of the patient's own serum or the serum from a case under treatment, obtained by defibrinating or centrifuging the blood.

Van Someren,<sup>4</sup> putting Balfour's suggestion into practice, treated six cases, but concluded that the results were not encouraging. He added, however, that the method was tried only in cerebral cases, usually too far gone for other treatment.

Reichnow (1914), in the Kameruns, treated his cases on similar lines, but added 0.04 gram neo-salvarsan to his salvarsanized blood serum, a procedure which he himself admitted was far from devoid of danger and the risk attendant upon which caused him to abandon the method, as other observers had already done in the treatment of syphilis of the central nervous system.

From the above extracts it is quite clear that those whose duties included the treatment of sleeping sickness in endemic areas were even then—as they are now—dissatisfied with the adequacy of the methods at their command; so that it is almost incomprehensible to the present writers that the fact that they were following (even if unwittingly) the suggestion of such a keen observer and logical thinker as Balfour should have aroused so much and so uncompromising a hostility.

Moreover, the method we now advocate is administratively and economically sound. The patient's treatment is completed in two or three days, when he is free to return to his village and friends. Large hospitals and camps are no longer required, nor is the patient's life made irksome by continuous drugging for long periods of time. The natives themselves appreciate these advantages and now come in of their own volition asking for treatment.

Recently Warrington Yorke, in a critical review of recent work on the treatment of sleeping sickness in the *Tropical Diseases Bulletin*,<sup>5</sup> has done us the compliment of massing much of the evidence he has collected from the literature around the debatable points in our work in such a manner as to make it evident that he, like ourselves, is primarily interested in the elucidation of the disease. As we have now completed a further survey of the cases we have had under treatment by various methods, we wish to present the results to the impartial reader so as to make it clear where we are in agreement with Yorke's arguments and where we consider our observations justify a totally different interpretation. But first we would deal with some general observations in connexion with sleeping sickness.

Naturally the first point that arises in connexion with the work has reference to the virulence of the particular strain or strains of trypanosomes that are met with in the Uganda Protectorate. With a nomadic population it is sometimes difficult to collect the necessary figures in support of any particular view, but we now have notes relating to the Northern Province of nearly 100 cases which have been diagnosed clinically and by laboratory methods and have been under observation for a year and a half, and another 200 cases which have been under observation for a shorter period (six or seven months). For facilities in following up these cases we are indebted to the Hon. E. C. Eliot, Acting Chief Secretary of the Protectorate.

The following table shows the course of the disease in the district under natural conditions and without treatment, and may be of value in another direction also—namely, that of extending Yorke's Table II. We have here adopted Yorke's plan of setting out the percentage mortality under two headings—in the first place assuming that all the cases missing at the time of the second census were alive, and under the second heading assuming that those missing had died of the disease. From our table it will be seen that the mortality varied from a minimum of 14.7 per cent. in one series of cases of six months' duration to a maximum of 70 per cent. in the small series under observation from twenty months. The true mortality percentage obviously lies somewhere between these extremes, but in any case the inference is justified that the disease, as it occurs in Uganda, is a serious one, and that the strain of trypanosome which is encountered there is fairly virulent.

\* This report was received on September 11th, 1922.



TABLE I.

District.	No. of Untreated Cases.	Months since first seen.	No. Alive.	No. Missing.	No. Dead.
Gulu ... ..	23	20	10	0	16
Arua ... ..	40	18	12	8	20
Toro and Katwo ...	23	18	11	8	9
East Madi ... ..	123	6	90	15	18
West Madi ... ..	118	7	73	20	25

The percentage mortality of these cases would therefore be as follows:

District.	Percentage "A."	Percentage "B."
Gulu ... ..	61	61
Arua ... ..	50	70
Toro and Katwo ...	31	60
East Madi ... ..	14.7	18.6
West Madi ... ..	21	38

Note.—The cases here shown are the cases still alive and not those "alive and well"; if only the latter were included, the percentage would be very different indeed—for example, of the 12 cases alive in Arua, 6 are in an advanced state of sleeping sickness.

The East Madi figures are by Dr. G. D. H. Carpenter, who was in that area in September, 1921; of the cases he examined then, he only noted one as being in an advanced state, yet by February, 1922, eighteen had died. Further, in the same area, another sixty cases were discovered in March, 1922, but it is difficult to say if these were recent infections or were cases that had eluded observation during Carpenter's previous tour.

It is interesting to compare the figures relating to Gulu in this table with some details of a small series of treated cases discovered about June, 1920, in the same area; apart from the 26 untreated cases recorded in Table I, 11 others were conveyed a distance of some three hundred miles to one of us (S. M. V.) and were then treated in the latter part of the year as indicated in Table II. They returned home, two advanced cases dying on the road. Owing to difficulties of transport, etc., no further observations were possible till March, 1922—that is, about fifteen months after treatment—when it was found that a third case had died, giving a mortality of 28 per cent. The remaining eight cases absolutely refused blood, gland, or any other form of examination, so that, though alive and to all appearances well, we have no definite evidence to offer as to their condition, and have therefore omitted them entirely from our calculations.

TABLE II.—Treatment and Results of the Gulu Cases.

Case No.	Date of Treatment.	Treatment.	Result.	Period under Observation.	Remarks.
40	4.10.20	Intrathecal salvarsanized serum	Died	—	Advanced cases; died on road.
41	4.10.20	Ditto	Died	—	
44	4.10.20	Ditto	Well	15	C.S.F. positive (neo-kharsivan).
47	15.11.20	Ditto	Well	14	C.S.F. negative (atoxyl).
48	15.11.20	Ditto	Well	14	C.S.F. negative (atoxyl).
49	2.12.20	Ditto	Died	—	
50	2.12.20	Intramuscular salvarsanized serum	Well	14	Atoxyl.
51	6.12.20	Intrathecal heterogenous serum	Well	14	C.S.F. negative (atoxyl).
52	6.12.20	Intrathecal salvarsanized serum	Well	14	C.S.F. negative (atoxyl).
53	6.12.20	Intramuscular salvarsanized serum (heterogenous)	Well	14	Atoxyl.
54	6.12.20	Intrathecal heterogenous serum	Well	14	C.S.F. negative (atoxyl).

If it had been possible to carry this experiment to a definite conclusion the results would have been of considerable value, since both the treated cases and the controls lived under identical conditions in an infected district, and in close contact with other cases of disease, for there is even now in Gulu and the surrounding districts a serious epidemic of sleeping sickness.

The next criticism—and a very reasonable one—that the cases we have recorded as still alive and well are not necessarily cured, cannot easily be controverted at this stage, owing to the widely varying interpretations placed upon the word "cure" by different authorities. In a discussion which followed the paper by the present writers at the Royal Society of Medicine in 1921 a five years' limit was suggested as desirable. Whilst regarding this as a counsel of perfection, we are not in the least inclined to take exception to it, and judged by this criterion we are ready to agree that all our cases are still "under observation"—although it may be noted that from time to time cases are reported in the medical press as "cured" well within this period. Hitherto, however, if clinical symptoms are totally absent and examination of the blood, glands, and, whenever possible, the cerebro-spinal fluid, is repeatedly negative within a period of two to three years, we have assumed that such an uninterrupted convalescence normally proceeds to a permanent cure. Such cases are referred to in all our subsequent tables as "alive and well."

Turning now to Yorke's criticisms, he is correct in emphasizing the fundamental character of our statement that "most authorities are agreed that although the (intravenous) administration of one dose of salvarsan, neo-salvarsan, or atoxyl may be sufficient to sterilize the blood stream, yet within a variable period, averaging about four months, the symptoms reappear and the disease progresses to a fatal termination." Table III, although it only comprises six cases that we have treated in the first instance with only a single dose of neo-kharsivan or novarsenobillon, does include some of the coincidences characteristic of the disease in Uganda which originally stimulated our interest in the treatment of trypanosomiasis.

TABLE III.—Showing Results of Intravenous Treatment Only.

Case No.	Date of Diagnosis.	Intravenous Dosage.	Result.	Period under Observation.	Remarks.
7	10.7.19	0.6 gm. neo-kharsivan.	Relapsed. C.S.F. + 27.10.19	Months. —	Re-treated completely 28.10.19. See Table I.
14	22.11.19	0.6 gm. ditto	Well	26	
28	21.4.20	0.4 gm. ditto	Well	21	
56	13.1.21	0.4 gm. ditto	Died	—	Sleeping sickness 23.9.21.
68	2.8.21	0.3 gm. novarsenobillon	Recurred	—	Trypanosomes in blood 20.1.22.
69	15.12.21	0.6 gm. neo-kharsivan	Died	—	Sleeping sickness 17.4.22.

Thus (1) in two very early cases the single dose (intravenous) apparently acted as the desired *therapia sterilisans magna* and resulted in the individual remaining "alive and well" after twenty one (Case 28) and twenty-six (Case 14) months respectively; (2) in four cases the single dose was insufficient to sterilize the blood stream and/or the central nervous system; and (3) in three of these relapse occurred in three and three-quarter months (Case 7), four and three-quarter months (Case 68), and four and a half months, when death occurred (Case 69); Yorke, too, quotes Larz as recording nine relapses out of eleven after salvarsan within one and a half months, and four out of six treated with atoxyl within one month.

Further, in many instances sleeping sickness is a disease of slow progress, and, although symptoms may reappear within a short time of one therapeutic dose, the subsequent progress may be very tardy; such, however, is not usually the case—for example, Case 56, Table III. With regard to the fatal character of the disease Yorke quotes one batch of cases undergoing various prolonged treatments (Table IV, *Bull. Trop. Med.*, 18, 1921, p. 172), which in this connexion is very significant—namely:

"Hodges, Uganda, states that of 1,185 cases admitted between December, 1906, and November, 1907, 734 were dead at the end of two years and only 49 could be found four years later, whilst 912 were known to be dead; of the 49 still alive, 27 were clinically advanced cases, 19 showed definite signs of disease, and only 3 were cases we should count as 'alive and well.'"

Other similar instances become at once apparent from an examination of Table IV, where we have completed Yorke's Table IV in this sense.



TABLE IV.

Author.	No. of Cases.	Condition before Treatment.	Treatment.	Length of Observation Period.	No. Disappeared.	No. Dead.	No. Alive.	Percentage of original total alive assuming all who had disappeared are		Remarks.	On our Basis "Alive and Well."	
								"A" Dead.	"B" Alive.		"A" percentage.	"B" percentage.
Hodges. Uganda: all sleeping sickness camps, 1910	1185	Unselected cases	Various prolonged treatments, chiefly arsenical	2 years	182	734	269	22.7	38.2	Of 49 alive: 3 good health; 19 definite signs of disease; 27 advanced	—	—
				4 years	224	912	49	4.1	23.0		0.2	10.5
Hodges. Uganda: Busino Camp, 1905-7	399	Unselected cases	Various prolonged treatments	3-4 years	65	313	21	5.2	21.5	All showed signs of disease	0	0
Bagshawe, 1910	50	Europeans	Ditto	3-7 years	7	30	13	26.0	40.0	No details	—	—
Simson. Yei Camp, Sudan, 1920	35	15 early, 20 advanced cases	Metallic antimony, 8 injections	7 years	7	20	8	22.8	42.8	6 good condition	15.0	37.0
	23	Selected cases	15 injections antimony, 2 injections salvarsan	6 years	0	11	18	62.0	62.0	All good condition (2 died of small-pox and cerebro-spinal meningitis)	62.0	62.0
	23	Selected cases	15 injections antimony	6 years	0	4	19	82.6	82.6	17 good condition	74.0	74.0
	96	Unselected cases	36 injections atoxyl 2 years' continuous treatment	6-7 years	2	43	51	53.1	55.2	33 good condition 13 fair 5 poor	34.0	36.0
	63	Unselected cases	Atoxyl, prolonged treatment	7-8 years	0	23	40	63.5	63.5	26 good condition 6 fair 3 poor	41.0	41.0
	11	Unselected cases	Ditto	7 years	0	5	6	54.5	54.5	(* 2 died small-pox) No details	54.5	51.5
	7	Unselected cases	Ditto	6 years	0	3	4	57.1	57.1	2 good condition 1 fair 1 bad	28.0	28.0
	19	—	Ditto	5 years	0	6	13	68.4	68.4	6 good condition 3 fair 4 poor	47.0	47.0
	5	—	Salvarsan and atoxyl, 1 year	3 years	0	1	4	80.0	80.0	2 good condition 2 fair	40.0	40.0
Marshall and Vassallo, 1918-1922	12	Unselected cases	1 dose neo-kharsivan 1 injection intrathecal serum	2-3½ years	2	2	8	66.6	83.0	All "alive and well"	65.5	83.0
	17	(2 advanced) Unselected cases	Ditto	18-21 mos.	1	0	16	94.0	100.0	All "alive and well"	94.0	100.0

With reference to our own cases which we have incorporated in this table we would point out: (1) Of the three cases we record as missing, two, we believe, died during the famine, while the third, we are informed, is working on an estate in a distant part of the country and is perfectly well; but as we have put the worst possible construction on our returns these "missing" do not really affect our percentage any more than those of Simson's cases who died of small-pox or cerebro-spinal meningitis. We have, however, excluded the two cases of reinfection, and the one case who died, possibly from delayed chloroform poisoning. (2) All our cases are unselected, as compared to some of Simson's returns, and the deaths occurred in very advanced cases, which would not have been included if we had exercised any selection. (3) The cases here included have only received one complete treatment—that is, one intravenous injection of arsenic and one intrathecal injection of serum the following day, as against the prolonged treatments of others—a point completely ignored by Yorke.

We would therefore suggest that this table in its present form not only affords considerable support to our first assumption, but also goes far to confirm our statement that our routine method of treatment has furnished better results than any one hitherto published treatment of a series of cases.

Again, in Yorke's Table I there are given details of 46 cases where it is claimed that (a) trypanosomes disappeared from the cerebro-spinal fluid after treatment, and (b) treated cases survived for long periods after their cerebro-spinal fluid was found to be infected. There are no details with regard to 4 cases, which leaves us 42 to deal with. Martin, Leboeuf, and Ringenbach record a series of 31 cases, and of these 11 disappeared and 10 died. Of the remaining 10, which were followed up, only 3 were found negative after twelve, nine, and seven and a half months respectively—that is, out of 31 cases under 10 per cent. were found to be negative.

Incidentally the period of observation of all these cases is much less than ours.

The other 11 may be regarded as isolated cases. Eight are examples of negative cerebro-spinal fluid after treatment when examined at intervals of one and a half to nine months, but the cell count in most instances suggests that infection is merely latent. Of the remaining 3 cases (Gray and Tulloch) one gave post-treatment positive results until his death at the end of twenty-three months, and the other two were positive up to the end of 230 and 195 days respectively. These cases are of academic interest undoubtedly, but for all practical purposes merely indicate the slow progress of the disease in some individuals.

Yorke's Table II<sup>6</sup> is interesting, as in the first two instances it suggests that the chances of infected individuals remaining alive are equal whether they are treated or not; for example, 100 per cent. (calculated on 3 cases) and 80 per cent. (calculated on 5 cases) were still alive without any form of treatment. In a third instance the information that 5 were known to be well and working after four years out of a total of 102 cases is held to justify a percentage of 33 living (Dutton and Todd). The absence of any details with regard to the number dead, number alive, and number missing would, on the basis of our calculations, give less than 6 per cent. "alive and well."

The second assumption, a threefold one, is as to its first sentence—"Quite early in the disease the trypanosomes appear to gain an impregnable position in the central nervous system"—avowedly an alternative to the "drug-fast" theory. As to its second part—"in this position they are protected from the action of drugs"—it may be remarked that syphilologists as a body fail to find arsenic in this situation after using salvarsan and its derivatives in the medicinal doses at present employed. It further derives a certain amount of support even from the personal communication from Voegtlin to Yorke (which is all that is offered in contradiction of our



statement) that arsenic reaches the cerebro-spinal fluid in low concentration only after massive and toxic doses have been administered intravenously. The further observation of Vogtliu (unpublished), "that parasites in the cerebro-spinal fluid of experimental animals diminish within twenty-four hours of large doses of these drugs administered intravenously," might, it is true, be explained by the action of that trace of arsenic in the cerebro-spinal fluid, but we would hazard another explanation more in consonance with our own conceptions—namely, that trypanolysin is formed as a result of the action of the intravenous arsenic upon the trypanosomes in the circulating blood, and this trypanolysin is then secreted into the cerebro-spinal fluid by the choroidal cells.

The third part of this assumption, supported though it is by cases in which the cerebro-spinal fluid was originally apparently sterile, but was found to be infected at the time of the post-treatment relapse (for example, Case 7, Table II), is, we are willing to admit, still lacking in experimental proof, since on this point we can only offer the experimental work of Reichnow (one observer again) that infection does take place from the cerebro-spinal fluid to the blood stream. As to the exact route, until experimental proof is forthcoming we are willing to accept either of the suggestions put forward—namely, that infections in the basal systems travel via the nerve sheaths (Keith) or via the arachnoid villi (Halliburton), since either structure, in our opinion, might be permeated by the living trypanosome just as readily as it is by the amoebic activity of the leucocyte.

Still, with regard to the second assumption, we may perhaps deal further with some of Yorke's criticisms. In the first place he argues that if there are no nervous symptoms and the lumbar puncture is negative, there is no evidence that the central nervous system is involved, and therefore it is not justifiable to tamper with it. To this we would reply that a negative lumbar puncture does not necessarily mean that the cerebro-spinal fluid is sterile; the trypanosomes might be present in so small a number as to be overlooked or even to be actually absent from the quantum of fluid taken for examination—an argument which Yorke himself advances when it serves his purposes (that is, when he suggests that relapses are due to a few trypanosomes in the blood, so few as to escape detection when the blood is examined). That the parasites have other hiding-places than in the cerebro-spinal fluid, we are quite willing to admit is more than a probability (we have already referred to van Sacheghem's work on the bone marrow); it is almost a certainty, and could be paralleled by the relapses which occur in malaria after apparent sterilization of the blood stream by drugs, under circumstances where reinfection is impossible and where there is no suspicion either from the symptoms or from the subsequent history that the central nervous system has ever been involved. In face of the well known fact that nervous symptoms are practically always the accompaniment of advanced cases of sleeping sickness, we are of opinion that the central nervous system is the seat of election. Stevenson, too, has recently demonstrated trypanosomes in the central nervous system cells.

There is, of course, the possibility that Yorke, like many others even in the present year of grace, has a personal aversion to the local treatment of infections of the central nervous system, despite the brilliant results achieved in this direction by the scientific use of suitable serums in the treatment of cerebro-spinal meningitis, tetanus, and syphilis of the central nervous system. Others have already advocated local treatment for demonstrable trypanosome infections in this situation, and more recently Mayer urges intrathecal injection of "Bayer 205" and Pearce of trypanamide. But in view of the opposition of the native to repeated lumbar punctures and the possibility of the existence of central nervous system infection at the moment treatment is undertaken, we consider it more politic to administer the drug through the needle employed to collect the specimen of cerebro-spinal fluid for examination. On the result of the subsequent examination we can decide whether we have employed the salvarsanized serum as a prophylactic or a therapeutic agent. In other words, on the clinical evidence at our disposal, we have gone a step farther than other workers, and employed the method as our routine treatment, and we have the temerity to assert that our results have justified our action.

We are now in a position to present our own results to date in concrete form.

TABLE V.—Cases Treated by Intrathecal Salvarsanized Serum and Results to Date.

Case No.	Report up to 31.1.20.		Report up to 31.1.21.		Report up to 31.1.22.	
	Months since Treatment.	Remarks.	Months since Treatment.	Remarks.	Months since Treatment.	Remarks.
2	16	Well	22	Well	40	Well.
3	1	Disappeared				
4	12	Well	24	Well	35	Well.
5	1	Died (cause unknown)				
7	2	Well	11	Well	26	Well.
8	4	Well	16	Well	23	Well.
9	1½	Died				
10	2½	Died				
11	1½	Well	13½	Well	25½	Well.
12	1½	Well	13½	Well	25½	Well.
13	1½	Well	13½	Well	25½	Well.
15	1½	Well	13½	Well	25½	Well.
16	—	—	8	Well	21	Well.
17	—	—	8	Well	21	Well.
18	—	—	8	Well	21	Well.
19	—	—	8	Well	21	Well.
20	—	—	8	Missing	21	Well.
21	—	—	8	Missing	21	Well.
22	—	—	8	Well	21	Well.
23	—	—	8	Well	21	Well.
24	—	—	8	Well	21	Well.
25	—	—	8	Well	21	Well.
26	—	—	7½	Well	20½	Missing.
27	—	—	7½	Well	20½	Well.
28	—	—	7½	Well	20½	Well.
29	—	—	6½	Well	19½	Well.
30	—	—	6½	Well	19½	Well.
32	—	—	1 day	Died*		
33	—	—	—	—	16½	Well.
43	—	—	—	—	13	Well.
55	—	—	—	—	11	Well.
60	—	—	—	—	11	Well.
61	—	—	—	—		

\* ? Chloroform poisoning.

Table V gives the cases treated by the method we suggest should become a routine one, with the reports at the various time periods presented on former occasions. Apart from two cases this needs no comment. We must, however, draw attention to Cases 18 and 20. These were found at a subsequent examination several months after treatment to harbour trypanosomes in their glands, but in both cases the cerebro-spinal fluid was negative.

Case 18 was treated on April 18th, 1920; three subsequent examinations were all negative: a fourth one on July 27th, 1921, showed trypanosomes in glands.

Case 20 was treated on April 25th, 1920; subsequent examinations were all negative, but on April 20th, 1921, trypanosomes were recovered from a gland by puncture.

Obviously these two cases would be claimed, by hostile critics, as instances of the failure of our routine treatment; we, however, consider them as reinfections—the only ones we have noted; the circumstantial evidence that influences our opinion is as follows:

1. The glands of both cases had disappeared after the first treatment, and there had been consistent negative results of blood, glands, and cerebro-spinal fluid.
2. There had been no clinical signs or symptoms of any sort during these twelve months, and it would therefore appear probable that the disease had been arrested at the time of the first treatment.



3. Both patients live at Nakibira, a village in the cleared part of the sleeping sickness infected area on the Mpologma River, from which place, however, a succession of fresh infections have been derived (Cases 36, 37, 66, 67, and 68).

4. Investigation showed that the people from this village were crossing to an uncleared and heavily fly-infested promontory, Budobo, for the purpose of devil worship.

5. Acting on the belief that they were not relapses but reinfections, and early cases at that, we treated them by a single intravenous injection of arsenic. Up to the present date they both remain quite well, and blood, glands, and cerebro-spinal fluid are completely negative. (Another case treated with plain serum, who also comes from Nakibira, showed trypanosomes in glands, and he also is possibly a reinfection.)

In view of a suggestion made to us by Dr. Shaw Mackenzie of King's College, that the results obtained from serum treatment might be due to the stimulation of fat splitting by the autogenous serum, we have treated a number of cases by injecting the serum intramuscularly instead of intrathecally. The number so treated, however, is too small for any conclusions to be drawn from them. Dr. Shaw Mackenzie also gave us two preparations to try—"A" and "B"—on which we are experimenting; further, he suggests that autogenous serum is one of the best stimulants of lipase.

In our endeavour to ascertain clinically the most satisfactory procedure we have used other methods; these are set out in Table VI, which is again self-explanatory.

TABLE VI.—Showing all Cases Treated, Method Employed, and Result to Date.

No.	Method.	Total Treated.	Alive and Well.	Dead or Relapsed.	Number Missing.
1	Intrathecal serum	41	31	8	2
2	Plain serum—that is, no preliminary drug injection	4	3	1*	0
3	Non-autogenous serum: injected intrathecally or intramuscularly	7	4	3	0
4	Intramuscular serum—as 1, but intramuscularly†	7	5	1	1
5	Drug only intravenously	5	2	3	0
6	Drug direct into spinal canal	2	0	2	0

\* Possibly reinfection. See report.

† See Shaw Mackenzie's suggestions.

‡ See Table II.

Towards the end of 1920 Dr. Ashton Boud of the Church Missionary Society, Toro, at our request treated some cases by the salvarsanized serum method. He writes as follows (January 31st, 1922):

"... serum (about eighteen months ago) and in most cases there was general improvement of general health and also the glands had mostly become so small as to be hardly palpable, or else were not palpable at all."

Boud has, in addition, treated 12 other cases; after an average period of twelve to eighteen months these were re-examined, and the following report sent to us about them: "Dead, 2; 'alive and well,' 5; and migrated to Belgian Congo, 5." (The latter are therefore probably quite well.)

Apart from the appended figures we have, since the beginning of 1922, treated some 200 cases at the suggestion of the Uganda Government. These we have grouped under various treatments as follows:

1. Intrathecal salvarsanized serum.
2. Intramuscular salvarsanized serum.
3. Intramuscular plain serum.
4. Intrathecal plain serum.
5. "A" (Shaw Mackenzie) intravenously only.
6. "B" (Shaw Mackenzie) intramuscularly only.
7. "A" (Shaw Mackenzie) intramuscularly only.
8. "B" (Shaw Mackenzie) intramuscularly only.
9. "B" (Shaw Mackenzie) intramuscularly only.

The study of these cases should provide an instructive commentary on the efficacy of the treatment we advocate.

We wish to express our deep obligation and thanks to Dr. C. A. Wiggins, P.M.O. Uganda, for permission to publish this report, and also for his great assistance in enabling us to

carry out this method on a large scale; also in Uganda to Drs. Mary Martin, Griffin, Bond, and Rawson; and in England we are deeply indebted to Professors Simpson and Eyre and to Dr. Shaw Mackenzie for their very valued interest and assistance.

<sup>1</sup> BRITISH MEDICAL JOURNAL, 1905, p. 18, 1921, p. 155. <sup>2</sup> C. R. Soc. Coloniale, 1907, p. 247. <sup>3</sup> Dis. Bulletin, xviii.

## HISTOLOGICAL CONDITIONS IN A CASE OF ADDISON'S DISEASE.

BY  
EVELYN E. HEWER, D.Sc.,

LECTURER IN HISTOLOGY AND ASSISTANT LECTURER IN PHYSIOLOGY  
AT THE LONDON (ROYAL FREE HOSPITAL) SCHOOL OF  
MEDICINE FOR WOMEN.

It is not easy to find any detailed description of the microscopical appearance of the organs in Addison's disease; the following details may therefore be of interest, more especially in view of the prominent part that is being assigned to the endocrine organs at the present time.

**History.**—The patient was in September, 1921, he began to suffer from by vomiting, and about the same time his skin began to darken; she stated that the deep bronze colour noted on his admission to hospital was reached within a few weeks. In January, 1922, the patient gave up work, and took to his bed on account of progressive weakness; at this time he also complained of pains in his limbs and chest, and was treated for "influenza." On February 14th, 1922, he was admitted to hospital suffering from extreme weakness. He had had no previous illness except severe influenza thirty years ago. The family history is good and he has five healthy children.

**Condition on Admission.**—The patient was emaciated, although well built and muscular. He was extremely weak, and sweated freely on the slightest movement. Temperature 94° F., but no shivering. The skin was brown all over, the pigment being most marked over the hands, face, penis, scrotum, nipples, and anterior folds of the axilla; there were also brown spots within the cheeks. There was some deep tenderness over the liver; no superficial abdominal hyperaesthesia. There was slight dullness over the apex of the right lung. Knee and ankle jerks absent; flexor plantar reflex. The urine was alkaline, sp. gr. 1026; otherwise nothing abnormal detected. Respirations 20, shallow. Circulation: Radial pulse not felt; blood pressure (by auscultatory method) 55 mm. Hg; blood film normal. A blood count showed red blood corpuscles 4,800,000; haemoglobin 65 per cent.

The temperature rose to 98° F. on February 15th. On the morning of the 18th, the fourth day after admission, he suddenly became weaker and died.

### Post-mortem Report.

**Lungs:** Old pleural adhesions present over the whole of the right lung; a few scars of old healed tubercle at right apex. Bronchial glands show no evidence of tubercle. Heart: 233 grams, normal. Liver: 1,450 grams, slightly nutmeg. Gall bladder: Distended; contains a single small black stone; no evidence of inflammation. Spleen: 200 grams, moderate perisplenitis. Kidneys: 330 grams, normal.

**Suprarenals.**—Right, 16 grams; left, 22 grams. The right is small and fibrous, the left shows much fibrosis and some areas of caseating material. No evidence of accessory suprarenal tissue.

### Microscopical Appearance of Organs.

The material obtained at autopsy was fixed immediately in formal-acetic-Müller, and embedded in paraffin; the sections were stained with Scott's haematoxylin and Biebrich's scarlet, with Mallory's connective tissue stain, with Weigert's resorcin-fuchsin stain, and by the Ziehl-Neelsen method for the tubercle bacillus.

**Suprarenal.**—Only one small area of cortical tissue found involved in a chronic tuberculous process with round-cell infiltration showing an unusually high percentage of plasma cells. There was much fibrosis, some calcification, and formation of many giant cell systems. The cells of the cortical tissue were of the type belonging to the zona fasciculata, many of them spherical with strongly eosinophil cytoplasm and eccentric nuclei; other cells were very irregular, with poorly staining nuclei. The unusual appearance of these cells might have been due to post-mortem changes, but more probably indicates the breakdown of the last remnants of true cortical tissue. No medullary tissue was found. The surrounding fat was unusually rich in small round cells. A small ganglion just outside the organ showed some cellular degeneration and pigment deposition.

**Pancreas.**—No gross lesion was detected. The islets of Langerhans appeared normal, and contained some lymphocytes. The organ was extremely vascular, and there was some fibrous increase in the blood vessel walls.

**Thyroid.**—The organ was not so vascular as usual. There was very little intervesicular parenchyma, but frequent aggregations



of lymphocytes between the vesicles. Most of the latter were distended with colloid, and showed a very flattened epithelium; in these vesicles the colloid stained very deeply with Biebrich scarlet, and was probably old. A very few vesicles showed the typical cubical epithelium, lightly staining colloid, and slight vacuolation round the edge of the colloid, that indicate active secretion; these vesicles, mostly towards the outer edge of the gland, seemed the only really active ones. A few vesicles showed migration of cells into the colloid, and the appearance of giant cells; both epithelium and colloid were disappearing from these vesicles.

**Thymus.**—Some true thymus tissue was persistent, lying as nodules in fat and fibrous tissue. There was slight increase of the connective tissue elements, and large cells of endothelial type were entering the gland in parts by way of the trabeculae. A few large, clear, strongly eosinophil cells were present, and an occasional giant cell. The Hassall's corpuscles were unusually large and well formed, and a few chromophobe complexes were also present.

**Spleen.**—The capsule contained hardly any muscle, being almost completely fibrous. The pulp showed intense congestion, with hyperplasia of the endothelial cells at the expense of the lymphoid tissue. The Malpighian bodies were small, otherwise normal. A very few giant cells were present, and many eosinophil myelocytes, which usually showed bilobed nuclei. The walls of the small arteries were thickened.

**Testis.**—The condition of the seminiferous tubules resembled somewhat that obtained by the action of x rays in small doses. (This patient had never received any x-ray treatment.) There was marked degeneration of the tubules; no spermatozoa were present, but a few spermatids. In the tubules, cells of all stages of development were being set free into the lumen; some of these cells showed a large nucleus with diffuse, poorly staining chromatin; others showed a very small pyknotic nucleus. There was no mitosis. A few tubules showed giant-cell formation. Very little interstitial tissue was present; there were very few (if any) real interstitial cells, but an increase of fibrous tissue and a few large strongly eosinophil granular cells. The vascularity was not increased.

**Semilunar ganglion.**—There was definite, patchy, cellular degeneration, but no evidence of local tuberculous or other inflammation. Very few of the cells were healthy, and various stages of degeneration could be distinguished. There were cells staining poorly, showing an indistinct outline, swollen eccentric nucleus, and pyknotic nucleolus; in a later stage the nucleolus was lost and yellow pigment granules appeared in the cytoplasm; then the nucleus became vacuolated and disappeared, the cytoplasm became very granular, and much pigment was deposited; this pigment did not contain iron. The nuclei of the cell capsules were also degenerated, and some of the nerve fibres. Nissl staining showed that the basophil substance was diffused throughout the cytoplasm, even when the cells appeared healthy.

**Lymphatic Glands.**—Lymph glands from the neighbourhood of the suprarenal, pancreas, semilunar ganglion, and portal fissure were examined. They all showed subacute inflammation, but no tubercle bacilli were found. A fibrinous exudation was always present just within the capsule, and filling the periglandular lymphatic sinus. The cellular content was high, and many large endothelial cells were present, entering the glands along the connective tissue strands; there were also many eosinophil cells of various sizes, some clear, others granular. Most of the glands showed some fibrosis. No pigment was present.

**Pituitary.**—The pars posterior was more vascular than is usual and showed several small haemorrhages; there was no evidence of pigment, nor of "colloid," but small granular masses with faintly eosinophil reaction were present. The pars intermedia showed a small amount of eosinophil colloid, and a large proportion of the small strongly eosinophil cells of the pars anterior. The pars anterior had a general appearance of being normal; the small chromophobe cells were fairly numerous, but there were very few of the large basophil cells; on the other hand, the vast majority of cells were strongly eosinophil, and these were of all sizes. Some colloid was present, similar to that of the pars intermedia; and between the groups of cells, but apparently not in the blood vessels, there was much granular chromophobe (secretion). In parts some cells were greatly enlarged and swollen, with eccentric nuclei, looking as if being changed into this chromophobe granular material. There was some increase of fibrous connective tissue in the pars anterior.

The presence of the tubercle bacillus was not demonstrated in any of these organs.

Considering the extent of the suprarenal lesion, serious symptoms were of comparatively short duration. At the time of death there was probably no functioning suprarenal tissue, and yet the patient had been at work until three weeks before this.

It has been stated that in Addison's disease there is a general increase of lymphocytes; in this case no such increase was apparent. The blood picture was normal; in the spleen the lymphoid tissue was even decreased owing to the increase of the endothelial cells. In such lymph glands as were examined the cellular content was certainly high, but in addition to the increase of lymphocytes there were also many endothelial cells. But a general lymphoid increase was not apparent; this is contrary to the distinct increase that the author obtained in rats whose suprarenals had been almost destroyed by inoculation with certain suprarenal constituents.

It is to be regretted that no haemolymph glands were obtained for examination, because in the experiments just referred to melanoblast cells—carrying pigment presumably produced consequent on the deficient elaboration of adrenin—had been found in these glands. In the case under discussion such cells were not found in the organs examined; no doubt melanin-bearing cells were present in the Malpighian layer of the skin, as is usual in this disease.

The thymus evidently reacted to the condition in the same way as the other lymph glands, as shown by the appearance of endothelial cells. The large Hassall's corpuscles and chromophobe complexes are usually interpreted as signifying involution of the gland; this is what would be expected in a man aged 42. The condition of the thyroid is interesting in connexion with the view that this gland and the suprarenal mutually excite each other's activity. In this case the suprarenal was probably functionally inactive, and the thyroid presented an appearance similar to that seen in colloid goitre, with very few indications of any activity. The degeneration of cells in the sympathetic ganglia in this disease has been emphasized by others; it may perhaps be due in part to the lack of adrenin, which is necessary for the optimum functioning of the sympathetic nerve endings.

The atrophy of the seminiferous tissue in the testis is of interest in view of the debated relationship existing between the suprarenal cortex and the gonads. In this case both seminiferous and interstitial tissue were degenerating. Here again the breakdown of the tubule cells was precisely similar to the degeneration experimentally brought about in rats by suprarenal inoculations (where again the suprarenal was more or less destroyed), and is probably due to perverted or deficient action of suprarenal autotoxins.

It is often stated that there is a close functional relationship between the suprarenals and pituitary. In this case the suprarenals were probably functionless, and the pituitary had the appearance of great secretory activity. It is somewhat difficult to interpret the appearance of a "fixed" human pituitary; the *post-mortem* changes are rapid, and various fixatives have very different effects on the cells. The extension of colloid material into the pars anterior, and the presence of masses of granular chromophobe material, probably signify great activity; it is, however, unusual to find the colloid strongly eosinophil, and the relative number of basophil cells was below the normal.

I am greatly indebted to Dr. A. P. Beddard, under whose care the case was, for permission to make use of the hospital reports from which the above details of the history of the case and the gross *post-mortem* findings have been taken, and also for permission to publish this case. I would like also to thank Dr. Laidlaw for procuring the material for me, and Professor Herring for examining the sections of the pituitary.

## TWO CASES OF HORSESHOE KIDNEY.

BY

CLIFFORD MORSON, O.B.E., F.R.C.S.,  
SENIOR ASSISTANT SURGEON, ST. PETER'S HOSPITAL.

The union of both kidneys by means of fibrous tissue is a well known abnormality, generally recognized in the *post-mortem* and dissecting rooms, Sir Henry Morris claiming that it occurs in one out of every thousand bodies. But when the uniting band is composed of renal tissue the condition is believed to be of unusual interest and undoubted rarity. The cases which I record come in the latter category, and the interest of one is enhanced by an accurate diagnosis having been made during life with the assistance of pyelography.

### CASE I.

The patient, a man aged 45, had suffered from a stricture of the urethra for many years, which from time to time had been dilated with instruments. When this man came under my care, apart from difficulty in micturition, he complained of pain in the left loin. A skiagram revealed the presence of a shadow in this region, but as I was not convinced that it was in the left renal area I decided to perform pyelography. The pyelogram clearly showed the presence of an accessory calyx directed inwards from the lower pole of the left kidney towards the vertebral column. It also demonstrated a shadow immediately above that of the accessory calyx and distinct from it. The renal pelvis was shown to be dilated, but no calyces other than the one mentioned could be seen, the explanation of which was not cleared up until after the operation.

Under general anaesthesia an incision was made in the left lumbar region and the kidney exposed. It was found that the convex border of the kidney was resting on the quadratus lumborum,



the pelvis looking forwards and slightly inwards. This position explained why no calyces other than those of the uniting portion of the renal tissue could be seen in the pyelogram, the shadow due to the dilated pelvis lying immediately in front of the kidney.

All attempts at delivery of the kidney on to the surface of the loin failed, owing to the lower pole being attached to the opposite kidney. The bond of union could be felt as a thick mass extending across the middle line immediately in front of the aorta and inferior vena cava. The successful removal of the calculus, which was embedded in the lower pole, presented difficulties on account of the lack of mobility of the kidney, and an incision had to be made through the capsule and cortex before the stone, the size of a marble, could be extracted. The patient's convalescence was slow, but no complications occurred until six weeks later, when an outbreak of influenza in the ward caused pneumonia to set in, from which the patient died.

The post-mortem examination revealed a very fine example of a horseshoe kidney. (See Fig. 1.) The left half of the transverse portion was anatomically perfect—that is, it consisted of calyx and cortex, the latter seen with the microscope to be made up of glomeruli and tubules. The right half had no calyx, but normal glomeruli and tubules were present. Each half of the uniting band of renal tissue had its own blood supply, which was distinct from that of the kidneys proper. The ureters, as is usual in these cases, passed down in front of the kidneys. Both pelves were dilated, the left more than the right.

In order to confirm the presence of an accessory calyx, as seen during life in the pyelogram, and before a portion of the uniting band had been removed for microscopical examination, a post-mortem pyelography was performed. The accompanying illustration (Fig. 2) shows the result of this procedure. The accessory calyx and the dilatation of the renal pelvis are again well demonstrated, but branching shadows can also be seen in the cortex of the left kidney. These shadows are caused by the pyelogram fluid having been injected under pressure, and forced into that part of the cortex where incision was made for removal of the calculus.

Since this specimen was shown at a meeting of the Section of Urology of the Royal Society of Medicine, I have had to operate on a somewhat similar case at the Whipps Cross Hospital. The notes of the case are as follows:

#### CASE II.

The patient, a man aged 33, had had intermittent attacks of pain in the left loin from childhood. No investigation of the urinary tract had been undertaken until recently, when cystoscopy was performed at one of the London hospitals. The patient, having refused any further examination, was discharged, but later was admitted to the Whipps Cross Hospital. Again he refused any examination, but was willing to undergo an operation if promised that he would be relieved of his pain. As a fluctuating swelling could be felt in the left loin extending down to the left iliac fossa, I felt confident of the diagnosis of hydronephrosis without the necessity of confirmation by pyelography. As indicating pressure on the inferior vena cava the superficial veins of the lower limbs and lower abdomen were noted to be dilated. Previous to the commencement of the operation, when fully anaesthetized, the patient was cystoscoped. The bladder and ureteric orifices were normal. A catheter passed up each ureter and ureteric orifices were normal. The quantity of urine which escaped from the left side was greater than that from the right. The urine analysis prior to operation

showed a urea excretion of 2 per cent. and the absence of abnormal constituents.

On exposure of the left kidney through an incision in the anterior abdominal wall the diagnosis of hydronephrosis was verified. Its

removal was not possible until some of the fluid contents had been evacuated, this being accomplished by means of trocar and cannula. Two and a half pints of straw-coloured fluid were thus drawn off. From this bag of urine two small stones were also removed. Separation of the surrounding tissues from the kidney then revealed a band of renal tissue 1½ inches broad, extending from its lower pole across the aorta and inferior vena cava and continuous with the lower pole of the opposite kidney. The latter in size and consistency felt normal. The left ureter and left spermatic vein, which were anterior to the uniting band, were ligatured and divided. With great care this transverse band was next dissected off the aorta and divided between two ligatures of Japanese gut. No accessory calyx was observed. The ligature of the vessels of the renal pedicle was attended with some difficulty owing to their unusual arrangement. In fact, no pedicle as such existed, both arteries and veins having entry and exit along the entire

length of the inner border of the kidney.

The operation was followed by profound shock and paralytic distension of the small and large bowel, but these disquieting phenomena disappeared under appropriate treatment carried out by the resident medical staff of Whipps Cross Hospital. The dilated veins of the lower abdomen and limbs subsided within a week of the nephrectomy. From the first the function of the remaining kidney was satisfactory.

It has been stated that in cases of horseshoe kidney an occasional symptom is epigastric pain due to pressure of the transverse band on the aorta. It was absent in both of my cases. Moreover, I am sceptical of such an explanation should there be complaint of pain in this region. The first structure to show signs of pressure must be the thinner walled inferior vena cava, and then the sympathetic nerve trunks in its vicinity.

A careful search of the literature on the subject of horseshoe kidney has not elicited any reference to the presence of accessory calyces in the uniting band, as dia-

gnosed by means of pyelography. I have reason to believe, therefore, that the pyelogram of the first case is unique.

THE United States Census Bureau states that in 1921 the death rates of mothers from childbirth and puerperal causes were lower in 1921 than in any year since 1917. In the area for which figures are available the death rate in 1921 from puerperal causes was 6.5 to 1,000 live births, and the ratio of deaths from childbirth to the number of women bearing children in the year was about one to 150.

THE *Nederlandsch Tijdschrift voor Geneeskunde* states that the sixth All-Russian Congress of Internal Medicine was held in Petrograd last September under the presidency of Professor Kotschalowsky of Moscow; 500 members were present, and 104 communications were made. Moscow has been chosen for the next meeting in 1927. The fifteenth All-Russian Surgical Congress was held the same week in Petrograd, and was attended by 685 members. There were 158 communications.

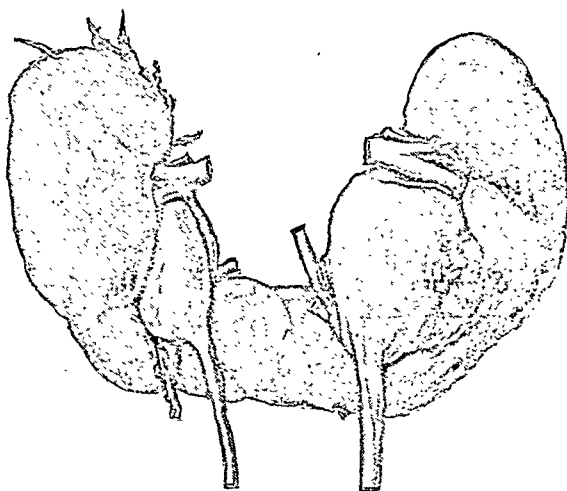


FIG. 1.—Drawing of horseshoe kidney, showing the position of the bloodvessels, which supply the uniting band of renal tissue, also the ureters passing down in front of it, and the dilatation of both pelves.



FIG. 2.—Post-mortem pyelogram. Note the shadows of the accessory calyx and those in the cortex. The pelves of both kidneys are dilated.



## Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

## MILK INJECTIONS IN INFANTILE COMPLAINTS.

This case here reported may be of interest, for although the diagnosis may be open to question the treatment was followed by immediately satisfactory results.

At the local maternity hostel Mrs. W., at 11.30 p.m. on September 25th, 1922, gave birth to a male child weighing 7 lb. 10 oz. The confinement was normal, but forceps were employed at the end on account of feeble uterine contractions; no force was needed. During the first two days the baby passed a considerable amount of blood in its stools, and on the third day I was prepared to inject haemoplastin, but found that the bleeding had ceased after a dose of castor oil. Haemoplastin was therefore not given.

As the mother had no milk the baby was put on citrated cow's milk, which appeared to suit it quite well. When a week old, on October 5th, it began to have convulsions; at first infrequent and slight, they soon became frequent and very pronounced. In one night as many as thirty fits were observed. On October 8th the diet was changed to Nestlé's milk with cream added, and he was given 1 grain each of bromide and chloral regularly; the only result observable was that he was drowsy between the fits, which were just as frequent. He never vomited, nor did he seem to be in discomfort. The convulsions went on for a whole week, and showed no signs of stopping. The questions which arose were: What was the cause of the convulsions? and what treatment should be adopted? It did not seem probable that the brain had been injured during birth, for the labour was easy, while there had been no fits until the first week had passed.

There were no indications that the milk was not being digested, or that it was in any way unsuitable; but the idea that the child had in some way been sensitized by the protein of the milk gradually became a conviction. About noon on October 12th I boiled a little milk in a test tube and injected 10 minims into the child's thigh. The fits were worse down to about 7 p.m., after which they gradually eased off, and by 6 a.m. on October 13th they had ceased entirely, and down to the present, three months later, another fit has not been observed. For the day or two following the injection of the milk there was a considerable inflammatory reaction in the thigh, which was hard and tense, but subsided.

I must leave it to others to decide whether or not anaphylaxis was the actual cause of the fits in this case, and whether the injection of milk desensitized the child. I record the case as I do not remember having come across one similar, and the result was spectacular.

Harrow.

W. A. WILSON-SMITH, M.D., D.P.H.

The result of the method of treatment adopted in the following case was very striking, and may be found useful in similar cases of infantile diarrhoea.

A baby girl was born on November 2nd, 1921; she weighed 6½ lb., and was perfectly healthy. She was fed by the mother, and things went well for three days; but on the fourth day icterus neonatorum appeared, and the stools became dry, chalky, pale yellow in colour, and increased in frequency, until on November 9th twenty or more were passed in twenty-four hours. The character of the stools now altered; they were loose, watery, with mucus and streaks of blood in them. The child became restless and lost weight, in spite of careful treatment. The parents were greatly alarmed, as the first baby, a boy, had died of exactly the same symptoms a year previously.

On November 12th 1 c.c. of sterilized mother's milk was injected subcutaneously. The effect was remarkable. The patient, who was peevish and restless, slept for ten hours at a stretch. The number of stools dropped to five during the next twenty-four hours; but they were still loose and slimy. On November 14th a second injection of 2 c.c. of mother's milk was given. The diarrhoea stopped, and within forty-eight hours the stools became normal. The child rapidly gained in weight, and is now alive and well.

The mother's milk in the above case was abnormally rich, thick, and yellowish in colour, and the infant was unable to digest it. The subcutaneous injection produced a lasting tolerance, and the child has now gone through her first year of life unusually free from trouble.

Bombay.

B. P. SABAWALA, F.R.C.S.E.

## VENESECTION IN A CASE OF APHASIA.

VENESECTION is so rarely performed nowadays that the following case is, I think, both interesting and instructive.

The patient is a man aged 52, who had been treated by me some nine years ago for pancreatic diabetes, but had been lost touch with during the war. There is no history of syphilis. On January 3rd, 1923, I was called to the patient, who had gone to bed on

feeling "queer" soon after the midday meal. His face was congested, his mouth drawn to the left, and his speech more or less incoherent, although he was quite conscious, knew what he wanted to say, and was annoyed when he used wrong words. He had vomited, but was not in pain, nor was there any apparent loss of power or sensation. The temperature was normal; pulse 72, regular, and somewhat "full." The blood pressure was not taken, as I considered other action more urgently necessary. The heart was normal in size and situation and there were no adventitious sounds. Eye movements were normal; pupils of medium size, equal, and reacted briskly to light; fundi normal. Knee-jerks normal. The urine contained large amounts of both sugar and albumin.

I decided that this was a case in which blood-letting was indicated, and at once opened the left median cephalic vein and relieved him of three-quarters of a pint of blood. The effects were immediate and gratifying. His complexion improved, the vomiting ceased, and he began to recover his proper speech. Subsequent progress was no less satisfactory. He was placed on a strict diet, which was amplified at the end of a week, and given other treatment.

The patient says he feels quite well, though weak. His speech is normal, and though his mouth still droops a little on the right side he can whistle and laugh without difficulty or deformity. He is going about the house, but not yet taking an active part in his business.

[Since the above was written he has developed albuminuria retinitis.]

London, W.

R. GALWAY MURRAY, M.D.

## Reports of Societies.

## THE TREATMENT OF GASTRIC AND DUODENAL ULCER.

A MEETING of the Hunterian Society was held on January 29th at the Mansion House, with the President, Dr. FORBES FOX, in the chair. In opening the meeting the President said that this was the first occasion during the Society's long connexion with the City of London on which it had met in the official residence of the Lord Mayor, and he expressed its great sense of obligation for the privilege.

SIR BERKELEY MOYNIHAN delivered the second Hunterian lecture on the treatment of gastric and duodenal ulcer. It is published in full in this issue at page 221.

In the subsequent discussion Dr. J. R. BELL (Leeds) said that the method of fractional gastric analyses was of comparatively recent introduction into this country, and the interpretation of the curves obtained was by no means complete. It had been the custom to describe typical curves for different conditions, the most notorious example being the so-called duodenal ulcer curve—a rapidly rising curve with continued secretion. But in a series of Sir Berkeley Moynihan's cases this curve was found in only 5 per cent. of those with duodenal ulcer, showing how very fallacious the statistics based on particular curves might be. He believed that there were almost no curves which could be said to be typical.

MR. H. W. CANSON said that the principle that cases should not be turned over to the surgeon until a long course of medical treatment had been tried was likely to lead them astray; medical treatment of chronic gastric ulcer was likely to be useless. The present tendency in operation was to be more and more drastic, and partial gastrectomy offered itself as the recognized procedure; mere excision was not sufficient, nor, he thought, Balfour's operation. He did sleeve resection for a particular type of callous ulcer over the lesser curvature; though it sounded a formidable operation, patients stood it very well.

DR. CAMPBELL McCLEURE thought Sir Berkeley Moynihan had been a little hard on medical treatment; it required patience and endurance on the part alike of doctor and patient. The idea of starving a patient for a few days and then hurrying him on to a moderate diet shortly after the disappearance of the symptoms was ridiculous. He agreed that the treatment of chronic gastric ulcer, once the diagnosis was thoroughly established, should be surgical. He was glad to hear the question of gastrectomy pushed; anything which would avoid gastro-jejunostomy was to be encouraged, for it was a horrible makeshift.

MR. GORDON TAYLOR said that he was becoming more and more an ardent advocate of partial gastrectomy, the results of which were extraordinary. There were certain cases of gastric ulcer where the haemorrhage would not cease in spite of medical treatment. He had ten cases of gastric ulcer



associated with severe haemorrhage, and performed partial gastrectomy, with nine recoveries; they were all very large ulcers.

Dr. RAMSAY (Tasmania) spoke in admiration of the technique he had studied at Sir Berkeley Moynihan's clinic, and said that he would carry back to Australia very pleasant memories of some excellent surgery.

Mr. J. H. ROBERTS also spoke in support of partial gastrectomy, which, he said, was followed by no symptoms—a result that could not be claimed for any other form of operative treatment. Mr. A. MORTIMER WOOLF referred to the extreme importance of diagnosis. In both duodenal and gastric ulcer the most important indication in diagnosis was obtained from the clinical history, which could only be elicited by good temper and great care. The PRESIDENT (Dr. Fox) remarked that in recent epidemics of influenza symptoms indistinguishable from duodenal trouble were often observed, and he had known operations for perforated duodenal ulcer necessary after influenza.

Sir BERKELEY MOYNIHAN declared that he had never said or thought that a gastric ulcer could not be compelled to heal. The scars—seen rarely at operation, more frequently in the *post-mortem* room—indicated with certainty that a chronic gastric ulcer had healed. All his efforts that evening had been directed to the encouragement of the physician so to supervise, and especially to protract, his treatment as to secure such a result. His own sympathies were really medical. After all, the craft of surgery was a thing within the capacity of most men who took pains. But the things within the purview of the physician were illimitable and infinitely more interesting. Surgery, bereft of medicine, was work for anybody. Surgery with medicine in it was, in his judgement, the greatest pursuit in the whole world. Physicians found fault with gastro-enterostomy, but there was no fault to be found with that operation; the fault was with the people who practised it in cases in which it was utterly inadequate. Gastro-enterostomy was quite useless—he could assure them, because he had seen it practised—in the vomiting of pregnancy. It did not relieve—and again he spoke from what he had seen—the gastric crises of *tabes dorsalis*. It was not of very much use in cases of carcinoma of the colon. In such cases and in many others he had known the operation of gastro-enterostomy to be practised. But in the right kind of case and, done in the right way, there was no operation in surgery which was better than gastro-enterostomy, and when physicians criticized it—as they had every right to criticize an operation, seeing, as they did, the surgical dust heaps—he would ask them rather to criticize the choice of that operation for a condition for which it was unsuitable. He had performed sleeve resection and was not very dissatisfied with it. He had seen it performed also on the Continent, to the satisfaction of some distinguished surgeons, though, they admitted, with occasional bad results. He had no quarrel with the operation; but it was a great thing to have ideals—ideals were not so much for attainment as for pursuit—and he himself was chasing the ideal of an absolutely perfect operation for patients suffering from chronic gastric ulcer. In his hands, and in the hands of those trained by him in Leeds, they had no fault to find with gastrectomy, and they found blemishes in every other method—not serious blemishes, but something short of perfection. Not long ago he was spending a week-end in Liverpool with Robert Jones and Harold Stiles, and the question arose as to what was the greatest weight he had ever seen put on by a patient after gastrectomy. He replied that he thought some patients had almost doubled their weight. But on reaching home that day he saw a new patient who was accompanied by another lady, and the latter by certain gestures and glances indicated that he ought to know her. He searched his mind in vain to identify her, and when at last she told him who she was he flatly denied it, saying that he knew that person very well. But having given him some convincing proofs that she was the person in question she consented to be weighed, and he found that if she had only put on seven pounds more she would have trebled her weight as it was before gastrectomy was done. He said to her, "You cannot blame me for not recognizing you. You see, I had not seen two-thirds of you before!"

In conclusion Sir Berkeley said that the things which made a surgeon's life worth while were not the things that he got for himself. They were not the titles he received nor the money he accumulated, nor the books he wrote. He had perpetrated a few literary efforts himself, and had been profoundly dissatisfied with every one of them. The thing that

made the surgeon immortal was the spirit he imparted to the teaching of the men who were coming after, and he thought that Mr. Gordon Taylor, who knew the work in Leeds, would say that he had been the means of training some young men who could do these things just as well as he could himself, if not better. The legacy that he had always wanted to leave to posterity was a band of young men trained by him and inspired by his spirit, and he ventured to hope that that was one of his dreams which had come true.

On the motion of Mr. T. H. OPENSHAW a hearty vote of thanks was accorded.

## CARDIO-VASCULAR CONDITIONS IN RELATION TO ANAESTHESIA.

At a meeting of the Section of Anaesthetics of the Royal Society of Medicine on February 2nd, with Dr. A. L. FLEMING in the chair, the relation of some cardio-vascular conditions to anaesthesia was discussed.

Dr. J. STRICKLAND GOODALL spoke on the systematic examination of the patient in a cardio-vascular case. He admitted that the methods he described would be impossible in a large number of cases where, owing to the patient's condition, the examination had to be of the most superficial character. The ideal, however, was always to discover the exact state of the cardio-vascular system, and thereby minimize risk. It would not be long before every general hospital would have a proper cardiological department, under a trained cardiologist, where every case would be examined as a matter of routine before operation.

The examination of the cardio-vascular system included the examination of the heart, the vasomotor mechanism of the vessels, and the respiratory pump. It was advisable to examine the patient three times: standing, lying, and after exercise. The face of the patient was instructive. They all knew the typical mitral face, and the difference in appearance when the cardiac condition was good and when there was failing; also the pale face of aortic disease, the dull yellow face of infective endocarditis, and the absolutely pallid face of pericarditis. If the patient was cyanosed one would look at his neck to see what the jugulars were like, at his fingers to see whether they were clubbed, and so forth. If the apex beat was visible its regularity or irregularity must be noted. On palpation the position of the apex beat and its character could be made out. A "slapping" apex beat meant that the ventricle did not contract well, either because it was degenerated or was subject to some toxic condition, or was not sufficiently stretched by adequate filling. A "heaving" beat meant only one thing—namely, ventricular hypertrophy. A third apex beat was made up of two distinct components, "slapping" and "shoving," and was almost always characteristic of a double lesion. If the apex beat was irregular the volume of the pulse would enable one to distinguish whether this was due to auricular fibrillation or extra-systole. If there was an intermittent thrill it was important to find out under what conditions it was intermittent.

On auscultation the quality of the first sound at the apex was important. The normal first sound was long, dull, and booming. This sound indicated the condition of the muscle and of the auriculo-ventricular valves. It might be short in any condition which interfered with the contractility of the ventricle. A reduplicated first sound meant a disturbance of the relationship between pulmonary and systemic pressure, as in mitral stenosis and arterio-sclerosis. The apex beat might be weak, or suppressed, or modified by the presence of a murmur. He believed that the systolic murmur at the apex, if of endocardiac origin, always meant leak through the mitral valve. The second sound of the apex might be distinct, duplicated, or modified by the presence of a murmur. At the base the aortic second sound was particularly interesting; normally it was short and sharp, but if accentuated it meant a high peripheral resistance and high blood pressure; if ringing and metallic it meant damage to the structure of the aortic valve. The aortic second sound was weak when the valve was inflamed; or it might be duplicated owing to inflammatory or degenerative change. Its absence did not necessarily mean that the aortic valve had not closed, but only that it closed so quietly as not to be heard. There were several different means of assessing the quality of the first and second sounds. The differential stethoscope was sometimes useful, and the electrocardiograph gave a graphic record of what the myocardium was doing at any particular time.



The worst hearts, from a myocardial point of view, in which an anaesthetic could be given were cases in which there was profound myocardial toxæmia, or definite degeneration of the myocardium. In aortic cases observation would be made of the vasomotor mechanism, which should be tested first for vasomotor stability and then for positive and negative vasomotor accommodation. He spoke in conclusion of the heart in Graves's disease, where the heart underwent a progressive degeneration. Cases of Graves's disease which died during or after operation were those in which the ventricular myocardium was damaged.

Sir BERNARD SPILSBURY said that for a number of years he had been very much interested in the subject of deaths under anaesthetics, and had had unusual opportunities of investigating cases. In 1913, in a Section of the International Congress of Medicine, he gave an analysis of 104 cases in which death occurred during or shortly after the administration of the anaesthetic. In all these cases he made the *post-mortem* examination himself. The anaesthetic employed was chloroform alone in 58, chloroform in mixture in 22, pure ether in 12, and other general anaesthetics in smaller numbers. The cases in which death was found associated with the condition of status lymphaticus numbered 32. In almost all these 32 cases a microscopic examination showed fatty degeneration, sometimes of the acute patchy type, easily recognizable in the *post-mortem* room, at others of a diffused fine type, giving rise to a pallor or sometimes a glazed appearance of the heart muscle, which was liable to be disregarded. In some of the remaining cases, although death had taken place under the anaesthetic, the anaesthetic was not the cause of death.

During the last nine years (1913 to 1922) he had studied 174 similar cases, which he had not been able to classify as completely. In this series the status lymphaticus cases numbered only 26—a considerable drop in proportion to the whole number. Quite a large proportion of these status lymphaticus cases were in the early years of life—8 out of the 26 in the first five years. In a certain proportion of cases, again, the anaesthetic probably played no part in causing death, and in some the cause was quite evidently pulmonary embolism or serious hæmorrhage. In certain cases the patient was moribund when administration commenced; this was particularly so in cases in which storaine was administered. In 9 cases storaine was administered alone, and in 3 others it preceded some other anaesthetic, but all these patients were desperately ill at the time. In 56 cases pure chloroform had been used, and in 56 others chloroform mixtures, in 36 ether alone. In 10 per cent. of the cases nitrous oxide had been given, either alone or with ether, but these cases, again, were desperately ill. He systematically investigated the condition of the heart muscle in almost every case of the 174, and found fatty degeneration or brown atrophy or a combination of the two conditions in all but a very few (three or four). In four cases the anaesthetization had been of an exceptional character. One was a case of murder by the administration of chloroform; the victim was a healthy boy, and there was no disease of the heart muscle. Another was a case of suicide by inhalation of chloroform, and here there was a certain amount of brown atrophy. The other two were apparently accidental deaths, one of a chemist and the other of a nurse, both caused by the breaking of a bottle of chloroform, and in both there was a certain amount of disease of the heart muscle. Among the 174 cases there was not one in which there was fibrosis of the heart muscle; only one in which there was disease of the coronary arteries; only one in which there was pericarditis, and that of slight degree. In 5 there was valvular disease, and in 3 congenital disease of the heart, all in young children, who had other diseases also. Of cardiac lesions which were seriously important in connexion with the administration of anaesthetics, diseases of the myocardium took the first place; these pointed, in the vast majority of cases, to some toxic process, either chronic, as in the status lymphaticus cases, or acute, and the damage to the heart muscle, caused by this original poisoning, was extended up to a fatal result owing to the additional poisoning action of the anaesthetic.

Dr. GOODMAN LEVY said that there seemed to be a consensus of opinion among anaesthetists that, provided the circulation was not seriously disturbed, no cyanosis or marked dyspnoea being present, inhalation anaesthesia was generally a safe procedure in cases of cardiac disease. Yet if fatality should occur there was a tendency to impute responsibility rather to the state of the heart than to the anaesthetic.

Recent information as to the mechanism of chloroform syncope must lead to an entire recasting of ideas on the relation of cardiac activities to this disease. So long as chloroform was regarded only as a cardiac depressant, and every case of syncope as a manifestation of an overdose, it was perhaps permissible to draw an inference as to correlation between chloroform syncope and cardiac disease. It happened, however, that the condition underlying chloroform syncope—namely, fibrillation of the ventricles—was essentially a manifestation of the healthy heart. In fact, a heart with depressed muscular action was less excitable, and hence less liable to pass into ventricular fibrillation, than a heart with a healthy muscle. Ventricular fibrillation also was less likely to occur when the blood pressure was low. There was no evidence that endocardial lesions or muscular degenerations predisposed in any way to chloroform syncope.

In the general discussion Dr. JOHN PARKINSON commented upon the absence of any rapid heart stimulant, though it was true that the conditions of heart failure were not alike, and it was improbable that one remedy, if it could be found, would meet all conditions. There were only two common irregularities—auricular fibrillation and extra-systole. Dr. Goodall looked rather more seriously on extra-systole than other cardiologists; current opinion was that extra-systoles, apart from other signs, had little significance. Mr. JAMES BERRY spoke on the value to the operating surgeon of electrocardiography and examination by a skilled cardiologist. In exophthalmic goitre cases particularly there ought to be free consultation between cardiologist, surgeon, and anaesthetist. There were two classes of cases in which, if he were operating with a young and inexperienced anaesthetist, he was a little fearful: one was the case of a fat and flabby person, whether he had a murmur or not, and the other the case of a person with advanced malignant disease, especially when there were cancerous glands at the root of the neck. Dr. JOSEPH BROMFIELD said that the cases in which anaesthetists did want all the help which could be given to them were those cases in which the heart was degenerated or toxically affected, and in which there were no apparent signs to arouse suspicion beforehand.

Dr. GOODALL, in reply to a remark by Mr. BERRY, said that he did not believe in local anaesthesia in Graves's disease, nor in any condition which was to a large extent an "emotion disease." Adrenaline, injected into the circulation, would produce ventricular fibrillation. With regard to extra-systole, he thought it extremely rare to find this condition, which was an expression of hyperirritability, without some other associated evidence of cardio-vascular disease.

## A REVIEW OF EPIDEMIOLOGY.

At a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine held on February 2nd the President, Dr. R. J. REECE, C.B., delivered his inaugural address on "Progress and problems in epidemiology." Dr. Reece first described the aims of the founders of the Epidemiological Society, and pointed out that, although many of the most important papers in the *Transactions* were the work of men who had not served in the medical service of the State, the early days of the society were those of the activities of Simon, Netten Radcliffe, George Buchanan, and others, the value of whose epidemiological work could not be overrated. When the State Medical Department was transferred to the newly constituted Local Government Board in 1871, other men joined the service, and the study of epidemiology was continued by Power, Thorne-Thorne, Ballard, Barry, Parsons, T. W. Thompson, Theodore Thomson, Bulstrode, and many others whose names were household words in this society. He continued:

"Only last year one of our members, who joined the society in 1887, departed from us—my old colleague Robert Bruce Low, who, by his industry, skill, and perseverance, materially assisted in the advancement of our knowledge in regard to the prevalence and distribution of disease throughout the world. In a sense he continued the work which is out the world. In a sense he continued the work which is specially associated with the name of Netten Radcliffe. While he held a strong view on many subjects, he had only one opinion, and that an honest one; and he was able to keep an unbiased mind, for he loved truth for truth's sake. His amiable disposition, courteous manner, and his readiness at all times to place his knowledge and experience at the service of his medical brethren, endeared him to all."

When the society was founded it advocated adequate endowment for medical research and, Dr. Reece thought,



they might congratulate themselves that with the advent of the Medical Research Council one of the primary objects of the society had been fulfilled. He next sketched the career of Sir Patrick Manson, who was a firm believer in the influence of the Epidemiological Society for good in promoting the study of epidemiology, and in his presidential address, in 1900, set forth the future lines of research to be followed.

"During the twenty-two years," continued Dr. Reece, "that have elapsed since Manson delivered the address there has been considerable stimulus in the study of pathology and bacteriology, sciences that directly improve our knowledge of epidemic disease though not of the epidemicity of disease. Many workers have entered these fields of study, but it cannot be said that there has been any comparable influx of workers in the domains of epidemiology. There are few men who have the time and opportunity to devote to this science, and however rich the reward that may fall to the successful worker from the fact that he has materially assisted in advancing knowledge and in affording relief to suffering humanity, it is nevertheless a sad truism that judged on the sordid basis of finance there are other branches of medicine that are more remunerative. To be able to work men must be able to live, and to be able to live necessitates the possession of the essential means of supporting life."

The President then reviewed the salient features of certain diseases communicable from other animals to man. Speaking of anthrax he said:

"For many years it has been known that the infection can be acquired by man through handling specifically infected skins. An instance occurred during the war in which Professor Tulloch of Dundee, then a lieutenant in the R.A.M.C., found *Bacillus anthracis* in the cerebro-spinal fluid of a man who was thought to have died of cerebro-spinal fever, and on continuing his investigation he was able to demonstrate that the infection had been acquired through the respiratory tract. By so doing he added another link to the chain of evidence that anthrax is one of the diseases that is air-borne. A more recent instance in connexion with anthrax which is of interest is that of a man who died of anthrax, and who, immediately prior to his fatal illness, had been engaged in unloading bone meal from a vessel in one of the London docks. Colonel P. G. Stock, who investigated the matter, was able to produce evidence that certain samples of the bone meal obtained from the cargo of the vessel were infected with anthrax, and the question at once arises whether the sporadic outbreaks of anthrax that occur among animals in this country are associated with the use of bone meal for manure."

Dr. REECE next dealt with the present position of plague, and remarked that with the disappearance of rats from vessels the possibility of plague being ship-borne from port to port became remote. He then reviewed the general epidemiological position of zymotics, emphasized the need of further research on general epidemiological lines, and concluded his address with the following words:

"Progress in the study of epidemiology is closely associated with precise observations in the wide realm of nature, and in the correct interpretation of these observations. This requires time and opportunity, patience and perseverance, enterprise and experience. There is nothing new or startling in this statement: it is 250 years since Sydenham wrote, 'true practice consists in the observations of nature.' The student in epidemiology can in all humility echo the avowal made by Placastorius 440 years ago—'I am well aware that it is difficult to say what Heaven does effect and in what fashion, and to find a certain assured cause for every event.'"

On the motion of Sir WILLIAM HANER, seconded by Dr. E. W. GOODALL, a vote of thanks to the President for his address was carried by acclamation.

### CONCEALED ACCIDENTAL HAEMORRHAGE TREATED BY HYSTERECTOMY.

At a meeting of the Edinburgh Obstetrical Society held on January 10th, with the President, Dr. LUMOND LACKIE, in the chair, Dr. Wm. FORDYCE and Dr. R. W. JOHNSTONE read a note on a case of concealed accidental haemorrhage treated by hysterectomy.

The patient, aged 34, was seven and a half months pregnant, and had previously given birth to four children. At her first labour she had had eclampsia and severe albuminuria, which cleared up

after the pregnancy. In each of the three subsequent pregnancies she developed albuminuria about the sixth month, but the condition was kept under control by treatment, the pregnancies going to term, and the child in each case being alive and healthy. In each case also the albumin disappeared completely soon after the labour. During her present pregnancy the urine had been repeatedly examined by her doctor and no albumin was ever found, the last examination being September 22nd. A week afterwards she was still apparently in perfect health, but on the morning of October 1st she was awakened by severe abdominal pain accompanied by sickness. The pain was chiefly over the appendix region, though there was tenderness over the whole abdomen. The pulse was slow, the temperature subnormal, and there was no oedema, and apart from pallor, which was more or less her usual habit, there were none of the usual signs of haemorrhage present. She was rather short, so that it was difficult to estimate the degree of tension of the uterus or the exact size of the uterus. The os was quite closed and rigid. About 8 oz. of darkly stained urine was drawn off, which was practically solid with albumin. This, together with the sickness, the slow pulse, and the fact that the pain became localized to the epigastric region, led at first to a diagnosis of impending eclampsia. Under treatment for this the patient seemed at first to improve, but in two hours her pulse rate had steadily increased and a brownish haemorrhagic discharge appeared from the vagina. A diagnosis of concealed accidental haemorrhage was then made and abdominal section was decided upon. While preparations were being made for this a copious vaginal haemorrhage occurred.

On opening the abdomen a considerable quantity of blood-stained serum was found. The uterus, which did not seem unduly tense, was of a bluish or purplish colour, like that of an ovarian cyst with a twisted pedicle with numerous haemorrhagic patches and a large haematoma in the right broad ligament which seemed to extend subperitoneally deeply into the pelvis. Supravaginal hysterectomy was performed, the patient appearing to progress favourably thereafter, and four days after operation the urine was completely free from albumin. After a somewhat prolonged recovery due to the development of a stitch abscess, phlegmasia alba dolens, and parotitis, she was preparing to go home at the end of six weeks when she suddenly became very ill and died from what was thought to be a slowly developing thrombosis of the pulmonary artery.

On opening the uterus it was found that the placenta had been almost completely detached by a large blood clot behind it, some of it recent, most of it older. On microscopic examination the separated portion of the placenta showed evidence of early infarction, crowding and congestion of the villi, and coagulation of the intervillous spaces. In many areas the whole muscular wall of the uterus was ploughed up by the escape of blood from the vessels. In some areas there were large haemorrhages separating the muscle bundles, while in others the haemorrhages were smaller and had caused separation of the muscle fibres. There was also considerable degeneration of muscle fibres, varying in degree, but showing itself for the most part in the loss of nuclear staining. Here and there, there was some fragmentation of the muscle fibres, which had a clear hyaline appearance. The findings did not throw any clear light upon the relationship between concealed accidental haemorrhage and albuminuria.

### Gonococcal Infections of the Tubes and Ovaries.

Mr. DAVID LEES read a communication entitled "Some observations on gonococcal infections of the tubes and ovaries." He condemned the practice of promiscuous douching in gonorrhoea, and emphasized the importance of local therapy of the lower genito-urinary tract as a means of preventing ascending infection. In acute inflammatory gonococcal cases absolute rest should be enjoined, and the original focus of disease sought for and treated whether or not operative measures were employed for the treatment of such complications as salpingitis. Removal of one or both tubes was only the removal of the end-product of the disease and not a cure of the existing infective process in the rest of the genito-urinary tract. The infected uterus, cervix, and lower genito-urinary tract were still the seats of active disease and the patient continued to suffer ill health as a fertile source of infection to others, and the disease might at any time flare up or give rise to other metastatic lesions, such as arthritis. Operation was rarely needed to save life and had the serious disadvantage that it sterilized the patient if both tubes were removed, whereas there was ample evidence to show that quite a number of such cases if treated by conservative measures made a good recovery and the tubes retained their function. The main principles of expectant treatment were rest in bed with liquid diet, and an ice-bag over the lower abdomen except during menstruation, when hot applications were preferable. The bowels should be well opened, belladonna or atropine sulphate given in fairly large doses, and sedatives such as bromides or hyocyamus administered. The Fowler position assisted drainage from the uterus. Vaginal douching should be avoided while the pain was severe. When the acute abdominal symptoms had subsided hot antiseptic hip baths and careful local treatment of all foci of infection in the



lower tract should be carried out. Large vaginal douches at 112° F. helped to produce hyperaemia, prevented formation of adhesions, and hastened resolution. As soon as the temperature had subsided, usually about the second or third week, the patient should be given the benefit of fresh air, but exercise should be avoided. In addition to local treatment of the cervix and lower tract at this stage the insertion of vaginal ichthyol and glycerin tampons every second day was of benefit. Treatment through the blood stream by vaccines, detoxicated or otherwise, was essential in inaccessible lesions such as salpingitis, in order to make certain that the infection was eradicated from the tissues.

#### Pathological Specimens.

Dr. HAIG FERGUSON showed two specimens: (1) A large gangrenous submucous fibroid complicated by double pyosalpinx, acute appendicitis, and purulent peritonitis in a married woman aged 46, who had had an offensive vaginal discharge with pain in the lower abdomen for two years; panhysterectomy and appendicectomy was followed by a good recovery. (2) A cystic fibroma apparently growing in the broad ligament and unattached to the uterus, bearing a close resemblance before operation to an ovarian cyst, and during operation to a cervical fibroid. The patient was a multipara aged 42, and for three weeks before operation the tumour had been growing rapidly. It was shelled out of its capsule, and the uterus removed by supravaginal section, along with both ovaries and tubes.

#### IRISH HOSPITAL FINANCE.

The Section of State Medicine of the Royal Academy of Medicine in Ireland met on January 12th, with the President, Dr. T. HENNESSY, in the chair, when Dr. HORACE LAW read a paper on hospital finance. He said that in spite of the deficit incurred during the war the hospitals of Dublin were not in serious debt. For many years past, however, the annual income had not balanced the expenditure and was supplemented by bequests which were used as income. He sketched the development of the Board of Representatives of the Associated Dublin Hospitals, which had been engaged chiefly in studying the means of increasing income. The ideal method, he believed, was for the people to subscribe small weekly sums when well, so that the hospitals might care for them when sick. An agreement with one of the branches of the Irish Transport and General Workers' Union had been made embodying this principle, and a system of payments by urban and rural sanitary authorities for necessitous patients coming from their areas was in force in connexion with about sixty of these bodies. Arrangements had also been made with the National Health Insurance Commissioners whereby the approved societies might include hospital benefit as one of their extra benefits. Under the scheme of the Board of Representatives the patient had free choice of hospital, the payments being made by the Board to each hospital in proportion to the work done in treating patients. While acknowledging the economy and increased efficiency which would result from amalgamation of hospitals, he thought the matter at present impossible of achievement. Further, he pointed out that the smaller hospitals permitted of the patient being individualized, with the result that the patient subsequently took an interest in "his hospital."

Sir JOSEPH GLYNN said that State control would kill the hospitals, and should only be accepted as the last possible expedient. There were two ways in which the question could be approached: First, the rate in aid, which would come through the county councils, but he was not in favour of this scheme: if any one of the twenty-six counties stood out there would be difficulties. Secondly, the grant in aid, the scheme which he thought the better—and which was used in connexion with child welfare schemes at present working in Ireland. Incidentally he was of opinion that some of the hospitals in Dublin could make claims on that scheme. He thought that for every £1 which was raised by contributions, fees, or any other means for the hospitals, £1 should be given by the State, up to 50 per cent. of the annual expenditure of the hospitals.

Sir JOHN MOORE said that one point which was worthy of consideration was the proposal of a State grant to provide equipment for the hospitals, which was a very expensive item, and one which he thought should hardly be a charge on the voluntary subscription-lists of the hospitals.

Sir JAMES CRAIG said that he personally opposed State aid where State aid meant State control. He had heard the Minister of Home Affairs give a very explicit account of lotteries for hospitals. No matter how much control the Government exercised, they could not tell how much fraud went on in connexion with these. The Minister said that he would not allow these lotteries to go on unless a bill was brought in by some private member legalizing lotteries in connexion with charitable institutions.

Dr. R. J. ROWLETTE said that some years ago the hospitals came to the conclusion that they were admitting, and treating free of charge, patients who were well able to pay for their maintenance, and they therefore decided that all patients should contribute as far as they were able to the funds of the hospital. Some of the members of the various hospital boards had thought that this payment by patients would mean a gold mine to the hospitals, and in his opinion they had encouraged it too much. He had suggested long ago that if the hospitals relied too much on payment from patients they would injure both the patients and the hospitals. There was one question which had not arisen here yet, but which would later on, in connexion with payment from the patients. The British Medical Association had said that a definite proportion of the funds which were contributed by the patients towards the maintenance of the hospital should be placed at the disposal of the hospital medical staff. If the hospitals were not charitable institutions there would be no claim on the medical staff to give their skill and time free to these institutions.

The President said that the Dublin hospitals were worthy of support, and of the usual charitable donations which they had received in the past, but they were also worthy of a grant from the State. Very few of the hospitals in Ireland were fully equipped to carry out either surgical or medical work in a really efficient manner, and some of the country hospitals had been closed, with the direst consequences to the people. The British Medical Association had given this subject a great deal of consideration, and had approached it from the medical point of view. Patients admitted to hospital should come under three classes: (1) free or indigent patients, (2) tariff patients, and (3) paying patients.

A MEETING of the Obstetrical Section of the Royal Academy of Medicine in Ireland was held on January 19th, with the President, Dr. BETHEL SOLOMONS, in the chair, when Dr. L. CASSIDY read a paper on pelvic pain from a gynaecological standpoint, which was followed by a discussion. Dr. J. F. CUNNINGHAM demonstrated Kielland's obstetric forceps, which were smaller and lighter than the usual forceps, and were being used increasingly in Vienna. Dr. J. T. SIMPSON showed two urethral calculi, which had caused dystocia. Dr. L. CASSIDY said that he was of opinion that the obstruction was probably caused by the fullness of the bladder, an opinion with which Dr. SOLOMONS agreed.

A CLINICAL meeting of the West Kent Medico-Chirurgical Society was held at the Miller General Hospital, Greenwich, on January 12th, with Dr. E. W. FARMER in the chair. Dr. HILDRED CARLILL showed three cases: (1) A man who suffered from encephalitis lethargica and syphilis of the nervous system; he was unable to wash his face, his features were expressionless, and he had diplopia with unequal pupils. He was treated with one-hundredth of a grain of hyoscine twice a day. (2) A man, 53 years of age, who suffered from tabes dorsalis, with Charcot's disease of the tarsus, and lightning pains in a lower limb amputated ten years ago. His lip was thought first to be sarcomatous and then tuberculous. His pupils were unequal, the ankle-jerk was absent, pressure on the tendo Achillis was not painful, the knee-jerk was present, and there was analgesia of the ulnar nerve. (3) A boy of 13 years, who flexed his neck and spine whenever he spoke; he was able to say a few words without doing so by taking a deep inspiration between each word. Dr. E. P. CUMBERBATCH showed (1) a case of pigmented mole treated by fulguration, and (2) a case of epithelioma of chest treated by diathermy. Dr. ARTHUR DAVIES showed a man of 24 years who was fat, short, with scanty hair, and sexually normal, the underdevelopment being presumably due to polyglandular insufficiency. Dr. E. F. SMITH showed (on behalf of Mr. C. A. JOLL) two cases: (1) A man who had suffered from appendicitis six years previously, a fistula developing which required two operations for its excision. (2) A man aged 21, with the appearance of a boy of 12 years; x-ray examination showed neoplasm of brain; he had been treated with 5 grains of thyroid extract daily.



## Reviews.

### THE POISONS AND CHARM CURES OF MALAYA.

A second enlarged edition of Dr. JOHN D. GIMLETTE's book on *Malay Poisons and Charm Cures*,<sup>1</sup> of which the first appeared in 1915, has now been issued. He writes with authority, for not only has he spent more than twenty years in Malaya, but he has had very unique opportunities for obtaining information; the late Sultan of Kelantan was kind enough to depute the Secretary to the Kelantan Ecclesiastical Council and two of the medicine men to the Royal household to assist Dr. Gimlette in preparing the second edition of his book. In a foreword Sir William Willcox mentions that the Government of the Federated Malay States has given its support to the publication of the book, and points out that a large proportion of the poisons and drugs mentioned are potent substances with unknown active principles, so that they offer a promising field for research. Dr. Gimlette's book will interest many classes of scientists; it is of value to the anthropologist in that it gives an accurate first-hand account of native folklore, much of which is of a secret nature, and it is of very great interest to the pharmacologist for the reason mentioned by Sir William Willcox. It is not surprising to learn that the first edition was used extensively as a reference book in poison trials in the Malay States.

The book is chiefly concerned with the work of the "bomors," or medicine man, who is an important figure in Malay society. Clinical medicine and magic are closely allied in Malaya, and the medicine man deals in both. The origin of the magic employed is complex; it has its foundations in the original animistic beliefs of the Malays, and upon this stock have been grafted both Brahmin and Mohammedan superstitions. The final results are charms and incantations of a purely pagan nature, commencing and ending with prayers to Allah, a compromise being thus established between the ancient folklore and the newer creed of Islam. The "bomors" are of various classes: some are simple village medicine men, others are priest-physicians and masters of the occult sciences, whilst a few are dangerous characters who specialize in poisons. Dr. Gimlette describes in detail various interesting charms, incantations, and spells, some of which, he says, are secret, being known only to a limited number of "bomors."

The greater part of the book is devoted to a description of the various poisons in use in Malaya. About twenty animal preparations are mentioned which appear to contain definitely toxic substances; these are chiefly derived from poisonous fishes, toads, and insects.

The vegetable poisons of Malaya are numerous and potent; some are well known to European medicine—for instance, *Croton tiglium* (croton oil), the upas tree, *Antiaris toxicaria*, and the upas climber, *Strychnos tieuti*, the active principle of which is brucine.

In addition to these a considerable number of very potent substances are described by Dr. Gimlette which are new to European medicine. Malaya is indeed extraordinarily rich in vegetable poisons; the poisons used by the wild tribes on their arrows are in many cases complex preparations; as many as thirty different substances are known to be employed by the various tribes for this purpose. The arrow poisons are very deadly, and it is stated that five arrow wounds suffice to kill an elephant.

Criminals show a considerable ingenuity in choice of poisons. The harmlessness of powdered glass is recognized, and it is seldom given alone. Numerous vegetable poisons are employed. Several specimens of datura are known which contain hyoscyne, and these plants are used to produce stupefaction. The plant is burnt beneath the bamboo huts, and the fumes are stated to produce unconsciousness; this device is used by thieves.

It is, however, interesting to learn that in spite of the immense variety of unknown and potent vegetable poisons, criminals employ largely the common minerals arsenic and potassium cyanide. The ancient device of treacherously killing a guest by poisoning one side of a knife is known in Malaya: the knife is smeared on one side with potassium cyanide and honey, and the poison is administered during the cutting up of a water melon. The antidote for cyanide poisoning is complex, since it contains the helmet of the

soft-billed hornbill, the tusk of an elephant, and the bones of a dugong. This mixture is almost more surprising than a formula in modern polyglandular therapy.

### EPILEPSY.

EPILEPSY, though a disease which can never fail to attract attention or to demand relief, is accorded in many textbooks only the most conventional description. Hence we welcome Dr. CESTAN's monograph,<sup>2</sup> for the wider the experience of the observer the more fully is he impressed by the complexity of the disease and the difficulty of its treatment. Dr. Cestan gives a good account of the various forms of epilepsy, both those which are symptomatic of some underlying disease and that peculiar disorder known as idiopathic or essential epilepsy. The clinical features of the epileptic attack, both the grand mal and the petit mal, are carefully and fully described. Next the peculiar features of the Jacksonian, or, as our French colleagues term it, the Bravais-Jacksonian, attacks are considered and their significance discussed. In a chapter on the mental disorders which may complicate the disease, the so-called psychic equivalents and the varieties of the post-epileptic state receive careful attention, the subject being illustrated by many valuable clinical cases. A short but useful chapter on its medico-legal aspect, especially in relation to criminal responsibility, is of great interest at the present time.

The differential diagnosis between hysteria and epilepsy is often not the relatively simple matter the author would have us believe; the truth of this is indeed well illustrated by an admirable anecdote of Trousseau's quoted by the author. Very debatable ground is traversed in the brief section on the pathogenesis of the epileptic syndrome, and we may regret that so little is said as to the possible relations of abnormal "protein sensitivity" in this disease.

The epileptiform attacks occurring in cerebral lesions, both traumatic and other, are adequately described, as well as those forms found in various states of toxæmia, such as uræmia and eclampsia. The various theories as to the etiology of idiopathic epilepsy and its relation to infantile convulsions are fully discussed, and practical deductions of value for prognosis and treatment are made. The concluding section on treatment is good and concise and commendably free from prejudice. We note with interest the author's favourable opinion of the value of luminal, or gardenal, as it is termed in France.

Perhaps the author might have insisted more on the fact that every epileptic is a law unto himself, and that every case should be studied strictly on its merits, especially in regard to treatment. Little reference is made to the claims of those who urge the value of psychotherapy, but whether this omission is due to conviction or to lack of knowledge we know not. Altogether a very readable book, it cannot be said to teach the profession anything new. But as a monograph to supplement the ordinary textbook for the student we have nothing but praise for it.

### THREE TEXTBOOKS OF DERMATOLOGY.

Of making many books there is no end, especially in America. What is more remarkable is that America, with but a little help from this side of the Atlantic, appears quite able to absorb them. Here are three noble volumes devoted to the science and art of dermatology, each of which has succeeded in living beyond its initial edition; one of them, Schamberg's, has now attained its fourth. There is a very considerable similarity between these books. They each take as their province the whole of the subject, and thus a large proportion of each is composed of second-hand information culled from the works of previous writers, to whom each of the authors duly acknowledges his indebtedness. Consequently the personal note, which is so valuable and makes a textbook so much more interesting, is only occasionally heard. Each work is profusely illustrated with photographs, most of them quite good, and with a few coloured plates, which are not so good. Moreover, although the illustrations are of different patients, the authors have selected cases of such similar characteristics that the pictures would be quite easily interchangeable between the volumes. Each adopts substantially the same classification, that of Hebra, which was originally entirely pathological but lately has been modified by modern discoveries of the etiology of many dermatoses.

<sup>1</sup> *Malay Poisons and Charm Cures*. By John D. Gimlette, M.R.C.S., L.R.C.P. Second edition. London: J. and A. Churchill, 1923. (Demy 8vo, pp. 240; 24 illustrations, 8s. 6d. net.)

<sup>2</sup> *Les Epilepsies*. By Dr. R. Cestan. Paris: F. et J. Flammarion, 1922. (Cr. 8vo, pp. 275. Fr. 7.50.)



especially of infective conditions. Each is well and clearly printed on nice thick smooth paper, and they are all published at about the same price, which is somewhere between £1 and £2.

No revolutionary doctrines will be found in any of them, but each is pretty well up to date and abreast of the latest advances which have been made in the subject. Owing to modern facilities for travel dermatologists in every country have frequent opportunities of meeting one another, and consequently they, as a rule, come to a common decision on most points, and there is not much room left for marked differences of teaching on important matters. This common standpoint does not, however, prevent most dermatologists from producing textbooks of the subject, which in consequence are sound enough but distressingly devoid of originality. Sometimes, when they consider the number already before the medical public, their consciences compel them to apologize for the new arrival in the inevitable preface, and they next proceed to point out that they have produced something unlike all its predecessors. But an unprejudiced student of dermatological literature is often hard put to it to discover the novelty claimed.

Of the three volumes now before us Dr. ORMSBY'S<sup>3</sup> is the biggest, chiefly because he devotes more attention than the two others to the literature of the subject, the references are fairly copious, and he has attempted a complete treatise on the subject. In fact his book bids fair to become a serious rival to Stelwagon's well known work, but at present it is not so complete. In the study of tropical dermatoses American dermatologists have a certain advantage over their British brethren, for the tropics lie almost within their own borders and they are not, as we are, dependent for their material for observation on chance sea-borne cases. All the authors whose books are now under consideration have availed themselves of their facilities in this respect, and one of them, Dr. HAZEN,<sup>4</sup> has made a special study of skin diseases as they are seen in the negro; for this he has enjoyed exceptional opportunities, for he practises in Georgetown, District of Columbia, which is not far from the old slave states. The chief peculiarities seem to be that the skin of the full-blooded negro is more resistant to external irritants than that of the white man, though the mulatto does not enjoy this relative immunity; acute forms of irritant eczema are not so frequent in negroes, and the common septic disorders—impetigo, boils, and abscesses—are neither so common nor so severe. Psoriasis is rare and lichen planus infrequent. More interesting still is the fact that cutaneous carcinoma is comparatively uncommon, owing probably to the fact that even in the aged negro who has spent most of his life in the open air the senile degenerative changes manifested by scaly dry spots are almost unknown. On the other hand, keloid is well known to be more common among negroes than whites, and so is leucoderma. Syphilis also is more common among negroes, but this is probably due to economic rather than racial causes.

The most distinguishing feature of Dr. SCHAMBERG'S book<sup>5</sup> is the large amount of space he gives to the eruptive fevers. He is evidently one of those favoured dermatologists who have had exceptional opportunities for studying them. Most dermatologists have had to surrender that portion of their subject to the superintendents and other medical officers of fever hospitals. His article on small-pox is particularly full and interesting. He also has a useful section on x-ray treatment. It appears that in America the Sabouraud pastille, for some reason or other, probably atmospheric, does not register properly. Hence the Americans have been compelled to work out an electrical formula for timing the exposure. As the ordinary gas tube cannot be relied upon to give always the same dose under the same conditions American dermatologists are almost obliged to use the Coolidge tube for treatment since that, up to the present, is the only tube which gives uniform results. Dr. Schamberg's work, of course, is well known to all dermatologists, and his name will always be associated with the peculiar pigmentary disease of the skin called after him. In this volume he demonstrates his modesty by devoting only a very few lines to its description. He might justifiably have given more, for since he first described it other observers

have shown that it is by no means so uncommon as was thought at one time. Some of his other sections are a little scrappy—that, for example, on drug eruptions, one of the most important subjects in dermatology for the general practitioner.

In conclusion, it may be said that from each of the three books here dealt with the student or practitioner may gain a sound knowledge of the subject so far as it is possible to do so from a textbook, but, as we began by stating, there is no really outstanding feature about any one of them.

### THE EVOLUTION OF CONTINUITY.

DR. DAVID RUSSELL, in his book *The Evolution of Continuity*,<sup>6</sup> has set himself the task of demonstrating that one evolutionary principle rules throughout all nature, and that, true to this principle, all matter has been evolved into being, and the many fundamental species of dead and living matter have been differentiated. He contends also that the outstanding phenomena of living growth and reproduction reflect the action of the common factor behind all evolution. For the purpose of his thesis, as there is no such thing as absolute continuity of matter in the natural world, the word "continuity" is used to express that more or less firm attachment of component elements which resists the forces making for their severance or dissipation into wide discontinuity. Thus he explains, "the atom preserves the relative continuity of its system of revolving electrons, the living cell its protoplasmic continuity, and our bodies their cellular and tissue continuity." Though maintaining that the underlying principle is the same for all forms of matter Dr. Russell devotes the greater part of his book to the evolution of the living species and the development of the theory that this is based on the fundamental evolutionary principle, the evolution of continuity. His view seems to be that though the general principle of natural evolution is on an unshakable basis, the bed-rock of the process has never been clearly displayed, mainly because all investigators have hitherto accepted the dictum *Natura non facit saltum*. Dr. Russell believes that nature does take leaps, small and large, and that modifications of type must essentially be always sudden. Unless we mistake his meaning, his contention is that though a more perfect geological record would provide invaluable information, yet, unless his theory is accepted, there would always be large gaps in the chain of evidence, "missing links" which could only be satisfactorily explained by the view that nature in the course of evolution had never seen fit to forge them.

The author formulates four fundamental laws of growth: 1. All growth is a manifestation of the forces of attraction and repulsion in action. 2. Fertilization produces multicellularity. 3. Environment produces continuity. 4. Continuity produces arrest, and, with arrest, control—that is, the power to maintain, arrest, or release from arrest. A breakdown of the control system entails the complete discontinuity of the individual's parts, the loss of identity, death. He traces the application of these laws from the lowest forms of life to the higher and more complex forms. He explains the formation of abnormal growths or tumours as being due to the action of diverse agencies which cause an initial break of cellular continuity whereby the normal process of cell arrest is broken. In working out his theory Dr. Russell combats the Darwinian view that the variation to which must be attributed the origin of subspecies may be due to a variety of causes; he holds that variation has been acquired from environment only, and that the acquisition must have been sudden. He sums up his main argument thus: "All characters have originated as acquired variation under the influence of environment. Life itself originated as an example of such variation."

Dr. Russell's opinions are expressed in such a thoughtful and scholarly manner that they at least merit the careful consideration of biologists.

### THE COURSE AND PROGNOSIS OF PHTHISIS.

IN a small book on the cure of pulmonary tuberculosis, Dr. R. BURNAND deals not with the diagnosis, nor with the pathology, nor even primarily with the treatment of phthisis, but with the clinical course of the disease followed from the outset

<sup>3</sup> *A Practical Treatise on Diseases of the Skin*. By Oliver S. Ormsby. M.D. Second edition. Philadelphia and New York: Lea and Febiger. 1921. (Med. 8vo, p. xiv + 1166; 448 figures.)  
<sup>4</sup> *Diseases of the Skin*. By H. H. Hazen, A.B., M.D. Second edition. 1921. (Med. 8vo, pp. 8vo, pp. 608; 240 figures. 37s. 6d.)  
<sup>5</sup> *Diseases of the Skin and the Eruptive Fevers*. By J. F. Schamberg. London: Henry Kimpton. 1922. (Roy. 8vo, pp. 626; 265 figures. 25s. net.)  
<sup>6</sup> *The Evolution of Continuity in the Natural World*. By David Russell, M.D. London: George Allen and Unwin, Ltd. 1922. (Demy 8vo, pp. 278; 95 figures. 16s. net.)  
<sup>7</sup> *La Guérison de la Tuberculose Pulmonaire*. By Dr. R. Burnand. Paris: J. B. Baillière et Fils. 1923. (Cr. 8vo; pp. 193. Fr. 6.)



to its arrest or fatal termination. It is a subject which is quite inadequately treated, even in pretentious textbooks, and, though there is nothing original in the matter, the author has succeeded in bringing together into a small compass a considerable amount of information scattered through original papers and memoirs not readily available to the general reader. Tuberculosis is different in many ways from other diseases: it is one in which a cure in the sense of a *restitutio ad integrum* does not take place, while often the best that can be hoped for is the establishment of an equilibrium between the patient and the invading bacillus. He emphasizes this point very carefully. He points out that though tuberculosis may be the most curable of chronic diseases, it is also the most chronic of curable diseases, and that therefore prolonged treatment continued diligently and conscientiously for the rest of the patient's life is essential if the primary arrest is to be maintained. This is especially important as those who are clinically cured of the disease tend gradually to lose their immunity, and unless particular care be taken as to the hygieno-dietetic mode of living serious relapses may occur even after several years. This somewhat gloomy view of the prognosis of tuberculosis he supports by extracts from the statistics at Leysin.

The main portion of the book is occupied with the actual study of the progress of the disease, considered from a clinical standpoint. Accepting Bard's classification, Dr. Burnand divides pulmonary tuberculosis according to its anatomical seat of attack—that is, as to whether it affects the parenchyma, the interstitial tissue, the bronchi, or the pleura. Any case of phthisis referred to one of these categories—which are, of course, amplified—tends to evolve along a certain definite line, so that a case primarily of caseous type will tend to remain caseous, one of a chronic fibrosing type will tend to retain its tendency to fibrosis, and so on. It is the more or less distinctive autonomy of each of these classes which he then proceeds to describe. Passing on, he deals with individual symptoms, and indicates the amount of weight which is to be attributed to each in judging the condition of the patient. Great stress is laid on the limitations and the difficulties in interpretation of auscultatory findings. These at best furnish a knowledge of the local lesion in the lung, but they can afford no idea as to the general resistance of the body. The effect of therapeutic measures on the progress of the disease is considered briefly and the criteria of recovery laid down. In his opinion, speaking generally, it is unwise to pronounce the word "cure" till the patient has been free from all signs of active tubercle for a year—a year, too, in which he has returned completely to his normal mode of life. We have every confidence that this book will be of considerable value, especially to those whose knowledge of the disease is limited by their lack of experience in following its course. In recommending it to our readers we feel that it is only necessary to point to the distinguished name of its author, Dr. Burnand, the Medical Director of the Leysin Sanatorium, to ensure its welcome reception.

#### RENAL AND GENITO-URINARY DISEASES.

*Reins et Organes Génito-urinaires*,<sup>9</sup> by MM. BRAULT, COTTET, MICHON, LEMAIRE, LOUSTE, and HAZARD, is the thirteenth volume of the treatise on medical pathology and therapeutics appearing under the direction of Emile Sergent, L. Ribadeau-Dumas, and L. Babouneix. Ideas concerning the kidneys, the physiology of urinary excretion, and the pathology of nephritis are in such a state of flux that any work which gives a precise and clear view of the subject is to be welcomed. In the volume under review the task of making a survey of this interesting portion of the field of medicine has been entrusted to Drs. Brault, Cottet, Michon, Lemaire, Louste, and Hazard. The subject is difficult; no one can look at the literature on, say, the classification of the different forms of nephritis without being impressed by the great divergency of views. So is it with such subjects as the estimation of renal function, the pathology of uraemia, and the relation of vascular to renal lesions in certain forms of nephritis. The sympathy of any reviewer must, therefore, be extended to authors grappling with such subjects. It cannot, however, be said that those responsible for the volume have succeeded. The reader loses himself amongst a mass of facts, and when he lays down the volume will probably have no clearer view of

renal pathology than he had when he started. It is indeed difficult to know exactly to what class of student the volume will appeal. To the ordinary medical man who has made no special study of the genito-urinary system and its diseases it will provide stiffer reading than he is prepared to tackle. For the expert urologist it presents deficiencies that will prevent it from being of any more value, for it cannot be regarded as a work of reference. The literature on which it is based is almost entirely French; little reference is made to the work of foreign authorities.

In the second part of the work are sections dealing with diseases of the genital system, both male and female, whilst the third part is devoted to the analysis of urine. With the exception of some figures in the last section, the book is entirely without illustrations. In this respect it differs from some of the other volumes, notably the excellent volume by Legoux and Papin on urology, but the presence of a few more suitable plates and diagrams would have done much to make the reading of this volume an easier task.

#### AN INCOME TAX GUIDE.

*The Income Tax Guide*<sup>10</sup> issued by Messrs. Nelson has been prepared by a competent writer on proper lines, and is published at a reasonable price. Mr. SULLEY's service as an inspector of taxes has evidently shown him what is expected from such a handbook; for instance, he includes in his survey that separate application of the law and practice to the manufacturer, the tradesman, the professional man, the employee, etc., which is the help usually found to be most effective, but which is seldom if ever supplied at so low a price. Indeed, the matter is carried even farther, seeing that the chapter on the professional man's difficulties is subdivided, and those of the doctor, the lawyer, the clergyman, and others are dealt with separately.

The author's official experience is drawn upon to supply useful hints; his plea for accuracy in detail—"Round figures should always be avoided; they are officially suspect"—carries force, and his *obiter dictum* on the attitude of General Commissioners towards appeal proceedings might well be remembered by intending appellants—"that body dearly hates to have long or frequent sittings and to have to listen to small matters." The section dealing with the doctor includes a model form of account, with a specimen list of working expenses, for ascertaining the average liability, beside other information which should prove useful. Such matters as the adjustments obtainable where one person succeeds to a practice carried on by another, the procedure for obtaining repayment, and so on, are effectively dealt with. There are, of course, imperfections—for instance, the special allowance of £45 in respect of wife's earnings is no longer conditional on their being independent of the husband's earnings; and, in a somewhat similar connexion, the wife of a husband who has no residence in this country is not, in general, assessable in respect of remittances from his earnings, though the note on page 27 would lead the reader to assume the contrary. On the whole, however, this little book can be recommended as giving as good value for the price as can be obtained anywhere in this field.

#### NOTES ON BOOKS.

THE thirty-third edition of *Burdett's Hospitals and Charities*<sup>11</sup> has recently been published, and although the range of information has been increased it has been found possible, by the exclusion of all obsolete matter and by condensation and revision, to reduce the size of the volume by over a hundred pages. The military and naval section has been augmented, particulars of hospitals where the Ministry of Pensions has financial liability have been added, the new names of Poor Law infirmaries are given, with a list of the local committees set up by the Voluntary Hospitals Commission appointed by the Ministry of Health. The first 66 pages deal with hospital finance, the classified lists, with the analysis of the expenditure under different heads and the sources of their incomes, being particularly useful. Then follows the detailed directory of hospitals and other charitable institutions, occupying some 800 pages, and including hospitals not only in Britain but in the dominions, colonies,

<sup>9</sup> *Traité de Pathologie Médicale et de Thérapeutique Appliquée*. Published under the direction of L. Sergent, L. Ribadeau-Dumas, and L. Babouneix. Tome xiii, *Reins et Organes Génito-urinaires*. Paris: A. Maloine et Fils, 1923. (Demy 8vo, pp. 831; 61 figures. Fr. 35.)

<sup>10</sup> *Nelson's Income Tax Guide*. By P. Sulley. London, Edinburgh, and New York: T. Nelson and Sons, Ltd., 1923. (Cr. 8vo, pp. 221. 2s. net.)  
<sup>11</sup> *Burdett's Hospitals and Charities, 1922-23*. Founded by Sir H. Burdett, K.C.B., K.C.V.O. Thirty-third year. London: The Scientific Press, Ltd., 1923. (Cr. 8vo, pp. lxxxvi + 875. 17s. 6d. net.)



America, and other foreign countries. It is interesting to note among the many other details that in Australia, although the hospitals appear to be managed by elected committees of subscribers, large grants are made by the Government. In connexion with the American hospitals the size of the medical staffs is noticeable, particularly perhaps in the special hospitals of New York; one of the New York eye, ear and throat hospitals, for instance, with 175 beds, has a staff of thirteen consulting surgeons and two physicians, thirty-four surgeons and eight clinical assistants in the ophthalmic department, thirty-four surgeons and five clinical assistants in the aural department, forty-three surgeons and five clinical assistants in the throat department, and seven house-surgeons—nor is the size of the staff of this hospital unusual as compared with others in that city.

In the preface of his monograph, *Anaesthesia in Children*,<sup>11</sup> Dr. HEWLETT states that "most of the elementary teaching has been omitted. . . . As far as possible simple methods have been described in order to make the book more useful to the general practitioner who is unable to employ complicated apparatus." Yet among the illustrations one finds figured Boyle's gas and oxygen apparatus, the direct vision laryngoscope, Hood's apparatus for infusion anaesthesia, the Davis gag, and the Yankhauser combined pressure and suction outfit; moreover, in several cases the methods for using such apparatus are fairly fully explained in the text. It is, however, unlikely that the average general practitioner will go to the expense of providing such instruments. Though the author can hardly be said to have achieved his object of describing only simple apparatus, there is little fault to be found with his teaching. As is but natural, ethanasesol comes in for a full description at the hands of its pioneer administrator, and various little "gadgets" invented by him are also described. Should a second edition be called for the author will do well to revise the text carefully in order to remove some literary blemishes which have escaped his eye.

Judging from the output in America of handbooks intended for non-medical readers, the lay public seems more open in the New World to personal education on health subjects than in this country. *Personal Hygiene Applied*<sup>12</sup> is a book of this class; in the course of fourteen chapters the author, Dr. J. F. WILLIAMS, discusses the application of the principles of hygiene to the various functions and organs of the body—the muscular and skeletal systems, nutrition, respiration; the circulatory, excretory, and nervous systems; the sexual aspects of life; the mouth, eye, and ear; the prevention of specific disease, and other such matters. The author deals faithfully with Christian Science, osteopathy, and the occult. Here and there in the volume he takes the opportunity to expose "prescription fakes" and misleading advertisements. He discusses the forces of instinct and of intellect in determining human conduct, and urges that the ideal of social responsibility arises out of the nature of life, each individual being a link in the chain of life, and an heir to the inheritance of life, with its responsibility. The book is well fitted to fulfil its purpose.

Dr. WILLIAM WILSON's *Handbook of Aural Surgery for Students and Practitioners*<sup>13</sup> would have been better described as a synopsis of otology, for the work takes that tabulated literary form which is becoming ever more familiar, and the author does not confine himself to the surgical side of his subject. Descriptions of some recent operative methods have been introduced into the text which seem a little out of place, having regard to the scope of the book as expressed in its title. It is hardly likely, for example, that either a student or a practitioner will be called upon to perform an elaborate operation on the labyrinth, whilst the style of the book, though convenient for reference, makes consecutive reading difficult. Where economy of space is of importance in order to cover a wide range of topics this method of writing may be justifiable, and for those who take their reading as a draught of medicine the book can be safely recommended; but anyone who expects to derive pleasure as well as instruction will, we fear, be disappointed. The information and advice given are clear and on the whole orthodox; but the author is at some pains to point out that he considers himself in certain respects in advance of opinions generally accepted, and especially of those likely to be held by examiners. The book should serve as a useful introduction for anyone taking

a course in the subject, though unnecessary stress is laid upon rare conditions and upon elaborate operative procedures seldom required and difficult to perform.

Professor MAX NEUBURGER of Vienna deserves our gratitude for bringing out in facsimile the original edition of Leopold Auenbrugger's *Inventum Novum ex Percussione Thoracis Humani, ut Signo Abstrusos Interni Pectoris Morbos Detegendi*<sup>14</sup> (1761), and also the translations into French by J. N. Corvisart (1808), into English by Sir John Forbes (1824), and into German by S. Ungar (1843). This interesting reproduction is rendered more complete by Professor Neuburger's biography of Auenbrugger, which contains two facsimile letters to his senior contemporary the omniscient Albrecht von Haller of Bern. Of the three portraits in the volume two are of Auenbrugger, that inserted at the beginning of his life being the better; the other portrait is appropriately that of Corvisart. Auenbrugger published the *Inventum Novum* when he was 38 years of age, but it was years in advance of the times and did not receive its due recognition until Corvisart's influence brought its principles into medical practice. Corvisart's translation appeared the year before Auenbrugger's death in 1809. This well printed volume will appeal to the growing number of those interested in medical history.

*Willing's Press Guide*<sup>15</sup> is a useful work of reference containing a list of the newspapers and periodicals published in Britain, with particulars of their date of foundation, politics (if any), date of publication, price, and address; lists are also given of overseas, American, and of the principal newspapers printed in various countries, as well as of Continental newspapers published in the English language. The British periodicals are further divided according to their interests, professions, trades, sciences, and subjects; the London addresses are given of colonial, foreign, and provincial newspapers, and provincial newspapers are also arranged according to the counties and towns where they are published. An interesting couple of pages are devoted to those newspapers and periodicals which date back to the seventeenth and eighteenth centuries: with the exception of the official *Gazettes of London* (founded at London), *the Edinburgh Gazette* (founded at Edinburgh), and *Dublin*, the earliest newspaper to be the *Worcester Postman* (subsequently called *Berrow's Worcester Journal*), which was founded in 1709.

*Small-pox and Vaccination in Barbados*. Dr. JOHN HUTSON, who holds the office of Public Health Inspector for Barbados, has reprinted as a pamphlet three articles he contributed to the local press in exposition and defence of vaccination. Thirty years ago Dr. T. L. Gaskin had taken similar action to counteract prejudice then existing. It appears that recently there had most unfortunately occurred two deaths in one household within two weeks after vaccination, and this naturally caused a revival of antivaccination writings. Dr. Hutson's articles show close and extensive knowledge of the subject, and are written calmly and convincingly. They ought to have much effect with reasonable readers, and should evoke the thanks of all who are interested in the protection of the inhabitants from the scourge of small-pox.

<sup>14</sup> Leopold Auenbrugger's *Inventum Novum*. Facsimile nach der Ersten Ausgabe. Begleitet von der Französischen Übersetzung Corvisart's, der Englischen von Forbes, der Deutschen von Ungar. Herausgegeben und mit einer biographischen Skizze versehen von Dr. Max Neuburger. Wien und Leipzig: Josef Scharf. 1922. (Med. 8vo; 3 portraits, 2 facsimile letters. In boards, £1 1s. 3d.; in half-morocco, £1 5s. 9d.)

<sup>15</sup> *Willing's Press Guide*. Fiftieth year. London: J. Willing, Ltd. 1923. (Demy 8vo, pp. xl + 451. 2s. 6d.)

## MEDICAL AND SURGICAL APPLIANCES.

### A Non-Grip Cover-slip Holder.

DR. M. W. GEFEN has devised a non-grip cover-slip holder for microscopic work. It consists of a stiff wire framework fused into a glass-rod handle. The wire is bent into the shape of two Y's, one above the other, and united at the ends of all three arms of one Y to the corresponding arms of the other. The cover-slip is inserted between the two Y's, where it will remain in position until the instrument is held end downwards, when the cover-slip slides gently out on to the slide, as required in mounting. At the choice of the user, the glass-rod handle may be bent at a right angle, or circularly, so that the holder will not roll, and an upward bend to the wire stem leaves the slip secure and steady. The wire has been chosen to stand the flame well, and will not readily corrode with wet or acids; it is quite pliable, and can be easily bent between the fingers to hold any size of cover-slip. The bent instrument, he considers, presents the following advantages: that its cost is trifling; that there is no grip on any part of the slip, so that breakages are avoided; that play is allowed for expansion in the flame; that the handle is long and made of non-conducting material; that the wire is malleable; and that sterilization by flame is easy. The instrument is made by Messrs. Allen and Hanbury.

<sup>11</sup> *Anaesthesia in Children*. By C. Langton Hewar, M.B., B.S. Lond., M.R.C.S. Eng., L.R.C.P. Lond. London: H. K. Lewis and Co., Ltd. 1923. (Cr. 8vo, pp. viii + 111; 31 figures. 4s. 6d. net.)

<sup>12</sup> *Personal Hygiene Applied*. By J. F. Williams, A.B., M.D., Philadelphia and London: W. B. Saunders Co. 1922. (Post 8vo, pp. 412. 12s. net.)

<sup>13</sup> *A Handbook of Aural Surgery for Students and Practitioners*. By William Wilson, M.D., B.Sc. Manchester: Sherratt and Hughes. 1922. (Cr. 8vo, pp. 336; 100 figures. 15s.)



## British Medical Journal.

SATURDAY, FEBRUARY 10TH, 1923.

### THE TREATMENT OF GASTRIC AND DUODENAL ULCERS.

SYDNEY SMITH is credited with having made the very commonplace remark that "It is wonderful what a different view we take of the same event four-and-twenty hours after it has happened." And these words, commonplace though they are (for they have been uttered by humanity before and since Sydney Smith's time), must have sounded like the epitome of wisdom to those who heard and to those who will read Sir Berkeley Moynihan's address delivered at the Hunterian Society meeting in London on January 29th. The subject of the address was "Some problems of gastric and duodenal ulcers," and in a delightful way the salient points of a much-debated problem were isolated and considered. It is in connexion with the recommended treatment that Sydney Smith's words seem so apposite, for Sir Berkeley advises that, to obtain the best results, chronic gastric ulcer should be dealt with by the operation of partial gastrectomy. Ten years ago what would we have said to this recommendation? Yet to-day it is difficult to see what answer but that of assent can be given to Sir Berkeley's advice.

The address is full of a wide variety of clinical wisdoms. There are none of us who can afford to neglect the advice as to the value of constantly reviewing and examining case results. The successful surgeon must be an optimist, but rose-coloured spectacles should not be included in his gifts. "To see things as they are, to know the truth, and thence to find the right"—in these things the modern surgeon will do well to follow in the footsteps of the Roman sage. As the lecturer very aptly puts it, "To review our own work is a very stern and salutary discipline"; and "From a long array of cases we can glean knowledge that the single case can never disclose. The years certainly teach much that the days never knew." It is difficult to over-estimate the value of such advice, more especially in days such as these, when almost every aspect of our lives is in a constant whirl of change. When those who are responsible for much of our modern surgical and medical literature will act upon this truth less ink will be spilled and more truth will be told.

Ten years of experience in the treatment of gastric and duodenal cases forms the subject matter of the address: it embodies a total of 718 cases, 531 of these being duodenal and 164 gastric ulcers. Only chronic ulcers are included in the category, and a clear line of distinction is drawn between the chronic and the acute types of the lesion. The differentiation is important because the problem which each presents is vitally different; whether viewed from a clinical or an operative standpoint, there is a very clear and evident distinction. As Sir Berkeley points out, it is the chronic ulcer which gives us anxiety, for it is in this variety that we meet with the disastrous complications of haemorrhage, perforation, and malignant degeneration.

The problem of the etiology of chronic gastric and duodenal ulcers remains unsolved; it is assumed that an acute ulcer may form the nidus in which the chronic ulcer eventually develops, but such an answer is insufficient. In this connexion Sir Berkeley makes no mention of the influence of distinctive types of stomach cells upon the

situation and occurrence of the disease, though recent histological work on the "map" method suggests the importance of this influence.

Great interest from the pathological point of view centres round the question of malignant degeneration in the ulcer. There are few who will dispute the possibility of the event, and the instances the lecturer quoted should convince the most sceptical. The recognition of the possibility is of extreme importance, and it naturally forms one of the strongest arguments for surgical ablation of the ulcer. It is refreshing to find that this shrewd observer attaches the greatest importance to the careful interrogation of subjective features. It is well that we should be reminded of this, for the technical nature of many modern methods of investigation is sometimes apt to overshadow the personal subjective factor. An impressive distinction in this connexion is drawn between the individual clinical histories of a gastric and of a duodenal ulcer.

Apart from the clinical history, radiological examination and gastric analyses afford the information upon which the diagnosis is eventually based. The visible evidence of x-ray examination will probably continue to be our most valuable mechanical aid. The demonstration of a "crater" is proof positive, but there are many who will not share Sir Berkeley Moynihan's confidence in the "niche" and the "notch"—the latter especially is open to suspicion, for its interrogation may be read as a localized contraction of the stomach, and it has been demonstrated as a "fractional gastric analysis" has displaced other methods of gastric analysis, but the method has not yet been brought to the pitch where its evidence can be regarded as more than confirmatory. The curves obtained from a fractional gastric analysis may afford suggestive information, but, while a positive result is of value, nothing can be assumed from a negative reading. This is especially manifest in duodenal ulcer—in hyperchlorhydria the curve of "terminal ascent" may only be met with in a small proportion of the cases. The method, as yet in its beginnings, promises, however, to be of increasing value.

A considerable proportion of the address is devoted to a consideration of the curative value of medical treatment. Sir Berkeley Moynihan claims that he is a physician who has been led by force of circumstances to practise surgery, and it seems to us that he has stated the arguments of the relative values of medical and surgical treatment with remarkable fairness—in fact, he has given the former a consideration which should prove a stimulus to the physician. He has demonstrated to his own satisfaction that the chronic gastric ulcer is capable of spontaneous cure, for the healed scar has been apparent *post mortem*, but he asks the physician to supply the explanation and to initiate the successful treatment. Until this distant goal (we had almost said "Utopian," but there is surely nothing chimerical in the possibility) is reached the claim of the surgeon, as expressed by Sir Berkeley Moynihan, is that the ulcer-bearing segment of the stomach should be removed. The pleas which he brings forward are extremely cogent, and it is difficult to raise any strong objection to them; one aspect of the argument for operation, however, demands a passing notice. Sir Berkeley Moynihan claims that the extraordinarily low mortality associated with the operation is one of the strongest arguments in its favour, but it is here that the personal factor bulks so largely. The operation of gastrectomy will always be one of the most serious operations of surgery, and judgement and exquisite surgical technique are demanded if uniformly successful results are to be attained. To an onlooker it may seem that with such an extraordinarily low associated mortality



the operation must be one of simplicity and inherent safety—and so it is in the hands of an expert, but any error of technique or judgement is likely to be followed by disaster. A word of warning on this point might with advantage have been uttered.

There is one last feature connected with gastrectomy which calls for mention. Experimentally the operation has been followed by a curiously large proportion of acute jejunal ulcerations. This is especially so in the dog, where the active acidity of the gastric contents is badly tolerated by the intestinal mucosa. It would be interesting to know whether, when the operation in man is done in the presence of hyperchlorhydria, there is a greater liability to this complication. We observe that the lecturer records its occurrence in several duodenal cases, and this is the explanation which suggests itself. Experimentally a very long interval of time sometimes elapses before the jejunal ulceration manifests itself; have we any reason to fear its development as a late result in gastrectomy? Possibly it is yet too soon to say. "It is wonderful what a different view we take of the same event four-and-twenty hours after it has happened."

### THE INSURANCE MEDICAL SERVICE.

During the past two years there have been suggestions from several quarters that an inquiry should be held, by Royal Commission or otherwise, into the working and effects of the National Insurance Acts. It has not in every case been evident that the motive prompting the suggestion has been a simple wish to discover truth: indeed, it has been accompanied sometimes by the avowed hope that discredit would be brought on the Insurance Service. Nor has the purpose of the inquiry been clearly stated. It might be threefold: into the finances of the Acts, both as to their administrative cost and as to the allocation of the funds to the different benefits provided; into the efficiency of the working of the system within the limits laid down, and the desirability and method of extending those limits; and into the effect of the system upon public health and national well-being. The time may be almost ripe for an inquiry limited to the first of these purposes. Further experience over a number of years under more normal conditions is probably required before any safe conclusions can be drawn as to the third. With regard to the second, more practical results than could be expected from any inquiry may accrue from such Conferences as that which was held last week at the invitation of the Insurance Acts Committee of the Association, and from the work of the standing committee which that Conference set up.

As will be seen from the full report in the SUPPLEMENT, the scope of the Conference was wisely limited: within this scope it should prove helpful. No representatives of the Ministry of Health were present, but all other sections of National Health Insurance workers were adequately represented. Scotland and Wales had spokesmen of marked ability. The atmosphere soon became friendly, though this did not prevent the complaints and criticisms of all sections being quite outspoken. This was as it should be. Some three or four of the speeches from approved society representatives consisted solely of general denunciation of the insurance system or of the character of the medical service given, but such vague declamation evidently did not impress the Conference, and was indeed repudiated by several other members of approved societies. Generally, specific points were dealt with in a practical manner with a view to their nature and importance being appreciated by the other sections of the Conference, and a number of useful suggestions were made for remedying defects or overcoming difficulties. These will be considered and reported upon by the new standing committee.

There are, no doubt, in the aggregate a considerable number of insured persons who have never claimed either the sickness benefit or the medical benefit to which they have become entitled, and it is possible that a large proportion of these would state as their reason that they expected something superior in the treatment they would obtain outside the service. This is a survival of an attitude not uncommon during the early stages of medical benefit, and is not based upon experience. There are also a relatively small number of insurance practitioners who have not shown that thoroughness in their work and consideration for their patients which is expected of them, and in these cases some thousands of insured persons have been affected and may have expressed, as the result of their own experience, an opinion of the service which has no justification when applied to the whole. The Insurance Acts themselves provide the machinery by which imperfections in the attention given to insured persons are constantly brought to public notice, not merely in serious cases but in those which are trivial; and although doubtless many complaints do not become vocal by the use of this machinery, on the other hand all the good steady work of the ordinary practitioner and all the friendly help given and extra services rendered go unrecorded, but are nevertheless an abundant reality in the daily lives of millions. Considerations of this kind were brought out at the Conference, and altogether it did not appear that there was any justification for general charges against the efficiency of the health insurance service within its present limits or that any improper distinction is made between the medical treatment given to insured persons and that given to others. The complaints of some insured persons both as to the administration of sickness benefit and as to the treatment received under medical benefit were seen to be curiously parallel both in their nature and in their explanation; and it is clear that both doctors and approved society officials do well to remember that generalization is dangerous, and that even grievances which appear well founded often receive a satisfactory explanation in the light of fuller knowledge.

Nevertheless, wherever defects are discovered it is to the interest of everybody that they should be removed, and where these defects are due to the real delinquency of any doctor it is certain that such delinquency will not be condoned by the profession, whose standard of judgement will probably be more severe than that of the laity. Most of the defects could be dealt with by the appropriate local action already provided for, and it seems worth while to consider whether an occasional joint meeting of the Insurance Committee and the Panel Committee of an area might not prove useful. Serious fault was found with the standard of medical certification. The importance to approved societies of trustworthy certification is clear, and their demand that they should be able to rely absolutely on the certificates of every medical man is quite incontrovertible. A distinction must be made between the mere technical breach of some certification rule and the signing of an untrue statement; but the latter can never be justified by calling it the former, and is an offence against the honour of the profession which may properly be visited with severe penalties. Insurance practitioners cannot afford to ignore this matter, and will not wish to do so.

The incompleteness of the service is recognized, but its extension—whether to include persons not now included or to embrace additional kinds of treatment and accessories to treatment—is so bound up with finance as to be an exceedingly difficult problem. The Conference made it clear that such an extension as would give greatly increased medical, surgical, dental, and nursing facilities to all insured persons was dear to the hearts of many representatives. The medical profession equally



desires these extensions. To pretend, however, as some have done, that all these things could be provided within the limits of the present Central Practitioners' Fund is quite foolish. In connexion with the reconsideration of the capitation fee at the end of this year, it may be found possible to provide for a reasonable extension of diagnostic facilities; but there is no real hope of completion of the service without serious additional national expenditure, unless a wide view is taken of that co-ordination of health services which the profession has long advocated, and which was referred to at the Conference by Mr. Canter and others. The total amount of money at present expended on National Health Insurance, on the Poor Law medical service, on the school medical service, on maternity and infant welfare centres, and on tuberculosis and venereal diseases schemes, might, if properly used, provide such a completion of the insurance health service for all classes of suitable persons as would, without departing from the present general lines and principles, go far to satisfy the aspirations of those who are working for the national health. Here is the task awaiting a Minister of Health of sufficient knowledge and vision.

#### THE ETIOLOGY OF DISTEMPER.

In the annual report of the Medical Research Council a paragraph is devoted, as was noted in our article on the report published on January 20th (p. 110), to the fact that the Council had made arrangements for an experimental study of distemper in dogs. The etiology of distemper is unknown, but it is clearly an acute specific infectious disease, presenting resemblances to diseases of the same class in man. A certain resemblance to measles has been noted by many medical dog owners, but it seems probable that it is more like influenza, and may even possibly be due to the same infective agent, though this is perhaps not probable. The Medical Research Council has for some years been encouraging researches into influenza, and Dr. Mervyn Gordon communicated his results to the Section of Microbiology of the Annual Meeting of the British Medical Association in Glasgow last July. His paper was published in our issue of August 19th (p. 299), and was illustrated by a special plate showing a microphotograph of a filter-passing organism in culture. Dr. Gordon saw reason for believing that influenza, and also common cold, is due to a filtrable virus. In this he confirmed results obtained in the Army Medical Service during the war, and more recently at the Rockefeller Institute. It seems probable that the infective agent of distemper in dogs is also a filtrable virus, and that, as in influenza, the severity of the resulting disease depends largely upon secondary infections, facilitated by the primary infection. There is ground for the hope that the study of distemper under strict experimental conditions may throw important light upon analogous problems of human disease; the direct results may, it is hoped, disclose the possibility of relieving or preventing the malady in dogs, and of reducing the great economic loss which it causes to this country. The Council stated that it had already received assurances that independent financial support would be forthcoming to meet the special cost of this investigation. An appeal was last week issued, signed by the Dukes of Beaufort and Portland, and Sir Theodore Cook, editor of the *Field*, for contributions to a Distemper Fund, which will be administered by a council consisting of masters of foxhounds, dog owners, and a number of biologists, and members of the medical and veterinary professions, including Sir Ray Lankester, Sir David Bruce, Sir William Leishman, Sir Walter Fletcher, Sir Humphry Rolleston, Professor C. J. Martin, Mr. Frederick Hobday, F.R.C.V.S., and Dr. H. Hammond Smith. The Council of the *Field* Distemper Fund at its first meeting assigned the direction of the research work to a Technical Scientific Committee, to be

appointed by the Medical Research Council; this committee, of which Sir William Leishman will be chairman, will be responsible for the practical conduct of the investigation.

#### INFLUENZA AND THE LAY PRESS.

THE publication of our note last week calling attention to the recent observations of Sir Spencer Lister with regard to the presence of a filter-passing organism in influenza has been followed by numerous announcements in the lay press emanating from America to the effect that the influenza germ has been isolated there, at the Rockefeller Institute for Medical Research, by Olitsky and Gates. This statement, without further details, does not advance matters. The valuable work of the Rockefeller observers mentioned was referred to in our note, and in connexion with the actual discovery of a filter-passing organism in the acute stage of influenza the still earlier work of Graeme Gibson and others must also receive due appreciation. It is well, however, to sound a note of caution. Although evidence in support of the view that influenza is due primarily to a filter-passing organism is fast accumulating, it has not yet been fully established that "influenza vera" is due to an organism of this group, and in the later stages other organisms undoubtedly play an important part. At present our knowledge of filter passers is at a very early stage. In addition to diseases such as poliomyelitis, variola, and measles, it would seem likely, from the observations of Foster in America and Embleton in this country, that one type of the common cold is due to an organism of this group. The exact relation between this organism of colds and the filter passer found in influenza has still to be determined. The work of Dr. Mervyn Gordon of St. Bartholomew's Hospital, to which reference is made above, is being actively pursued, but the technical difficulties attending such inquiries are great.

#### THE EXHIBITION OF JENNER RELICS.

LAST week we noticed (p. 205) the Jenner Relics from the Wellcome Historical Museum, 54A, Wigmore Street, exhibited at the house of the Royal Society of Medicine on the occasion of the Jenner centenary lecture by Sir William Hale-White. The whole collection is now on view in the hall of the museum (54A, Wigmore Street), and we are glad to learn that the curator, Mr. Thompson, is on the point of issuing, for the convenience of visitors and others, a condensed catalogue of the Jenner exhibits, which are numerous and varied. The bronze statue by Monte Verde, of which there is a marble replica in Genoa, occupies a prominent place, and is one of the permanent possessions of the museum. It has been sometimes described as "Jenner vaccinating his own son," but that is wrong. In 1789, seven years before his first vaccination, Jenner inoculated his son with a mild strain of small-pox, denominated swine-pox, at that time prevalent. Nor does it represent James Phipps, his first vaccinee, who was several years older than the boy figured on Jenner's knee in the bronze group. The artist has simply depicted Jenner in the act of vaccination. Among the pictures shown is a water-colour sketch of the college in which James Phipps lived. Jenner inoculating his own son is the subject of a painting also contained in the exhibition, and there are about fifteen oil paintings of Jenner. Probably they were not all taken from life, as the differences between them cannot wholly be accounted for by the age of the subject. There is a portrait in oil of Mrs. Jenner (by Sir Peter Lely), and of their daughter. The collection includes a medallion profile of Jenner, modelled in wax from life in 1803, and a very good pencil profile evidently intended for a medal, but never produced as such, though it appears as an engraving. The striking of medals to commemorate notable events has been much commoner in other countries than in England. A case in the exhibition contains an astonishing number of vaccination medals from France, Italy, Belgium, and Germany. One English medal, however, is of particular significance. It is quite small,



a replica of one in the British Museum, which is perhaps the only example in existence of a medal struck to commemorate the recovery of Queen Elizabeth from small-pox. The head of the queen is shown in profile on the medal. The Continental medals were probably used for propaganda of vaccination. Some of the framed diplomas and addresses include notable signatures, as, for example, one from Edinburgh with the names of William Cullen, Benjamin Bell, George Bell, Andrew Duncan, and John Thomson. The diploma of the Physical Society has more than a hundred signatures. The valuable gold enamelled box in which the freedom of the City of London was presented in 1803 is one of the exhibits. The Royal College of Physicians has lent for the exhibition Jenner's favourite armchair, in which he was sitting when he died. There is also a memorial gold ring which he had made on the death of Mrs. Jenner. Among the many manuscripts exhibited is a letter which Jenner wrote immediately after the momentous vote of the House of Commons awarding him £20,000 in recognition of the value of vaccination, in addition to the previous vote of £10,000. The fact that Jenner was awarded these sums is one of the standing grievances of the anti-vaccinator of the present day. There is also the manuscript of a jocular couplet which he sent along with two ducks to a convalescent patient—

"A regular physician she no longer lacks,  
So I send you, dear Madam, a couple of quacks."

An important letter, dated September 7th, 1800, to Dr. Davids of Rotterdam, who was largely responsible for the introduction of vaccination into Holland, contains Jenner's constantly reiterated advice about the importance of collecting lymph at an early stage in the progress of the vaccine vesicle. These are mere samples of the contents of the exhibition, which no doubt contains the best Jennerian collection ever brought together in one place, and is of the utmost interest to the whole medical profession. The collection of books was referred to in our previous notice.

#### VENEREAL DISEASE IN NEW ZEALAND.

We have received a copy of the report of the Committee appointed last year by the Minister of Health in New Zealand to inquire into the prevalence of venereal disease in that country, and to advise as to the best means of combating it. The results are of special interest, since they appear at a time when in our own country a similar committee is at work. Although the conditions in New Zealand differ from those at home, the problem is essentially the same, and many of the Committee's recommendations, although possibly not all, should be applicable here. Perhaps the most important part of the report is that which deals with legislation; the Committee recommends the adoption of what is known as the system of conditional notification embodied in the Western Australia Act. Under this plan cases are notified by the doctor by number or symbol only, and it is only when a patient refuses to do what is necessary for his own safety and for the safety of others that the name is sent to the Health Department in order that appropriate steps may be taken in the interests of public health. The obligation to notify is, in this particular scheme of notification, placed on the medical practitioner, who is entitled to a fee for his services. To supplement notification, provision is made for the enforcement of treatment, the Director of General Health being empowered to demand of any person who he has reason to believe is suffering from venereal disease a certificate showing that he is receiving treatment or is cured. Should the said person not comply with these requests, the Director-General of Health may obtain a warrant from a magistrate ordering him to undergo examination. In the event of his being found to be suffering from venereal disease he may be detained in hospital or other approved place until cured, or at any rate until rendered non-infectious. In addition to this the Committee recommends "the adoption of a provision of the Queensland Act, which makes venereal disease a ground for annulling a

marriage contracted whilst one party is suffering from such a disease in an infectious stage, provided that the other party was not informed of the fact prior to marriage. Also that it should be the duty of a medical practitioner attending a case of venereal disease, if he has reason to believe that the patient intends to marry, to warn him or her against doing so, and that if he or she persists it should be the duty of the doctor to notify the case by name to the Director-General of Health, whose duty it should be to inform the other party or parents or guardians of such other party. Such communications made in good faith either by the doctor or the Director-General of Health should be absolutely privileged." It will be seen, therefore, that the New Zealand Committee is prepared to go farther in legislation than most of those who have considered these questions in England would dare to recommend in the case of the mother country. For the proper working of such an Act the co-operation of medical practitioners would be absolutely essential, since the whole onus of notification rests upon their shoulders. We do not know whether the recommendation of the New Zealand Committee will receive the support of medical men in that country, and it would be of interest to have a statement of their collective opinion on the legislative measures outlined above. The medical profession is, as a whole, conservative in the views it holds on the subject of medical legislation, and rightly regards with suspicion any measures tending to disturb the confidence that exists between doctor and patient. Of one thing there can be no doubt, and that is that, should the recommendations of the Venereal Diseases Committee of New Zealand be adopted, their success will almost entirely depend on the support they receive from the medical profession. In any case, whether these legislative measures become law or not, the report of the Committee cannot fail to be of interest to all those who are dealing with similar problems at home.

#### THE PASTEUR CENTENARY.

The rooms of the Royal Society at Burlington House were crowded on the afternoon of February 2nd, when Dr. Pasteur Vallery-Radot delivered a lecture on Pasteur, under the auspices of the Alliance Française, with Sir Charles Sherrington, G.B.E., M.D., President of the Royal Society, in the chair. The Alliance Française has arranged for twelve addresses (of which this was the first) to be given by Dr. Vallery-Radot at Cardiff, Manchester, Newcastle, Liverpool, Reading, Bradford, Portsmouth, Bexhill, Leicester, and Wolverhampton. Sir Charles Sherrington, in introducing the lecturer, said that he was a grandson of the great scientist, was himself a distinguished pathologist and physician, and had in preparation a collected and annotated edition of the works of his illustrious grandfather. Dr. Pasteur Vallery-Radot, who spoke in French, said that none of the homage that was being paid to Pasteur on the centenary of his birth would have been dearer to him than that of England, because it was the land of Jenner and Lister, and because here he had found some of his warmest partisans and greatest friends. Before the days of Pasteur medicine knew nothing of the cause of virulent illnesses, surgeons were afraid to operate, infection was the great fear of maternity hospitals, industries based on fermentation were powerless, and herds were dying fast. In forty years, however, the genius of Pasteur had changed all that. He transformed microbes from an instrument of death into an instrument of preservation. The work of Pasteur was by its logical linking and its incalculable consequences one of the most wonderful products of the genius of man. He had an extraordinary imagination, but he tempered it by the most strict experimentation. If he had a great mind Pasteur also had a great heart. Modesty was his great characteristic, and his work and his home life were closely linked, because Madame Pasteur was his constant help. He bound together love of his country with love of humanity. His ideal was to see humanity led to peace by the aid of science. In the evening the Alliance Française gave a dinner to Dr. Vallery-Radot.



at the Vintners' Hall, Upper Thames Street, generously lent by the Company. His Excellency the French Ambassador, le Comte de Saint-Aulaire, presided over a company of one hundred, including Sir Arthur Griffith-Boscawen (Minister of Health), Sir Charles Sherrington (President of the Royal Society), Sir Humphry Rolleston (President of the Royal College of Physicians), Sir Anthony Bowlby (President of the Royal College of Surgeons), Sir William Hale-White (President of the Royal Society of Medicine), Mr. A. Chaston Chapman, F.R.S. (President of the Institute of Chemistry), Mr. H. D. Truscott (Master of the Vintners' Company), and Mr. André L. Simon (Président de la Fédération des Comités d'Alliance Française), and many representatives of the brewing and wine interests. The health of Dr. Pasteur Valléry-Radot was proposed by Mr. Cecil Lubbock (chairman of the London Brewers' Council), who, speaking in fluent French, referred to an interesting relic of Pasteur's visit to England in 1871 which had been exhibited before dinner; it was the microscope used by him when working in this country at Whitbread's brewery. Sir Anthony Bowlby paid a high tribute to Louis Pasteur's influence in originating friendly relations between French and British surgeons in the sixties, which bore fruit in the *entente médicale* during the war under Professor Tuffier; he read a letter from Lister to Pasteur acknowledging his debt to the latter's researches. As an experimenter, pathologist, and physician, and by his war service, their guest was a worthy descendant of Pasteur. In his reply Dr. Valléry-Radot gracefully referred to Edward Jenner's work, to the sanitary service of the British army in France during the war, and to Sir Charles Sherrington's world-wide physiological repute. The French Ambassador, in very happy terms, proposed the toast of "The Vintners Company"; and the Minister of Health, as the representative of the British Government, gave the chairman's health, and insisted that the progress of civilization depended on the close friendship of France and Great Britain.

#### INFECTIOUS DISEASE IN SCHOOLS.

WHEN the Medical Officers of Schools Association was founded in 1884 it issued a *Code* of rules for the prevention of infectious and contagious diseases in schools, drawn up by the medical officers of the principal public schools in the country. It was compiled with such great care that it speedily became authoritative, and has deservedly maintained that position ever since. The eighth edition of the *Code*,<sup>1</sup> just issued, bears evidence of the most careful revision, so that it may be considered to express present-day views. The text published at the beginning of the present century advised that a scarlet fever patient might return to school six weeks after the beginning of the illness, and then only if there was no desquamation or sore throat. The rule as it stands in the latest *Code* indicates the changed view which now prevails as to return to school after an attack of scarlet fever: "In not less than four weeks from the date of the appearance of the rash, provided convalescence is completed, and there is no sore throat, discharge from the ear or nose, suppurating or recently enlarged glands, or eczematous patches." As regards diphtheria, the earlier rule advised three weeks' absence from school and return only if convalescence is complete and no sore throat nor albuminuria or discharges remain. We are now able to call to our aid bacteriology in deciding upon freedom from infection in this disease, so that the present rule advises return to school after an absence of at least four weeks, provided that convalescence is completed, that there is no longer any sore throat or any abnormal discharge from the throat, nose, ears, or eyes, no cutaneous pustulation and no albuminuria, and that at least three successive bacteriological examinations of the pharyngeal and nasal mucus for the specific bacillus have given consistent negative results, each examination having been made not less than three hours after the discontinuance of local antiseptic applications. In an appendix to the *Code* practical advice is given on the

methods of disinfection which should be employed after there has been a case of infectious disease in a school. There are also set out forms of certificates which may be used in connexion with the first admission of pupils and with their return to school after holidays. These ought to be of great service to head masters, for it is notoriously extremely difficult to draw up a certificate in terms which precisely express its intention.

#### PHYSICALLY DEFECTIVE CHILDREN.

THE Survey of Physically Defective Children, lately issued by the London County Council,<sup>1</sup> is a valuable and interesting document. It consists of two parts: the first is a criticism on Mr. R. C. Elmslie's report by the school medical officer and medical officer of health for London, Sir W. H. Hamer, and the second is Mr. Elmslie's report, which itself is a criticism of the work of the Council among physically defective children since the last reports in 1907 and 1912. The number of children examined in the schools for the physically defective was 2,294, but it is noticeable that no fewer than 597 cases were not examined on account of absence from one cause or another. The figures show a noteworthy decrease in the number of tuberculosis cases and an equally striking increase in the number of cases of infantile paralysis, which latter disease (as Mr. Elmslie points out) has become the chief cause of crippling among the children under the care of the Council, whereas in 1912 tuberculosis predominated. This change is attributable to various causes, chief among which is probably the improvement in methods of treating tubercle, although it is not improbable that there has been some increase in the prevalence of anterior poliomyelitis. The deformities due to tuberculous disease of the spine seem to be less severe than they were in 1907, and the same may be said of the hip, but the results of treatment of disease of the knee are little improved. The out-patient treatment does not and cannot yield the best results in these cases, which should all be treated as in-patients of special hospitals in the country such as those of Carshalton and Alton. Mr. Elmslie's protest against excision of the knee in children is amply justified by experience. It is to be hoped that improvements in hygiene will cause a continuous decrease in the prevalence of tubercle, but meanwhile there is a crying need for more accommodation and for up-to-date treatment. The public treatment of children who have suffered from infantile paralysis presents a very difficult problem. Despite improved surgical procedures, some of which aim at stabilization of joints, a great many of these cases require permanent instrumental support. Mr. Elmslie states that as many as 50 per cent. of the children with infantile paralysis examined by him in the East End of London were without instruments because those supplied were broken. He suggests that provision should be made for the systematic and continuous treatment of anterior poliomyelitis in its earliest stages and of its resulting deformities in a special institution, or section of an institution, in close relationship with the out-patient departments of special and general hospitals. This country has hitherto been spared any great epidemic of the disease, such as Sweden and parts of the United States experienced in recent years, but we do not know to what circumstances we owe our comparative immunity, nor can we be sure that we shall continue to enjoy it. Other kinds of paralysis do not furnish many cases. Spastic paralysis would probably figure more largely were not many cases so mentally deficient as not to be eligible for physically defective schools. Among congenital deformities were more cases of dislocation of the hip than of club-foot. Both these conditions are often cured before the patient reaches school age, and therefore they do not attend the special schools. Rickets plays a very small part in crippling London children, and would play less were parents more willing to allow operative treatment. Of the amputations, rather more than half were performed on account of accidents and rather less than half for disease.

<sup>1</sup> A *Code of Rules for the Prevention of Infectious and Contagious Diseases in Schools*. Issued by the Medical Officers of Schools Association. Eighth edition. London: J. and A. Churchill. 1923. (Demy 8vo, pp. 48. 2s. 6d. net.)

<sup>1</sup> London: P. S. King and Son. 1923. (Folio, pp. 10. Price 2s.)



Some of the latter were probably done on account of severe infantile paralysis, but no details are given on this point. Mr. Elmslie is no doubt right in saying that artificial arms are useless to children of this class. In a general criticism of the medical organization of the physically defective schools he puts in a strong plea for better organization and co-operation with the various other agencies for the treatment of cripples, and urges that the services of those physicians and surgeons who are engaged in orthopaedic work should be utilized to a greater extent. He is doubtless right in thinking that the physically defective school is not a suitable place for actual treatment, which should be carried out at special clinics and in the out-patient departments of special hospitals or in the orthopaedic departments of general hospitals. The table of hospital attendances shows how few of the cases are cared for at those hospitals which have not an orthopaedic surgeon on the staff. When such institutions have established adequate departments the treatment of London's cripples will be more thorough and general. In his covering report Sir William Hamer sets forth the difficulties which have hitherto prevented the Council from filling up some of the gaps in organization to which Mr. Elmslie refers; one of the chief of these lies in the competing claims of surgical and educational requirements. While the report forms a most valuable survey of London cripples of school age, it cannot pretend to give any account of the proportion of cripples of all ages to the general population and only a partial estimate of the percentages of the various maladies and accidents which are the immediate causes of deformity. A census of cripples, not only in London but throughout the country, is still wanting, and any complete plan for meeting their needs cannot be formulated until we possess fuller knowledge of the magnitude of the problem.

#### THE NEW ELEMENT.

THE fundamental laws of  $x$ -ray emission were established by the young British physicist Henry Moseley, whose death was one of the greatest losses of the war. The laws he formulated made it possible to calculate the wave-length of the  $x$ -ray spectral lines for any element in the periodic table, if those of the elements in its neighbourhood are known. A very small proportion of a definite element in any chemical substance suffices to give a good  $x$ -ray spectrum of that element. Moseley was able in this way to arrange the elements in a series, in which each element had an atomic number. The first element in the series is hydrogen, 1, and there is much evidence to establish the proposition that the total number of elements is 92, the last being uranium. When Moseley was working a good many numbers were unfilled; since then several have been found, but among those hitherto unrecognized was the element with the atomic number 72. Dauvillier reported to the Paris Académie des Sciences on May 22nd, 1922, that he had detected by means of  $x$ -ray spectroscopy the element 72 in a mixture of rare-earth metals; it was provisionally identified with a rare-earth element suspected by Urbain, to which he had given the name "celtium." There were, however, certain theoretical reasons for doubting this identification; it was held to be unlikely that the element 72 could be a rare earth; it was thought probable that it must be a homologue of zirconium, a metal whose affinities are with titanium, cerium, and thorium; its existence, suspected by Klaproth in 1789, was established by Berzelius. Two Danish chemists, D. Coster and G. Hevesy, working in the University Institute of Theoretical Physics in Copenhagen, announced recently in *Nature* that they had identified the presence of element 72 by spectroscopic examination of extracts of zirconium minerals. In one such mineral from Norway the new lines were so intense that Coster and Hevesy estimated that the quantity of 72 in it amounts to at least 1 per cent. As the discovery was made at Copenhagen, the Latin name of which is *Hafnia*, they propose to call the new element "hafnium." At the meeting of the Chemical Society on February 1st Dr. Alexander Scott, F.R.S., director of scientific

researches at the British Museum, whose work on atomic and molecular weights is well known, was able to report that he had isolated the oxide of the new metal from a certain black sand obtained from New Zealand. He had received samples of the sand in 1913, when he extracted from it a cream-coloured material, consisting of magnetic oxide of iron, and titanium dioxide in the proportion of 3 to 1. In the titanium dioxide he had found small quantities of a highly refractory residue. These residues were collected, but their further examination was postponed. The compounds made by the metal in the residue with potassium and fluorine resembled those of titanium and zirconium, and Dr. Scott was stimulated by the discovery by Coster and Hevesy to determine the atomic weight; he found it to be approximately 180; the chemical characters fitted in with the suggestion, arising out of the results of the  $x$ -ray examination, that the substance was an oxide of element 72. Dr. Scott did not apply  $x$ -ray spectroscopy to this oxide, preferring to offer samples to Coster and Hevesy in order that they might be the first to make the examination.

#### THE OPHTHALMOLOGICAL SOCIETY'S CONGRESS.

THE annual congress of the Ophthalmological Society of the United Kingdom will be held at the house of the Royal Society of Medicine on the last three days of the last week of April. On April 26th the president, Dr. A. Maitland Ramsay, will deliver an opening address at 10 a.m., and at 5 p.m. Dr. George E. De Schweinitz (President of the American Medical Association) will give the Bowman lecture. He has taken as his subject certain ocular aspects of pituitary body disorders, mainly exclusive of the usual central and peripheral hemiopic field defects. On the afternoon of the same day a discussion on the disorders of the blood and their ophthalmological manifestations will be opened by Sir Humphry Rolleston, Sir Frederick Andrewes, F.R.S., and Dr. W. C. Souter. On Friday there will be a discussion on the diagnostic significance of proptosis, to be opened by Mr. Wilfred Trotter, Mr. Herbert Fisher, and Dr. Angus MacGillivray. In the afternoon a visit will be paid to the London Hospital, and here a clinical meeting will be held. In the evening demonstrations will be given by members. Persons desirous of reading papers, showing cases, or taking part in the discussions, are requested to communicate with Mr. R. Foster Moore, 91, Harley Street, W.1, one of the honorary secretaries. "All communications must be typewritten."

We are informed that an appeal is about to be made to the public to provide funds for M. Spahlinger to continue his experiments on the production of an antitoxic serum for use in the treatment of tuberculosis, and of a vaccine for early or convalescing cases. Inquiries into the nature and results of M. Spahlinger's methods have been made both by the Red Cross Society and by the Ministry of Health. The reports have not been published, but we gather that the methods were looked upon as interesting, and the results, though hitherto on a very small scale, as encouraging. We are informed that M. Spahlinger is at the end of his financial resources, and that his laboratory and experimental farm at Carouge, near Geneva, may in consequence be closed. We are of opinion that M. Spahlinger should publish a clear account of his theories, with an outline of the methods he has devised for carrying them out.

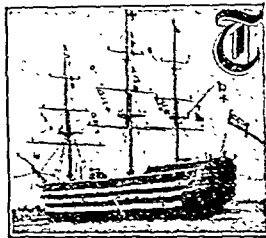
We announced some time ago that Professor E. H. Starling had been appointed by the Royal Society to the Foulerton Research Professorship. It is now announced that under the same trust Dr. H. W. C. Vines has been appointed a Foulerton Research Student; he is a Fellow of Christ's College, Cambridge, and clinical pathologist to Addenbrooke's Hospital. He is known to our readers especially for his researches on the physiology and therapeutics of calcium.



# NINETY-FIRST ANNUAL MEETING of the British Medical Association, PORTSMOUTH, 1923.

## AN OUTLINE OF PORTSMOUTH HISTORY.

### PORT, DOCK, AND HARBOUR.\*



H.M.S. Victory at her old moorings.

On return to the Port and Docks. When a king wished to cross to Normandy he either used one of his own ships, or employed one belonging to the fleet of the Cinque Ports. If he had a big expedition on hand he had the further right to arrest—that is, commandeer—all the shipping of the country. John, when he lost his Norman province, was the first to exercise this prerogative. Portsmouth and Southampton were no longer opposite a friendly coast, no longer were they the connecting links between two portions of the kingdom. They were now the collecting centres for armies and fleets that tried to win back Normandy. Consequently John was much in Hampshire, and the castle at Porchester, then furnished as a royal residence, was his halting place. From here he used to superintend the preparations of his futile expeditions to France, and this perhaps has given rise to his claim to the title of Founder of the Royal Navy. He was compelled to give some attention to the collecting and manning of his fleets, and for this purpose created the post now occupied by the First Lord of the Admiralty. The first "Keeper of the King's Ships" or "The Keeper of the Sea Ports" was the Archdeacon of Taunton, William de Wrotham. His duties at Portsmouth were arduous.

"He had to carry out the King's orders respecting ships and goods coming into the port; he had to see that the bailiffs of the town did their work properly in supervising the arrival of wine, corn, pork, figs, almonds, rice, cloth, sails, anchors and ships' stores; he had to see that the armour, the engines for throwing stones, and the hurdles used in transporting horses were all in readiness."

More important to Portsmouth than the collecting of fleets was the formation of a kind of dock and dockyard. King John wrote a letter to the Sheriff of Southampton on May 20th, 1212. Translated by Mr. Sparks it reads:

"We order you without delay to cause our docks at Portsmouth to be enclosed with a good and strong wall . . . for the preservation of our ships and galleys. You are also to cause pent houses to be made to these walls, in which all our ships' tackle may be safely kept. Be as quick as you can that the work may be completed this summer. . . . When we know the cost you shall be paid."

\* Concluded from p. 73, January 15th, 1923. An introductory article on Portsmouth and Southsea appeared in the BRITISH MEDICAL JOURNAL of December 9th, 1922, p. 1137.

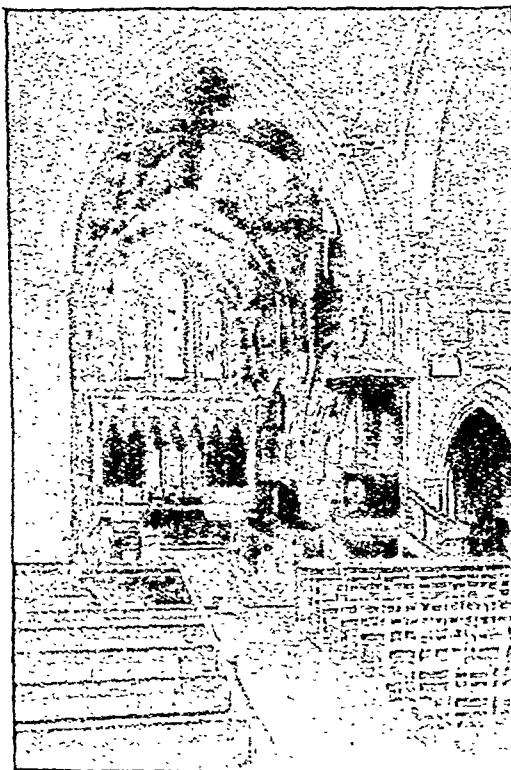
At this time there was a mill and a pond where the Old Gun Wharf now stands. This was near the opening of a creek that ran from the harbour along what is now Park Road towards the present Town Hall Square. It was in this creek John kept his ships and built his docks. An old book of this date defines a dock as "any place or creek where we may cast in a ship out of the tide way into the ooze, and then when a ship hath made herself a place to lie in, we say the ship hath docked herself." The King's ships were run up the creek on full tide and dragged as far ashore as possible. At low tide they were surrounded with timbers and brushwood mixed with clay, and "a good strong wall" thrown across the mouth of the creek along the shore.

This began the docks, but no ships were built for years to come, although shipwrights were imported from the Cinque Ports to repair ships and galleys. So with these docks we come upon the nucleus which since has gathered round it all that goes to make Portsmouth the foremost naval station of the world. From the harbour grows the dock, from the dock grows the town.

Henry III, like his father, was a frequent visitor, and on one occasion held a great council here. The townsmen naturally took advantage of these visits, and on several occasions got their charters renewed. In 1256 one was granted which gave "our good men of Portsmouth the right to have a Merchant Guild."

For the next hundred years and more there were wars and rumours of wars, and during that time the town suffered much from attacks by pirates, Frenchmen and others. Once it was burned by the barons of the Cinque Ports and twice by the French fleets. In 1445 Margaret of Anjou landed here and was married at Titchfield by Bishop Ayscough to Henry VI. In 1450, during a mutiny amongst the sailors owing to the absence of pay, Bishop Moleyns was slain whilst trying to pacify the mob. The severest penalty of the Church was meted out to Portsmouth—the Great Excommunication. The act of expiation was not performed till fifty-eight years later, and then it was done efficiently and thoroughly.

Portsmouth as a naval base began to revive in the reign of Henry VIII. Southampton was the centre of a large Venetian trade, and so, being commercially prosperous, was not likely to compete with Portsmouth for naval honours. Henry VII began by building the square tower at the end of High



INTERIOR OF ST. THOMAS'S CHURCH, LOOKING EAST.

Street, and the round towers on either side the mouth of the harbour were rebuilt in stone. On June 14th, 1495, a new dock was commenced, the first of its kind in Europe. Sir Reginald Bray was the architect. First the body of the dock was prepared and the sides timbered, then the more difficult task of making and fixing two gates had to be overcome. One gate was in the outer transverse wall in a gap next the long side wall—say the right; the other gate was in a



parallel wall a little way within the dock, but with the gateway between the parallel wall and the left side—that is, the gates were diagonally opposite each other. The ship was manoeuvred round the gates into the basin, the gates shut, and the space between the outer and transverse walls filled in with stones and clay, and, lastly, the water was pumped from the dock. As a result of Mr. Sparks's researches we find that this dock cost £193 Os. 6½d. to build, that the greatest number of men employed on it was 60, and that it took forty-six weeks to construct. The first ship to enter this dock was the *Sovereign*. The making of the dock necessitated the building of forges, workshops, and storehouses, and thus a regular dockyard was established. Mr. Sparks says that the earliest record of a warship being built here was the construction in this dock of a small vessel called the *Sweepstake*, and that she cost exactly £120 3s. 2d. to build!

Henry VIII was fond of the sea and took an interest in naval matters. He added eighty-five ships to the fleet, and is justly regarded as the "Founder of the Royal Navy." For that navy Portsmouth was the chief and only centre for the first half of the sixteenth century. European states were building fleets, and the discovery of the New World caused a greater interest in shipbuilding and larger and larger ships were constructed. The life of the seamen was terrible on the Royal ships—they were overcrowded, the food, poor in quality, consisting of salt meat, fish, biscuit, cheese, and beer, the beer often stored in old oil and fish barrels, and severe penalties were meted out to those who grumbled. Lord Howard reported that out of a crew of 500 on the *Elizabeth* 200 died in a month—he made fires on the ship "of sweet broom" and obtained fresh men, but they died more quickly than the others. Beer and biscuits were wanted in quantities greater than Portsmouth and Southampton could supply. To obviate

some of the trouble five Royal brew-houses were set up in Portsmouth in 1513. Three of them were in "Four-House Green," and remained till the time of Charles II. The fourth house was in St. Thomas Street, and here biscuit making went on as well as brewing. Gosport, on the opposite side of the harbour mouth, no doubt helped to supply some of the biscuit; in late years, at any rate, Gosport became the centre for supplying the navy with biscuit.

Henry VIII held the first royal review of the navy at Spithead. Holinshed tells us "the King having a desire to see his navy together, rode to Portsmouth 1 Aug 1512." This review had one point at least in common with the modern ones—namely, "The King gave a banquet to his Captains before they set out." Previously to the reign of Henry VIII the King's representative had been styled "Constable of the King's Castle at Porchester and town of Portsmouth." Early in Henry VIII's reign the town was looked upon as a garrison town and a governor in command was appointed. Many additional fortifications were built in and about the town, and later in the reign Southsea Castle was built. In 1544 Sir Anthony Knyvet, who was in charge of the work, reported "that the first floor of the square tower within the great fortress is laid." Next year it had to stand a practical test of its utility—a French fleet appeared off the Wight. The English went out to meet them in St. Helen's Bay, but, as there was not sufficient room to manoeuvre the sailing ships, our ships returned to harbour and were protected by the fortresses along the shore. The French, unable to entice the English from the harbour, retired. During the attack, whilst the King was at Southsea Castle, one of the ships, the *Mary Rose*, 500 tons, 400 men, heeled over and

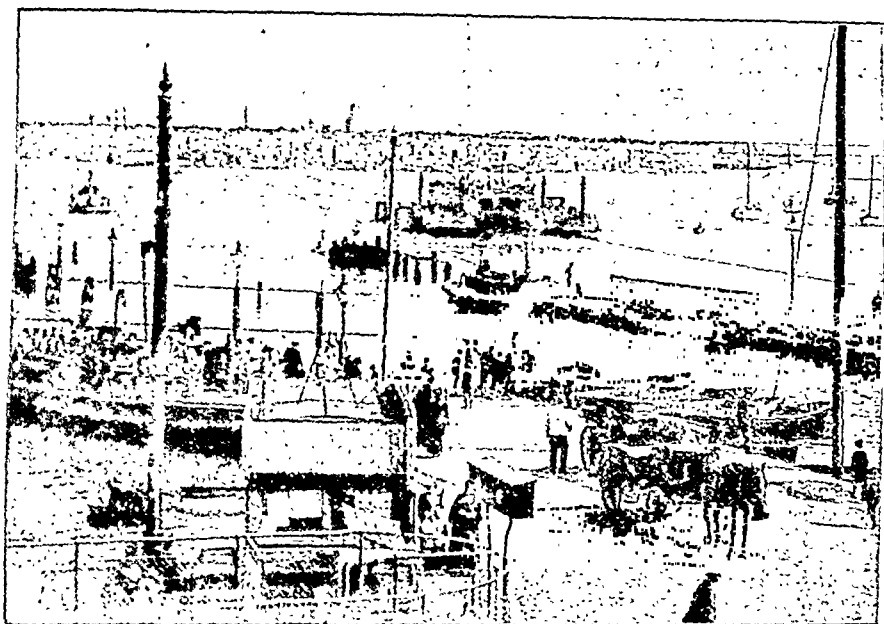
sank. One result of this action was the creation of a Navy Board, which made a fixed naval policy possible. About this time a great iron chain was laid down and drawn across the mouth of the harbour between the Round Tower on this side and a similar tower on the Gosport side.

Elizabeth, the "Lady of the Seas," whose navy defeated the mighty Armada of Spain, and won dominion of the seas, did not support Portsmouth as a dockyard town. She removed most of the naval work to Deptford and other Thames yards. Portsmouth continued neglected till the seventeenth century. In 1623 the famous dry dock built in 1496 was filled in.

The revival of Portsmouth's fortunes was largely due to the Duke of Buckingham, a favourite of James I. Buckingham was appointed Lord High Admiral in 1617. He appointed a commission to overhaul the navy. Portsmouth was again made the rendezvous of the fleets. Buckingham and the young Prince Charles set off on a "philandering" expedition to Madrid in 1623, one of their objects being to arrange a marriage between the Prince and the Infanta of Spain. Their scheme failed, and ships were got ready to fetch the pair back. The King came down in August to view the fleet before it sailed. In October the Prince and Duke returned, and shortly afterwards a bust of Charles was

set in a niche in the north wall of the Square Tower in St. Thomas Street, and under it the words can still be read: "After his travels through all France into Spain, and having passed very many dangers, both by sea and land, he arrived here on the 5th day of October, 1623." In August, 1628, Buckingham was assassinated in his house, now No. 10 High Street, by a disappointed soldier, John Felton.

At the commencement of the civil war Portsmouth was wanted by both parties. Colonel Goring, the Governor, made the Mayor and



PORTSMOUTH FROM GOSPORT HARD, SHOWING FLOATING BRIDGE AND PART OF HARBOUR.

Aldermen swear allegiance to the King, and he sent a small body of troops to hold Portsbridge, then, as now, the only way on to the island by land. Parliament sent ships to blockade the harbour and troops to Portsdown Hill. Portsbridge was soon overpowered, and further fighting took place on the north wall of the town. Some of Goring's men deserted, shots were fired into the town from Gosport, Southsea Castle was scaled and seized. Goring capitulated and was banished to Holland, and Portsmouth remained in the hands of the Parliamentarians till the end of the war.

The Commonwealth was a period of great activity at Portsmouth. Henceforth the growth of the town was to be measured by the growth of the fleet. A number of special committees were appointed to manage the navy, each with separate work to do. The value of Portsmouth as a naval base was soon recognized. Five new vessels were built. The first built was christened *Portsmouth*, and during her career put up a good record. Much repairing was done in the yard, new storehouses and shops erected, and a new dry dock built. During the Dutch wars there were many wounded men in Portsmouth. There were no hospitals, and the men, crippled by wounds and disease, were placed in stuffy public houses, and many such houses had sprung into existence. Porchester Castle received many sufferers, as it was no longer used as a residence. Elizabeth Atkin—a forerunner of Florence Nightingale—did noble work amongst the unfortunate soldiers and sailors. Amongst the wounded here was the famous Robert Blake, a native of Bridgwater, who eventually became admiral and general at sea.

The reigns of Charles II and James II were good times for Portsmouth. Samuel Pepys was during the Restoration a



frequent visitor here, and there are many entries in his diary about his visits. In 1662 on one of his visits he was made a burgess, and the honour cost him "a piece of gold to the Town Clerk, ten shillings to the Bailiffs, and spent five shillings." During the same visit "by coach to the yard and then on board the *Swallow* in the dock, where our Navy Chaplain preached a sad sermon, full of nonsense and false latin."

New docks and slip and new warehouses were built and the gunwharf commenced, and complete remodelling of the fortifications took place in the early years of Charles II; and twenty-six new vessels were built. One was christened the *Charles Royal*, and was inspected by the King, who was "infinitely pleased with the sight."

On May 14th, 1662, Catherine of Braganza landed at Portsmouth and was housed in the Domus Dei in rooms "all rarely furnished." She was met by the Duke of York, but not married to him till a week later, when the King arrived. The marriage ceremony was privately celebrated in the Queen's apartment. The marriage was duly registered at St. Thomas's Church and a copy of the entry can be seen in the porch.

James's interest in the navy brought him again to Portsmouth, when after his inspection of the yard, John Evelyn tells us, "His Majesty was entertained to a magnificent dinner." There are still standing two monuments to James II—the fine gateway at the entrance to the Officers' Recreation Ground, which originally stood in Broad Street, and the King's monogram on a bastion at the Camber Quay.

From the coming of William III (1689) down to 1815, for 126 years, there was almost continuous war with France, and during all this time Portsmouth was the chief naval centre; scarcely an admiral or general of note who did not at some time or another tread the streets of the old town. The number of ships in the navy was greatly increased, and enormous work thrown on the dockyard. In 1713 there were 240 ships of all kinds, in 1813 there were 722. Many acres of land and water were added to the dockyard. At the end of the seven years' war (1756-63) there was an Official Visitation, which recommended spending £350,000 on improvements; new docks were proposed, and it advised the use of stone rather than wood. The Admiralty Lords further "thought it highly important that all future additions, alterations, and repairs should be founded on certain fixed plans . . . proceeded on year after year in a regular manner."

George III was greatly attached to Portsmouth. In 1778 he appointed Sir Samuel Bentham—younger brother of the philosopher Jeremy Bentham—Director of the Dockyard. During Bentham's administration Marc Brunel's patent machinery for making blocks was set up in the yard. It was now possible for one man to do what ten had previously done in the same time; 100,000 blocks a year were soon produced. While Marc Brunel was living in the yard his famous son Isambard was born. Isambard's greatest feat was the building of the *Great Eastern*, the largest ship up to that time built, and for many years after. She was of 22,500 tonnage. It was due to Isambard Brunel's experiments that the screw propeller was adopted for warships.

The nineteenth century was a time of great change in the navy. It saw the passing of the sailing ship and the introduction of the steamship and the ironclad. The *Dreadnought* of 1805 was a wooden sailing ship of 2,000 tons; the *Dreadnought* of 1905 was a screw steel ship of 15,000 tons; the *Dreadnought* of to-day a steel ship of 27,500 tons, costing about £5,000,000. The area of the Dockyard is now over 300 acres, more than treble what it was 100 years ago. In 1759 there were employed in the yard 2,099 men; in 1783, 2,285 men; in 1890, 6,232 men, with a wages bill of £428,430; in 1910, 10,439 men, and wages £743,360. During the recent great war over 20,000 men were employed at one time.

The passing of time sees endless changes in the needs of the nation. The Yard, a few years ago busy beyond the limits of its capacity, is to-day nearly silent and empty. The star of the Royal Navy—or rather the Royal Dockyard—is not to-day in the ascendant.

The writer of these articles wishes to thank many friends for assistance and advice, and especially to acknowledge his indebtedness for useful information to books relating to Portsmouth, written by Mr. H. J. Sparks, Mr. W. H. Saunders, Mr. W. Gates, Mr. Monray Read, and Messrs. H. T. Lilley and A. T. Everett.

For the loan of blocks acknowledgment is due to the courtesy of Messrs. Charpentier, Ltd., Portsmouth.

## Victoria.

[FROM OUR SPECIAL CORRESPONDENT.]

### MELBOURNE UNIVERSITY SUPERANNUATION SCHEME.

THE University of Melbourne is about to adopt a superannuation scheme for all its full-time officers of every grade, which can only be described as generous and essentially sound. The university has made a capital grant at once, and will make an annual contribution of 2½ per cent. of the salaries paid, whilst the beneficiaries contribute annually 5 per cent. of the salary. The annual contributions of junior officers below 35 years of age are correspondingly graded. Professors will be able to retire at 60 years of age and other officers at 65 years of age; retirement is not, however, compulsory but optional. The maximum pension payable is one-sixtieth of the average salary for the numbers of years served, always provided that the pension payable shall not exceed £500 per annum. In the case of an officer leaving the service of the university before the retiring age he is entitled to withdraw from the fund all the moneys he has paid, together with 4 per cent. compound interest. Should the officer die within less than five years after retirement, the full pension will be paid to the widow for five years after the age of retirement. The scheme, which is guaranteed by the university and has been thoroughly examined by an actuary of recognized standing, appears to have given general satisfaction, and cannot fail to do something to remove some of the objections which have hitherto existed to service within a university.

### SECOND-YEAR EXAMINATIONS IN ANATOMY AND PHYSIOLOGY.

Under the extended and revised medical curriculum of the university second-year examinations in anatomy and physiology have just been conducted. There can be no question that the introduction of this examination has had a beneficial effect on the work of the students. Those who have been successful in the recent examination will enter on the further work of the third year in these important basal subjects of medicine under much more favourable conditions than formerly, and it is anticipated that the work of the third year will thus attain a higher standard than has been the case under the old curriculum.

### INCREASED UNIVERSITY FEES.

The Council of the University, after a long period of hesitancy and timidity, has at last ventured to raise the fees in medicine from about £23 per annum to £25. The fact, however, remains that it is still cheaper to send a boy to the university to study medicine than it is to educate him at a public school.

### CHANGES IN THE MEDICAL SCHOOL.

It is expected that the new anatomy department will be ready for occupancy about July or August, 1923. The evacuation of the existing anatomy buildings will enable the medical school library to be much more efficiently housed, and will also provide for some much needed extensions for physiology and pathology. It is hoped that the new department will be officially opened during the British Medical Association Congress (Australasia) which will be held in Melbourne in November, 1923. From a large field of local and overseas candidates Mr. J. Alexander Gunn, of the University of Liverpool, has been appointed director of tutorial classes in the University of Melbourne.

### THE STEWART LECTURES.

The last series of the triennial Stewart lectures of the University of Melbourne, recently delivered by Professor R. J. A. Berry, on "The Modern Psychology," have now been published by the university. Copies may be obtained from the Melbourne University Press at 2s. 6s.

## Scotland.

### COLOUR VISION.

At the meeting of the Royal Medico Chirurgical Society of Glasgow held on February 2nd an address on "Some recent work on colour blindness" was given by Mr. R. A. Houston, D.Sc., lecturer on physical optics in the University of Glasgow. In the course of his address Dr. Houston said that during the past eight years statistical surveys of the colour vision of



more than 2,000 students had been made at Glasgow University. They have already been described in papers in the *Proceedings of the Royal Societies of London and Edinburgh* and in the *Philosophical Magazine*, and the present lecture dealt with some of the principal results obtained. Frequency curves were shown representing the variation of the ability to discriminate colour about a mean. These demonstrated that normal variation covers almost everything as regards women but not as regards men. The colour-blind could not be regarded as an extreme case of normal variation. Trichromasy passed into monochromasy directly and not through dichromasy as an intermediate stage, as the original form of the Young-Helmholtz theory required, and the results of the investigation rendered untenable the latter theory and also the Hering theory. The final theory, when it came, would be a photo-chemical one, and the prospects of progress were at present very promising. The lecture was illustrated by lantern slides.

#### CENTRAL MIDWIVES BOARD.

At a meeting of the Central Midwives Board for Scotland, held for the election of office-bearers, Dr. James Haig Ferguson was unanimously re-elected chairman; Dr. Michael Dewart was elected deputy chairman; and Sir Archibald Buchanan-Hepburn, Bt., convener of the Finance Committee. The meeting appointed other committees and examiners, and approved the list of recognized institutions, with the teachers attached thereto, for the training of midwifery nurses.

At a meeting for the hearing of penal cases, with Dr. Haig Ferguson in the chair, a Glasgow midwife was cited to answer charges of serious breaches of the rules and misconduct. The Board found the charges to be proved and instructed the secretary to remove her name from the Roll of Midwives and to cancel her certificate, and in addition thereto the Board issued an order prohibiting her from attending women in childbirth in any other capacity.

## England and Wales.

#### THE NEW HASLEMERE HOSPITAL.

In a recent issue (January 27th, p. 169) we recorded briefly the formal opening of the new Haslemere and District Hospital by the Lord Chancellor, Viscount Cave. The need for increased hospital accommodation had been felt for some years, the old cottage hospital, opened in 1897, with its twelve beds, being quite inadequate for the largely increased population of the district. Early in 1920 it was decided to undertake a scheme of rebuilding, and an appeal was issued; but the offer of a new site led to the abandonment of this plan for enlargement in favour of the building of an entirely new hospital with ample room for future expansion. Upon the successful issue of this large undertaking, due in particular to Mr. W. E. Muir, Chairman of the Building Committee. The whole sum of £36,000 needed to complete the scheme had already been given or promised by the day of the opening ceremony.

The hospital stands on an excellent site of over four acres sloping towards the south, and its external design harmonizes with the surrounding residential property. The present accommodation provides thirty-one beds and four cots. The main entrance is on the east side, and the building has a long south frontage. Two wards project from the main block and form a sheltered court. The nurses' quarters are separated from the hospital proper by the kitchen and offices serving both departments; they have a private entrance, and communicate with the hospital by one doorway only on each floor. The main hospital corridor runs east and west, and leads to the male and female wards, each with twelve beds. There are also two single-bed wards on the ground floor, and one private ward for paying patients. The end of the corridor communicates with the two operating theatres (one large and one small), the x-ray room, dark room, and electrical treatment room. The first-floor corridor gives access to the labour and maternity wards and to another private ward. The building throughout has been designed in accordance with modern ideas of hospital construction: all corners are curved, and the skirtings form plain curves of the floor material. The walls of the hospital part of the building are of hard plaster. The corridor has a central gangway, four feet wide, of rubber sunk flush with the terrazzo floor. The floors of the wards, bathroom, ward kitchen, etc., are

covered with a jointless material and polished. The operating theatres are paved with terrazzo, and have white enamelled walls. The building is heated throughout with low-pressure hot-water radiators. Fresh air is admitted through the radiators and foul air is carried out in ducts to turret ventilators. The building is lit by electricity, with emergency gas-lights. The sterilizing room is fitted with a high-pressure steam sterilizer heated by gas.

The architects are Messrs. Read and Macdonald, and the medical equipment has been installed under the direction of Dr. Arnold Lyndon. On the evening after the opening ceremony the workmen engaged in building the hospital were entertained to supper. Dr. Lyndon, in acknowledging the toast of prosperity to the hospital, paid a tribute to the way in which the lay committee had supported the medical committee. There was nothing asked for by the doctors which was not freely given by the committee, and the medical staff had been allowed an absolutely free hand in getting anything they considered necessary. He congratulated all concerned upon possessing a thoroughly up-to-date and well equipped hospital.

#### THE POSITION OF PATHOLOGIST TO THE L.C.C. MENTAL HOSPITALS.

The Mental Hospitals Committee of the London County Council has been considering the terms and conditions to be attached to the appointment of a successor to Sir Frederick Mott, pathologist to the London County Council mental hospitals and director of the *Asylum Officers' Superannuation Act*, and the appointment is to be determined by three months' notice on either side, provided that the first year's service shall be on probation, and the appointment be terminable at the end of, or at any time during, that period without notice if the person appointed be found to be unsuited for the service.

#### SMALL-POX.

While small-pox has disappeared entirely from the metropolitan area and no cases remain in the Long Reach Hospital of the Metropolitan Asylums Board, cases continue to occur here and there throughout the county. It appears that at Clowne, near Chesterfield, there were on February 2nd a total of twenty-five cases, of which five had been reported that day. Not one of the victims had been vaccinated; the first cases of this outbreak were mild, but later cases have been much more severe, without being malignant. No deaths have been reported.

## Ireland.

#### PROFESSOR ELLIOT SMITH.

PROFESSOR ELLIOT SMITH, F.R.S., who delivered the Montgomery lecture at the Royal College of Surgeons in Ireland on January 29th, on "The movement of the eyes," was entertained to dinner the same evening by the President of the College, Sir W. I. de C. Wheeler. The following guests were present:

The Most Rev. and Right Hon. the Provost of Trinity College, the Right Hon. James MacMahon, the President, Royal College of Physicians, the President of University College, Mr. Leonard Abrahamson, Professor J. W. Bigger, Mr. Alexander Blarney, Mr. C. R. Boyce, Professor Boxwell, Mr. L. A. Byrne, Professor Caldwell, Sir Arthur Chance, Mr. Arthur Chance, Professor McDowell Cosgrave, Mr. T. H. Croly, Professor A. Dixon, Mr. O. H. Drennan, Sir Con. way Dwyer, Professor Evans, Professor T. H. Gordon, Mr. L. G. Gunn, Mr. T. G. Hardman, Mr. Arnold K. Henry, Professor G. J. Johnstone, Mr. R. L. Joynt, Mr. J. L. Keegan, Mr. A. MacConnell, C. J. MacAuley, Mr. R. B. Miller, Mr. R. C. I. Thomas Myles, Sir Lambie, Mr. Seton Pringle, Professor Scott, Mr. E. Sh., Mr. Henry Stokes, Mr. R. A. Stoney, Mr. J. B. Story, Sir Wm. Taylor, Sir Robert Woods.



## WAR MEMORIAL

TO

MEMBERS OF THE BRITISH MEDICAL ASSOCIATION WHO GAVE THEIR LIVES IN THE WAR,  
1914-1918.

It has already been announced that the Council of the British Medical Association has decided that the memorial to members who gave their lives in the war of 1914-1918 shall take the form of a Book of Honour to be placed in the library, a memorial tablet in the entrance hall, and a small book for issue to relatives describing the Book of Honour. Mr. F. G. Hallett, Secretary of the Conjoint Examining Board in England, has generously undertaken, as a labour of love to the profession, to illuminate the roll and superintend the engrossing of the names. He submitted to a meeting of the special committee appointed to make arrangements for the memorial a sketch of the first page or frontispiece of the roll, bearing a beautifully illuminated dedication. The scheme of the illumination was greatly admired and Mr. Hallett was asked to complete it. He was further asked to arrange that the work of engrossment should be proceeded with as soon as the list of names could be completed.

A list has been prepared which is believed to be complete, but it is of course very possible that some names may have been omitted. The first instalment appeared in our issue of January 20th (p. 125), and a further instalment is printed below. It is hoped that members will be good enough to look through the list and notify any additions or corrections that should be made, and, in particular, to verify the correctness of the christian names, as in some instances difficulty has been encountered in ascertaining them. Corrections or additions should be sent as early as possible to Mr. L. Ferris-Scott, Financial Secretary, British Medical Association, 429, Strand, London, W.C.2.

## THE ROLL OF HONOUR.

(Continued from page 126)

MacAllan, James  
McCall, Sir John  
McCall, William  
McCormac, John Sides Davies  
McCosh, Thomas  
MacCuish, Kenneth Angus  
McCulloch, Thomas Campbell  
McDiarmid, John Campbell  
MacFarland, George Adams  
MacFarlane, Ian  
McGowan, Joseph  
MacGregor, Roderick Dear  
McHattie, Alexander Campbell  
Nicholson  
Mackenzie, Henry Deedes Nutt  
Mackenzie, John Gladstone  
McKerrow, Charles Kenneth  
Mackinnon, Duncan  
Mackinnon, Frank Irvine  
McKnight, Dundas Simpson  
MacLean, Ivan Clarkson  
MacLeod, George Munro  
Manders, Neville  
Mangin, Frederick Meredyth  
Mann, John Bently  
Mansfield, Cyril James  
Marks, George Frederick Handel  
Marshall, Charles Devereux  
Marshall, George Archibald  
Marshall, John  
Martin, Arthur Anderson  
Martin, Edwin William Sidney  
Martin, James Sackville  
Martin, Lionel Arthur  
Martineau, Alfred John  
Massy-Miles, Harry Godfrey  
Mathewson, Hamilton  
Mathison, Gordon Clunes McKay  
Mays, Charles Cecil Wildman  
Meek, Ethelbert Eldridge  
Meers, John Harry  
Melville, Harry George  
Menzies, Arthur John Alexander  
Meyrick, Robert Williams  
Miley, William Kildare  
Mill, George Robertson  
Miller, William Linton  
Miller, Albert Guy  
Miller, Archibald Ingram  
Miller, Frederic Richard  
Milne, Joseph Ellis  
Monks, Charles  
Moon, George Bassett  
Moore, Henry  
Moorhead, George Oliver  
Morgan, James Campbell  
Morris, John  
Mossop, Isaac  
Mowat, George

Mowat, James  
Moysey, Lewis  
Mulkern, Hubert Cowell  
Munro, James Sutherland  
Murphy, James Keogh  
Murphy, Matthew  
Murray, William Dunmore  
Naylor, Joseph  
Nicholas, James Joachim  
Nicol, Charles Mill  
Nix, Percival Kent  
Noyes, Harry Francis Golding

O'Connor, William Moyle  
O'Donnell, Frederick Albert  
O'Flynn, Dominick Thomas  
O'Flynn, Michael Joseph  
O'Leary, John  
Ommannery, Francis Montague  
Maxwell  
O'Reilly, Patrick Stanislaus

Palmer, Ambrose Henry  
Palmer, Hugh Salisbury  
Parker, Jeffery Wimperis  
Parkhurst, Arthur Usk  
Parsons, Edward Daniell  
Patel, Maneckji Burjorji  
Paterson, Andrew Melville  
Pattison, Peterwald  
Peel, Thomas Alfred  
Pereira, Frank Charles  
Peters, Owen Herbert  
Phillips, Abraham Zadok  
Phillips, Thomas McCann  
Philp, Claude Hastings George  
Philson, Samuel Cowell  
Pickles, Philip Dobson  
Pickthall, John Maynard  
Pickup, William Howard

Power, Pierce Michael Joseph  
Prall, Cedric Barkley  
Preston, Richard Amyas  
Pridham, Arthur Tregelles  
Priestley, Percival Thomas  
Pritchard, William Bridgett  
Proctor, John  
Pryce, Arthur Meurig  
Pye, Cecil Robert Arthur

Quirk, Frederick Whitly

Rees, Morgan James  
Reid, James More  
Reporter, Maneckjee Eduljee  
Richards, Samuel Jabez  
Ridge, Percy Brewster

Ring, Charles Augustus Eamsonson  
Rix, John Cecil  
Roberts, Benjamin Richard  
Roberts, Walter Rowland Southall  
Robertson, Angus Burns  
Robertson, Herbert Rennie  
Robertson, James  
Robinson, Henry Betham  
Robinson, Henry Ellis  
Robinson, Kenneth  
Robson, Charles Henry  
Rock, Frank Ernest  
Rodger, Douglas  
Ross, Alexander Aitken  
Ross, Andrew Beaconsfield  
Ross, Kenneth McAlpine  
Runde, Cubitt Sindall  
Russell, Robert Fergusson  
Rutledge, Victor John  
Ryley, Charles

Sandwith, Fleming Mant  
Sargent, Alfred George  
Saundby, Robert  
Savage, Thomas Copeland  
Saw, Noel Humphrey Wykeham  
Sayres, Alexander Ward Fortescue  
Scatchard, Thomas  
Scott, Samuel Geoffrey  
Selby, William  
Senter, John Watt  
Shand, William Garrow  
Sheppard, Walter Sidney  
Sherman, Reginald  
Sillar, Roy Allen  
Simpson, James Christian  
Sinclair, James Johnston  
Smith, Alexander Robb  
Smith, Charles Edgar Holton  
Smith, Douglas Wilberforce  
Smith, Francis Shingleton  
Smith, George Munro  
Smith, Harry Graham  
Smith, William Alexander  
Sneath, Wilfrid Archer  
Spensley, Frank Oswald  
Spittal, Robert Haig  
Sporer, Herbert Mather  
Stainsby, John Addison  
Steel, Arthur Robert  
Steel, Edwin Bedford  
Steel, James  
Stephen, David James Shirres  
Stephen, Lionel Henry Yorke  
Sterling, Robert  
Stewart, Thomas Louis Greuet  
Stiebel, Charles  
Stokes, John Wilfred  
Stonham, Charles  
Storr, Hugh Cochrane  
Strain, Thomas  
Stratford, Ernest  
Stritch, George Seymour Russell  
Struthers, John  
Sturdy, Arthur Carlisle  
Sturrock, Peter



Sturrock, William Malcolm  
Sutcliffe, Archibald Alfred  
Swann, Alexander James Thompson  
Sykes, Harold Widdrington

Tackaberry, John Bailey  
Tanner, Harold Herbert  
Tate, Isobel Addy  
Taylor, David Robert  
Taylor, Henry Young Cameron  
Taylor, James Craik  
Tennent, Bernard Chalmers  
Thomas, Charles Ernest  
Thomson, Alfred Maurice  
Thomson, Frank Wyville  
Thornley, Arthur Lincoln  
Tickle, Frederick Ralph  
Tolhurst, St. John Alexander  
Molesworth  
Townsend, Thomas Ainsworth  
Trewman, George Turner  
Turner, William  
Tweedy, Reginald Carlyon

Venables, Joseph Kendrick  
Verge, Arthur

Watto, Joseph Thorp  
Walker, Arthur Nimmo  
Wallace, Andrew  
Walsh, James Joseph  
Walsh, Patrick Joseph  
Walsh, Stephen Barry  
Ward, William Alfred  
Wardleworth, Douglas  
Warren, Peyton Tollemache  
Warrington, William Bennett  
Waters, George Alexander  
Watson, George Henry  
Waugh, Arthur John  
Weaver, John James  
Wedd, Edward Parker Wallman  
Wedgwood, Percy Ashworth  
Welchman, Eliot William  
Westlake, Algernon  
Whincup, Frank

Whitaker, Frederick  
White, Hill Wilson  
Whittle, Edward Denis  
Whitty, Michael Joseph  
Whitworth, Henry Parks  
Whyte, George Thomas  
Wight, Ernest Octavius  
Williams, Maldwyn Leslie  
Williams, Penry Garnons  
Williams, Sir William Daniel Campbell  
Wilson, Charles Edgar Andrew  
Wilson, John  
Wilson, John Sidney  
Winter, Laurence Amos  
Wood, Russell Elliott  
Woods, James  
Wooster, Reginald Joseph  
Wright, Eric Alfred

Yates, Henry Bridges  
Young, Robert Percy

The following names, additional to the list published in our issue of January 20th (p. 125), have been received in response to the appeal then made for additions and corrections:

Dykes, James Johnstone

Honman, Andrew Victor

Hornsey, John Frederick

## Correspondence.

### GALEN.

SIR.—In reference to your interesting leader of February 3rd on Galen (in which, by the way, you refer very generously to my humble pioneer efforts to put him into an English dress), may I try to throw light on one point which is still somewhat obscure? You state very properly that the great masters of literature have all had the gift of selection, but you go further and affirm that Galen had not this gift. Well, it is true that he is often diffuse and unsystematic, and includes much matter that a more artistic perception would have eliminated. Yet must we not realize that when compared with his predecessors and contemporaries his advance was precisely in the direction of this artistic method of handling material? Galen is, after all, universally acknowledged to have been an eclectic and a synthesizer, and this can only mean that he chose the best elements from all the competing schools of medical thought and blended these elements into a unity. Observe how clearly he saw this principle of artistic selection at work in the animal organism or organic part; amongst the most fundamental of the "natural faculties" he includes one of attracting the appropriate (*δυναμὴς ἐλκτικῆς τοῦ αἰσίου*), and another of eliminating the inappropriate, the irrelevant (*ἀποκριτικὴ τοῦ ἁλλοτρίου*). Galen affirms repeatedly that it is by exercising these faculties that the living organism showed itself an artist (his constant phrase is, *ἡ τεχνικὴ φύσις*, the artistic, creative organism), and, although he may not state it in so many words, yet surely it is clear from the whole tenor of his writings that he recognizes the need for corresponding faculties being exercised in the conscious human sphere as well; in other words, he saw that these eclectic principles were as fundamental in psychology as in physiology.

Too true it is, as you say, that Galen left much uneliminated that ought to have been eliminated, but let us at least agree that he went a long way in the right direction. He did not select enough, and you are right in demanding, as the next step, selections from Galen. A word, then, on this point. Who is to give us the material from which to select? Who, in a word, is to put the rest of Galen into English? Is it not even conceivable to the academic powers that be that this man, who held the whole medical world spellbound for a thousand years, might at least be worth reading in our day? In any case, there do not seem to be as much funds available for such purposes as would do more than recoup the translator for getting his MSS. typewritten and posted to the publisher. Or, if there are such funds, I have never heard of them.—I am, etc.,

A. J. BROCK.

Edinburgh, Feb. 4th.

volumes, and I have ordered many of those which are in preparation. The format of the volumes is delightful (I prefer the leather binding), and the size admits of one being easily slipped into the pocket. The scholarship and printing are of the best. I find I could easily become intemperate in expressing my admiration for the library, and I think any doctor with the slightest tincture of the classics would find a volume of Loeb an excellent corrective for the worries of practice. The message is as fresh as on the day on which it was written, and an hour or two, occasionally, in the clear air of Ancient Greece has a tonic effect which few modern books can give, unless, indeed, a man is too fagged for anything but the latest "best seller."—I am, etc.,

Falkirk, Feb. 5th.

GEORGE C. STEWART.

### THE TREATMENT OF NON-MALIGNANT AFFECTIONS OF THE COLON.

SIR.—In his letter on the above subject which appeared in the BRITISH MEDICAL JOURNAL of December 16th, 1922, Major R. Kelsall, I.M.S., refers to Sir Arbuthnot Lane's quotation of my experience that certain Himalayan races enjoy a remarkable freedom from asthenic dyspepsia, gastric or duodenal ulcer, appendicitis, mucous colitis, and cancer. Let it be assumed that freedom from these diseases is common to all Eastern races, Major Kelsall has most opportunely recorded his own experience in Burma. He has found that the maladies above mentioned are not at all uncommon amongst the Burmese, Indians, and Chinese who seek relief at the various hospitals of that province. His experience is of great interest to me, for, having regard to the food habits of the people of Burma, it would have been perturbing to have heard that they exhibited an unusual freedom from gastro-intestinal disease.

The Himalayan races to whom I referred are exceptional both as to their food habits and their freedom from these diseases; so also are certain other races of Upper Egypt and Northern Nigeria. I referred to them in my Mellon lecture on "Faulty food in relation to gastro-intestinal disorder" with the object of contrasting the conditions of life of certain communities or races that are free, or comparatively free, from gastro-intestinal disease with the conditions of life of those that are not. I found an explanation of the unusual freedom of certain Himalayan races from such disease in their habit of using only the unsophisticated foods of nature. I venture to think that the faulty food habits of sufferers from gastro-intestinal disease in Burma will provide an explanation of its occurrence.

The genesis of these gastro-intestinal diseases is, to my mind, not a question of race, nor of East or West, but is pre-eminently one of the food habits of communities, of households, and of individuals. These diseases are common amongst the people of Southern India, a high proportion of whom live on the borderland of vitamin B insufficiency. Like the people of Burma, their staple food is rice—usually polished rice. It provides a supply of vitamin B that is insufficient for the needs of the body in general, and for the needs of the gastro-intestinal tract in particular. It is ill balanced, being too rich in carbohydrates and too poor in suitable protein.

SIR.—Your notice in the BRITISH MEDICAL JOURNAL of February 3rd of the Galen volume in the Loeb Classical Library impels me to try to discharge a small part of the debt of pleasure which I owe to the library. I bought the two volumes of Apollodorus, translated by Sir James G. Frazer, and since then I find myself the possessor of over seventy



The ill effects on the gastro-intestinal tract of food having these faults have been established by they are such as lead to the ultimate assimilative, and motor functions of the alimentary tract, and are the foundation upon which is built much of the gastro-intestinal disease so common at the present day.—I am, etc.,

Pastour Institute of Southern India,  
Coonoor, Jan. 14th.

R. MCCARRISON.

SIR,—I offer these suggestions with some diffidence, but I think the difference in Colonel McCarrison's experience and that of Major Kelsall is due to the fact that the people in one case were those living under normal outdoor conditions on the hills and those of the latter were chiefly from a large town.

I have never seen a case of appendicitis or gastric ulcer in an Indian woman. Indians are no doubt comparatively free from gastric and intestinal troubles—first, because they empty their bowels completely once or twice daily. One sees them sitting amongst their crops at dawn and at sunset for this purpose. They use the crouching posture—front of thighs against the abdominal wall and knees apart, the body supported on the balls of the toes. I think it will be found that this secures a more complete evacuation of intestinal contents than the position assumed by the European, or by those adopting European clothing and habits.

Every Indian is constantly drinking water—very often very bad water; in fact, as often as he urinates if he can he drinks water. This renders the normal bowel contents more putty-like, and the motion is evacuated in one long piece or is of the consistency of porridge.

The men in India as a race have excellent teeth. The women often have very bad teeth and suffer from constipation and toxæmia when pregnant. They do not drink as much water as the men, take little exercise, and lead sedentary lives. In my experience a woman who drinks plenty of water and is not constipated never has eclampsia.

That civilized people retain their faeces too long is probable. An enema given after a normal morning evacuation reveals too often that the intestines are full of faecal matter. Is it not possible that this retention of waste material from which toxins can be absorbed may be the cause of many diseases common to the civilized—dyspepsia, gastric ulcer, appendicitis, rheumatoid arthritis, migraine? I would also suggest that dental decay is intimately connected with unhealthy conditions in the intestine.

I think x-ray photographs of the bowel during defaecation on the Eastern and Western plans might give useful information. It is possible that the Oriental gut has no pathological kinks because it is properly emptied daily and washed out.—I am, etc.,

Lahore, Jan. 17th.

KATHLEEN VAUGHAN, M.B. Lond.

#### THE SURGERY OF THE PROSTATE.

SIR,—In your issue of January 27th I read the address of Sir John Thomson-Walker on "Some problems of prostatectomy" with the interest which the importance of the subject and the authority of the author demand.

In his reference to the renal complications of prostatic disease wise stress is laid on the necessity for a complete physical examination of the patient, and the fallacy of accepting laboratory figures alone as an index of renal function.

The relative merits of one-stage and two-stage prostatectomy are considered, a decided preference being shown for the two-stage method in cases complicated by chronic urinary retention or sepsis. I was under the impression that such cases were far from uncommon in every genito-urinary clinic until I read that two-stage prostatectomy is rarely performed by Sir J. Thomson-Walker, as cases complicated by chronic urinary retention or sepsis form only "a small minority of the cases of prostatic enlargement." His routine procedure in this respect I believe that of many urologists in this country, who of late years have become increasingly partial to the two-stage method. If it be agreed that the majority of these cases are potentially uræmic, the added margin of safety provided by preliminary suprapubic drainage of the bladder cannot be gaudied.

Now, as the Leeds school has recently shown, we owe the classical operation of suprapubic prostatectomy to McGill, its perfection to Freyer; and it is of this operation, perfected by Freyer and practised by surgeons everywhere to-day, that

Sir J. Thomson-Walker has some interesting criticisms to make. In his description of it he emphasizes as cardinal defects the obstacle of a rigid abdominal wall, the "primitive and unreliable method of controlling hæmorrhage by irrigation with hot water," and the danger of sepsis.

His description of the operation does not correspond exactly with that of Freyer, which, for the sake of accuracy, I have reread, after twenty years; it is to be found of course in his book, *Enlargement of the Prostate*, published in 1902. There we find no reference to the embarrassment of a rigid abdominal wall, and there can be few surgeons practising the Freyer method who are conscious of such difficulty in enucleation of the prostate. Given adequate elevation of the gland per rectum, and a supple finger within the bladder, the apex of the prostate is usually reached without "the considerable amount of force required to push the abdominal wall downward towards the pelvis."

Let us pass on for a moment to the question of hæmostasis in this operation. On this point Freyer is illuminating. An unrivalled experience of the operation led him to say, "there is, as a rule, very little bleeding, and this is easily controlled by irrigation with hot water." "Primitive" the method may be, in the sense of time-honoured; the fact that it is effective is of more consequence, but, we are assured, the method "would not be tolerated in any other operation of first importance." I believe the arrest of *post-partum* hæmorrhage from the uterus falls within this category, and the obstetric teacher of to-day, as of yesterday, not only tolerates but actually advocates its use.

One further defect, sepsis, merits consideration. The danger from the rectal finger is emphasized by reference to "changing the enucleating hand." Is it necessary to effect this change? Such a manoeuvre would certainly be more dangerous than the speculative risk of "direct infection through the rectal wall," of which there is no proof.

The solution of the author for these defects in the commonly performed prostatectomy of Freyer is its abandonment in favour of the open operation, which he describes in detail; it is by no means new, but in the practised hands of Sir John Thomson-Walker I am sure it is an ideal method. My attention was drawn to it several years ago by a paper emanating from the Mayo Clinic (E. S. Judd, 1916). Therein is figured and described what I take to be the American edition of the open operation. I tried it, and found it uncommonly difficult to perform with the aid of a forehead lamp, various retractors, and the Trendelenburg position; in all essentials a striking contrast to the directness and economy of means employed in the Freyer operation. In particular, the insertion of the continuous hæmostatic suture through the torn frill of vesical mucosa and prostatic capsule struck me as a gymnastic rather than a surgical exercise. Assuredly it is not an operation for the general surgeon.

Criticism comes easily to one who writes from a brief. And a perusal of Sir John Thomson-Walker's address prompts the thought that in his brief for the open operation he has done less than justice to the merits of the older and classical operation by the method of Freyer.—I am, etc.,

Dakinfield, Cheshire,  
Feb. 5th.

GERALD RALPHS,  
Assistant Surgeon,  
Ashton-under-Lyne Infirmary.

#### POLIOMYELITIS AND ENCEPHALITIS LETHARGICA.

SIR,—Having had the opportunity of meeting, under the most cordial circumstances, the then Chief Medical Officer of the Local Government Board, Sir Arthur Newsholme, during the epidemic at first called "botulism" in the spring of 1918, my interest in the whole matter of this extraordinary malady has led me to follow its subsequent course in England. Obviously not the least important aspect of this subject is that of the true nature of the peculiar disease. Now there still is great difference of opinion on this point. But on reading over the report of the Local Government Board, which included my report to our Surgeon-General, and also after reading the new monograph on encephalitis lethargica and certain recent British literature, I am rather surprised to find that there has been some misunderstanding of my attitude on the matter of diagnosis. When I finished the survey of those cases which I was permitted to see by Sir Arthur Newsholme in London and the Midland cities, I came away feeling that I had observed what was tantamount to the second or third month stage of an epidemic of poliomyelitis. This point I stated clearly in my report. In that



same communication, notwithstanding the fact that I had found many cases of muscle atrophy which had gone undetected, and which led me to feel that the disease was poliomyelitis, I also intimated that the characteristics which made it seem unlike that disease—namely, those that had to do with the higher centres, and from which it drew its name, encephalitis—were also present.

In my report I carefully avoided taking the flat position as to whether the disease was encephalitis lethargica or poliomyelitis, and intimated that there was no way—save, perhaps, further animal experimentation—of determining whether the two were different expressions of the same disease, or actually two different diseases. Dr. F. G. Crookshank has, from the very first, held the position that no categorical distinction can be made between cases of "poliomyelitis" and cases of "encephalitis lethargica," and his original articles on the subject, as well as subsequent ones, have never been given adequate consideration by the public authorities, or by the journals. Notwithstanding the fact that experimental work under the direction of Dr. Flexner at the Rockefeller Institute has failed, so far, to establish immunological relationship between the two diseases, encephalitis lethargica and poliomyelitis, one cannot help being impressed, from the clinical standpoint, with the very great similarity of the two afflictions. We are having a good deal of this disease now in sporadic form in the neighbourhood of New York City, and I have recently seen many cases which one might justifiably classify in either category.

In view, then, of the still clouded state of our understanding of this remarkable affliction, which may involve the whole or any part of the central nervous system, it is difficult to comprehend why some medical journals have so unfortunately increased the fog by emphasizing one conception of the disease to the exclusion or misrepresentation of others.—I am, etc.,

New York, Jan. 16th.

GEORGE DRAPER.

### THE WHITE MAN IN THE TROPICS.

SIR,—In your issue of November 4th, 1922, there appears a note on the subject of the residence of white people in the tropics and a reference to the Northern Territory of Australia. May I briefly state the facts? So far as scientific investigations have gone in Queensland, it has been impossible to find any evidence of organic changes produced in human beings by high temperatures alone. There are, however, in Queensland few tropical diseases and only a negligible coloured population. The vital statistics of Queensland are extraordinarily good, as the following statement will show.

TABLE I.—Showing the Rate of Growth of White Population in Australian Tropics.

Date of Census.	Population of Tropical Portion of			Total Population of Tropical Australia.
	Queensland.	Northern Territory.	Western Australia.	
April 4th, 1881 ...	56,011	3,451	651	60,153
April 6th, 1891 ...	103,986	4,898	3,711	117,595
April 1st, 1901 ...	145,932	4,036	4,664	154,742
April 3rd, 1911 ...	157,112	3,310	4,598	165,420
April 4th, 1921 ...	181,123	3,709	4,443	189,275

It will be seen that the population of Tropical Queensland increased by 24,011, or 15.28 per cent., during the decennium 1911-21. The rate of increase compares very favourably with that experienced by the Commonwealth as a whole, the results for which showed, for the same decennium, an increase of 9.11 per cent. in respect of rural areas, and 19.10 per cent. in respect of provincial urban areas.

It may be of interest to note that in 1881 the tropical population of Queensland represents 28 per cent. of the total population of that State, the corresponding percentage at succeeding censuses being as follows: 30 per cent. in 1891, 31 per cent. in 1901, 27 per cent. in 1911, and 25 per cent. in 1921.

The particulars here furnished relate to all that portion of each State north of the tropic of Capricorn.

The scanty population in tropical Western Australia and the Northern Territory is due to economic causes. Tropical Queensland is just as hot as the Northern Territory and nearly as hot as the northern part of Western Australia.

TABLE II.—General Mortality and Infant Mortality Rates for the whole of Queensland.

Year.	General mortality rate (No. of deaths per 1,000 of mean population).	Infant mortality rate (No. of deaths under 1 year of age per 1,000 births).	Year.	General mortality rate (No. of deaths per 1,000 of mean population).	Infant mortality rate (No. of deaths under 1 year of age per 1,000 births).
1911	11	65	1916	11	70
1912	11	72	1917	10	54
1913	10	63	1918	10	57
1914	10	64	1919	12	72
1915	11	64	1920	11	63

In respect of general mortality, it may be noted that for each of the years specified Queensland was below the Commonwealth average on six occasions, and above it on the other four. In respect of infant mortality, Queensland was below the Commonwealth on nine occasions, and above it on one only.

It will be noticed that both adults and infants have a better chance of living in Queensland than in the Commonwealth. The whole of Queensland is north of 29° lat. S., and the greater part of it is north of the tropic of Capricorn. May I ask your readers to name any country blessed with a temperate climate which shows a better vital record?

I shall be grateful if any of your readers can give me any valid reason for the belief that coloured people suffer less than white people from heat. It is, of course, true that for the most part people in the tropics are dark and people in temperate latitudes are fair, but it is not universally true—for example, the southern Chinese are yellow and not black, and in the Pacific, as is well known, the Melanesians and Polynesians differ greatly in colour. Physically it would seem that the dark skin should mean a quicker response to heat by more rapid absorption. My own experience, however, of the tropics has been that the principal difference lies in the manner in which the coloured man adapts himself to the climate by discarding his clothing.—I am, etc.,

Melbourne, Australia, Dec. 28th, 1922.

JAMES W. BARRETT.

### THE DANGEROUS DRUGS REGULATIONS.

SIR,—These regulations are justified only on the principle that politicians need jobs and secretariats require food at the cost of that most patient of animals—the taxpayer. The British maxim used to be that laws were not made to bind honest men but to bind the villain of society. This is all being altered, and laws are being made to bind every member of society, and are being gradually pressed home until we will shortly receive Government orders for every act in our natural lives, except the act of being born and the act of dying.

This drugs order is most absurd. It used to be a maxim of economics that no tax should be levied unless there was a reasonable prospect that it could be economically collected—that is, that the cost of collection should not exceed the revenue collected. It was also a maxim of statecraft that no law should be made which could not be enforced. The medical law should be made which could not be enforced. The medical profession, like any other large body of men, has got a few villains. This dope law binds the honest man as well as the villain. It not only binds the former—it insults him. He objects to it, but he is far too patient. He does not object near enough. He should see to it in the future election of British Medical Councils, etc., that he elects men who will represent him, and not councils which will be the creatures of Government secretariats who only help the politicians to barter the liberties of honest men.

Will this dope order be effective? This is the grand issue; if not effective, it is the work of charlatan "statesmen"; to be effective, it has clearly to be efficient with the few villains of the profession—it cannot be effective with those who are not offenders, who are the great mass of the profession.

Assume that in defending the dope-taking degenerates against themselves Dr. A. is an offender: he is, so to speak, degenerate, too. Has degenerate Dr. A. any scruples about the methods he uses to evade the order? He has only to write up his register—falsely, of course—and no gentleman of the secretariat can detect him. His register shows a large opium thalamic practice which justifies the use of a large amount of cocaine. His register shows a large medical practice and requires a large amount of opium, etc. The opium and cocaine may be used for dope purposes, but this will not be



shown by his register when a committee comes to deal with him. Their honest verdict will be suspicion that the drugs are used for dope purposes, but not proven, and the case falls through. The dope order will not effect its object.

Take the "dry law" in the U.S.A., which is on the same footing, except that it deals with a very large body of the community who are not degenerate. Is it effectual? It has not lessened drink for those who can pay for it.

If the ordinary law of the land cannot cope with this question, this inquisitorial law will not.—I am, etc.,

HENRY SMITH, C.I.E.,

Lieut.-Colonel I.M.S. (retired).

Sidcup, Kent, Jan. 29th.

# RADIOTHERAPY FOR CANCER.

SIR,—I have only now had the opportunity of reading Mr. Fitzwilliams's paper in your issue of January 20th, as I returned but a few days ago from a second visit to Erlangen to study the recent developments there in that very deep x-ray therapy, principally which Mr. Fitzwilliams writes the same category with violet paste, and other so-called "cures" of cancer.

Surely such an attitude is most unfair, and discouraging to research, though it is true that immediately following his diatribe against any of the attempts at treatment, as an alternative to surgical removal of malignant growths, he does say, "Investigation and experiments should and must continue; I should be the last to decry them." He then goes on to imply that the medical profession is Athenian-like in its desire for "some new thing."

Now it is an interesting coincidence that, in your issue of January 27th, there is a report of a meeting of the Medical Society of London on the x-ray treatment of malignant disease, and, though different speakers held varying views as to the extent of relief that might, as yet, be expected from radiotherapy—"deep" or ordinary—of malignant disease, yet the consensus of opinion of both surgeons and radiologists seemed to be unanimous as to the benefits of radiotherapy after an operation for cancer.

Now on what do these benefits depend? Obviously because the rays have a lethal action on any malignant cells that may have escaped the surgeon, and which therefore form a focus for a so called recurrence. If, therefore, rays can destroy malignant cells when scattered near the surface, it only requires that these rays be made more and more penetrating—in fact that they approach the gamma rays of radium—and that apparatus and x-ray tubes be devised to produce them in sufficient quantity and for a sufficient time to allow them to act for this same lethal effect to be produced on malignant growths en masse.

Much has been written on this deep therapy, and in January of last year you published a paper of mine on the subject, after my first visit to Erlangen. Steady progress has been made there at the expense of much time and money, and with a most complete organization. It is unfortunate that, to obtain these penetrating rays, "larger and more expensive instruments" are necessary, but that is no reason why a carefully thought out scientific method of endeavouring to treat malignant disease is to be classed with quack nostrums. Mr. Fitzwilliams says he is the last to decry investigation. Certainly paragraphs 4 and 5 of his otherwise interesting paper are the last things to encourage research.

However, in spite of the gibes of Mr. Fitzwilliams and of any followers he may have, research and investigation will go on, at any rate on the Continent, where the mental attitude on the treatment of malignant disease is broader than it appears generally to be in this country.—I am, etc.,

J. CURRIS WEBB,

Honorary Radiologist, Gloucester Royal Infirmary.  
Cheltenham, Jan. 29th.

# HOSPITAL POLICY.

SIR.—Dr. Garratt's letter (February 3rd, p. 211) emphasizes the difficulty that meets any attempt to differentiate payments made by patients, and it overlooks a most important premise in the Council's Recommendation (SUPPLEMENT, BRITISH MEDICAL JOURNAL, November 18th, 1922, p. 187) that "all payments made for hospital benefit . . . are in fact payments towards all the services of the hospital," as I feel sure Dr. Garratt will concede they must be, and there is no attempt made in hospital accounts to separate contributions into parts for treatment and otherwise.

It would be well at the outset to know exactly what is included under the term "maintenance and accommodation"; we are told that it is only the "bare necessities of life," which, however, cost 30s. a week, but in a previous letter (December 23rd, p. 1196) it is stated that the working man has no difficulty in providing this maintenance and accommodation at home. Is it really suggested that these items in the expenditure of a working man with an income of 40s. or 50s. a week amount for any one member of the family to 30s. or even 20s. a week? Would anyone contend that the maintenance and accommodation found in a hospital, costing, say, 20s. to 30s. a week, is not incomparably better, especially from the point of view of the sick person, than that found in an ordinary working man's home, and that it is not an essential and integral part of most treatment? Could it be held that given the necessary medical and nursing staff and apparatus treatment would be as successful in a hospital patient's home, with the surroundings, air space, food, and service provided there, as it would be in the hospital?

No objection is raised to the assessment for a staff fund of money from a working man's contributory scheme because, we are told, "there will almost always be some definite financial arrangement between the contributor and the board." This arrangement of course applies to every unit contributing to the fund; is there not implied a similar understanding between the individual patient who pays and the hospital? Payment by a patient is not a charitable contribution, but for services rendered.

I would like again to ask whether it is intended in the case of a payment which exceeds the agreed amount for maintenance and accommodation that the sum assessed shall be the whole amount paid or only the excess.

No, I certainly would not attempt at the present time to approach any hospital board with our proposal, and I hope that no one will do so until we have arrived at a fairly general agreement among ourselves. It is a great thing that even the opponents of the Association's policy are now coming to admit that staffs of hospitals should receive at any rate some payment, and I am convinced that it will be possible before long to formulate a policy which shall have the practically universal acceptance of the profession; but it can only be arrived at by friendly discussion both in meetings and in the press.—I am, etc.,

Bradford-on-Avon, Feb. 5th.

CHAS. E. S. FLEMING.

# RAGGING IN BOYS' SCHOOLS.

SIR,—I think that there can be no doubt that bullying of a more or less objectionable type, now called ragging, does go on at a certain number of boys' schools. I have at the present time under my care a boy who had run away from a public school, and who when I saw him first was in a highly nervous and cowed condition. The whole matter is under investigation by the school authorities, and active steps will undoubtedly be taken to stop any bullying that may be going on. The average healthy boy can face his day's troubles all right, but it is when the boys go to their dormitories at night in charge of senior boys that serious consequences may arise to the boy's health, mentally, morally, and physically, if bullying is then continued. I seriously hope that all medical men who are consulted by parents as to a school for their boys will strongly advise them to inquire very carefully as to what supervision is exercised over the dormitories at night by the masters. At some schools the senior boys may be 19 years old, and it is a question whether paragraph 12 of Part II of the Prevention of Cruelty to Children Act, 1908, would not come into force; at any rate it is a serious menace to the national health.—I am, etc.,

HOWARD M. STRATFORD, F.R.C.S. Edin.

London, W., Feb. 3rd.

AN International Congress of Thalassotherapy will be held at Venice from April 9th to 12th. Titles of papers should be sent to the General Secretary, Professor Ceresole, Ospedale Civile, Venice, before March 15th.

THE thirty-fifth German Medical Congress will be held in Vienna from April 9th to 12th, under the presidency of Professor K. F. Wenckebach, when there will be discussions on encephalitis lethargica, introduced by von Economo of Vienna and Nonne of Hamburg; and on high arterial blood pressure, introduced by A. Darig of Vienna and Volhard of Halle. One afternoon will be devoted to demonstration of patients with endocrine disturbances.



## Obituary.

JAMES RITCHIE, M.A., B.Sc., M.D., F.R.C.P. EDIN.,  
Professor of Bacteriology, University of Edinburgh.

We had the sorrow last week briefly to announce the death of Professor Ritchie of Edinburgh on January 28th, after a long and distressing illness.

James Ritchie was born in 1864, and was the only son of Rev. W. Ritchie, D.D., of Duns, an eminent minister of the United Presbyterian Church. He was educated first at the Royal High School, Edinburgh, and later, in arts and medicine, at the University. By the time he graduated in medicine at 24 years of age he was already recognized by his teachers and fellow students as one for whom the future contained rich promise. In addition to honours at graduation he had the much coveted distinction of being appointed one of the Presidents of the Royal Medical Society. He was a resident surgeon in the Royal Infirmary in charge of Professor Chiene's wards. He graduated M.B., C.M. with honours in 1888, and took the degree of B.Sc. in Public Health in 1889. In the same year he went to Oxford to act as assistant to Mr. Horatio Symonds, F.R.C.S. In this post he continued for a number of years and gained a wide clinical experience, but the Oxford laboratories attracted him and he took up the study of pathology and bacteriology. He had in this the encouragement of Sir Henry Acland.

Research led to teaching and writing, and by 1895 he was giving instruction in bacteriology; in this year also he obtained the degree of M.D. Edin. and was awarded a gold medal for a thesis entitled, "Some contributions to the theory of germicidal action." In 1897 he published, with Professor Muir, a *Manual of Bacteriology*. This was from the first, and has remained, the standard English textbook on the subject. Sir John Burdon-Sanderson succeeded Sir Henry Acland in the Regius Chair of Medicine, and one of his first acts after his appointment was to arrange for a three-term course in pathology and bacteriology for the medical curriculum at Oxford. It fell to Ritchie to undertake the greater part of the teaching. Further developments naturally followed. He was first lecturer, then reader, and finally, in 1902, was appointed professor of pathology. During this time a new department was built under his direction. His work as a professor was most successful. The undergraduates were his enthusiastic disciples; his weight in all educational questions was recognized by his colleagues in the University, and he was elected to a Fellowship in New College. His Oxford period came to a close in 1907, when he returned to Edinburgh to take the post of superintendent of the Laboratory of the Royal College of Physicians; in 1913 he was appointed to the Chair of Bacteriology in the University.

This bald recital of the posts which he held is itself ample evidence of the kind and amount of work which Ritchie found it possible to undertake. He was never afraid of responsibility, and in what he did he had most exact methods of working, and ceaseless application. In teaching he was clear and stimulating; he came into close personal touch with his students, and he drove his teaching home with many a humorous stroke; he was held in much affection by all whom he taught. The subjects of his own researches were chiefly bacteriological; they included prolonged investigations into the nature of bacterial toxins and the relation of their harmful action to their chemical constitution; the nature of the immunity reaction; and the application of antiseptics. He inspired and trained numerous younger men to follow his footsteps, and his help and criticism were sought by workers in many medical schools.

He had a ready pen. The early interest in literature and philosophy which led him to take the M.A. Edin. in 1884 remained through his life, and the power of clear scientific exposition which he acquired lent a note of distinction to all his writings. In 1913 he edited with Professor Pembrey a textbook on *General Pathology*. It was an important contribution to the science by a group of authors in this country, and the volume included illuminating chapters on "Tumours," "Atrophy and Hypertrophy," and "Death," which he himself had written.

When the Pathological Society of Great Britain and Ireland was founded in 1906 Ritchie was appointed a secretary along with Professor Boycott. The success of the society is largely due to the genial enthusiasm and efficiency with which he gave himself to the work of his office. In 1908 a working

arrangement was made by which the *Journal of Pathology and Bacteriology* became the official organ of the society, and Ritchie became one of the editors with Professor Sims Woodhead. For this duty he was singularly well fitted: his wide knowledge of the subject in all its branches, his business capacity, his tact in dealing with contributors, and his keen appreciation of expository style made him an ideal editor. Needless to say, the journal prospered wonderfully under his care.

In the Medical School of Edinburgh he had a profound influence. For the Royal College of Physicians, the Royal Infirmary, and for the University he did endless service. He was one of those who originated the movement to establish in Edinburgh a memorial to Lord Lister. This was designed to provide an institution arranged and equipped for medical research in a form which would unite the forces of the various medical corporations in its comprehensive purpose. No sooner had the scheme been announced and the first steps taken to carry it into effect than the great war broke out. It was one of the greatest disappointments of Ritchie's life that he was not spared to see the development of the scheme.

He was ever on the side of progress, and into any duty which he undertook he managed to convey something of the idealism and enthusiasm by which he was inspired. In all the different offices he held he found many who relied on his judgement with implicit confidence, and not a few who claimed the privilege of friendship. His loyalty, steadfastness, and sympathy were unflinching.

His wide circle of friends, to whom his untimely illness and death brought the deepest sorrow and regret, express the most heartfelt sympathy with his widow and daughters.

J. LORRAIN SMITH.

Professor Muir of Glasgow University writes:

As Professor Ritchie was my intimate friend from the days when we sat together in the junior Latin class in Edinburgh University in 1880, it is fitting that I should add something to the account of his life.

James Ritchie was a son of the manse, and was brought up in an atmosphere of culture and piety; the impress of this was deep and permanent. Educated at Edinburgh High School and afterwards at Edinburgh University, where he graduated M.A. in 1884, he had the advantage of entering on the study of medicine with a well trained mind and liberal outlook. As a student of medicine, he was recognized by his fellows as a man of great ability and strong personality; he won many distinctions and graduated with honours. He had a strong bent towards the scientific side of his profession, but for a year or two after graduation it was not clear what line he would follow; he might have excelled in any department. It was after he went to Oxford as assistant to Dr. Horatio Symonds that his life's work was determined. Taking up pathological work at the Radcliffe Infirmary, he attracted the attention of Sir John Burdon-Sanderson, whose friendship and help Ritchie ever acknowledged with gratitude, and it was at his request that he started classes in pathology. When he went to Oxford there was no regular teaching of the subject. When he left it in 1907 he had been made professor, and a modern pathological institute had been built and equipped; and though he was helped by Burdon-Sanderson in every possible way, this was essentially his own doing, and it was a wonderful achievement. He had, moreover, remarkable success in teaching. His classes attracted a constantly increasing number of the best students, and not a few owe to him their earliest interest in pathological science. It is sufficient to mention that men such as Boycott, Dean, and Turnbull were among his pupils. In Edinburgh his gifts as a teacher have been equally prominent, and few men have inspired so much devotion in their pupils.

While fully recognizing the importance of morbid anatomy and histology, Ritchie realized the enormous advances which were being made in other fields. Especially was this the case with bacteriology, and it was with a view to bringing recent discoveries in this subject into relation with pathological processes that he and I wrote the *Manual of Bacteriology* which was first published in 1897. Here I should like only to say how much, in working with him, I came to admire both his critical judgement and the painstaking labour which he devoted to his share of the work. At a time when new work was being rapidly published, it was a matter of no small difficulty to distinguish wheat from chaff, but Ritchie's instinct was rarely at fault. His broad view of pathology is further illustrated in the *Textbook of General*



*Pathology*, which was edited by Dr. Pembrey and himself, and published some years later. The chapters were written by pathologists, physiologists, and physicians, including the editors, and the object was to set forth the results obtained in different departments, so far as they bore on the problems of disease. In this way the work has been of great value. From an early period Ritchie saw clearly that pathology was not to be studied by any one method, but that all possible methods must be used, and that, for the best ultimate results, work in different fields must be co-ordinated. How true this view is, has been abundantly shown in recent times.

Few men nowadays are so science as Dr. Ritchie was. knowledge of bacteriology in public health. He was an expert in kindred sciences, and he had considerable experience as a physician. Both as an investigator and as a director of research he held high rank, his own investigations dealing chiefly with wide problems in immunity and antiseptic action. In the systematic exposition of a subject and in critical analysis he had few equals, and here I may refer, in addition to the textbooks mentioned, to his review of the subject of immunity published in the *Journal of Hygiene* in 1902, and to his masterly article on the General Pathology of Infection in *Allbutt and Rolleston's System of Medicine* (second edition).

The unstinted way in which Ritchie devoted his powers to any work which he undertook is strikingly illustrated by his services to the Pathological Society of Great Britain and Ireland. He was one of its secretaries from the foundation, and when the *Journal of Pathology* was adopted as its official organ he became assistant editor, and, on the death of Sir German Sims Woodhead, editor of the journal. The work which he did, both on the scientific and business sides, was invaluable; for along with his critical ability, always used with courtesy and tact, he had a special knowledge of the technical side of publishing, which was of great advantage. I am sure that all the members of this society will acknowledge that to him the success and efficiency of both society and journal were largely due, and will always gratefully remember the debt they owe to him.

In later years his gifts for administration brought him new duties in other spheres. He was never a lover of office for its own sake, but he was always responsive to the appeal of any good cause. As a member for several years of the Board of the Royal Infirmary in Edinburgh, and more recently of the University Court, he took a leading part in furthering the work of both institutions, and gained the unreserved trust of his colleagues. Always zealous for progress, he was helped to it by his fair-minded, kindly, and unselfish dealing.

Professor Ritchie had a wide circle of friends—he loved their companionship. He was not cloistered in his own profession, and many grieve at his death whose work lay wide apart from his own. He was intensely human in his outlook, humorous and wise, interestingly informed, and sympathetic; witty also—his skill in word portraiture and epigrammatic terseness in description will not soon be forgotten. He rejoiced in the advancement of his fellows, and nothing that he did ever savoured of the petty or the unworthy. The foundation of all the affection felt for him was well and truly laid. He has left a noble record of good and useful work, but those who knew him best will dwell most on what he was. His

family life was a peculiarly happy one, and was for him a priceless possession. He bore the trials of his last illness with marvellous courage and patience, and he died, as he had lived, in calmness and confidence.

Professor ARTHUR THOMSON of Oxford has been good enough to send the following appreciation of Ritchie's work for the University of Oxford:

To those of us at Oxford who were associated with him in the days gone by, the death of Professor James Ritchie of Edinburgh recalls how much the medical school was indebted to his initiative and enterprise whilst he was our colleague. As I write this away from sources of accurate information, I must content myself with a general outline of his career whilst he was with us. Coming to Oxford about 1890, as a young man with surgical tastes, he became associated with Mr. Horatio Symonds, the well known surgeon, whose death we have had so recently to deplore.

In this capacity he was brought in contact with the staff of the Radcliffe Infirmary and with those concerned in medical education in the University. At this time the medical school was in process of development under the inspiring influence of Professor Burdon-Sanderson, who was ever alert to recognize ability and utilize it to the best advantage. Under Burdon-Sanderson's guidance Ritchie was early attracted to the study of pathology, and soon made rapid strides in his knowledge of that subject.

When Sir Henry Acland resigned the Regius professorship of medicine, after much pressure, and despite the adverse comments of some, Burdon-Sanderson accepted the responsibility of filling that chair. This he did with the declared intention of devoting himself to the furtherance of the study of pathology, for which at that time the University made no provision. He was most ably supported by the energy and ability of young Ritchie, who threw himself heart and soul into the project. For long they struggled against adverse conditions, with but slight encouragement from the University, and but little sympathy from the Oxford medical



Photograph by]

PROFESSOR JAMES RITCHIE.

[W. Crooke, Edinburgh.

graduates in London, whose contention was that Oxford was ill adapted for the pursuit of that study. Happily, when the future seemed to hold but little prospect of success, Mr. Ewan Fraser, then a pupil of Ritchie, offered us the munificent sum of £5,000 towards the erection of a department of pathology. The University, in duty bound, and in response to the crying needs of a growing school, provided the additional funds, and thus were laid the foundations of a subject which has since been taught at Oxford with ever-increasing advantage to its students and with recognized distinction by its teachers. It is not belittling the fame of Sir J. Burdon-Sanderson to say that Ritchie was the moving spirit in planning the new buildings and directing the teaching of the department of which he was subsequently placed in charge as titular professor of pathology.

Under Professor Ritchie's influence a school of pathology was soon founded, many of whose pupils have since risen to distinction, but unfortunately there was no permanent endowment associated with the chair, and the future was to some extent precarious. Under these circumstances it is not to be wondered at that, attracted by the inducements held out by the late Sir Batty Tuke, Ritchie, about 1907, accepted the directorship of the Research Laboratories of the Royal College of Physicians of Edinburgh. To us it was a sad



wrench; to him, I know, the decision was only taken in spite of the dictates of his heart, but the claims of his fatherland and his Alma Mater proved paramount, and he answered to what he regarded as the call of duty. What was our loss has proved Edinburgh's gain. When, alas, too late to retain his services, a couple of years after he left us a chair of pathology was instituted and endowed by the University, and the future of the subject was thus assured.

Meanwhile during his sojourn in Oxford Ritchie's abilities had been quickly recognized in other directions; he was given a Fellowship at New College, and in due course became a physician to the Radcliffe Infirmary. There his activities did much to place on a permanent footing the *entente* established between that institution and the University, particularly in respect of the facilities necessary for the teaching of pathology. It is in grateful recognition of these services that those of us interested in the welfare of the Oxford Medical School desire to place them on record. Of his personal qualities, as one of his oldest friends I write feelingly. He was a "white man" in every sense of the term. With high intellectual attainments and lofty ideals he combined a soundness of judgement and an insight into business which in my experience are unusual. He had within him the makings of a statesman but withal was simple, modest, and a lover of all that was good and pure. In the interests of the school he worked with untiring energy, often sacrificing his own personal claims, for the common good. Of his virtues as a colleague I can only write with feelings of profound respect and admiration. In lighter vein his pawky Scottish humour just bubbled over. When on occasions in debate he took the floor at the meetings of the Oxford Medical Club, his incisive criticism and brilliant repartee, often delivered in the broadest Doric, never failed to arouse the attention or stir the feelings of those who were privileged to hear him. Of Ritchie I never heard a man say an ill word—a tribute which few can claim.

By his death—alas! all too soon—Oxford shares with Edinburgh the sorrow entailed by the loss of a man so gifted and lovable. With us his memory will ever be associated with the early development of the medical school. To Ritchie we owe more than most men know. May it not be forgotten.

To his bereaved widow and sorrowing family we tender respectfully our sincere sympathy and regret for the loss of the man who helped us much.

Dr. F. E. REYNOLDS, Senior Lecturer in Pathology, University of Edinburgh, writes:

Although the name of Professor James Ritchie will go down in the history of the University of Edinburgh as a great scientist, worker, and teacher, it is even more for his personality that those of us who have been his undergraduates or workers in his laboratory will treasure his memory. The keen interest he had in each of his students made us feel that in him we had a personal friend who shared with us our joys and successes, our difficulties and sorrows. Nothing was too much trouble for him to do on our behalf. Although so fully occupied by his professorial and other duties, he was never too busy to give us freely of his advice and help both as a man and as a scientist. As with all truly great men, patience, simplicity, and humility were outstanding features of his character.

Professor Ritchie's death has caused a gap in the lives of his students and of his assistants that can be filled only by the memory of his many acts of personal kindness to us all. When our time comes to pass, may we be able to say with as much justification as he could have said: "I have upheld the honour and dignity of my profession; by my work and industry I have added to the great reputation of my university; I have helped my fellow men to the utmost of my ability."

Dr. ERNEST W. M. HIGGS of Oxford died from broncho-pneumonia on January 9th, aged 52. He was a native of Bodmin and received his medical education at Charing Cross Hospital Medical School and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1891 and the L.M.Dub. in 1892. After serving as demonstrator in minor surgery and house-surgeon at Charing Cross Hospital, he became surgeon to the Royal Niger Company, West Africa, and commenced practice in Oxford in 1900. Early last year, in consequence of a severe accident sustained six years before, he underwent high amputation through the thigh. An artificial leg was fitted, in the use of which Dr. Higgs became adept; he was able to drive his car as before and continued much of his professional and public work. He was a member from its

inception in 1912 of the Oxford National Health Insurance Committee, and had served on the medical service, allocation, and finance subcommittees. During the war Dr. Higgs was one of the examining members of the local medical board. He was a member of the Executive Committee, and was this year chairman, of the Oxford Division of the British Medical Association. He is survived by his widow and two sons. The funeral took place at Rose Hill on January 11th.

We regret to record the death, at Lisbon, of Dr. THOMAS WOOD of Leith, who had been ill for several months and was on his way to the Canary Islands. Dr. Wood graduated M.B., C.M. in 1883, and M.D. (with commendation) in 1904, at Edinburgh University. He was a well known general practitioner in Leith, was a Fellow of the Royal Society of Edinburgh and of the Obstetrical Society of Edinburgh, and held the appointment of factory surgeon. His principal public work was performed in connexion with Leith School Board, of which he was a member from 1894 to 1909. He took a large part in the provision of school extensions, and was particularly identified with the introduction of the medical inspection of school children, which was carried out in Leith for a considerable period before legislation made it general in the rest of the country. In his younger days Dr. Wood was a keen Volunteer, he was a justice of the peace for the county of Midlothian, and he was a member of the Edinburgh and Leith Division of the British Medical Association. He was the author of several contributions to medical literature, chiefly on subjects connected with obstetrics and public health.

We regret to record the death, following an accident, of ALFRED HENRY FISON, D.Sc., who had been Lecturer in Physics at Guy's Hospital since 1906, and at the London Hospital since 1910. He was born in 1857 and received his early scientific education at the Royal School of Mines. For more than twenty years he travelled about the country giving university extension lectures, and he had been secretary of the Gilchrist Educational Trust since 1912. Dr. Fison's great ability as a teacher was recognized by generations of students, many of whom caught something of his enthusiasm for physical science.

## Universities and Colleges.

### UNIVERSITY OF OXFORD.

THE Representatives of the University at the Conference on the Courses of Instruction Provided by Medical Schools, held at the University of London on February 3rd, were the Regius Professor of Medicine (Sir Archibald Garrod) and the Dean of the Faculty of Medicine (Dr. E. W. Ainsley Walker).

## The Services.

### R.A.M.C. COMMISSIONS.

THE following were the successful candidates for commissions in the Royal Army Medical Corps at the competition held in London last month: H. A. Gilkes, M.B., Ch.B.Oxf., R. Murphy, B.A., M.B., B.Ch., B.A.O.Dub., F. C. H. Sergeant, M.B., Ch.B.Liverp., W. L. S. Cox, M.R.C.S.Eng., L.R.C.P.Lond.

### DEATHS IN THE SERVICES.

Lieut.-Colonel Allen Andrew Lyle, R.A.M.C. (retired), died at Douglas, Isle of Man, on January 9th, aged 67. He was born at Belfast and educated in Dublin, taking the L.R.C.S.I. and L.K.Q.C.P. in 1876. He entered the army as surgeon in 1873, became lieutenant-colonel after twenty years' service, and retired on August 9th, 1898. After retirement he was employed for some time at Aldershot, and also served in the war of 1914-18, from June 7th, 1915.

Liam Napier Keefer, Bengal Medical Service, died on December 27th, 1922, aged 73. He was born in Ontario, and graduated B.A. Toronto in 1874, and M.D. and C.M. McGill in 1869. He took the L.R.C.S. Edin. and the L.S.A. in the same year, and entered the I.M.S. as assistant surgeon in 1869. He became surgeon-major after twelve years' service, and retired in 1889. Most of his service was passed in military employment; he was for many years medical officer of the 13th (Duke of Connaught's) Bengal Lancers (Watson's Horse). During the last five years of his service he held the post of chief medical officer of the Andaman Islands. He served on the North-East Frontier of India in the Lushai expedition of 1871-72 (medal); on the North-West Frontier in the Jowaki campaign of 1877-78 (clasp); in the Afghan war of 1878-80, capture of Ali Masjid, Laghman Valley and Zaimukht expeditions, capture of Zawa (mentioned in dispatches, medal with clasp); and in Egypt, 1882, action at Kassassin, battle of Tel-el-Kebir (medal with clasp). Khedive's bronze star, and Order of the Osmanieh (4th class). During the recent war he gave a very large donation to the Red Cross.



## Medical News.

THE Postmaster-General asks us again to call the attention of medical practitioners to the regulations under which "deleterious liquids or substances," including pathological specimens, may be sent through the post, as packets of the kind found not properly packed are regarded as prohibited articles and are destroyed. Any such liquid or substance must be sent by letter post, not parcel post; it must be enclosed in a receptacle, hermetically sealed or otherwise securely closed, which receptacle must itself be placed in a strong wooden, leather, or metal case in such a way that it cannot shift, and with a sufficient quantity of some absorbent material (such as sawdust or cotton-wool) so packed about it to prevent leakage from the package in the event of damage to the receptacle. The package so made up must be conspicuously marked "Fragile, with care," and bear the words "Pathological specimen." A person who sends such liquid or substance contrary to these regulations is liable to prosecution.

A SPECIAL post-graduate course of systematic lectures and clinical demonstrations will be given at the National Hospital for Diseases of the Heart, Westmoreland Street, W.1, on Thursdays, at 5.30 p.m., commencing on February 15th and terminating on March 29th. Further particulars can be obtained on application to the dean at the hospital.

BEFORE the National Assembly of the Church of England brought its session to an end last week it adopted a proposal by the Bishop of London to appoint an advisory committee to consider social and industrial matters in which moral issues are involved. It would, in particular, watch bills introduced into Parliament and call conferences of persons interested in social and industrial problems. A proposal to employ a paid secretary was withdrawn.

AT the invitation of the Mayor and municipality, the Royal Institute of Public Health will hold its next annual congress in Scarborough from May 16th to 21st, 1923. The Congress will be conducted in the following five sections: (1) State Medicine and Municipal Hygiene; President, Sir William Middlebrook, late Lord Mayor of Leeds. (2) Naval, Military, Air, and Tropical Diseases; President, Lieut.-General Sir Arthur Sloggett, K.C.B., late D.G.M.S., British Armies in France. (3) Bacteriology and Bio-Chemistry; President, Dr. F. W. Twort, Superintendent, Brown Institute, University of London. (4) Women and the Public Health; President, Lady Dorothy Wood, President of the Yorkshire Federation for Maternity and Child Welfare. (5) Industrial Hygiene; President, Sir Lynden Macassey, K.B.E., Governor of the London School of Economics, University of London.

CIRCULARS of inquiry as to the accuracy of their addresses were sent on February 2nd to all persons whose names appeared in the printed *Dentists Register* for 1922—that is to say, to all persons registered before the passing of the Dentists Act, 1921. Any person coming within the above category who does not receive an inquiry in course of post should communicate with the Registrar of the Dental Board, 44, Hallam Street, W.1, without delay, in order that there may be no risk of the erasure of his name under Section 12 (3) of the Dentists Act, 1878.

A DISCUSSION on the detection and estimation of small quantities of arsenic was held recently at Nottingham, at a joint meeting of the Society of Public Analysts and the Nottingham Section of the Society of Chemical Industry. Mr. A. Chaston Chapman, F.R.S., described his experience during the last twenty-five years with the zinc-acid process, and gave an outline of his procedure, more particularly in the use of cadmium to render the zinc sensitive. Mr. Wilkie, secretary of the Nottingham Section, demonstrated the use of his electrolytic method of estimating arsenic, in which the reversibility of the reaction was prevented. Dr. Monier-Williams showed an electrolytic Marsh apparatus modified from that in use in the Government Laboratory. Major Trotman expressed the opinion that the preliminary treatment of the material was the crucial point of the estimation. He suggested that a conference should be called to discuss the standardization of methods of estimating arsenic.

DR. A. V. HILL, professor of physiology in the University of Manchester, will deliver the Friday evening discourse at the Royal Institution, 21, Albemarle Street, W.1, on February 16th, at 9 p.m., the subject being muscular exercise.

THE Ministry of Health has issued a revised list of the treatment centres for venereal diseases approved by the Ministry under Article III of the Public Health (Venereal Diseases) Regulations, 1916. Information is also given as to the days and hours of the out-patient clinics, and for the irrigation of cases of gonorrhoea during the intervals between the clinics.

WE announced a year ago that the Conjoint Board of Scientific Studies had arranged to issue an alphabetical list of titles of periodical publications containing the results of original research, together with indications of the libraries in London, Oxford, Cambridge, Aberystwyth, Edinburgh, and Dublin, in which they are filed. The Carnegie Trust has given £1,000 to defray the cost of including a larger number of libraries. It is stated that over 300 copies have already been subscribed for at two guineas each.

THE Departmental Committee on the Taxation and Regulation of Vehicles appointed by the Ministry of Transport held its first meeting on January 26th. It heard evidence from Sir Arthur Stanley, chairman of the Royal Automobile Club, with regard to the proposal that motor taxation should take the form of a flat-rate duty on motor spirit. The so-called private motor had, he said, become very largely a utility or business vehicle. Evidence was given at this and subsequent sittings on behalf of motor manufacturers and traders to the effect that the present system of taxation had a prejudicial effect on the design of British motors and hampered trade.

THE annual dinner of the Hunterian Society of London will be held on Tuesday next. Particulars can be obtained from Mr. A. E. Mortimer Woolf, F.R.C.S., 81, Wimpole Street, W.1.

THE Chairman of the Executive Committee of the British Red Cross Society, 19, Berkeley Street, London, W.1, in making an appeal for subscriptions to enable the Society to cope with the position in the Near East, states that the Greek Government cannot meet the pressing demands upon it. The refugees in Greece include thousands of British subjects from Asia Minor and Thrace. From Lady Rumbold's Hospital, already established at Dedeagatch in Western Thrace, with 300 beds, assistance could be sent to the villages in the surrounding country, but at least three clearing hospitals of 100 beds each are, it is said, urgently needed in Western Thrace.

WE are informed that we were under a misapprehension in stating that the system by which medical publishers send out books on approval is new to this country; in particular we learn that Messrs. H. K. Lewis and Co., of Gower Street, carry on the system not only in respect of their own publications, but of the works of any publisher.

IN view of the withdrawal of overseas contributions the Imperial Institute is in financial difficulties, and the Secretary of State for the Colonies has appointed a committee to consider what functions carried out by the Institute are essential, and whether these should be continued by it or attached elsewhere.

A PAPER was read recently before the Royal Society of Arts by Mr. T. H. Fairbrother, a chemist on the staff of the British Dyestuffs Corporation, and Dr. Arnold Renshaw of Manchester, on the relation between chemical constitution and antiseptic action in the coal-tar dyes. As a general rule, dyes which show any marked antiseptic action contain one or more amido groups in the molecule. The physical state of a substance has probably much to do with its power to destroy organisms or interfere with their growth. If a dye-stuff has a colloidal nature in solution it is not likely to be an active antiseptic. While antiseptic action cannot be predicted from chemical constitution alone, absence of antiseptic action can be so predicted. A series of aniline dye-stuffs have been investigated for their action on certain common bacteria and protozoa (the latter generally paramoecia, isolated from sewage). The dyes which had the greatest action on paramoecia were Nile blue, Meldola blue, auramine O, ethyl violet, magenta acetate, malachite green oxalate, and certain new violet dyes. Paramoecia forms were affected at once by these dyes at a dilution of 1:20,000. With Meldola blue D—a new preparation of Meldola blue with zinc chloride—immediate death occurred with a dilution of 1:80,000, and within two and a half hours with a dilution of 1:160,000. Neo-salvarsan solutions, in dilutions of 1:200, fail to kill paramoecia in two hours. Of the dyes mentioned auramine O, ethyl violet, malachite green oxalate, and magenta acetate have great bactericidal properties also, but oxazine dyes act more intensely upon protozoa than upon bacteria. Two of the most active dyes—auramine and Nile blue—were tried in varying dilutions upon trypanosomes freshly obtained by bleeding an infected mouse, and within fifteen minutes a dilution of 1:20,000 of either of these dyes destroyed all the trypanosomes in the film, whereas control films under the same conditions showed great activity at the end of thirty minutes. Experiments on animals are held to make it probable that auramine might be injected intravenously in trypanosomiasis without any untoward result. Answering a point raised in a brief discussion, Mr. Fairbrother said that, though certain dyes stained the protoplasm of the organism, the staining did not appear to have any great antiseptic significance.



IN response to an invitation from the President of the Rockefeller Foundation, a commission has been appointed by the Japanese Minister of Education to visit the United States next March as guests of the Foundation for the purpose of studying American and Canadian medical institutions and methods. The six members of the commission are Dr. Kinnosuke Miura, professor of medicine, Tokyo Imperial University; Dr. Sahachiro Hata, professor of medicine, Keio University, and director of the Kitasato Institute; Dr. Ketsusuke Miyairi, dean of the medical college, Imperial University of Kyushu; Dr. Mataro Nagayo, professor of pathology and pathological anatomy, Tokyo Imperial University; Dr. Akira Fujinami, professor of pathology and pathological anatomy, Kyoto Imperial University; and Dr. Yoshihiro Takegi, chief surgeon and professor of surgery in the Tokyo Charity Hospital and Medical College. The leading hospital and research centres of North America will be visited, and attention will be paid by the commission to public health and hospital organization and administration, as well as to medical research.

A PORTRAIT of Dr. C. J. Sells, who for forty-six years and a half served as medical officer of the Guildford Poor Law Institution, has been hung in the board room of the Guildford Guardians in appreciation of his valuable services. At the unveiling ceremony on January 27th a replica of the portrait was presented to Mrs. Sells.

THE price of Sir Archdall Reid's book, *Prevention of Venereal Disease* (Heinemann), has been reduced to 7s. 6d. net.

IT is now possible to travel in comfort from the Libyan border of Tunis to the Atlantic shores of Morocco. During the war the French Government constructed a network of splendid roads, particularly in Morocco, and since the war the Compagnie Générale Transatlantique has put motor cars upon them and established twenty-two hotels. Full particulars of these tours, and also with regard to the French Riviera, can be obtained from the Office Français du Tourisme, 56, Haymarket, London, S.W.1.

DR. ROUX, director of the Pasteur Institute of Paris, has received the distinction of the Grand Cross of the Royal Order of the Dannebrog.

## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

Correspondents who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

Authors desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, Aitology, Westrand, London; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), Articulate, Westrand, London; telephone, 430, Gerrard.
3. MEDICAL SECRETARY, M. ... London; telephone, 2630, Gerrard. The address of the British Medical Association is 16, South Molton Street, London; telephone, 4737, Dublin, and of the Scottish Office, C. Rutland Square, Edinburgh (telegrams: Associate, Edinburgh; telephone, 4261, Central).

## QUERIES AND ANSWERS.

### INCOME TAX.

"M. D." gives particulars of the statement he sent in for assessment purposes.

We think that the root of the difficulty he finds in coming to some arrangement with the local inspector lies in the fact that the major items in his statement of earnings appear to have been estimated instead of having been taken from actual records of receipts. Out of the total gross earnings of £489, £200 is included for dispensary and £150 for private practice, and the claim for expenses of motor, chauffeur, and maid is put at an all-over figure of £350. "M. D." has evidently been placed in circumstances in which the keeping of proper records is almost impossible, but if he cannot produce more detailed evidence of his earnings than the above figures he is at a serious disadvantage in contesting the assessment. We advise "M. D." to see the inspector—or depute a friend or agent to do so—give him what

facts he can, and endeavour to come to some amicable arrangement of the whole matter. We have no doubt that if the facts as to "M. D.'s" illness are explained by letter the inspector will arrange for the matter to remain in abeyance for the present.

## LETTERS, NOTES, ETC.

### BLOOD UREA.

MR. A. BASIL ROOKE, F.R.C.S. (Bournemouth), writes: The following statement appears in Sir John Thomson-Walker's address on "Some problems of prostatectomy" published in your issue of January 27th: "The figures given as normal for the blood urea—namely, 20 to 25 per cent.—are too low in dealing with old men, and a blood urea of 40 to 50 per cent. may be present without indicating serious impairment of the renal function. I recently operated on a patient whose blood urea was 58 per cent., and who had been refused a single-stage prostatectomy on this account. The patient was in other respects a healthy man, and I disregarded the high blood urea. Recovery from the operation was uneventful." W. F. Braasch states: "It is generally recognized that an estimation of 40 mg. of urea nitrogen for each 100 c.c.m. of blood would indicate a guarded prognosis, and when it reaches more than 100 mg. the prognosis is very grave" (*Diagnosis of Surgical Lesions of the Kidney*, Mayo Clinic, 1919). The practice of recording the blood urea sometimes as a percentage and at others as milligrams in 100 c.c.m. facilitates such clerical errors as those in Sir John Thomson-Walker's paper, and is a source of much confusion. In the ... the result is expressed as a percentage of the same terminology for blood the position of the decimal point.

We referred this note to Sir John Thomson-Walker, who writes: I am obliged to Mr. A. Basil Rook for pointing out the clerical errors which have occurred in transcribing the figures of the blood urea in my address on prostatectomy. The figures should have been expressed in milligrams per 100 c.c.m. Without doubt the use of two methods of record promotes confusion, and it would be safer to use one common method. Whether the urea should be expressed in terms of percentage or in milligrams per 100 c.c.m. must lie with the biochemist rather than the surgeon.

### THE NATIONAL MILK CONFERENCE.

AN account of the National Milk Conference held at the Guildhall, London, last October, under the presidency of Viscount Astor, appeared in our columns at the time. The full report of the proceedings has now been published, in a paper-covered volume of some 220 pages, by the National Clean Milk Society, the conveners of the Conference (3, Bedford Square, W.C.1; 3s. post free). It will prove of interest and value to all who take a practical interest in the problems connected with milk and dairies.

### WINTER IN ITALY.

WE published a short time ago (January 20th, p. 116) an article on the opportunities Italy afforded to winter visitors. The Italian State Tourist Department, 12, Waterloo Place, London, S.W.1, has issued an illustrated pamphlet by Major W. Stormont, F.R.G.S., giving information on all the places mentioned in our article, and also a note on winter sport centres, such as Cortina d'Ampezzo. The price of the pamphlet is 6d., by post 1s.

### MERCURY-VAPOUR LAMPS.

MESSRS. WATSON AND SONS (Parker Street, Kingsway, London, W.C.2) have issued a bulletin on the mercury-vapour arc, with descriptions of the mercury-vapour lamp made by them.

### A CORRECTION.

THE price of the Dodge Brothers' coupé was given in our last issue as £375, whereas the figure should be £395.

### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 31, 34, 35, and 37 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 32, 33, and 34.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 47.

## SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words. All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive post restante letters addressed either in initials or numbers.



## The Hunterian Oration

ON

JOHN HUNTER (1728-1793): HIS AFFAIRS,  
HABITS, AND OPINIONS.DELIVERED AT THE ROYAL COLLEGE OF SURGEONS,  
FEBRUARY 14TH, 1923,

BY

SIR JOHN BLAND-SUTTON, F.R.C.S.,  
CONSULTING SURGEON, MIDDLESEX HOSPITAL.

My knowledge of John Hunter began in a curious way. In my ninth year I was taken to his famous house at Earl's Court and shown the den in the garden where he kept wild beasts in order to study them. Being fond of animals, this made a deep impression on my mind. In the simple religious exercises of my childhood, the story of Adam and Eve, the first keepers of a zoological garden, and the famous exploits of Noah, collector and preserver of wild animals, had great charm for me. Some years later the visit came vividly to my mind on finding a dilapidated copy of Otley's *Life of Hunter*, which I read eagerly. Ever since I have been deeply interested in all that relates to this extraordinary man, and the preparation of this Oration has been to me a delightful and engrossing occupation.

## LONG CALDERWOOD (1728-1748).

John Hunter was born at the farmhouse Long Calderwood, near Glasgow. The house bears a tablet to the effect that he was born February 13th, 1728. In his lifetime the birthday was kept on February 14th, and this College drinks to his



FIG. 1.—The nerves on the nasal septum. (Hunterian.)

memory in "Solemn Silence" on the 14th. Like myself he was probably born so late at night that in the hurry-scurry the midwife failed to notice whether he appeared just before or shortly after the clock struck twelve.

John, or Jockie, as he was called at home, the youngest of a family of ten, petted by his mother (his father died in 1741, aged 78), disliked school and hated books. He preferred to lead an out-of-doors life, looking after nests, insects, and animals, whilst his brothers got the same education as country gentlemen.

At the age of 17 he spent some months with a brother-in-law, a timber merchant and carpenter in Glasgow, and we can well believe he tried his hand with tools; his mother noticed that the "lad showed neatness of hands and quickness of perception in anything that regarded mechanism." What inquisitive boy has not meddled with awls and gimlets, mallets and chisels, hammers and nails, saws and planes?

Sharp boys can learn much that is useful in workshops, and a training in joinery teaches neatness and precision. Looking back it is instructive to consider how the farm life fitted John Hunter for his subsequent career. The practical surgeon is a craftsman: Greek and Latin are useful to him for polish, but think of the natural knowledge a smart boy can collect on a farm about sowing, sprouting, and the

ripening of crops; the breeding of animals, gelding of colts, spaying of pigs, caponizing of cocks, fattening and slaughtering of animals for food; farriery—shoeing and doctoring of horses; the wild life in ponds and ditches, fields and hedgerows, trees and heather. In the village he can watch the wheelwright, smith, tinker, glazier, cobbler, and cooper, all experts with simple tools.

Practical knowledge of this kind was useful in that state of life unto which William Hunter called his youngest brother.

## HUMAN ANATOMY (1748-1760).

At the age of 20 John Hunter came to London with the object of assisting his brother William, who had a school of anatomy at the back of his house in Covent Garden. John showed unusual skill in dissecting, worked hard, liked the companionship of men of his own age, and was fond of the theatre. There can be no doubt that he was an example of the medical student skilfully described by Dickens in *Pickwick Papers* (1836) and Albert Smith in *Punch* (1841).

Human anatomy appealed to this uncouth Scot, and William Hunter, a cultured man, moulded John's character and "bred him to anatomy" in its widest significance, with astonishing results.

In the summer of 1754 Hunter was busy studying the routes by which the branches of the fifth nerve leave the

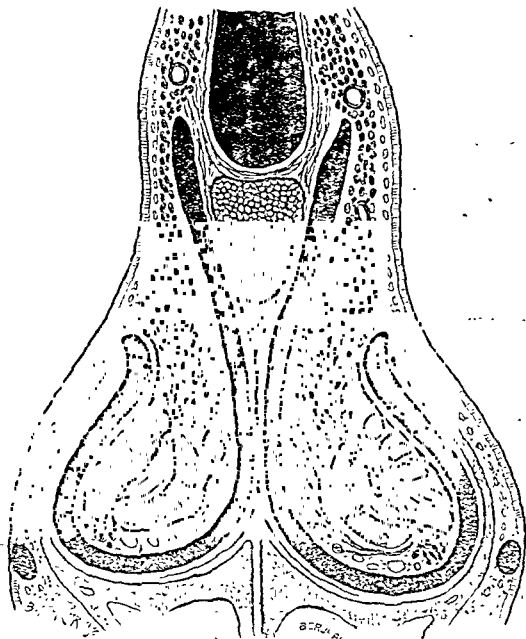


FIG. 2.—Section of a rabbit's nose exposing Jacobson's organ. (Klejo.)

skull—a fascinating exercise. He unravelled the branches of the olfactory nerve, traced the course of the naso-palatine nerve, and the rambling nerve known as the nasal branch of the ophthalmic division of the fifth. A specimen (Fig. 1) he dissected to show these nerves exists in the museum, in excellent condition.

Hunter's attention was arrested by the uniformity in the course and distribution of nerves. Even now, few grasp the problem presented by the branches of the olfactory nerve which run down the anterior border of the nasal septum. In 1811 Jacobson, a surgeon in the Danish army, discovered a curious organ lodged in a scroll of cartilage situated on the anterior part of the base of the nasal septum (Fig. 2).

Jacobson's organ—a vestige in man, ape, and whales—is well developed in many mammals. Little is known of its function, but the specialized cells lining its cavity receive the olfactory twigs detected by Hunter. Jacobson's organ is well developed in mammals with long snouts, especially insectivora that find food at dusk; rodents whose young are born blind and live in deep burrows; and kangaroos, whose young must find their way into, and pass many weeks snugly ensconced in, the mother's warm pouch.

The prime service of olfaction is the quest for food, and is of first-rate importance to mammals born blind—it enables



them to find the teats of the mother. The vomero-nasal is subsidiary to the olfactory organ.

The morphology of the canals and foramina by which the cranial nerves leave the skull has always fascinated me, and many delightful hours of my life have been spent in unravelling the secrets connected with their methods of exit, re-entrance, and final escape from the skull. The study interested Hunter, apart from its morphological aspect. In his day vestiges were merely anatomical curiosities. How much greater the interest for us to unravel these curious courses in the light of man's evolution!

For Hunter morphology was a gleam in the intellectual sky. We revel in the sunshine; Morphology has become the Soul of Anatomy.

Many regard the dissection of the human body as a repulsive exercise. Many begin to dissect with disgust, but overcome the distaste and continue the study because it fits them for the medical profession. Some

FIG. 3.—Segment of an eel showing the ovary. The brittle marks the end of the rectum and the abdominal pore. (Hunterian.)

who have found difficulty in retaining or appreciating the facts of anatomy have shone in other professions. On the other hand, men unable to grasp mathematics or the principles of physics have become proficient anatomists. In a few instances men working at a humdrum calling turned to anatomy more or less accidentally and pursued it with zeal and success.

It is easy to understand that the unschooled, apparently idle, Jock Hunter, when introduced to the dissecting-room, became interested in the structure of the human body and found it an absorbing study.

*Verily the gunpowder of genius is stored in many minds, but—it needs a match!*

#### BELLEISLE AND MARINE ZOOLOGY (1760-1762).

Hunter during the first period of his life in London (1748-1760) acquired a practical knowledge of human anatomy, but this was mainly a study for the winter months. During the summer he studied surgery, following Cheselden for a season, also Pott, but St. George's Hospital offered better chances, and he joined as surgeon's pupil, and later had the good fortune to serve as house-surgeon for two years—an invaluable experience.

Whilst engaged in the routine of dissecting and teaching he developed a taste for comparative anatomy, which became an absorbing passion, enhanced by a change of locality. In the spring of 1759 he had some lung trouble, which made it necessary for him to seek change of climate. In 1760 a force was sent from England to take Belleisle, near the mouth of the Loire. Hunter applied for an appointment with the expedition and served as staff surgeon. This gave him the chance of obtaining practical knowledge of gunshot wounds.

Belleisle, well named, is a pretty island, now almost treeless. It is a plateau of 33 square miles about 130 feet above sea-level; here and there slopes give access to beautiful tracts of white sand. The coast has many grottoes. The most remarkable is La Grotte de l'Apothicaire, a sanctuary for sea birds; their nests in rows on ledges of the rocks are supposed to resemble bottles on the shelves of a pharmacy.

I spent a week on this lovely island and realized what a change it proved for a man from London ardently pursuing

comparative anatomy, a country new to him in flora and fauna. He took advantage of it by observing, collecting, dissecting, experimenting, preparing and preserving specimens. Hunter had no knowledge of marine zoology until he landed on this island, which afforded him access to barnacles, sea squirts, sea nettles, sea stars, sea anemones, sea cucumbers, sea urchins, huge spider crabs, tunny fish, and conger eels.

While studying and dissecting these animals the idea came into his mind that living things could be arranged in a physiological series, but he was puzzled to ascertain the use of strange organs he met with in marine invertebrata.

Like Cuvier he had to rely on naked-eye dissection, but dissection, however skilful, does not enable anatomists to determine minute structure of soft organs, which is the key to function. These difficulties are shown in Hunter's studies of the reproductive organs of eels. He truly observes, "the production of animals out of themselves excites wonder and curiosity." The precise manner in which it is carried out has required centuries of observation for its demonstration. The eggs of flies, butterflies, fishes, frogs, turtle, crocodiles, snakes, and birds appeal to the simplest mind.

It was difficult to prove that mammals came from eggs, for their small eggs require a microscope to make them visible. This is true of mice and men.

In London he got eels every month of the year from a fishmonger and examined the parts he expected to be the ovary with a magnifier, but without result. In the summer of 1761 there was a vast number of conger eels in the sea around Belleisle; he dissected many and satisfied himself that the ruffle-like organs he regarded as ovaries in the common eel were indeed ovaries (Fig. 3), but he did not solve the mystery of the propagation of eels.

In 1896 Grassi discovered that eels need salt water for the development of their reproductive organs, and the deep

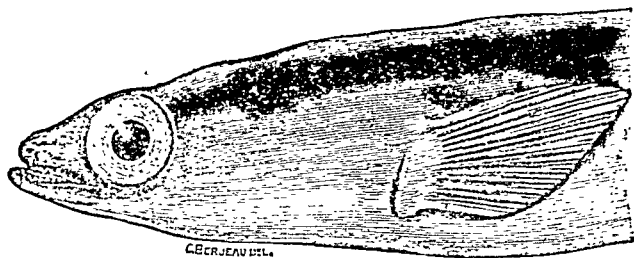
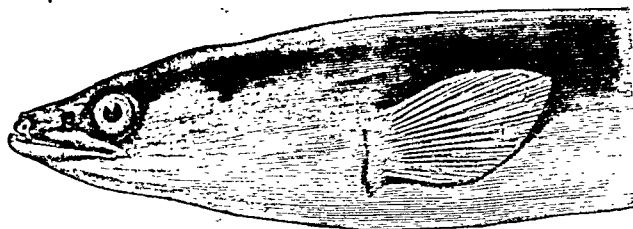


FIG. 4.—Drawing showing the change from a yellow eel with thick lips, small eyes, and compact fin, into the large-eyed silvery eel which migrates to the ocean, where it becomes mature, spawns, and dies. (From models in the Natural History Museum.)

sea is their spawning place. In autumn they migrate to the sea and the dull yellow of their skin changes to silvery glitter; the eyes enlarge, the pectoral fins become black and change in shape, and the ova ripen (Fig 4). Mature eels cease to feed, and after spawning die.

Recently hatched eels, called leptocephali, are as transparent as glass, and the eyes shine through the water like black beads. When about 7 cm. long, leptocephali cease to



feed and change into elvers, which in spring find their way up the rivers in enormous numbers and in fresh water change into eels. These in their turn descend the rivers, seek the depths of the sea, where, decked in glorious sheen, they spawn and die.

Although Hunter did not get on well with his senior colleagues at Belleisle, he was comfortable on his pay, and enjoyed the opportunities for studying natural history, but in 1762 a British expedition to Portugal was the topic of conversation; he was keen to go, and his brother William helped him with the authorities in London to do so.

#### PORTUGAL AND GEOLOGY (1762-1763).

One of the last episodes of the seven years' war was an attempt on the part of France and Spain to invade Portugal. The French and Spanish forces were collected at Ciudad Rodrigo with the object of advancing on Lisbon.

England decided to support Portugal, and sent an expeditionary force of 7,000 men. The British and Portuguese troops, under the command of Count Schanburg-Lippe, an able officer trained in the school of Frederick the Great, assembled on the banks of the Tagus near the Spanish border. The outstanding feature of this almost forgotten campaign was the use for the first time of light cavalry, which General John Burgoyne was instrumental in introducing into the British Army. Under Burgoyne the cavalry rendered distinguished service at Valencia d'Alcantara, and in some sharp fighting at Villa Velha. The campaign was concluded by the peace of Paris 1763. Mr. Robert Boyne Home was the surgeon attached to the regiment of light horse.

John Hunter, transferred from Belleisle to Portugal, was in charge of a hospital; he landed at Lisbon in July, 1762, and in November was at Portalegre, near the Spanish frontier, 140 miles from Lisbon. General headquarters was at Estremoz, thirty miles south of Portalegre, on the direct road to Lisbon. Little is known of his doings in Portugal, and it has been supposed he made additional observations on gunshot wounds; for this there was not much opportunity, but with a force of 7,000 men there would be accidents and sickness incidental to a campaign in a foreign country.

It is certain that in Portugal Hunter made observations of natural history and collected specimens, some of which are preserved in the museum, but the most important gain was an inspiration to study geology. The hill on which Portalegre is built belongs to a remarkable plateau called Alentejo (spelt Alentejo in 1763). In an extraordinary tract published about fifty years after Hunter's death, under the title *Observations and Reflections on Geology*, he refers to the extensive plateau called Alentejo, which shows evident signs of its surface being covered by the sea, and to the enormous heaps of granite so frequent on the plain. The tract not only contains remarkable observations on geology but some ideas on the distribution of animals in relation to the antiquity of the world inconsistent with the creation as described in Genesis. He abstained from publishing them on the advice of friends.

Recently I visited Portalegre, the Alentejo, and the sur-

rounding country, and satisfied myself that Hunter while living on the plain had many inducements to study botany as well as geology, for he was among a subtropical flora, and at Lisbon had excellent opportunities for collecting specimens and adding to the knowledge of marine zoology he had acquired at Belleisle.

Hunter's domestic life was influenced in an important manner by the affairs of Portugal, for Home, surgeon to Burgoyne's regiment of light horse, became his friend. Returning to England, he got engaged to Home's daughter Anne. It was a long engagement, for they were not married till 1771. Mrs. Hunter's younger brother Everard became Hunter's house-pupil, then his assistant, and finally executor. Sir Everard Home and Matthew Baillie founded the Hunterian oration in 1813, and Everard Home was the first orator (1814).

#### EARL'S COURT.

On the conclusion of peace Hunter returned to London, a staff surgeon and deputy purveyor on half-pay. He took a house in Golden Square and started to practise. His half-pay, probably half a guinea a day, helped to pay the rent. He opened a room for dissecting, made teaching preparations, and, while waiting for patients, like many of us taught human anatomy for capital and comparative anatomy for interest. The classes were neither large nor lucrative, for he was not a good lecturer.

In 1765 he bought the lease of three pieces of land at Earl's Court, built a house, established a small menagerie, and made observations and experiments—

On gizzards of gulls,  
hawks and owls,  
The heat of lizards, spurs  
of fowls;  
Bones of pigs, air sacs  
of eagles,  
Moaning dingoes, barking  
beagles;  
Sleek opossums, prickly  
hedgehogs,  
Buffaloes, dormice,  
wolves and dogs.

Leopards and jackals  
lived in the den; stallions,  
sheep, goats, and rams  
occupied the stables. A

mulberry-tree furnished leaves for the silkworms, and St. John's wort supplied pollen for the bees. There was a pond for ducks and geese which laid eggs for the table and for embryological study.

Hunter made observation hives for the bees, discovered that their wax was a secretion, and left some excellent notes on the relation of vegetables to animal fat. With the aid of Ramsden's delicate thermometers he discovered the significance of the terms "hot-blooded" and "cold-blooded" animals. He would have been astonished to learn that muscular action is the main source of animal heat. Hunter failed to grasp the importance of measuring the temperature of the body for clinical purposes. Indeed, the value of the clinical thermometer was not appreciated until the middle of the nineteenth century.

Earl's Court remained a bachelor's residence for seven years. In 1771 John Hunter, aged 43, married Anne Home, aged 29, a charming, amiable, and accomplished spinster, who in due course added to the physiologist's paradise the most delightful of all objects of natural history—children. Mrs. Hunter had a brother, Robert Home, an artist, who painted a portrait of Hunter which eventually came into the possession of the Royal Society. In 1787 Hunter read a



FIG. 5.—John Hunter, by Robert Home. The dog is supposed to be the offspring of a half-bred wolf bitch and an English mastiff.



paper before that society on some observations "tending to show that the wolf, jackal, and dog are all of the same species." The odd dog in the picture is supposed to be the offspring of a half-bred wolf bitch and an English mastiff. The dog died in 1782. The portrait represents Hunter about the age of 45. He describes himself at this period in a letter to James Baillie, his brother-in-law, as "one of the happyst men living" (1775), in spite of the fact that he had to raise money on the Earl's Court property, a fact concerning which Dr. G. C. Peachey has found unimpeachable documentary evidence.

Hunter was a resident at Earl's Court for thirty years. In 1877 the Royal College of Surgeons, and a few friends, placed a window to his memory in the north transept of St. Mary Abbot's Church, Kensington. One of the principal lights represents St. Paul in the island of Melita casting a viper off his hand.

#### THE MUSEUM.

Nothing is known of the time Hunter began to collect specimens with the definite object of establishing a comprehensive museum of comparative anatomy. The Museum owes its origin to the peculiar conditions under which medical education was carried on in London in the eighteenth century. Schools of anatomy were private ventures. It was necessary for a surgeon who owned and managed a school to illustrate his lectures with skilfully prepared specimens. Such preparations are more useful than diagrams, wax models, or drawings on blackboards, even when made with skull and coloured chalk.

Hunter made many preparations for his brother, and some exist in the Hunterian Museum at Glasgow, but when he returned to London in 1763 he brought with him specimens of natural history from Belleisle and Portugal, and they formed the nucleus of the comparative anatomy series. It is a fair inference that such specimens were collected for teaching purposes connected with his lectures, but the collection grew until it became a museum that could be regarded as a discourse on the human body in relation to the animal kingdom. Gradually its founder's ideas expanded, and he conceived that it would be an ample illustration of life exhibited in the vast chain of organized beings, living and extinct, by a display of the various organs in which the functions of life are carried on.

In 1783 the lease of the house (42, Jermyn Street) which he had acquired from his brother William expired. He then took premises in Leicester Square and built his famous Museum. Sir Joshua Reynolds lived in the square, and the two men subsequently helped each other to what artists jokingly call immortality—one as subject, the other as painter. When Baron Grant furnished Leicester Square and laid out the garden in 1874 a colossal bust of Hunter was placed in one corner and a bust of Reynolds in another.

Hunter's example in collecting specimens was contagious. Blizzard, Astley Cooper, Heavyside, and other surgeons formed museums, but the specimens are dispersed. The care entailed in the upkeep and supervision of such museums is very great. Hunter's collection nearly perished. His executors, Matthew Baillie and Everard Home, when struggling young practitioners, with sound judgement retained the services of William Clift, who preserved the specimens from decay by the judicious use of two gallons of spirit occasionally. He had no books, so he read and made extracts from Hunter's manuscripts. The transcripts were made from some of the notes afterwards destroyed by Everard Home. They were published as *Essays and Observations* by Owen (1861). For seven years Clift received seven shillings weekly and meekly as wages. In return for these services he was made first Conservator when the Government bought the collection and entrusted it to the College in 1800. The Museum contains in orderly array big and little of every living thing Hunter could obtain: shrimps and sharks, tits and ostriches, shrews and whales; of the human kind dwarfs and giants. Animals

now living on the earth were not enough—he must have fossil forms. When John White returned to England (1790) from New South Wales "the nondescript animals, Kangaroo, Tapua Roo, and Potoroo" were handed to Hunter for investigation. It is now so rich in specimens illustrating the anatomy of vertebrates, living or extinct, normal and abnormal, that no one who is prudent ventures to publish anything he thinks new without examining correlated specimens in the Museum. It abounds in surprises, and is in a sense an anatomical Valhalla.

#### PATHOLOGY.

Specimens illustrating "diseased action" were preserved in the museum. Pathology is a department of Biology. Hunter's ideas of many pathological processes were crude; without the aid of a compound microscope, section-cutting and staining methods, his knowledge of tumours was not above that of the farrier. Shepherds talk of corns, warts, blains, wens, and blemishes. The slaughterhouse supplied him with melanotic tumours from oxen, and from the knacker's yard he got similar things from horses. Graveyards yielded calcified fibroids and tumours of bones.

In Hunter's day, and for many years afterwards, pathological specimens were mainly spoils from the dead-house; to-day they are prizes from the operation theatre. The history of surgical progress during the last fifty years can be traced in the Museum catalogue. The hall in the Museum that enshrines Hunter's statue is a temple of pathology, admirably arranged and catalogued by Shattock. It should stimulate surgeons to study the science as well as practise the art of surgery.

#### EMBRYOLOGY.

Hunter's keen interest in monsters was not mere curiosity, but part of a great scheme for showing the phases of Life. The collection of Malformations in the Museum is the most comprehensive in the world. He was aware of the importance of a knowledge of the developmental stages of animals, and applied himself to study the chick. He studied geese because their embryos are bigger than those of fowls. He tried swans,

but could not get eggs enough. He tried to obtain ostrich eggs, but only got two in thirty years, and made nothing out of them. The flock of geese for embryological work was kept at Earl's Court for thirty years.

Although he obtained much first-hand knowledge from this work, and some excellent drawings, he discovered little of importance, but left among his notes, awkwardly expressed—for masters of science are rarely masters of style—

*Embryology indicates the steps by which the higher forms in a group of animals have been evolved from a lower.*

Thirty years after Hunter's death von Baer discovered the human ovum, and realized that embryology is the key to the knowledge of the human body.

Hunter collected books but read little. Probably he never read the *System of Philosophy* written by Lucretius, although both men reasoned on inexplicable things:

LUCRETIUS: "Before the horns of a calf appear and sprout, he butts when angry and pushes passionately. But the cubs of panthers and lions' whelps already fight with claws, and biting, when their teeth and claws are scarcely yet formed."

HUNTER: "A duckling runs into the water the moment it sees it. A hen with ducklings seeing them run into the water is unhappy."

"A duck with chickens tries to induce them to enter the water; they run about the bank."

In relation to these paragraphs it may be stated that incubators and serial sections aided by the most exquisite stains throw no light on instinct. Though dogs and pigs do not interbreed, maternal instinct may be so strong in a bitch that she will suckle a sow's orphans (Fig. 6).

*Pity is not an exclusive attribute of gods and men.*

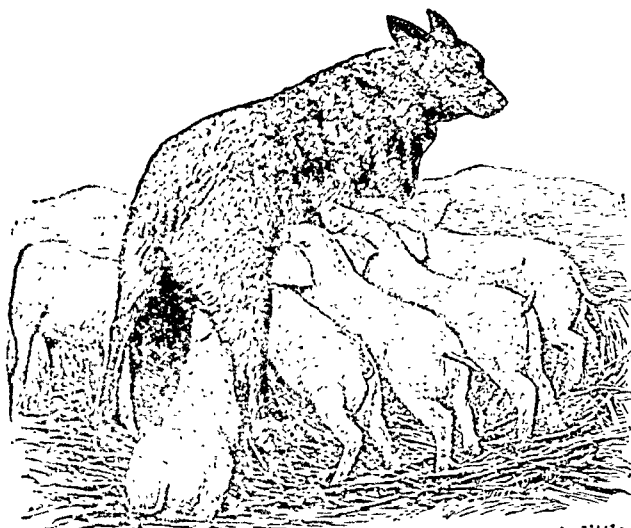


FIG. 6.—Alsatian bitch, whose pups had died, suckling six little pigs. (*Veterinary Journal*, 1920.)



## FEATHER-THICKETS.

In March, 1778, Hunter requested Jenner, his former pupil and friend, to watch a blackbird's nest, and remove the nestlings one by one on different days and preserve them in spirits in order to show the manner in which their feathers grow. He wrote details of the way in which the birds were to be treated, and Jenner carried out the instructions admirably, and the preserved nestlings are in good condition to-day (Figs. 7 and 8).

Forty years after Hunter's death Owen found among the MSS., transcribed by the faithful Clift, some notes on the situation of feathers:

Although the feathers of birds appear to be an entire and uniform covering, they do not arise equally from every part of the body, but only from such parts of the skin as are least likely to be affected by the motion of the contiguous parts, such as the motion of the limbs. The feathers arise pretty equally on the head where there is no motion; and along the back, on the wings between joint and joint, and also on the thighs and legs, the whole making the bird a partial coat of mail. As they do not arise from every part of the skin equally they must be proportionally thickest where they do arise. The places of origin of feathers are very observable in a bird that has been plucked; but still more so in young birds just feathering, more especially of such as have little down, and of which the clump of feathers, from their colour, as in young blackbirds, present a great contrast with the skin. In the interstices of the clumps of feathers there are others disposed irregularly, but so sparingly as not to interfere with the motion of the part.

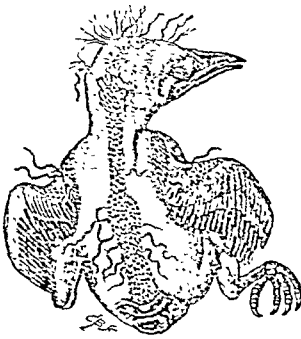


FIG. 7.—Callow blackbird. (Owen.)

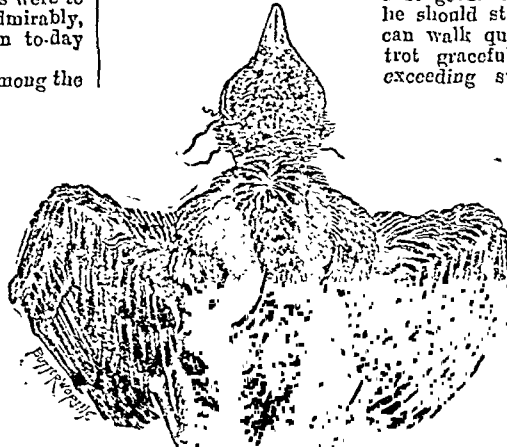


FIG. 8.—Nestling blackbird. (Owen.)

Hunter named each feather-thicket according to its situation. In 1883 Nitzsch, unaware of these observations, published a study of the distribution of feathers. He called the thickets pterylae—feather forests—and the featherless spaces apteria.

The arrangement of feather-tracts (pterylosis) is now used as an aid in the classification of birds. Oken cast ridicule upon it; he could not refrain from laughter when he looked in Nitzsch's book, since the plates reminded him of plucked fowls in a poulterer's shop! We must admit that the idea is comic. Newton, referring to this joke, adds: It might as well be urged as an objection to the plates in many anatomical books that they call to mind a butcher's shop!

Hunter had his gibe at the systematists, for in his opinion natural historians are more pleased if they can class an animal than they would be if they could find any use such an animal would be to society.

The value of pterylosis in classification depends on the fact that feather-tracts, like beaks and feet, are modified by the habits of the bird.

These callow blackbirds are as instructive as a parable. They prove Hunter's skill as a museum expert. The contrast in colour—black and white—is excellent, and the skill shown in mounting them undeniable. They were prepared in 1788, and remained in obscurity until Owen found them nearly fifty years later.

Hunter had great power of observation, but lacked the gift of exposition. His discovery was like a lighted candle under a bushel. Half a century later Nitzsch detected the value of pterylosis and urged its importance in spite of ridicule. It is one thing to make a discovery, but it is another to make con-

temporaries accept it, or appreciate its value. It is as hard to establish a truth as to eradicate an error.

## THE HORSE.

Hunter studied the horse carefully as an anatomist and as a surgeon. It was natural that he should study an animal that can walk quickly, amble easily, trot gracefully, or gallop with exceeding swiftness on limbs

each of which ends in a modified toe, or finger, and in spite of many anomalies be so useful to man. He was thoroughly familiar with equine anatomy, the teeth especially; left a careful description of the curious guttural pouches connected with the pharyngeal ends of the Eustachian tubes, and discovered the con-

jugal ligament, which connects the heads of the ribs or opposite sides of the spine. This ligament, well developed in the seal (Fig. 9), is homologous with the thick transverse ligament that not only keeps the odontoid process of the axis in position, but excites curiosity in every student when he sees it for the first time.

Hunter helped to found the Royal Veterinary College (1791); he was a vice-president, and with Cline served on a committee that approved of the appointment of Vian St. Bel as the first professor of the College. Among the first operations performed by St. Bel was one for the removal of "two accessory feet which grew from the fetlocks of the two forelegs." Hunter assisted and gave him some useful and friendly hints.

St. Bel died in 1793 from glanders. His early and unexpected death led to some difficulty, and Hunter, in order to help in the emergency, arranged for the students to have admission to the lectures of the leading teachers in the hospitals. The names mentioned in this connexion were Dr.

Fordyce, Dr. Baillie, Cruickshanks, and Everard Home. The directors of the College sent Hunter a letter of thanks for this help, which he acknowledged in a letter from Leicester Square, October 2nd, 1793, exactly two weeks before he died. This letter long remained a treasured possession of that College but it has been lost.

Hunter's coach was drawn by a pair of bay stone horses. Jesse Foot, his detractor, saw these horses in Piccadilly returning from the funeral at St. Martin's Church. The circumstance recalled to his

mind Virgil's account of the war-horse Aethon, in the funeral procession of young Pallas, shedding tears!

## WHALES.

Whales are the biggest animals that exist or have existed on the earth, and their skeletons are the most impressive things in the Museum. Hunter recognized that whales are land mammals modified to live in the water. He dissected them when he got the opportunity and discovered their semicircular canal.

The organ of hearing in these huge mammals is modified in a remarkable manner. The pinna is absent; the meatus is narrow and, in some species, nearly obliterated. The tympanic is a shell of bone; the ossicles—malleus, incus, and stapes—are present. The tympanics are so loosely attached to the skull that when the bodies of whales decompose these bones

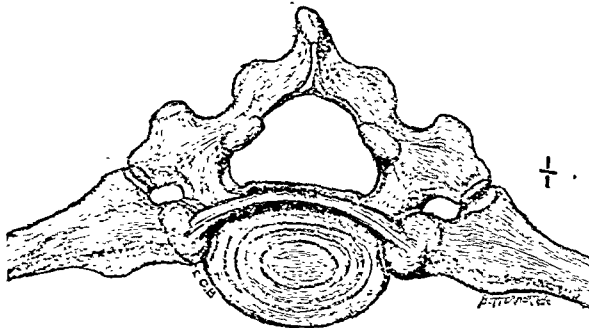


FIG. 9.—Conjugal ligament of a seal.



fall away. In the central Pacific detached tympanics, petrosals, and shark's teeth litter the floor of the ocean. Hunter studied the semicircular canals of fishes before he went to Belleisle, and it is reasonable to believe that the structure of the internal ear interested him for thirty years.

Lillie in 1910 and 1915 made some dissections of the internal ear of whales, and explains the vestigial character of the external auditory meatus by suggesting that whales hear through their nasal passage, which opens on the top of their heads. The nostrils collect the sound waves to be conducted through the blow-holes to the huge guttural pouches and the Eustachian tubes, thence to the tympanic bullae, which act as sounding boxes and transmit the sound waves to the chain of ossicles.

The shell-like tympanic probably intensifies the sound waves in the water. There is no doubt that whales rely on the sense of hearing, and appreciate the pulsations caused by waves striking rocks, or the approach of an enemy. These shell-shaped bones are often kept as curiosities. One of them here is seen in Fig. 10; it was used as a paper-weight by a lady of fashion, yet it collected sound waves that enabled a mighty whale to move through unfathomable waters with the same certainty that the compass enables mariners to guide ships across the trackless ocean.

Intrepid whalers who have watched whales in the solitary ocean regard them as timid and inoffensive, with large brown eyes and affectionate in disposition to their young. This character does not apply to the toothed whale. The killer whale has a large dorsal fin, and there has been much speculation in regard to its use. Herman Melville in *Moby Dick* states that the flukes of whales are tactile organs of great delicacy. I believe that the median fin of a killer is a tactile organ. On watching a killer rise to the surface, this dorsal fin is seen to rise like the periscope of a submarine (Fig. 11).

Captain Wild has described to me tricks of *Orca* worthy of a crocodile. It is not easy for a killer to seize a seal on the edge of the ice, but he swims under it, and rising suddenly, breaks off a piece with the object of dislodging the seal. If the seal retreats, crafty *Orca* follows the animal as it lumbers over the ice and breaks off successive pieces in his endeavours to seize the creature. In such tricks the dorsal fin may be a reliable tactile organ like the whiskers of cats and the feelers of catfishes. Killer whales have formidable teeth, insatiable appetites, hunt in packs like wolves, and attack the biggest whales.

When Hunter died in 1793, and for many years afterwards, his skeletons of whales were the only examples existing in a museum in England. Imagine the enthusiasm of a surgeon actively engaged in practice, finding time for dissecting such huge animals, mounting their skeletons and housing them!

#### OPOSSUMS AND KANGAROOS.

Hunter kept opossums at Earl's Court, and about 1790, when he was studying the marsupials which John White brought from New South Wales, he wrote: "There is something in the mode of propagation in the opossums that

deviates from all others." He kept many alive, "yet never could get them to breed."

The manner in which the foetus gets into the pouch, affords a simple explanation for opossums and kangaroos. Goerling of Perth, Australia, discovered in 1906 that when the embryo is extruded from the vagina it is blind, but the arms are well developed, the fingers furnished with claws, and it can open and close its hands like the paws of a cat. The foetus, which makes its way through the fur to the opening of the pouch, enters, finds a teat and fastens itself on with the powerful lips (Fig. 12).

The little wanderer travels through the mother's fur, moving the arms alternately as in swimming, and leaves a track in the fur which lasts some hours. In the pouch the little fellow finds protection, warmth, and nourishment, and remains there till the eyes are opened and it has donned a fur coat; then, as many have seen with delight at the Zoo, the little kangaroo looks over the rim of the pouch and gazes with curiosity on the world at large, and in a way that would

have amused John Hunter.\*

#### FOSSILS AND OWEN.

Belleisle and Portugal had much the same influence on Hunter as South America on Darwin, especially in relation to geology, and with unexpected consequences, for few suspected his interest in fossils, although they were often sent to him, especially by Jenner. The discovery of Hunter's collection of fossils is one of the romances of the Museum.

When Richard Owen in 1826 started practice as a surgeon near the College, Abernethy, concerned at the neglected condition of the Museum, induced his old pupil to assist in cataloguing it. In this way Owen became acquainted with Clift and the collection.

A few years later he married Clift's daughter, was gradually weaned from medical practice, and devoted himself to comparative anatomy. Whilst busy with the catalogue he unexpectedly found Hunter's store of fossils and displayed them in the Museum when it was rearranged in 1837. Startled by the number and variety of the specimens, he worked at them seriously. Nothing illustrates more thoroughly the parable of the sower than these fossils. Nearly all the seed sown by Hunter fell on stony ground, but

some fell and grew in Owen's fertile brain. He dissected animals to enable him to study fossils, and became essentially a palaeontologist, revelling in the reconstruction of extinct creatures.

The Museum contains reconstructed skeletons of huge ground sloths; the gigantic armadillo with "an osseous coat in compartments," and the huge bird, the moa, towering over all. Skeletons of sloths, armadillos, turtles, crocodiles, ostriches, and emus stand in rows to demonstrate the truth of Owen's deductions. When these skeletons were mounted "evolution" and "mammalian descent" had not become the stock phrases of zoological zealots.

\* O. G. Hartman discovered that the foetuses of the opossum (*Didelphis virginiana*) find their way into the mother's pouch in the same manner as the foetal kangaroo (*Anatomical Record*, 1920, xix, 25).

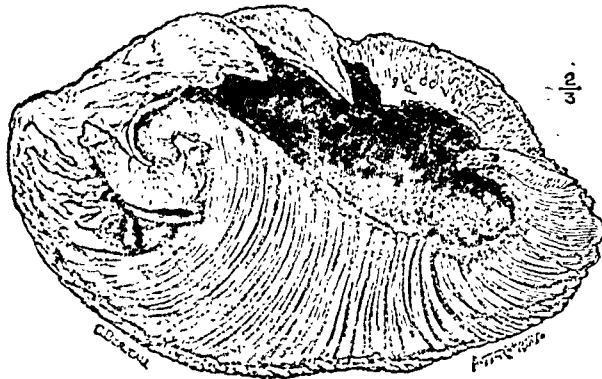


FIG. 10.—Tympanic of a whale.

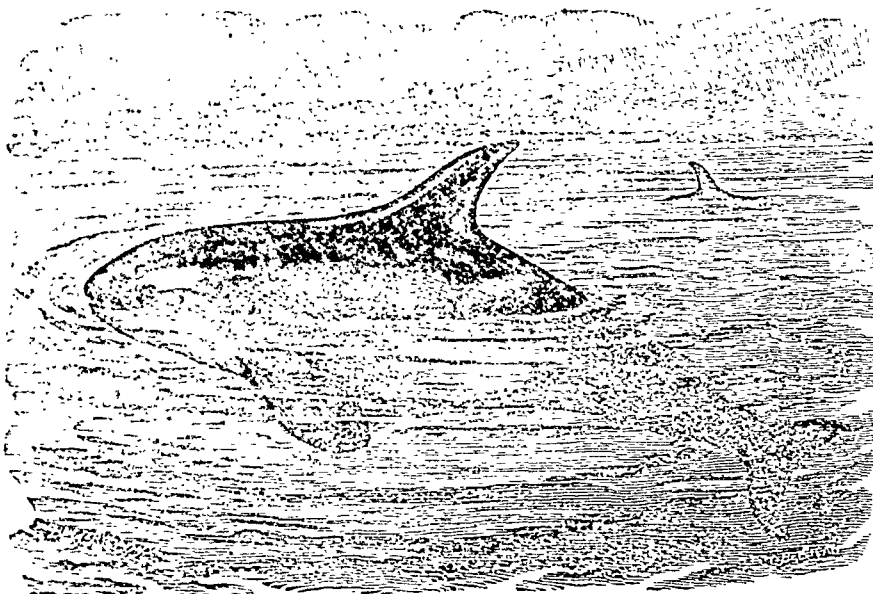


FIG. 11.—*Orca gladiator*. Though killer whales are evil-looking, they glide gracefully through the sea, impelled by their powerful flukes.



To-day zoologists include extinct as well as living animals in their lists. Before Darwin classification was a mania, since Darwin zoologists persistently endeavour to bridge gaps.

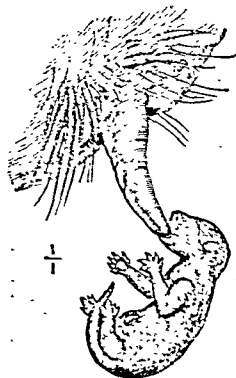


FIG. 12.—Young kangaroo hanging on the teat by its lips. (Museum, Royal College of Surgeons.)

Hunter's fossils turned Owen's thoughts to palaeontology and led men to take an interest in animals, huge and weird, that once moved about the earth and then passed into the twilight and silence of the past.

#### THE ORATION.

A man who achieves greatness in any calling inspires others to follow his example. No man retains prominence unless he has impressed others to believe in him and magnify his name. Those who have been closely associated with a masterful teacher and speak well of him are often mockingly called disciples by his contemporaries. Many who during the lifetime of a great investigator or a reformer were detractors are often loudest in

appraising him when dead. When our friends are alive we hesitate to say much about them in their presence—except in after-dinner speeches. As soon as they are dead we are apt, in a paroxysm of sympathy, to overpraise their work. Hunter was in advance of his time; his contemporaries could not appreciate the value of his work, and some of his later admirers overrate it.

The delivery of the Oration is justified. It is necessary to remind men of their benefactors; even the holiest saints require to have their names preserved by shrines, chantries,

cathedrals, or festivals. Are there not saints' days in the calendar of every church—Protestant, Greek, or Roman?

Aesculapius had two famous sons: of these Machaon healed injuries, and Podalirius could recognize what was not visible to the eye and tended what could not be healed. They served with the army in the Trojan war.

Podalirius, returning from the war, was wrecked at Caria, Asia Minor. He had the good luck to cure a princess of falling sickness (probably hysteria), and in consequence acquired a great reputation. The Carians, after his death, built him a temple and paid him divine honours. This temple has long since disappeared, but his effigy survives on the College seal.

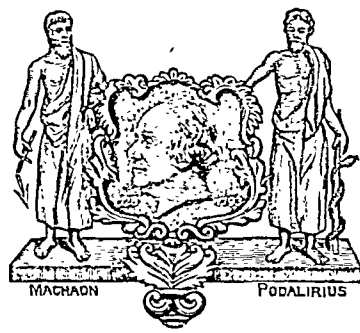


FIG. 13.

The essential work of Hunter's life was the useful specimens he prepared and left for successors. These specimens, safeguarded by faithful Clift, catalogued by sagacious Owen and Paget, and such able curators as Flower and Shattock, are now in the care of Keith, who lacks none of Hunter's enthusiasm but totally eclipses him in the art of exposition. The Museum was never in safer custody.

If I could believe the soul of man survives the dissolution of his body, I would believe the spirit of John Hunter haunts the galleries of this wonderful Museum, but I do believe his influence is a quickening spirit among surgeons to-day.

## THE PROPERTIES OF CERTAIN "COLLOIDAL" PREPARATIONS OF METALS.

BY

A. J. CLARK, M.C., M.D., F.R.C.P.

(From the Pharmacological Department, University College, London.)

CONSIDERABLE attention has been paid during the past decade to the therapeutic action of metals in the colloidal form. The clinical literature associated with this subject is very extensive, and the results recorded are extremely remarkable; indeed, a cursory survey of the subject leaves the impression that colloidal metals act as specific cures for every known disease. The full claims of colloidal therapy will be found in the works of Searle.<sup>1,2</sup> Unfortunately the quality of this literature does not correspond to its quantity. Dale,<sup>3</sup> in a review of Searle's book, points out that the claims made there regarding the action of colloidal metals violate most of the known laws of physiology. The *Journal of the American Medical Association*<sup>4</sup> criticized Searle's report as follows:

"In a style as bombastic and verbose as the usual house-organ write up, the report recklessly details all sorts of conditions, in which the so-called colloids—and particularly the Collosol brand—have been recommended, but derogatory findings are conspicuous by their absence."

An examination of the clinical literature further shows that the great mass of it is wholly uncritical, and that the few animal experiments and therapeutic observations which have been made with proper controls have mostly given negative results. Since the "scientific" literature on this subject is so uncritical, it is only natural that the manufacturers of colloidal preparations should have made rather startling therapeutic claims in advertising these preparations.

The author, at the invitation of the *BRITISH MEDICAL JOURNAL*, has investigated the properties of certain of the colloidal preparations advertised. The preparations investigated were certain of the collosols (The Crookes' Laboratories) and of the oscols (Messrs. Oppenheimer and Son, Ltd.). The preparations were bought in the open market, but care was taken to ensure that they had come recently from the manufacturers. The retail price of collosols varied from 2s. to 6s., and that of oscols from 2s. to 15s., a 4-oz. bottle.

### Chemico-physical Properties.

The preparations contain in most cases 1 in 2,000 of metal, together with 0.6 per cent. of sodium chloride, and from 0.5 per cent. to 5 per cent. of organic matter. The organic matter in collosols is in some cases stated to be arabinic acid derived from gum arabic, and in other cases to be glutaminic acid derived from gelatin; in the patent specifications peptones are said to be used as the suspending agent. The organic matter acts as a protective to the colloidal metal and keeps it in suspension. Ultrafiltration showed that the organic matter was partly in colloidal form and partly in true solution, for the greater part of it passed through collodion membranes, but a part of it was retained.

The chief point to be determined was whether all or any of the active principles in the various preparations were in true colloidal suspension. The following are the chief tests by which colloidal solutions are distinguished from true solutions:

1. *Ultramicroscopic Examination*.—The ultramicroscope shows colloidal solutions to be full of microns, which appear as bright points undergoing rapid Brownian movement.

2. *Tyndall's Beam*.—A beam of light passed through a colloidal solution illuminates its path, just as a beam of sunlight in a darkened room is visible when the air contains dust or smoke.

3. *Kataphoresis*.—An electric current passed through a colloidal solution contained in a U tube causes the solution to move towards one of the electrodes.

4. *Dialysis and Ultrafiltration*.—Colloidal particles do not pass through such membranes as parchment or collodion.

5. *Diffusion*.—Colloidal particles diffuse into water much more slowly than do molecules or ions. Colloidal particles do not diffuse into gelatin.

These tests can easily be applied to pure solutions of colloidal metals, but the presence of a considerable quantity of organic matter in the preparations tested made them much more difficult to test.

The manufacturers apparently rely upon ultramicroscopic examination for determining the state of suspension of the metal, for they emphasize in their advertisements that the preparations show Brownian movement under the ultramicroscope, and state that this is evidence of the colloidal nature of the preparations. The absence of particles on ultramicroscopic examination is evidence of the absence of colloidal



matter; on the other hand, most forms of colloidal matter will show visible particles under the ultramicroscope. For instance, the ultramicroscopic examination of soapy water shows an extremely brilliant picture of microns in active Brownian movement. The ultramicroscope cannot therefore give any reliable evidence as to whether metals mixed with an excess of organic matter are in a colloidal state, for the particles seen may be metallic or organic; evidence may be obtained that probably some of the metal is in colloidal form, but it is not possible under these conditions to estimate how much of the metal is in colloidal suspension.

Kataphoresis also is of little value as a test for the physical state of these solutions. The passage of an electric current through these solutions caused a movement of the solution towards the anode, but this may have been due to the colloidal organic matter present.

Dialysis through parchment thimbles was next tried. The solutions were placed in parchment thimbles and were dialysed for six days. The results are shown in Table I. This test showed that oscol ferrum and oscol argentum were true colloidal solutions, for none of these metals passed through the parchment. In all the other cases examined a considerable proportion of the metal passed through the parchment. This suggested doubts as to whether these preparations were colloidal, but the test is open to the objection that the solutions may have oxidized on exposure to the air.

Kütz<sup>1</sup> examined a preparation of colloidal arsenic and found that on exposure to the air free arsenious acid was liberated slowly; with a solution of 0.1 per cent. of arsenic in colloidal form, after three days' exposure to the air, 0.07 per cent. of free arsenious acid was liberated.

#### Ultrafiltration Experiments.

Since dialysis was inconclusive, ultrafiltration was employed. Collodion membranes were used. At first membranes were made from 7 per cent. collodion dissolved in equal parts of ether and alcohol, the membranes were made to fit Buchner funnels, and fluid was driven through under a pressure of two atmospheres. In later experiments collodion thimbles were made from 9 per cent. collodion in equal parts of ether and alcohol; the thimble was fixed to a rubber cork through which passed a glass tube, and a pressure of 100 c.cm. of water was used to drive the fluid through the thimble. In all cases the membranes employed were tested by filtering through them solutions of Congo red or haemoglobin, and only those membranes were used which retained 99 per cent. of these substances. About 5 c.cm. of fluid could be filtered in from one to three hours by these methods.

The colloidal preparations were tested by taking 20 c.cm. of the preparation, filtering through 10 c.cm., and then estimating the amount of metal in the filtrate and in the residue.

Iron preparations were estimated colorimetrically with ferricyanide. Arsenic and antimony were estimated gravimetrically by precipitating as the sulphide; in some cases arsenic was also estimated quantitatively by Marsh's test. Quinine was estimated by extracting the solution with chloroform and then estimating the residue obtained from the chloroform volumetrically by using Mayer's reagent as

described by Schmidt.<sup>5</sup> Silver was estimated volumetrically with cyanide solution. The results of these experiments are shown in Table I.

The results shown in Table I indicate that the whole of the metal present in oscol ferrum and oscol argentum is in a colloidal form, and that it does not pass into true solution on exposure to the air. Collosol antimonium and arsenicum and oscol arsenicum and stibium all appear to contain a mixture of colloidal and non-colloidal metal, but on exposure to the air the metal tends to pass into true solution. Very little of the quinine in collosol quinine appears to be in colloidal form, and no demonstrable quantity of the iron in collosol ferrum appears to be in colloidal form.

#### Diffusion Experiments.

Further experiments were made to measure the rate of diffusion into water. Tubes 27 cm. long, with a diameter of 6 mm., were closed at one end and filled with water; the tubes could be inverted without the water escaping. A solution of collosol was put in a small bottle, a tube was dipped into the solution, the bottle closed with a rubber ring, and then left to stand in a dark cellar for sixteen days. At the end of this period the metal content of the solution within and without the tube was estimated. This method is a rough one for measuring diffusion, but control experiments showed a well marked difference between colloidal and non-colloidal substances. The results are given in Table II, and it will be seen that with non-colloidal substances the concentration inside the tube is about one-seventh that of the outside solution, whereas with colloidal substances the concentration inside the tube is only about one-seventieth that of the outside solution.

Oscol ferrum behaved like a colloidal solution, but collosol ferrum and oscol iodine behaved like non-colloidal solutions. The iodine content of collosol iodine was so low that it was impossible to measure it exactly.

Further experiments were made to test the rate of diffusion of collosol ferrum and other iron solutions into gelatin. A tube was half filled with 10 per cent. gelatin, and 5 c.cm. of solution were poured on top of the gelatin; at the end of a week the distance the colour had diffused into the gelatin was noted, and the quantities of iron in the fluid and in the solution were estimated. These results are shown in Table III, and it will be seen that collosol ferrum diffused into the gelatin like a non-colloidal solution of iron.

The results of the diffusion experiments confirm the previously expressed opinion that the iron in collosol ferrum is in a non-colloidal form; they suggest also that the iodine in oscol iodum either is not in colloidal form or else passes into true solution very readily. Collosol iodine is advertised as "Crookes' Colloidal Iodine," and the statement is made—"Collosol iodine consists of a 0.2 per cent. colloidal solution of iodine." In a more recent publication<sup>2</sup> the statement is made—"Collosol iodine is a 0.05 per cent. colloidal solution of iodine suitably protected," and "Collosol Iodine Aqueous (Crookes)" is described as 1 in 500 (0.2 per cent.).

I have received the following report from the analyst selected by the BRITISH MEDICAL JOURNAL.

#### Analytical Report on Collosol Iodine.

I beg to report that I have analysed samples of collosol iodine, with results which show that it consists essentially of an aqueous solution of iodine with sodium chloride and gelatin.

The quantitative composition was found to vary in three bottles purchased on different occasions, but in no case was it found to exceed that which could be dissolved by a solution of simple character; the amount of iodine in the influence on its molecular nature or activity. Therefore the iodine is in no sense colloidal, nor indeed is there any colloidal quality in the preparation except the colloidal attribute of the dissolved gelatin.

The most notable effect of the gelatin in this composition is to reduce a part of the iodine to hydriodic acid, which becomes neutralized by the gelatin. The effect is visible as a loss of colour. Reference is made to the loss of colour in a separate label on the bottle, which states—

"If exposed to light collosol iodine becomes lighter in colour. The clinical efficiency is not affected, but for the sake of uniformity keep in a cool dark place."

TABLE I.

Preparation.	Amount of Active Principle stated to be present in—	Amount of Active Principle found on Analysis in—	Portion of Active Principle present which passed—	
			Collodion Membrane in Ultrafilter.	Parchment Dialysing Thimble (6 days' Dialysis).
	Per cent.	Per cent.	Per cent.	Per cent.
Collosol antimonium...	0.01	0.09	25	30
Collosol arsenicum ...	0.1-0.2	0.15	47	60
Collosol ferrum...	0.05	0.05	100	99
Collosol quinine ...	1.0	0.9	80	85
Oscol argentum...	0.05	0.05	nil	nil
Oscol arsenicum ...	0.05	0.05	25	80
Oscol ferrum ...	0.05	0.05	nil	nil
Oscol stibium ...	0.05	0.04	23	75



The following are the analyses:

I.					
Free iodine ...	...	...	...	...	0.021
Iodine as iodides ...	...	...	...	...	0.009
Sodium chloride ...	...	...	...	...	0.737
Gelatin ...	...	...	...	...	0.315
Water ...	...	...	...	...	99.918
100.000					
II.					
Free iodine ...	...	...	...	...	0.023
Iodine as iodides ...	...	...	...	...	0.002
Sodium chloride ...	...	...	...	...	0.165
Gelatin ...	...	...	...	...	0.327
Water ...	...	...	...	...	99.483
100.000					
III.					
Free iodine ...	...	...	...	...	0.012
Iodine as iodides ...	...	...	...	...	0.014
Sodium chloride ...	...	...	...	...	0.215
Gelatin ...	...	...	...	...	0.213
Water ...	...	...	...	...	99.546
100.000					

These figures agree closely with my own figures. I tested three samples, and the highest figures I found on analysis were 0.025 per cent. of free iodine with 0.015 per cent. of combined iodine. This concentration was too low to allow its rate of diffusion to be tested with any certainty.

TABLE II.—The Amount of Metal which Diffuses in Sixteen Days into a Tube of 6 mm. diameter filled with Water.

Solution.	Per cent.	Per cent.	Per cent.	
<i>Non-colloidal Solutions:</i>				
Potassium ferricyanide ...	0.1	0.072	0.01	1 to 7.2
Ferric ammonium sulphate ...	0.01	0.0093	0.0015	1 to 6
Ferrous ammonium sulphate ...	0.1	0.09	0.016	1 to 5.6
Iodine ...	0.127	0.09	0.013	1 to 7
<i>Colloidal Solution:</i>				
Dialysed iron ...	0.2	0.2	0.003	1 to 70
<i>Solutions Tested:</i>				
Collosol ferrum ...	0.05	0.047	0.006	1 to 8
Oscol ferrum ...	0.05	0.05	0.0035	1 to 100
Oscol iodum ...	0.16	0.09	0.0124	1 to 7.5
Collosol iodum ...	0.021	0.014	About 0.005	—

TABLE III.—The Diffusion of Iron Salts into Gelatin. (5 c.cm. of a solution containing 2.5 mg. iron were in contact with gelatin in a tube 5 mm. in diameter for seven days.)

Solution.	Iron Remaining in Solution in—	Iron Diffused into Gelatin in—	Depth in mm. at which Colour was Visible in Gelatin.
Ferric ammonium sulphate...	1.25 mg.	0.85 mg.	5
Ferrous ammonium sulphate	1.75 mg.	0.7 mg.	7
Dialysed iron ...	2.25 mg.	nil	nil
Collosol ferrum ...	1.75 mg.	0.43 mg.	15*

\* This colour was, I believe, largely produced by the organic matter present.

#### PHARMACOLOGICAL ACTION OF COLLOIDAL PREPARATIONS.

A certain number of pharmacological tests were made to determine the action on living tissues of some of the preparations already mentioned.

##### Collosol Iodine.

The literature supplied by Messrs. Crookes suggests that the iodine in collosol iodine has an action on the body different from that of ordinary iodine. They state:

"The iodides have the disadvantage that being rapidly excreted they must be exhibited in large doses which often cause sickness, a foul taste in the mouth, and later, iodism with skin eruptions ... collosol iodine is free from these defects."

Collosol iodine is, of course, very unlikely to cause iodism, for according to the analysis given above a litre of collosol iodine only contains 6 grains of iodine (free and combined), and the dose recommended by mouth of collosol iodine is from 2 to 8 c.cm.

I determined the smallest amount of iodide and of iodine which, when taken by mouth on an empty stomach, would cause the appearance of a demonstrable amount of iodine in the urine, and then determined the effect of corresponding amounts of the colloidal preparations of iodine. The results are given in Table IV. It will be seen that collosol and oscol iodine apparently suffer exactly the same fate in the body as does ordinary iodine.

TABLE IV.

Drug Administered.	Quantity of Iodine Administered.	Amount of Iodine Appearing in the Urine in Four Hours.
Sodium iodide ...	Grams. 0.008 0.016	Presence just demonstrable. Presence clearly demonstrable.
Iodine ...	0.02	Presence just demonstrable.
Collosol iodine (50 c.cm.)...	0.012	Presence just demonstrable.
Oscol iodum (5 c.cm.) ...	0.003	None demonstrable.
" " (10 c.cm.) ...	0.016	Presence just demonstrable.

##### Colloidal Antimony and Colloidal Arsenic.

Cawston<sup>6</sup> and Wildish<sup>7</sup> claim to have cured leprosy with oscol stibium, and the total quantities of the preparation which they found effected a cure varied from 15 to 40 c.cm. These results are very remarkable, for 40 c.cm. of oscol stibium only contains 0.02 gram (1/3 grain) of antimony, and the quantity of antimony found necessary to produce cures in other diseases has been from 5 to 40 grains. Rogers,<sup>18</sup> who used colloidal antimony sulphide, recommended 2/3 grain antimony intravenously as a single dose.

Messrs. Crookes claim for collosol arsenicum that<sup>19</sup> "it is entirely non-irritant and does not cause any symptoms of arsenic intolerance; it has a very low toxicity while remaining therapeutically active."

Experiments were made, firstly to determine the minimal lethal dose of these colloidal metals, and secondly to determine the minimal dose required to exert a trypanocidal action. The minimal lethal dose and the minimal trypanocidal dose were determined by intravenous injection into mice. In case the protective colloids should have any toxic action on intravenous injection the minimal lethal doses on intramuscular injection in rats also were determined. These results are shown in Table V.

TABLE V.—The Minimal Lethal Doses of Antimony and Arsenic Preparations.

Drug.	Animal.	Mode of Injection.	Minimal Lethal Dose in Grams of Metal per kilo Body Weight.
<i>Antimony Preparations:</i>			
Tartar emetic ...	Rat	Intramuscular	0.012
Tartar emetic ...	Mouse	Intravenous	0.015
Oscol stibium ...	Rat	Intramuscular	0.02
Oscol stibium ...	Mouse	Intravenous	0.015
Collosol antimonium ...	Mouse	Intravenous	0.02
<i>Arsenic Preparations:</i>			
Arsenious acid ...	Rat	Intramuscular	0.006
Arsenious acid ...	Mouse	Intravenous	0.007
Collosol arsenicum ...	Rat	Intramuscular	0.017
Collosol arsenicum ...	Mouse	Intravenous	0.007
Oscol arsenicum ...	Mouse	Intravenous	0.01

The minimal lethal doses of non-colloidal arsenic and antimony agree with the results of other workers. Voegtlin and Smith<sup>8</sup> found, by intravenous injection into rats, that the minimal lethal dose of antimony given as tartar emetic was 0.018 gram per kilo, and that the minimal lethal dose of arsenic given as arsenious acid was 0.0053 gram per kilo. Fargher and Gray<sup>9</sup> found that the minimal lethal dose of arsenic injected as arsenious acid intravenously into mice was 0.0057 gram per kilo.



Külz<sup>4</sup> found, however, that the toxicity of a purified preparation of colloidal arsenic was far less than that of arsenious acid. The minimal lethal dose of arsenious acid injected intravenously as arsenious acid in a rabbit is 0.005 to 0.007 gram per kilo, but Külz found the minimal lethal dose of his preparation under these conditions was 0.03 to 0.035 gram per kilo. These results lead to the conclusion that colloidal arsenic is about one-sixth as toxic as arsenious acid.

Table V shows that the collosol and oscol arsenic and antimony were nearly as toxic as non-colloidal solutions on intravenous injection, but that the former were about one-half as toxic as the latter on intramuscular injection. The results with intramuscular injection may be due to the organic matter in the colloidal preparations hindering absorption. These results confirm the conclusion that a considerable proportion of the arsenic and antimony present in these preparations is in true solution, and suggest that the remainder is rapidly converted in the body into true solution.

The trypanocidal action of these substances was tested upon mice infected with *Trypanosoma equiperdum*. The trypanosomes were kindly supplied by Dr. C. M. Wenyon of the Wellcome Research Laboratory. The mice were infected with 0.1 c.cm. of the blood of a heavily infected mouse; this infection produced in most cases a trypanosomic count of from 100,000 to 300,000 trypanosomes per cubic millimetre of blood after three or four days. Untreated controls died in all cases within ten days, and usually within seven days of the infection.

The minimal dose of arsenic or antimony which cleared the blood of trypanosomes after four days was determined. The results are shown in Table VI.

TABLE VI.—The Trypanocidal Action of Antimony and Arsenic Preparations Injected Intravenously into Mice Infected with *T. equiperdum*.

Drug.	Minimal Curative Dose in Grams of Metal per Kilo Body Weight.	Minimal Lethal Dose in Grams of Metal per Kilo Body Weight.	Ratio M.C.D. to M.L.D.
<b>Antimony Preparations:</b>			
Tartar emetic ... ..	0.003	0.015	1 to 5
Oscol stibium ... ..	0.0076	0.015	1 to 2
Collosol antimonium ...	0.01	0.02	1 to 2
<b>Arsenic Preparations:</b>			
Arsenious acid ... ..	0.005	0.007	1 to 1.2
Collosol arsenicum ...	0.005	0.007	1 to 1.4

The results in Table VI show that in mice tartar emetic is superior to either collosol antimonium or oscol stibium as a trypanocidal agent, and that there is no pronounced difference between the activity of arsenious acid and collosol arsenicum.

The minimal curative doses obtained for tartar emetic and arsenious acid agree fairly well with those obtained by Voeghtlin and Smith.<sup>6</sup> These workers used rats infected with *T. equiperdum*, and obtained ratios  $\frac{\text{M.C.D.}}{\text{M.L.D.}}$  of 1/4 for tartar emetic and 1/1 for arsenious acid. These results show that these special preparations of arsenic and antimony have much the same trypanocidal action as non-colloidal arsenic and antimony.

#### Toxicity of other Collosol Preparations.

The minimal lethal dose to mice on intravenous injection of various other colloidal preparations was tested. The results are shown in Table VII.

TABLE VII.—Minimal Lethal Doses in grams of Metal or Alkaloid per Kilo Body Weight on Intravenous Injections into Mice.

Non-colloidal Preparations.		Collosol.	
Substance.	M.L.D.	Substance.	M.L.D.
Quinine HCl ... ..	0.015	C. quinine ... ..	0.015
Mercuric chloride ... ..	0.01	C. hydrargyrum ...	0.02
Ferrous ammonium sulphate	0.05	C. ferrum ... ..	0.022
		C. argentum ... ..	0.015

The results in Table VII show that the collosol preparations tested have nearly the same toxicity as non-colloidal preparations of the same substances.

Heubner<sup>10</sup> found that with intravenous injection into rabbits the minimal lethal dose of the non-colloidal silver thiosulphate was 0.01 to 0.03 gram per kilo, while the minimal lethal dose of colloidal silver was 0.065 gram per kilo. That is to say that colloidal silver was less than one-half as toxic as an ordinary silver salt.

#### The Pharmacological Action of Colloidal Metals.

The facts as to the pharmacological action of colloidal metals have been obscured by various effects having been ascribed to them without adequate evidence, and also because many workers have used preparations which were to a large extent non-colloidal.

Metals in the colloidal form appear to exert only a feeble disinfectant action *in vitro*.

Marshall<sup>11</sup> prepared pure colloidal solutions of silver, and found that when tested over a period of ten minutes the colloidal silver had a disinfectant action only one-tenth as strong as silver nitrate. Marshall and Killoh<sup>12</sup> found that after *B. coli* had been covered with undiluted collosol argentum (1 in 2,000 silver) for ten minutes a vigorous growth resulted when the solution was removed; on the other hand, silver nitrate killed *B. coli* in five minutes at a dilution of 1 in 2,000,000. These results tend to show that colloidal metals will not exert a rapid disinfectant action.

Colloidal metals, if left in contact with bacteria for prolonged periods, will, however, act as efficient antiseptics. Simpson and Hewlett<sup>13</sup> found that on a twenty-four hour exposure collosol argentum acted as a disinfectant at a dilution of 1 in 200,000. This action of colloidal metals is, I think, probably due to their slowly breaking down and liberating free ions. Since metals in the colloidal form are non-irritant, this slowly exerted disinfectant action may be of considerable therapeutic value.

#### Fate of Colloidal Metals in the Body.

The suggestion is often made that metals in the colloidal form will continue to circulate for a long time in the blood; this is incorrect, as several workers have shown. Duhamel<sup>14</sup> found that when colloidal silver was injected into a rabbit 60 per cent. of the metal injected was fixed in the liver within fifteen minutes. Voight<sup>15</sup> in similar experiments, found that after three hours 81 per cent. of the silver was fixed in the liver, and that none remained in the blood. It appears from these experiments that colloidal metals will not circulate in the blood and act there as a disinfectant for more than a few minutes.

The results recorded in this paper concerning the action of collosol and oscol antimony and arsenic lead me to conclude that these are not superior as trypanocides to non-colloidal preparations; these results are inconclusive as regards the relative merits of colloidal and non-colloidal preparations because the proportion of colloidal metal in these preparations is uncertain. Külz<sup>4</sup> found that arsenic in purely colloidal solution was not superior to arsenious acid as a trypanocide in rats.

The chief therapeutic action of colloidal metals when given intravenously appears to be that they produce a general reaction similar to that produced by the injection of peptones or non-specific vaccines. Petersen<sup>16</sup> classes colloidal metals amongst the agents which produce "protein shock," and considers their use as a particular example of non-specific protein therapy. Since many of the collosols and oscols contain breakdown products of proteins in considerable amount as protective colloids, the injection of such preparations is particularly likely to produce the reaction known as protein shock. Unfortunately our present information as to the value of non-specific protein therapy is so vague that the knowledge that colloidal preparations may belong to this class of preparation gives little exact guidance to their therapeutic value.

#### Summary.

The physico-chemical tests employed indicated that the active principles of some of the "colloidal" preparations investigated were entirely in the colloidal form; in other cases the active principles were partly in colloidal form and partly in true solution; whilst in some cases the whole of the active principle appeared to be in true solution. Previous criticisms of the physico-chemical properties of some of these preparations have appeared in the *Journal of the American Medical Association*.<sup>17</sup>



The pharmacological tests employed failed to show any marked difference between the action of the "colloidal" preparations tested and the action of the same substances in true solution.

Note.—The expenses of this research were defrayed by a grant from the British Medical Association.

## REFERENCES.

- I. A. B. Searle: The Administration of Colloids in Disease. Report of the British Association for the Advancement of Science, 1918, 155. *The Use of Colloids in Health and Disease*, London (Constable), 1920. 24. *Transactions of the Royal Society of Medicine*, 1920, 13, 17. *Colloidal Iodine*, p. 7. *Crook*.  
 16 Petersen: *Protein Therapy and Non-fermentative Resistance*, New York, 1922. *Journ. Amer. Med. Assoc.*, 641, 1219, 73.  
 17 Rogers: *Lancet*, 1919, i, 535.  
 18 Voight: *Biochem. Zeit.*, 409, 63, 1914.  
 19 *Journ. Amer. Med. Assoc.*, 641, 1219, 73.  
 20 *Colloidal Iodine*, p. 7. *Crook*.

## FIVE CASES OF DIABETES MELLITUS IN YOUNG CHILDREN.

BY

F. JOHN POYNTON, M.D., F.R.C.P.LOND.,

PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL AND THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET.

The occurrence of five cases of diabetes mellitus in young children admitted within a short interval to one ward in a hospital leads me to think that at the present juncture in the history of this disease their publication may be of value. It is clear from the present literature that, for those who have few opportunities of studying a malady which is fortunately rare in childhood, it will be of importance to recognize the symptoms and, above all, the course of the disease at this early age, in order to obtain a correct perspective of the value of treatment by pancreatic extracts. It is in childhood that we see the pure type of virulent diabetes, and if very different results from those recorded in this series are obtained in the future there must be conviction that a great step forward has been made in medical knowledge. These cases were treated upon what until recently was considered to be the modern lines, and with the assistance of Dr. Spence and Dr. Donald Paterson, good medical clerks and devoted nurses, a whole-hearted attempt was made to study the effect of dietetic treatment and of such pancreatic extracts as were then available. The first case was an example of the type of problem that confronts us in hospital, and it will serve as an introduction to the main subject.

## CASE I.

A boy aged 7 years was admitted on September 5th, 1920, in a state of coma. He had suffered from diabetes for eleven months, and for four months had been under "a specialist," and was sent to us when comatose. If we turn to this boy's history we find it is a characteristic one. An only child of healthy parents, he had been for the first time attending school. For two weeks, though complaining of headache and thirst, he tried to do his work and then had to stop. For six months these two symptoms remained the prominent ones, but later others were added—hunger, irritability, constipation, and polyuria (5 to 6 pints per diem). His weight at first hardly altered. The final symptoms were increasing thirst; emaciation, some vomiting, abdominal pain, and fleeting pains in the limbs. Finally drowsiness and coma.

On admission he smelt strongly of acetone and was comatose. The action of his heart was feeble and his face grey. The abdomen was scaphoid, and the urine contained 2.2 per cent. of sugar. Death was sudden.

Among these symptoms I should dwell upon irritability as one which repeatedly appears in the young when the disease is making headway, and upon abdominal and other pains as occurring just before the onset of the coma.

There was no necropsy, and a more unsatisfactory case than this for all concerned can hardly be imagined. The second case was much more instructive.

## CASE II.

C. N., a boy aged 5½ years, was admitted on December 11th, 1919, with a history of symptoms of two months' duration. These symptoms were thirst, nocturnal enuresis, and occasional pain in the upper part of the abdomen. The sugar had been detected three weeks before admission, when the boy was attended by a doctor for colic due to eating green apples. Unless an attack of measles

in June, 1919, could be claimed as a factor in causation, there was not a single event in the boy's history to suggest a cause for the diabetes.

I dwell for a moment on the symptom of nocturnal enuresis. We see many cases of this disability, but very few are due to diabetes. It is, then, very unfortunate if one should overlook testing the urine thoroughly in a case of nocturnal enuresis and happen upon a diabetic child. This boy was well nourished and walked into hospital. His skin was dry and his tongue beefy. The knee-jerks were present but difficult to obtain; the fundi were normal. The urine had a specific gravity of 1042, was acid, contained 5 per cent. of glucose, and also acetone and diacetic acid.

## Treatment.

His appetite was poor. He was placed on a low diet of tea, boric, two eggs, and some minced meat. The calorie value of this diet was about 250, and in four days the urine was free from sugar, acetone, and diacetic acid.

We then started to test his carbohydrate tolerance, and by December 30th we had reached a diet of calorie value 914, which contained 78 grams of carbohydrate. The weight of the boy was 18 kilos, and accordingly the calorie value per kilo was  $\frac{914}{18}$  = practically 50 calories per kilo. Authority has stated that 40 are sufficient to maintain weight, but this boy barely held his own when in bed on 50 per kilo.

On January 1st we let him get up on the same diet for three days, and his weight increased, but a slight trace of sugar appeared in the urine. He returned to bed, whereupon the sugar disappeared, but his weight began to fall again.

By January 18th we had increased his carbohydrate tolerance to 85 grams, but after four days there was a slight trace (under 0.5 per cent.) of glucose. We accordingly decided that his carbohydrate tolerance was about 80 grams.

We then turned our attention more particularly to the fat tolerance, which we raised to the limit of 110 grams. During the next month we made tentative experiments in dieting, with these obvious points in view:

1. To obtain a diet which his parents could give him when he left hospital—one, that is to say, not too expensive for their resources, and fairly satisfactory for the boy.
2. A diet which, while keeping him sugar-free, maintained his weight.

This, whatever may be the opinion of others, is, I am convinced, very essential. We must try and maintain the weight in children. "Keep them thin" may be a motto for adults, but not for children. His diet finally had a calorie value of 835, but this would only admit two small slices of bread and two tablespoonfuls of milk pudding.

We failed—though the value of 46 calories per kilo body weight was attained—to maintain his weight in hospital, and after a long stay we sent him out with a fair diet. On admission he had weighed 2 st. 11 lb.; on February 15th, 1920, he weighed 2 st. 9 lb.

The diet for guiding his parents when he was at home was:

- Breakfast*.—One egg, one buttered rusk, and an ounce of bacon.  
*Lunch*.—Clear broth, one buttered rusk.  
*Dinner*.—Mince 2 oz., cabbage 6 oz., potatoes 2 oz.  
*Tea*.—One orange, one cup of milk, one buttered rusk.  
*Supper*.—One buttered rusk, one cup of cocoa.

This was the skeleton outline—fish and other vegetables could be substituted—and it was useful as a working basis.

Three weeks later he was readmitted, with urine specific gravity 1039, glucose 3.9 per cent., and a faint trace of acetone. We ascribed this to eating too many vegetables. He had gained weight.

Once again in hospital we had difficulty in getting him to maintain weight, but on a diet of 926 calories he just held his own. In a month, however, he was able to take 122 grams of carbohydrate and a diet of 1,124 calories, on which he had gained a pound. The urine (specific gravity 1014) was free from sugar and ketone bodies.

From March 31st to August, 1920, he lived at home and kept well but did not gain weight. Then he broke down with hunger, thirst, irritability, and polyuria. There was sugar but no acetone in the urine. He was admitted on August 28th, when only a trace of sugar was demonstrated. This time the specific gravity of the urine was never above 1026, and only traces of sugar and acetone appeared when we were building up his diet. The result on this occasion was encouraging, and he left the hospital in October, 1920.

About Christmas he became thirsty, lost strength, and suffered from polyuria. Alarm was aroused three days before he came to the hospital by a "bilious" attack and drowsiness.

On admission he looked ill and drawn, and his urine was loaded with ketone bodies and sugar. There was general abdominal tenderness. In spite of intravenous alkaline injections he died that night in severe convulsions.

The post-mortem examination naturally interested me greatly, for I had never had an opportunity of seeing one in a child after so protracted an attack of diabetes. His illness had extended over almost three years. As usual there was very little to see and no long description is needed. The liver was large, pale, and flabby; the kidneys appeared natural. The pancreas was small and soft, and microscopy showed no increase of fibrous tissue but atrophy of cells. The gland looked exhausted, and the cells of the islands of



Langerhans were atrophied and separated by connective tissue.

We know that much caution is required in interpreting post-mortem changes in the pancreas owing to the autolysis that occurs after death, but this was a clear case of atrophy of the pancreas.

The third case was of especial interest because there had been a history of only one week's illness.

## CASE III.

A girl aged 9 years was admitted on February 23rd, 1921, for sudden thirst, rapid wasting, and a nasty taste in her mouth. She had always had good health, and this was her first illness of any kind. Both her parents were healthy, her father aged 34, her mother 36.

The patient was thin and languid, passing 20 oz. of urine of a specific gravity 1042, containing 8.6 per cent. of sugar and ketone bodies. We put her on equal parts of milk and water, with a caloric value of 381. The sugar and ketone bodies disappeared, the urine falling in specific gravity to 1020; weight 3 st. 4 lb. Then we rebuilt the diet up to one of over 1,000 calories, and she gained steadily—leaving, sugar-free, in April. In June she was still sugar-free.

In September, 1921, she "caught a cold," and a fortnight later, being weak and generally ill, her urine was examined and found to contain sugar, and she was brought to hospital on September 24th. The child seemed quite ill and looked pale. Urine: specific gravity 1040, 2.9 per cent. sugar, ketone bodies present.

After admission she was very quiet and refused her food, and on September 28th fell into coma with profound collapse, dying early on the morning of September 29th. Efforts were made with an intravenous injection of a 2 per cent. solution of sodium bicarbonate—large doses by rectum—and drachm doses of glucose to restore her balance, but she never rallied.

Post-mortem examination was refused.

Here was a very remarkable and treacherous case. The first attack came like "a bolt from the blue," swift and threatening. The crisis passed and no case seemed to be doing better, for there was steady gain in health and weight and disappearance of the sugar. For months the child seemed well—and then came an infection in the shape of a "cold," and once more the swift onslaught. It was possible that the few days in hospital before death were not managed to the best advantage, but I do not think that this made any essential difference to the final issue. We must be wise indeed if, with scant opportunities for seeing diabetes in childhood, we can always anticipate an attack of coma.

Watching a series of these cases would convince one that there is something more than diet involved in these sudden relapses. Not for one moment do I suppose that, good though these children were and devoted their parents, it is probable that a strict diet can be maintained. One of the children was a member of a working man's large family—can one believe that the children did not have pity upon the sister whose diet was so dull, and provide her with occasional treats? Granting this, children who left hospital losing ground in every way actually improved in some instances at home. The breakdowns were more mysterious than a matter of diet—for example, when the weather became cold and treacherous and there were sore throats and coughs, my various cases would come back within a week or ten days with sugar in the urine. Three came back into the ward within a week, although from different families and different localities.

## CASE IV.

My next case, a boy aged 8 years, had been suffering from lassitude, weakness, thirst, and polyuria for eleven months. His condition first attracted attention by his general weakness after he returned from school.

He was admitted to hospital in September, 1919, in what as the sequel showed was to be a feature of his case—an acute condition of acetonaemia. I did not see him then, and can only record that he went out improved. He appeared to have kept well, and certainly gained weight for nine months, when, fourteen days before he came under my supervision, he became irritable, weak, sleepless, and suffered from polyuria.

His second admission to the hospital was August 9th, 1920. The only history we could get was an injury to his right calf before the first symptoms of the disease commenced. The parents were healthy, as also was his only sister.

This boy was a very home-sick one, and on his readmission he had an acetonaemic attack, with vomiting. The specific gravity of the urine was 1010; it contained no sugar, but great excess of ketone bodies.

In this case it was urgent to control particularly the fats, and as the ketone bodies diminished a little sugar appeared and the child lost weight. The strict diet soon got rid of sugar and ketone bodies, but the loss of weight called for an advance upon this.

The blood was examined on August 24th by Dr. Spence, who found the blood sugar normal, but the curve a true diabetic one; as the chart exemplifies.

By August 27th he was so much better that we had him on a practically normal diet, except that bread and potatoes were cut

down by half because of an occasional slight leakage of sugar. From the 19th to the 26th he was in fact on a good diet, free from all sugar and ketone bodies; but his blood sugar estimation, though giving a normal blood sugar content, showed after carbohydrate a true diabetic curve.

We eventually sent him out on October 12th sugar-free, though, in spite of every care, sugar would sometimes appear mysteriously in small quantities. I thought, in spite of the blood test, that we were going to have a successful result if we could only keep reasonable control of him when out of hospital. His diet was the following:

Breakfast.—Milk one glass, one egg, one rusk and butter.

Lunch.—One glass of milk.

Dinner.—Clear broth, mince, cabbage, potato.

Tea.—One orange, one glass of milk, one egg, one rusk and butter.

Supper.—One rusk and butter, one cup of cocoa, cheese, lettuce.

The boy kept well from October until the beginning of February, 1921, attending the hospital every fortnight.

In February, within a week he became irritable, drowsy, languid, and thirsty. He was admitted to hospital threatening coma, with sugar 4.8 per cent. and ketones in the urine, which had a specific gravity of 1040.

An in- was some bronzing of the face and a yellow palms of the hands. He was treated with skimmed milk, given glucose, 2 drachms four-hourly, and large doses of sodium bicarbonate by the mouth.

He rallied well, and we raised him eventually to a diet of 1,616 calories, on which he just held his own. After two months in hospital he left with a sugarless and ketone-free urine in April. This time we had difficulty in ridding the urine of the ketone bodies, which made me uneasy as to the future.

Until August, 1921, he kept on the whole well, though leaking sugar at intervals, but at the beginning of this month he developed headache, polyuria, thirst, pains in the limbs, drowsiness, and deep breathing. The urine had a specific gravity of 1026, and was loaded with sugar and ketone bodies. The knee-jerks were absent. Treatment with stimulants, intravenous sodium bicarbonate, calomel, and sodium bicarbonate by the mouth saved him, but for several days his life hung in the balance. This time with all our efforts, and with occasional starvation days, we could never get him free from some sugar or acetone. He left the hospital in October, 1921.

He left the hospital losing ground and in an apparently hopeless condition, but it would have been sheer cruelty to keep him longer away from his home, particularly as we were doing him no good. To my astonishment he then commenced to improve, and though not free from sugar kept well through the winter, until February, 1922—that is, for four months. Then all his symptoms reappeared synchronously with the formation of a small abscess on his scalp. He came to hospital on February 14th, smelling strongly of acetone, breathing deeply, and very drowsy. The urine had a specific gravity of 1032, and contained sugar and great excess of ketone bodies. In spite of every effort he died in coma on the 6th.

The post-mortem examination showed, as in Case II, a fatty liver, but the pancreas was shrunken and even more wasted than in the former case. Microscopy showed no active reaction, no trace of inflammatory change, but similar shrinking of the cells of the islets and relative increase of connective tissue.

## CASE V.

The last case, a girl aged 7½ years, was admitted on May 28th, 1920. This case we got early, for there had only been three weeks' history. The symptoms were: inordinate eating and drinking, rapid wasting, and polyuria, the urine being noticeably pale in colour. There was not the slightest hint in the family or personal history, or in the surroundings, as to the cause of this sudden breakdown.

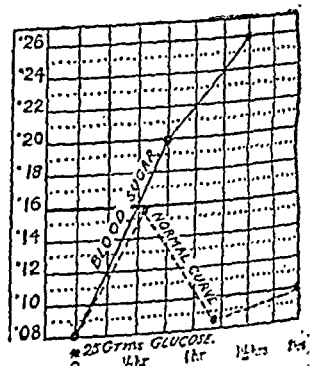
The child looked ill and was wasted, and suggested the diagnosis of diabetes. The specific gravity of the urine was 1045, and there was much sugar with ketone bodies.

By June 12th, on skimmed milk, with caloric value reduced to 513, and carbohydrate 52 grams, the sugar in the urine was reduced to a trace and the ketone bodies eliminated.

In July she was keeping free from sugar.

This child left hospital in October, 1920, free of sugar and ketones, apparently well, but with a blood curve of the diabetic type as shown by Dr. Spence. She kept well, but unfortunately ceased to come up to hospital for two months.

Previous to her next admission in February, 1921. It would be wearisome to detail the subsequent history, but, in a few words, the child broke down again in February, 1921, and once more we sent her out, in April, 1921, sugar-free and looking well, but in the notes I had expressed the opinion that there was increasing difficulty in attaining this result and that the outlook was bad. In July it was interesting to read the note of an enthusiast below this to the effect that she was looking splendid and was sugar-free.





Shortly after this note, in the same month, she broke down again. In her case we had difficulty in raising the calorie value as there was some sugar appearing; and particular difficulty was experienced in trying to raise the carbohydrate tolerance. However, in September we had got the calorie value up to 1,546, carbohydrates 50 grams, and the patient had gained a little weight. On September 30th half a slice of bread brought back sugar, and later some mince produced the same result.

In October we managed to give one ounce of potato and a quarter of an ounce of bread, and a diet of calorie value 1,600. Now and again a trace of sugar would appear, but we then discharged her under supervision with the following diet:

*Milk*.—8 oz. every four hours.

*Breakfast*.—One egg, cheese 1 oz., two tomatoes, weak coffee, bread 1/4 oz.

*Dinner*.—Broth, cabbage, 8 oz., potatoes 1 oz., fish 2 oz., cheese 1 oz., one egg.

*Tea*.—Broth, one orange, lettuce 6 oz., cheese 1 oz., one egg.

*Supper*.—One egg, weak tea, an onion, bread 1/2 oz.

In 1921 a yellow discoloration was noticed on the palms of the hands and soles of the feet.

Once more she kept well through the winter—her mother taking infinite trouble—but broke down again in February, 1922. From that date onward she always appeared thin and drawn, but was out of hospital until the autumn, when again all the symptoms returned: diet proved ineffectual, and the child became very unhappy. It was apparent that the last stage was reached, and at urgent request she went home, dying in coma in November, 1922. There was no necropsy.

The experience gained from these cases was not unexpected, but was very disappointing, for we had all, according to our lights, worked most diligently at them; yet all five died within three years. In all the cases of any duration we invariably went through three stages of thought: first the belief that we were succeeding—a belief which was never confident; then the uneasy feeling that we were losing ground; and finally, the realization that our efforts were fruitless. We protracted the illnesses, but nothing more, and this very partial success was so unsatisfactory from the children's point of view that had not there been always a hope that some new advance might appear, or some unexpected improvement arise, it seemed hardly worth while.

The course of the illnesses and condition of the pancreas suggested to me an abiotrophy comparable to a myopathy.

That diet only touched the fringe of the problem seemed also beyond dispute. No doubt our methods were open to criticism—no dietetic therapy could escape this fate—but no criticism would alter, in my opinion, the essential fact that the disease was materially untouched.

The remarkable periods of comparative quiescence, the unexpected outbursts, and the sudden improvements under apparently less favourable surroundings, all pointed to a mysterious hidden hand working against us.

Finally, with new methods in sight, I would venture to repeat that this series of cases may be of some value to those with fewer opportunities to form a clear idea of new results. If, as we all hope, these are much more favourable in the diabetes of the young, they will be seen more clearly against this black background—painted, as it were, at the eleventh hour.

This fact, if nothing more, is to be learned from these cases—that even in the young, with careful dieting (and presumably some care will always have to be taken with the diet), sugar and ketone bodies may disappear for weeks and months. When I write "disappear" I mean this in a practical sense—namely, ordinary careful examinations at reasonable intervals compatible with workaday medical practice.

Any remedy may, then, produce this effect, or rather be coincident with it; but if this remedy in addition wards off acetonaemic attacks, or tides children over the sudden relapses, we shall be in a better position.

## REMARKS ON BOTULISM AS SEEN IN SCOTLAND IN 1922.

BY

T. K. MONRO, M.D., F.R.F.P.S.,

REGIUS PROFESSOR OF MEDICINE IN THE UNIVERSITY OF GLASGOW;

AND

WILLIAM W. N. KNOX, L.R.C.P.S. EDIN., L.R.F.P.S.,

GAIRLOCH, ROSS-SHIRE.

THE general circumstances attending the food poisoning tragedy at Loch Maree Hotel in August, 1922, became sufficiently familiar to the public through the agency of the press and the proceedings at the public inquiry; but as this outbreak was the first of its kind known to have occurred in Britain it has been thought advisable to describe its principal features, so far as they came under the notice of the medical observers. It will be borne in mind that the scene of the calamity was a remote spot some twenty miles distant from the nearest railway station, and ten miles from the residence of the nearest medical practitioner. Some of the victims and other guests had frequented the hotel in the fishing season for many years, and it was admitted by those who were in a position to know that the management and catering at the establishment were of a particularly high order.

All was well at bedtime on Monday, August 14th. On the morning of Tuesday, August 15th, six guests were suffering from nervous symptoms. On Tuesday afternoon one, and on Wednesday morning another, of the ghillies became indisposed, and thus the number of sufferers was increased to eight.

Before giving notes of the individual cases we may summarize the more general features of the illness as follows: The onset was with diplopia and unsteadiness on standing (less or none of the unsteadiness while lying in bed); palsy of ocular muscles (internal or external, or both); palsy of elevators of upper eyelids with contraction of frontals; inability to protrude the tongue; nasal or thick speech, or loss of speech; dysphagia; palsy of diaphragm; paresis of costal respiratory muscles; paresis of upper limbs and dorsal muscles of neck; complaint was made with regard to the throat (the patient pointing to the region of the larynx or of the pharynx); vomiting was severe in some cases, slight or absent in others; diarrhoea in some; in some cases complaint was made of abdominal discomfort or pain. There was no fever, no cough, and no disturbance of sphincters. The heart was normal; intelligence was preserved; there was little or no headache.

In most of the cases the illness began on the Tuesday morning with diplopia and unsteadiness on standing. The nervous symptoms were more obtrusive than the digestive; and, so far as was made out, the damage was confined to motor neurones, and mainly, if not solely, to lower motor neurones. The cranial nerves involved were apparently the third, fourth, sixth, ninth, tenth, eleventh, and twelfth. In certain cases there was involvement also of motor elements in the spinal cord, and particularly in the cervical region. It was surprising to note how completely the facial muscles appeared to escape, while their neighbours supplied from the brain stem above and below the facial nuclei suffered so severely. The condition of the face below the level of the eyes was therefore in striking contrast to that which is often seen in the victims of the Parkinsonian type of lethargic encephalitis.

One patient called attention to his lips, but it was not clear whether he referred to a motor or a sensory disturbance. No other sensory defect was recognized in his case, and, so far as could be ascertained by objective examination, the power of the orbicularis oris, if impaired at all, was not lost.

All the patients succumbed. The most fortunate were those who died on the first day, since they were cut off by rapid failure of the heart, with very little suffering. Those who survived for a day or two had the greatest physical suffering, and it was painful to witness how for hours, and while in full possession of consciousness, they had to maintain the struggle for breath which resulted from the paresis of the ordinary muscles of respiration; and to this cause of distress there was added the inability to see, to speak, or to swallow. Those who survived longest formed an intermediate group with respect to the amount of physical suffering.

THE second international congress of military medicine and pharmacy will be held in Rome from May 28th to June 2nd, with General della Valle, Director-General of the Italian Army Medical Service, as president. The subjects for discussion include the relation of the transport service to the medical service; the collaboration between the civil and military authorities in matters of health, physical education, tuberculosis, venereal disease, alcoholism, etc.; disinfection and disinfection in peace and in war; the treatment of chest wounds; and the scope and methods of chemical laboratories in relation to the army. Further information may be obtained from the Secretary of the Congress, at the Ministry of War (Direzione Centrale del Servizio Sanitario Militare), Rome.



## Notes of Cases.

## CASE I.

Male guest, aged 70. On rising from bed at 3 a.m. on Tuesday, August 15th, began to suffer from giddiness and double vision. He had also severe vomiting and diarrhoea. By the middle of the day he had difficulty in . . . in the evening speech was severely affected, and . . . was one of collapse. He died at 8 p.m. apparently from cardiac failure, and without having suffered much from respiratory distress.

## CASE II.

Female guest, aged 56. Began to have diplopia on Tuesday morning. About the middle of the day she vomited, and when she was seen shortly afterwards her tongue was dirty and her speech was difficult to follow. She was able to sit up in bed and did not look very ill. Later on she became unable to swallow. When seen about 10 p.m., she was lying quietly on her side, intelligent, and free from evident distress, but cyanosed in the face. Her pulse rate, which not long before had been 72, was now found to be over 130. She died about 11 p.m.

## CASE III.

Male guest, aged 22. Could not see properly on Tuesday morning. He had diplopia while in bed, and on trying to rise felt giddy. When he complained of double vision squint was noticed by his friends, and he complained of discomfort in the mouth. Vomiting began in the afternoon. He could speak intelligently till 5 p.m. or later. Late on Tuesday night it was noted that the pupils were dilated. The fundi were easily seen and were normal. The patient was speechless, and communicated by writing, complaining of choking by spittle. The urine was abundant and of nearly normal colour.

At 3 a.m. on Wednesday some jerking of the arms was observed. When seen about 9.30 he was quite intelligent, and the pulse and breathing were normal, but he was unable to open the eyes properly, or to speak, or to swallow, or to keep up his head while sitting in bed. The knee-jerks and abdominal reflexes were absent. The diaphragm appeared not to be acting. Death took place at 12.30 p.m. that day (Wednesday, 16th).

## CASE IV.

Male guest, aged 66. Began to suffer on Tuesday morning from double vision and giddiness. When he was seen at a late hour that evening his voice was very thick. The pulse rate was 80.

On Wednesday there was no movement of the eyeballs. The patient raised the eyelids with his fingers to see who was beside him. The right pupil was slightly contracted. The tongue could not be protruded. The knee-jerks and abdominal reflexes were absent. The pulse rate was 92. The voice was at length lost completely, so that the patient made signs in trying to communicate with others. Dyspnoea became severe and caused intense suffering, the patient being unable to lie down or to remain still even in a sitting position. Consciousness remained almost to the end, and hypodermic injections of morphine were the only means found to give temporary relief to the suffering. Death occurred at 9.30 p.m. on Wednesday, August 16th.

## CASE V.

Female guest, aged 45. On getting out of bed on Tuesday about 6 a.m. felt dizzy and saw double. She had eaten potted-meat sandwiches about 1 p.m. on Monday, and was quite well when she went to sleep at 11 o'clock the same evening. When she was seen late on Tuesday night she had diplopia on looking to the left, dysphagia, slight defect of speech, and sluggishness of the pupils. She remarked spontaneously that she had been drowsy all day. During the ensuing night there was diarrhoea.

On Wednesday morning there was cyanosis. No movement of the diaphragm was detected. The hands were weak. The knee-jerks were normal, the plantar reflexes flexor, and the abdominal reflexes absent. Speech had become worse. There was vomiting of slightly fetid yellow material. The pulse rate was 92. The heart was normal.

For a brief period there was stridor suggesting abductor paralysis. Aphonia ultimately became complete. There was frequent complaint of the throat, and the patient often inserted her fingers into her mouth, with the purpose, as it seemed, of inducing vomiting, but without success. Inspection of the fauces showed no abnormality. Temporary improvements were observed in this case once or twice. In the later stages of the illness the muscles at the back of the neck were paralysed, so that the head hung forwards, and the upper limbs appeared to be seriously weakened. In the last few hours there was orthopnoea with restlessness and great distress referred to the throat. Consciousness was retained practically to the end, which took place at 4.5 a.m. on Thursday, August 17th.

## CASE VI.

Ghillie, aged 35, was out with Case V and her husband on Monday, and with the husband alone on Tuesday. Before he left the boat on Tuesday afternoon he had begun to feel unwell. When he was seen late on Tuesday night he complained of his throat, and of pain and tenderness in the upper abdomen. The bowels had moved several times that afternoon. There was no diplopia. The temperature was non-febrile.

On Wednesday the speech was very thick. The tongue was dry, and was not fully protruded. There was pain at the throat, with inability to swallow either food or drink. There was no vomiting. The patient was quite intelligent, and communicated with others in writing. The left pupil was slightly larger than the right; both contracted to light. Lateral deviation of the eyeballs was defective. There was no nystagmus nor diplopia.

On Thursday he was seen about 6.30 a.m. He was unable to speak or to swallow. He was intensely restless and unable to remain either in the recumbent or in the sitting posture. He was eager to be removed by motor to his own home, some thirty miles distant, and his wish was respected. He died at 1.30 p.m., an hour after arrival.

## CASE VII.

Male guest, aged 60, husband of Case II. Found on Tuesday morning that he was seeing double and that he staggered when on his feet. He told his wife about the double vision, and she said that she had the same symptom. The patient went rowing and fishing on the loch that day, hoping that the exercise would do him good, and he dressed for dinner in the evening.

Next day (Wednesday) he rose again, but in the afternoon he thought his speech was slightly affected, and he had decided ptosis. On Thursday he remained in bed, but was not obviously worse. For a day or two there were temporary improvements.

On Friday evening the voice was thicker; protrusion of the tongue was defective; movement of the palate was impaired but not lost; and there was ptosis on both sides. The external recti were weak, especially the left, and squint was perceptible, particularly when the patient looked to the left. Diplopia, however, was not now admitted. The pupils were of medium size and contracted actively to light. The movements of the facial muscles and the power of grasping were well preserved. The knee-jerks were normal or slightly increased. The plantar reflexes were flexor; the abdominal reflexes were absent. There was no disturbance of the bladder. The pulse was 84.

During the ensuing night the patient had a good deal of sleep, but on Saturday morning ptosis was complete and the voice was so thick that his speech was very difficult to understand. He tried to communicate with those around by writing, but in order to see the pencil and paper he had to raise the eyelids with his fingers, and then he found that he could not manage without his glasses, and an attempt to hold the eyelids up and to keep the glasses adjusted at the same time proved a failure. For a time it remained possible to detect a few words which he tried to whisper. In the afternoon he was seen by Dr. Brown Kelly, who found that sensation was preserved in the palate and posterior pharyngeal wall. There was reflex movement of the soft palate on probing with a wire, but there was no movement on phonation. The power of protruding the tongue was diminished but not lost. The patient called attention to the lips, but the muscles were not obviously paralysed, and it was not quite clear what the symptom was. He seemed also to indicate that his right upper limb was weakened.

On Sunday he was unable to swallow. During the ensuing night he was restless, but he did not have the intense respiratory distress noted in some of the other cases. He died on Monday, August 21st, about 1 p.m. The brain was removed by Mr. Colt, who sent one portion to Dr. Cruickshank of Aberdeen, and the other to the Scottish Board of Health.

## CASE VIII.

Ghillie, aged 40 (boatman to Case I). Complained on Wednesday morning, August 16th, of abdominal discomfort on rising. There was sickness also in the morning, but not vomiting. In the course of the day he had a feeling of heaviness in the eyes, and saw double when he looked far ahead. Movement of the eyeballs was good, and did not induce diplopia. The pupils were of medium size and contracted to light.

When seen on Thursday he was in bed, but was not obviously worse. He spoke of some difficulty in swallowing, but there was no pain. The movements of the eyes seemed satisfactory. In the course of that evening or night he began to complain of his throat.

On Friday night he was complaining of pain near the lower angle of the left scapula. The heart, lungs, spleen, and superficial lymph glands all seemed to be normal. The area of hepatic dullness was somewhat reduced. The pulse was regular, 72 a minute. The tongue had a white fur. There was no vomiting. The bowels were constipated, but had been moved by enema. The tongue was protruded pretty well. There was very little movement of the palate, and the power of swallowing appeared to be reduced. The fauces were normal. The voice was thick. There was no deafness nor tinnitus. The power of grasping was good. No noteworthy change was discovered in the reflexes. During the night he had a good deal of sleep. On Saturday morning he was unable to swallow, but was free from distress. The pulse rate was 70. The respirations were 19 a minute and were free from embarrassment. The tongue was dry. He was seen that afternoon by Dr. Brown Kelly, who found that the tongue could be protruded and moved sluggishly from side to side. The palate was motionless and showed no reflex contraction on probing. The power of less and showed no reflex contraction on probing. The power of swallowing was lost, and there was a gurgling sound in the throat owing to the accumulation of mucus, which could neither be swallowed nor expelled by coughing.

On Monday, August 21st, at 11 p.m., the patient died peacefully of cardiac failure.

Reckoning from 1 p.m. on Monday, the shortest incubation period was fourteen hours (Case I), and the longest about forty-three hours (Case VIII). The patient (Case VIII) who was the last to become ill and the last to die was boatman to the one who was the first to become ill and the first to die (Case I). As the ghillies may have eaten the poisonous food some time later than the anglers, the longest incubation period may really have been less than the forty-three hours.



Cases I and II died on Tuesday, August 15th; Cases III and IV on Wednesday, August 16th; Cases V and VI on Thursday, August 17th; and Cases VII and VIII on Monday, August 21st. The longest periods of survival from the onset of symptoms were six and a quarter days (Case VII) and five and a half days (Case VIII); the shortest were from fifteen to seventeen hours (Cases I and II).

Of the various means used to help the sufferers, the only one which gave any obvious benefit was morphine, and the relief was only of a temporary character.

With regard to the nature of this outbreak of illness, it was soon possible to set aside early suspicions as to the presence of poisonous berries in the black-currant tart consumed at dinner, and as to lethargic encephalitis. A careful inquiry as to the various articles of food consumed at dinner in the hotel, and at lunch on the loch, on the preceding day, showed that with one doubtful exception (subsequently found not to be an exception), the sufferers had all partaken of certain sandwiches made with potted wild duck. In the course of Wednesday, August 16th, we met in consultation with Dr. Maclean, M.O.H., and Dr. Brodie, school medical officer from Dingwall, Dr. Carnegie Dickson from London, and Dr. Cox from Preston; and all were agreed that the illness was due to food poisoning and that the potted meat was probably the offending substance. In course of time it became quite evident that botulism was the particular form of food poisoning with which we had to deal.

At the public inquiry held by Sheriff McIntosh at Dingwall on September 5th to 7th it was shown that some individuals who had partaken of the wild-duck sandwiches had not suffered any harm. This was accounted for by the fact that two pots of wild duck had been used for the sandwiches on the Monday morning. It also appeared that no other pot prepared by the manufacturers had ever been known to be harmful. The inquiry showed that the infection must have been in the pot when it left the factory, but it failed to show how or where the infection had taken place.

While the symptomatology was of itself sufficient for a diagnosis, there was a general feeling of satisfaction when it was learned that the results of laboratory investigations had removed any possibility of doubt. Dr. Cruickshank of Aberdeen gave evidence that the histological examination of a portion of the brain from Case VII was in accordance with the diagnosis of botulism, and Mr. Bruce White, B.Sc., of Bristol, working for the Scottish Board of Health, stated that he found *Bacillus botulinus* and its toxin in the remains of one of the pots of wild-duck paste.

Among the colleagues whose valuable co-operation we had in examining the patients, in trying to relieve their suffering, or in endeavouring to elucidate its origin, were Drs. Maclean and Brodie (Dingwall), Carnegie Dickson (London), Cox (Preston), Brown Kelly (Glasgow), Colt and Craickshank (Aberdeen), and Dittmar and Leighton (Edinburgh); and, in addition, Mr. Bruce White (Bristol).

## OBSERVATIONS ON THE CAUSE AND CURE OF CHRONIC RHEUMATISM.

BY

E. HARDING-FREELAND, F.R.C.S.Eng.,

BERNE, SWITZERLAND.

THE general characteristics of rheumatism, popularly so called, must be apparent to even the most casual observer. Everyone, I take it, will agree that rheumatism is a disease which is very prevalent, usually very painful, often very disabling, and always very liable to recur in spite of treatment. With such a picture presented to our view it seems strange that rheumatism of the chronic type has from time immemorial been treated with scant courtesy alike by writers of books and practising physicians. The references to this type of rheumatism in the textbooks are usually meagre in the extreme—as a rule the subject is mentioned merely to be dismissed in a few cursory words, while in practice any ache or pain which cannot be conveniently referred to any cause in particular is labelled "rheumatic."

So it happens that under the term "rheumatism" there have been grouped together a large number of conditions which bear a certain superficial resemblance to each other, as far as their external manifestations are concerned, but differ widely the one from the other when their fundamental nature comes to be investigated. They are due to widely dissimilar

causes, and must therefore be considered to be different and distinct conditions. The result is that the term "rheumatism" has come to be very loosely used, and has come to denote a medley of symptoms rather than any definite disease.

### The Nature of Rheumatism.

At the outset we are confronted with the all-important question—What is rheumatism? To this question it is essential that he who sets out to cure the ailment should be prepared to give as definite an answer as possible if he expects his efforts to be rewarded with success. Observation and experience extending over many years have led me to the following conclusions, among others, as to the nature of this disease.

1. That rheumatism is a definite disease.
2. That rheumatism is an infective disease due to the invasion of the part affected by a specific microbe—the *Streptococcus rheumaticus* of Poynton and Paine.
3. That the acute, subacute, and chronic types of rheumatism are variant forms of the same disease, the underlying pathological conditions and essential cause being the same.

To put the matter more concisely, rheumatism is a specific infective disease due to the *Streptococcus rheumaticus*. The validity or otherwise of this proposition I do not propose to discuss here, my present purpose being to show the practical results which may be achieved by adopting this proposition as a working hypothesis and a basis of treatment.

### Basis of Treatment.

Every practising physician must be painfully conscious of the futility of trying to cure rheumatism by what may be termed the ordinary methods of treatment. These remedies, it is true, seldom fail to give temporary relief; but equally seldom they fail to prevent a relapse. To my mind, this inveterate tendency to recur in spite of treatment, which must be patent to even the most casual observer, must be considered the outstanding feature of rheumatism. That being so, it follows that any method of treatment which is capable of effecting a permanent amelioration or cure must be not only capable of breaking up the attack in being but also capable of preventing the occurrence of any prospective attack.

In other words, assuming rheumatism to be an infective disease due to a specific microbe, to effect a cure it is essential to compass the destruction of the microbes already lurking in the tissues, and to render the tissues immune to attack by other microbes which may subsequently gain access to the circulation. In the present state of our knowledge the only method of treatment which can be expected to fulfil these conditions is vaccine therapy.

### Necessary Preliminaries.

Before, however, undertaking the treatment of a case of alleged rheumatism by vaccines or any other method of treatment it is necessary, as a preliminary, to make sure—or to make as sure as possible—that it is a case of genuine rheumatism with which we have to deal, and not one of its many counterfeit presentments. In other words, we must take pains to determine that the case in question is a true *Streptococcus rheumaticus* infection, and not some other form of infection which gives rise to similar manifestations. To this end all the various conditions which are known to give rise to symptoms closely resembling those of rheumatism should be closely considered and excluded. A careful study of the case in general, its history, course, symptoms, and physical manifestations, and, wherever necessary, the application of appropriate tests, will in the vast majority of cases lead us to a correct conclusion as to its true nature.

### Vaccine Therapy.

Having determined the identity of the disease, and that it is a case suitable for vaccine treatment, the subsequent course is comparatively easy going. Practically the only difficulty which presents itself is the question of dosage. This must necessarily vary with the individual, and can only be determined by experience. If the initial dose produces an undue reaction, the subsequent dose should be reduced; if, on the other hand, no reaction is apparent, the subsequent dose should be increased; and so on until a dose is found which produces a minimum of reaction. In other words, the ideal dose is the maximum of vaccine which produces the



minimum of reaction. Once this is found the rest is easy. It is only necessary to repeat the dose week by week until such time as the symptoms have disappeared, or until no further improvement is obtained.

Circumstances of course may occur when it may be considered advisable to increase or decrease the dose or the intervals between the doses, temporarily or permanently. Every case must be treated on its merits.

#### Supplementary Treatment.

Let it not be thought for one moment that I am advocating vaccine therapy as the be-all and end-all of treatment. On the contrary, with rheumatism, as with all other diseases, no remedial measures should be neglected which help to bring about the best possible results. Experience, however, has led me to regard vaccine treatment as essential, and other remedial measures as subsidiary, but by no means unimportant, seeing that, in the vast majority of cases, they are usually desirable, and often necessary.

Symptoms of various kinds must be treated from time to time as they arise. The general health of the patient must be attended to, and every effort must be made to get him as fit as possible. The state of the digestive organs should be investigated and any tendency to indigestion rectified. The question of diet should not be overlooked, and, although it is seldom necessary to recommend an unduly restricted diet, it is often necessary to formulate a dietary suited to the digestive capacity of the individual. Speaking generally, a somewhat generous but plain and wholesome diet is indicated. Vaccine treatment seems to improve rather than diminish the digestive capacity. For obvious reasons it is essential to ascertain that the bowels, skin, and kidneys are functioning well, and, if not, to regulate their activity by appropriate measures.

Massage, active and passive movements, radiant heat, Turkish baths, resolvent applications, etc., should not be neglected, especially in the more chronic cases, which are often accompanied by much swelling and stiffness.

Such, then, is a brief outline of the method of treatment which I have been accustomed to adopt for some years past in cases of chronic rheumatism.

#### Analysis of Cases.

The results, which I have recently reviewed and been at pains to verify, are set forth in the following analysis. Only those cases are included in which sufficient time has elapsed to render them of any value in computing results, and in which the results are definitely known. An examination of the cases shows that, with few exceptions—which have not been included—they all fall naturally into five anatomical groups, as shown in the following tabular statement, which also shows the nature and number of the cases treated in each group, and the results obtained.

	Cases.
Articular rheumatism (arthritis) ... ..	52
Cured or markedly relieved ... ..	42
Slightly relieved or failed ... ..	10
Muscular rheumatism (lumbago 10, other forms 14) ... ..	24
Cured or markedly relieved ... ..	20
Slightly relieved or failed ... ..	4
Neural rheumatism (sciatica 6, other forms 14) ... ..	20
Cured or markedly relieved ... ..	15
Slightly relieved or failed ... ..	5
Pharyngeal rheumatism (tonsillitis) ... ..	12
Cured or markedly relieved ... ..	12
Cerebral rheumatism (chorea) ... ..	4
Cured ... ..	4
Total number treated ... ..	112
Cured or markedly relieved ... ..	93=83%
Slightly relieved or failed ... ..	19=17%

Some explanation is necessary with regard to the terms used in describing results. "Cured" means that the symptoms have completely vanished, and that there has been no recurrence for upwards of a year. "Markedly relieved" includes cases of more recent date, which have remained well for from six to twelve months. "Slightly relieved" means that there was no very marked improvement in the condition, or what improvement had occurred was not permanent. "Failed" speaks for itself.

It should be noted that most of these cases were of long standing, and all had lapsed, or were tending to lapse, into the chronic phase, with frequent recurrences; and that the majority had been treated with the ordinary methods of treatment with little or no benefit. The following cases in epitome exemplify the type of case treated.

#### Articular Rheumatism.

*Case 1.*—Male, aged 35. Origin, attack of rheumatic fever. Duration, nine months. The condition when first seen included pain, swelling and stiffness of the hips, knees, and ankles; locomotion was only possible with the aid of two sticks; the general health was fair. After three injections the swelling disappeared; pain and stiffness were less; he was able to move about more freely, but still used a stick. After five injections, voluntary movements of the joints were free; he was able to get about fairly well, but his legs were still weak; he could not altogether dispense with a stick, but pain was practically gone; there was still some stiffness after resting. After eight injections all symptoms had gone; he could walk well and returned to work. He was under treatment for seven weeks.

*Case 2.*—Female, aged 66. Origin, subacute attack. Duration, six years. When first seen all the joints were involved; she was unable to do anything for herself, and was bedridden, with marked deterioration of health. After twelve injections she was able to get about and could use her arms and hands freely. Her general health was much improved, but she was still weak. After sixteen injections all symptoms had disappeared; she could walk well without assistance and use her hands and arms for all practical purposes. Her general condition was good. She was under treatment for four months.

#### Lumbago.

*Case 3.*—Male, aged 47. Origin, subacute attack. Duration, three years. His condition included pain in the back, limitation of movements, and stiffness; the pain increased on movement, rendering locomotion difficult. After eight injections all symptoms had disappeared. He was under treatment for six weeks.

#### General Myalgia.

*Case 4.*—Male, aged 30. Origin, "chill." Duration, two years. When first seen he had general muscular pains, varying with changes in the weather, worse at night. After five injections the pain had gone. He was under treatment for four weeks. Note: This case is typical of the majority of cases of generalized myalgia treated.

#### Sciatica.

*Case 5.*—Female, aged 28. Origin, acute attack, attributed to sitting on a damp seat. Duration, three weeks. When first seen the attack was lapsing into a chronic phase. Ordinary remedies failed to relieve. There was pain along the course of the sciatic nerve trunk and its branches, increased on movement and pressure. She was unable to get about. After four injections all symptoms disappeared; the patient expressed herself as feeling just as well as ever. She was under treatment for three weeks.

#### Tic Douloureux.

Two cases of this painful and intractable ailment have been under treatment. In one case the result was completely successful, in the other it was a failure. The following is a brief epitome of the successful case.

*Case 6.*—Male, aged 65. Had always enjoyed good health, except for recurrent attacks of pain over the left eyebrow, which commenced five years previously; at first recurring about every six months, the intervals gradually became less and less. When first seen the attacks occurred every evening about 6 o'clock, persisted throughout the night, and passed off in the early morning, the patient being free from pain during the day. No previous treatment brought any permanent relief, and life was a burden. After four injections the attacks were less severe. After eight injections the attacks still persisted, but the pain was duller and bearable. After twelve injections the attacks, which had been getting less severe and less frequent, ceased. He was under treatment for two months.

#### Facial Neuralgia.

Three cases of so-called facial neuralgia, apparently of rheumatic origin, have been treated—two with complete, one with only partial, success. The former were cured after six injections at weekly intervals. In the latter, treatment was abandoned after three injections had been given.

#### Chorea.

*Case 7.*—Boy, aged 9. Duration, three months. When first seen there were marked involuntary movements of the arms and head, with twitching of the face; there was also a mitral bruit. After four injections the movements ceased. The patient was under treatment for three weeks.

*Case 8.*—Girl, aged 15. Duration, eight years. She had had recurrent attacks. The mental and physical conditions were much impaired; involuntary movements were general. After six injections the condition was much improved. The movements, which were severe, were now reduced to spasmodic twitches. After twelve injections the movements had ceased; her physical condition was good, her mentality much improved. The duration of treatment was three months.

#### Tonsillitis.

These cases occurred chiefly in adolescents and young adults. In all there was a tendency to recurrence in the spring and autumn, and all were accompanied by symptoms elsewhere, which pointed unmistakably to their rheumatic origin. Otherwise there was nothing to differentiate them, superficially, from ordinary subacute attacks of tonsillitis. Treatment was carried out in the intervals between the attacks. Six injections were administered



in each case. Eight remained well for over a year, and the remaining four for periods varying from over six months to a year, all having passed the period at which a recurrence was due.

#### CONCLUSION.

In conclusion, it should be noted that the foregoing remarks are not put forward in any sense as a critical study, but merely represent a brief record of individual experience concerning a certain line of treatment, with its results.

### TREATMENT OF ORIENTAL SORE BY PHOSPHORATED OIL.

BY

ALDO CASTELLANI, C.M.G., M.D., F.R.C.P.,

PHYSICIAN, MINISTRY OF PENSIONS HOSPITAL; LECTURER, LONDON  
SCHOOL OF TROPICAL MEDICINE.

The treatment of oriental sore (dermal leishmaniasis) which I devised some time ago and have used in three cases during the last six months consists in injections of recently prepared phosphorated oil into the nodule and around it.

*Method.*—A sterile 20 minims all-glass hypodermic syringe is used; 5 minims of the oil are drawn in and injected into and around the lesion by inserting the syringe in two or three places into the nodule itself and under the skin around the periphery; if the lesion is ulcerated two or three drops of the oil, in addition, are dabbed on the fundus of the ulcer after removing the crust. The injections are given once or twice a week.

The result in all three cases has been very satisfactory, evidence of incipient healing appearing almost immediately after the second or third injection, and an apparently complete cure being obtained within three weeks to two months.

#### CASE I.

A demobilized army officer, aged 26, contracted oriental sore six months ago in Persia—one large non-ulcerated nodule and a partially ulcerated one, both on the left forearm. Microscopical examination of both lesions showed the presence of *Leishmania tropica* Wright. The patient had had severe malaria and had been treated with large doses of quinine. He had had no treatment of any kind for the sore. I gave him altogether seven injections (5 minims each) of phosphorated oil at rather irregular intervals, as he could not come to see me very regularly. The actual injections were painless; after a few hours there was a slight local reaction, the lesions becoming somewhat oedematous and the surrounding skin slightly reddened. Symptoms of rather severe general reaction occurred once; after the third injection the patient had fever (102°) and felt chilly and unwell, with rheumatoid pains all over the body. The symptoms may have been due in reality to his old malaria, as the temperature fell to normal with sweating within twenty-four hours; I could, however, find no malaria parasites in the blood. The open sore healed very quickly within two weeks, a smooth white scar being left; the non-ulcerated nodule took six weeks to disappear.

#### CASE II.

A young married woman (British), age 24, presented on the left wrist a small smooth nodule with a few scales at the apex and no sign of ulceration. Microscopical examination showed it to be an oriental sore, contracted apparently two months earlier in India; the first sign of it appeared during the voyage home. Six injections of phosphorated oil (two a week) were followed by complete disappearance of the lesion within three weeks. The injections were never painful, the local reaction was very slight, and there was never any sign of general reaction.

#### CASE III.

An Englishman, aged 22, had contracted oriental sore seven months earlier in Iraq. There was one very large nodule on the left forearm ulcerated at the top and covered with a thick crust, as positive. The patient said that with intravenous injections of tartar it had also been considered to be of with salvarsan unsuccessfully. He was given an injection of phosphorated oil (5 minims) twice a week into the nodules and at several places under the skin and around it. The lesion took two months to heal completely.

The method seems to have been successful in these three cases, which are all I have treated. The following points should be kept in mind: First of all, it is essential that the phosphorated oil should be of recent preparation; old phosphorated oil is inert. The phosphorated oil I have used is the oleum phosphoratum B.P. The injections are practically painless, but after a few hours there may be some local reaction, the lesions becoming slightly swollen and the skin around them somewhat reddened; apparently severe general reaction is rare; a reaction lasting twenty-four hours occurred after the third injection in Case I, but the patient was an old malarial subject, and the condition—though I did

not find any malarial parasites—may have been malaria, especially as it terminated in sweating.

Phosphorus is a powerful poison, and its delayed action on the liver should especially be kept in mind; it should therefore be given with care, and every precaution taken. I may say, however, that though I have used injections of phosphorated oil in only three cases of oriental sore, I have used this therapeutic method without any ill effects in several other conditions, since I found, some years ago, that phosphorated oil given by subcutaneous injection was almost painless: I have used it, for instance, without any untoward effect in cases of rickets and of osteomalacia, and in certain cases of very chronic malarial cachexia as an adjuvant to quinine and arsenic.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### TRAUMA AND APPENDICITIS.

The two following cases, in which appendicitis appeared to be the result of trauma, came under my care early this year; the injury in each instance occurred on January 2nd.

#### CASE I.

A young woman, aged 19, a field worker, was walking on the outskirts of a wood when she tripped on a stub and fell flat on the ground, but not upon any projecting object. On raising herself she felt sick and faint, but improved as the day advanced, took her evening meal, and slept well. The next day she felt pain just above the right groin, and could not take her food well. The father, thinking his daughter had received some injury from the fall, asked me to call on the following day.

I saw her at 3.45 on January 5th. She had abdominal facies, anorexia, and complained of pain in the right lower quadrant; temperature 103°, pulse 140. There was scarcely any movement of the abdomen, a resisting area in the right iliac region per rectum, and some tenderness on palpation high up.

From the history, I wrote a note to King's College Hospital (to which the patient was admitted) expressing the opinion that she was suffering either from a large hæmatoma commencing to suppurate or an acute appendix abscess.

Operation was performed the same evening, and the following note, from Mr. St. J. D. Baxton, assistant surgeon to the hospital, describes what was found: "She had a localized appendix abscess; it was shut off from the general peritoneal cavity with very firm adhesions, but the abscess was very offensive. I took the appendix away and drained the cavity. I took some trouble to avoid opening the general peritoneal cavity, and hope that will be rewarded, so I do not know if there was any free fluid in that. Your note regarding the fall was very interesting."

#### CASE II.

A farm labourer, aged 59, while standing astride a wooden pole slipped and fell, his whole weight coming on the lower part of the abdomen. He felt sick and faint, and went home. He resumed work the next day, and continued to work daily until January 8th. On this day the district nurse was called in; she decided that it was necessary the patient should see a doctor without delay. He was seen by Major S. H. Smith, who ordered enemata to relieve constipation, and a mixture for what was diagnosed as a reflex asthma. That night the nurse reported no result from the enemata, and proposed giving a high one. This was agreed to, and a request was made that a report on the state of the patient should be submitted early the following morning. No report came, and the patient was not visited again until January 12th. He had commenced to vomit the previous night (mucus and bile), complained of pain in the right inguinal region, and had had no action of the bowels since the high enema on January 8th. The abdomen was immobile and distended.

The patient was removed to Gravesend Hospital on the afternoon of January 12th, and operated on in the evening. A report from Mr. G. R. M. Cordiner states that "his abdominal cavity was found to be full of foul-smelling pus. On search being made, a gangrenous perforated appendix was found."

Farningham.

T. F. HUGH SMITH.

#### FOREIGN BODY REMOVED FROM THE ORBIT.

Mr. W. was taking an inebriated friend home, a misplaced kindness, which resulted in a severe blow causing a wound below the left eye. Next morning he consulted the local medical man; who stitched the wound, which healed by first intention. Four weeks later Mr. W. was sent to me, and was admitted to the Salisbury Hospital, Southern Rhodesia. There was a scar below the left lower eyelid, and external and superior strabismus on the left side, the eye being displaced outwards and upwards. There was also extensive herniation of the bulbar conjunctiva, which protruded between the lids and hung over the malar region. The pupillary reaction and tension were normal. There was



marked diplopia. Ophthalmoscopic examination revealed nothing abnormal; the fundus and media were clear. The herniated conjunctiva was excised; there was slight purulent discharge from the wound, which was opened, explored, and drained. Examination showed fracture of the orbital plate (superior maxillary) with displacement of fragments, and fracture of the lacrimal bone, but raised no suspicion of any foreign body. A second operation was undertaken ten days after the first, on account of short recurrent attacks of left fronto-temporal headache of a stabbing character. The orbit was freely exposed by opening and extending the original wound, following the anterior border of the orbital plate of the superior maxillary and malar bones. Fractures in accordance with the x-ray report were found. The sphenoidal fissure was explored, revealing the rough edge of a foreign body, which gave an impression of a fragment of loose bone. This was grasped by sinus forceps, which slipped, and a portion of black material (vulcanite) was noticed on the tip of the forceps. The foreign body was then seized with bullet forceps, the lumen of which contained 1½ in. of vulcanite pipe stem, the broken end of which projected into the brain substance. The broken end being embedded in the brain for about 1.8 in., the mouth end being embedded in the brain to the extent of about 1 in. The edges of the sphenoidal fissure were fractured. The wound was closed, leaving a long drainage tube leading to the brain cavity. The operation wound healed rapidly, and the patient made an uninterrupted recovery. The eye regained its normal position with perfect movement, and binocular vision was restored. The point of particular interest in this case is that definite symptoms were absent until four weeks after the injury.

H. V. GATCHILL, F.R.C.S., D.P.H.

Salisbury, Southern Rhodesia.

## Reports of Societies.

### GASTRIC AND DUODENAL ULCERS.

A joint meeting of the Sections of Medicine and Surgery of the Royal Academy of Medicine in Ireland was held in the Royal College of Physicians on February 2nd. The President of the Surgical Section, Sir WILLIAM I. DE COURCEY WHEELER, who was in the chair, said that the Council of the Surgical Section had arrived some time ago at the conclusion that it would be advantageous to arrange co-operation between that Section and the Medical Section. The latter had from time to time invited or accepted communications from individual surgeons, and leading members of the General Council of the Academy had been taken by the General Council of the Academy to approve the principle of joint meetings and definite action had been taken by the physicians and surgeons, and the result was the meeting now held to discuss the diagnosis and treatment of gastric and duodenal ulcers.

In opening the discussion the President said that there might usefully revolve. Often the presence of a gastric ulcer could not be definitely ascertained unless an accident such as perforation occurred, or deformity produced by cicatrization is put beyond doubt by an x-ray picture. In cases of duodenal ulcer without deformity he had frequently obtained two x-ray reports in the same case which at first sight appeared contradictory. One report would state that there was pyloric spasm, some dilatation of the stomach, and gastric stasis; the next report that the pylorus was open and that the stomach contents were shot through by the action of a hypertonic gastric muscle. These apparent inconsistencies could easily be explained when it was remembered that pyloric spasm frequently disappeared when the patient was put to bed on restricted diet and took alkalis freely. The spasm passed off, but the stomach remained hyper-tonic and the contents were readily and forcibly propelled through an open door. It was therefore necessary to take into consideration whether a patient was at work without restriction or in bed under medical guidance. In the small acute ulcers of females he did not think that x-rays were helpful, and he did not think either that these cases were suitable for surgical interference. He was of opinion

that the presence of excess of hydrochloric acid in the stomach was not a characteristic sign of gastric ulcer. It appeared to occur frequently in the absence of ulcer, when pyloric spasm was well marked; but when ulcers were present in the region of the lesser curvature an increase in the amount of hydrochloric acid was not usually found. It was a fallacy to rely on the absence of hydrochloric acid in cases of suspected malignant disease. In half the cases where carcinoma arose primarily, or was grafted on a pre-existing ulcer, the presence of hydrochloric acid could be found; and, on the other hand, achlorhydria was sometimes but not frequently a feature in cases of ulcer of the duodenum. The significance of haemorrhage was all-important. They were all familiar with the haematomesis of biliary cirrhosis; gastric haemorrhage occurred frequently from pathological conditions of the pancreas, gall bladder, appendix, and Fallopian tubes, and other organs, without any lesion in the gastric mucous membrane. Oozing of blood from the stomach had been described by Hale-White under the term "gastrostaxis." In renal disease it was not an uncommon symptom. He believed that it was seen during attacks of gastric crises in tabes. Capillary oozing or bleeding from arterioles quite commonly took place in all these conditions. Under the term "toxic gastric haemorrhage" many such a gastric lesion were at one time thought to be examples of vicarious menstruation. The question of perforation needed passing mention. It could not be mistaken. The patient could tell to the moment when the catastrophe occurred, and could generally indicate exactly the position of the perforation. He never repelled the suggestion of immediate operation, and if he was not an alcoholic he became rapidly anesthetized with ether, and never resented the fumes by a single movement. If the patient came for treatment some hours after the perforation, the shock had passed off, and he would apparently be better. The improvement probably coincided with the outpouring of the protective and defensive fluids of the peritoneum, which had been so vividly described by Murphy. Then the final stage came, with the facies hippocratica, the black vomiting, the pulse quickened, and the temperature rose. Lastly they got the clammy, bright-eyed, toxic patient described ruthlessly by Murphy as being "more fit for an undertaker than a surgeon." The chronic recurrent ulcer needed surgical intervention, and if there had been haemorrhage before the operation there would be duodenal ulcers, and 8 per cent. of gastric ulcers, unless more than gastro-enterostomy was done. Ulcers were now, if possible, excised or destroyed with the actual cautery by Balfour's method. It was his own practice to burn them out. The greatest difficulty that arose at present was the knowledge that perhaps 40 or 50 per cent. of chronic ulcers in people past middle life changed their character and became malignant. He did not believe that gastrectomy was the operation of choice in cases which were known to be non-malignant at the time of operation, but in the hands of Moynihan and Sherren the operation did not carry increased mortality. In special cases he preferred gastrectomy, the first of which he published in 1910. Once gastro-enterostomy was performed the patient again became a medical case, and with proper dieting and the administration of alkalis for three months the results would be very different from those obtained in patients allowed to go their own way.

Sir JOHN MOORE said that the President's paper raised questions which were of equal interest to physicians and surgeons. He would like to know if the symptom of disappearance of pain after taking food was reliable as differentiating a duodenal from a gastric ulcer. He suggested that when giving alkalis in connexion with hyperchlorhydria it was desirable to add a solution of bismuth and ammonium citrate.

Dr. SPEARES said that personally he had never got much help from x-rays in either gastric or duodenal ulcer cases, and though he always had the patients radiographed he did not place much confidence in the results. Regarding alkalis in duodenal ulcer and gastric ulcer, he usually confined himself to Sippy's powder; it had always had good results. A duodenal ulcer presented peculiar difficulties. He would like to know in those cases where there was a perforation of the duodenum if it was necessary to do a gastro-enterostomy. Physicians met with a number of cases of gastric ulcer which yielded readily to medical treatment and did not require surgical intervention at all, but if there was any



suspicion of malignancy, or if the symptoms did not yield to treatment, operation should always be undertaken.

Dr. HARDMAN confined himself to the points on which radiographers tried to base their diagnosis of gastric or duodenal ulcer. The diagnosis of ulcers depended upon direct evidence and indirect evidence.

*Direct evidence:* (1) Niche, or ulcer crater; (2) accessory pocket; (3) organic hour-glass deformity.

*Indirect evidence:* (1) Spastic manifestations—(a) incisura, (b) spasmodic hour-glass, (c) diffuse gastric spasm; (2) retention; (3) hypotonus; (4) localized tenderness; (5) limited mobility.

Certain diagnosis could be made from direct signs. Of the indirect signs, the spasmodic hour-glass was the most important, and was an almost certain sign of ulcer. Other secondary signs alone were sufficient to justify a diagnosis, but if correlated with clinical and laboratory evidence diagnosis might be made much more certain. Belladonna or atropine would differentiate between the intrinsic and extrinsic types of spasmodic hour-glass. The spasmodic type, when intrinsic in origin, was just as important from a diagnostic standpoint as the organic. Spasmodic hour-glass of extrinsic cause was not common, but might be due to a duodenal ulcer, gall bladder disease, or appendicitis. When due to duodenal ulcer the spasm would not be relaxed by belladonna. Pseudo hour-glass stomach might be caused by contraction of the abdominal muscles, pressure of stomach against spine, adhesions, bands, atony, or gas in colon. Duodenal ulcer was more difficult to diagnose radiographically than gastric ulcer. The direct sign was deformity of duodenal contour. Indirect signs were alterations in gastric tone, in peristalsis, and in mobility, gastro-spasm, localized tenderness over cap. The first three signs were an indication of duodenal irritation, and might be associated with conditions other than ulcer; they had often been found in association with mobile colon, with gall stones, and with appendicitis. Taken in conjunction with a typical clinical picture, these were strongly suggestive of duodenal ulcer. If hyperactivity of stomach were found in association with retention and an enlarged stomach of normal outline, the diagnosis was almost certain.

Mr. SETON PRINGLE was of opinion that in diagnosis of gastric ulcers, x-ray reports were of the greatest help. Duodenal ulcers were different, as their clinical history was much more definite and the diagnosis could be verified much more directly. His treatment for gastric ulcer was: if small—cautery excision, and gastro-enterostomy; if large and in body of stomach—knife excision, and gastro-enterostomy; if large and in pyloric portion—pylorotomy. He was of opinion that gastro-enterostomy alone could cure some cases of ulcer in cardia. His treatment for duodenal ulcer on the anterior wall was cautery and gastro-enterostomy. If difficult of access he closed the pylorus by using round ligament as ligature and made a gastro-enterostomy. In gastric ulcer cases, he mostly based his diagnosis on the effect of medical treatment, and in duodenal ulcer on nocturnal pain. Tenderness and haemorrhage were fallacious signs.

Dr. R. J. ROWLETTE said that in practice it was often necessary to make a diagnosis of gastric ulcer without an x-ray report or an operation. Unless the art of diagnosis was bankrupt, they must make practical diagnosis of cases which fell short of absolutely demonstrated certainty, and it was, he thought, of cases like this that physicians had most experience. Regarding diagnosis, he had obtained a good deal of help from x-ray reports, and he would be very sorry to be deprived of the help of the radiologists. Very often cases which had no haemorrhage and no perforation got well by medical treatment, the chief part of which, in his opinion, was rest. Recurrence might take place, but that was liable to happen after operation also. He would be interested to know if many cases of gastric haemorrhage had proved fatal, as he thought that must be an extremely rare occurrence.

Mr. McCONNELL said it did not seem possible that an ulcer could be diagnosed on the clinical symptoms alone. He had seen several patients who had been operated on for duodenal ulcer, and at the operation no ulcer was found, but there was always something wrong with the duodenum; these were examples of duodenal irritation. X-ray reports had been of the greatest benefit to him in dealing with these cases.

Dr. HAYES remarked that x-ray examination was only one method of establishing diagnosis, and the radiographic report should not be regarded as conclusive evidence. There should

be more intimate co-operation between the physician or surgeon in charge of the patient and the radiologist. It was unfair that a diagnosis should be made on the radiologist's written report without a consultation between the doctor in charge and the radiologist.

Mr. STONEY thought it important to do a gastro-enterostomy at the time when operating for perforated duodenal ulcer. He had formerly thought that gastro-enterostomy added considerably to the danger of the operation, but experience did not confirm this view, and when gastro-enterostomy was performed the recovery was quicker and more complete than when it was not done. After gastro-enterostomy the return to feeding should be very gradual. Dr. W. M. CRORTON did not think that x-ray reports were any aid to diagnosis in early cases of ulcer.

## TECHNIQUE OF CAESAREAN SECTION.

A MEETING of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine was held on February 1st, with the President, Dr. T. WATTS EDEN, in the chair, when Dr. S. J. CAMERON read a paper on the technique of Caesarean section.

Dr. Cameron said that his object was to relate briefly the technique which had enabled him to perform 107 successive cases of Caesarean section in rachitic subjects with only one death. It was a decided advantage to have patients under observation for some days before the operation, in order that minor ailments might be treated; for example, special attention should be paid to "colds," as rachitic patients were very susceptible to pulmonary complications after operation. Chloroform was preferable to ether as an anaesthetic. The fatal case in his series died from bronchopneumonia. Perhaps the most important danger to be considered was sepsis. He now performed craniotomy in most patients who had been repeatedly subjected to vaginal examination before admission to hospital, and in all cases where the membranes had been ruptured for longer than twelve hours. The abdominal incision was best made through the right rectus sheath. As regards cases of repeated Caesarean section, where there were numerous and dense adhesions in the region of the former scar or scars, Dr. Cameron thought it advisable not to divide these adhesions, but to avoid them by evacuating the uterine contents by transverse incision in the abdominal and uterine walls. He paid great attention to packing the uterus off from the peritoneal cavity before he opened it. He used two knives—one for opening the abdomen, the other for incising the uterus. He had given up mattress sutures for closing the uterine incision, and now used interrupted sutures of catgut reinforced by three interrupted sutures of silk. He thought the free use of silk within the abdomen was unjustifiable, as, if infected, it might lead to the formation of a sinus. He had seen two cases of uterine sinus or fistula resulting from infected silk sutures. He did not favour the lower uterine segment operation, though it certainly seemed to have diminished the liability to rupture of the scar on a subsequent occasion. It was a difficult operation, and it should be remembered that maternity homes, staffed by general practitioners, were being opened in all parts of the country. Before the patient left the operating-table the surgeon should compress the uterus through the abdominal wall, and if a trickle of blood failed to appear the probability was that a retained portion of membrane was occluding the os; in such a case the index finger should be introduced into the sterilized vagina and forced up the cervical canal.

Mr. BECKWITH WHITEHOUSE and Dr. HENRY FEATHERSTONE read a note on two cases of Caesarean section under spinal anaesthesia with tropacocaine. The first case was one of pregnancy complicated by chronic nephritis and diabetes; the second was one of ante-partum haemorrhage. In both cases the anaesthesia was in every way satisfactory and the result to mother and child extremely good. Three points were worthy of notice: (1) The infant cried lustily as soon as extracted, and presented a very different appearance from that often seen when inhalation narcosis was employed. (2) The tone of the uterus; as soon as the child was extracted the uterus contracted firmly and partly expelled the placenta through the uterine incision. (3) The operation was practically bloodless, due to the tone of the uterus.

Mr. MILES PHILLIPS thought that Dr. Cameron's wonderfully low mortality rate was chiefly due to the wise rules for the selection of cases suitable for Caesarean section.

Dr. J. D. BARRIS thought spinal anaesthesia a good method



in certain conditions such as morbus cordis, diabetes, or pulmonary complications; but the use of morphine was excluded for the sake of the child, and he therefore preferred, in routine cases, to perform the operation under a general anæsthetic.

Dr. HERBERT SPENCER said that Professor Barr had published a series of 97 selected cases without a death—a better series even than Dr. Cameron's. But he thought that both these obstetricians made such a selection of cases as must lead to the unnecessary sacrifice of many children's lives. He saw no reason for refusing to perform Caesarean section when the patient had been examined and the membranes ruptured for twelve hours; so far he had only lost one case of Caesarean section for contracted pelvis, a case already infected at the time of operation, which should have been dealt with by total abdominal hysterectomy, an alternative to craniotomy not mentioned by Dr. Cameron.

#### Clinical Cases and Specimens.

Dr. J. S. FARMAN showed specimens: (1) A necrotic fibromyoma in a patient of 74 simulating cancer of the body of the uterus. The patient gave a history of slight uterine hæmorrhage with offensive discharge for two months. The cervix was atrophic, but the uterus was somewhat enlarged. The cervix was dilated and the uterine cavity explored, and portions of necrotic material came away as the dilators were withdrawn and appeared sufficiently certain evidence of malignancy. The uterus was therefore removed by abdominal hysterectomy. Examination of the specimen showed it to be an innocent polypoid growth made up of cystic spaces lined with endometrial glandular tissue, and it could have been removed quite easily after dilatation of the cervix. (2) A cyst of the uterine cornu due to dilatation of the interstitial portion of the tube. The patient was operated on for an inflamed ovarian cyst, and both Fallopian tubes were found distended with blood-stained fluid. There was also a cystic swelling in the right cornu of the uterus; the body of the uterus was removed, as the nature of the cyst was uncertain. The cyst was found to be lined by tubal mucous membrane and had evidently arisen by blocking of the lumen by inflammation.

Mr. BUCKWITH WHITEHOUSE described a case of adenomatosis vaginae. The patient was a multipara aged 40, who had had constant muco-purulent vaginal discharge dating from a forceps delivery five years ago. Examination showed a very unusual condition of the vaginal vault; the cervix was lacerated and everted, and was the seat of numerous small cysts of the typical Nabothian type which had extended widely to the upper half of the vagina, so that the vaginal vault was completely studded with small cysts, varying in size from a pin's head to a pea. The cervix was amputated, several of the cysts were excised and the remainder obliterated by means of the cautery. The patient was now reported to be free from discharge.

Drs. WHITE-COOPER and H. K. GRIFFITH communicated a case of inversion of the uterus occurring in the third week of the puerperium. There was pronounced inertia of the uterus during labour, which was terminated by forceps and with the help of pituitary extract. There was severe post-partum hæmorrhage in the third stage of labour. On the fourteenth day of the puerperium the patient sneezed several times, and this was followed by bright hæmorrhage from the vagina; at the same time the temperature rose, and during the next two days the patient had rigors. On examination the uterus was found to be inverted. Under an anæsthetic the uterus was reinverted, but the fundus slipped back quickly through the cervix, so the uterus was again replaced and the cavity packed with gauze soaked in flaxine. The gauze was slowly withdrawn, beginning twenty-four hours after the operation, and was completely removed at the end of the third day. The patient made a good recovery.

Drs. White-Cooper and Griffith also reported a case of obstructed labour due to a contraction ring. After the patient, a primigravida aged 32, had been in labour for three days, examination under anæsthesia showed a tight ring of contracted uterus in front of the shoulders, preventing them coming down and preventing also version being performed. Steady traction by forceps failed to move the foetus. It was then decided to perforate and crush the head, then do version and use the breech to dilate the ring; when the crushing was nearly completed the ring was felt to relax and the foetus was quickly extracted by version.

## THE SURGERY OF ABDOMINAL TUBERCULOUS GLANDS.

A MEETING of the Liverpool Medical Institution was held on February 1st, with Professor E. E. GLYNN in the chair, when Mr. G. C. E. SIMPSON read a paper entitled "The surgical aspects of tuberculosis of the abdominal lymphatic glands."

Mr. Simpson said that the acute complications of this condition usually brought the case to the hands of the surgeon, instancing general and local tuberculous peritonitis following rupture of glands, abscess, acute obstruction by bands or adhesions, intussusception, rupture into the bowel, and erosion of the mesenteric artery. He next considered cases complicated by acute and chronic appendicitis, chronic obstruction with serious gastric sequelae and tuberculous infection of the bowel, and gave illustrative cases. He pointed out that enlarged glands might lead to strangulated hernia either by entering the hernia sac and mechanical obstruction, or by causing acute tuberculous peritonitis and leading to oedema and adhesion.

He then discussed the symptoms associated with tuberculous of one or of a few groups of abdominal lymphatic glands apart from complications. He quoted one case of hæmaturia cured by removal of a large calcified gland (alluding to Thomson-Walker's work), and three cases of hæmatemesis among others with less striking symptoms, cured apparently by removal of calcified glands. He also referred to a case of chronic constipation apparently due to tuberculous glands along the vessels of the colon, cured by resection of glands and ascending colon *en masse*, and in another case by resection of the same with three feet of the terminal ileum. A number of cases were mentioned with recurrent abdominal pains where no causative lesion other than tuberculous glands were found, and which improved after resection. In one case of a solitary gland without abdominal symptoms, the gland was 1½ inches in diameter, very caseous and presenting under the peritoneum without any attempt at limiting adhesion. The complicated nature of the operation where many adhesions or a large abscess was present, the unsatisfactory outlook after short-circuiting even if combined with evacuation of the abscess, and the high frequency of serious complications led the speaker to plead for earlier surgical attack on the glands. In such cases the operation either of enucleation or of resection of glands and involved intestine was safe and only called for patience.

Mr. Simpson quoted 57 cases: about equal numbers showed acute complications, chronic complications, and no complications. Twelve cases were over 30 years of age, twelve under 10 years, twenty-one between 10 and 15 years, and twelve between 20 and 30 years. Removal of glands was done in 43 cases, and of these 15 showed no recurrence and three had not been traced; two cases showed signs of abdominal tuberculous. In one case short circuit and scraping out of a large abscess was done in March, 1920, and the man was still at work, but had ascites. Three cases had phthisis; two had died. In fourteen cases in which removal was not attempted two died, two had phthisis, and eight were cured.

On these results he based the following conclusions: (1) Guided by the condition of the patient, operation for the relief of acute and chronic complications of tuberculous glands in the abdomen was not complete unless not only the gland directly involved but any other group infected was removed. In widespread cases where eradication was impossible, it might be advisable to remove glands over which the peritoneum was thinned. (2) Many chronic abdominal symptoms were directly due to tuberculous glands, and removal of these was indicated where other causes for the symptoms could not be found. (3) Even in the absence of symptoms tuberculous glands, and more especially caseous glands, should be removed whenever the condition of the patient allowed. This was a question of prophylaxis, and was as much indicated as the division of bands or of a normal appendix during laparotomy for other conditions.

Mr. W. H. THOMPSON commented on six of his cases in which abdominal tuberculosis had necessitated operation for acute intestinal obstruction. In one where perforation and massive destruction of intestine compelled him to do resection, the patient died. In four cases where involvement was so extensive and the condition of the children so poor, his zeal was limited to combating the obstruction by short-circuiting the bowel. All these cases recovered and were apparently well. As such seriously ill cases had done so well he adopted the same treatment where the general condition



might have permitted a more radical operation; the result was equally satisfactory. Knowing how intolerant children were to intra-abdominal liberties he believed that in such severe cases the operation of necessity, usually lateral anastomosis, ought to be the operation of choice.

#### Ergotism.

Mr. R. E. KELLY and Dr. W. J. DILLING read a note on a case of ergotism with gangrene of the toes. Mr. Kelly said that it occurred in a patient aged 42, a Polish Jew, who had used rye bread for many years. Dr. Dilling tested the bread and flour from which it was made and found evidence of infection by the ergot of rye. Dr. Dilling detailed his pharmacological examinations. He discussed the life-history of *Claviceps purpurea* in cereals and grasses grown on damp, clayey soils during wet seasons. The chief symptoms of convulsive and gangrenous ergotism were mentioned, and the possibility of mild cases being diagnosed as gastro-enteritis was pointed out. Tabular statements showed the rapid loss of toxicity in ergot on keeping and the adulteration (1 to 10 per cent.) in various epidemics. Cases were quoted showing the difference in susceptibility of individuals even in the same family, and an instance of 0.2 gram ergot a day causing gangrene was given. In the present case the evidence in favour of regarding it as an instance of gangrenous ergotism was as follows: (1) The man ate exclusively rye bread, in which mycelial tissue was found microscopically, and extracts representing 46 grams and 88 grams of bread produced distinct cyanosis of a cock's comb; rye from the mill contained 0.1 per cent. sclerotia, and the rye grains were also partially infected; an extract of the ergot caused tonic contractions of an isolated

The patient's two attacks occurred when the ergot of the previous c. (3) There was no haemorrhage on removing the toe. (4) The patient's age, the absence of general arterio-sclerosis, and of extension of the gangrene, were all in favour of this consideration. As no further instances could be traced the case had to be regarded as one of idiosyncrasy.

Professor BRIGGS quoted past clinical opinion against ergot; the pharmacologists were now in search of the best ergot. For many years he had pleaded for closer association in teaching schools between the pharmacological laboratory and the hospital; for example, lists of hospital cases and the drugs used were quite as important as the present familiar long lists of operations. He remarked that the joint report read that nothing on the pathological condition was not incontestable and stimulated similar efforts.

#### Myeloma of the Ischium.

Mr. G. P. NEWBOLT read a note on myeloma of the ischium treated by gouging and radium. Mr. Newbolt described a case of myeloma involving the tuber ischii and extending upwards towards the acetabulum and forwards along the ramus towards the pubes. The patient was a man, aged 47. X-ray photographs showed the extent of the disease. At the operation the growth was freely gouged out. A few days later a tube containing 105 mg. of radium was left in the main cavity for twenty-four hours, and in the cavity of the ramus for a second twenty-four hours. Four years had passed and the patient remained quite well. Dr. C. TRUSTAN HOLLAND showed x-ray photographs which he had taken of the condition before and after operation, and he described the bone changes characteristic of the condition.

#### ARTIFICIAL LIMB FITTING.

At a meeting of the Aberdeen Medico-Chirurgical Society held on February 1st, with the President, Dr. ALEXANDER OOSTON, in the chair, an address on "The art of limb fitting: a plea for the standardization of amputations" was given by Dr. MIDDLETON COXSON, medical officer in charge of the Orthopaedic Annexe and Limbless Centre, Ministry of Pensions, Aberdeen. From the experience of five years at this centre, with the supervision of some 1,400 cases, Dr. Connors advocated practical reforms in the performance of amputations in civil surgery. Although the surgeon in civil cases had the selection of the site of amputation, there was too often a tendency to conform unnecessarily to the "classical" amputations; in such cases co-operation between the surgeon

and the limb fitter was essential in dealing with the problems presented. War experience had shown that only certain amputations could be fitted with satisfaction to all concerned; other "classical" amputations which had proved impracticable as a limb-fitting proposition should, Dr. Connors maintained, be deleted from the textbooks and relegated to lectures on the history of surgery. He then reviewed the sites of amputations of the extremities most likely to be satisfactorily fitted, the reasons for their selection, and the stumps which had proved unsatisfactory. He also referred to the great importance of education in the use of an artificial limb, holding that the best method was to start the patient, as soon as the stump was ready, with the artificial limb which he was permanently to have, the limb not being finished off until all adjustments necessitated by the shrinkage of the stump had been made. He deprecated the use of temporary legs, plaster pylons, and so forth.

At the conclusion of the paper, various models of artificial limbs were shown by representatives of limb-making firms, and Dr. Connors showed patients who had been fitted with limbs and demonstrated very convincingly their ability to use them to full advantage. A short discussion followed, in which Professor MARNOCH, Mr. ALEXANDER DON, and the President took part. Dr. Connors's suggestions as to the teaching of "classical" amputations were generally supported. Dr. Connors then replied, and on the motion of the President was awarded the thanks of the Society for his lecture and demonstration.

A MEETING of the Bath Clinical Society was held on February 2nd, with Mr. W. G. MUMFORD, the President, in the chair, when Dr. A. B. CLUCKIE read a paper on the differential diagnosis of acute conjunctivitis, acute iritis, and acute glaucoma. He discussed the differential features of these diseases both with regard to objective signs and subjective symptoms, and described the correct methods of measuring the ocular tension and the pitfalls of the wrong methods. Dr. A. B. CLUCKIE also showed a case of orbital tumour. Dr. R. G. GORDON showed a case of Charcot's hip-joint in a case which was probably haematomyelia; he also exhibited a case of rheumatoid arthritis with achlorhydria gastrica which showed in addition signs of early pernicious anaemia and early subacute combined degeneration. Dr. V. M. COATES showed a case of early rheumatoid arthritis with enlarged glands and achlorhydria gastrica, and discussed the importance of the latter sign. Mr. FORBES FRASER showed a specimen of round-celled sarcoma of the breast and a case of probable gumma of the breast; he exhibited also a specimen of a large gall stone which had given rise to very acute abdominal symptoms, and an x-ray photograph of a case with a very large gastric ulcer which gave rise to remarkably few symptoms. Dr. SPENCE showed a blood smear from a case of lead poisoning showing punctate basophilia. Dr. MITCHELL showed a specimen of a calcareous subpatellar bursa. Dr. F. G. THOMSON showed a specimen of a large round-celled sarcoma of the kidney. Dr. PRESTON KING showed an x-ray photograph of a fracture of the body of the fifth cervical vertebra which had developed tuberculous disease or a secondary growth. Mr. W. G. MUMFORD showed a case of severe double talipes, and also a case of old arthritis of the hip of seven years' duration in a child aged 10 showing signs of coxa vara.

THE Medico-Psychological Association of Great Britain and Ireland will meet at the City Mental Hospital, Gosforth, Newcastle-on-Tyne, on Thursday next, February 22nd. The chair will be taken by the President, Professor G. M. Robertson of Edinburgh, at 2.45 p.m. Discussions will be held on the future policy of the Association as regards its nursing certificates and examinations, and also on the appeal for funds for the prevention and treatment of insanity, and the formation of the Council of Mental Hygiene.

THE annual report of the Institute for Medical Research of the Federated Malay States for 1921 has reached us recently. It is compiled by Dr. William Fletcher, acting director of the Government laboratories, and deals in the main with routine work; but a special inquiry was held into cases of malaria described as "quinine resistant." Of 44 such cases investigated, in only one was the condition uninfluenced by quinine; in one other case described as "relatively resistant" parasites persisted for a long time in spite of treatment. It is pointed out that before accepting a statement that a case resists quinine care should be taken to make certain that the drug is being swallowed by the patient.



## Rebels.

## THE SURGERY OF THE WAR.

[FIRST NOTICE.]

In the two volumes which treat of the *Surgery of the War* the editors and contributors have acquitted themselves nobly. To write the story of the surgical achievements which the years 1914-18 cover was a monumental task. One may truthfully say that the surgeon of to-day, once more engrossed in civilian practice, hospital or private, will have his memories vividly awakened by the perusal of these volumes. Clad in their unattractive green backs (why should an "official" book not seek to please the eye and tempt the buyer as much as those issued by private enterprise?) he may pass them by. But though the outside may be rather official most of the inside is thoroughly human and interesting. The print is clear, the paper heavy, and most of the illustrations are admirable, many having been reproduced most faithfully in colour.

It has been said by Bacon that "It is the nature of the mind of man, to the extreme prejudice of knowledge, to delight in the spacious liberty of generalities." It is certainly very natural for the reviewer of a book like this to cloak his remarks in generalities, and he trusts that he will be forgiven if he fails to mention many admirable sections and descriptions.

The first volume begins with a section on projectiles, their varieties, velocities, theories of action, relative sterility and effects on the various tissues. This section, whilst of general interest, will appeal especially to the professional soldier, both combatant and medical.

The destructive effects of shell and bomb bursts in confined spaces are described, and the mechanism by which death follows from explosion without wounding is discussed, but a definite conclusion is not reached. A long paragraph by the editors on the radiating effects of missiles is very much to the point; concrete examples are given of severe injury to underlying soft parts from wounds caused by missiles which struck glancing blows without penetrating deeply themselves. There are two photographs of a slip of German dum-dum bullets. It is doubtful how widely these were used. The explosive action of the standard pointed-nose bullet in the skull was well known long before this war, and in the limbs its pulverizing action on bone was so great that exit wounds at least were commonly of an explosive type. Certainly the soldier himself frequently asserted that he had been hit by an explosive bullet, sometimes adding that he had heard it burst! It was usually difficult to exclude the possibility that the sound that he heard might well have been the impact of the missile on bone. Burns from shell-bursts were not so important in the field as they were in naval warfare, and the great heat generated by large shells fortunately failed to reproduce the conditions described at sea by Surgeon Commander H. E. R. Stephens.

## Wound Shock.

We turn next to the chapters on wound shock. Shock remains one of the *bêtes noires* of surgery, because the surgeon cannot properly explain it, and as a result cannot properly treat it. This statement needs, perhaps, a little qualification, and may seem ungenerous to those who have laboured so well to elucidate it. But it remains that our treatment is still largely empirical, though by no means entirely unsatisfactory. One thing the war brought home to all, and that was the effect of certain anaesthetics in increasing shock, and the value of one anaesthetic—gas and oxygen—in diminishing the chances of producing it. In the short chapter on anaesthesia these considerations are discussed. The apparent improvement under ether anaesthesia and the subsequent rapid collapse of badly shocked men was often a surprise, and spinal anaesthesia, from which we had reason to expect so much, caused too great a fall of blood pressure. Failing gas and oxygen, ether from the Shipway apparatus is cordially recommended. Marshall has pointed out that 54 per cent. of abdominal cases had broncho-

pneumonia with open ether, only 14.7 with warm ether. But it is evident that in abdominal operations, and especially those on the upper abdomen, there is always the question of lung collapse, from immobility and interference with expansive mechanism of the lower parts of the lung, to be reckoned with. This chapter, by Captain H. P. Crampton, should be read by all, though it might have been developed with advantage.

To return to the sections on shock and blood transfusion by Lieut. Colonel Cowell, Captain Fraser, Major Gordon Taylor, and Captain K. M. Walker. It brings us at once to the admirable work which was carried out at the instigation of the Medical Research Council and fostered by it. This body deserves the very highest praise for the work it did, and in these volumes the reader will constantly see traces of its handiwork. Fraser's article on wound shock in casualty clearing stations forms the best synopsis on shock with which we are acquainted. "The problem of the lost blood" is entered into in considerable detail, stress being laid on the observations of Captain (Professor) Emrys-Roberts on the higher red cell count in the capillary as compared with the venous blood. The Crile-Mummery theory of a primary vasomotor paralysis is dismissed; similarly the excessive storage of blood in the splanchnic area receives no support. The evidence against a splanchnic storage rests on naked-eye observation at operation. But it might well be asked how much reliance can be placed on such a method. One of the outstanding features of shock is pallor of the skin, and yet we are to believe that a large concentration of blood takes place in the capillaries of the skin. If such be the case it occurs to one to suggest that superficial observation of the splanchnic vessels may be an inaccurate method of estimating the volume and concentration of the blood contained within them.

Chromatolysis of the nerve cells of the brain and cerebellum is put down to anaemia and relative deficiency of oxygenation owing to the low pressure. This is an extremely probable explanation and rests largely on the pathological investigations of Mott. Due attention is paid to the histamine shock of H. H. Dale. There is adequate acknowledgement to Henderson for his work on the genesis of acidosis in shock. Cowell's blood-pressure observations under varying conditions of excitement, fear, and pain furnish some most interesting passages. The tracings are of very exceptional interest, and the chapter gives a most lucid and suggestive description of the conditions likely to favour the onset of wound shock, and illustrates also the relation between primary and secondary shock, the influence of anaesthetics on these patients, and the effects of toxæmia. The development of severe shock in lightly wounded men is made clear, and no less so the aggravation of their condition by the rapid onset of microbial infection. In fact, a strong link is forged connecting gas infections with the lowered blood pressure and the sluggish circulation of shocked patients. The influence of injured vessels in inducing gas infection in the muscles of the anaemic territory is brought home by Sir Cuthbert Wallace in a very able chapter. Stress is laid on the importance of avoiding further vessel damage in the excision of the wound. This section is illustrated by some of A. K. Maxwell's beautiful coloured drawings.

There is a good deal of overlapping in the sections hereabouts which makes it impossible to give the various authors their due, for shock, haemorrhage, and infection naturally come within the range of all. Great stress is laid on warmth, sleep, and the giving of fluids (especially hot sweetened tea) in the treatment of primary wound shock. The question of morphine is handled with reservation, large doses being condemned. It is generally admitted that it is harmful in acidosis, and should therefore not be given to cyanosed patients. It is interesting to recall that Crile, who was at one time the high priest of morphine for shock, in his latest writings has somewhat modified his use of the drug. Bayliss's 6 per cent. gum acacia in 0.9 per cent. saline receives more general commendation than we should have expected, as the blood transfusion enthusiasts at one time rather condemned it—not as harmful, but as of little value. This was, no doubt, an exaggerated view, and there can be no doubt about the inefficiency of ordinary normal saline which was the panacea for everything fifteen years ago. How many dying patients had their last hours disturbed by the real life house-surgeon and his miraculous saline! Of drugs, atropine and digitalin receive highest commendation, atropine having a more temporary action. Strychnine, of course, is not recommended.

<sup>1</sup> *History of the Great War, Based on Official Documents: Medical Services. Surgery of the War.* Vols. I and II. Edited by Major-General Sir W. G. Macpherson, K.C.M.G., C.B., LL.D., Major-General Sir A. G. Bowley, K.C.B., K.C.M.G., K.C.V.O., Major-General Sir Cuthbert Wallace, K.C.M.G., C.B., and Colonel Sir Crisp English, K.C.M.G. London: H.M. Stationery Office, 1522. (Med. 8vo, pp. vii + 618 and 604 respectively; illustrated. 25s. each net, post free 26s.)



*Tetanus and Trench Foot.*

Tetanus is dealt with by Sir F. W. Andrewes, and the tables and charts which he uses illustrate the fall in mortality which followed the prophylactic injections. Sir David Bruce's work is freely mentioned. A few cases of local recurrent and late tetanus, always subjects of exceptional interest, are referred to.

The section on trench foot is rather short, but the reader is referred for further information on this fruitful cause of "wastage" to the volume which is to be published on the hygiene of the war.

*Field Ambulances and Casualty Clearing Stations.*

The account of work in the field ambulances and the development and rise of the casualty clearing stations will interest many readers, bringing back recollections of friendships, of work on teams, and of the gradual evolution of the high efficiency which came to mark these units. The amount of work the clearing stations got through was often astonishing: for instance, 30,000 operations were done during the first four and a half months of the Somme fighting; 14,400 men were admitted to thirteen casualty clearing stations of the Fourth Army on the first day, 13,806 on the second, and 8,793 on the third. The total number of wounded on the Somme from July 1st to November 17th, 1916, is stated to have been 318,408. At the battle of Messines, 10,434 wounded were treated in eleven casualty clearing stations on the first day. The effects of early operation were immediately evident, for of these only 0.5 per cent. developed gas gangrene subsequently, and the base hospitals reported a low death rate and few amputations.

The casualty clearing station was an innovation, and no doubt has come to stay, though it is interesting to speculate what shape it might take in a more mobile war than the last. At all events we trust that the lessons learned in this war, and particularly the importance of mechanical as opposed to chemical cleansing, will not be forgotten. Operations must be done early, and every facility for the carrying out of the necessary treatment must be provided as close as possible to the firing line. In future wars, unless an international arrangement is held to, advanced operating stations may be driven underground by aircraft.

*Wound Treatment.*

The important subject of wound treatment is discussed by more than one writer, and considerable overlap occurs. There is no doubt that the South African war did our army surgery a great disservice; for it was easy to attribute the relative benignancy of long-range bullet wounds in that campaign to the success of the full use of antiseptics and asepsis. How far this was from the truth we were soon to learn.

Sir George Makins, in his chapter on "Surgery in general hospitals," has a well written review of the various steps in our re-education. Everyone will recall the failure of the antiseptics and will remember Sir Almoth Wright's crusade against chemicals. His ingenious experiments and the attractive physiological character of his explanations gained many adherents. Still, at the bottom of his heart, every surgeon loves an antiseptic, and though you may prove to him that in the case of wounds his chemicals do very little good, he is apt to hug them as being better than nothing. The fact that Sir Almoth Wright had reason on his side was abundantly proved by the improvement which followed the immediate excision of wounds, although Wright's own methods did not find wide favour. The excision method had been in use in this country, here and there, for some years before the war, but it must be admitted that the civilian surgeons who now say they always used it failed to make their voices heard at the proper time. In spite of arguments, antiseptics were used to the end in conjunction with excision, which was always given first place. We wonder how many hospitals are carrying out the principles of complete mechanical cleansing and of excision in their casualty cases to-day, or how many of the smaller hospitals realize how much they can save themselves in the cost of dressings, maintenance, and attendance by insisting on the primary excision of accidental wounds—to say nothing of the economic advantage from the patient's point of view.

Of the various antiseptics of the war those that appear to be surviving best are bipp, flavine, eusol, and the Carrel-Dakin method. Of bipp it may be said that its chief enemies are those who know least how to use it. Of the Carrel-Dakin method it may truly be asserted that though one may know well how to use it the difficulties of

correct application are so great that few who have the knowledge can make good use of it. Of all antiseptic methods it is theoretically the most perfect, but it is certainly the most difficult and the most tedious. It is doubtful whether its disadvantages do not debar it from use on a large scale, and as it needs highly skilled attention it is not a method which can be used on the occasional case, for continued practice with it is necessary. The reader will find all that he wants to know about the various antiseptics in Sir Anthony Bowlby's article on the casualty clearing stations, in the article of Makins already referred to, and in C. J. Bond's excellent paper on the hospitals in England.

*Wounds of the Chest.*

Wounds of the chest are dealt with by T. R. Elliott and G. E. Gask. A tremendous impetus has been given to the surgery of the chest as the results of war experience, and it is something of a relief to find that a very reasonable and conservative view is taken by the authors. No attempt is made to hide the serious nature of these wounds, or the very high mortality that attends them. Most surgeons who were in France in 1918 will remember the very optimistic view that was held by many of the newer surgeons. A few of these allowed their enthusiasm to outrun their discretion, and Gask speaks wisely of the training that is necessary before a man can become a competent chest surgeon. It was an interesting, nay a fascinating, discovery that the chest could be opened without the use of elaborate pressure chambers. True, this was no new knowledge, but it was knowledge shared by the few. It is a thankless task to discover who exactly was responsible for the change that came over surgical practice in regard to thoracic wounds in France. The names of three people will come to mind at once. But whoever he was, a great service was done to the armies. As in the case of the brain, it is impossible to give any accurate data as to the exact mortality of chest wounds on the field. The best results, excluding these immediate deaths, gave a mortality of about 27.5 per cent., or a little less than 1 in 3. Gradually the general principles which were applied to all wounds came to be applied to the chest—to operate early to stop bleeding, to excise the wound and broken bone, to remove lodged foreign bodies. But when applied indiscriminately to all chest wounds, the results were found to be very little if any better than had been obtained by the old conservative treatment.

The great problem in the chest as elsewhere was to combat sepsis, and though the above methods seemed eminently suitable to prevent this dreaded enemy from obtaining his foothold unnecessary operations were being performed with the best intentions, but not always with the happiest results. The turn came when it was laid down that blood effusions without evidence of serious intrathoracic injury were to be treated on conservative lines. An excellent account is given by Elliott of the physical signs in these cases and of the need for repeated needleings if infection of the blood is suspected. The clinical aspects of the cases are clearly described. Elliott discusses lung collapse in the injured and uninjured side. He is not a believer apparently in the frequent contralateral collapses which some claim to find. No cases of "pleural shock" are referred to. We should have liked to see a dogmatic statement on this point. A short description is given of surgical emphysema. It would have been worth while to have mentioned the very wide distribution of subcutaneous air sometimes found—at the wrists, for instance, on the scalp, and in the scrotum.

Gask's account of the operations of military surgery on the chest wall and lung is clear and well illustrated. The various stages of the operations are well figured. His insistence on aspiration of the chest on the day following operation is good. The various methods of dealing with pleural infection are described. Empyema is undoubtedly a more serious condition than has been generally recognized. It will be remembered that the exceedingly high mortality of post-influenza empyema in the United States of America caused the appointment of an Empyema Commission of Enquiry. There is a good deal of truth in Gask's remark that the surgeons who took the most pains with their infected chests got the best results. This probably accounts for the excellent effects of the Carrel-Dakin method in Tuffier's hands, for this method insists on the surgeon's constant attention whether he wills or no. For persistent pleural fistulae the authors recommend decortication, but they do not describe how this is to be applied to those most difficult and persistent cases of all—those with long, shallow cavities running up



beneath the scapula to the third rib or thereabouts. They mention that in 1920 there were still pensioners suffering from persistent pleural sinuses. We might add that in 1923 they are still with us, though not perhaps all the same patients. These cases present some of the most difficult problems of surgery. The freed lung will not now expand, and the general condition of the patients often makes them the worst possible operative risks.

#### Wounds of the Pericardium and Heart.

Sir George Makins treats of wounds of the pericardium and heart. This is largely a compilation from the War Office collection and from the literature. It is very ably put together, and reads well. The figures illustrate a variety of wounds, some amenable to surgery, but many not within the possibilities of repair. A point is made of pericardial (and also of myocardial) sepsis, and one wonders whether some apparently brilliantly successful operations would have ended in the death of the patients had a drain been inserted. Major Litter Jones's dramatic case is described in full; here the pericardium was left open. In Sampson's it was closed with success—probably not a good precedent. The reader will find a workmanlike account of the various methods of exposure of the heart and some useful indications for operations.

#### A TEXTBOOK OF MEDICINE.

*The Textbook of the Practice of Medicine*,<sup>2</sup> by various authors, edited by Dr. FREDERICK W. PRICE, will be of great service to the English medical profession. Usually English textbooks of medicine, for students and practitioners, have been written by one author. But since no physician can now claim an extensive knowledge of all of the groups of diseases described in a medical textbook, it follows that generally all sections of such a work, by one author, are not of equal merit. In this volume each section has been allotted "to one author, or to two writing in collaboration, instead of enlisting the services of a large number of writers." Altogether there are twenty-six contributors to the work.

The book commences with articles on fever by Professor Pembrey, and on infection, immunity, and immune therapy by Dr. J. Matthews and Sir Thomas Horder. Most of the fevers commonly met with in England are described by Dr. C. R. Box; the articles on septicaemia, erysipelas, influenza, tuberculosis, cerebro-spinal fever, and rheumatic fever are by Sir T. Horder; those on tetanus, anthrax, glanders, actinomycosis, and hydrophobia by Sir T. Horder and Dr. J. Matthews; and those on spirochaetosis ictero-haemorrhagica and epidemic jaundice by Sir W. H. Willcox. Typhoid fever is described by Lieut.-Colonel Byam, leprosy by Dr. C. R. Box, and acute anterior poliomyelitis and lethargic encephalitis by Drs. J. Collier and W. J. Adie. The article on syphilis is by Colonel L. W. Harrison. Tropical fevers and tropical diseases generally (in all sections of the book) are described by Dr. G. C. Low, and are treated more thoroughly than in any other English textbook of general medicine we recall.

This first portion of the book is of great value and interest, since it contains, in a concise form, the experience of writers who have devoted special attention to the diseases they describe. Dr. J. Collier contributes the articles on caisson disease, anoxaemia, and sea-sickness, and Sir W. H. Willcox those on heat-stroke, alcoholism, poisoning by arsenic, lead, mercury, and food poisoning. Dr. J. Matthews describes the bacteriology of food poisoning. A concise account of gout, obesity, and diabetes is given by Dr. G. Graham, who apparently recognizes the limitations of the starvation treatment in diabetes.

Rickets and scurvy, and also epidemic diarrhoea in children, are described by Dr. R. Hutchison. The relation of the sympathetic nervous system to endocrine glands is considered by Dr. Langdon Brown. The suprarenal thymus, thyroid, and pituitary glands are described by Dr. O. Leyton.

The articles on diseases of the digestive system, liver, gall bladder, pancreas, and peritoneum are (with five exceptions) by Dr. A. F. Hurst, who gives us a concise summary of his own experiences, and of his valuable work on x-ray examination in these affections. Acute intestinal obstruction, appendicitis, and peritonitis are described by Mr. E. G. Slesinger. The accounts of diseases of the lymphatic system, blood, and spleen are by Dr. Hugh Thursfield.

<sup>2</sup> *A Textbook of the Practice of Medicine*. By various authors. Edited by Frederick W. Price, M.D., F.R.S., Edin. Oxford Medical Publications. London: H. Frowde, and Hodder and Stoughton. 1922. (Demy 8vo, pp. xxiii + 1753; 95 figures. 35s. net.)

The interesting section on diseases of the heart is written by Dr. F. W. Price (with the exception of one article). It shows the great advance in cardiology made in recent years, and is illustrated by eighty-six tracings and electro-cardiograms. Progress in the treatment of cardiac diseases is less evident. Sir T. Horder contributes a valuable article on infective endocarditis. The articles on disease of the arteries and veins, on thrombosis, embolism, and aneurysm are by Dr. T. Thompson; the relation of aneurysm to syphilis is emphasized. The section on diseases of the lungs, pleura, and mediastinum are by Drs. R. A. Young and G. E. Beaumont. The summary of the recent work on the causation of lobar pneumonia is of great interest. The affection is regarded as an acute infectious disease, and the authors advise that "if possible, no case of pneumonia should be nursed in a general ward of a hospital, and the doctor and nurse in attendance should wear gauze masks." Concise accounts of the various diseases of the nose, larynx, and pharynx are given by Mr. H. S. Barwell. This summary will be very useful in general practice.

Diseases of the kidneys are described by Drs. W. Langdon Brown and G. Evans. We are glad to note that in addition to the various forms of nephritis causing albuminuria, another group of cases is recognized—"leaky kidney." The name is not quite satisfactory, since it does not indicate what is leaking, but the authors have done good service by drawing attention to these cases, which are not infrequent in practice. "Leaky kidney" is defined as a "condition in which the kidney leaks, allowing some of the blood proteins to escape; but is not the subject of a progressive lesion as in nephritis." It is the result of some old damage, and may follow acute nephritis. Diseases of the joints and bones are considered by Sir William H. Willcox. A concise account of the various diseases of the skin is contributed by Dr. A. M. H. Gray.

The section devoted to diseases of the nervous system by Drs. J. Collier and W. J. Adie is very thorough. The account of brain tumours is of special interest; but some surgeons will not agree with the recommendation that "No attempt must be made to remove a tuberculoma . . . since any disturbance of its seat results invariably in tuberculous meningitis and death." The account of compression of the cord is excellent, and the great diagnostic value of lumbar puncture in these cases is emphasized. Myelitis is briefly mentioned under myelomalacia; it is often discussed in differential diagnosis; and syphilitic myelitis is described under syphilis of the nervous system; but no separate account is given of acute myelitis, in the transverse or disseminated form. Apparently acute myelitis is regarded as "nearly always of syphilitic origin." The work concludes with a concise section on psychological medicine by Sir Maurice Craig and Dr. E. D. Macnamara.

The book may be strongly recommended to students, general practitioners, and physicians. It is an excellent work, and gives, in a most concise form, a vast amount of valuable information, and the experience of many of the most able London physicians. The system of conjoint authorship has, on the whole, been well managed. In a book containing so great a mass of details it would be easy to pick out statements from which dissent might be expressed; but this would take us too far. The wording of the book is necessarily often very concise, and occasionally this obscures the meaning. The type is small and the paper very thin. In another edition the publishers might consider the advisability of improvements in these respects and might also with advantage encourage the authors to increase the number of illustrations.

#### CYTOLYSIS.

PROFESSOR G. H. ROGER, Dean of the Paris Medical Faculty, in a preface to a book by Dr. Louis Bory on the destruction of cells,<sup>3</sup> recommends it as a guide to laboratory workers on account of the concise information it contains, and to medical men for the practical applications that may be obtained from a study of autolysis.

The first part of the work deals with autolysis—the last act of life—under the two main headings of experimental autolysis *in vitro* and autolysis in the living organism; the

<sup>3</sup> *La Destruction Cellulaire*. By Louis Bory. Preface by G. H. Roger. Paris: Masson et Cie. 1922. (Roy. 8vo, pp. . . .)



latter is divided into physiological autolysis, which is constantly taking place but is so compensated that no histological change or functional disturbance occurs, and pathological autolysis—for example, maceration of the dead foetus *in utero*, cerebral softening, the changes in the centre of tumours, and the effects of radiation on organs, such as the sexual glands, and on new growths. From comparatively recent work by Roger and by himself in conjunction with Garnier the author is inclined to doubt the view of previous investigators that the products of autolysis are highly toxic, and to consider that autolysis rather diminishes the injurious effect of the juices of the organs by lessening their coagulative power. Experimentally, autolysates from half its renal or hepatic substance are required to kill the animal, and as this amount of autolysis rarely occurs clinically it appears improbable that fatal results of this kind often occur in man. On the other hand, the autolysates may damage tissue of the same kind as that from which they are derived; thus slow destruction of one kidney entails the production of cytolytins which may seriously affect the other (sound) organ.

The second and much the larger part of this monograph deals with cytotoxicity under the headings of bacteriolysis, haemolysis, and organolysis. In the section on bacteriolysis anaphylaxis is described as resulting when the toxins liberated by destruction of micro-organisms are not properly neutralized, and a brief account is given of d'Herelle's phenomenon, which that authority, as is well known, regards as due to an intracellular ultramicroscopic organism or bacteriophage. The subject of haemolysis, as being the most familiar example, at any rate, of experimental cell destruction, is considered at length, and full attention is given to the pathological aspects of the process—for example, in haemoglobinuria and in jaundice. The concluding chapter on organolysis contains a summary of what is known on this interesting subject, with a number of useful references.

#### MENTAL DEFICIENCY.

It is not surprising that there should so soon be a demand for a new edition of Dr. A. F. TREDGOLD's work on *Mental Deficiency*.<sup>1</sup> The book is excellent in every respect, and no one who is interested in its subject can afford to be without a copy for study and reference. It is a most comprehensive textbook, and as it is generally accepted as a standard work and has already abundantly proved its worth its contents do not call for extended comment. The present edition has been thoroughly revised. The chapters dealing with moral deficiency, criminal aments, clinical examination, mental tests, and diagnosis have been entirely rewritten; considerable additions have been made to the chapters on psychology, mentally deficient children, and the clinical varieties of primary and secondary amentia; and a number of new illustrations have been added.

The presence of the defective in the community constitutes a serious social problem, and Dr. Tredgold deals with this aspect of his subject in the last chapter of his book. No recent statistics are available showing the number of aments still in need of care and control. The Report of the Royal Commission, 1904, estimated that the total number of persons urgently in need of provision was 66,539, and while the Mental Deficiency Act, 1913, has done something to alleviate the position, institutional facilities are still far from adequate to meet the need. Dr. Tredgold points out that the economic disability, the antisocial propensities, and the rate of propagation of these persons, combine to constitute a problem of a magnitude that no civilized country can afford to neglect, either in the interests of the defectives themselves or in those of the community. The author does not deal exhaustively with the question of prevention, but the few pages he devotes to this all-important problem merit the attention of all who are interested in the welfare of the race. His views on sterilization, segregation, and the regulation of marriage are marked by the common sense, balance, and restraint which characterize all his work. Similar comments are applicable to Dr. Tredgold's lucid treatment of moral imbecility, a subject which he has made peculiarly his own. We can again recommend this valuable book with complete confidence.

<sup>1</sup> *Mental Deficiency (Amentia)*. By A. F. Tredgold, M.D., M.R.C.P., F.R.S.M. Fourth edition. London: Baillière, Tindall, and Cox. 1922. (Demy 8vo, pp. xx + 579; 31 plates. 21s net.)

#### ARAB MEDICINE AND SURGERY.

MR. M. W. HILTON-SIMPSON has published an elaborate and careful study of *Arab Medicine and Surgery*,<sup>2</sup> embodying a kind of native pharmacopoeia; it is founded on his experiences and observations amongst the usually reticent Berber and Arab doctors of the Aures Massif in Algeria. These mountains are on the fringe of the great Sahara, to the north-east of Biskra, and the district was selected by the author in 1912 as one in which he "might reasonably hope to find among its Shawiya Berber inhabitants relics of the past in the shape of arts, crafts, and customs which have long disappeared from the more accessible regions of Barbary before the advance of the successive waves of conquest which have swept over North Africa since the dawn of history." He was fortunate enough to become the friend of many native practitioners, who completely admitted him into their confidence, and thus, though himself a layman, he has been able to collect and arrange an extraordinary amount of information concerning native methods of medical and surgical treatment, methods which are destined soon to disappear with the advent of modern European ideas, in which the natives are beginning to have faith. It is the fatalistic attitude of the natives which has kept Shawiya methods so long alive, even in areas which can be easily reached by skilled European doctors. "Success is due, under God's will, to the skill of the doctor, failure and death to the will of God alone." This point of view is agreeable to the native doctor and also readily acceptable to his fanatical patients, who, moreover, have a dread of amputation, "with its unpleasant consequences in the next world."

The native practitioners in the Aures, with whom the author came in contact, were all men who had definitely studied medicine and surgery. They had been apprenticed to an established doctor, almost invariably a member of their own family, and were all comfortably situated from the financial point of view. Professor Edmond Doutté's assertion that "la médecine ne se distingue pas encore de la magie" may be correct in regard to the neighbourhood of Marrakash in Morocco, but cannot be extended to the Shawiya of the Aures. Belief in magic can, however, be traced in some of the native medical methods. Nearly all the practitioners possess "books, some in manuscript which have been handed down from their fathers, others modern reprints of Arabic authors obtainable in Constantine, Algiers, or, especially, in Tunis." These books are used to some extent as works of reference, though they may be of little value in ordinary practice. The works of three of the authors—Suyuti, El Haj Tlemsani, and Mohammed ben el Haj el Kebir—are apparently concerned as much with magical practices as with medicine. The works of Abderrezag, "the Algerian" (eighteenth century), are perhaps those best known to the modern native practitioners. It seems that the medicine as practised nowadays in the Aures is derived from that of the mediaeval Arabians.

One of the most important surgical operations performed is trepanning. "The native surgeons . . . are unanimous in declaring that injuries resulting from a blow are the sole cause of their favourite operation, which, they assert, is never resorted to for the relief of a malady not so caused, and is not performed as a magical cure in cases of persons supposed to be possessed by demons."

An extensive *materia medica* is alluded to in the book, and the author has taken great trouble to identify the plants used by native doctors. The work ought to interest many besides those specially concerned with the history of medicine.

#### NOTES ON BOOKS.

*Tuberculosis in Infancy and Childhood*,<sup>3</sup> by Drs. J. C. GITTINGS, F. C. KNOWLES, and A. P. C. ASHCURST, is based on a series of lectures delivered at the Children's Hospital, Philadelphia. The lectures were addressed to general practitioners; they deal mainly with the diagnosis and treatment of tuberculosis in early life, and attempt, by special sections devoted to the skin and to surgical affections, to comprehend all the more common sites of the disease. There is a good

<sup>2</sup> *Arab Medicine and Surgery: A Study of the Healing Art in Algeria*. By M. W. Hilton-Simpson, B.Sc. London: Humphrey Milford, Oxford University Press. 1922. (Demy 8vo, pp. viii + 56; 8 plates, 12 figures. 10s. 6d. net.)

<sup>3</sup> *Tuberculosis in Infancy and Childhood*. By J. Claxton Gittings, M.D., Frank Crozer Knowles, M.D., and Ashley P. C. Ashurst, M.D. Philadelphia and London: J. B. Lippincott Company. 1922. (Med. 8vo, pp. iv + 75; 23 figures. 21s. net.)



introduction on general considerations, with a useful historical summary taken from the literature. Unfortunately, however, this part is somewhat marred by the frequent sacrifice of clarity to conciseness, and by the failure to give references to the papers which are epitomized. In the chapter on diagnosis the danger of judging by the nutritional appearance of the child is pointed out; in the early stages there is little or no perceptible change, as is shown by the figures of Sachs, who found the nutritional state to be normal or above normal in 64 per cent. of a given series of children examined. On the other hand considerable importance is attached to a careful study of the temperature—especially of the extent of its diurnal variations. A thorough account of the technique and of the interpretation of the tuberculin test in its various modifications is provided. The main systems of the body are then dealt with in a simple, straightforward manner, and the book concludes with a chapter on general treatment, in which particular attention is directed to the prophylaxis of infection. There is nothing new, practically nothing original, and nothing markedly controversial—nor, we imagine, is there intended to be. As a compact and easily readable manual for general use it ought to supply a need felt by those whose practice makes too extensive demands on their time to allow of careful study of the more voluminous textbooks.

*L'Artériosclérose et son traitement* is the third of the five tomes, all now in a second edition, of Dr. ARTHUR JECKERQ'S *Les maladies de la cinquantaine*, and sets forth a rather startling conception of the relation of gout, obesity, diabetes, and arterio-sclerosis. It is that as a result of dietetic excesses, especially in protein food, the liver rises to the occasion and becomes abnormally active for a time—the stage of hyperfunction; this is succeeded by a phase of disordered function, which passes on into functional impairment and insufficiency. The result is that at about the age of 40 years gout is prone to appear, followed ten years later by obesity, then by diabetes, and lastly by arterio-sclerosis. The author regards gout, obesity, and diabetes, not in the light of ordinary diseases, but rather as protective measures adopted by the organism to prevent the flooding of the blood with poisons which would otherwise cause arterio-sclerosis. When the stage of hyperfunction has developed the liver and kidneys are described as undergoing visceral sclerosis, though the liver, from the paucity of interstitial tissue, shows much less evidence of this change; at about the same time the arterial blood pressure rises, and this is followed by hypertrophy of the middle coat, a process analogous to the visceral hyperfunction; on this supervenes a widespread fibrosis of the arterial media. The author considers that this arterio-sclerosis is essentially distinct from chronic arteritis and atheroma, which affect the inner coat and are due to infections and intoxications of various kinds. These hypotheses, which do not appear convincing and are admittedly in opposition to the views commonly held, are developed in the first part of this volume; the second part is devoted to the treatment of arterio-sclerosis and its various complications and is on more conventional lines.

Professor T. B. JOHNSTON'S book on *Regional Anatomy*<sup>1</sup> is a contribution to the Students' Synopsis Series. It is intended for the student revising his anatomy in the dissection room prior to examination. The author in his preface states that he is catering for the ordinary examinations only, and that consequently minor details and long accounts of unimportant structures are omitted. The more important facts and relations are emphasized by the use of italics. The old terminology is used throughout. The section on the central nervous system contains eleven diagrams. The descriptions of organs, structures, and relations are clear and concise, and in a review of a synopsis can more be said? This book should prove really useful to the student doing his final spurt.

*Endocrine Glands and the Sympathetic System*<sup>2</sup> is a translation by Dr. F. RAOUL MASON of the book by Lereboullet, Harvier, Carrion, and Guillaume which formed one of the thirty-two parts of the big treatise edited by Sergent, Ribadeau-Dumas, and Babonneix. This part was reviewed in our columns in March, 1921 (p. 463). A few footnotes have been added by the translator, with the collaboration of Dr. D. R. Ayres. The work of translation has been well done, and the general get-up of the volume is good—better, indeed, than that of the original.

<sup>1</sup> *L'Artériosclérose et son traitement. Les maladies de la cinquantaine. Tome III.* Par Dr. Arthur Jeckerq. Deuxième édition. Paris: Librairie Octave Doin, Gaston Doin. 1923. (Deray 8vo. pp. 203. Fr. 12.)

<sup>2</sup> *Regional Anatomy.* By T. B. Johnston, M.B., Ch.B. Students' Synopsis Series. London: J. and A. Churchill. 1921. (Cr. 8vo. pp. 447; 11 figures. 12s. 6d. net.)

<sup>3</sup> *Endocrine Glands and the Sympathetic System.* By P. Lereboullet, P. Harvier, H. Carrion, A. G. Guillaume. Translated by F. Raoul Mason, M.D., with the collaboration of Daniel R. Ayres, A.B., M.D. Philadelphia and London: J. B. Lippincott Co. 1922. (Med. 8vo. pp. viii + 378; 31 figures. 25s. net.)

## SEX AND SCHOOL COURSES.

### CONSULTATIVE COMMITTEE'S REPORT.

"Men and women have existed for centuries, but either sex is still a problem to the other—and indeed to itself; nor is there any third sex to discriminate dispassionately between the two." That is a sentence in the introductory chapter of a report prepared by a Consultative Committee appointed by the Board of Education to advise on the differentiation of the curriculum for boys and girls respectively in secondary schools, of which a preliminary notice appeared in our issue of January 20th. The report is one of the most interesting and illuminating documents upon an educational subject that we have read. Moreover, anything that touches the cultivation of the finer attributes and instincts of the sexes is of paramount importance; and school life is gradually extending its influence upon our children with a corresponding diminution of home influence.

The importance of the subject is only equalled by the difficulty attending the answer to the problem set to the Committee; and it has done well in this respect, if alone, for it has shown how many and how disturbing are the cross currents which need to be taken into account before any final determination can be arrived at. The difficulty of these cross currents is so great that in the one type of schools from which a conclusive answer might have been expected there is no answer. The protagonists of equality of the sexes who carry their belief to its logical conclusion have secured the establishment of not a few co educational schools both for day pupils and boarders; from these, if anywhere, one might have expected a clear account of the likenesses or differences of boys and girls in their work, their play, and in the reaction of the sexes upon each other in these respects. But in the appendix dealing with these schools no satisfactory answer is found. The co-education school system appears to have been mainly approved by the men witnesses, the head masters of the schools, for the chiefs of these schools are almost always men; criticism came largely from the women witnesses. The report does not indicate what particular cross current is responsible for this diversity of opinion, but it would seem that even here vested interest—the importance of the headship of a large mixed school as against the headship of a smaller department of a school—produces a very natural bias.

#### *Evolution of the Secondary School Curriculum.*

The report makes it clear that no satisfactory judgement on the present position of secondary education can be arrived at without a knowledge of the past history of education in this country. To meet this need a complete chapter has been devoted to the history of the curriculum in secondary schools. It appears from the preface that this is largely if not entirely the work of Mr. R. F. Young, and for this he justly receives the special thanks of the Committee. The account shows how great an influence opinion has had upon the work of schools. "The development of secondary education, more especially in girls' schools, has been influenced by successive currents of social opinion." In the early part of the nineteenth century the work of the public schools and grammar schools for boys was almost entirely literary—Latin and Greek grammar and versification. Attempts to expand the curriculum of the grammar schools was checked when Lord Eldon ruled in the Court of Chancery that it was illegal for the Governors of Leeds Grammar School to expend the endowment funds in teaching modern and commercial subjects. But the demand for such subjects caused them to be taught as extras, or "accomplishments," for which separate fees were charged. The Non-conformist academies established in considerable numbers from about the year 1662 provided a remarkably wide curriculum, even to the inclusion of natural science—chiefly physics. "These private schools had many faults and weaknesses, but they were more receptive to new ideas and more ready to experiment than the old foundations, and subsequent reforms in the curriculum can be traced largely to their influence." The movement spread to the endowed schools in the early part of the nineteenth century, with Butler at Shrewsbury, followed by Arnold of Rugby, Tailor at Thring of Uppingham. The foundation of a number of proprietary schools by bodies of shareholders gave an impetus to reform, and many of these newer



schools are now well known public schools. The influence of private enterprise was great; indeed, Sir Joshua Fitch reported in 1866 that in Yorkshire "almost all the educational enterprise of the last few years has originated with private teachers." The influence of the introduction of the examination system is also shown to have been at first advantageous in widening the curriculum. Simultaneously games and physical exercises were developed, school societies and other corporate out-of-school activities sprang into existence, so that "the boys' curriculum was already becoming rather heavy at the period (1860-1875) when it was adopted with some minor modifications as the model for courses in the new girls' schools."

#### *Progress of Female Education.*

In the girls' school up to this date the work was mainly devoted to "accomplishments." Sydney Smith, writing early in the last century, says: "The system of female education as it now stands aims only at embellishing a few years of life which are, in themselves, so full of grace and happiness that they hardly want it, and then leaves the rest a miserable prey to idle insignificance." And this was a costly performance, for fees at one of the fashionable girls' schools in Brighton were £500 a year! In general it may safely be said that the traditional education for girls up to about 1845 accentuated the differences between the sexes.

The movement for the better education of girls and women may be said to have begun in 1843 with the foundation of the *Governesses' Benevolent Institution*, which was designed to provide a system of examinations and certificates for governesses. This led to the establishment of *Queen's College*, Harley Street, and the leaders of the movement, such as the Rev. F. D. Maurice, took over the boys' curriculum which they knew, and handed it on to the women's college. Miss Beale and Miss Buss will always be regarded as the pioneers of the new girls' schools, and they were trained at *Queen's College*. There were no ordinary women, as the well known couplet of their pupils shows. Miss Buss, the sterner of the two, boldly threw out, so far as she could, "accomplishments," and made the curriculum of the North London Collegiate School, which she founded and brought to success, as nearly like that of the boys as possible. In evidence she gave in 1865 she said "she did not think that a girl's education should differ essentially from that of a boy in the same rank of life with regard to the subjects which were to be taught, though it was rather difficult to ascertain what was the proper education for a boy." Miss Beale followed much the same lines, with a leaning to milder measures, for she retained the old-world accomplishments in her school at Cheltenham, and recognized the importance of art, for she was a friend of Ruskin. Thus the theory of the emancipation of women seemed to work out on a theory of imitation. The main causes of the assimilation of the girls' curriculum to that of the boys are summarized under three main heads: Humanistic—on the belief that "nature has given to girls equal capacities with boys for acquiring the greater part of that knowledge which is comprised in our higher education." Vocational—on the ground that "every lady is or must be a teacher of some person or other, of children, sisters, or the poor." Economic—in the aim of fitting women to earn a living.

But the influence of parents was inevitable; accomplishments were not allowed to be banished; science, mainly botany, was added owing to the favouring influences of the Sciences and Arts Department, and later domestic subjects were introduced. So that the curriculum, already too full for the boys, became more than overfull for the girls.

Vicious consequences of three competing Government departments in education led, in 1899, to the formation of the Board of Education. The Board enunciated a policy which aimed to secure "a certain measure of breadth and richness in the curriculum of secondary schools, and to leave them a larger freedom in devising and executing schemes of education of their own." The task set to the Board's Consultative Committee is the natural consequence of this policy. It asks: "Should boys and girls study the same subjects in secondary schools? Should they study all subjects in the same way and up to the same standard? And if any different treatment is desirable, what should the difference be?"

At the outset the Committee found one difference: "It seemed to be implicitly assumed that girls' schools, in addition to giving their pupils a general education, should also give them some training designed to fit them for the duties of home life and of motherhood." There is a compulsory provision in

girls' schools of practical instruction in domestic subjects (such as needlework, cookery, laundry work, housekeeping, and household hygiene) which are in practice generally substituted for the wood-work and metal-work taught in boys' schools. For girls over 15, domestic subjects may be substituted partially or wholly for science and for mathematics other than arithmetic.

It appears that the substitutions allowed for the domestic subjects does not relieve the strain on the girls. There was evidence that girls are much less able to protect themselves against overpressure than boys, who have, as a rule, a habit of "healthy idleness," whereas girls are more conscientious. As one witness expressed it, "If you give a girl too much to do she breaks down; if you give a boy too much to do he doesn't do it." It was further found that the curriculum both for boys and girls was modelled too much with regard to preparation for university and professional examination and failed to provide sufficient contact with practical life. Girls, being more receptive than boys, absorbed the knowledge without giving thought to it, so that on entering into work they were found not to have acquired the habit of thinking and acting for themselves and correlating such knowledge as they possess. The assiduity of the women mistresses was held to be partly responsible, for they helped their pupils too much. There is evidence, too, that the curriculum drawn up by the school authorities to comply with the existing regulations was unduly rigid, and did not allow adequate scope to head mistresses to meet the needs of pupils who deviated from the ordinary type. There was also a tendency to overwork the girls at games; this was partly due to the zeal and conscientiousness of the games mistresses, who were sometimes inclined to supervise and direct too much. Stress is laid on the cultivation of remedial gymnastics, particularly for girls, amongst whom postural defects are common.

#### *Physical and Mental Differences.*

Considering the general physical and mental differences between boys and girls and the possible causes of such differences, the Committee points out that though there is a mass of traditional doctrine there is a corresponding lack of precise observation and comprehensive study. But it is now certain that physiological age bears no direct relation to chronological age. Anatomically girls are in advance of boys by six months at 5 years and about one year at 15 years of age. There are material differences in the blood contents—the percentage of haemoglobin is less in the female after puberty; the male is therefore the better prepared for a more abundant liberation of energy with less exhaustion or fatigue. Except in the essential organs of sex other anatomical differences are quantitative and not qualitative. The larger male brain, while closely associated with the larger size of the body, may or may not indicate a better supply of cortical cells or co-ordinating fibrils, or it may only indicate "padding"; but there is no evidence either way. "It is therefore, at present, impossible to infer from anatomical considerations that the average male is potentially more intellectual than the average female." But it appears to be recognized that girls in general are not so strong physically as boys, and are more highly strung and liable to nervous strain. Moreover, medical statistics seem to indicate that there is a higher percentage among girl pupils of cases of anaemia, spinal curvatura, defective eyesight, and minor physical defects; these defects are sometimes caused and often accentuated by sedentary occupations such as needlework.

The periodic disturbances to which girls and women are constitutionally subject condemn many of them to a recurring, if temporary, diminution of general mental efficiency, and these are most intense and pervasive in the critical years of school life. Among the intellectual processes belonging to the higher mental levels there is a difference in memory. In sheer retentiveness, especially in its lower and more mechanical forms, girls seem to surpass boys, and women to surpass men. This difference may possibly underlie the traditional view that women are the more imitative and men the more creative. In tests of ingenuity men seem to be as clearly superior as were women in tests of assimilative power. Experience with research students corroborates the common view that constructive force and initiative came chiefly from the men, while the women students almost without exceptions worked conscientiously and industriously along lines laid down for them. Beyond this little has been determined in any exact fashion, and the Committee concludes that "probably the well known formula that the male was the greater expender and the female the greater conservator of energy



covered all the differences that were not sexual in a narrower sense. It might also account for the greater intellectual vigour and adventurousness with which boys are commonly credited."

But there are other factors to be taken into account. There is a variability within the sexes; within one and the same sex the range of individual variation is, for most mental characteristics, so enormous as almost to obliterate the smaller group differences. These variations are greater in the male, so that the male sex shows the higher percentage of geniuses of almost every type, but also includes the larger number of criminals and mental defectives—an assumption which is supported by evidence that boys are inclined to break away between the upper and lower extremes in most manifestations of ability, while girls keep closer to the norm. Most witnesses agreed that these conditions are not shown until close on puberty, and there was general agreement that the average boy possesses at this age a large amount of physical and mental energy which enables him, as a rule, to surpass girls of the same age. Hence they would protect the girls from overpressure, and some were in favour of actually driving the boy during the period of adolescence.

#### *Sex Differences and School Conditions.*

Differences in response to the subjects of the curriculum are found, but many of these appear to be due to school conditions. Boys do better at classics than girls, for their teachers are the better; contrariwise girls do better at modern languages for a similar reason. Girls do better at English language and literature, for they read more, but they tend to reproduce rather than to reason. Girls know their history and geography facts better, but boys show signs of originality and freshness in their ideas. In mathematics there is a considerable weight of opinion among examining bodies affirming the relative inferiority of girls to boys in work done in this subject; girls show more aptitude for book work than for problems. The Committee is uncertain whether this is a real difference in educability or due to some school conditions or liability to fatigue; but in any case it recommends that girls should drop the subject at an earlier age, and that its teaching should have more practical applications. In science the girls are "microscopic rather than telescopic in their scientific outlook"; boys excel in experimental work, in initiative, in the capacity of judging phenomena, and in reasoning. In music the girls had the advantage of the tradition of accomplishments, the boys the handicap of the breaking voice; but it appears that the girls show a better response to rhythm, which is also observed in dancing. In drawing girls have a high sense of decoration, and under good teachers may draw, model, or paint with the directness of a man many years older and with greater freshness and charm; but the girls' work, highly expressive as it is, is usually based on less sympathetic observation than that of a boy, and is of slighter interest.

Girls suffer at games by over-supervision, and the Committee is of opinion that the authorities of girls' schools would be well advised to arrange their games more on the lines of boys' schools, where the organization of the sports is left very largely to the boys themselves. So with the out-of-school activities there is a tendency to over-organization in the girls' schools. In co-educational boarding schools it generally happens that the boys take, in practice, a larger share of the management of these activities than the girls; the boys also speak more at the debating societies than the girls. It is difficult to compare aptitude for manual work, for the sexes for the most part take different subjects. In a co-educational school the boys had the best gardens, and needlework by the boys was often more particular and exact.

The Committee concludes that "the predisposition of girls to nervous overstrain, especially at the period of adolescence, is one of the most important factors in the problem of female education." The greater liability of the girls to fatigue should be taken into account in arranging the curriculum, more especially in the co-educational day schools. It is interesting to note in this connexion that Miss Beale at Cheltenham had early to change the hours of school, which had been arranged on the plan of the boys' school. On psychological evidence the Committee judges that there is general agreement that girls are more receptive, more imitative, more amenable to discipline, and more conscientious in their work than boys, who are on the whole more independent, unruly, original, and creative. The differences do not seem to justify serious differentiation in the curriculum, except in mathematics and physics. And the pressure of uncongenial

subjects should, if possible, be removed, for a time at all events, when the teacher considers that no further educational benefit is to be got from it.

The Committee points out that there is relative absence of systematic inquiry on the intellectual and emotional side differences between boys and girls of secondary school age in their bearing on education, and urges that research should be undertaken, based on wide deductions over a term of years. Such researches might reveal important facts regarding divergences of interest and differences in intellectual capacity between the sexes at various ages. Similarly, comment is made on the empirical and unscientific character of much of the available evidence on the educational achievements of boys and girls, and systematic inquiries based on experiments should be undertaken in co-educational day schools with a view to collecting trustworthy data.

#### *Some Recommendations.*

Discussing the conflict of home and school duties the Committee does not think it desirable to attempt to divorce a girl's education from her home duties and her home opportunities. No distinction can be drawn between the qualities that go to make a good parent and those that go to make a good citizen; there is a gain in a girl's feeling that her teachers appreciate the dignity of home duties, and have full sympathy with her development in this direction. And no preconceived ideas as to the best preparation, even for motherhood, ought to hamper experiment or to dim vision. All children have to be educated with two ends in view: to earn their own living, and to be useful citizens; while girls have also to be prepared to be makers of homes. Boys and girls should be educated on similar lines, though not necessarily at the same pace, so far as concerns the first two aims. The whole aim should be the cultivation of general intelligence, as distinct from the accumulation of information. Variations there must be in different parts of the country, for a general rule applying to areas so different as London, Gloucestershire, Lancashire, and Durham can hardly fail to do violence to the facts. Each area should work out its own solution of the problem in accordance with its own needs and traditions. In general, girls should have an additional year before sitting for the first school examination. There should be a wider range of subjects, more accomplishments, a lessening of university influence, greater freedom for the teaching of vocational subjects, and less home work, seeing that they have home duties; also organized games in boarding schools for girls should be materially diminished.

On the whole, the Committee is disposed to think that in many schools, and more especially in girls' schools, the daily life is over-organized. The obvious result of such methods is to produce girls and boys who, though well informed, are rather dull, and lacking in initiative and freshness of outlook. This is a serious defect, and steps should be taken to allow boys and girls, but more especially girls, more free time in which to develop their own individual interests.

The report closes with a series of appendices, of which the third and the fifth are of chief importance from the medical point of view. Appendix III gives a digest of certain points in the evidence relating to co-educational day schools (mixed secondary schools). There is here a marked conflict of evidence. The head masters of these schools were favourable to them and urged the beneficial effects upon both sexes; for the most part the women witnesses were unfavourable, to the extent of stating that "the curriculum was arranged for the boys, the school was run in their interests, and, in general, they acted as a depressing element on the girls." Most agree that no harm results in a mixed school up to the age of 11 years; then there should be separation. Serious difficulties arise in staffing, and particularly from the habit of girls to form sentimental attachments—sometimes for a particular teacher. Appendix V is a very able paper by Professor J. G. Adami (to which we alluded in our previous note) on anatomical and physiological differences between the sexes. Full weight is there given to the physiological effects of the endocrine glands, a subject which is insignificantly known to the laity. The story of the "free-martin," there given and explained, is a parable applicable to the alleged influence of the co-educational school.

As we have already stated, this report is one of singular interest and importance, and we hope that the desire of the Committee to secure detailed scientific information upon many of the points raised in the course of the inquiry may bear fruit without delay. It is a fine field for investigation, full of interest, and likely to prove of real profit.



# British Medical Journal.

SATURDAY, FEBRUARY 17TH, 1923.

## ACIDOSIS AND ALKALOSIS.

UNDER the somewhat forbidding title "The Acid-Base Equilibrium of the Blood" the Medical Research Council has just published a Report\* dealing with the vexed questions which centre round the words "acidosis" and "alkalosis." The report is by the Council's Haemoglobin Committee, of which Mr. Barcroft is chairman, and a number of well known physiologists and representatives of clinical medicine, members. The report consists of two parts, of which the first is entitled "The blood considered as a fluid"; by this is evidently meant that it is the reaction of the plasma alone that is of direct importance. The first section of this part deals with nomenclature and its physico-chemical significance. An admirably clear account is first given of the significance of "hydrogen ion concentration," of the "buffering" to changes of reaction in blood, and of the manner in which the red corpuscles increase the buffering of the plasma. This is succeeded by a discussion of the words "acidosis" and "alkalosis." The Committee proposes to abolish the use of these words, substituting "ketosis" for the condition in which acetone and its related organic acids are present in excess, and "acidaemia" and "alkalaemia" for conditions in which the blood is abnormal towards the acid and alkaline sides respectively. Probably the use of the word "ketosis" will be found useful, since there is no necessary connexion between acidosis and the presence of excess of acetone bodies; but the rest of the proposal seems unfortunate and unnecessary. The references to the original identification with acidosis of the symptoms leading up to diabetic coma are misleading. It was not the presence of acetonuria (which had been known for long), but the close resemblance between the characters of the urine and the breathing in threatening diabetic coma and in acid poisoning that led to the search for, and discovery of, abnormal acids in the urine and blood by the experimental pathologists who made the discovery; and they had the best of reasons for concluding that it was acidosis, and not merely ketosis, which they had discovered. These reasons are still valid. "Acidosis" and "alkalosis" are, moreover, better terms than "acidaemia" and "alkalaemia," since the latter suggest that only the reaction of the blood is affected, whereas the whole of the body is involved. The abolition of the old terms would help neither clinicians nor physiologists, and might easily cause misunderstanding. It is to be hoped, therefore, that this proposal will be dropped.

The rest of the section deals mainly with the bicarbonate content, so-called "alkali reserve," and "titration alkalinity" of the blood. The real significance of these values from the standpoint of acid-base equilibrium is pointed out, though it is to be regretted that there is not a clearer account of the error which may arise when they are taken as measures of the blood's alkalinity. Thus in the alkalosis produced by anoxaemia, as well as in the acidosis of diabetic coma, they are diminished, while in the acidosis produced by true  $\text{CO}_2$  poisoning, as well as in the alkalosis from ingestion of excess of alkali, they are increased. During the war there were many mistakes in diagnosis, gently hinted at in the introduction to the report, owing to misunderstandings in this direc-

tion. Diminution in the "alkali reserve" or "titration alkalinity" was quite commonly taken as clear evidence of acidosis.

The second section refers very shortly to methods of obtaining blood samples, and the third deals much more fully with methods of measuring or indirectly estimating the hydrogen ion concentration or reaction of blood. The principles of the hydrogen electrode method, together with the difficulties in applying it to blood, and the best method of avoiding these difficulties, are first described. This is followed by a description of the alternative, and, in its latest form, much easier, "indicator" method. In view of the probable small errors owing to slight variations in technique, etc., it is wisely pointed out that relative results are almost as valuable for most purposes as absolute results. The indirect method on the principle introduced by Hasselbalch is then described. This is at present very popular, particularly in America. There seems no doubt that, as applied to blood plasma in a test tube, it gives correct results. Whether it is equally reliable when applied in connexion with that extremely leaky test tube, the vascular system, seems somewhat doubtful. The last method discussed is that of estimating changes in reaction by observed variations in the dissociation curve of oxyhaemoglobin. Round apparent results by this method there is also a good deal of doubt.

The fourth section deals in detail with the buffering of blood. A truly head-splitting diagram (nomogram) devised by Professor L. J. Henderson is included in it. The first part ends with a short, but interesting, discussion of the buffering of the tissues, and particularly muscle. Reading between the lines of this section it is easy to see that acidosis means vastly more than mere acidaemia.

The second part of the report is rather unfortunately entitled "The relation of changes in the hydrogen ion concentration of the blood to pathological conditions of the body." What this part really attempts to treat of is the physiology and pathology of regulation of hydrogen ion concentration in the living body. The first section deals with the recorded values for hydrogen ion concentration of normal human arterial blood under resting conditions. It is clearly pointed out that although different methods give very appreciably different results, yet those by any one method are extremely close to one another—so close that it is not possible to deduce from the measurements that real differences in hydrogen ion concentration exist at different times, though it seems probable that there are very slight differences in different individuals. On the other hand, slight apparent differences have been found by several methods to exist shortly after fairly heavy muscular exertion, while quite large differences have been clearly demonstrated by Dale and Evans in animals after injection of alkali into the blood, though the breathing was still active.

The second section has the unsuitable heading, "The central mechanism of respiration," for it discusses the relations between breathing and the hydrogen ion concentration of the arterial blood and other factors. The development of the experimental work which led up to the conclusion that the rate of ventilation of the pulmonary alveoli in man depends under normal conditions on the hydrogen ion concentration of the arterial blood is first clearly traced. A minute excess or deficiency of hydrogen ion concentration, caused by slight excess or deficiency of  $\text{CO}_2$  in the blood, immediately acts on the respiratory centre and causes an increase or diminution in the breathing, so that no more than a very slight variation of hydrogen ion concentration can be produced. It is also pointed out how the kidneys and the varying production of ammonia in the body co-operate in this regulation. The calculated differences in hydrogen ion concentration which suffice

\* *The Acid-Base Equilibrium of the Blood*. Report to the Medical Research Council by the Haemoglobin Committee. Pp. 70. H.M. Stationery Office. Price 3s.



to produce great changes in the breathing, or even to cause apnoea, are so small as to be beyond the limits which can be detected by any of the existing methods for measuring hydrogen ion concentration. The probable importance of very small changes of hydrogen ion concentration in the body, and the difficulty of detecting them by direct measurements rather than by symptoms, can thus be imagined.

A very useful and suggestive discussion follows of the evidence that when changes in the hydrogen ion concentration of arterial blood are produced by other agents than  $\text{CO}_2$  there may be no immediate response by the respiratory centre, or the response may even be the opposite of what might have been expected. It has been known for twenty-five years that although when caustic soda is injected into the blood (which can be done without any injury owing to the efficient buffering which exists) temporary apnoea is at once produced, yet when sodium bicarbonate is injected the breathing is immediately increased, although the blood must be rendered more alkaline. Clear and quite unimpeachable evidence was recently obtained by Dalo and Evans that the arterial blood of animals after injection of bicarbonate does actually become far more alkaline, but apnoea is not produced. The increase of breathing after bicarbonate injection was quite intelligible so long as it was believed that  $\text{CO}_2$  acts specifically, and not simply as an acid, on the inspiratory centre, since in the blood  $\text{CO}_2$  is at once partially liberated from bicarbonate by the action as weak acids of the proteins, including haemoglobin. But why, if  $\text{CO}_2$  acts only in virtue of its acid properties, is the respiratory centre stimulated when the blood, in spite of the presence of more  $\text{CO}_2$ , is actually far more alkaline? The evidence, both physiological and clinical, in favour of the hydrogen ion theory of respiratory regulation is far too strong to be upset; it is suggested that the reason why the respiratory centre reacts promptly to the minutest changes in  $\text{CO}_2$  concentration, but only very sluggishly to changes otherwise caused in the hydrogen ion concentration of the blood, is that whereas  $\text{CO}_2$  penetrates rapidly through the delicate membranes between the blood and living protoplasm, other substances affecting the reaction of the blood penetrate far more slowly. This is well known to be the case as regards the delicate walls of red corpuscles, and quite clear evidence has recently been furnished in plants by Jacobs that  $\text{CO}_2$  penetrates the delicate cell membrane far more easily than various ions.

A very clear and satisfactory account is given of the effects of deficiency of oxygen on the breathing, and of the manner in which oxygen deficiency leads to an increase of the breathing at high altitudes. The next section deals with the reaction of the blood during exercise. The picture presented by this section is confused, and there is no co-ordination with the preceding section, though the possible means of co-ordination seem evident enough. The statement that there is no evidence of deficient oxygenation of the blood during muscular exertion is surprising, for it is well known that there is both direct and indirect evidence for such a deficiency.

The concluding section deals with "the relation of breathlessness to hydrogen ion concentration in pathological states." Diabetic acidosis or ketosis is first considered. The historical review of this subject is defective, and of the conclusions reached we can only say that they are not likely to convince an experimental pathologist. The breathlessness of renal and cardiac disease, and of the condition so familiar during the war under the name of D.A.H. (disordered action of the heart) are then discussed. It is surprising to find no reference to the quite different types of "breathlessness" existing in these different conditions, since the type of breathing always affords a definite clue to the cause of the abnormality.

The abnormal breathing due to acidosis is, for instance, entirely different from that observed in uncomplicated heart cases or in D.A.H. The treatment of this subject is unsatisfactory, and the same is true of much of the chemical evidence quoted, though some of it is very valuable.

The defects of the report, looked at as a whole, are doubtless due largely to the difficulties of securing agreement among the different members of the committee, and the consequent recourse at many points to unsatisfactory compromises. This, however, does not diminish the great value of individual sections of the report; the defects in co-ordination between the different sections are indeed only a mirror of existing divergences of opinion. In any case, the medical profession is much indebted to the Medical Research Council and the members of its Haemoglobin Committee for the preparation of this valuable report.

## THE ANNUAL REPORT OF THE REGISTRAR-GENERAL.

We publish on another page a brief summary of the principal items in the tables of what will be called in future the Annual Statistical Review of the Registrar-General, from which will be seen that, on the whole, 1921 was a year of favourable mortality experience. Of the great causes of death, cancer alone is increasing, and the precise significance of this increase cannot be determined without a further analysis of the statistics which we cannot now undertake, especially as the age distribution of the population enumerated in 1921 does not appear to be available—presumably a consequence of the delay in taking the census, as the corresponding information was published in the Annual Report of the Registrar-General for 1911.

This first instalment of the vital statistics of 1921 differs in so many respects from its predecessors, the Annual Reports of the Registrar-General, that a few reflections upon the change will not be out of place. One change—the inclusion with the statistics of mortality of the return of notified cases of diseases—is an unalloyed benefit, and will be welcomed by all medical users of the reports. Another—the reversion from folio foolscap to royal octavo—will not be unanimously approved, because in some of the tables it necessitates the employment of a rather less legible type; but an octavo volume is so much handier than a folio that we think this change also will find a majority of supporters. Some other modifications—for instance, the omission of certain small areas but a slightly extended list of causes tabulated for areas retained—have a good deal in their favour.

But, on balance, we think the new method of presentation inferior to the old. One obvious defect in the actual tabulation is the omission of rates of natural increase. Table 1 should certainly have included the total annual births; were space a primary consideration the ratio of standardized rates of mortality on males and females could have been spared. Even the total number of births for the year of record is only to be found on page 62, and no comparison can be made with previous years. This illustrates the inconvenience of paper dichotomies, attempts to define rigidly what is and what is not of "medical" interest. It is not, however, a very important matter; what we do think important is the separation of Dr. Stevenson's review of the vital statistics of the year from the body of tabular matter.

The Annual Report of the Registrar-General of England and Wales has been for more than seventy years a document of unique scientific importance. It has gained this position owing to causes rather characteristically English which it will be interesting to consider. It has



always been the rule of this country to make non-technical administrators heads of departments; as Macaulay said, "From the Book of Dignities a curious list might be made out of Chancellors ignorant of the principles of equity, and First Lords of the Admiralty ignorant of the principles of navigation, of Colonial Ministers who could not repeat the names of the Colonies, of Lords of the Treasury who did not know the difference between funded and unfunded debt, and of Secretaries of the India Board who did not know whether the Mahrattas were Mahometans or Hindoos." The same rule has applied to minor offices, and the choice of the Registrar-General has never turned upon statistical qualifications. But, almost by an accident at the foundation of the office, a medical statistician of great genius was associated with the Registrar-General in a minor official capacity, and, thanks to the good sense of his official superior, Farr did perform all the scientific functions of the office. Even in those paragraphs of the old reports which were signed by the Registrar-General the hand of Farr can easily be detected, while the annual letter bore his signature.

The tradition has continued down to our own time. Ogle's work—despite certain improvements—was not perhaps, as a whole, of the same standard as Farr's; for that of Dr. Tatham and Dr. Stevenson, without making a suggestion which they would certainly repudiate, a suggestion that it is precisely on the same plane as Farr's, can properly be claimed that it has always reached the standard of scientific research work. Such studies as, for instance, those of Dr. Stevenson on the alleged increase of cancer or on the factors of infant mortality would have been welcomed by any scientific statistical journal or learned society in the world. But it is of the essence of genuine research work that it shall have a personal element; nobody can ever hope to reach a great truth without risking a serious error. The man who plays for safety makes very few runs. When any document is clothed with "official" authority the temptation to take refuge in safe generalities is great. By the happy accident of the old system at the General Register Office individual initiative was saved by the expedient of combining in a single publication the personal conclusions of Farr, or one of his successors, and the whole corpus of data. The personal conclusion might be dubious, but there was the whole material upon which it was based for the private investigator to treat if he pleased in another way, leading perhaps to another conclusion. We think this a satisfactory arrangement, and one that should, at all costs, be maintained. On that ground we deprecate the separate publication of text and tables, even if the separation means that the tables are issued a few months sooner.

### RADIUM IN CANCER OF THE TONGUE, OESOPHAGUS, AND RECTUM.

Last year Mr. Hayward Pinch, the Director of the London Radium Institute, in presenting his report for 1921, after giving statistics of all the cases treated, devoted the greater part of the space at his disposal to a discussion of the value of radium in the treatment of various gynaecological conditions. Encouraged by the approval this plan received, Mr. Pinch has this year followed the same policy, and has on this occasion devoted particular attention to carcinoma of the tongue, oesophagus, and rectum—diseases for which radium treatment is very frequently sought.

It will, we believe, generally be admitted that surgery has not been so successful in dealing with these conditions as to arouse any great enthusiasm for it as a method of treating cancer in these positions. At the same time it is obvious that from the curative point of

view alone radium is still not a competitor, as the director of the Institute is emphatic in his statement that operative interference is advised and urged in every case in which it is considered to be at all possible, and radium treatment is restricted to those cases which are totally inoperable, or in which operation is definitely refused by the patient. Notwithstanding the really great results which can sometimes be obtained in these inoperable cases—the general relief of symptoms, the special relief of pain, the destruction and disappearance of masses of growth, the prolongation of life—it is still evident that the fear of delaying operation is paramount in our minds and, as much as anything else, prevents a trial of radium in many cases of early growths in which much might be expected. The newer methods of radium treatment, especially in carcinoma of the tongue—namely, the burying of radium or radium emanation in all parts of the growth in addition to the irradiation of the whole lymphatic area involved—are a great advance in technique, and when combined with the use of diathermy in the first instance give much better results than were formerly possible. The condition of patients suffering from this disease is peculiarly trying, and the pain they experience so bad, that any method of treatment which can hold out fair hope even of relief is not to be lightly put aside because it does not also include a hope of cure. Carcinoma of the oesophagus, again, is a most distressing and altogether hopeless disease; not only is it impossible to hope for cure but even relief of symptoms is very difficult to obtain, and it is disappointing that the results which were hoped for and even expected some years ago when radium was first used for this condition have not been realized. The condition is much more frequently to be met with in the x-ray department of a large general hospital than is generally recognized; in fact, the workers in such an x-ray department come to look upon it as a comparatively common disease. Of the cases applying to the London Radium Institute the site of the growth is at the cardiac orifice in 53 per cent., but we notice that only four cases were seen during 1922; we learn that the experience in Liverpool, extending over many years and amounting to several hundred cases, suggests that the middle third of the oesophagus is the common site. The most that is now claimed for the radium treatment of cancer of the oesophagus is that, to quote the report, "in favourable cases the patient is enabled to swallow food in comparative comfort for six, eight, or twelve months, or even longer, though sooner or later the exposure will have to be repeated." This statement is hardly satisfactory, as it says too little and seems to infer too much. Does it mean that at the end of the period of relief further radium treatment will bring about another period of several months' relief of symptoms, and so on? Patients may live for twelve months or so from the first onset of symptoms without radium treatment, and periods of marked improvement in swallowing may occur without any kind of treatment; in some instances these periods have been fairly long. It would be of interest to know the longest time any patient has lived in an undoubted case treated by radium. The evidence at present available falls short of establishing the proposition that the use of radium in these cases is definitely indicated.

Three ways of treating carcinoma of the stomach by radium are described: In one the abdomen is opened, radium tubes are buried in the growth for twenty-four hours, and the laparotomy wound is then closed. In the second the stomach is irradiated from the interior by passing radium tubes into the stomach through the mouth and oesophagus. In the third method radium is applied from the outside. With a knowledge of the size of the stomach, and the size and positions of cancerous



growths affecting it, and the obvious difficulty of bringing the radium into apposition with such a growth and at the same time protecting the healthy mucous membrane, the second of these methods—namely, the swallowing of the radium tube—appears to be somewhat fantastic. The difficulties of treating an accessible growth are so obvious from this report that it is difficult to imagine that any successful result could be expected in the case of a malignant growth of a hollow organ like the stomach by means of a tube of radium more or less let loose in its interior. It is perhaps to be regretted that that portion of the report which deals with the symptoms and diagnosis of carcinoma of the stomach was not more cautiously worded; many of the statements made will, we fear, be apt to mislead. It is strange that no mention is made of the value of an x-ray examination of the stomach; it is most important, and in diagnosis a reference to it would have made this portion of the report more accurate and of more value.

It is well known that operative procedures in carcinoma of the rectum, provided the patient applies for treatment early in the disease, give fairly favourable results. This suggests that even in the inoperable cases radium might be more effective than it is in carcinoma in other positions. The report bears this out, inasmuch as improvement is reported in sixteen cases treated during the year. Apparently a drawback to the treatment is that the rectal mucosa is, as a whole, very intolerant to irradiation; there is a danger that intractable proctitis may be set up, a condition trying both to the patient and the medical attendant. A point urged in the report is that when the condition is such that the major abdomino-perineal operation is necessary and the patient is 60 or over, then radium therapy, which can often prolong life in comparative comfort for from four to six years, is preferable to operation. This may be true in the case of some patients, but age alone should not be the determining factor, as many patients of 60 or even over are comparatively young.

Many other conditions are alluded to, and, taken as a whole, the report is written with commendable care and restraint; it furnishes a very fair idea of what can be expected from radium treatment, carried out by an expert of long experience with a sufficient amount of radium at his disposal, in a disease which is baffling in the problems it presents, and, apart altogether from its inevitably fatal results, so often means years of misery from the various symptoms to which it gives rise.

#### VISION AND EVOLUTION.

On January 29th Professor Elliot Smith gave the third of his series of Montgomery lectures, dealing with the general subject Vision and Evolution, at the Royal College of Surgeons in Dublin. In the first of this series, which was given in December, 1920, he discussed the problem of the reconstruction of man's pedigree for the purpose of determining exactly what changes occurred in the brain at each step in the progress of man's ancestors toward the attainment of human rank. Before the commencement of the Eocene period in a particular group of primitive tree-living mammals the importance of vision and the extent of visual representation in the cerebral cortex (already increased as the result of arboreal habits) became further enhanced, and this was responsible for bringing the Primates into existence. The continuance of this process led to the still further enhancement of vision in one subdivision of the Prosimiae known as the Tarsioidae, one member of which, the Spectral Tarsier, has persisted in Borneo, Java, and elsewhere from Eocene times until the present with practically no change. The importance of *Tarsius* in this investigation is that it represents the branch of the Prosimiae in which vision for the first time became the dominant sense, definitely displacing

smell as the chief guide of the animal. The sub-order Tarsioidae has the very important significance that it represents the group from which the apes and man were derived, so that the comparison of the brain of *Tarsius* and the most primitive monkeys enables us to determine what was the nature of the process which led to the origin of the higher Primates. Professor Elliot Smith made use of the observations of the living *Tarsius*, and of photographs by Mr. W. E. Le Gros Clark, F.R.C.S., who also sent him from Borneo most of the material for the research. In the second lecture, which was given in January, 1922, the significance of the acquisition of true stereoscopic vision was discussed; the monkeys, it was explained, came into existence when one particular group of Tarsioidae acquired the powers of stereoscopic vision. The development of these higher powers of vision acted as a most profound stimulus to almost every part of the cerebral cortex. The visual area itself became further enlarged and more highly specialized, mainly for the purpose of establishing more abundant and more intimate connexions with the other cortical areas, as well as with other parts of the brain. But the change which was most noteworthy was the sudden expansion of the pre-frontal cortex, and this was due primarily to the development of a much wider range of conjugate movements of the eyes and a further development of the power of convergence. The ability to focus the two images of an object with exactitude on corresponding parts of the retinae prepared the way for the development of the macula lutea, so that the animal acquired the ability to appreciate more fully the nature of objects on the outside world, their exact position, their form, size, and texture. This stimulated the animal's curiosity to examine and handle things, which not only led to the cultivation of the sense of touch and the acquisition of higher powers of skilled movement, but also enabled the animal to train its powers of appreciating form and spatial relations and to learn by experience the meaning of events which were happening around it. This fuller understanding of the outside world gave added importance to information collected by all the senses, even the sense of hearing, and led to the further development of most of the cortical areas. The fixation of vision represents the germ of the powers of attention and of mental concentration in general. In the third lecture, which was given on January 29th, 1923, it was pointed out that the essential factor which enabled these great developments in the cerebral cortex to be brought about was in the last resort entirely dependent upon the acquisition of a wider range of conjugate movement and a much greater control over such movements to give the precision and accuracy which were essential before real vision as we interpret the word could be acquired. The development of these more extensive powers of linking up the movements of the two eyes and acquiring a more precise control of convergence was the result of a very complex series of developments in the brain. They were dependent not merely upon the elaboration of a pre-frontal cortical area, but also upon the transformation of the ocular motor nuclei in the mid-brain and certain other changes in the connexions between both the mid-brain and the cerebral cortex with the cerebellum and the vestibular nuclei. Different aspects of these problems have been elucidated by the investigations of Dr. Wilfred Harris, Mr. Treacher Collins, Professor Winkler of Utrecht, Dr. Brouwer of Amsterdam, and Professor John Hunter of the University of Sydney, and the service which the lecturer tried to render was to correlate the results obtained by these investigators with his own work on the cerebral cortex, and to interpret the respective rôles of the cortex and mid-brain in this process. The wide range of independent movement of the eyes of vertebrates below mammals becomes restricted in mammals when a mechanism for effecting automatic conjugate movements begins to develop. The extension of the range of these linked movements is acquired very gradually in man's ancestors; and the close correlation between the range and precision of conjugate movements and the development of the cerebral cortex is a clear indication of the extent to which our intellectual powers have been built



up on the basis of visual experience. The elucidation of the details of the process requires so many illustrations to make it intelligible that it is Professor Elliot Smith's intention to publish a book presenting the three Montgomery lectures, together with the three Morison lectures on the evolution of the intellect given at the Royal College of Physicians of Edinburgh in 1922, which deal with essentially the same problem from a somewhat different angle.

#### M NERS' PHTHISIS.

DR. A. MAVROGORDATO started the investigation of the effects of inhaled dusts on the lungs in 1913 at Oxford, under the direction of Dr. J. S. Haldane, and with the support of the Medical Research Committee. He has continued the investigation at Johannesburg, and some of his results have recently been published by the South African Institute for Medical Research.<sup>1</sup> The investigation has been carried on partly by experiment and partly by histological examination of the pulmonary lesions in miners' phthisis. Many interesting points have been brought out. It was formerly supposed that foreign particles entered the pulmonary tissues and did harm largely in virtue of their being sharp, pointed, and crystalline; but it is now recognized that in pneumokoniosis the particles are seldom larger than the common micro-organisms, and are taken up by phagocytic "dust cells," and so carried into the lung; they do not get there because of any inherent penetrating properties. Dust that contains silica is harmful, and Drs. Gye and Kettle correlated this effect with the production of silicic acid. Experimentally Dr. Mavrogordato showed the different effects of dusts containing silica and of those free from it. When sterile silica is inhaled it is absorbed by macrophages which manifest "early pleural drift"—that is, they tend to flock to the visceral pleura and form pseudo-tubercles; the silica appears to preserve from autolysis the containing phagocytes, which therefore block up the lymphatics of the lung and form white fibrous tissue; the suggestion is made that lymphatic fibrosis would be a better name than the misleading term "miners' phthisis." Cross sections of the thickened lymphatics resemble pseudo tubercles, and it is pointed out that the early histological changes resemble those in tuberculosis, though giant cells are not formed. It is interesting to contrast the effects of coal dust and silica. Coal dust prevents the fixation of silica in the lung, though experimentally it cannot remove it when once it has got into the lung; it is well known that coal-miners do not develop miners' phthisis. On the other hand, when silica has gained an entrance to the lung and damaged it by interfering with the lymphatic circulation and its power of dealing with coal dust, the carbon accumulates in that region and so accounts for the pigmentation. If, therefore, coal dust or its equivalent were to be employed as a means of preventing silicosis, it would have to be provided at the same time as exposure to quartz dust. There is a most important difference between sterile silicosis as described above and infected silicosis, in which the pulmonary changes are more widely spread, the clinical course much more severe, and the damage not necessarily curable by discontinuance of exposure. Much depends on whether the infective agent is the tubercle bacillus or not. There may be three stages in silicosis: simple irritation, non-tuberculous infection, and finally tuberculous; it is difficult to say in what proportion of cases the infection is first of a non-tuberculous nature and later tuberculous. The old type of disease characterized by cyanosis and right-sided cardiac failure, still familiar in Cornish miners, has become rare in the Rand mines, and early tuberculous infection has become common; with a change in the ...peans to Africans, and in the atmospheric conditions of the mines, formerly dry,

now moist and less dusty, as a result of the application of the wet process work to control the dust. Whether or not the mines have become gravely infected with the tubercle bacillus has not been established.

#### VITAL STATISTICS OF ENGLAND AND WALES IN 1921.

The tables of the Registrar-General's Statistical Review of England and Wales, which have just been published,<sup>1</sup> contain most of the tabular matter formerly issued in the Annual Report of the Registrar-General. In the year 1921, 848,814 births and 458,629 deaths were registered; the death rates, both crude and standardized, are the lowest recorded, being respectively 12.1 and 11.5 per 1,000 persons; the corresponding rates for 1920 were 12.4 and 12.1. Forty years before, in 1881, the standardized rate of mortality was 18.2; in 1891 it was 20 (an influenza year); in 1901 it was 16.9, and in 1911 14.2. In spite of the dysgenic selection due to war, the rate of 1921 is substantially below that of 1911. The rates in age groups at all ages below 65 and for both sexes were lower than or equal to those of 1920. At ages over 45 the improvement is slight, in the first two quinquennials it is substantial. The ratio of deaths under 1 to births, although very slightly in excess of the figure for 1920 (83 in 1921, 80 in 1920), is, with that exception, the lowest ever recorded. This is perhaps the most gratifying feature of all, since 1921 was a record summer, and might have been expected to take a heavy toll of infant life. In 1911—the hottest summer in living memory excepting 1921—the infant death rate was nearly 25 per cent. greater than in 1910—130 in 1911, 105 in 1910. Turning to the causes of death we notice that cancer alone of the chief factors of mortality has increased its hold; the rate of mortality from this cause was higher than in any previous year except 1918, the increase being more amongst females than males. In 1921 cancer was responsible for rather more than 10 per cent. of the total number of deaths, tuberculosis for 9 per cent. In 1911 cancer was credited with less than 7 per cent. and tuberculosis with rather more than 10 per cent. of the whole number. The five great groups of disease forms—heart diseases, cancer, tuberculosis, pneumonia, bronchitis—comprise almost half (46 per cent.) of the total mortality. Regional mortality exhibits the usual features, being higher in the northern than the midland or southern areas. Thus Darlington (12.3) was the only one of the five county boroughs within the geographical county of Durham recording a crude rate of mortality below 14 per 1,000. Of the six East Anglian county boroughs (East Ham, Southend, West Ham, Ipswich, Great Yarmouth, and Norwich), Great Yarmouth (12.9) had the highest death rate. The lowest rate of infant mortality in the Durham county boroughs was 96, the highest in the East Anglian county boroughs 75. In the metropolitan boroughs, the rate of infant mortality ranged from 54 in Stoke Newington to 111 in Shoreditch. The rates of mortality from the principal infectious diseases were favourable. The rate per million persons of enteric fever was slightly higher than in 1920, but less than in any previous year; measles had much the lowest rate of the present decennium; scarlet fever, which was very prevalent, had a lower death rate than in 1920, as had diphtheria. In the whole of England and Wales, 315 cases of small pox were notified; 106 were of persons in the city of Nottingham, 92 in the West Riding of Yorkshire, 40 in Middlesbrough, 16 in Derbyshire, and but 2 in London. Five deaths from small-pox (all males) were registered. The number of deaths attributed to influenza was 8,955, the smallest number since 1917. Malaria was credited with the deaths of 139 males and 4 females; in 1920 there were 240 deaths of males and 10 of females so described. Encephalitis lethargica was returned in 729 cases, a considerable increase over 1920—460 deaths. A new feature of the report is the tabulation of cases of notified infectious disease, which occupies fifty-two pages.

<sup>1</sup> Publications of the South African Institute for Medical Research. Edited by W. Watkinson, I. Ibbett, M.A. No. XV. *Studies in Experimental Fungi and other Pneumokonioses*. By A. Mavrogordato, M.R.C.S., L.R.C.P. Published by the Institute, Johannesburg. 1922. (Pp. 58; 114 figures. 5s.)

<sup>1</sup> The Registrar-General's Statistical Review of England and Wales for the Year 1921. Tables, Part I. Medical. H.M. Stationery Office. 1923. (Pp. 452. 15s. net.)



## LOCAL GOVERNMENT AREAS.

THE rapid—in some instances phenomenal—increase in the population of many towns in England and Wales during the past forty years has added greatly to the difficulties of administration, and has created many anomalies. In some cases encircling belts of rural areas have become urbanized but still retain the administration of a rural district, while in others contiguous urban districts have so spread out their suburbs that, meeting each other, it has been wellnigh impossible to define the precise boundaries. An excellent example of the latter is to be found in the Staffordshire Potteries—Mr. Arnold Bennett's "five towns"—which during Mr. John Burns's presidency of the Local Government Board were formed into the county borough of Stoke-on-Trent. In more recent years many applications have been made to the Local Government Board or the Ministry of Health for sanction to extensions. Some of these have been granted and others refused. The refusals have caused much heart-burning in the districts concerned, for the central department did not appear to have any settled policy. In these circumstances the action of the Government will be generally approved in appointing a Royal Commission "To inquire as to the existing law and procedure relating to the extensions of county boroughs and the creation of new county boroughs in England and Wales, and the effect of such extensions or creations on the administration of the councils of counties and of non-county boroughs, urban districts, and rural districts; to investigate the relations between those several local authorities; and generally to make recommendations as to their constitution, areas, and functions." The reference, as will be seen, is wide, and we are glad to find that it includes the investigation of the relations between local authorities and the making of recommendations as to their constitution, areas, and functions. The additional duties which the Legislature in recent years has cast upon local authorities, most of them of necessity requiring the appointment of special officials to carry them out, has resulted in a considerable amount of overlapping and consequent extravagance in administration. All this may be rectified by thorough inquiry and well considered recommendations. Many instances of anomalies might be given. The rural district of Chesterfield, with 76,000 inhabitants, has a larger population than there is in each of eleven English and Welsh counties; the population of Wrexham rural district (63,000) is larger than that in each of six Welsh and three English counties; and the population of the Rhondda urban district (162,000) is only exceeded in two of the Welsh counties, and it is higher than that in eight English counties. No exception can be taken to the constitution of the Commission, which includes representatives of counties, county boroughs, urban and rural districts. The Earl of Onslow will be chairman, and Mr. Michael Heseltine, of the Ministry of Health, Whitehall, S.W.1, secretary.

## QUAKER RELIEF IN STRICKEN EUROPE.

IN these troublous times our view of Europe is apt to be limited by our own immediate wants and difficulties. We remember the Russian famine, but few of us perhaps realize the present state of affairs in the devastated lands of Austria and Poland, as well as Russia. In a film, "New worlds for old," the work of the Relief Committee of the Society of Friends in meeting the crying need of these populations is vividly displayed. In Vienna there was overcrowding in the poorer parts. The Society supplied materials for houses, and the actual building was done mainly free of charge by the people themselves. To remedy the food shortage seeds were given, and to meet the shortage of milk the Society sold cows to farmers, to be paid for in milk. The milk so received was distributed to children and tuberculous patients. The acute distress among the middle classes was not forgotten. Parcels of food were distributed to many whose annual pensions would not at the present time suffice to pay for a week's supply. Many of the women were able to do needlework, which was paid for by the Society in food. The population of the devastated areas in Poland is urgently in need of help. The pictures showed refugees still trekking

back to their homes over the immense snowy plains, sometimes in small sledges, sometimes walking. Often they succeed in reaching their village, only to find that their home has disappeared, and that a young forest of pine trees is growing up on the land which they once cultivated. Their only refuge is often a mud hovel. One such dug-out, 6 ft. by 4 ft., is shown in which a whole family lived with their cow and their pig. Fortunately wood is plentiful, and the Government gives timber for building, while the Society provides tools and transport. The peasant himself does the work, so a house can be built at the cost of £9. Food, clothes, seeds, and implements are all required to start these peasants in life again, but by spinning, weaving, and embroidery they are able to pay for a great part of what is required. Famine conditions still prevail in the Buzuluk district in Russia, for the harvest failed again last year. Medical relief as well as food has been provided, and must be continued till the harvest of 1923 if the district is to be saved. The Society of Friends has kept before itself the ideal that men must be helped to help themselves; the people go back to their natural avocations. In return for their work they receive the necessities of life and the means to restore them to prosperity. Their gratitude is sincere, and the exertions of the Society in the lands where it has worked will not soon be forgotten.

## PASTEUR CELEBRATION.

THE centenary of Pasteur will be celebrated at a social evening of the Royal Society of Medicine on Wednesday, February 28th. The President, Sir William Hale-White, will give an address on Pasteur in relation to medicine, and Professor T. M. Lowry, F.R.S., Director of the Laboratory of Physical Chemistry, Cambridge, will give a short lecture on Pasteur in relation to chemistry. Afterwards Dr. Gustavo Monod will speak on Pasteur as an artist, illustrating his remarks by lantern slides of some of Pasteur's drawings. The French Ambassador does not expect to be in this country at the time, but the French Consul-General will be present. Invitations have been issued to other representative Frenchmen in London, and members of the profession are invited to attend.

DEAN INGE will give an address on a subject relating to religion and medical sociology at the meeting of the Marylebone Division of the British Medical Association which will be held at the house of the Medical Society of London, 11, Chandos Street, on Friday, March 2nd, at 8 p.m. Members of the medical profession who are not members of the Association are invited to attend this meeting.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

## The New Session.

THE King's Speech at the opening of the new session on February 13th, though it did not raise any fresh issues of a striking character, indicated a programme of larger dimensions and greater variety than had been anticipated. To the usual paragraph about the estimates for the public services was appended the observation that the financial burdens of the country were heavy, and that reductions in public expenditure remained essential to the well-being of the State—an intimation, in short, that further cuts are contemplated. Proposals will be made to grant credit facilities to agriculturists, to remove anomalies in local taxation, to deal with unemployment insurance benefit, housing, trade boards, and industrial insurance. Certain of the recommendations of the Committee on the Restrictions of Rents Bill are to be embodied in a bill, and measures will be submitted for simplifying legal procedure, effecting economies, especially in the county courts, and consolidating various branches of the law. From the medical point of view the principal comment in the lobby on this outline of work for the coming session was that directly interests will apparently be indirectly rather than directly concerned in the legislation to be proposed. But the King's Speech is never drawn up to comprehend all that is intended to be done or attempted. Moreover, private members will have greater facilities at certain sittings each week than was the case during the last Parliament.



## England and Wales.

### EAST LANCES (TERRITORIAL) WAR MEMORIAL.

On Saturday, February 10th, an extremely impressive service was held at the Manchester R.A.M.C.(T.) headquarters on the occasion of the unveiling of the memorial to the officers, nurses, and men of the 42nd East Lanes Division who gave their lives in the great war. The memorial takes the form of three canopied tablets with the names of the nine officers, seven nurses, and 177 other ranks placed above a semi-column containing the dedication:

TO THE GLORY OF GOD  
AND IN PROUD AND GRATEFUL MEMORY  
OF THE OFFICERS, NURSES, N.C.O.s AND MEN  
OF THE R.A.M.C.  
WHO SERVED WITH THE EAST LANCES  
DIVISION T.F.  
WHO GAVE THEIR LIVES  
IN THE SERVICE OF THEIR KING AND COUNTRY  
DURING THE GREAT WAR.

It is surrounded by bronze pillars and chains, and is a fitting companion to the memorial to those of the corps who fell in the South African war.

After the inspection of the guard by Lieut.-General Sir John Goodwin, Director-General A.M.S., the hymn "God of our fathers" was sung by the troops and an assembly of about 500 doctors, nurses, V.A.D.s, and Red Cross men who had gathered to do homage to their fallen comrades. Colonel W. Coates, in asking the Director-General to unveil the memorial, referred to the units which had originated in the East Lancashire Division: the 18th Field Ambulance, the first Territorial unit on foreign service in France, September 6th, 1914; the 65th Division, trained here after the departure of the 42nd; the 33rd General Hospital in Mesopotamia and the 57th General Hospital in France; the 64th Casualty Clearing Station; and at home the 2nd Western General Hospital, starting with its 520 beds and developing, with auxiliaries, to over 20,000 beds, which dealt with over 850,000 casualties. The difference in service between the combatant forces and the medical service was emphasized. Personal reference was made to the deaths of some of the officers and to the seventy-five who were drowned in the Aegean Sea.

The Director-General, after unveiling the memorial, mentioned his personal acquaintance with the 18th Field Ambulance and the 66th Division in France, and later referred to the hospital work at home, giving special praise to the Red Cross service, particularly to the transport branch. He concluded his short and direct address by emphasizing that these "without any personal advantage or gain in a spirit of loyalty and devotion served their fellows. That spirit still survives with us, and so long as it does England can never go down." After Canon Scott, the Subdean of the Cathedral, had dedicated the memorial, the buglers sounded the Last Post.

In asking Sir Frank F. Adam, the chairman of the East Lanes Territorial Association, to accept the custody of the memorial, Colonel Westmacott referred to the question of the utility of such mementoes, and said this was placed in position by the comrades of the fallen, not only to recall their memory, but also for those who came after but knew them not as an incentive to them, and as a standard of what must be required of them. After Sir Frank Adam had accepted the custody, and Lieut.-Colonel Callam had offered thanks to the Director-General and others, the hymn "O God, our help in ages past" was sung, and the réveillé terminated a very touching ceremony.

### WELSH NATIONAL SCHOOL OF MEDICINE.

The Royal Commission on University Education in Wales, of which Lord Haldane was chairman, recommended in its report (1918) that the Welsh National Medical School should be a constituent college of the Welsh University rather than an integral part of the University College of South Wales and Monmouthshire at Cardiff. The recommendation of the Royal Commission was not accepted; the medical school has been established as a part of the University College, Cardiff and that college some time ago presented a petition to the Privy Council for a supplemental charter embodying this arrangement. The Court of Governors of the University College had before it on February 8th a letter from the Privy Council containing the following passages:

"Their lordships, after careful consideration of the whole problem, have come to the conclusion that, in order to avoid most of the difficulties inherent in the scheme as it now stands, it will be best to constitute the National School of Medicine a separate constituent college of the University of Wales to be governed, under the University, by a council and senate of its own, as recommended in the report of the Royal Commission on University Education in Wales (see paragraph 216 of report).

"Their lordships are of opinion that not only does the change of plan proposed appear to be the best expedient on the ground that the interests of the school and the college alike would be better served if the school were administered as a separate institution, but that the views of many of the bodies who at the date of the Royal Commission's report dissented from this portion of its recommendations have undergone a substantial modification."

Dr. T. H. Morris (Cardiff) pointed out that there was a good deal to be said on both sides. While it was true that the reports of the Board of Medicine had to be approved by the college council, that body could not alter a report but only suggest amendments. If the two bodies did not agree on any point it had to be referred to the University, which alone had a veto on the Board of Medicine. This, in his opinion, was practically the same thing as making the medical school a constituent college of the University. He moved that the letter from the Privy Council should be referred to the council of the University College for consideration and report. After considerable discussion Dr. Morris's motion was carried unanimously. The council at its meeting of February 9th appointed a special committee to report upon the whole subject.

### THE LONDON RADIUM INSTITUTE.

The London Radium Institute (Riding House Street, Portland Place, W.1) has possessed a small in-patient department since October last. This arrangement permits the combination of surgical procedures with radium therapy, and thus enables radium to be applied in the most effective manner possible in such situations as the treatment of cancer of the bladder. It also makes it possible to administer larger doses in a shorter time. This so-called "intensive radium therapy" has given most encouraging results in lymphadenoma, leucocythaemia, lympho-sarcoma, and mediastinal tumours; but it is recognized that much careful observation and long clinical experience will be required to determine the limits of safety of large doses. Though the phenomena attendant upon the immediate systemic disturbance which follows a heavy dose of radium are well known, the possibility of later consequences, such as interference with the internal secretions, blood changes, and atrophy of the mucous glands, must be constantly kept in mind. A diathermy apparatus of the latest pattern has been installed, as that method is considered to be of value as a preliminary to radium treatment when dealing with extensive fungating growths of the palate, vulva, bladder, and other parts. The exuberant masses are thus completely removed, and subsequent treatment of the base and edges of the growth, with numerous small platinum screened tubes, leads to the degeneration of any isolated scattered foci in the normal tissues and excites a protective fibrosis.

The total number of new cases seen during the year was 804. It appears from the table given that the total number of patients suffering from carcinoma who applied was 305; of these 35 were examined but not treated and 4 abandoned treatment; from 60 no recent report has been received and 20 received prophylactic irradiation only; 16 were apparently cured, including 3 cases of cancer of the breast and 2 of the uterus; 110 cases of cancer were improved and 50 were not improved. The cases of cancer of the breast treated numbered 63; of these 12 received prophylactic irradiations only. Of the remainder 3 were apparently cured, 28 improved, and 10 not improved; 2 died, and from 8 no recent report has been received. The results in rodent ulcer were remarkably good; of 138 cases in which the result could be traced 102 were apparently cured, 34 were improved, and only 2 not improved. Of the miscellaneous non-malignant cases treated it may be noted that of 20 cases of arthritis deformans 11 were improved, and of 7 cases of spring catarrh 1 was cured and 6 improved. With regard to the terms used the report contains the following statement:

"The column 'cured' refers only to cases of a non-malignant nature, as it would be unjustifiable to claim as 'cured' cases of malignant disease which have been treated for the first time during the past year.

"The term 'apparent cure,' used in relation to cases of malignant disease, must be interpreted as representing a condition in which all trace of the original lesion or lesions has disappeared, in which there is no sign of any recurrence, and in which the patient is, so



far as can be determined by a thorough and careful examination, free from any indication or symptom of the disease.

"Cases have been classed under the heading 'improved' only when the result of treatment has been to produce a definite and marked degree of benefit, either in the direction of retardation of the progress of the disease, diminution in the size of a growth, healing of ulceration and arrest of hæmorrhage and discharge, or of relief to such subjective symptoms as itching, tenderness, pain, dyspnoea and dysphagia."

Altogether 8,620 treatments were administered during the year, of which 4,165 were given free of charge to necessitous patients.

The demand for the loan of radium emanation apparatus has increased so much as to be an important part of the work of the Institute: the number of such applicators prepared during the year and distributed to hospitals and medical practitioners was 887. Advice is freely given to any medical practitioner on the treatment of disease with emanation, and if precise information is furnished as to the nature and extent of the disease or growth suitable apparatus with full instructions is usually sent within two or three days. It is found that in the case of patients of very advanced age, enfeebled constitution, crippled condition, or suffering from disabilities of any kind which prevent them from journeying to London, effective radium treatment can often be successfully given at the patient's home by his own medical attendant, by the use of emanation apparatus of appropriate strength and suitably screened.

Of the patients suffering from malignant disease who attended the Institute the condition in the majority was inoperable, so that the prospects of obtaining even an apparent cure were slight. No case, however, is refused if there is believed to be any chance of improving the patient's condition, lessening pain, and prolonging life. In a few such cases the results have exceeded the most sanguine anticipations.

The body of the report is devoted to a consideration of radium therapy in diseases of the alimentary canal and its accessory glands. It is, in fact, a monograph on this subject and is likely to be as much appreciated by the profession as was the similar essay on radium therapy in gynaecology published in the report for 1921. Particular interest attaches to what Mr. Pinch has to say about the radium treatment of carcinoma of the tongue, oesophagus, and rectum, and to this matter we refer at some length elsewhere (p. 297).

A brief report on the Research Department is contributed by the Director, Dr. J. C. Mottram. The results of the researches in which he has taken part have already been published in the *Proceedings of the Royal Society* and in the *British Journal of Experimental Pathology*. A report by Mr. W. L. S. Alton, F.I.C., Director of the Chemico-Physical Laboratory, contains an illustrated account of the apparatus used at the Institute for the preparations of emanation applicators by a chemical method, which will be demonstrated to persons interested who will make an appointment with Mr. Alton at the Institute.

## Scotland.

### PROPOSED PRESENTATION TO DR. MATTHEW HAY.

A LARGE and influential committee has been formed for the purpose of presenting Professor Matthew Hay, M.D., LL.D., medical officer of health for the City of Aberdeen, with his portrait or bust in recognition of the devoted and eminent services rendered by him to the City and University of Aberdeen during the last forty years, as well as his powerful influence on the progress of preventive medicine and public health throughout the country. In appealing for subscriptions the committee does so in the confidence that its appeal will meet with a cordial and widespread response from all who are acquainted with Dr. Hay's high character, his acute and impartial mind, his scientific attainments and powers of organization, his fine influence as a teacher, his great place in the medical councils of the nation, and his unceasing and most generous labours in the public interest. Subscriptions (limited to two guineas) should be sent to Major H. J. Butchart, D.S.O., at Marischal College, University of Aberdeen, who is honorary secretary to the committee.

### THE HEALTH DEVELOPMENT OF EDINBURGH.

A series of lectures on the literary and social history of Edinburgh has been arranged by the Edinburgh education authority, and the third of these, entitled "The development

of Edinburgh from the health point of view," was delivered by Sir Leslie Mackenzie on February 8th. For generations, said the lecturer, Edinburgh had been badly handled, and the nineteenth century found the administrative organization hopelessly inadequate for the new problems forced upon them. It was formerly considered good civic practice that the water supply of a great and rapidly growing city should be in the hands of a private company, whose primary concern was to make dividends. In the early days the various sections of the city had to rely for water upon deep wells, but later the idea of a gravitation supply was developed. As early as 1621 the Scottish Parliament empowered the city to bring in such a supply, but for some reason it was not brought in until fifty years later. By 1840 the water supply was plentiful, but it was in the hands of the water company, and for many years the struggle went on to transfer from the company to the city the powers and duties of providing water. He looked upon the appointment in 1862 of Sir Henry Littlejohn to the office of medical officer of health as marking a new departure in civic thought. Great problems were still with them, particularly tuberculosis and venereal disease, but the city was dealing with them were active, and the situation was brought down. It was only within the last thirty-three years that the tuberculosis problem had come to be seriously tackled, and in this one Edinburgh citizen, Sir Robert Philip, had set the pace almost for the whole world. Another great health expansion had been the medical inspection and treatment of school children, which could be dated from the year 1903, when the Scottish Royal Commission on Physical Training issued its report, and recommended the medical inspection of school children. The scheme of maternity and child welfare was another great development which had sprung, under the stimulus of the war, from the voluntary system of health visiting.

### HOUSING IN SCOTLAND.

At a meeting of the Eastern District Committee of Stirling County Council on February 8th an application was made for sanction to erect twenty-four houses of three apartments, and eight houses of two apartments, with scullery, bathroom, etc. Dr. Adam, county medical officer of health, pointed out that under the Housing Act houses of three apartments were the minimum unless there were special circumstances to warrant two apartments. Mr. T. D. Wallace said that the conditions laid down by the Scottish Board of Health were hindering the building of houses. The chairman, Captain Harvey, remarked that the Board of Health was now willing to consider a certain proportion of two-roomed houses. Dr. Adam said that approximately 50 per cent. of the population of Scotland were living in two-roomed or smaller houses, a condition of affairs which should not persist. The matter was remitted to the Public Health Committee.

## Ireland.

LOCAL GOVERNMENT BILL (IRISH FREE STATE).  
THE Local Government (Temporary Provisions) Bill was read a second time at a recent meeting of Dail Eireann. In 1919 the Local Government Board, which then administered under the British Government, withdrew the usual health and other grants to the local authorities unless they undertook to carry on local administration as hitherto. The result was that nearly all the local boards and councils severed their connexion with the Local Government Board, and there was formed, to meet the new situation, a Local Government Department under Dail Eireann which discharged, in the twenty-six counties, practically all the functions of the old board, and carried out important reforms. In the Free State, with the exception of a few counties, all the boards of guardians — they averaged six for each county — were abolished; their functions under the Medical Charities and other Acts relating to health are now administered through a health board or committee, one for each county. There is no fixed number of members for a county health board, but it generally consists of about thirty. They are appointed by the county council, and most of them are members of that body. In a few counties the medical practitioners were asked to nominate representatives for the county health board, and at present there are two medical practitioners on the health boards for Clare and Wexford. That medical representatives should be appointed on the county health boards was a recommendation



made in the report of the Irish Public Health Council. The Irish Public Health Council, in making this recommendation, suggested that medical officials—for example, dispensary workhouse doctors, etc.—should be eligible for membership; the object was to bring the county health boards into closer touch with their medical officials in order that there may be better co-operation in administration.

It seems evident that Section 13 of the new bill is specially drafted to prevent county health boards having as members part-time medical officers who are employed by these boards or any other local authorities. This section can only be regarded as a very retrograde step, as it will deprive the county health authorities of expert medical advice in administrative matters which they have at all times badly needed. Nor will it help that co-operative spirit between health authorities and their medical officers which is so essential to success in Irish medical administration. Section 10 of the bill provides for the superannuation of officials whose offices are abolished as the result of the recent amalgamation of workhouses and their hospitals. This section has for its main object the radical alteration of Section 8 of the Local Government Act, 1919, which was to protect existing officers of local authorities from arbitrary removal from office, and to give to every such officer who had become incapable of discharging his duties owing to permanent infirmity, or who attained 60 years of age and had served in his office for twenty years, the right to retire on a pension. Under the eighth section of the Local Government Act, 1919, the local authority, irrespective of the number of years served by an officer, may vote him a maximal pension of two-thirds of the salary, fees, and emoluments which he was in receipt of at the time of removal or resignation, or a minimal pension of not less than an allowance, in accordance with his years of service, calculated as provided by the scale under the Superannuation Acts, 1834 to 1892. If the new bill becomes law in its present form it will only secure an official the minimal pension as calculated previous to the passing of the Local Government Act, 1919.

The Minister for Local Government, in moving the second reading, stated that its chief purpose was to regularize certain things that had been done without legal sanction during the Anglo-Irish war. If the bill became an Act it would cease to have force after March 31st, 1924. In the meantime he hoped the Government would bring forward a very comprehensive reform of the entire Poor Law system, including the Medical Charities Acts.

## Correspondence.

### STATE HOSPITALS.

SIR,—My attention has to-day been called to a letter signed by the senior medical officer of the Walton Infirmary and published in the BRITISH MEDICAL JOURNAL of February 3rd. The writer quotes some observations of mine on State hospitals abroad, and treats them as applying to Poor Law infirmaries in this country. I have never spoken of the officers and staffs of these institutions except with the greatest regard and admiration for their services to the sick and ailing, and Dr. MacWilliam is entirely mistaken in supposing that my criticism applied to them.—I am, etc.,

Richmond, Surrey, Feb. 8th.

CARE.

### HOSPITAL POLICY.

SIR,—I am glad to see that the discussion on this is being continued, for I am certain that it is one of the most important, and yet most difficult, matters that the profession has to consider. The hospital-using public recognize the great debt that they owe to the honorary staffs, and would like to make them some return; but I do not think the time is ripe for that return to be direct payment from contributory funds, especially as nearly all those funds are being collected with the understanding that the payments are solely for maintenance. The differences of opinion in the profession are very marked, some wishing to retain the present purely honorary system, some to receive a peppercorn acknowledgment (these having an eye on future developments), and some frankly wishing to receive definite payment.

There is one method that might reconcile these divergent opinions, and which would, I think, meet with the contributors' approval. Could not a definite proportion of all money paid by patients be put to a pension fund? The age

at which this might be drawn should be a fairly early one, say 55 or 60, so as to give the younger men a chance of getting on the staff without such a very long wait. Although pensioned, the retiring members could be made use of for consultant and special work. I have not yet sounded contributory members as to this, but I am pretty certain that it would meet with their approval. Hospitals, too, will be able to afford this when contributory schemes become, as I think they will, universal.—I am, etc.,

L. S. LUCKHAM,  
President, Salisbury Infirmary League.

February 12th.

SIR,—Dr. Flemming (February 10th, p. 261) allows that the policy of the Council has not even now been adequately discussed, and is not yet, in 1923, ripe for presentation to the public. I agree most heartily, and therefore cannot excuse those who in 1921, by methods which I detailed with absolute accuracy in my letter of December 16th, 1922, foisted this policy upon us at Newcastle. What plea can now be urged for men who laid upon us then a duty which only one of them has even yet dared to undertake himself, and which Dr. Flemming still to-day declines? The suggestion to tax small individual payments is not only repulsive to a large body of the profession, but never had the remotest chance of general acceptance by the laity. Therefore a compromise is necessary, and that which we suggest is reasonable, can be defended before lay boards, and was accepted by a majority at Glasgow. What more can be asked for? Whereas Dr. Flemming frankly allows that he would not attempt to approach any hospital board with his proposal, I have not only done so, but secured the approval of our board to mine, conditional upon its acceptance by the British Medical Association. When supporters of the Council can claim the like I shall begin to take them seriously, but not before.

In our hospital, which typifies many provincial county hospitals in rural areas, many contributors who can pay are able to afford but 10s. weekly or less—in fact, not enough for the "bare necessities of life." I deny absolutely the "important premiss" which he quotes. I do not for one moment allow that these small individual contributors can be considered to pay for our services by such means. I would go farther and state emphatically that to encourage in them any such notion would be a blunder in policy of the first magnitude, calculated to react most injuriously upon the status of our profession now, and yet more disastrously in the future, should hospitals be taken over by the Government or municipal bodies. As regards contributory schemes, there is a vast difference between a great insurance scheme, involving in the mass a large sum of money, carrying definite obligations undertaken by the hospital, and securing admission in priority for its beneficiaries, and a payment for services actually rendered, by a person admitted solely on his merits. Therefore my classification is quite legitimate. I would suggest that where the payment is made by the patient or his relatives, only the excess over that required for maintenance be taxed, but in all other cases the total sum actually paid for the patient, or, in the case of mass contributions, a sum agreed between the staff and the board, be the basis for assessment.

I do not think it possible to make cast-iron regulations to govern all hospitals alike, and one of the great advantages of our scheme over that of the Council is that it allows latitude of interpretation as to what constitutes maintenance, and can therefore be varied to suit local conditions. In our hospital we agreed to accept 30s. as cost of maintenance. I would ask Dr. Flemming to give this proposal more careful consideration than it has yet received, always bearing in mind that the ultimate decision lies, not with the profession as he implies, but with lay boards of hospitals, and that it is quite impossible to coerce the latter, seeing that they are unpaid, and can resign at any moment without loss to themselves if we annoy them. Has Dr. Flemming considered in detail exactly what we should do in such event? It is an interesting problem which I submit to the earnest attention of the Council and Hospitals Committee, before they embark upon a rash and ill considered adventure, which can have only one end, and that a pitiful one. I would again point out that neither Dr. Flemming nor anyone else has even hinted how, when the staff and lay board are both paid, hospitals shall be financed, yet retain one shred of that voluntary control for which the Council and Hospitals Committee profess such reverence; yet we are assured that payment of lay boards



will necessarily result from the acceptance of their policy. It follows that we must choose between rejection of this policy and rejection of the voluntary system. The answer will be given at Portsmouth. Finally, as regards "token payments," seeing that no legal question of property rights can conceivably arise, I am at a loss to understand on what grounds a proposal so fantastic can possibly be defended. Does anyone imagine we are going to approach our lay boards with a proposition so absurd?—I am, etc.,

Chichester, Feb. 10th.

G. C. GARRATT.

### THE DANGEROUS DRUGS REGULATIONS.

SIR,—In the letter from Colonel Smith in your last issue I am doubtful whether by "British Medical Councils" he means the General Medical Council or the Council of the British Medical Association. If it be the former the matter must rest until the May session of that body. If, however, he should mean the Council of the British Medical Association he will find, by reference to the reports of the Representative Meeting, of the Council acting through its appropriate (Medico-Political) Committee, and to Current Notes *passim*, as published in the BRITISH MEDICAL JOURNAL, that on the introduction of the first draft of the Dangerous Drugs Regulations the Council took very strong objection to them *in toto*, and reinforced that objection by letter and interview. The result was that certain modifications were introduced, but they were not improved sufficiently to satisfy the Association. Working in conjunction with the pharmacists, the Association requested the Home Office to appoint a Select Committee which should be competent to bring these regulations into a form which, while protecting the public, should safeguard the interest both of the medical and pharmaceutical professions. On this being refused letters were sent round to all Divisions and Branches of the British Medical Association, asking them to approach the members of Parliament for their districts and to request them to attend a meeting at the House of Commons, when the case for alteration and modification of the regulations would be put before them. As a result of this action a meeting of over 200 members of Parliament was held in one of the committee rooms of the House and the case for doctors and pharmacists most ably put before them by Dr. Cox, the Medical Secretary of the Association, and by Sir William Glyn-Jones. While this meeting was in progress a message was brought in from the Home Secretary announcing that he had decided to appoint a Select Committee as requested. As a result of the deliberations of this body the regulations were reintroduced in a very much more satisfactory form, to which no objection was taken by the Council of the Association.

When the new regulation which prohibits the doctor from prescribing certain dangerous drugs for his own use was contemplated, the Medical Secretary and I met Sir John Anderson and Sir Malcolm Delevigne at the Home Office, and vainly endeavoured to convince them that the regulation as proposed was useless and impossible to carry into effect.

At the present time the matter is receiving active attention at the hands of the Medico-Political Committee, which is collecting evidence as to the working of the regulations throughout the country. The Insurance Acts Committee has also protested against regional medical officers of the Ministry of Health being employed as inspectors under the Dangerous Drugs Regulations, and there at present the matter rests. Perhaps, on the whole, it may be better to have a medical practitioner as an inspector rather than a policeman.—I am, etc.,

E. B. TURNER,

Chairman of the Medico-Political Committee,  
British Medical Association.

February 12th.

### THE SURGERY OF THE PROSTATE.

SIR,—I have no desire to disturb the charm which "the directness and economy of means employed" in the "classical" operation of Freyer appears to exercise on Mr. Gerald Ralphs; but I feel that I ought to comment on some of his criticisms of my recent article on prostatectomy, published in your columns (February 10th, p. 259). I am surprised to learn that "many urologists" in this country use the two-stage operation as a routine procedure. I had not heard of their "increasing partiality."

To be forced into doing a routine two-stage operation because the majority of cases of enlarged prostate are "potentially uraemic" is absurd. The term is so vague as to have

no weight in deciding whether a one-stage or a two-stage operation should be performed.

Mr. Ralphs quotes the writings of Sir Peter Freyer to prove that there is never any difficulty with the abdominal wall and never any bleeding that cannot easily be controlled with hot water, or danger of sepsis from the rectal finger. I have the advantage over Mr. Ralphs of having worked alongside Sir Peter Freyer and being closely in touch with his cases during the whole period of his activity in prostatic surgery. What I have stated in regard to these disadvantages of the Freyer technique is the result of direct observation of Freyer's cases, as well as my own and those of other surgeons. My articles on the complications of this operation were published during Freyer's lifetime, and they elicited no response from one not prone to overlook such matters.

The operation that I have described is, Mr. Ralphs says, "by no means new." He saw a paper by Dr. E. S. Judd in 1916 describing it. I confess I had not seen this article, so I have looked up the Mayo Clinic reports for 1916 and subsequent years. In 1916 there are illustrations, but no description, of an open operation where the prostate is being partly dissected and partly enucleated by the finger in the Trendelenburg position. In 1917 there are similar illustrations and a short note about the control of bleeding.

Before that time I had been trying enucleation and dissection of the prostate in the Trendelenburg position with my bladder retractors in place, and had given it up in all but small fibrous or malignant prostates as being cumbersome and unsatisfactory. I then resorted, at first in a few cases and gradually as a routine method, to the operation I have described many times. In 1920, after my description of the operation was published, I saw Dr. Judd at Rochester operating in the method he had illustrated. He was using my bladder retractors very slightly modified, and told me one of his colleagues had brought them from London. The operation illustrated in Dr. Judd's article and the operation which I saw him perform is not the operation that I described.

Mr. Ralphs finds the open method difficult, and states that it is not an operation for the general surgeon. The question as to whether the operation was one for the general surgeon had not occurred to me. My object has been to get the best result for the patient, not to suit the operation to the general surgeon. But is Mr. Ralphs really qualified to speak for the general surgeon? I personally know many general surgeons who practise the operation that I have described and are satisfied with the technique.

Lastly, let me say that I hold no brief for an open operation if better results can be obtained by other methods. During the last three years I have published a series of articles dealing with the complications of suprapubic prostatectomy as I have seen them. It was to meet these complications that the open operation and other details of technique were developed, and not to push any special operation.—I am, etc.,

JOHN THOMSON-WALKER.

London, W., Feb. 12th.

### TREATMENT OF TUBERCULOSIS OF THE CERVICAL GLANDS.

SIR,—Dr. Flecker's letter in your issue of February 3rd (p. 211) on the comparative merits of treatment by operation and by irradiation raises a question that many surgeons and medical men are called upon to answer in daily practice. That the operative treatment of tuberculous adenitis still possesses a somewhat precarious reputation cannot be doubted or, indeed, wondered at. Yet the discussion on this subject, so ably introduced by Mr. John Fraser at the last meeting of the British Medical Association, showed that British surgeons of much experience in this branch are wholeheartedly in favour of operative treatment subject to certain limitations. My own experience in several hundreds of such cases leads me to submit to Dr. Flecker and to others who question the position of surgery in this disease that the localized type of disease in the upper deep cervical group in children, which is breaking down, or which resists non-operative treatment over a reasonable length of time, can be cured with certainty by a clean dissection operation, and that there is no other method available which offers the same prospect of a permanent and speedy cure in this type of case. If the surgeon is not prepared to perform such an operation then it is far better to abstain from lesser operative measures and to employ irradiation or tuberculin injections to deal with subcutaneous abscesses by repeated aspiration and injection of Calot's fluid, and not to overlook the value



of bodily rest during the active stage. The evil results of operation are due to its inadequate performance (particularly the perfunctory scraping operation without visual exposure of the seat of the disease), or to its performance in unsuitable cases; amongst the latter may be placed children under 18 months to 2 years of age, cases of widespread disease on both sides of the neck, and lastly the type resembling lymphadenoma.—I am, etc.,

Manchester, Feb. 8th.

H. H. RAYNER.

#### PENAL DISCIPLINE.

SIR,—Dr. Mary Gordon is still a little misleading to the general reader. Only experts would know that when she says that girls are "put in irons" she means that they are restrained in a canvas body-belt with handcuffs of her own design—a design for which she claims that the patient cannot injure herself or anyone else—and that such confinement is for their own protection only and subject to the authority of the medical officer, checked by the visiting committee.

The girl mentioned by Dr. Mary Gordon was, as she (I think) means to say, of superior education and surroundings, and she had had exceptionally favourable opportunities of living a normal and successful life, for she had been on the staff of a leading London bank, of the Pensions Ministry, and of the Admiralty. But everywhere she had committed thefts. She was, in fact, so unbalanced that she was unfit to live in the open, and when she was transferred from Aylesbury to Rampton she destroyed herself in a fit of jealousy because another girl had been given a position which she desired. May it not reasonably be suggested that but for the use of Dr. Mary Gordon's improved method of restraint at Aylesbury the girl would have killed or seriously injured herself at a much earlier date?

I am not in the slightest degree responsible for the conduct of Borstal institutions, but the care of inmates on their release has brought me in contact with the officers of these institutions. They are not permitted to speak for themselves in the press, and should not suffer hasty and unmerited criticism.—I am, etc.,

WENYSS GRANT-WILSON.

The Borstal Association, London, W.C., Feb. 12th.

### Obituary.

#### ALFRED EDWIN HARRIS, D.R.C.P. AND S. EDIN.,

Formerly Medical Officer of Health, Metropolitan Borough of Islington.

It is with regret that we record the death on January 24th of Dr. Alfred Edwin Harris, who in 1921 retired from the position of medical officer of health for the metropolitan borough of Islington. He was born in 1850 and received his medical education in Cork and Edinburgh; he obtained the diplomas of L.R.C.P. and S. Edin. in 1876. After engaging in general practice in Gosport for about six years he was elected the first whole-time medical officer of health for the borough of Sunderland and for the Sunderland port sanitary authority. He was also public analyst for Sunderland. In 1892 he was appointed medical officer of health to the Islington Vestry and subsequently to the metropolitan borough of Islington. Even while in practice he took a keen interest in public health, and when the Annual Meeting of the British Medical Association was held in Ryde in 1880 he contributed a paper on "The compulsory notification of infectious diseases." The problem of infant mortality engaged his attention at an early date, and suggestions which he made in 1879 for the employment of what in effect were health visitors actually materialized in later years, although in his own borough of Islington it was some time before he could persuade the borough council to give him a sufficient staff of these officers. He wrote very forcibly, and had the knack of pointing his argument by apt and well considered illustrations. Speaking at the meeting of the Sanitary Institute at Newcastle-upon-Tyne in 1882, on infant mortality, he said:

"I cannot believe that an Almighty hand ever sent these little ones into this world, that having lived in it an hour, a week, a month, a year, they should gain an eternity. Surely He never intended that these new spokes in the wheel of life should be injured or fall out through being rolled over rough and broken ground that it was never meant they should travel over."

With the coming into being of the metropolitan borough councils there was an awakening of the public health conscience in London, and Harris continued with increased vigour the efforts he had made under the vestry to improve the

conditions of life of the inhabitants. How well he succeeded is recorded in his annual reports, the bare statements which they contained of decreased sickness, fewer deaths, and lengthening of life bearing testimony to the success of his efforts. He was essentially a pioneer and was never ashamed of appearing to be ahead of his time. He was among the first to advocate the notification of phthisis and of ophthalmia neonatorum, to press for the appointment of women sanitary inspectors, and to call for a clean milk supply. On his retirement in 1921 he had the satisfaction of leaving a public health department every detail of which had been built up by his untiring efforts and indomitable pluck. The inhabitants of Islington through all time will have cause to be grateful to Alfred Edwin Harris.

#### PROFESSOR RÖNTGEN.

THE scientific world, and not least its medical members, will learn with profound regret of the death of Professor Röntgen at Munich on February 10th. Down to four years ago he was director of the Physical Institute of that city, a post to which he was called from Würzburg some years after his discovery of  $x$  rays.

Professor Conrad Röntgen was born in Rhenish Prussia in 1845. He received his early education in Holland and in Switzerland, and later studied at the University of Zurich, where he received the degree of D.Sc. in 1869. After holding the usual minor appointments at several German universities, he went to Würzburg as professor of physics, and it was there that he made his discovery of the mysterious rays, designated by him " $x$  rays"; to this day the name is used for the rays otherwise known all over the world as Röntgen rays.

The discovery was to some extent accidental, and Röntgen himself was the first to acknowledge the fact, though it must be stated that he was at the time engaged in a painstaking investigation into the action of the Crookes's tube. If proof were needed of the thorough scientific manner in which Röntgen probed into the secrets of nature, it is afforded in his subsequent action; he did not immediately publish his discovery, but from November 8th, 1895, to early in January, 1896, he devoted himself to a number of experiments ascertaining and recording physical data which have stood the test of time and are clear evidence of his great ability as a research worker. He communicated his results to the Physical Society of Würzburg in January, 1896, and the value of his discovery cannot even now, after the lapse of over twenty-five years, be estimated fully, for in spite of immense developments along special lines we are still only at the beginning of other developments which may prove to be of even greater importance. In physics theories previously current have been revolutionized; great progress has been made in the study of the structure of the atom; Laue has demonstrated the diffraction of  $x$  rays by crystals; Sir William Bragg has pointed out the similarity between  $x$  rays and light waves, and Bragg the younger has shown how the crystal reflection of  $x$  rays can be utilized to separate out the different wave-lengths. It was with the aid of the  $x$ -ray spectra that Moseley did his great work on atoms, and formulated the table of elements based on atomic numbers—work which will ever be associated with his name.

The value of  $x$  rays in medicine is hardly less great. From the very outset it was realized that a new and most powerful agent had been discovered. Röntgen was the first to observe that a fluorescent screen lying near a Crookes's tube which was covered with black paper to exclude the light from the tube when it was in action lighted up with a faint green fluorescence, and that the shadow of an object lying between the tube and the screen was plainly seen on the screen; he then used his hand as the opaque object and saw the outline of the bones. Here then was heralded, by the discoverer of the  $x$  rays himself, the birth of fluoroscopy. But Röntgen could not then have had any idea of the immense boon his discovery was to be to countless thousands of sufferers, and the immediate value of the rays to the medical profession. The developments in radiology have been very great, and elaborate methods have been evolved for the examination of practically every region of the human body. In the early days a radiogram of the hand was produced with an exposure of about twenty minutes; by the very powerful apparatus now used a much better picture can be obtained in about 1/100 of a second; that is a striking example of the advance made in one direction. In tube construction very great improvements have followed upon







## Medical News.

A JOINT meeting of the Röntgen Society and the Physical Society will be held on February 23rd, when there will be a discussion on the measurement of  $x$  rays.

At a meeting of the Medical Officers of Schools Association to be held at 11, Chandos Street, Cavendish Square, W., on Friday, February 23rd, at 5 p.m., Dr. J. G. Forbes will read a paper on "Diphtheria carriers in children of school age."

COURSES of lectures on "The diseases of the periodontal tissues due to infection in their relation to toxæmia" will be delivered in London, Edinburgh, and Manchester under the auspices of the Dental Board of the United Kingdom. Each course will consist of four lectures, and is intended primarily for registered dentists and medical practitioners. Dental students and candidates for the prescribed examination of the Dental Board are invited to attend; tickets of admission are not required. The course in London will be given at the Royal Society of Medicine (1, Wimpole Street, W.) on March 1st, 8th, 15th, and 22nd, at 5.30 p.m. The course in Edinburgh will be delivered in Professor Thomson's lecture room at the University on March 2nd, 9th, 16th, and April 7th, at 5.30 p.m. The course in Manchester will be given in the Physiology Lecture Theatre, Victoria University, on March 1st, 8th, 15th, and April 6th, at 5.30 p.m. The lecturers are Mr. J. Howard Mummery, Mr. J. G. Turner, Sir William Wilcox, and Professor E. E. Glynn, who will deal respectively with patho-histology, local clinical symptoms, systemic effects, and bacteriology.

It is proposed to add to the accommodation provided at St. Mark's Hospital for cancer, fistula, and other diseases of the rectum by erecting on vacant land adjoining the present hospital an additional building, to contain twenty-one beds, a new out-patient department, and new pathological and  $x$ -ray departments. The estimated cost is about £10,000.

A BOOK on orthopaedic surgery by Sir Robert Jones, lecturer on orthopaedic surgery in the University of Liverpool, and Dr. Robert W. Lovett, professor of orthopaedic surgery in Harvard University, is in the press. It is a large volume, will contain 729 engravings, and will be published by William Wood and Company of New York.

A DISCUSSION on partial sterilization of soil will be opened by Sir John Russell, F.R.S., and Mr. H. G. Thornton, both of the Rothamsted Experiment Station, at a meeting of the Association of Economic Biologists, to be held at 2.30 p.m. next Friday at the Imperial College of Science.

SIR CHARLES BALLANCE will deliver a short appreciation of the life and character of the late Hunter Tod, F.R.C.S. (sometime President of the Section), to the members of the Otological Section of the Royal Society of Medicine, at 1, Wimpole Street, W., to-day (Friday, February 16th), at 5 p.m. Old friends and colleagues are invited.

It is announced that the Council of St. Bartholomew's Hospital Medical College has acquired, for the purpose of extension, a block of premises in Giltspur Street, facing the main hospital buildings, and containing 17,000 sq. ft. of floor space, for new laboratories, lecture rooms, etc. We understand that these premises have been acquired from John Bell and Croyden, Ltd. (incorporating Arnold and Sons).

THE seventh annual report of the National Council for Combating Venereal Diseases, covering the period from June, 1921, to June, 1922, which has just been issued, contains a general account of the Council's activities, centrally and through the branches, which now number nearly a hundred in Great Britain. The Council's executive committee, being of opinion that information from countries, especially Canada, where legislation requires continuous treatment, would be of value, asked the Ministry of Health to authorize a commission from this country to inquire into the conditions in Canada with a view to ascertaining whether some of the steps adopted there with apparent success could not be taken in this country also; owing to existing financial circumstances the suggestion was not accepted. Inquiries were then addressed directly to the provincial health departments in Canada, asking for information of the legislation. Almost every

was to the effect that the system of in force did not prevent people working fairly well as between the sexes. The district conferences of the Council in this country have, it is stated, afforded evidence of a growing public opinion in favour of legislation enforcing continuous treatment of infective persons. Questions on this subject were circulated to the members of the Council and branches and members of other organizations represented on the Council. Most of the replies expressed the view that the health authorities should

have power, to be obtained by legislation, to compel infective persons to remain under treatment, while the confidential treatment of persons willing to continue until they were non-infective should be preserved. Views were divided as to whether public opinion, in the districts of those replying, was ripe for such a change. Alternative proposals included one for the reporting by medical officers of clinics, and by private practitioners, of cases of syphilis and gonorrhoea among infants, children, and adolescents, to the school medical officer, with a request that the school nurse should follow up those failing to attend for treatment. The work of the colonial commissions sent out by the Council is reflected in reports from the allied councils and branches overseas. At several places at which the commissions touched facilities for treatment have since been provided or extended, and at Trinidad a Venereal Diseases Ordinance has been passed which is said to be checking quack remedies. In reply to a request for a Government grant of £15,000 for 1921-22, the Council was informed that this amount must be reduced by £1,000, that a further reduction of 30 per cent. must take place in the Government grant for 1922-23, and that after the end of 1923 the Government hoped that no further financial call would be made. The Council is therefore taking measures to increase its income from voluntary sources.

SIR FREDERICK TREVES'S new book has been published this week by Messrs. Cassell (7s. 6d.). It contains twelve stories or sketches, and the title of the book—*The Elephant Man*—is that of the first, which is a moving account of the sufferings and the psychology of a young man whose terrible deformities made him a show; in certain areas immense hypertrophy of the skin was present, and there were, in addition, bony deformities of the skull and face. The case was fully reported in our columns, with illustrations, on December 11th, 1886 (p. 1183), and on April 19th, 1890 (p. 916).

A COURSE of three public lectures on psychology and psychotherapy will be given in the Department of Psychology, King's College, on February 19th, 26th, and March 5th, at 5.30 p.m., by Dr. William Brown, Wilde Reader of Mental Philosophy in the University of Oxford.

MRS. MARRYAT, sister of the late Sir James Caird, of Dundee, has presented £20,000 to Dundee Royal Infirmary. The directors were about to issue an appeal for that amount to provide additional operating theatres, a central electrical department, etc., but, thanks to this generous gift, the appeal will not now be made.

CASES of small-pox continue to be reported here and there. At Doncaster down to February 9th there had been a total of 93 cases; 8 had occurred within the preceding week. Two or three others were notified at Bentley, not far off, but at Heanor (Derbyshire), where there had been 49 cases, there were signs of abatement. In January the total number of cases in the Basford rural district were 11.

THE Yorkshire Association of the University of Edinburgh met at the Midland Hotel, Bradford, on January 24th. At the general meeting it was decided that the society be known in the future as the West Riding Association. An enjoyable dinner followed, at which sixty members and guests were present. The president, Dr. Rabagliati, proposed the toast of the University. Professor Lorrain Smith, the guest of the evening, in his reply traced recent developments and changes in the University, referring especially to its connexion with Paris and to the recent lamented loss of several of its distinguished teachers. He warmly congratulated the society on its successful resuscitation and took back the best wishes of the graduates to their Alma Mater.

PROFESSOR VINCENT has been elected a member of the Académie des Sciences in place of the late Professor Laveran.

THE late Miss M. L. Jeffcock, of Worksop, Notts, has bequeathed £1,000 to the Sheffield Royal Infirmary; £500 to the Jessop Hospital for Women, Sheffield; and £500 to her medical attendant, Dr. George Kemp.

THE Cambridge University Press announces for early publication *Problems in Dynamic Psychology: A Critique of Psychoanalysis and Suggested Formulations*, by John T. MacCurdy, M.D., Lecturer on Medical Psychology, Cornell University Medical College, New York.

PROFESSOR BORDET of Brussels, director of the Pasteur Institute of Brabant, has been made a Commander of the Legion of Honour.

THE Ministry of Health has issued draft regulations, to come into force on August 1st, with regard to the labelling and composition of condensed milk. Every tin must bear a label specifying whether it is full cream, unsweetened, or as the case may be, and stating the equivalent volume of milk (or skimmed milk) contained in it. Tins of condensed skimmed milk are to be labelled "unsuitable for babies," and instructions as to dilution must be quantitatively accurate. The regulations provide further that condensed milk sold as "full cream unsweetened," or "full cream sweetened," must contain 9 per cent. of milk fat.



THE Council of Epsom College will shortly award "Franco" pensions of £30 a year to medical men. Candidates must not be less than 55 years of age, and their yearly income, independent of any allowance from the College, must not exceed £100. Application should be made to the Secretary, Mr. J. Bernard Lamb, 49, Bedford Square, W.C.1.

A CIRCULAR (366) has been issued by the chief medical officer of the Ministry of Health, stating that it has been decided to discontinue the practice of forwarding special forms of inquiry when cases of encephalitis lethargica are reported. The facts obtained by these forms have recently been summarized in a report (noticed in the JOURNAL of October 7th, 1922, p. 654), and it is considered improbable that the collection of further details by means of these forms will provide much additional information. It is pointed out that encephalitis lethargica remains on the list of diseases which are compulsorily notifiable, and that the Ministry of Health undertakes the examination of cerebro-spinal fluid in cases of suspected cerebro-spinal fever. The work of Dr. E. G. D. Murray for the Medical Research Council on the subject of the production of an immune serum for therapeutic use in cerebro-spinal fever has been retarded, it is stated, by scarcity of material, and pathologists are asked to send cultures of freshly isolated strains of meningococci from the cerebro-spinal fluid of cases of meningitis direct to Dr. Murray, at the Field Laboratories, Milton Road, Cambridge; special outfits for this purpose may be obtained free of cost at the offices of the Medical Research Council, 15, York Buildings, Adelphi, London, W.C.2.

## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

The postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic address is:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Attilio*, Westrand, London; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand, London; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra*, Westrand, London; telephone, 2632, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Biocillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

## QUERIES AND ANSWERS.

DR. MAUDE K. HOSAIN (110, King's Gate, Aberdeen) writes: If any of your readers could spare their quarterly copy of *Brain* after they have finished with it, to send to one of the German universities, will they kindly communicate with me?

### DISTEMPER IN DOGS.

DR. J. S. MANSON (Warrington) writes with reference to the proposal for research into the etiology of distemper (BRITISH MEDICAL JOURNAL, February 10th, p. 249): I have been under the impression for some years that the bacillary origin of distemper was discovered by McGowan of Edinburgh, and that this discovery had been corroborated by American workers. Reference is made to McGowan's researches into canine distemper and other diseases of domestic animals in the book entitled *Edinburgh's Place in Scientific Progress*, issued to the members of the British Association attending the annual meeting in 1921. The great interest shown at the Glasgow meeting of the British Medical Association in the papers and discussion on animal and plant pathology, to which Sir Clifford Allbutt made a notable contribution, induces me to express the hope that someone familiar with these topics will say whether we are as ignorant of the cause of canine distemper as is implied in the statements of the lay press.

Dr. McGowan has done a great deal of work with regard to distemper, and has described an organism, *B. bronchi-septicus*, the only cultivable micro-organism which he found to be present with uniformity and in great numbers in the tissues and organs of cases of canine distemper. He has stated also that typical distemper may be induced by infection with pure cultures of this micro-organism, and that dogs which have recovered from attacks so induced are protected on exposure to natural distemper. Dr. McGowan's experiments have led him also to the conclusion that distemper occurs in many other animals besides dogs, and he has described an outbreak, among pigs, of a destructive infect on which he believed to be distemper. We gather, however, that Dr. McGowan's results have not so far

been generally accepted by the veterinary profession, and we must assume that the Medical Research Council is of opinion that further inquiry is needed. We hope to recur to the subject on a subsequent occasion.

## LETTERS, NOTES, ETC.

### RITTER'S DISEASE.

DR. D. WALSH (London) writes: The rare condition described by Dr. Ronald Cairns in your issue of February 3rd (p. 188) suggests an origin in local anaphylaxis. A similar explanation possibly or probably applies to those rare cases in which bullae persistently follow slight traumatism. The precise nature of the antigen in either instance would still have to be ascertained, and naturally one would investigate food idiosyncrasies, at any rate in elder children or adults.

### EARLY HUMAN OVA.

DR. R. H. BOTHAM (Skelton-in-Cleveland) writes: Some time ago an embryologist was inquiring through the BRITISH MEDICAL JOURNAL for early fertilized ova. I have a good specimen of seven weeks, which I shall be pleased to send anyone interested. Also a foetus of ten weeks.

### A MISQUOTATION.

DR. C. F. CLARKE (Woolwich) has put his finger on a misquotation in our issue of February 3rd. He says: "The writer of the obituary notice of Dr. Dickson of Marlow introduced a verse from Tennyson at the end. But

"The peaceful stream glides on  
Through the vale and under the hill"

should be

"And the stately ships go on  
To their haven under the hill."

The lines are from "Break, break, break"—a tiny classic—which will not bear a word of alteration.

We submitted this to the author of the memoir—"J. A. P. P."—who pleads guilty, and asks to be allowed to set himself right with our readers.

"I was rash and presumptuous," he says, "in daring to alter the beautiful words of the great Victorian poet to suit the changed locale from Severn Sea to Father Thames; in a footnote in the obituary notice I ought perhaps to have apologized for so doing, but such a note appeared to me inappropriate. I am therefore all the more grateful to you for giving me this opportunity of explaining and apologizing to your readers."

This handsome admission impels us to add a word of apology on our own account for the lapse from editorial vigilance.

### DETERMINATION OF SEX.

DR. REGINALD MAPLES (Kingsclere) writes: Dr. R. A. Parker's letter (January 27th, p. 174) is most interesting to me, but exactly opposite to my own experience. For the past thirty-five years I, together with many friends, have systematically bred from our small herds calves of the sex we wished by simply following the following rule: If a cow has a bull calf and you wish to continue bull calves you must send her to stock on the second, fourth, or sixth period of coming "on use." If, on the contrary, you desire heifer calves you must send her on the first, third, or fifth period, and so on, till she is stopped. This rule is infallible if you have a reliable cowman to keep observation. This does not apply to a heifer with her first calf, because you have no record how many times already she has been "on use." I have helped many a farmer to breed to sex by giving him this advice. I have some extraordinary reliable records.

### ERRATUM.

IN Dr. Mary Gordon's letter on penal discipline (BRITISH MEDICAL JOURNAL, February 3rd, p. 212) the sixth line of paragraph 5 should read "superior surroundings and education," etc., not, as printed, "inferior."

### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 30, 31, 34, and 35 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 32 and 33.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 55.

## SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words. All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded. Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive postage letters addressed either in initials or numbers.



## An Address

ON

## ACHES AND PAINS OF RENAL ORIGIN.\*

BY

ANDREW FULLERTON, C.B., C.M.G., F.R.C.S., F.A.C.S.,  
SURGEON TO THE ROYAL VICTORIA HOSPITAL, BELFAST.

EVERY practitioner is confronted from time to time with the problem of aches and pains which raise a suspicion of some disorder of the kidney, and my intention in this address is to record my own difficulties in diagnosis, and the methods adopted to surmount them. I have gone carefully through the records of upwards of 1,500 successive cases of cystoscopy, of which I have notes, and picked out those in which pain was complained of, with a view to ascertain whether the condition of the kidney or ureter or the site of the lesion could be correlated with pain of a particular type or distribution. The results of these observations show, on the one hand, that the most extensive disease of the kidney may exist without any pain whatever, and, on the other, that a very slight departure from the normal may be associated with almost unbearable agony; also that a precisely similar condition may, in one patient, give rise to the merest local discomfort, and in another to pain of a severe character, radiating to the utmost terminations of the peripheral nerves. I have in my mind at the moment a man who used to bring in a small bottle a number of small calculi passed with the minimum of discomfort. Any one of these small calculi would be capable in another patient of producing the most intense renal colic.

Papin and Ambard in a recent article<sup>1</sup> give some interesting facts bearing on renal pain and its treatment, which will be referred to later. It will be convenient at this stage to review briefly the nerve supply of the kidney and its pelvis, based on Papin and Ambard's account.

The kidney receives its chief nerve supply through the renal plexus which accompanies the great vessels into the hilum. Branches also accompany the vessels to the capsule and accessory vessels, when the latter exist. The renal plexus comes off from the solar plexus, which is composed of a network of nerves and ganglia lying between the terminations of the great splanchnics of either side. The great splanchnic is formed by branches coming from the sixth to the tenth thoracic ganglia, receiving filaments (according to Beck) from all the thoracic ganglia above the sixth. It terminates in the semilunar ganglion, which also receives the pneumogastric and filaments from the phrenic.

The small splanchnic, which is sometimes double, is formed by filaments from the tenth, eleventh, and twelfth ganglia, and terminates either in the semilunar ganglion or passes directly into the renal plexus. The renal plexus is formed from branches issuing from the semilunar ganglia, the small splanchnics, and sometimes from the great splanchnics; it also receives a branch from the first lumbar ganglion. The plexus is composed of filaments and ganglia. The filaments follow the course of the vessels, around which they form a close network. In the kidney itself the nerves follow the blood vessels as far as their most remote terminations, and have been traced to the vascular tuft of the glomerulus. Other branches are distributed to the uriniferous tubules. Sensitive end organs have also been described in the muscular walls of the pelvis and calices, in the tunica adventitia and tunica media of the vessels, and in the capsule of the kidney. The nerves to the kidney itself are, with few exceptions, non-medullated, while those distributed to the pelvis and calices are for the most part medullated. The cells met with in the ganglia of the renal plexus are of the sympathetic type. It appears probable that renal pain proceeds from the sympathetic. According to Wundt the cells of the sympathetic oppose an obstacle to impressions, only overcome when these are of a violent nature. It is held by many authorities that painful sensations in the sympathetic system are really only perceived on quitting that system and gaining, by way of the rami communicantes, the posterior roots of the cord, and through these the cerebro-spinal centres. The result of this is that pain is often reflected along the course of nerves con-

nected with the corresponding rami communicantes. Section of the spinal cord between the eighth and ninth dorsal segments abolishes the sensibility of the kidney and ureter. Section of both splanchnics does not abolish the sensibility of either kidney or ureter. The pneumogastric takes no part in the conduction of renal pain.

We are now in a position to refer to the question of how far the kidney, pelvis, and ureter are sensitive to various stimuli.

Pressure on the normal kidney produces pain of a sickening character somewhat similar to, but much less severe than, that produced by pressure on the testis or ovary. When an operation is performed on the kidney under local anaesthesia manipulation of the organ produces pain.

The sensitiveness of the kidney to heat and cold has not been fully investigated, but would appear to be slight.

Puncture and section of the kidney are apparently not specially painful. Manipulations, however, carried out on the pedicle, and, especially, stripping back of the peritoneum, are attended with pain.

Compared with the kidney the pelvis and ureter are highly sensitive. The patient is often cognizant of the presence of the ureteral catheter in the pelvis of the kidney, and if the former is pushed too far pain may be produced. Hot and cold fluids introduced through the ureteral catheter are not clearly perceived as such. Distension of the pelvis, however, is very definitely painful. If more than 3 to 7 c.cm. of fluid are injected into a normal pelvis, pain resembling renal colic is, as a rule, provoked, and may at once be relieved by draining off the fluid injected. Pyelic pain may be very accurately studied by pyelography, or by simply measuring the capacity of the pelvis by the injection of fluid. The pain produced by distension of the pelvis commences in the subcostal region in the anterior axillary line. Tender points can be demonstrated by touch in the costo-lumbar, subcostal, para-umbilical, and iliac regions. These areas are those to which pain is referred by the cerebro-spinal nerves from impressions received by the sympathetic. Pain may be referred along the course of the nerves of the lumbar plexus towards the thigh, the testicle, or the labia majora, or it may be referred to the epigastrium or the renal region of the opposite side. Zones of cutaneous hyperaesthesia may be demonstrated by stroking or pinching the skin. The tenth, eleventh, and twelfth dorsal segments correspond in part to the kidney; the eleventh and twelfth dorsal and first lumbar correspond to the pelvis and ureter. Certain reflex phenomena such as nausea, vomiting, and pallor, with cold sweats, unassociated with disturbance of pulse or respiration, commonly accompany pyelic pain.

In pathological conditions the sensitiveness of the kidney and ureter may be profoundly altered. Papin and Ambard<sup>1</sup> classify renal and pyelic pain as follows:

1. That due to mechanical or traumatic causes.
2. That due to inflammatory conditions.

The mechanical causes are:

- A. Distension of the ureter, pelvis, and calices.
- B. Distension of the parenchyma in the capsule by congestion or oedema of the kidney.
- C. Contact of a foreign body with the walls of the pelvis or calices.
- D. Dragging of the pedicle of the kidney.
- E. Compression of nerves. Most of the pain is, however, reflex or of a toxic nature.
- F. Sclerosis of the kidney.

The inflammatory causes are:

- A. Lesions of the pelvis and calices, such as pronephrosis.
- B. Lesions of the parenchyma, such as pyelonephritis.
- C. Lesions of the perirenal cellular tissue, such as perinephritis and perinephritic abscess.

These authors are of opinion that renal pain is usually, as a matter of fact, pyelic. In calculus, hydronephrosis, movable kidney, renal tuberculosis, cancer, and renal haematuria, obstruction of the ureter declares itself by renal colic due to distension of the pelvis. Pain in the kidney itself is generally of moderate intensity except in inflammatory lesions, when it may become very severe.

It is very instructive, when one is constantly seeing cases of urinary disease, to record in the patient's own words his description of the pain he suffers. A collection of such accounts is of great interest, especially if the case is followed to its termination by operation or in the *post-mortem* room. A study on these lines shows that the most varied pathological conditions may give rise to almost identical symptoms. This supports the suggestion that a common cause may be present in

\* Presidential Address delivered before the Ulster Branch of the British Medical Association on November 30th, 1922.



all—namely, distension of the renal pelvis from some obstruction. This obstruction may be a calculus, a kink, a thickened ureter, or a blood clot. Except when obstruction is present, there does not appear to be any positive pressure in the pelvis. A proof of this is that when for any reason an incision is made into the pelvis of the kidney—say, for the removal of a stone—close, accurate, watertight suturing is not absolutely necessary to prevent leakage. The urine seems to trickle down the walls of the pelvis, as rain down the roof of a house, and if no obstruction is present finds its way into the upper part of the ureter, where peristalsis begins and forces it towards the bladder. If the obstruction has not been relieved leakage will take place. It is reasonable to suppose that the peristaltic movements of the ureter, if excessive, may be painful, just as those of the bile ducts and intestinal tube may be. Efforts by the ureter to pass on a calculus or to overcome an obstruction are probably attended with pain, but an investigation of cases with the most intense renal colic, radiating even to the toes, shows that the obstruction is quite frequently at the uretero-pelvic junction, hardly, if at all, involving the ureter. It is, of course, possible that spasm, started in the pelvis, may be transmitted along the ureter, and one does observe movements at the ureteral orifice in certain cases in which there is no efflux.

Renal pain or pyelic pain may be so slight as to pass almost unnoticed, or it may be of the most violent character. It may remain in one spot, or it may radiate widely. It may start suddenly or gradually, and may terminate in the same way. It may only last for a few seconds, or it may continue for hours. It may occur in attacks, with intervals of complete or comparative freedom, or it may be more or less constant. It may come on during exercise, or when the patient is resting quietly in bed. It is variously described as a sense of discomfort, an ache, a gnawing or burning sensation, a bursting feeling or a feeling of fullness, a stab, a tearing or cutting sensation. The intensity of the pain is no index whatever of the severity of the lesion. A minute calculus may produce the most severe agony, whilst one the size of a chestnut may give very little indication of its presence. A very slight kink of the ureter may produce more pain than an extensive hydronephrosis.

The direction of the radiation of the pain is, as a rule, towards the lower extremity, generally to the groin, the testis, or labia majora, sometimes into the upper part of the thigh, more rarely to the knee and the leg, even as far as the toes. Occasionally, however, radiation takes place towards the upper extremity, to the shoulder, arm, and fingers. Not infrequently the pain radiates to the opposite renal region, and occasionally is felt solely on the presumably healthy side. Reference has already been made to reflex nausea, vomiting, pallor, and cold sweats. A special variety of pain is that seen in some cases of movable kidney, and called Dietl's crises. The pain in these cases may be due to torsion of the pedicle, kinking of the ureter, or dragging upon the pylorus, gall bladder, or other abdominal structure. It may be suggestive of an acute abdomen with rigidity, or may be of the type already referred to in discussing distension of the renal pelvis.

A typical attack of renal colic is so characteristic that a diagnosis of something pathological in the kidney or ureter is justified, and yet the surgeon will occasionally encounter cases in which every examination that can be made fails to establish a diagnosis, and one is driven to inquire whether extrarenal conditions may not in exceptional cases give rise to colic that is with difficulty distinguished from that due to renal causes. It is important to ascertain if the site of the pain or areas of hyperaesthesia—lumbar, subcostal, para-umbilical, iliac, etc.—give any clue to the position of the causative factor. My own observations lead me to the conclusion that it is unsafe to predict from these symptoms alone the situation of the lesion. In back pressure from an enlarged prostate, for instance, pain is often complained of in the lumbar region. Pain in the iliac region may indicate the presence of a stone in the lower ureter, but is quite often present with a stone in the pelvis of the kidney. When the lesion is near the vesical end of the ureter (for example, a calculus) frequency of micturition is often complained of, but this symptom may be entirely absent in these circumstances and be present when a calculus is lodged in the renal pelvis. Pain of renal origin must be looked upon in many cases as referred pain, and its distribution as not necessarily giving any clue to the location of the lesion in the urinary tract.

#### Methods of Investigation.

Abdominal examination may discover displacements, deformities, or enlargements of the kidney, swellings in the renal region, tenderness, rigidity, or areas of hyperaesthesia. Rectal and vaginal examination may detect a calculus in the lower end of the ureter, thickening of the latter, undue tenderness, or other abnormality. Examination of the spermatic cord may disclose the presence of a varicocele suggesting renal tumour if on the right side. The urine will, of course, be carefully investigated by chemical, microscopic, and bacteriological tests. The absence of any demonstrable departure from the normal, however, does not, by any means, exclude the kidney. A small aseptic stone may be present without giving rise to any abnormal constituent such as blood, pus, or albumin. In certain cases of hydronephrosis the urine may be normal to the usual tests, and in pyonephrosis the affected ureter may be blocked at the time of examination. A tumour of the kidney may be present without showing any abnormality of the urine. X-ray examination, if thorough and efficient, will demonstrate alterations in the position, shape, and size of the kidney, besides showing the presence of opacities. Cystoscopy may demonstrate alterations in the shape, size, and surroundings of the ureteral orifice, and changes in the rate, rhythm, and character of the efflux. Ureteral catheterization will show the character of the urine from each side and any alteration of the relative specific gravities. The latter test, which I will call the specific gravity test, has been of great service to me for diagnostic purposes. Shortly stated, I find that with unilateral disorders of the kidney the specific gravity on the affected side is diminished in a large proportion of cases. If there is a difference in specific gravity on the two sides, even if no other sign is present, the chances are that the kidney which secretes the urine of lower specific gravity is pathological. A low specific gravity does not necessarily mean a seriously damaged kidney. It may be due to reflex diuresis from a small fragment of stone or from early disease. On removal of the cause (if removable) the specific gravity returns rapidly to normal.

Combined with ureteral catheterization, the subcutaneous, intramuscular, or intravenous injection of dyes, such as indigo-carmin, or phenolsulphonephthalein, may give valuable information. The time of the appearance of these dyes in the urine, the amount present in the specimens collected by ureteral catheter, and the time taken for their elimination will assist in clearing up many doubtful cases. The ureteral catheter will further demonstrate patency or narrowing of the ureter, and, by injection of fluid, the capacity of the renal pelvis. By the opaque catheter or bougie opacities discovered by radiography may be accurately located, and, if stereoscopic radiograms are employed, their position relative to the ureter and kidney accurately defined.

Finally, by pyelography the shape and size of the pelvis and calices, the presence and relations of foreign bodies, and the position, direction, and calibre of the ureter may be demonstrated with the greatest accuracy. I now use almost exclusively sodium bromide solution for this purpose. This is run in through the ureteral catheter into the pelvis of the kidney until the patient complains of slight discomfort. A radiogram is then taken, which shows with great accuracy the shadow of the pelvis and ureter.

Should these methods fail to establish a diagnosis, or for any reason be unavailable, and the surgeon be in doubt between a renal and an abdominal lesion, it may be necessary to explore. For this purpose I have in a few cases employed an oblique abdominal incision extending from the mid-axillary line just below the costal margin to the iliac region parallel to the fibres of the external oblique. The anterior part of the incision opens the peritoneal cavity, and the posterior part allows of the retroperitoneal exploration of the kidney and ureter. In this way the appendix, caecum, colon, liver, gall bladder, spleen, stomach, duodenum, tubes, ovaries and uterus, as well as the kidney, may be explored with relatively little trauma to the abdominal wall.

The possibility of disease of the spinal column or cord should always be borne in mind. Spinal caries, aneurysm of the aorta involving the vertebrae, tumours involving the spinal column or cord, and locomotor ataxy may give rise to pain closely simulating renal colic.

It now remains to mention some types of renal disorder commonly met with in practice which are attended with pain. Pain due to accompanying bladder conditions will not be discussed.



*Renal Calculus.*

Undoubtedly the most frequent cause of renal pain and renal colic in its worst form is renal calculus. Looking over the notes of 72 consecutive cases I find that pain was present at some time or another in all but two. The pain was of the most varied character. In one it was very indefinite on the affected side, and also was present on the sound side. A large phosphatic stone weighing 1½ oz. was removed from the pelvis of the right kidney. In another the pain was so slight that the patient, a young woman, was treated for fifteen years for Bright's disease. This was "cured" by the removal of a calcium oxalate stone from the pelvis of a movable right kidney. On the other hand, a patient with a small phosphatic stone the size of a pea, lodged in the pelvis of the left kidney, complained of "frightful" pain radiating to the groin and knee, associated with vomiting and rigors. The patient actually "yelled" with the pain in the knee.

The radiation of the pain in these calculus cases varied greatly. Most usually it radiated towards the groin, testis, or labia majora, frequently over the buttock, or down the inner or outer side of the thigh, sometimes into the penis, sometimes down the leg as far as the heel or toes, and occasionally all over the abdomen. In one case it started in the left renal region, radiated right up the back to the shoulder and back of the head. The patient was relieved by the passage of a small stone. A patient in whom a small stone about the size of a melon seed was removed from the right ureter near the bladder behaved like a madman during attacks of pain which, starting in the kidney, radiated to the testis. Another patient complained of cramp-like pain in the lower abdomen, and passed some small, irregular calculi about the size of split peas. Another felt "something snap in the kidney." A calculus was subsequently removed from the renal pelvis on the affected side. In a patient with calculi in both kidneys the pain was now on one side and now on the other, and radiated on both sides into the leg. The following rather rare case is worth recording:

The patient, a woman, suffered severe renal colic from the passage of a gummy material containing the characteristic spherules of calcium carbonate. The pain first affected the left side and radiated into the leg. There was rigidity and tenderness in the left loin. The urine contained a copious deposit of white material, thought to be pus, but which proved on microscopical examination to be an almost pure deposit of calcium carbonate. X-ray examination was negative. A few days later the patient had severe pain in the opposite kidney, again with the discharge of calcium carbonate. Reduction of the calcium content in the diet effected a speedy cure.

Similarly one sees occasionally cases of renal pain due to the passage of crystals of calcium oxalate, and probably other insoluble salts in the urine may cause pain. In many of these cases of renal calculus frequency of micturition, especially during the attacks of pain, was complained of. This was apart from any associated cystitis or other bladder affection. Reflex vomiting, pallor, and cold sweats were exceedingly common in the severe attacks.

*Tuberculous Kidney.*

It must be emphasized that renal pain is not a cardinal symptom of tuberculous kidney. Looking over the notes of 117 consecutive cases I find that pain was complained of in 56 cases only—that is, in less than half the number. Even in advanced cases pain may be entirely absent. In most of the painless cases there was thickening of the ureter, and, in many, very extensive destruction of the kidney substance. In one case, though the pelvis was enormously dilated and the ureter resembled a piece of small intestine, pain was not complained of. Even with a large perirenal abscess pain may be absent. In the painful cases the symptoms resembled those occurring in renal calculus, but were rarely so severe. It was described as an ache, or a soreness more or less constantly present, or a feeling of fullness on the affected side. Attacks of renal colic were, however, not uncommonly met with, but these rarely attained the intensity of those due to calculus. A few patients stated that the pain started in the bladder and radiated up into the kidney on the affected side. Some complained of "soreness" in both kidneys, and in a few the pain was on the side opposite to the seat of disease. Radiation of the pain was somewhat similar to that found in calculus. In one case the pain radiated to the shoulder on the affected side. Vomiting and pallor, with sweats, were less frequent than in the case of stone.

The pain in tuberculous kidney is probably due to intrapelvic pressure, but the chronicity of the disease allows of

more gradual distension than in the case of stone. At times, however, the passage of thick pus or debris down the ureter may suddenly increase the pressure in the pelvis and give rise to colic. The thickened, rigid ureter, so frequently present, is hardly capable of spasm.

*Pyelitis.*

Pain is a very frequent symptom in pyelitis. Thus out of 75 cases which I have noted pain was present in 59, or almost 80 per cent. In the acute cases with rigors and fever, vomiting, pain, and tenderness, with, perhaps, palpable swelling of the affected organ, and muscular rigidity were commonly present. The pain was more fixed and constant than in calculus and tubercle, and was not generally so severe as in calculus. Even in acute cases, however, pain may be entirely absent. In chronic cases pain is often absent, and the affected kidney is only discovered by cystoscopy or ureteral catheterization. In one case in which inspissated pus was squeezed out from the ureter, no pain was complained of. In a few cases renal colic was present, the pain radiating to the groin, testis, or even to the leg or foot, but the type was generally much less severe than that seen in calculus. The following case, in which the kidney was explored, is a good example of acute unilateral pyelitis.

A married woman, aged 32, had repeated rigors, with fever, sweating, rigidity, and acute pain in the right lumbar region. The right kidney was tender and painful. *Bacillus coli communis* was found in the urine. On exploration the kidney was congested and enlarged and the pelvis was dilated.

The local pain and tenderness in these cases are probably due to swelling of the parenchyma of the kidney and distension of its capsule. When colic is present it is no doubt due to the passage of purulent coagula along the ureter.

*Hydronephrosis and Pyonephrosis.*

In hydronephrosis and pyonephrosis we have the conditions most favourable to the development of renal colic—namely, obstruction and distension of the renal pelvis. As might be expected, therefore, pain is a frequent symptom in these affections. Out of 37 cases examined, pain was present in 31, and doubtful in 2. The pain, like that due to calculus and tuberculosis, varied very much in character and distribution. A very frequent history was that of pain and a tumour in the side, associated perhaps with vomiting. It is noteworthy that the radiation of the pain resembled very closely that seen in renal calculus. Now, in a large proportion of the cases the block was present at the uretero-pelvic junction, and did not involve the ureter itself, yet the pain was very similar to that said to be due to the passage of a calculus along the ureter, and attributed to spasm of the latter. Some of the cases of hydronephrosis were associated with an abnormal renal artery running to the lower pole and crossing the ureter. Hurry Fenwick attributed the pain in these cases to spasm produced by the artery acting as a bowstring to the ureter. This spasm might itself cause pain or, by narrowing the ureter, produce intrapelvic pressure, which, as we have tried to show, is the main cause of renal colic. A curious circumstance is that in some of these cases of hydronephrosis the pain is of recent onset, though the state of the kidney found at operation justifies the assumption that the condition has been present for years. The patient may have been perfectly free from pain from his youth, until suddenly he is seized with violent colic. Operation reveals a kidney reduced to a shell. Why, then, has pain not been present before? An explanation that suggests itself is that while very gradual distension spread over perhaps a number of years may be painless, a time comes when the uretero-pelvic junction becomes sufficiently kinked from the disturbed relations of the parts, caused by dilatation of the pelvis, to cause a more or less complete block. Pain is then felt, and is only relieved by the release of fluid from the dilated pelvis. In some cases hydronephrosis or pyonephrosis is accidentally discovered by palpation of the abdomen, and in others, again, there is a history of attacks of pain extending over twenty years or more.

The pain in certain cases of hydronephrosis and pyonephrosis may rival in severity that found in renal calculus, as in the following:

A man, previously healthy, began, at the age of 23, to suffer from paroxysms of renal colic. Before admission to hospital he had had three attacks at five months' intervals. The pain started in the left lumbar region and radiated towards the iliac fossa. During the attacks the patient became weak and vomited. The



urine was clear, amber, acid, specific gravity 1020, free from albumin, blood, pus, and micro-organisms. There was some tenderness in the left lumbar region but the kidney could not be palpated. X-ray examination was negative. Here was a patient with typical attacks of severe renal colic with no definite physical signs, and with normal urine—a state of affairs occasionally seen and practically always attributed to stone. Cystoscopic examination showed no change in the bladder or ureteral orifices. Catheters were introduced into each ureter, but no flow could be obtained on the affected side until the catheter had been passed as far as the renal pelvis. Then a large quantity of fluid was obtained. The specific gravity of this specimen was 1005, as against 1025 on the sound side. Sodium bromide solution, a large quantity of which was accommodated without pain, was run into the renal pelvis on the affected side. Radiography demonstrated great dilatation of pelvis and calices, and operation revealed a large hydronephrosis.

#### Renal Tumours.

Pain may be entirely absent in cases of renal tumour. It was present in 11 out of 18 cases recently examined—that is, in about 60 per cent. It was described as a soreness, a dragging pain, pain and tenderness, or severe renal colic. In one case the patient had what was described as "terrible" pain radiating down the leg and accompanied by vomiting and the passage of clots. In another case in which there was no visible blood in the urine, the patient complained of pain radiating to the outer side of the ankle. The tumour proved to be a malignant adenoma.

There are various factors which may contribute to the production of symptoms in renal tumours. The tumour may drag on, or involve, adjacent structures; by distension of the renal capsule it may cause pain; the pelvis may be partially or wholly filled with growth; the veins may be blocked with it; blood clot may be present and give rise to acute renal colic during its passage down the ureter, or detached portions of growth may act in the same way. Most of my cases who had pain suffered from renal colic of various degrees of intensity, and in most of them the cause appeared to be blood clot in the pelvis or ureter.

#### Haematuria.

In some cases of haematuria the blood is poured out in such small quantity that time is allowed for intimate admixture with the urine, and pain may be absent. In others the bleeding is so profuse that clotting does not take place until the blood reaches the bladder. In others, again, clotting takes place in the pelvis or ureter, and produces the well known symptoms of renal colic. After the passage of the ureteral catheter, when blood is drawn, it is not uncommon for acute pain to occur. No doubt in such cases the mucous membrane of the ureter is rendered more irritable by the trauma inflicted. Sometimes this pain closely simulates that produced by renal calculus. The amount of blood drawn does not seem sufficient of itself to account for it. That idiosyncrasy plays a part is shown by the fact that in some patients the smallest clot may produce very severe symptoms, while in others no discomfort is felt. This holds good in all forms of renal disorder in which pain is a common symptom.

#### Movable Kidney.

Pain is often present in cases of movable kidney, but this condition is so commonly associated with other manifestations of visceroptosis that it is difficult sometimes to apportion the blame between the various organs concerned. On the right side especially it may be impossible to differentiate symptoms of appendicitis, mobile caecum, and other abdominal affections from those due to displacements of the kidney, and mistakes in diagnosis are often made. In such cases I have found pyelography and pyelography useful. Most usually, if any difference is seen in the specimens from the two sides it is a diminished specific gravity on the affected side—due, no doubt, to a reflex unilateral diuresis. Rarely, the specific gravity is raised on the affected side—due, perhaps, to delay and increased absorption of fluid from slight kinking of the ureter. Pyelography may show some alteration in the pelvis or change in the calibre or direction of the ureter. The following case is a good illustration.

A man, aged 27, previously healthy, had a sudden severe pain in the left lumbar region, radiating to the groin and testicle. He also felt sick and vomited, and complained of a constant desire to micturate, passing only a few drops at a time. He had several similar attacks. The urine was free from albumin and pus, but contained a few red blood cells. The specific gravity of the

specimen on the affected side was 1005, as against 1015 on the sound side. Pyelography showed a sigmoid bend on the ureter just below the renal pelvis on the affected side. No calculus was seen, but the kidney was tilted and lower in position than normal. Nephropexy straightened out the ureter, fixed the kidney in its normal position, and cured the patient.

#### Other Causes of Renal Pain.

One must always bear in mind that renal pain may be due to some condition of bladder or urethra. Carcinoma of the bladder, a papilloma at a ureteral orifice, an enlarged prostate, or stricture of the urethra may cause renal pain on one or both sides from back pressure. Besides these there are some rarer conditions occasionally met with which are accompanied with renal or pyelic pain. Such are certain forms of chronic nephritis, infarcts, hydatid cyst in which small cysts are sometimes passed, giving rise to attacks of renal colic, other cysts of the kidney, and horseshoe kidney.

As a confession of failure, due no doubt to faulty methods in the past, I am bound to admit that I have only too frequently seen cases of renal colic in which I have been unable to trace the cause. In some of these the urine has been perfectly normal and x-ray examination negative. In a certain number the only indication of a renal origin has been a diminished specific gravity on the affected side. This may have been due to a small undetected calculus, a narrowing or kinking of the ureter, an accessory renal artery, or some other obscure condition which reflexly alters the blood supply of the organ. In other cases every method of diagnosis has been tried, with the sole result of excluding gross lesions. Recent advances in our methods of examination will reduce the number of undiagnosed cases and add to the satisfaction of all concerned in the investigation and treatment of these elusive complaints.

#### TREATMENT.

Cases of renal pain will be dealt with, of course, by removal of the cause, when this is possible. Papin and Ambard<sup>1</sup> point out, however, that in certain cases of painful nephritis, small hydronephroses, and renal neuralgias of ill defined character the only treatment which, up to the present, has been applied has been either insufficient or excessive. While decapsulation, temporary nephrotomy, and nephropexy are insufficient to effect a cure in a large proportion of cases of this sort, removal of the kidney is too drastic a step. In these circumstances they have devised an operation which relieves the pain and yet conserves the kidney. This consists in resection of the nerves of the kidney. The pedicle is carefully exposed, the nerve filaments accompanying the vessels are defined, seized one by one with dissecting forceps, and torn across by slipping under each a probe-pointed director. The authors state that it is not difficult to distinguish the resistant nerves from the softer lymphatics. Before the operation can be considered complete the vessels should have been stripped of all the nerve filaments surrounding them. In order to expose certain of the fibres it is necessary to pass between the different branches of the vessels. The renal vein is in danger of being torn unless care is taken. Should this accident happen, a delicate suture should be used to close the opening. In all cases the kidney is fixed in position by flaps of capsule, and a small drain is placed at the lower end of the wound. The authors publish detailed accounts of six cases so treated, with complete relief in five. After this operation the patient suffers much more than after any ordinary operation on the kidney, even nephrectomy. There is, however, no urinary trouble, neither polyuria nor marked oliguria. Things are just as they are after any operation outside the urinary tract. In these patients specimens of urine taken from the enervated kidney differed little from those collected from its fellow of the opposite side.

In conclusion, it is apparent that the idea running through this address is that the pain we have been discussing is due in a large proportion of cases to distension of the renal pelvis. Treatment should be directed towards removing the cause, and involves, in some instances, ablation of the kidney. In selected cases it may be possible to relieve the patient by interrupting the nerves carrying the painful impressions.

#### REFERENCES.

- <sup>1</sup> Étude sur l'Énervation des Reins, Arch. des Mal. des Reins et des Organes Génitaux-Urinaires, tome I, Paris, April 1st, 1922. <sup>2</sup> Loc. cit. <sup>3</sup> Loc. cit.



## CERTAIN DISEASES OF THE COW AND THEIR INTEREST TO THE PHYSICIAN.\*

BY

FREDERICK HOBDAI, C.M.G., F.R.C.V.S., F.R.S.E.,  
HONORARY VETERINARY SURGEON TO HIS MAJESTY THE KING, AND  
FORMERLY PROFESSOR IN THE ROYAL VETERINARY  
COLLEGE, LONDON.

THE necessity for the medical man to be in touch with his veterinary colleague over the question of cattle disease is well illustrated by the fact that certain illnesses, some of which are fatal and all of which are troublesome, can be contracted from bovine animals, and occasions of this kind, where members of the two professions meet, cannot but lead to profitable discussions and interchanges of knowledge for mutual benefit. Foot-and-mouth disease, cow-pox, and ringworm are all of local interest to the practising physician, but have not the vital importance of tuberculosis and anthrax, the two diseases to which I propose particularly to divert attention to-night. Not that the others are not troublesome, but they are curable and only in rare instances cause death.

### Foot-and-Mouth Disease.

That foot-and-mouth disease is contagious to man has been demonstrated many times, but with proper precautions in connexion with the disposal of the milk the risk is comparatively slight. It is, however, one of the diseases in which the members of the veterinary profession occupy the front trench, and the risk of spread to man depends upon the efficiency of their organization.

Man can contract it by drinking infected milk or even by eating cheese or butter made from such sources. That those who handle the mouths and feet of the infected animals do not always escape is well illustrated by the following account, which is published<sup>1</sup> by Mr. Vincent Boyle, M.R.C.V.S., one of the Ministry of Agriculture veterinary inspectors.

A veterinary inspector was sent to deal with an outbreak of foot-and-mouth disease on a farm in Suffolk in November, 1920. His duty was to examine each animal, and he was in contact with diseased animals on four consecutive days, November 21st to 24th, 1920. On December 5th he fell ill, complained of headache and general malaise, and showed elevated temperature (101.4°). On December 8th vesicles appeared on the inner surface of the lips, and on the gums above and below the incisor teeth, and during the following three days up to December 11th further vesicles formed on the hard palate and tongue. His general condition became worse, elevated temperature persisted, there were periods of delirium and semi-consciousness, and the heart had by this time become affected with endocarditis, involving the valves, especially the aortic. By December 25th an improvement had set in, and the lesions in the mouth healed gradually. Improvement continued, though convalescence was prolonged.

The exact method of infection is not clear, but probably it was through particles of saliva, shed epithelium, etc., contaminated with virus, reaching the face and lips of the examiner during the examination of the mouth lesions of the affected sheep.

In England foot-and-mouth disease has not troubled the human practitioner very much, as immediately an outbreak amongst cattle is notified the Veterinary Department of the Ministry of Agriculture takes the animals and the premises in hand and imposes rigid quarantine precautions until all the affected and in contact animals are slaughtered; thus are prevented the sale of milk and the spread of the disease to man and other animals.

On the Continent, however, where the law is not so drastic, its contagiousness is well recognized, and during an outbreak in Oldenburg in 1920 an inquiry by the medical profession resulted in the establishment of some sixty definite cases in mankind. Again, on the authority of Hutya and Marek<sup>2</sup> we are told that Bussenius and Siegel report sixteen outbreaks occurring in man between 1878 and 1896, in the course of which entire families became affected, and that a number of cases ended fatally. This is enough to prove that the veterinary surgeon has his duty to perform and share in warding off this disease from man, and thus being of service to the medical practitioner.

### Cow-pox.

That cow-pox is contagious to man is well known to every owner of a dairy herd, and occasionally it causes severe constitutional as well as local symptoms necessitating cessation from work.

There is plenty of literature to prove its transmissibility, and a recent well illustrated article by Dr. R. J. Reece, C.B., read before the Royal Society of Medicine, "On the circumstances associated with an outbreak of disease amongst milch cows, horses, and their attendants, believed to be of the nature of cow-pox, in the county of Somersetshire in the year 1909," brought the subject recently to the fore again. The great interest which has recently been taken in the question of the communicability of disease from animals to man has brought a number of excellent clinical articles to the *Veterinary Journal*; as, for example:

Captain Sparrow, M.R.C.V.S., of Rochford, Essex, reported<sup>3</sup> an instance in which a dairy herd of 40 cows all had cow-pox, and "most of the milkers caught cow-pox, with lesions on their arms and hands, and had to be medically treated."

Mr. Hugh Begg, F.R.C.V.S., the chief veterinary inspector to the county of Lanark, reported cow-pox in a herd of 30 milking cows; the four milkers employed all developed typical pox lesions between the fingers and on the backs of the hands. The symptoms were sufficiently severe to keep them from duty for several days, and the sores did not heal for about three weeks.

Mr. E. J. Thorburn, M.R.C.V.S., of Crewkerne, Somerset, a very large dairy district, reported several outbreaks amongst the milch cows, and in one particular dairy, consisting of 60 cows (of which 20 became affected), three of the milkers became very badly inoculated. In two cases the men were very ill, and were under medical treatment for a considerable time. Starting between the fingers, the disease spread up the arm to the lymphatic glands and axilla, thence through the system to the glands in the lower extremities. Several weeks elapsed before the men became completely convalescent.

### Ringworm.

Ringworm, especially of the calf, is very readily transmissible and at some time or other bound to come under the notice of the practitioner in an agricultural district. Common in many districts, especially at certain seasons of the year, it is quite easy for the herdman who dresses the infected skins to contract the ailment. The veterinary practitioner is often himself a victim, and ringworm infection obtained from a calf is not so easily got rid of as the ordinary human variety. The head of a calf may be covered with the ringworm crusts, and one does not need to be more than slightly careless when handling calves with ringworm in order to find within a few days a practical proof of its contagiousness on one's own hands and arms.

That, too, it may be passed on is also a fact, and to illustrate that I cannot do better than quote a short clinical note Dr. Alfred Eddowes recently contributed to the *Veterinary Journal*:

"Thirty years ago, when I was practising in the country, a young woman consulted me one evening for what was obviously ringworm on her cheek. A number of questions were put to her as to how she had caught it. She was a parlourmaid and 'had nothing to do with children, ponies, cats, or calves.' I begged her to lock round on going home and send me word if she noticed anything like it. Next morning a man stepped into my consulting room. Seeing a ringworm on the centre of his forehead I merely asked his name and told him I could guess all the rest. He was cowman to Mr. C. of S— Park; that he had not been at the job long—was, in fact, quite a novice—otherwise he would have had a cap ready to wear while milking. Further, that he was in love with the pretty parlourmaid, and no wonder. 'Doctor, you know too much, but it's all true,' was his reply, and I almost fancied myself a Sherlock Holmes!"

### Anthrax.

The diseases to which I wish to draw special attention are anthrax and tuberculosis, and it is here that the collaboration of the medical and veterinary professions is so urgently desirable. Stamp out anthrax from the animal (especially the cow tribe) and from animal products, and it is eradicated from man, for its origin is always one or other of these sources. Stamp out tuberculosis from cattle and you do away with the deaths from bovine infection, caused mainly by the milk supply, which form quite a big proportion of the total, especially of the deaths of children. As illustrating this, and at the same time illustrating the value of collaboration, I will quote an extract from a clinical article which has just reached me, for publication in the *Veterinary Journal*, from Major Rabagliati, O.B.E., B.Sc., F.R.C.V.S., the Director of the Serum Institute for the Ministry of Agriculture in Egypt. He writes:

"Some years ago an outbreak of anthrax in some of the inhabitants in a certain village assumed considerable proportions. These cases came under the notice of the medical authorities, who instituted preventive isolation and quarantine, with the necessary treatment, amongst the affected people. It was noticed that most of the fatal cases occurred amongst the old women of the village,

\* An address given to the South Essex Division of the British Medical Association, December 6th, 1922.



and that they suffered from the pulmonary form of the disease. A few cases occurred in children, who had malignant pustules on the arms and legs, or even other parts of their bodies. The explanation of this difference of situation was not at once apparent. Although no cases in animals had been reported in this neighbourhood a Government veterinary inspector was sent to make inquiries. He found that both cattle and sheep had been dying, and also that a number of sick animals had been slaughtered illicitly, and was soon able to diagnose anthrax as the cause of the illness and deaths amongst the cattle and sheep.

"The cause of the symptoms was then clear, and was as follows: It is the custom of the villagers to collect cattle dung for fuel, and to make it into round cakes by drying it in the sun. This is usually done by the children. When dry it is used for cooking purposes, this being done by the older women.

"The children employed in collecting the dung, a lot of which was from the sick cattle, were not so much exposed, owing to the moisture, but occasionally contracted malignant pustules through abrasions; but the old women of the village, who broke up the sun-dried 'cakes,' talking as is usual all the time, inhaled the dust, rich in spores, and so fell ready victims to the pulmonary form of anthrax."

Anthrax has been very much to the front lately, and it has been rare for a week to pass without some notice in the public press either of a death in man or animal, or else drawing attention to the danger of infection. The Japanese shaving-brush scare did much to familiarize the man in the street with the risks he ran from non-disinfected goat hair and wool, and recently deaths have been reported from the wool-sorters' area. An International Advisory Committee has been formed, consisting of delegates from various parts of the world, to inquire into the disinfection of wool, hair, and skins infected with anthrax spores, and also into the practice and effective methods of preventing infection amongst flocks. The Committee is to report to the International Labour Conference in 1923, and there is no doubt that it will examine a large number of expert witnesses. Its preliminary meeting took place yesterday, and one of its first duties will be to inspect the new anthrax disinfecting station at Liverpool. This disinfecting station cost just over £110,000, and started operations in July, 1921. It is capable of disinfecting about 8 million pounds of wool annually, and it is estimated that by the expenditure of another £15,000 this output could be doubled.

Wool and hair are the chief carriers, and the workers in the Bradford district of Yorkshire know the first signs of woolsorters' disease quite well. It is estimated that by compulsory disinfection of all imported wool and hair the danger of anthrax infection to human beings will drop at once by 50 per cent.; and it is to be hoped that the talk which has arisen in regard to closing it down, on the ground that it has not paid its expenses during its first year, will not be allowed to materialize, as the mere expenditure of £5,700 should not be allowed to be considered when human lives are at stake. I am glad to be able to say that Dr. Hope, M.O.H. Liverpool, informs me that this excellent work is to continue.

Hides and skins are as important as the hair and wool, for they too may come off infected beasts, and all should be submitted to a disinfecting process, whether on arrival in England or at the port of embarkation. The latter is, of course, the more ideal as doing away with the chance of contamination of the ship, etc., by its cargo. Between July, 1921, and September 30th, 1922, about 1,280,000 lb. of material has been dealt with at the disinfecting station, and the wool-workers may reasonably look forward to the risk of their trade now being reduced to a minimum.

Bones, and bone manure, imported from infected countries must also receive attention, as also the question of cattle feeding cake, for in this we have a not uncommon source of trouble.

The killing of a dying beast and the subsequent risk of infection to the man who dresses the carcass can only be dealt with as the law directs. It is here that our two professions are likely to come in contact, and the medical practitioner should know when the danger exists in his neighbourhood. As regards the treatment, the medical profession has the advantage over the veterinary, in that anthrax in man is not so rapidly fatal as in cattle, and that Sclavo's serum is so valuable in man if injected in the early stages of infection.

With us, although we occasionally get reports of spontaneous recovery in the dog and pig, the disease in cattle and horses is generally fatal and comparatively rapid. Statistics of the Ministry of Agriculture show that the number of outbreaks of anthrax in animals in 1922 up to the week ending November 25th was 456, with a total number of 527 deaths—quite a considerable number when we remember that every one was

a possible centre of infection for a human being. This, added to the risk of infection from imported hair, hides, bone manure, feeding cakes, etc., all animal products, adds another disease danger to be grappled with and one in which the veterinarian again stands hand in hand with his medical colleague—for once get the animal aspect of the question clear the human side must automatically follow, and anthrax will be relegated to join glanders and rabies in the list of diseases with which the next generation will only be acquainted by hearsay.

#### Tuberculosis.

In the prevention of tuberculosis much good can be done by collaboration. Until the law is altered so as to compel the milk vendor to guarantee tubercle-free milk, so long shall we have the human deaths from bovine tubercle infection. Most things are sold as guaranteed free from adulteration, and why not that most essential of things—milk free from this contamination? Here one has a food, necessary to infants and invalids, and yet it may contain living cultures of the most insidious and terrible poison in the world.

Dr. Howarth, the medical officer of health for London, tells us that out of fifty consecutive samples of milk purchased in the city no less than one in four proved to be tuberculous; and Dr. Bigger, at the last meeting of the Statistical Society of Ireland, asserted that 6 per cent. of all deaths from tuberculosis were due to drinking tuberculous milk. When we know it is preventable we cannot understand why no move is made.

At the recent National Milk Conference, Dr. Stanley Griffith, in a paper on bovine tuberculosis and its relation to man, gave some statistics which went to prove more than ever the necessity for the medical and veterinary branches of medicine to pull together.

In an investigation on 1,200 cases of human tuberculosis, "out of 116 cases of cervical gland tuberculosis it was found that 87.5 per cent. of those under 5 years were bovine, 61.3 per cent. of those between 5 and 10 years, 37.9 of those between 10 and 16, and 25 per cent. of those 16 years or over. Of 476 cases of bone and joint tuberculosis, 28.7 per cent. of those under 5 years were bovine, 23.1 per cent. of those between 5 and 10, 9.5 per cent. of those between 10 and 16, and 6.4 per cent. of those over 16. Of 126 cases of lupus, 69 per cent. of those under 5 years were bovine, 42.5 per cent. of those between 5 and 10, 60 per cent. of those between 10 and 16, and 17.6 per cent. of those over 16. Of 52 cases of scrofuloderma 58 per cent. of those under 5 were bovine, 44 per cent. of those between 5 and 16, and 7.7 per cent. of those over 16. Of 17 cases of genito-urinary tuberculosis, 3 were found to be bovine in origin. Of 113 post-mortem examinations conducted for the Local Government Board, it was found that in 21.3 per cent. of those under 5 years at death the infecting bacilli were bovine, and in 13.4 per cent. of those where death occurred between 5 and 12 years. From these and similar data it was estimated that bovine tuberculosis caused 6.44 per cent. of all the deaths from tuberculosis in England and Wales, or approximately 3,000 deaths every year. Both types of bacillus were equally virulent for man, the mode of entry being an important factor in determining the severity of the disease. Thus the effects of alimentary infection are, as a rule, less severe than those of respiratory infection. The age incidence and anatomical distribution of the primary lesions clearly point to cow's milk as the source of infection with the bovine type. Cows with tuberculous udders are the most dangerous, but cows with advanced tuberculosis may yield tuberculous milk or infect the milk through infected faeces or uterine discharges."

Why is not the 1914 Cattle Tuberculosis Order reimposed? Why are we not compelled to test the milking cows and segregate or eventually fatten or destroy the reactors, marking them in such a way that it cannot be deleted or passed by? This would at the least do away with a big proportion of the risk of infection, and probably indirectly abolish many other ailments which gain their foothold when the powers of resistance are depleted.

It is true that the scheme needs to be financed in order to pay the necessary compensation, but it seems incredible that money should be allowed to stand in the way of human lives and health.

Dr. Nathan Raw's scheme of vaccine immunization is being tried in various pedigree herds. Unfortunately it takes time to get results, but if this proves successful it will be a boon beyond price to the bovine race, and indirectly through the cattle to man, and a still further link in the chain of collaboration between the two professions.

#### REFERENCES.

- 1 *Veterinary Journal*, November, 1922.
- 2 *Hutya and Marek: Special Pathology and Therapeutics of the Diseases of the Domestic Animals.*
- 3 *Veterinary Journal*, November, 1922.
- 4 *Lancet*.



## DISCUSSION.

Lieut.-Colonel T. D. Young stated that the City of London Public Health Department presented a good example of the collaboration between the medical and veterinary officers. Dr. Collingridge, with keen foresight, recommended some years ago that the officer in charge of meat inspection should be a veterinary surgeon, and the City Corporation adopted his suggestion. The appointment was followed by the issue of by-laws to regulate the hours of slaughter; any killing proposed to be carried out after regulation hours was to be notified by the butchers, and no carcass or offal was to be removed until inspected. Statistics showed the marked results as to efficiency. Following the improvement of slaughterhouses came the more scientific inspection of pig carcasses, whereby £50,000 was saved in 1915 in the central markets, and the Departmental Committee on Meat Inspection recommended the adoption by local authorities of similar by-laws and the same system of examining pig carcasses as to their fitness for human food. Colonel Young gave instances of the finding of dead animals in lairages, the rapid examination of the blood, and the diagnosis of anthrax, whereby danger to slaughtermen and drovers was prevented. Dr. W. J. Howarth, the medical officer of the City, was not less anxious that progress should be made in all matters relating to the purity of meat and milk supply. In the speaker's opinion no public health department was complete without a veterinary officer collaborating with the medical officer in controlling and supervising meat inspection, inspection of cows and cowsheds, contagious diseases of animals, and the care of the authorities' horses. The salary (paid by the various committees) would be well spent in the interests of the public; he urged the reintroduction of the Cattle Tuberculosis Order and the sterilization of all milk or milk products to calves and pigs, as is done in Holland and some other countries. Figures were given showing the splendid results obtained.

## THE SCIENTIFIC BASIS FOR NON-SPECIFIC PROTEIN THERAPY.\*

BY

A. J. CLARK, M.C., M.D., F.R.C.P.

(From the Pharmacological Department, University College, London.)

THE clinical successes obtained with non-specific protein therapy have attracted great attention, particularly in America and Germany. Unfortunately the scientific foundations for this method of treatment are very uncertain. The present paper is an attempt to collect the available scientific evidence showing the nature of the effects produced by non-specific protein therapy. It is important to remember that this method of treatment developed along purely empirical lines from specific treatment with serums and vaccines. The minds of clinical workers were strongly prejudiced in favour of the view that such treatment to be effective must be specific; nevertheless, in spite of this preconception, it was established that in many cases non-specific vaccines and serums were as active as specific, and it was discovered that a large assortment of proteins and products of protein breakdown produced the same effects as vaccines; intravenous administration, moreover, was found to be a particularly effective method of administration.

Non specific protein therapy has been recommended for the majority of known diseases, but there is fairly satisfactory evidence that it is of benefit in the following classes of cases.

1. *Acute general infections*—for example, typhoid fever; here, after an initial exacerbation of the fever, it frequently causes it to terminate abruptly by crisis.

2. *Chronic infections with local lesions*; in this case the injection causes a febrile reaction, which is followed by a secondary phase in which there is a feeling of bodily well-being. The local lesions during the febrile reaction show acute inflammation, and subsequently healing is accelerated in many cases.

Non-specific protein therapy has been particularly successful in the treatment of arthritis, both acute and chronic, in gonorrhoea, in typhoid fever, and in anthrax.

The reaction obtained in non-specific protein therapy depends upon the agent administered and the manner in which it is administered; the general characters of the febrile reaction appear to be essentially the same whatever agent is employed. The

tration of typhoid vaccine are familiar to all, and may be taken as a type.

The intravenous injection of vaccines produces a more rapid and more severe response than the hypodermic administration. Peptone administration produces a less violent reaction than vaccines, and it is much easier to get peptones of standard activity than vaccines of standard activity. Purified proteins are usually given by intramuscular injection; they produce a mild reaction after a delay of some hours.

### Reagents Used in Non-specific Protein Therapy.

- (a) Proteins—for example, purified casein (caseosan, aolan).
- (b) Mixtures containing proteins—for example, milk, normal serum.
- (c) Products of protein breakdown—for example, purified proteoses, commercial peptones.
- (d) Other preparations containing products of protein breakdown—for example, some commercial preparations of colloidal metals, polyglanular extracts, etc.

A febrile reaction similar to that produced by protein therapy often follows a large number of other therapeutic measures, and Bier<sup>1</sup> is of opinion that any measure which causes breakdown of body proteins produces therapeutic results similar to the injection of proteins. According to this view the following procedures may be classed under the same heading:

- (a) Intravenous injections which produce alterations in the blood proteins—for example, hypertonic and hypotonic solutions, protein precipitants such as mercury perchloride, and many other disinfectants.
- (b) Radium, x rays, and the cautery and other procedures which lead to the destruction of body cells.

### The Action of Non-specific Protein Therapy on Infections.

It may be stated at once that there is very little evidence that protein therapy has any effect upon the course of infection in laboratory animals. As a whole the laboratory evidence fails to confirm the clinical evidence.

For example, Bingel<sup>2</sup> treated 471 cases of diphtheria with diphtheria antitoxin and treated an equal number of alternating cases with normal horse serum, and found that there was no difference in the mortality rates. Meyer<sup>3</sup> found that normal horse serum only saved 33 per cent. of guinea-pigs from a minimal lethal dose of diphtheria toxin, and Cowie and his co-workers<sup>4</sup> showed that the mild protective effect produced by horse serum was due to its containing traces of diphtheria antitoxin, and that other serums had no such effect. This, therefore, is not a case of non-specific protein therapy.

Normal ox serum has been used extensively in anthrax, and Kraus<sup>5</sup> found that it protected laboratory animals from anthrax, but other workers<sup>6</sup> have had negative results. Weichardt<sup>7</sup> obtained favourable results by treating mice infected with pneumococci with non-specific proteins, but Kross<sup>8</sup> had completely negative results with this treatment in rats infected with mouse typhoid.

One common criticism may be made of most of the above-mentioned results—namely, that the protein reaction varies greatly in different species, and that since rabbits, rats, and mice are peculiarly insensitive to protein shock they are unsuitable material upon which to test the results of protein therapy.

### The Substance Producing the Protein Reaction.

Since injections both of proteins and of products of protein breakdown and the destruction of body cells all produce a similar reaction, it appears probable that the common active principle is a product of protein decomposition.

Vaughan has shown<sup>9</sup> that the heating of protein with alkali in alcohol produces an intensely toxic product of which 0.5 mg. is sufficient to kill a guinea-pig. This substance appears to be a proteose; it gives the biuret reaction, it diffuses slowly through collodion membranes, and it is freely soluble in absolute alcohol, although insoluble in ether. When proteins are hydrolysed the higher cleavage products are toxic. The toxic effects produced by such preparations as Witte's peptone are well known, but it is important to note that so-called peptone poisoning is produced by proteoses and albumoses, and that proteins, when broken down completely to peptones, have very little toxicity.

Commercial peptones contain various bodies soluble in alcohol which have interesting pharmacological actions on isolated organs, but these substances are not highly toxic; heating with acid or alkaline alcohol produces, however, a strong poison which has all the characters of Vaughan's soluble protein poison. This substance was named "vasodilatin" by Popielski.<sup>10</sup> I measured the toxicity of peptones



by intravenous injections into mice, and found that 1 gram of Witte's peptone yielded about 0.3 gram of vaso-dilatin, and that the minimal lethal dose of the peptone was 4 mg. per gram of mouse, while the minimal lethal dose of the vaso-dilatin was 0.1 mg. per gram. This experiment shows that the vaso-dilatin cannot be performed in the peptone, although it appears to be formed more readily from peptone than from protein.

The base histamine produces effects similar to peptone poisoning, and it has been suggested that the toxic actions of peptones are due to histamine. Hauke and Koessler<sup>11</sup> showed that the content of Witte's peptone in histamine was not more than 3 mg. per 100 grams. I found that histamine was practically non-toxic to mice, which survived intravenous doses up to 0.3 mg. per gram. Histamine cannot therefore be the active principle of vaso-dilatin or of peptones.

The effects produced by peptones, protein poison, and histamine are very similar, although the reactions in different species of animals vary greatly. These varying effects in all cases closely resemble the symptoms of anaphylactic shock. The chief features of the reaction produced by these products of protein breakdown are as follows:

- (a) A rise of temperature associated with an increase of nitrogenous metabolism.
- (b) Contraction of plain muscles.
- (c) Increased secretion of glands.
- (d) Increased permeability of the capillaries, particularly of the liver capillaries.

The effect of intravenous injections of peptones in dogs is to cause a rapid fall of blood pressure, associated with a great swelling of the liver and rise of portal pressure. The peptone appears to act as a poison to the liver capillaries, and thus causes the liver to be engorged with blood; this prevents a proper return of blood to the heart, and consequently a fall of blood pressure, and at the same time a great increase in the lymph flow. The blood becomes non-coagulable and the animal is rendered immune to a subsequent injection.

Peptones have only a slight toxic action on rabbits, rats, and mice, and have no strongly toxic action on guinea-pigs. Vaughan's soluble protein poison produces the same effects as peptones in cats and dogs, but also acts as a strong poison to the other animals mentioned. Histamine has the same general action as peptones, but it does not render the blood non-coagulable, does not increase nitrogen metabolism, and does not produce immunity. Maunier and Pick<sup>12</sup> found that peptones and histamine produced engorgement of the isolated liver of the cat, dog, and ape, but had no such action upon the livers of rodents. The action of these poisons on skin capillaries can be demonstrated very easily by applying them endermically, when they produce wheals.

#### The Mode of Action of Protein Therapy.

The evidence considered makes it easy to understand why a large number of different procedures, all tending to introduce into the blood products of protein breakdown, should have a similar pharmacological effect. It is more difficult to understand why such reactions should produce therapeutic benefit.

There is no doubt that an excess of protein breakdown products is violently toxic. Besides the evidence from animals, we have the clinical evidence regarding traumatic shock, which appears to be caused by protein breakdown products. Whipple, moreover, has shown that the toxæmia produced by acute intestinal obstruction is due to the absorption of toxic proteoses.

All who have studied non-specific protein therapy emphasize the necessity of grading doses correctly, and agree that an overdose is extremely dangerous in its immediate effects, and does damage in its ultimate effects. The reaction, therefore, will only produce benefit if it is of a certain strength.

Weichardt<sup>13</sup> explains the effect of protein therapy by saying that it causes "omnicellular plasma activation." Other observers state that protein therapy establishes a condition of vagotonia. In this connexion it is interesting to note that Rosenthal and Holzer<sup>14</sup> and Freund and Gottlieb<sup>15</sup> found that protein therapy caused an increased sensitivity to adrenaline and pilocarpine in experimental animals. There appears to be no obvious explanation for this phenomenon.

#### The Blood Changes Produced by Protein Therapy.

The most important effect of protein therapy appears to be to produce an immediate negative phase with increased permeability of the capillaries, followed by a positive phase with decreased capillary permeability. The chief effect of the increased permeability is an increased lymph flow which washes into the blood stream a large variety of products of

cell metabolism. Heidenhain first showed that peptones and various proteoses caused increased lymph flow, and numerous writers have confirmed this. Petersen<sup>16</sup> showed, for instance, that in a dog typhoid vaccine induced increased lymph flow. Starkenstein<sup>17</sup> studied the rate of excretion of fluorescein into corneal ulcers, and concluded that non-specific protein therapy at first caused increased permeability of capillaries and later decreased permeability. Luthilen<sup>18</sup> measured the rate of excretion of iodides and ferrocyanides into the peritoneal cavity in the rabbit, and concluded that protein therapy caused decreased permeability of the capillaries. Starkenstein<sup>17</sup> and Döllken and Herzger<sup>19</sup> found that protein therapy diminished the toxicity of strychnine to rabbits.

There is no doubt that the protein cleavage products have a strong lymphagogue action and produce increased permeability of the capillaries, particularly in the liver and in the skin. The last effect is shown by the readiness with which they produce urticaria. Whether the capillaries really become less permeable than normal during the positive phase of the reaction appears to the writer a little doubtful. The blood changes observed are as follows:

- (a) Immediate leucopenia, followed by leucocytosis (Gow<sup>20</sup>); during the latter stage an increased number of young and atypical red cells and an increased number of platelets are present (Cowie and Calloun<sup>21</sup>).
- (b) There is an increase in the fibrinogen, globulin, thrombo-kinase, and blood sugar content in the blood.
- (c) The non-protein nitrogen content of the blood is raised considerably (Van Slyke and Whipple<sup>22</sup>).
- (d) The proteolytic ferments in the blood are increased (Jobling and Petersen<sup>23</sup>).
- (e) The antibodies in the blood are increased.

There is a general agreement as to the occurrence of these changes, but the relative importance of the changes is a matter of dispute. Jobling considered that the alterations in the content of the blood in proteolytic ferment was of great significance, but this is denied by Teale and Bach<sup>24</sup>. The increase in antibodies only occurs if an animal has been previously immunized. Apparently new antibodies are not formed, but antibodies present in the tissues are washed back into the blood.

The anaphylactic state depends upon the presence of antibodies in the tissues and their absence from the blood, and it is interesting to note that peptone injections cause a temporary desensitization in sensitized animals (Kellaway and Cowell<sup>25</sup>). Observations on typhoid patients show that only a slight rise in agglutinin content of the blood is produced by protein therapy, and most observers agree that it is quite insufficient to account for the beneficial effects produced by protein therapy in this disease.

The diphasic action produced by protein therapy is confirmed by Dresel and Freund<sup>26</sup> who found that in cats caseous injections caused at first the appearance of a dilator substance in the blood, and that after a few days a vaso-constrictor substance appeared. A vaso-constrictor substance can be obtained from blood platelets, and the platelets probably furnish the vaso-constrictor substance which appears when blood clots; but vaso-constrictor substances can be obtained from most tissues of the body, and therefore the origin of the substance found by Dresel and Freund is uncertain: it is certainly unnecessary to assume that it is a product of platelet breakdown.

These changes observed in the blood are of great interest, and the bulk of the evidence points to the fact that non-specific protein therapy causes a washing out of the tissue fluids into the blood, and that this process causes a number of changes in the composition of the blood. Unfortunately the evidence at present available is insufficient to indicate which of the changes observed is really of chief clinical importance.

#### REFERENCES.

- <sup>1</sup> Bler: *Munch. med. Woch.*, 63, 1473, 1921. <sup>2</sup> Bingel: *Deut. Arch. f. Klin. Med.*, 125, 284, 1918. <sup>3</sup> Meyer: *Deut. med. Woch.*, 45, 1048, 1920. <sup>4</sup> Cowie et al.: *Journ. Med. Res.*, 42, 227 and 261, 1917; 43, 21, 1922. <sup>5</sup> Penna, Guenen, and Kraus: Quoted from *BRITISH MEDICAL JOURNAL*, 1920, II, 865. <sup>6</sup> Hufiya and Maninger: *Centralbl. f. Bacter.*, 1919, Bd. 23, p. 118. <sup>7</sup> Weichardt: *Munch. med. Woch.*, 68, 33, 1921. <sup>8</sup> Kross: *Journ. Med. Res.*, 43, 29, 1922. <sup>9</sup> Vaughan and Wheeler: *Journ. Infect. Dis.*, 4, 476, 1917. <sup>10</sup> Popielski: *Pflüger's Arch.*, 128, 191, and 483, 1923. <sup>11</sup> Hauke and Koessler: *Journ. of Biol. Chem.*, 44, 567, 1920. <sup>12</sup> Maunier and Pick: *Biochem. Zeit.*, 9, 1713, 1913. <sup>13</sup> Weichardt and Schrader: *Munch. med. Woch.*, 66, 237, 1921. <sup>14</sup> Rosenthal and Holzer: *Med. Klin.*, 25, 675, 1920. <sup>15</sup> Freund and Gottlieb: *Arch. f. exp. Path. u. Pharm.*, 93, 92, 1922. <sup>16</sup> Petersen: *Protein Therapy and Non-specific Resistance*, Macmillan, New York, 1922, p. 53. <sup>17</sup> Starkenstein: *Munch. med. Woch.*, 66, 203, 1919. <sup>18</sup> Luthilen: *Med. Klin.*, 17, 1713, 1913. <sup>19</sup> Döllken and Herzger: *Munch. med. Woch.*, 66, 1100, 1921. <sup>20</sup> Gow: *BRITISH MEDICAL JOURNAL*, 1920, I, 284. <sup>21</sup> Cowie and Calloun: *Arch. Int. Med.*, 28, 213, 1918. <sup>22</sup> Whipple and Cook: *Journ. Exp. Med.*, 23, 221 and 243, 1918. <sup>23</sup> Petersen: *Loc. cit.*, p. 101. <sup>24</sup> Teale and Bach: *Proc. Roy. Soc. Med.*, 13, Path. Sect., 1920, p. 5. <sup>25</sup> Kellaway and Cowell: *Brit. Journ. of Exp. Path.*, 3, 238, 1922. <sup>26</sup> Dresel and Freund: *Med. Klin.*, 17, 1278, 1921.



## DIASTASE IN BLOOD AND URINE IN DIABETES MELLITUS.

BY

G. A. HARRISON, B.A., M.B., B.Ch. Cantab.,\*

AND

R. D. LAWRENCE, M.D. ABERD.†

(From the Biochemical Laboratory, King's College Hospital, London.)

In a previous paper<sup>1</sup> we have published some of our work on blood amylase, and have reported our findings in normal individuals and in renal disease, illustrating the importance of estimating diastase in both blood and urine. In this paper we shall outline our findings in pancreatic cases, in hepatic disease, and in diabetes mellitus, and then discuss the results in diabetes with reference to pancreas, liver, and kidney. Throughout this investigation the reaction of the urine has been adjusted to  $P_H$  6.7 before estimation of amylase, unless otherwise stated.

A brief summary of our previous results will facilitate comparison with the findings in diabetes.

Normally, the concentration of diastase in the blood lies between 3 and 10 units, and in the urine between 6.7 and 33.3 units. The total quantity of diastase excreted in twenty-four hours varies from 8,000 to 30,000 units. It is useful to calculate the total diastase excreted to reveal instances in which high or low concentrations of diastase may legitimately be attributed to oliguria or diuresis.

In renal disease there may be (a) "diminished excretion with retention," in which the value for blood is above 10, and for urine below 6.7; (b) "diminished excretion without retention," in which the blood amylase is normal, but the concentration in the urine is lower than in the blood or of the same value; (c) "normal excretion," in which the concentration of diastase is higher in the urine than in the blood.

TABLE I.—Examples of Results in Diseases of Pancreas and Liver.

Case.	Blood Diastase.	Urine (24 hours).			Remarks.
		Concentration of Diastase.	Vol.	Total Diastase Excreted.	
	units	units	c.cm.	units	
A	23.5	16.7	3,900	65,100	Gunshot wound of pancreas; resulting cyst drained.
5	3.3	2,780	9,200		Three weeks later, clinically much improved.
B	20	235	330	77,600	Traumatic pancreatic cyst; laparotomy; drainage. Loewi's test negative on three occasions.
	16.7	65	780	51,500	One month later, well on the way to recovery.
	—	16.7	950	16,000	Six weeks later, back at school.
C	40	400	—	—	Acute haemorrhagic pancreatitis; death 21 hours after operation; diastase of cerebro-spinal fluid = 10.
D	8	133	1,600	212,800	Carcinoma of pylorus; bile and pancreatic ducts blocked by growth.
E	5	80	1,540	123,200	Gall stones; pancreatitis; glycosuria.
F	5	100	540	54,000	Telipos equino-varus; no glycosuria; Loewi's test negative; no evidence clinically of pancreatic disease.
1	7	23.5	720	16,900	Malignant disease of liver.
2	1	10	—	—	Carcinoma of liver.
3	2	23.5	350	8,500	Catarrhal jaundice.
	8	10	1,230	12,600	Three weeks later, convalescent.
4	3.3	5	540	4,300	Cirrhosis of liver.
	8	10	780	7,800	One month later, clinically much improved.
5	7	16.7	720	12,000	Cirrhosis of liver.
6	5	16.7	1,020	17,000	Melanotic sarcoma of liver.
7	7	16	1,715	27,400	Acholic jaundice.

Note.—The reaction of the urine was not adjusted to optimum  $P_H$  except in Cases E and F. The total diastase excreted in twenty-four hours is calculated to the nearest hundred. Case F is included for comparison.

\* Working on diabetes with a grant from the Medical Research Council. Part of this work was included in a thesis for the degree of Doctor of Medicine, Aberdeen, 1922.

## Pancreatic Disease.

It is well recognized that active destruction of the pancreas (or sudden obstruction of its ducts) is accompanied by an increased concentration of diastase in the urine, and usually in the blood also. Examples are given in Table I. Occasionally a moderately high concentration of urinary diastase may be found in the absence of any other evidence of pancreatic disease (Case F, Table I).

We conclude that a high urinary index, when accompanied by a raised blood diastase, is diagnostic of active pancreatic disease, but when accompanied by a normal value for blood is merely suggestive.

## Liver Disease.

The urinary and blood diastase in the majority of 20 patients has been within normal limits. The blood diastase was subnormal in three cases (all severe), but these low values were accompanied by normal urinary figures for the concentration and total excretion of diastase. In two patients the blood diastase rose as the jaundice and clinical condition improved (Table I).

## DIABETES MELLITUS.

## Blood Diastase.

Over 200 estimations have been made in a series of 48 patients. In one instance only was the value raised (13.3 units), the estimation being made six hours before death in coma. Fourteen patients had a subnormal blood amylase (1 or 2 units). These low figures have been obtained usually, but not invariably, before treatment or during fasting or on low diets. In many instances they have been accompanied by normal values for concentration or total excretion of diastase in the urine.

In a few cases estimations of blood diastase at intervals of several days or weeks have revealed slight variations, the maximum being 5 units. We have been unable to correlate such changes with the clinical condition, the blood sugar content, or the diet (Table II), and are inclined to regard them as of little or no significance.

TABLE II.

Case and Date.	Blood Diastase.	Blood Sugar.	Glycosuria.	Diet.		
				Carbohydrate.	Protein.	Fat.
	units	per cent.		gram.	gram.	gram.
CASE 21: F., aged 65.						
2.5.21 ...	6.7	0.23	0	79	69	54
9.5.21 ...	4	0.35	+	22	13	24
31.5.21 ...	8	0.22	0	100	109	120
15.1.22 ...	6	0.31	+++	Low III balanced		
12.7.22 ...	7	0.21	Trace	Carbohydrate reduced		
23.7.22 ...	8	0.21	0	156	87	72
15.8.22 ...	5	0.28	+	93	91	93
13.10.22 ...	4	0.42	+++	Broken diet		
CASE 26: M., aged 33.						
17.8.21 ...	3.3	—	+++	Unrestricted		
13.9.21 ...	6.7	0.13	0	101	35	30
1.8.22 ...	3	0.24	+++	55	75	46
15.8.22 ...	2	0.22	Trace	20	15	10
4.9.22 ...	4	0.14	0	80	69	71
CASE 38: M., aged 60.						
17.2.22 ...	2	0.32	+++	Unrestricted		
21.2.22 ...	3	0.185	+++	205	90	17
24.2.22 ...	3	0.15	+	Starvation		
4.3.22 ...	3	0.115	0	80	39	7
8.3.22 ...	3	0.10	0	20	61	27
29.3.22 ...	3	0.18	0	100	101	103
CASE 33: M., aged 53.						
11.3.22 ...	2	0.33	+++	Unrestricted		
13.3.22 ...	1	0.14	0	Starvation		
23.3.22 ...	3	0.155	Slight trace	39	8	0
31.3.22 ...	3	0.25	+++	73	27	15

In our previous paper<sup>1</sup> it was pointed out that blood diastase remains virtually constant throughout the day (estimations at hourly or half-hourly intervals) in normal individuals and in diabetes mellitus. The following are typical experiments in diabetics:

Case S.—Mild. Blood diastase and blood sugar estimated at 10.15 a.m., immediately before a dose of 50 grams of glucose, taken fasting, and again at hourly intervals until 5.15 p.m. Lunch 1 to 1.15 p.m., and tea 4 to 4.15 p.m. The blood amylase was 5 units on each of the eight occasions. The blood sugar was 0.10, 0.21, 0.14, 0.11, 0.09, 0.07, 0.08, and — per cent. respectively.\*

\* The — signifies not estimated.



Although the blood sugar was doubled the diastatic-index remained constant.

**Case 7.**—Severe. Examinations before, and at half-hourly intervals after, a meal consisting of carbohydrate (30 grams), protein (23 grams), and fat (13 grams). The serum diastase was 3, 3, 4, 3, 3, and 3 units. The blood sugar was 0.215, 0.27, 0.23, 0.25, 0.27, and 0.27 per cent.

#### Urinary Diastase.

Until recently the reaction of the urine has been disregarded in estimating the concentration of diastase. Dodds<sup>2</sup> and Sladden<sup>3</sup> have published papers showing that a very considerable error may be introduced if the reaction is not adjusted to the optimum for the enzyme. This fact will necessitate the repetition of much of the work on urinary diastase, and accounts for many of the low results reported, but not for all. We append a few of our most striking figures to show the importance of this adjustment, in confirmation of the findings of the above workers (Table III), together with a few instances in which such correction has made little or no difference. Our corrections have been made according to the plan suggested by Sladden. The reaction has been adjusted with decinormal soda or hydrochloric acid to P<sub>H</sub> 6.7, the dilution being allowed for in the subsequent calculation. One per mille soluble starch in 0.5 per cent. sodium chloride has then been added in the usual way.

TABLE III.—Effect of Correcting Reaction of Urine.

Case.	Disease.	Blood Diastase.	Urine Diastase; P <sub>H</sub> not adjusted.	Urine (24 hours) at P <sub>H</sub> 6.7.				H <sub>2</sub> O Soda or HCl (cc.) per 100 c.c.m. Urine.
				Concentration of Diastase	Vol.	Total Diastase Excreted.		
				units	c.cm.	units	c.cm.	
48	Diabetes mellitus	6	0.5	6	600	3,600	13.8	
24	" "	2	1	4	3,100	12,400	17.9	
32	" "	3	2	6	2,005	12,000	19.6	
47	" "	—	3.3	23	—	—	77.7*	
43	" "	5	5	9	1,650	14,900	8.4	
54	" "	5	10	16	910	15,000	23.1	
26	" "	2	13.3	26	1,210	31,500	32.6	
42	" "	4	16.7	25	1,700	42,500	7.4	
K613	Chronic interstitial nephritis	5	0.5	4	1,560	6,200	17.9	
K632	Albuminuria in pregnancy	2	8	25	1,200	30,000	27.3	
I*	Cirrhosis of liver	2	3.3	15	560	14,400	50.4	
L	Myelogenous leukaemia	3	8	26	600	15,600	30.5	
C	Subacute pancreatitis	5	40	80	1,540	123,200	21.0	
26	Diabetes mellitus	3	5	8	3,400	27,200	62.9 (ac.)	
40	" "	3	8	9	2,300	20,700	9.3 (ac.)	
M13	" "	2	10	12	1,440	17,300	16.8	
52	" "	4	2	2.3	1,400	3,200	14.7	
K608	Chronic nephritis (mixed)	6	0.25	0.5	600	300	5.3	

\* Night urine.

Several hundreds of estimations of the concentration and total excretion of diastase have been made in a series of 55 diabetics, but only in 20 patients has the reaction of the urine been adjusted. Our remarks on diminished diastase excretion naturally are based solely on the corrected results.

In nearly all diabetics at one time or another the diastatic index is subnormal owing to polyuria, the total excretion being normal. But both concentration and excretion have been subnormal in 4 out of the 20 cases. We attribute such findings to a general depression of metabolism. Raised values have been encountered in only two patients, and then only in a minority of a large number of estimations.

**Case 26.**—Blood diastase 2 to 6.7 units (6 tests); urinary diastase, concentration 3.3 to 26, and excretion 10,300 to 40,800 units (43 tests, of which only 9 exceeded 30,000).

**Case 42.**—Blood diastase 4 to 10 units (4 estimations); urine, concentration 8 to 33.3, and excretion 14,400 to 69,900 units (62 estimations, of which 23 exceeded 30,000). The reaction of the urine has been corrected in all these experiments.

The influence of diet has been studied fully in eight patients. Before we realized the importance of correcting the reaction

of the urine, it was concluded that the excretion of amylase was generally lowered by fasting or by very low diets. We have repeated our experiments in three patients, making the necessary correction, and have made similar observations on two new patients, the P<sub>H</sub> of whose urine was adjusted in the first instance. As a result we now conclude that no marked or constant change in diastase excretion can be demonstrated as a direct consequence of changes in diet (Table IV).

TABLE IV.

Case and Date.	Urine (24 hrs.) at P <sub>H</sub> 6.7.			Glycosuria.	Diet.		
	Concentration of Diastase.	Vol.	Total Diastase Excreted.		Carbohydrate.	Protein.	Fat.
	units	c.cm.	units		gram.	gram.	gram.
CASE 49: M., aged 65.					Starvation		
9.9.22...	11.3	1,290	14,600	+++			
11.9.22...	10.4	1,620	16,800	0	50 "	16	4
16.9.22...	5.0	2,160	16,800	0	110	50	23
22.9.22...	5.0	3,660	18,300	Slight trace			
29.9.22...	5.0	2,520	12,600	0	70	83	43
5.10.22*	12.6	780	9,800	+++	60	38	11
7.10.22	10.0	840	8,400	++	25	17	7
10.10.22	5.0	2,220	11,100	0	60	45	25
17.10.22	8.0	1,620	13,000	0	80	72	62
CASE 26: M., aged 40.							
31.7.22 ..	11.6	2,400	27,800	+++	20	28	20
13.8.22...	26.2	1,230	31,000	++	Starvation		
18.8.22 ..	8.0	2,820	22,600	0	50	30	25
29.8.22...	8.0	2,520	20,200	0	80	71	57
5.9.22...	5.0	4,440	22,200	0	80	72	72
22.9.22...	7.0	4,920	34,400	0	82	71	75
CASE 21: F., aged 65.							
14.7.22...	7.0	1,680	11,800	0	80	47	60
22.7.22 ..	9.0	1,590	14,300	0	121	71	50
27.7.22...	12.0	1,500	18,000	0	145	80	65
9.8.22...	14.8	1,500	22,200	0	120	91	89
14.8.22...	7.5	1,950	14,600	0	94	91	89
CASE 42: F., aged 30.							
17.9.22...	13.3	1,950	25,900	0	60	61	47
18.9.22 ..	20.0	1,755	35,100	0	60	60	52
19.9.22...	13.3	1,800	23,900	0	60	58	55
29.9.22...	10.0	2,550	25,500	0	69	69	57
30.9.22...	13.3	2,550	33,900	0	63	69	49
5.11.22	10.0	2,250	22,500	Trace	81	76	46
12.11.22†	10.0	2,400	24,000	+++	65	61	48
19.11.22	8.0	2,850	22,800	+	71	59	43
25.11.22	13.3	2,700	35,900	Trace	71	56	39
3.12.22	10.0	2,850	28,500	0	42	50	38

\* Exploratory laparotomy (spinal anaesthesia, gas and oxygen), October 5th, 1922; nothing abnormal found.

† Two teeth extracted under gas, November 7th, 1922.

No evidence has been obtained for associating our diastase results in diabetes mellitus with kidney inefficiency. In no instance has there been "diastase retention" (with a single possible exception, blood amylase 13.3 units, urine not examined). Four patients have exhibited "diminished excretion without retention" of the ferment on one or more occasions (the reaction of the urine had been adjusted to P<sub>H</sub> 6.7). This diminished excretion may have been due to a general depression of metabolism. Clinically there was no evidence of renal inefficiency and urea tests of renal function were normal.

Increase of diastase in blood or urine has been reported only in active destruction of the acini of the pancreas. It is not surprising, therefore, that the majority of diabetics do not show raised amylase values. Their islet tissue may be degenerating as a result of overstrain by excessive diet (Allen), but in the absence of destruction of acini an increase of diastase excretion would not be expected. Conversely, when raised diastase values are found in diabetics, they might be regarded as evidence of active pancreatic injury (inflammatory or otherwise). Only two of our cases have shown such increases, and these were transitory and relatively small. The highest figures found were: blood diastase 10 units; urine, concentration of diastase 33.3 units, volume 2,100 c.c.m., and total diastase excreted 69,900 units.

In connexion with their work on the CO<sub>2</sub> content of alveolar air, Bennett and Dodds<sup>4</sup> have made an alternative suggestion—namely, that in diabetes mellitus there may be an excessive flow of pancreatic juice, with a corresponding diminution in internal secretion. It is true that we have not estimated diastase in the faeces, but the great majority of our cases (including many that clinically were severe and untreated at



the time) show either a normal or a diminished amylase content in blood and urine. Our work therefore gives little or no support to this hypothesis.

So far we have found a subnormal blood diastase only in diabetes mellitus, liver disease, one case of albuminuria in pregnancy (Table III, K632), and one case of septic endocarditis. In most instances the urinary diastase was normal, so that the low blood values were not due to a diminished formation of the ferment. It is possible that a lowered renal threshold for amylase was present, such as has been suggested by Langdon Brown\* to explain the relatively high urinary figures (associated with normal blood diastase) in pregnancy toxæmias. Excluding the pregnant patient, our cases had little or no albuminuria. Otherwise we are at a loss as to what significance (if any) should be attached to these subnormal blood amylase findings.

In conclusion our results confirm the opinion of previous investigators (Allen†) that diastase tests are of little or no value in the diagnosis, prognosis, or treatment of diabetes mellitus.

#### Summary.

Estimations of diastase simultaneously in blood and urine have been made in fifty-five diabetics and a large number of controls, due attention being paid to the reaction of the urine, the diet, etc.

Our findings are in support of those investigators who have concluded that the presence of amylase is more or less accidental, and of little or no value in the diagnosis, prognosis, or treatment of diabetes mellitus.

#### REFERENCES.

- \* Harrison, G. A., and Lawrence, R. D.: *Lancet*, 1923, i, 169. † Dodds, E. C.: *Brit. Journ. Exper. Pathol.*, 1922, 3, 133. ‡ Sladden, A. F.: *Lancet*, 1922, ii, 68. § Bennett, T. I., and Dodds, E. C.: *British Medical Journal*, 1922, i, 3. ‖ Brown, W. Langdon: *Proc. Roy. Soc. Med.*, 1922, 15, Sect. of Therap. and Pharmacol., p. 1. „ Allen, F. M.: *Studies Concerning Glycosuria and Diabetes*, i, 113, p. 113.

## BRACHIAL NEURITIS DUE TO CERVICAL RIB.

BY

W. WRANGHAM, O.B.E., M.D., M.R.C.P.,  
HONORARY PHYSICIAN, BRADFORD ROYAL INFIRMARY;

AND

JAMES PHILLIPS, F.R.C.S. EDIN.,  
HONORARY SURGEON, BRADFORD ROYAL INFIRMARY.

MUCH has been published on the condition of cervical ribs and the symptoms which this abnormality may produce, but most of the articles have been contributed to meetings of specialists or to little read journals, and a pathological condition does not become common knowledge until it has been repeatedly brought to the notice of the general practitioner at meetings of societies which he attends or in journals which he reads.

#### HISTORICAL.

In 1893 Lewis Jones published a report of 6 cases of paralysis of the small muscles of the hand (some supplied by the ulnar and some by the median nerve), which did not progress and so differed from progressive muscular atrophy.

In 1902 Buzzard published a series of similar cases and diagnosed the condition as due to a lesion of an individual root of the brachial plexus, but was puzzled as to the cause.

Apparently neither of these physicians was aware that in 1891, at Edinburgh, Sir David Wallace had read a paper in which he reviewed the older (anatomical) literature on cervical ribs, and had shown a patient with pressure symptoms which Wallace attributed to a rudimentary cervical rib.

In 1895 Stiles recorded a case of his own and referred to 8 or 10 cases in which the cervical rib had been excised.

Thorburn was probably the first to use x rays to diagnose the presence of rudimentary ribs, and in 1904 he described before a London society two cases with pressure symptoms.

The connexion between the nerve symptoms and cervical ribs having thus been brought to his notice Lewis Jones endeavoured to trace the cases he had described eleven years earlier, and found that of 14 patients examined 10 showed one or more cervical ribs.

Edwin Bramwell was apparently the first to suggest (in 1903) that the lowest brachial plexus root might be pressed on by a rudimentary or even by a normal first thoracic rib, and in 1911 Sir Harold Stiles removed a portion of first rib, with satisfactory result, from a patient with typical pressure symptoms. Similar cases have been recorded by various surgeons (Stopford stated in 1919 that in less than two years he had met with 10 cases of compression neuritis

produced by normal first rib), but, so far from this having become common knowledge, Stiles informs us that it was news to not a few of the American surgeons to whom he lectured on the condition in the States in 1922.

#### EMBRYOLOGY.

In a limbless animal like the snake, to every vertebra is attached a pair of ribs, and each somatic segment has also its pair of segmental nerves. In the human embryo the arms and legs first appear as limb buds, the arm bud springing from five or six vertebral segments. These segments grow chiefly in a vertical direction, while the limb grows chiefly out at right angles and soon fails to cover the whole vertical extent of the segments from which it was derived. Thus, of the spinal nerves which supply the limb, the upper and lower nerves come to pass more and more obliquely between their points of origin and their point of entry into the limb. The nerves are relatively larger in the embryo than after birth, and they are of sufficient size to interfere with the forward growth of the rib mesoblast, so that in the cervical and lumbar regions the ribs are normally represented by the rudimentary costal processes of the vertebrae only. Occasionally a more or less perfectly formed pair of ribs spring from the seventh cervical vertebra; more rarely the first pair of thoracic ribs are incomplete or rudimentary. The limb bud is not constant in its origin: in some individuals it derives from the cervical segments alone, in others it derives also from the first dorsal segment, and exceptionally from the second dorsal segment also. The brachial plexus, being of course formed from the nerves of whichever segments enter into the origin of the limb, varies accordingly. Wood Jones states that where little or no contribution to the plexus comes from the first dorsal root there is a greater liability to cervical rib; in cases of rudimentary first rib the second thoracic nerve has been found to make a considerable contribution to the brachial plexus.

#### ANATOMY.

A rudimentary cervical rib is commonly an inch or more in length, and ends in a rounded knob from which a tight fibrous band passes to be attached to the first rib. An intercostal muscle exists between the rudimentary rib and the rib below; anteriorly the muscle fibres are gradually replaced by fibrous tissue. The lowest root of the brachial plexus more usually passes over and rests upon this fibrous band than upon the rudimentary rib itself.

#### CAUSE OF SYMPTOMS.

Cervical rib is of course a congenital condition. Pressure symptoms rarely occur before adult age. This is explained by the dropping of the shoulder which normally takes place as growth proceeds: in the child the clavicles rise markedly from their sternal ends towards their outer extremities; in adults (especially women) they not uncommonly slope downwards from their sternal ends. Apart from this general factor, there is almost always a definite exciting cause for the pressure symptoms. This may be an acute illness—for example, diphtheria—leading to stretching of ligaments; or a sudden weight lifting; or the pressure, say, of a violin above the clavicle; or unaccustomed use of the upper limb, strenuous such as digging, or intricate such as piano playing or typewriting.

#### SYMPTOMS.

The lowest root of the brachial plexus contains motor, sensory, and sympathetic fibres, and motor, sensory, trophic, and vascular symptoms may all be present in cases of rib pressure.

**Pain.**—The patient most usually consults a doctor on account of pain, which commonly extends along one aspect (more often the inner side) of the forearm. The pain is burning, neuralgic, or "pins and needles" in character, and a diagnostic point of importance is that it is relieved by raising the arm above the head, this movement lifting the nerve off the rib or fibrous band over which it has been stretched.

**Paralysis.**—Wasting of the thenar eminence is the most frequent motor symptom, the opponens pollicis and abductor pollicis being the muscles usually chiefly affected. Careful examination may reveal wasting of some of the interossei or others of the ulnar group of muscles, but the most characteristic clinical picture is one where there is very obvious wasting of the ball of the thumb.

**Vascular Symptoms.**—A weak radial pulse has been not uncommonly noted; very rarely oedema of the forearm.

**Trophic Symptoms.**—Gangrene of the fingers is a very rare symptom.



## TREATMENT.

The symptoms being due to pressure on a nerve root, they cannot be cured except by removing the pressure, and this can only be done by surgical operation.

In the absence of pain it is doubtful whether a patient should be urged to submit to operation merely on account of paresis of some of the intrinsic muscles of the hand unless his occupation is one which requires the use of these muscles. But the doctor is hardly likely to be consulted unless there is pain; if he finds that pain in the hand or forearm is relieved by raising the limb above the head, and is accompanied by thenar wasting, he should have the patient x-rayed; and even if no cervical rib is found to be present the characteristic syndrome will justify a diagnosis of rib pressure and warrant recourse to operation.

The operation is a dissection of the neck, demanding an accurate knowledge of anatomy; if a cervical rib is present it is isolated, divided posteriorly, and removed. If no cervical rib is present a portion of the first rib is removed. Provided the symptoms have not persisted too long cure is to be expected—usually rapid cure of pain and much less rapid restoration of muscle power.

The case which we have to describe came under the care of one of us (W. W.) on March 16th, 1922.

He was a well developed, muscular young man of 25, living in the country, who had previously been in good health. Five months ago he began to have pain in the back of the right wrist; later it spread to the arm, and a fortnight ago the right side of the root of the neck became painful. The pain was intermittent, and he might be free from it for two or three hours at a time; but when present the pain was severe and burning, and at night prevented sleep. He found some relief from supporting the elbow. On examination, the pad of the forefinger was dry and black, and there was a smaller area at the tip of the thumb, and a quite small black spot on the tip of the middle finger. The right thenar eminence was smaller than the left, and the muscles of the right forearm had less tone in them than those in the left. Sensation was impaired in the thumb and forefinger.

Palpation at the root of the neck revealed on both sides a hard bone-like outgrowth, suggesting an extra rib, which was confirmed by a skiagram. The sensory impairment and trophic changes at the tips of the thumb and first and second fingers pointed to involvement of the sixth or sixth and seventh cervical nerves, and the slight wasting of the thenar eminence showed that the eighth cervical had not wholly escaped.

On inquiry as to a possible cause for the development of the symptoms the man stated that he had been digging rather vigorously in his garden for many days prior to the onset of the pain.

**Operation.**—On March 28th, 1922, through an L-shaped incision the right cervical rib was exposed and divided posteriorly and removed.

**Result.**—The operation was followed by immediate relief of pain. The trophic changes cleared up less quickly and the gangrenous tip of the forefinger had ultimately to be amputated.

Writing on October 25th, 1922, the family doctor thus describes the man's condition: "There is slight tenderness at the corner of the scar to the ulnar side—this has always been the tenderest spot. No anaesthesia or pain in forearm or hand. No trophic changes except that the terminal inch of the forefinger is slightly red, glazed, and numb. The muscles of the forearm are like a blacksmith's, very well developed, and there is no difference between those of the right and left hands except as regards the thumb muscles."

## ASTHMA AND ADRENAL INADEQUACY.\*

BY  
T. DRUMMOND, M.D., M.R.C.P. EDIN.,  
DURBAN, SOUTH AFRICA.

I do not propose to enlarge in any detail on what we one and all picture to ourselves as asthma, and what we readily recognize as such, but there are a few points I should like to refer to.

Dienlaffoy, in his description, says: "The attacks of dyspnoea which constitute asthma . . . appear suddenly, weeks, months, or even years apart." They consist of two elements—(1) a nervous, which is constant, and (2) a catarrhal, which is variable, may not be present with first attacks, but appears as a complication in later attacks. The attack of asthma generally begins "in the early hours of the night." Then follows a picture of the patient during a paroxysm:

"An attack of asthma is rarely single; we usually see a series of attacks which are repeated for several days or weeks; they often return at the same hour—usually at night. . . . Analysis of the attack shows that the dyspnoea presents peculiar characteristics. . . . The painful and wheezing inspiration

only allows an insufficient quantity of air to enter the chest, and the expiration, which is still more painful and three or four times as long as the inspiration, does not drive out the inspired air. . . . We do not see sucking-in, as in croup, because in asthma the chest is always filled to its maximum with air."

In the true variety the nervous element is alone in play and it is only when catarrh appears that the picture is modified. "The attack of asthma is certainly produced by spasm of the muscles of respiration," though authorities disagree in allocating the spasm to the intrinsic muscles of respiration, the extrinsic, or both. Asthma is a neurosis and presents all the caprices of such, and further, it is almost always a diathetic and hereditary neurosis.

"The spasm of the respiratory muscles and the phenomena of vaso-dilatation and vaso-secretion are themselves due to a special condition of the nerves which govern these functions. This state of irritability is sometimes spontaneous or at least apparently so; at other times it is due to a reflex act which starts in the terminals of the sensory nerves which supply the bronchi or the nasal passages."

Thus Dienlaffoy, and if one reviews his treatment the drugs used are all those which have an inhibitory action on the vagus.

Now in coming to a logical conclusion as to what is the root mischief at work, wherein has lain our difficulty? As I regard it, the reason is that we have to deal with a condition which apparently is subject to no fixed laws, whether of heredity or environment; germinal origin, seasonal incidence, race, or age period. I say "apparently" is evidence, if we seek it, of some hereditary influence, of some relation to the age of the individual and to his environment. Thus, faced with the initial difficulty of incidence, can we isolate any one condition common to all cases, any one condition subject to the above influences, any one condition of which we could say: "This is the fundamental principle lacking in the human economy of all asthmatics, and this is the cause of asthma, however it as a cause may be produced"? I think we can do so.

The fundamental fault in the incidence of asthma I believe to be *suprarenal inadequacy*, and I propose to advance as briefly as possible evidence in favour of this opinion.

Some months ago the one question knocking at my brain was: Why do so many cases of asthma obtain such marked and definite relief—even though only of a temporary nature—from an injection of adrenaline or some such derivative of the suprarenal medulla? The answer was: This supplies the suprarenal medulla; this has to do with the cause of temporarily a deficiency; this has to do with the cause of the condition, and is a manifestation of the specific action of adrenaline in restoring the normal tonus of the bronchial muscles.

On this basis the problem required much wider, more minute, consideration: the first principle involved was the review of the known action of the extract of the suprarenal glands, and the second was how this action could be affected or modified by external influences acting on the glands or by influences on the glands themselves. The actions are familiar, but they will bear recapitulation.

The glands probably have two secretions—one produced by the medulla and one from the cortex—whose action may be supplementary, but probably is antagonistic, to adrenaline. We owe to Langley the discovery that the action of adrenaline on any part . . . of the sympathetic nerves is on a structure that at no time in its history has been innervated by the sympathetic. Elliott, in extending these observations, has brought forward some facts which suggest that, after excision of the suprarenals, the muscles innervated by the sympathetic cannot be thrown into activity even by electrical stimulation of the nerves.

Adrenaline appears, then, to be a chemical body whose presence is essential to the activity of the sympathetic. Nor is this the only example of such an association, for sympathetic paraganglia and structures such as the carotid body contain paraganglia—a similar but more stable body which does not lose its effect even if . . . with the stomach wall for twenty-four hours.

It has little or no action on the vessels of the heart itself. It has little or no action on the vessels of the lungs or brain. It liberates sugar in the blood. It causes relaxation of intestinal muscles and of bronchial muscles. It contracts all sphincters. It can bring about rapid recovery of the normal irritability of muscle after this has been lessened by fatigue, and this is an inherent property of adrenaline itself and not produced through its influence on the circulation. The glands are innervated by the sympathetic system, and since the secretion stimulates the same activities that are stimulated nervously by this division, it is possible that disturbances in the realm of the sympathetic, although initiated by nervous discharge, are automatically augmented and prolonged through chemical effects of the adrenaline solution.

Every one of the visceral changes noted—the cessation of processes in the alimentary canal (thus freeing the energy supplied to other parts), the shifting of the blood from the abdominal organs and skin to the organs mostly in need of them, the lungs, heart,

\* Abstract of a paper entitled "Asthma—a phantasy with some facts," read before the Durban Medical Society.



and central nervous system; the increased vigour of contraction of the heart, the quick abolition of muscular fatigue; the mobilizing of energy-giving sugar into the circulation—every one of these visceral changes is directly serviceable in making the organism more effective in the violent display of energy which fear or rage or pain may involve (Cannon). Thus the emotions affect the glands and the adequate response is made.

My next remarks may seem irrelevant, but I wish to show how the glands may be affected by simple causes, and thus lay the foundation for assuming that some such cause may be at work in the production of asthma.

Why does a red rag irritate a bull? The retina in its pigmentation and because of its pigment must be in close association with the suprarenals. Certain retinal cells and fibres are connected through the autonomic system with the adrenal medulla; certain cells are connected through the same system with the adrenal cortex; and therefore, as the retina in different animals, races, and individuals differs in its structure and sensitiveness, so in the bull the connexion with the adrenals may be such that red as a colour immediately stimulates and rouses it and the associated glands, with the resulting increased production of adrenaline and the stirring up of pugnacity and the emotion of anger.

We know the stimulant effect of red as a colour—a stimulation which goes on to irritation if one is too long exposed to it. Red stimulates the suprarenal glands to overproduction of adrenaline, with consequent demonstrable influence on the emotions. Black and darkness depress and frighten, and asthma in most cases is of nocturnal occurrence. The inference, as related to adrenaline production, is obvious. Assuming, therefore, an origin for asthma arising through the medium of the retina, can we not with equal justice assume that an influence in the nose, acting through the sympathetic, can produce suppression of adrenal secretion, with resultant asthma, or border-line asthma precipitated by the added depressing influence of darkness? The vital tide is at its ebb at 2 o'clock in the morning.

Can we not proceed on the same lines, and assume that indigestion or a heavy meal (and remember the stomach and bowel congestion, the lethargy produced by the necessity of digestion is the antithesis of what obtains when there is a superabundance of adrenaline in the blood) may reflexly affect the suprarenals with temporary suppression of secretion, permitting the onset of an attack of asthma? Once got a suppression of sufficient magnitude and in most cases an attack supervenes.

Assuming that this theory of adrenal suppression, as the cause of asthma, is correct, let us briefly consider the mechanism at work.

The bronchi, or rather bronchioli, affected are directly innervated by the autonomous nervous system, and this innervation is through the medium of two distinct entities, the sympathetic nervous system and the vagus. The sympathetic, as concerned in the mechanism of asthma, keeps the bronchioles patent. It is definitely stimulated to activity by adrenaline. Further, it is closely interrelated with the adrenal glands and conveys to them stimuli which increase their activity, and, what is even more important in the present discussion, impulses which may suppress function. The vagus action is directly opposed to that of the sympathetic and it is the careful balance of these opponents which maintains bronchiole equilibrium. Unopposed by the sympathetic, the vagus produces spasm of the bronchioles and consequent asthma.

Again, during sleep the endocrine glands are at rest. The sympathetic, receiving no external impressions, unstimulated by internal secretions or relatively so, is sleeping as well, while the vagus—concerned in the perpetuation of cardiac action and rhythm, bowel peristalsis, respiration, etc.—is necessarily active. We can, therefore, all the more readily appreciate the propensity for asthmatical attacks to develop during sleep. And so it is in practice—asthma, colic, and labour pains tend to develop while the sympathetic is at rest.

Thus, given bronchiolar muscle of border-line instability, it may be kept apparently stable by an active sympathetic. The activity of the sympathetic depends on a steady flow of adrenaline. This may be just sufficient during the day when the sympathetic is wakeful and continuously requesting the glands to function. But when the sympathetic sleeps, what then? The supply of adrenaline is more or less rapidly exhausted, the gland sleeps with the sympathetic; and calls for more secretion are not made and not received. Asthma supervenes.

In leading up to this I have endeavoured to indicate a selective action of suprarenal products, as of all endocrine products. But why should one person get asthma and another, under apparently identical conditions, not get it? It is all a question of degree. The normal individual manufactures normal amounts of internal secretion, enough to

keep the peace during the day and to tide him through the hours of darkness. But glands vary as do individuals. If the thyroid can be deficient in one individual, then why not the suprarenal in another? Thus we assume congenital deficiency. Again, it is known that glandular function may alter without any definite evidence in the glands themselves. If this can happen with the ovary, thyroid, and pituitary, why not with the suprarenal? Thus we assume deficiency later in life. Moreover, glands are subject to disease processes and toxic influences, and adrenal hypofunction and asthma may often be a sequel of some other exhausting disease.

But there are cases of asthma which we can explain by none of these suppositions. Endocrinologists inform us, and produce indubitable proof, that the endocrine glands form a chain, the strength of which depends on the integrity of each link. Let one link of the chain be malformed, weak, distorted, or broken, and the chain as such gives evidence of the weakness when put to the strain; and, moreover, the weakness is found at the particular link affected. Exophthalmic goitre, cretinism, Addison's disease, dystrophia adiposa genitalis, acromegaly, osteomalacia, are all cases in point. But the chain means more than that: the perfection of action of one gland link depends on the perfection of action of another gland link.

Thus the ovary and thyroid are interdependent, as are the thymus and ovary, and change in one is evidenced as well in the other. Now the ovary has a close relation with the suprarenal, and so has the thyroid. During pregnancy the action of the ovary in certain directions is in abeyance. Menstruation has ceased. That there is in many cases some deleterious effect produced on the suprarenal glands is certain. They are the chromophil glands, and we have only to note phenomena of brown areolar pigmentation, brown discoloration of the skin, apathy, somnolence, all indicating a kind of pseudo-Addison's disease. To what does this lead us? To the supposition that the ovary has a stimulating influence on the suprarenal glands. Before puberty this stimulation is absent; it is absent during pregnancy; it is lost after the menopause.

Is not asthma a condition rather of ante-puberty or post-menopausal ages? Have we not all made brilliant prophecies concerning the disappearance of the child's asthma at puberty? We were taught so by experience, but we did not understand the mechanism at work. May we not attribute the emotional disturbances of the climacterium with its flushings, etc., to a disturbed and constantly changing function of the suprarenal glands?

So much for the ovaries. Similar evidence can be adduced showing that inhibition of function or excess function of other glands may produce a suppression of suprarenal function. The adenoid and lymphoid overgrowth one associates with the youthful asthmatic is the direct result of glandular abnormality. Thus we adduce faults in the glandular chain which may work towards adrenal deficiency and consequent asthma.

Throughout this paper I have argued that asthma is primarily due to suprarenal inadequacy. In the present state of our knowledge of the separate actions and concerted interrelation of the endocrine glands it is difficult to substantiate this theory by facts which have the confirmation of physiological and pathological proof. It may, indeed, be necessary to enlarge the scope of the theory, and to accept a disorganization of the endocrine chain as a whole as the fundamental reason for this distressing condition. Nevertheless, on the supposition that suprarenal inadequacy is the chief factor in the incidence of asthma, the problem of treatment becomes somewhat simplified.

We must have two objects before us in undertaking treatment:

(1) It is necessary to discover the adverse influence at work, be it in the eyes, nose, throat, abdominal tract (and, of poisons there, I include peptone products), thoracic tract, or urinary system, or be it in the associated endocrine glands. We must try to discover it and eliminate it, calling to our aid all the devices that medicine and surgery have bestowed on us.

(2) We must reinforce the action of the suprarenal glands themselves, and re-establish normal function.

I defer consideration of (1). Each case must be dealt with on its merits and the origin located; appropriate treatment must be instituted to deal with it, bearing in mind that failure to do so may prejudice or stultify the results of treatment instituted under (2). For treatment under (2) we have at our disposal



the extract of the suprarenal medulla itself, and we have the extracts of glands known to work in unison with it. It is my practice to order mixed gland because I can see no harm in giving an overdose of a gland substance known to stimulate the suprarenal glands, and no harm in giving gland substance which has no demonstrable action on the suprarenal. But where there is evidence of hyperfunction of any particular gland I withhold that gland substance in treatment.

It will be said: "But we have all had failures with the exhibition of adrenaline in asthma." Perhaps these can be explained by reference to the properties of the extract and to what happens when it is administered. When given subcutaneously it brings about intense constriction of subcutaneous vessels and thus tends to defeat its own absorption. It does the same in the stomach, but this may not be a disadvantage. It is rendered inert though not destroyed in an alkaline medium. The stomach contents are acid and the vaso constriction produced would be useful in producing a slow, continuous absorption, unlike the quick absorption obtained from an intramuscular injection, for adrenaline dilates intramuscular vessels. Therefore, for immediate ease, an intramuscular injection should be given; and oral administration employed for a slow continuous action.

My great difficulty in compiling this paper has been the paucity of available bibliographic references to the endocrine glands and asthma. There are, I feel, many flaws in my argument, but if the paper serves to stimulate discussion I shall feel amply rewarded.

## THYROIDISSURE FOR MALIGNANT DISEASE IN A MAN OF 74.

BY

W. J. HARRISON, M.B., M.R.C.S.,

BERKHOE, EAR, NOSE AND THROAT HOSPITAL, NEWCASTLE-ON-TYNE.

The case here reported is interesting in view of the advanced age of the patient. So far as I have been able to ascertain, the only instance in which thyroidissure has been performed on a patient older than this is that of a man aged 75, on whom Sir StClair Thomson operated successfully. There is naturally a certain amount of hesitation in advising an operation on a patient of such an age, especially if he is at all debilitated, but this man is more vigorous than usual at this time of life—thin, but with good arteries, and unhesitatingly chose to have the operation.

W. T., aged 74, attended as an out-patient at the Throat Hospital in May, 1922. He complained of hoarseness of several months' duration, and this was the only symptom. A small warty growth could be seen on the margin of the right vocal cord, at the junction of the middle and anterior thirds. There was no lagging of the movement of the cord, the only impairment of the movement being caused by the mechanical obstruction of the growth to proper apposition. A specimen showed the growth to be a squamous-cell carcinoma.

On June 6th thyroidissure was performed. The isthmus of the thyroid gland was ligatured and divided and tracheotomy performed in the median position. Before opening the trachea a 2 per cent. solution of cocaine was injected into its lumen and into the interior of the larynx. The tracheotomy tube was inserted and the larynx opened without any of the usual disturbance. On exposing the growth by sawing through the ossified thyroid cartilage it was found that, as is so often the case, it was much more extensive than it appeared to be, spreading below the cords across the anterior commissure to implicate the tissue below the opposite cord in the anterior part. In consequence a considerable amount of tissue on both sides of the larynx had to be removed; this was done after placing a swab dipped in 2 per cent. cocaine into the larynx and packing off the trachea and pharynx.

As soon as he recovered consciousness and there was no sign of bleeding the tracheotomy tube was removed, a suture having been placed in each side of the trachea at the time of the tracheotomy. These were left *in situ* for a short time, so that if necessary the wound could be readily opened and the tracheotomy tube reinserted. He was kept in the upright position in bed and encouraged to get up and sit in a chair from the third day onwards; convalescence was uneventful. A small tumour appeared at the anterior commissure and persisted for several months; this was removed and proved to be the remains of granulation tissue with no evidence of malignancy. He now speaks in a loud whisper, which, taking into account the amount of tissue which had to be removed, is as much as can be expected.

The case illustrates clearly the importance which should be attached to persistent hoarseness or alteration of voice occurring in a man over 40. Semon and all laryngologists have pointed out the great importance of a laryngeal examination when it occurs, but unfortunately this symptom is

frequently ignored until some other reason sends the patient for an examination. Then it is too often found that the disease has progressed to such an extent that operation is impossible, and only a very severe operation offers any prospect of success. Alteration of the voice, being the only symptom of intrinsic cancer for some considerable time, should arouse suspicion when occurring in a man of 40 or over, which suspicion should not be set at rest even if no growth is visible at the time of examination, unless some other definite cause can be found for the condition, treated and cured. It is now possible to examine the larynx below the vocal cords by means of a mirror, introduced by Irwin Moore, so early growths in this region can be detected. As in the case mentioned above, the growth is frequently more extensive below the cord than is at first imagined. Impaired mobility or lagging of the cord implies some infiltration of the intrinsic muscles by the growth, and when present in conjunction with a growth is considered pathognomonic of malignant disease. In the case recorded it was not present; in spite of the size of the growth. In the larynx, as in other situations, epitheliomatous growths may be divided into those which tend to grow outwards (exfoliate) and at first show little tendency to invade the deep tissues; those which at first tend to extend over the surface, with little tendency to exfoliate or invade the deeper tissues; and those which tend to invade the deeper tissues at an early period of their growth.

The injection of cocaine into the trachea and larynx is of great value in the operation. Everybody knows the violent coughing, venous congestion, wide movement of the trachea, etc., which occur as soon as it is opened. After introducing a few drops of the 2 per cent. cocaine solution it can be opened with absolutely no disturbance. The disturbance when opening the larynx is even more marked, and the manipulation of the tissue may, by the inhibitory action of the branches of the recurrent laryngeal nerve, cause dangerous and fatal collapse. All this is done away with by the use of cocaine, which has the still further advantage of greatly reducing the haemorrhage and more clearly defining the growth and diminishing the shock.

The early removal of the tracheotomy tube is a matter of considerable importance, as it enables the patient to cough up secretions much more easily than when the tube is retained. It can easily be replaced, by the nurse if necessary, if sutures have been placed in the trachea, the wound being easily opened by traction on them.

The median position of the tracheotomy opening offers several advantages. After division of the thyroid isthmus the trachea is superficial in this region, so the operation is more easy than low tracheotomy; the tube can readily be reinserted if necessary, and during the operation is sufficiently out of the way not to cause inconvenience. In high tracheotomy the tube is in the way during the operation, and the thyroid isthmus, which has to be retracted when the trachea is opened, may get in the way and cause difficulty and delay in replacing the tube should necessity arise after its removal. In low tracheotomy there is often much difficulty in reinserting the tube owing to the depth at which the trachea lies.

### REFERENCES.

Irwin Moore: *Intrinsic Cancer of the Larynx*. Sir StClair Thomson: *Journal of Laryngology*, May, 1919.

## PRIMARY UNION AFTER OPERATION FOR SUPPURATIVE APPENDICITIS.

BY

ROBERT G. RIDDELL, M.D., F.R.C.S.E.,

HONORARY SURGEON, ROTHERHAM HOSPITAL.

It is now the practice of many surgeons to close the peritoneum without drainage in cases of abdominal sepsis, such as perforated gastric or duodenal ulcer, pyosalpinx, and appendicitis with localized abscess or general peritonitis, when it has been possible to remove the focus of infection. In such conditions, the root of the trouble having been removed, and as much as possible of the septic material having been swabbed out, the peritoneum is left to deal with what remains; provided that the infecting organism does not belong to one of the more virulent strains of streptococci (when the patient has not been left till in extremis, and provided also that the patient has not been reposed in it, that membrane seldom betrays the trust reposed in it.

The tissues of the abdominal wall have not the same



capability as the peritoneum of dealing with infective organisms, and as it is almost impossible to prevent contamination of the parietes during the operation for the removal of the septic focus, it usually happens that the wound suppurates and breaks down. Healing is then a very slow process, and a weak scar is likely to result.

*Bacillus coli* is the usual offender in appendicitis, and signs of mischief do not manifest themselves before the fifth day, when a little local discomfort and a slight rise of temperature give an indication of what is happening. Sometimes there is no evidence of trouble when the clips are taken out on the fifth day; and it may not be till the tenth day, when the supporting stitches are removed, that the edges of the wound fall apart, and a thin offensive pus appears. It is not difficult to clean such a wound; eusol or flavine will make it look quite healthy in a few days, but the slow process of granulation is a serious matter both for the patient and for the hospital. Secondary suture hastens matters in some cases, but is not always successful, and sometimes not advisable. The complete breakdown of the wound may, to some extent, be avoided by inserting at each end a drain reaching down to the fascia. These should not be removed earlier than the fifth day.

It is worth while, however, to attempt more than this, and to endeavour to obtain primary union, first by protecting the wound as well as possible against infection, and secondly, if that fails, as in most cases it will to some extent, to try to destroy the contaminating organisms. Where purulent fluid wells up immediately on opening the wound there is little chance of keeping the wound clean; but in cases of localized abscess it is possible to protect the edges with tetra cloths stitched to the peritoneum, or with the rubber-backed cloths recommended by Bonney, held in place by his special clips. If the abscess is small, the pus may then be mopped out without soiling the wound. Even then it is a difficult matter to keep the protecting cloths in position during the manipulations necessary in performing the operation, and one can never be quite certain that infection has not taken place. It is advisable, therefore, in all cases to disinfect the wound after the peritoneum has been sewn up; and it was in order to find a suitable antiseptic that various chemical agents were tried in the small series of cases tabulated below. The cases were all emergency ones of acute suppurative appendicitis, five having localized abscess and seven having general peritonitis. In all of them the appendix was removed, pus and fluid mopped out as well as possible with dry gauze, and the peritoneum and abdominal wound firmly sewn up. All did well eventually, though with varying success as regards union of the parietal wound, as will be seen.

Eusol was tried first, but appeared to have no effect. *Violet green* seemed to have an inhibitive effect on microbic growth, and delayed the appearance of sepsis till the tenth day, when the whole wound broke down (No. 4). *Iodine* produced a first intention wound in one instance, and only slight failure in another. *Flavine*, 1 in 1,000, gave the best results. It was used in the last seven cases and all healed by primary union except one, where the tissues were soaked with purulent fluid as soon as the peritoneum was opened, and where the operation was long and the patient weak (No. 8). *Bipp* was not used in this series. I have tried it in other similar conditions, with unfavourable results.

Flavine should be very thoroughly swabbed into every corner of the wound, which should then be flooded with it, and afterwards gently dried out. It is not advisable to run saline into the abdomen, either to wash out the peritoneum or for absorption. In the former case the wound will become hopelessly saturated, and in the latter there is likely to be leakage through the peritoneal suture, with consequent infection of the parietes, especially as the patient has to assume the Fowler position. Saline should of course be given freely by the rectum for the first twenty-four hours.

## OSTEITIS OF THE TEMPORAL BONE WITH MENINGITIS.

BY

H. LAWSON WHALE, M.D., F.R.C.S.,

OTO-LARYNGOLOGIST TO THE HAMPSHIRE GENERAL HOSPITAL, AND TO THE LONDON TEMPERANCE HOSPITAL.

The following case is of interest on account of its complicated nature, for, in addition to osteitis of the temporal bone and meningitis, extradural abscess and lateral sinus thrombosis were also present. The satisfactory result would appear to be due largely to the use of bipp.

Florence G., aged 11, was admitted under Dr. Porter Parkinson to the London Temperance Hospital on November 10th, 1922. For the previous week she had complained of earache (right), but latterly rather of general headache and pain behind the eyes. On November 5th there had been a slight discharge from the right ear. On and after November 7th she had vomited daily. Since November 9th her arms and legs had twitched occasionally. On admission the temperature was 103°, pulse 114, respirations 20. The child was drowsy and complained of pain behind the eyes. There were no physical signs of disease in chest or abdomen. Edges of both optic discs indefinite and "fuzzy." Veins dilated. Otherwise cranial nerves normal; no facial paresis; no demonstrable deafness. There was some rigidity of neck. Kernig's sign and tache cérébrale present. The knee-jerks were normal, as also was the flexor plantar response on both sides. There was a slight inoffensive watery discharge from a small central perforation in the membrana tympani of the right ear and tenderness over the mastoid, chiefly at the tip; no oedema. There was no thickening in the neck over the jugular. Dr. Porter Parkinson agreed with me that there were no physical signs to warrant operation.

November 11th: Lumbar puncture: cerebro-spinal fluid under pressure and turbid. Pathologist's report (Dr. Sanguinetti): Many polymorphonuclear pus cells, but no organisms seen. Culture sterile.

November 17th: The patient was less drowsy. The temperature had fallen on November 15th to 98.3°, which had been the average temperature ever since. Tenderness over right mastoid, and slight puffiness behind angle of right jaw. Head rigidity and tache cérébrale still present. No paralysis, anaesthesia, or other focal signs.

November 21st: The temperature shot up to 104° without rigor or convulsion. Obvious puffiness over the right mastoid. Optic neuritis on both sides, more marked on the right. The right pupil was larger than the left. At 6 a.m. the temperature was 104°, pulse 128, respirations 28. It was decided that operation must be deferred no longer; and the patient was transferred to my care by Dr. Porter Parkinson.

### Operation.

The operation was done under general anaesthesia (Dr. Hirsch). Preliminary lumbar puncture yielded findings similar to those of November 11th. The antrum was now opened, but neither pus nor necrotic cells were found. On exposing the sigmoid sinus an extradural abscess was encountered overlying a black non-pulsating thrombosed sinus. Pus also exuded in small globules from the cut edge of the bone itself. Bone was freely cut away backwards, exposing the lateral sinus until healthy sinus wall was reached, and no pus exuded from the bone. The thrombosed sinus was sausage-shaped, two and a half inches long, and quite black and inelastic.

A pack of ribbon-gauze was placed between bone and dura behind to control bleeding, and the whole length of the thrombosed sinus slit open and clot evacuated. The wound was packed with gauze. The bony "bridge" was not touched. The dura (excepting the outer wall of the lateral sinus) was not opened to examine the brain. The internal jugular vein was not tied, the neck not being interfered with at all.

The patient endured these procedures fairly well. Immediately after operation the temperature fell to 99°.

### Subsequent Progress.

November 24th: The temperature has remained low—93° to 99.6°. Wound re-dressed with gauze soaked in bipp, under short general anaesthesia. The sinus bled, but only from about one-sixth of the length of the original incision.

November 29th: Wound re-dressed under general anaesthesia, cleaned with hydrogen peroxide, saline, and spirit, and repacked with bipp gauze. No bleeding from the sinus, which was almost completely covered by healthy granulation tissue. Lumbar

No.	Sex.	Age.	Lesion.	Anti-septic.	Result.	Days in Hospital.
1	M.	39	Perforated appendix, general peritonitis	Eusol	Infected, broke down	57
2	M.	32	Ditto	Iodine	Slight infection	23
3	M.	14	Localized abscess	Flavine	Slight infection	22
4	F.	63	Perforation, general peritonitis	Violet green	Infected, broke down	43
5	M.	18	Gangrene, general peritonitis	Iodine	Primary union	17
6	M.	17	Localized abscess	Flavine	Primary union	19
7	F.	12	Ditto	Flavine	Primary union	12
8	F.	34	Gangrene, general peritonitis	Flavine	Infected, broke down	58
9	F.	38	Extensive peritonitis	Flavine	Primary union	14
10	M.	8	Localized abscess	Flavine	Primary union	13
11	M.	25	General peritonitis	Flavine	Primary union	18
12	F.	63	Localized abscess	Flavine	Primary union	17



puncture: fluid under high pressure but clear. No organisms found. Culture sterile. Temperature for the past five days 97.8° to 99.6°. All drowsiness has disappeared; appetite and well-being are returning.

On December 4th the right pupil was still larger than the left and optic neuritis was more marked on the right side than before; there was right external strabismus (this was transient and will not be referred to again). On December 6th the wound was re-dressed as before under general anaesthesia. On lumbar puncture the fluid was normal in appearance and flow.

December 12th: Wound re-dressed under general anaesthesia. The temperature oscillated very slightly around normal. The patient sat up in bed. Optic neuritis, right and left, steadily diminishing. Swelling of discs: right, 2 D; left, 3 D. The oculist (Mr. Loosely) is of opinion that some degree of optic atrophy will result.

From this time onwards recovery was uneventful. The dressings since December 12th were performed without an anaesthetic. The membrana tympani had healed. With the Bárány noise-box applied to the left ear to exclude its function the right ear heard as follows: conversational voice, 20 feet; whisper, 4 feet.

#### Commentary.

1. Although on no occasion were organisms found in, or grown from, the cerebro-spinal fluid, the diagnosis of meningitis was nevertheless obvious from the turbidity and presence of pus cells.

2. In the course of the illness optic neuritis appeared early and disappeared late. Being a true inflammation and not a mere congestion, this lesion cleared up only slowly after the exciting cause had been dealt with.

3. The jugular vein was not tied. This was partly because the child would obviously not have stood the necessary prolongation of anaesthesia, but also because it is debatable whether the usefulness of thus cutting off the peripheral outflow (even although the common facial vein also be ligatured) may not be discounted by the remaining patency of the petrosal sinuses.

4. We have here another instance of the value of bipp. The intervals between the first four dressings were respectively 3, 5, 7, and 6 days; during the whole period the temperature remained low.

5. The residual hearing is very satisfactory.

### FATAL THROMBO-ARTERITIS OF THE RIGHT MIDDLE CEREBRAL ARTERY OF UNCERTAIN CAUSATION.

BY

F. PARKES WEBER, M.A., M.D., F.R.C.P.

THE following brief report of a case of fatal thrombo-arteritis of the right middle cerebral artery is of interest, and may serve to draw attention to a subject of some importance.

The patient, A. H., aged 43 years, a Russian Hebrew cabinet-maker in London, had a cerebral "stroke" of some kind on the evening of December 29th, 1922, and remained in a semi-conscious condition, with left hemiplegia, thought to be probably due to haemorrhage on the right side of the brain. He had previously enjoyed good health, and had had five children, all of whom were living. He was admitted to hospital on the morning of January 1st, 1923, still in a semi-conscious state. There was no fever. He could hardly be roused to answer questions. His left knee-jerk was greatly exaggerated. The plantar reflex on the left side was of the extensor type (Babinski's sign), and on the right side was of the normal flexor type. The cremasteric and superficial abdominal reflexes were absent on the left side and present on the right side. Ophthalmoscopic examination (Dr. R. Gruber) showed slight blurring of the inner margin of the optic discs, suggesting commencing optic neuritis. The brachial systolic blood pressure was 130 mm. Hg. The blood serum gave a completely negative Wassermann reaction. The urine was passed into the bed. The condition became gradually worse, and Cheyne-Stokes respiration preceded death on the evening of January 2nd.

#### Necropsy.

The necropsy, which was performed by the house-physician, Dr. G. Welsch, in my presence, except for passive congestion of the viscera, showed nothing special beyond thrombosis of the trunk and branches of the right middle cerebral artery, with extensive (white) softening on the right side of the brain. There was no chronic interstitial nephritis and the heart and great blood vessels were healthy. There was nothing to suggest cerebral embolism.

In regard to the microscopic examination I have to thank Dr. J. G. Greenfield for his kind help. There was evidence of arteritis, but not of syphilitic endarteritis obliterans. The main part of the middle cerebral artery (trunk) showed a degenerated inflammatory area on one side only. The inflammation appeared to be older there than in the more distal parts. At the region of the first branch of the middle cerebral artery the vessel walls showed similar inflammatory areas. As to the type of cells in the

inflammatory areas, many of the cells were so degenerated that it was impossible to be sure whether they were polymorphonuclear or not. Some of the less degenerate cells were definitely mononuclear and some were polymorphonuclear. By Gram staining Dr. Greenfield failed to find any definite organisms in the necrotic masses of cells or in their vicinity, though some were present in the clot. The arteritis was apparently confined to the main trunk of the middle cerebral artery.

Dr. Greenfield suggested that we might be dealing with an arteritis secondary to suppuration in the sphenoidal cells, which is often unaccompanied by obvious clinical symptoms. It has, however, occurred to me that the arteritis might have been analogous to the arteritis of middle-sized arteries in the extremities in so-called "Buerger's disease".

In a typical case of this disease, who had long had intermittent claudication of both lower extremities with absence of pulsation in the pedal arteries, I once was able to observe the commencement of thrombo-arteritis obliterans in the radial artery at one wrist. The man complained of a tender swelling in that situation, and when the swelling gradually subsided pulsation in that portion of the radial artery (which had been present up to the time of the appearance of the swelling) was found to be absent. This was several years ago, and pulsation has not returned. The process seemed to resemble what takes place in superficial veins during attacks of nodular thrombophlebitis, to which Hebrews with thrombo-arteritis of one or both lower extremities are sometimes subject. (That particular patient had suffered a good deal from superficial thrombophlebitis.)

It is worth mentioning that in the case of the patient A. H., some urine collected from the urinary bladder at the post-mortem examination was found to contain much albumin, but no tube casts. J. Sabrazès and Ch. Massias have recently (abstract in the *Presse médicale*, Paris, 1923, xxxi, p. 104) drawn attention to the occurrence of "massive" albuminuria, without tube casts in the urine, in cases of cerebral haemorrhage. They found that in a young rabbit, when 2 to 3 c.cm. of its own blood were injected into its brain, albuminuria accompanied the resulting apoplectic shock, the albumin in the urine reaching 4.6 per mille at the time of the animal's death, thirty hours afterwards.

### RUPTURE OF RENAL ARTERY AND VEIN BY SLIGHT INJURY: OPERATION: RECOVERY.

BY

E. MILES ATKINSON, M.B., F.R.C.S.,

CHIEF ASSISTANT TO A SURGICAL UNIT, ST. BARTHOLOMEW'S HOSPITAL;  
SURGICAL REGISTRAR, PRINCE OF WALES'S HOSPITAL, TOTTENHAM.

THE following case seems worthy of note as an example of the serious lesion which can occur in a hydronephrotic kidney as the result of very inconsiderable trauma. Moreover, I have not been able to find a record of any similar case.

A boy, aged 18, was admitted to the Prince of Wales's Hospital with haematuria. Two days previously he fell while playing cricket and pushed his elbow into his left side. The pain was very slight, and he thought so little of the accident that he continued playing. The next day his side was stiff and painful, and he was passing blood in his water all day. On the day of his admission the pain in his side was less, but he still had haematuria, and consequently consulted his doctor, who sent him to hospital the same afternoon.

On admission he did not look ill, distressed, or pale. The whole of the left side of the abdomen and the left flank were rigid and tender, sufficiently to make examination difficult; but palpation of the left kidney region revealed an indefinite swelling below the costal margin which was dull to percussion. The lower pole of the right kidney could be felt with ease. The abdomen was not distended and there was no evidence of free fluid. The temperature was 99°, pulse 104, and the urine contained old dark blood in large quantity. In view of the fact that the boy did not appear ill and that there was no fresh blood in the urine it was decided to do nothing in the way of operation, but to keep him quiet in bed. He continued to pass dark blood in the water for the remainder of the day, but with no rise of pulse rate. His bowels not having been open since the accident he was given an enema, with no result.

The following morning he seemed quite well, though still passing blood. There was no result from an enema. In the afternoon he suddenly vomited three times, and the pulse rate rose from 100 to 120. The abdomen was then seen by me later and when seen by me later was less rigid than before. He looked ill, and a large mass could be felt on the left side and in the flank, and extending down from the left kidney region to the iliac crest and extending down from the left kidney region to the iliac crest, dull on percussion. The abdomen was somewhat distended, tympanitic on the right side, with no evidence of free fluid. The



right kidney was now not palpable on account of the distension. The temperature was  $101^{\circ}$ , the pulse 126, the urine still contained much dark but no recent blood. Per rectum there was a little fullness in the recto-vesical pouch, but no tenderness. The rectum was empty. Having regard to the onset of abdominal signs, it was thought possible that at the time of the accident there had been a tear of the peritoneum, that since then there had been a gradual leak of urine into the peritoneal cavity, and that now a spreading peritonitis was beginning. I therefore decided to open the abdomen.

#### Operation.

The abdomen was opened by a left paramedian incision. The descending colon was found pushed forward by a large retro-peritoneal haematoma extending from the region of the left kidney down to the brim of the pelvis. This piece of intestine was small and contracted, but proximal to it the whole intestinal tract was definitely distended. There was no peritonitis. Apparently the large haematoma had so interfered with the action of the descending colon as to paralyse it temporarily and cause an intestinal obstruction which enemata had failed to relieve. It was decided to explore the kidney and at the same time clear out the haematoma and relieve the descending colon, and to do this from the loin in order to avoid contaminating the peritoneal cavity with a possibly infected haematoma. The abdominal wound was therefore closed and the kidney exposed from the loin. It was entirely concealed by organizing blood clot, which was cleared away until the surface of the kidney was reached. On clearing the organ further it was found to be a very large hydronephrosis in which practically no kidney tissue was left. As it could be of no functional value, and as a large right kidney had been palpated, nephrectomy was decided upon. The ureter was found with some difficulty, but the renal vessels could not be discovered. A mass of blood clot in about the position where the vessels should have been was ligatured, the kidney removed, as much as possible of the haematoma cleared out, and the wound closed with a small drainage tube in one angle. Vigorous treatment with calomel, pituitrin, and enemata soon reduced the distension and got the bowel working again, and the patient made an uninterrupted recovery.

#### Specimen.

An examination of the kidney removed showed a hydronephrosis due to a congenitally narrowed ureteric strait, the kidney substance being almost non-existent. On searching for the renal vessels they were found, not in the piece of tissue which had been ligatured, but torn off close to the kidney just below this. Both artery and vein were very much smaller than normal, as was to be expected in a congenital hydronephrosis, and both were occluded by a thrombus. The injury had apparently been sufficient to tear through both, and the resulting haemorrhage had ceased spontaneously. The vessels were certainly not torn through in removing the kidney, as shown by the large retrocolic haematoma and by the fact that both vessels were closed by a thrombus. Moreover, the blood clot in the region of the renal vessels was separated very carefully by blunt dissection in looking for them.

It is a well recognized fact that haemorrhage occurs from hydronephrotic kidneys on very slight provocation, but rupture of both renal vessels following such a trivial injury seems a matter of sufficient interest to put on record. Oddly enough, in connexion with this tendency of a hydronephrotic kidney to bleed, two days after the above patient's admission a man came to hospital complaining of a sudden onset of haematuria following a fall off a bicycle, in which he did not hurt himself at all. He was found to have a calculous hydronephrosis.

I have to thank Mr. Carson, under whose care the patient was admitted, for permission to publish this case.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### STRANGULATION OF AN APPENDIX EPIPOICA SIMULATING APPENDICITIS.

The following case is chiefly of interest in illustrating a mistake in diagnosis.

A young man gave me the history that he had just recovered from a second attack of "appendicitis." Four weeks had elapsed between the two attacks. On each occasion the onset was sudden; severe pain was felt in the right iliac fossa, accompanied by nausea and vomiting. For some weeks he had suffered from dyspepsia with much flatulence.

I found a tender spot about one and a half inches above and slightly internal to the anterior superior iliac spine. Deep pressure caused him to wince, and a small hard lump could be felt, closely resembling an inflamed vermiform appendix when encased by a roll of omentum. Abdominal rigidity was hardly perceptible.

Operation performed the day following my examination revealed a vermiform appendix evidently healthy. About three inches distal to the caecal extremity of the appendix, upon the postero-external aspect of the caecum, was exposed a small plum-coloured lump, sessile upon the peritoneal coat of the gut. The appendix and the small tumour were removed, and both were examined at the

Royal College of Physicians laboratory, Edinburgh. The report was as follows: "The appendix shows early follicular ulceration; the small tumour shows the structure of an appendix epiploica with inflammatory reaction and recent haemorrhage."

It is worthy of note that this appendix epiploica was found near the post-external taenia coli, and that it gave rise to a mistaken diagnosis of appendicitis.

GEORGE ROBERTSON, F.R.C.S. Edin.,

Honorary Surgeon, Dunfermline and West of Fife Hospital.

#### CONGENITAL ABSENCE OF THE RADIUS.

As cases of congenital absence of the radius are not infrequent, and therefore not mere curiosities, the report of the following cases may be of interest. Potel collected reports of 200 cases, and Antonelli found it twice as common in males in the 114 cases he collected. Kummel says the prognosis is grave, as the patients show a general lack of resistance to disease, 27 being the oldest age recorded. Tunny saw 11 cases in eighteen years. In 1882 Shattock described 4 cases in still-born foetuses; these were dissected and the specimens illustrated. His first case was identical with the two to be described. Milne, in 1915, recorded a case in an imbecile, but five fingers were present. Scord in 1915 described a similar case in which there was a strong syphilitic taint.

The first of the cases now to be recorded occurred on the left side in a male aged 18, admitted under Mr. Dobson for inguinal hernia. His family history is good and himself otherwise normal. The humerus is about 1 in. shorter than the healthy one; there is a great deficiency in muscular development. The elbow-joint is very limited in its movement. The carpus articulates with the outer border of the ulna, which is curved and shortened. This hand is usually pronated; almost full supination is possible with assistance. The scaphoid, trapezium, and thumb are absent. Syndactylism occurs in the second and third fingers, which cannot be fully extended. His first and fourth fingers are abducted. He grips firmly by flexing his wrist and fingers, especially the first, on his elbow. Movement up and down in the axis of the false joint is very free. In supination the wrist moves dorsally over the ulna.

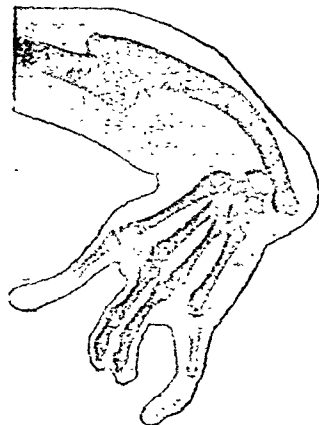


FIG. 1.—Case 1: Congenital absence of radius.

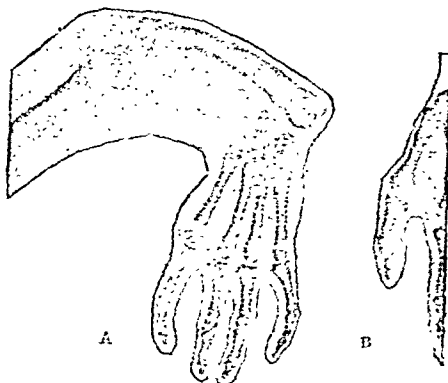


FIG. 2.—Case 2: A, Congenital absence of radius. B, Thumb: absence of adductor pollicis and flexor brevis pollicis.

The second case occurred in a man, aged 30, with a good family history and himself quite normal otherwise. The shoulder muscles are well developed and the movements extraordinarily free. The arm muscles are functional but weak. The elbow moves freely through 90 degrees, beyond which it will not go. The forearm shows strong muscular bellies on the concavity of the ulna, which is very stoutly built. The hand shows absence of the thumb, scaphoid, and



trapezium. There are some irregularities and adhesions in the carpal bones and joints. The fingers show trophic changes in skin and joints, whilst the  $x$  rays show some sclerosis. Pronation and supination are possible with the aid of shoulder movements. On the opposite hand there is complete absence of the adductor pollicis and flexor brevis pollicis, otherwise the left side is normal. He says he lifts heavy weights better with his deformed arm, hooking the object between the hand and humerus, the shortness of the ulna permitting relatively small articles to be grasped.

The interest of these two cases lies in their occurrence in otherwise perfectly normal adults.

A. P. BERTWISTLE,  
Resident Surgical Officer, General  
Infirmary, Leeds.

## British Medical Association.

### CLINICAL AND SCIENTIFIC PROCEEDINGS.

#### ULSTER BRANCH.

The winter meeting of the Ulster Branch was held in the Medical Institute, Belfast, on January 25th, when Mr. ANDREW FULLERTON, C.B., C.M.G., President, occupied the chair.

#### Tetanus.

Mr. S. T. IRWIN read notes of three unusual cases of tetanus. The first of these occurred in a young man aged 18, who cut his right cheek whilst shaving, and shortly afterwards played a game of Rugby football. Two weeks later he developed an indurated swelling on the right side of the neck. This was incised but no pus was found; he was therefore given a prophylactic injection of antitetanic serum, although at this time there were no signs of tetanus. Four days later he complained of "cramps" in his abdomen, which was found on examination to be tonically contracted. On pinching the skin typical clonic spasms occurred. He was treated by massive injections of serum given hypodermically, intravenously, and intrathecally, which after twelve hours caused disappearance of the symptoms, and recovery was uninterrupted. The second case occurred in a farmer aged 50, who was suddenly seized with acute abdominal pain on the left side. Forty-eight hours later his abdomen was opened by a surgeon in the country. The pain reappeared on recovery from the anaesthetic. Twenty-four hours after the operation the left side of the abdomen was rigid with frequent attacks of spasmodic contractions. After treatment by antitetanic serum all symptoms had disappeared in fourteen days, but during this time the patient burst his abdominal wound on three occasions and eventually succumbed to a low form of general peritonitis. The diagnosis in the case was verified (1) by finding the *B. tetani* in the discharge from an old sinus leading to the femur above the knee, and (2) by extension of the convulsions to include—for a day or two—the muscles of the neck and jaw. The third case was in a boy aged 5 years, who received a scalp wound just above the forehead on the right side. It was sutured, but suppurated. On the fourth day the mother noticed an irregularity on the boy's face. On the eleventh day he showed right-sided facial paralysis, with inability to swallow fluids and great terror when these were presented to him—the so-called "hydrophobic symptoms" of this type of the disease. The involvement of muscles extended rapidly, accompanied by frequent attacks of clonic convulsions, in spite of treatment, and he died on the thirteenth day after receiving the description of cephalic tetanus given by Bruce and Golla in *Abnormal Forms of Tetanus*.

The PRESIDENT remarked that in the war there was little faith in the curative value of the serum in a well developed case of tetanus.

#### Cases and Specimens.

Mr. KIRK showed a rare abdominal tumour from a woman who had had a tumour for many years, but had always refused any surgical interference; suddenly acute symptoms developed, with vomiting, haematemesis, etc., and she eagerly submitted to an operation. A tumour was found, attached by a pedicle to the stomach; it had caused a dragging of the stomach, and induced the urgent gastric symptoms. Relief at once followed, and the patient made a quick recovery. The tumour was submitted to Professor Symmers, at Queen's

University, and sections under the microscope showed pancreatic tissue, one of which was demonstrated to the meeting. The fluid in it digested protein and starch. It was considered to be a developmental "bud" on the stomach, analogous to the "bud" on the duodenum, which developed into the pancreas.

Mr. IRWIN read short notes of two cases of dropped foot due to pressure on the external popliteal nerve. One was in a boy of 17; a small firm tumour of white hyaline cartilage was found in the neck of the fibula and pressed on the nerve. Mr. Irwin removed the piece of the fibula, and in six months the dropped foot had disappeared, and a skiagram showed no hiatus in the bone. The second case was that of a man aged 34, in whom a ganglion from the superior tibio-fibular joint grew down and penetrated the outer coat of the nerve; operation was successful. Mr. Irwin also read notes of a case of renal colic due to an abnormal renal artery, which was relieved by operation.

Dr. BOYD CAMPBELL showed a case of enlarged spleen in a man aged 48. In 1917, in France, the patient had a severe pain and swelling in the left side which lasted for nine months; it disappeared and recurred several times. In 1919 there was fluid in the peritoneal cavity, and the blood examination showed that the condition was not spleno-medullary leukaemia nor splenic anaemia; Wassermann examination gave a double positive result. The patient was put on energetic antisyphilitic treatment—courses of arsenic, mercury, and potassium iodide—and he improved rapidly; he had worked for two years, and his blood was now negative. The spleen was still to be felt, and there was a slight anaemia and leucopenia;  $x$  rays had been tried, without improvement.

The PRESIDENT read notes of a case of spontaneous reduction of intussusception in a male child aged 3 months. The typical sausage-shaped tumour was present, and the end of the intussusception was felt by the finger in the rectum; there was blood-stained discharge. A laparotomy showed the characteristic oedematous colon; the child got quite well after operation.

Mr. R. J. McCONNELL showed a case of cyst of the neck, and Dr. HALL showed a child with haemophilia and arthritic symptoms.

## Reports of Societies.

### PSYCHOTHERAPY.

A DISCUSSION on "Psychotherapeutics" took place at the meeting of the Medical Society of London, under the presidency of Lord DAWSON OF PENN, on February 12th.

Dr. E. FARQUHAR BUZZARD introduced the subject by pointing out that psychotherapy was as old as the practice of medicine itself. It had been the mainstay of medical practice for centuries, and no medical man had been consistently successful in treating patients who had not, consciously or unconsciously, applied its principles. That the method of psycho-analysis in unskilful or unscrupulous hands might lead to harmful results could not be doubted, but this was a charge which might equally be levelled against electrotherapy or vaccine therapy. If psychotherapy was to prosper and maintain its position the difficulties which beset its path must be frankly faced. Its success would depend ultimately upon the proper education of the public mind in respect to mental disorders, and education could not properly be undertaken until the medical profession itself was equipped for the purpose. There were inherent difficulties in the teaching of psychotherapy. It could not always be practised in the open, and the presence of students or graduates was sufficient in itself to abort any inquiry into a patient's mental condition. If a medical man was able to recognize mental as well as physical suffering, and to discriminate between those psychological ailments which he could alleviate and those which he must hand over to someone else, that was all that could be expected of him. Time was the essence of success in the treatment of a neurasthenic, but few doctors could spare it, and this brought in the question of the specialist. Much as the necessity for specialism might be deplored, it must be recognized that often only the skill and time of the specialist could provide any hope for the patient. The scope of psychotherapy in the case of organic disease was a field which must needs be cultivated by every practitioner of medicine if he was to avoid mortifying failures.



Psychotherapy depended for its success, not always on deep psychological learning, but only on an ability to understand human nature, combined with knowledge and experience of the natural history of disease.

Dr. WILLIAM BROWN took up a remark by Dr. Buzzard that diagnosis in psychopathology must precede treatment. Everybody would agree with that in principle, but in practice, unfortunately, the state of affairs was such that they could not make their diagnosis until they had started their treatment. One general method of treatment—analysis—was necessary both for treatment and for diagnosis, so that the almost paradoxical position arose in psychotherapy of cure preceding diagnosis. He would gladly agree that there should be a close correlation between theory and practice in psychotherapy and theory and practice in neurology; but seeing that the mental disturbances met with in border-line cases were admittedly correlated with changes in the cerebral cortex, this correlation could only be made use of if something were known about the cerebral cortex, and he believed that the physiology of the cerebral cortex was quite inadequate for the physiological explanation of these processes. For a long time to come psychotherapy would have to be dealt with independently of physiology; the gap between the two was at present unbridgeable. He believed that the study of war cases had made a great addition to the knowledge of psychoneuroses. The study had definitely proved, on the one hand, that Freud was right in attaching great importance to mental conflict and repression, but, on the other hand, that Freud was wrong in declaring that the fundamental cause was of a sexual nature. The war proved that fear was sufficient to cause psychoneurotic symptoms in a large number of cases. Another discovery of the war was the dissociated nature of hypnosis. The cases met with in the war were extremely easy to hypnotize; the more dissociated they were the more easy they were to hypnotize, and when encouraged to re-associate their minds they were less hypnotizable. Hypnosis was, therefore, dependent upon dissociation, and was a thing to be avoided.

Dr. S. A. K. WILSON thought that in many of the types of cases seen at hospital it was a waste of time to talk about any form of analysis. Often all that was necessary was to say, "I know all about your case; I know how to cure you." The removal of a single symptom sometimes started the necessary train in the patient's mind whereby he was able to work out his own salvation. Cases must now be tackled in a far more scientific manner than by the old "knock-down" methods (the bucket of water in hysteria, for example), but he sometimes felt that the pendulum had swung too far, and he got a little cynical and sceptical about certain results. It was desirable to keep a shrewd judgement in treatment, lest the subconscious be exaggerated at the expense of the conscious. Concurrently with this tremendous spate of articles and books on psychology, there was equal activity in the discovery of the earliest forms and signs of organic change in the nervous system, and it was well to keep an open mind as to whether a case which appeared to be clearly of a psychical nature might not be due to some obscure physical cause.

Dr. M. B. WRIGHT argued that there must always be different forms of psychotherapy. He himself saw more hope in psycho-analysis than in any other method. He believed that the best psychotherapy in the future would be done in nursery and schoolroom, where it properly belonged.

Dr. DAVID FORSYTH said that suggestion and hypnotism were brilliantly effective in selected cases, but both methods dealt only with symptoms, and not with underlying causes. Psycho-analysis, on the other hand, seemed to offer an approach to the solution of innumerable perplexing problems. Objection had been made to the importance which psycho-analysis assigned to the sexual life, but once it was admitted that the neuroses were disorders of the mind the result of repression, it might be expected that the commonest nervous maladies would be related to those feelings most commonly repressed in modern civilized life. Psycho-analysis was also important from the preventive point of view; the beginnings of neurotic trouble were due to causes really preventable.

Sir STCLAIR THOMSON mentioned the case of a young girl with well marked symptoms of hay fever. She referred to a habit of hers of pinching and rubbing her nose, and her father asked if he had any objection to treatment by a psycho-analyst; he said he had none, provided the psycho-analyst was a qualified man. In due course the medical psycho-analyst's report was sent to him. It declared that

the habit of pinching and rubbing the nose was a form of masturbation, and that this case seemed to fit in with the Freudian conception that woman, feeling the humility associated with her place in the world, connected this with the absence of the male genital organ, which the nose would seem here to have replaced. He would make no comment upon this amazing bit of analysis.

Dr. CRICHTON MILLER said that a great many psychotherapists were obsessed with only one possible etiology, and were continually missing points which they would not miss if they had had a longer clinical experience. Some of them also essayed to use any psychotherapeutic means when they could "only play on one string." The real place of analytical psychology, he maintained, was not in the clinic, but in the home and the school.

Dr. BARTON, Dr. CRIMP, and one or two others described particular cases within their experience.

Lord DAWSON summed up the discussion. They would all be ready, he said, to pay a tribute of admiration to Freud, who must not be held responsible for all the developments associated with his theory. Mind influences had always played a prominent part in clinical medicine, and must play a still more prominent part as civilization became more complex. Therefore he thought that medicine owed a great debt to the psychotherapists, though it was permissible to regret that so few of them had had a sufficiently wide clinical experience. Psychotherapists needed to take warning from many other specialties which had preceded their own and had suffered through a too exclusive emphasis. Psycho-analysis had a very proper sphere, but it carried certain disadvantages, among them the tendency to introspection which it was apt to provoke, and the undue prominence which it gave to the Ego. The experience of all physicians would be that sex questions carried with them extraordinary dangers. Sex seemed to feed upon itself in the most morbid way, and men who practised sex analysis sometimes became tainted with the very thing they saw in their patients. Sexual feeling should be kept healthy by the balance of other qualities in mind and body. He urged that mind treatment in the main should be linked up with body treatment. What analysis meant was an intuitive insight into the thoughts and feelings of the patient. Both mind and body contributed to the clinical picture, though he would not belittle the splendid work which still lay open to the specialist in the more difficult type of case.

### THE SCIENTIFIC BASIS FOR NON-SPECIFIC PROTEIN THERAPY.

At the meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on February 13th, Dr. W. LANGDON BROWN presiding, a paper was read by Professor A. J. CLARK on "The scientific basis for non-specific protein therapy." The paper is printed in full at page 315.

In the discussion which followed the President said that for conditions of pernicious anaemia and other less definite blood diseases the method of transfusion had been used, and in cases yielding the best results a negative phase was established; there was a fall of corpuscles immediately after the injection, followed by a rise. The transfusion added some healthy ingredient to the blood and enabled the blood to improve. As Professor Clark had said, a washing out from the bone marrow occurred, and it was interesting to note the number of immature forms which were seen. In one case, that of a woman, aged 25, who had crippling arthritis, as no septic focus was discovered, recourse was had to non-specific protein therapy. After the fourth injection of T.A.B. she had a vaginal discharge and a swab was found to contain gonococci. It was a gonococcal arthritis.

Dr. H. H. DALE agreed with Professor Clark as to the probable action of non specific proteins in producing desensitization of the asthmatic patient. But the disappearance of the antibody effect or property seemed to be of too short a duration to account for the therapeutic effects. When blood was exposed to injury, or was brought into contact with a foreign body, causing such changes to occur as an alteration in the coagulation time, the blood seemed to acquire quite a potent toxic effect. The passing into solution of the platelets which occurred in these conditions was what would be expected.

Dr. A. G. ATLD said that he had adopted the method in the case of people who were very sensitive to ordinary peptone. One worker found that when he reprecipitated the



peptone in absolute alcohol several times the peptone quite lost its toxicity. The toxic substance in the proteoses was not histamine; it was a substance of which nothing was known, and which was only loosely attached to the molecule. Its physiological effect was similar to that of histamine, but the two were not identical.

#### *Treatment of Diabetes Insipidus by Intranasal Spraying of Pituitary Extract.*

Dr. H. BLUMGART, in a note on this subject, said that there was a group of cases of diabetes insipidus in which the cause could not be ascertained. In 1913 it was discovered that the introduction of extract of the posterior lobe of the pituitary body checked to a considerable degree both the polydipsia and the polyuria. But the effect was only transitory, as six hours after the treatment the patient was as bad as ever. Attempts had been made to introduce the extract by the rectum, and also by the mouth, but there was practically no effect from these methods in the hands of some, though a few workers claimed results from them. In one case he and his colleague found that 1/5000 c.cm. of pituitrin caused a drop in the urinary output and an alleviation of the thirst. He had experienced the best results from intranasal spraying with pituitrin. He used for this purpose Parke Davis's "Pituitrin O." The method had to be continued regularly, otherwise the case relapsed. In all the classes of cases benefited by the subcutaneous use of the drug it had proved efficacious when used intranasally. Dr. Blumgart's communication was in the main a summary of the work recorded by him in the *Archives of Internal Medicine* (April, 1922, p. 508), together with notes of three cases of diabetes insipidus which he had since observed.

Dr. H. H. DALE said that Dr. Blumgart's communication naturally raised the question whether the method could be applied generally—that is to say, whether there were other conditions presenting similar or even greater difficulties in requiring repeated hypodermic injections, and in which intranasal spraying would suffice. He desired to hear from Dr. Blumgart any remarks on the application of insulin by this method in America.

Dr. BLUMGART said that the point of absorption of the substance appeared to be high up in the nasopharynx, possibly through the cribriform plate. He had not experienced success in the use of insulin intranasally, but successes had been recorded in its intranasal use in large doses in rabbits. It had been found that in lead poisoning inhalation of the poison caused trouble in the upper respiratory passages, and the absorption of the lead in those passages was ten times what it was in the lungs themselves. There was an analogy between this condition and mode of entry and that of poliomyelitis, which was known to be by way of the nasopharynx rather than the blood stream.

### CONTROL OF VENEREAL DISEASE.

At a meeting of the Manchester Medical Society held on February 7th, with Sir WILLIAM MILLIGAN in the chair, a paper entitled "Public measures for the treatment of venereal diseases" was read by Colonel L. W. HARRISON.

He said that, as a result of the Royal Commission's recommendations, public authorities were asked by the Local Government Board, and later the Ministry of Health, to frame schemes for the treatment of venereal disease. The principle underlying the recommendation by the Royal Commission was to stop the spread of venereal disease by rendering the greatest possible number of the infected population non-infective. Conceivably a local authority, when required to frame a scheme for rendering the greatest possible number of the infected of its population non-infective, would think out:

1. All the kinds of people likely to be infected.
2. How to persuade these infected people to consent to treatment.
3. How to keep them under treatment until they had become permanently non-infective.
4. The provision of treatment centres.

The people likely to require attention were:

1. Those suffering from active diseases as a consequence of fairly recent sexual misconduct.
2. Those who had been infected in the past but believed themselves cured and were discovered only by reason of having communicated the disease to others, such as wives or children.
3. Those who had acquired gonorrhoea or syphilis innocently, such as wives of infected husbands and their children.

The innocently affected might require special provision for treatment owing to their probable objection to attendance at a venereal clinic, and Colonel Harrison strongly advised that this provision should be made at existing maternity and child welfare centres. The treatment of infected mothers had given most valuable results in the prevention of congenital syphilis, and no venereal disease scheme could be considered complete without the fullest provision for treatment of infected parents. It was not fair that a child should start life handicapped by inherited syphilis, and local authorities should ask themselves anxiously if they were carrying out completely the comparatively simple task of preventing it. Those who were discovered by reason of having infected others should be secured by a system under which wives were persuaded by social workers to send their infected husbands for treatment. Such a system was in operation at St. Thomas's Hospital, and many whole families had been brought under treatment by it.

As to the arrangements for the main body of the infected, Colonel Harrison pointed out the disadvantage of treating large numbers of venereal cases in premises ill adapted for the purpose, such as out-patient rooms of hospitals. It was economically unsound as it wasted man-power very seriously, and it led to defaulting on the part of the patients, since medical officers did not get a proper chance of treating their cases efficiently, especially in gonorrhoea, and the patients sooner became tired of attending. Experience had shown that premises specially designed for the purpose were necessary if the scheme was to be a success. In many cases voluntary hospitals had not made good provision for venereal treatment, and it would have been better in many cases to have established centres in separate premises. The theoretical objection to *ad hoc* clinics had not been substantiated by experience; they had proved to be just as successful as, if not more so than, the average clinic established in a voluntary hospital, and in future, if a voluntary hospital was not willing to give the facilities required for completely efficient work he would have no hesitation, in towns of any size, at any rate, in recommending the provision of *ad hoc* centres. With regard to the number of centres for a given size population, he thought that these should be few rather than many, since on the one hand transport was easy, and on the other a large centre was more economical than a small one. Clinics of any size should be open all day, say from 8 a.m. to 10 p.m., in order that patients might attend for intermediate treatment at hours convenient to themselves. Intermediate treatment was a daily business and likely to prove irksome in some cases; it was less so, naturally, if the patient could easily fit it in with his private engagements. It was a great advantage also if new cases could be seen at any hour, but the provision for this naturally depended on the size of the centre.

A number of slides of the venereal disease treatment centres at St. Thomas's Hospital and of the type plans of centres issued by the Ministry of Health were shown to illustrate the lecturer's ideas on the internal arrangements of treatment centres. The St. Thomas's Hospital centre had been in existence for nearly three years and was judged to be a success. The initial cost was high, but the running expenses were considerably lower than the average—in fact, the lecturer showed that the whole treatment required for the London area could be carried out in five such centres at a cost which was over £16,000 less than was at present being spent, though the London centres were not more expensive than those in the large provincial towns. With regard to the staffing arrangements, Colonel Harrison held strongly that each treatment centre should be under the control of one director, and he expressed his view of the great advantages which accrued to the public when the director of a centre was thoroughly imbued with the public health spirit. He pointed out that his work is to protect the community from venereal disease and that the treatment which he directs is to be regarded in the light of a means to that end. For the same reason he considered it most important that the closest sympathy should exist between the public health department and the directors of venereal disease treatment centres. At present those in charge of treatment centres were too closely shut up in watertight compartments, and regarded their patients rather from the individual than from the public health point of view. He reminded his hearers that this was a public health scheme, designed to render non-infective the greatest possible number of infected persons, and he considered that that end would



be served only by the determination of all concerned to allow no other consideration than its attainment to prevail in their councils on the subject.

### INSOMNIA.

At a meeting of the Edinburgh Medico-Chirurgical Society on February 7th, with the President, Sir R. W. PHILIP, in the chair, a discussion on insomnia was opened by Professor A. R. CUSNRY. He said that the nature of sleep was unknown; two theories had been offered—the first that sleep arose because of the action on the brain of toxic substances elaborated in the body, such as lactic acid or certain fatigue toxins; the second view was that the brain was not poisoned but exhausted, hence the great inducer of sleep was muscular exercise. Brain work itself was not a successful promoter of sleep, many forms of brain activity, such as worry, having the opposite effect. There were two types of sleep: the first and best was that in which the individual fell asleep a few minutes after going to bed, slumber gradually becoming more light as morning approached; in the second variety sleep for some hours after going to bed was light and fitful, and reached its greatest depth in the morning; this was the typical form of insomnia. As regards treatment, in the otherwise healthy person drugs should be employed only as a last resort. Among various general measures which, as a sufferer, the speaker had found helpful the following were mentioned: active exercise, which must not be excessive, and should be taken in the evening and in the fresh air rather than in a gymnasium; a cool bedroom and cool bedclothes; regulation of bodily functions; a peaceful book, read the last thing at night. The only drug he had used was bromide, which he had found ineffectual. Of the ordinary hypnotics chloral was probably best; its depressant action on the heart was negligible. The sulphonal group had the disadvantage of delayed action, and might be followed by serious symptoms coming on with little warning. Veronal was comparatively safe, but also slow in action. Paraldehyde, except for its objectionable taste and odour, was excellent. Alcohol had its place, in that it relieved worry. Where sleep was prevented by pain or motor excitement morphine or hyoscine was obviously indicated.

Dr. C. B. KER, speaking from experience of insomnia occurring in the febrile state, said that in such cases, as in other pathological conditions underlying insomnia, general measures had frequently to be supplemented by drugs. In insomnia due to fever cold sponging was often efficacious, and antipyretic drugs might be justifiable in reducing temperature so as to induce sleep. Bromide given in repeated doses from 6 p.m. onwards was occasionally helpful in placing the patient in a condition to get natural sleep. Morphine was excellent in the restlessness of diphtheria heart failure, as was hyoscine in the excited insomnia of cerebro-spinal meningitis. For ordinary purposes he was fond of chloral and bromide in repeated 10-grain doses; in the delirious insomnia of alcoholic erysipelas he found a combination of sulphonal given in the afternoon and paraldehyde some hours later successful. Bromidia was specially useful in children. Professor ROBERTSON said there were two types of insomnia: the first, in which the patient was restless till 2 or 3 a.m. and then fell asleep; the second, in which sleep came on at once, the patient waking easily. In the first variety a drug acting quickly, such as paraldehyde, was indicated; in the second a drug whose action was prolonged, such as veronal, was required. Veronal was therefore ideal in melancholia, where the tendency to suicide was greatest in the early morning hours. The combination of chloral and bromide was also useful. The speaker also referred to the value of suggestion in certain cases.

Professor MAKINS described three types of insomnia: first, the acute type, occasioned, for example, in acute fevers, and in such cases nursing methods, especially hydrotherapy, were called for, and drugs were sometimes necessary; second, the chronic form in which the cause must be found and dealt with, and drugs should be shunned—in this type suggestion was of value; third, the periodic variety, occurring in otherwise healthy people, after prolonged strain or heavy work—in these a holiday was all that was necessary.

Dr. TORRANCE THOMSON said that sleep was a response to a psychological necessity and referred to sleep from the psychological standpoint.

The President, Professor EDWIN BRAMWELL, Drs. KERRIE PATTERSON, SOMERVILLE, and JOHN ORR, also contributed to the discussion.

### RADIUM IN CANCER OF THE URETHRA.

The annual meeting of the North of England Obstetrical and Gynaecological Society was held in St. Mary's Hospital, Manchester, on January 19th. After the presentation of the secretary's and the treasurer's annual reports Professor W. BLAIR BELL was elected president for the ensuing year. The retiring president, Dr. H. CLIFFORD, gave his valedictory address on the history of abdominal surgery. This was received with great interest, and on its conclusion Dr. Clifford was accorded a hearty vote of thanks, both for his address and for his able services as president during the past year.

Dr. FLETCHER SHAW contributed two cases of carcinoma of the urethra treated by radium.

*Case 1.*—A maiden lady, aged 45, complained of great irritation of the vulva and painful micturition for four months previous to examination in November, 1919. A hard red growth extruded from the urethral orifice and extended for about half an inch along the lumen. There were no inguinal glands. As so many of the cases previously reported had incontinence after operation he decided to treat this case with radium, which was done in December, 1919. A year later there was some enlargement of the glands in both inguinal regions. These were removed, and a few of them showed carcinomatous deposits. She was seen at intervals, and there was no further recurrence till December, 1922—three years after the first treatment with radium—when a small inguinal gland the size of a pea, which had been overlooked at the first operation, was removed. This also contained carcinoma cells. There was no local recurrence in the urethra.

*Case 2.*—A married woman, aged 51, 3 para, complained of irritation of the vulva, dyspareunia, and slight haemorrhage for a few weeks. She had had a caruncle cauterized a few years previously. The growth was more advanced than in Case 1, and consisted of a hard, red, friable mass, the size of a sixpence, extending all round the urethral orifice, and the urethra was thickened and hard for about one inch. No glands were found. Treatment with radium in October, 1922; two months later the growth was very much diminished in size, though it had not disappeared. She would probably have another treatment in a month's time. It was much too early to form an opinion whether the condition would entirely disappear under radium treatment, and whether there would be a permanent cure.

The President (Professor Blair Bell) had seen an inoperable case, and also had had to deal with a fistula left after previous operation by another surgeon; in that case he had been fortunate in being able to mobilize the base of the bladder and remaining urethra and to bring them down to the vestibule with good functional result. Dr. DONALD suggested the combination of radium and surgery as the ideal treatment in this condition.

Dr. CHISHOLM said that fifteen months previously he had had a case involving the whole length of the urethra and the base of the bladder; he first did a permanent suprapubic cystostomy, as advised by McGill of Leeds, and then removed the urethral growth and base of the bladder. As it was doubtful whether the whole of the growth was removed, radium was inserted later. The inguinal glands were not invaded. Three months ago there was no recurrence; the patient was fairly comfortable and able to do a little housework.

Dr. FLETCHER SHAW, in reply, said it was very interesting to hear of so many new cases, as so few were to be found in the literature. The President's remarks were particularly interesting, as he had not thought it possible to regain control of the urine after complete excision of the urethra and base of the bladder.

Dr. LEITH MURRAY showed three specimens of strangulation: (1) of a normal appendage, (2) of a fimbrial cyst, and (3) of a broad ligament cyst.

Dr. D. DOUGAL showed two specimens: (1) of spontaneous separation of one ovary and adhesion to the floor of Douglas's pouch, and (2) of a six months' foetus with a teratomatous tumour growing from the sacral region. He suggested that these tumours might arise from the abnormal persistence of the "posterior growing point," and not be, as commonly considered, instances of conjoined twins.

Dr. LEITH MURRAY read notes of two cases of calcification.

1. Calcified ovary in a single woman, aged 31. Twelve months' amenorrhoea was followed by two months' continuous bleeding, six months' ... two months' continuous bleeding. ... areous ovary and rudimentary ... cured the patient. Chemically, the calcareous body consisted mainly of magnesium phosphate, with some calcium phosphate and traces of iron.

2. Calcified bodies in the uterine cavity associated with sarcoma of the ovary in a woman of 60. Three months' bleeding occurred fifteen years after the menopause; a mobile, cystic tumour reached nearly to the umbilicus; the uterus was enlarged and bore a cervical polyp. After removal of the polyp and diagnostic



curettage of the uterus, which appeared only to be enlarged, the abdomen was opened; the cyst, which presented the characteristics of a pseudo mucinous cystadenoma, was removed together with the enlarged corpus uteri. On opening the uterus, there were found lying loosely on the anterior wall seven flattened, glistening white, rosette-like bodies, 2.4 to 3.2 mm. diameter and 1.8 to 2 mm. thick; these seemed to have been dislodged by the curette without leaving any indication of their original site. Chemically, they consisted of calcium carbonate with traces of magnesium and iron. The ovarian tumour, on section, proved to be a short spindle-celled sarcoma. The patient was reported alive and well nine months later.

## ANATOMY AND PHYSIOLOGY.

A MEETING of the Section of Anatomy and Physiology of the Royal Academy of Medicine in Ireland was held at the Royal College of Surgeons in Ireland on February 9th, with the President (Mr. A. A. MCCONNELL) in the chair.

Professor E. J. EVATT showed a camera-microscope and a number of very clear embryological photographs which he had obtained with it. In making the camera and in the production of the photographs he was indebted to Dr. Henry and Mr. Nolan. He claimed for the camera great simplicity, stability, and small cost.

Professor Evatt then made a communication "On the growth of normal structures into adjacent tissues." In the growth of tissues, he said, the invaded tissue was always highly vascular, and the less vascular the tissue the less was it liable to be invaded by the ingrowing cells. The reaction of tissues to invading cells was accompanied by marked proliferation of the invaded cells. This proliferation was not so noticeable in the case of ectodermal as of endodermal cells. The line of separation between invading and invaded cells was marked by the basement membrane. In the growth of glands he did not find any basement membrane between the epithelial cells, nor did he find a basement membrane in relation to the bile capillaries. He considered that the commencement of the neural groove was due to a solution of the underlying cells.

In a discussion on the paper, Professor Scott found himself in disagreement with the author on several points, especially on the question of the basement membrane, which he considered did not exist. The communication was also discussed by Professors Dixon and Pringle and the President.

Professor H. PRINGLE described a curious difference in appearance that he had observed in the walls of large and small arteries respectively in cases of aneurysm. He found that in large arteries the elastic tissue of the wall was the first to disappear, whereas in the case of the small arteries it was the most resistant part of the wall. In large arteries the elastic coat could be traced as far as the wall of the aneurysmal sac and then it faded away. In small arteries the external elastic coat could be traced all round the wall of the sac. He demonstrated his findings with a series of very clear slides of aneurysms of the aorta, brachial, and radial arteries.

The communication was discussed by Professor Scott, Dr. O'FARRELL, and Professors Dixon and Evatt.

Dr. C. M. WEST showed a foetus exhibiting spina bifida and abnormalities of the central nervous and digestive systems, for which he was indebted to Dr. Solomons. The spina bifida was of an unusually large extent, involving almost the entire vertebral column. There was a fusion of certain of the thoracic vertebrae, and ribs. There was a condition of hydrocephalus and syringo-myelocoele, the brain being considerably altered in shape. The caecum and appendix occupied an unusual position in the abdomen. Dr. West discussed the causation of the various abnormalities found. The President and Professor Dixon spoke on the communication.

Dr. A. K. HENRY communicated "A note on the interpretation of sulci on certain bones." He selected the sacrum and first rib as bones on which were recognized certain grooves, which were ascribed to causes other than those to which they were really due. The so-called subclavian groove on the first rib he considered was more probably due to traction by the scalenus anterior and medius, so that the bone was depressed between the attachments of these two muscles. He instanced the case of a small mastoid process associated with atrophy of the sterno-mastoid muscle. He illustrated his remarks with specimens and lantern slides.

The paper was discussed by Professor Dixon, Dr. West, the President, and Professor Pringle.

## MIDLAND MEDICAL SOCIETY.

A MEETING of the Midland Medical Society was held in the Medical Institute, Birmingham, on January 31st, when the President, Dr. PURSLOW, took the chair, and about forty members were present.

Dr. STANLEY showed a patient with an intracranial lesion for diagnosis. The case was that of a middle-aged man, who had definite paralysis of the third, fourth, fifth, sixth, and seventh cranial nerves on the left side, with no signs of spasticity of the lower limbs. The cranial nerves on the right side were normal. Dr. Stanley believed that the man had a "surface" lesion on the left side of the mid-brain, but pointed out that it was difficult to conceive a lesion of this type which would spare the right third nerve. The Wassermann reaction was negative and radiographs did not help. Mr. BEATSON HIRD, speaking of the appearance of the left eye, which was ... and secondarily infected, said he had seen similar conditions resulting from tumours near the basic sphenoid. Dr. STANLEY BARNES agreed with Dr. Stanley that this lesion was a surface one, but he differed from Mr. Hird, who had said there was no proptosis of the eye. In Dr. Barnes's opinion the lesion extended backwards from the foramen lacerum anterius, and was probably either a tumour of the dura mater or a slow suppurative process beneath it.

Dr. RUSSELL showed a young woman who had oedema of the left foot and leg associated with albuminuria. The oedema was always worse in summer. He stated that some time ago he had seen another exactly similar case. Physical examination revealed nothing abnormal, but on screening the chest Dr. Black had drawn attention to a very definite sclerosis. Investigation of the albuminuria following various postures had led to the interesting conclusion that it was derived principally, if not entirely, from one kidney. Dr. RUSSELL had been completely unable to find any plausible explanation for this curious association of unilateral oedema with albuminuria until Professor Brash had suggested that it might depend on the presence of a subcardinal vein on one side, a rather unusual anatomical abnormality. Mr. NUTTALL suggested that the ureters should be catheterized, but Dr. RUSSELL thought this unjustifiable in the case of a perfectly healthy young woman.

Mr. G. P. MILLS showed a patient after excision of the upper end of the femur (the operation had been undertaken for dislocation of the hip-joint after septic arthritis). The surgical result was disappointing, inasmuch as the shaft of the bone had not remained in the acetabulum. The functional result, however, was excellent, as the patient got about comfortably, and could walk a considerable distance, whereas prior to the operation she had been crippled and had suffered excruciating pain.

Mr. MILLS showed two children after tendon transplantation. Mr. NAUGHTON DUNN, in congratulating Mr. Mills on his results, stated that tendon transplantation was usually successful providing that the fundamental principle underlying it was not neglected—namely, that a muscle used for replacing another should be one with which the latter was usually associated in function.

Mr. ADAMS showed specimens from a case of suprarenal tumour with metastasis in the skull. The tumour had been palpable before any metastasis had appeared in the skull. This, he stated, was very unusual, but in the course of a brief discussion Dr. DOUGLAS STANLEY and Dr. A. P. THOMSON stated that they had had similar cases. Mr. NUTTALL discussed the question of surgical intervention in those cases in which the abdominal tumour was palpable and there was no obvious metastasis.

## PSEUDO-HERMAPHRODITISM.

At the 703rd meeting of the Brighton and Sussex Medical-Chirurgical Society, Dr. D. W. LIVINGSTONE, Vice-President, being in the chair, Dr. RICHARDS and Mr. GEOFFREY BATE read notes of two cases of androgynoid pseudo-hermaphroditism.

Dr. RICHARDS said that his attention had been drawn to the cases and 18, and that his attention had been drawn to the cases by his having been called to the first on account of a painful and irreducible swelling in the groin. Inquiry and examination showed that although she was, to all outward appearances, a girl, she had never menstruated. Suspecting the nature of the case, he sent it to Mr. Bate at the County Hospital. The nature of the first case having been decided, he made inquiry as to the rest of the family and found that the younger girl had swellings in both groins and had a similar



history as to menstruation. A younger sister, aged 14, is now suspected of being in a similar condition.

Mr. BATE said that before operating on the first case he had made a careful examination. Externally the whole configuration of the body was feminine; the breasts were very fully developed; pubic hair was almost absent; the labia, clitoris, and hymen were normal but somewhat small. Careful examination of the vagina through a Kelly's speculum failed to reveal any cervix or sign of any cervical canal. The vagina ended about one and a half inches from the hymen in a rounded roof. Bimanual examination, though difficult owing to the small size of the orifice, failed to reveal any evidence of uterus, ovaries, or tubes, though there was a very slight median thickening of the vaginal vault in the middle line. The inguinal swelling, when removed, proved to consist of a rounded body with a thick fibrous coat, to which was attached a small cyst. This body when examined was found to be a testis, and was attached below by a firm gubernaculum to the pubes, and was continued upwards in a cord which passed upwards out of reach towards the kidney.

The second case was in every way similar, though swellings were present and removed from both groins. The elder girl was very distinctly feminine in her ways and was definitely pretty. The second girl, though apparently feminine, was less of the "pretty" type than her sister, and she presented the bilateral swellings, which proved to be even more definitely developed testes than in her "sister's" case.

Mr. Bate illustrated his notes by lantern slides showing the feminine characteristics of the patients and the histology of the testes removed.

Dr. H. M. GALT said that there could be no doubt whatever about the structures present. Although the development was to a certain extent of the infantile or immature type the typical testicular structures were all present. There was a well marked tunica albuginea, and in the more central portions of the sections the tubuli seminiferi were present in abundance and were quite characteristic, showing the convoluted structure of the tubes and the lining of the special columnar cells. From the appearances there was little doubt that the organs were functionally inactive, and that there was only a rudimentary fibrous mass representing the epididymis. There was also shown in one section what appeared to be a rudimentary vas deferens; this was in the form of a thick-walled muscular tube, but without any definite mucous membrane.

Mr. GEOFFREY BATE showed two cases of pseudo-coxalgia, one bilateral, and a case of traumatic epiphysitis of the hip for comparison. He read a paper on the former condition. After commenting on the inappropriateness of the name by which the disease was commonly known, he drew the attention of the Society to the importance of the condition being recognized, as its prognosis and treatment differed so materially from that of true hip disease. After giving an outline of the history of the condition, he quoted Platt's excellent description from the *British Journal of Surgery*. Having extended this somewhat, he showed a series of some thirty lantern slides illustrative of the condition, including radiograms of the cases shown and of other morbid conditions of the hip for comparison. He discussed the etiology and treatment of the condition, and emphasized the absolute necessity of radiographic evidence in diagnosis.

A MEETING of the Manchester Pathological Society was held on February 14th, with Professor J. SHAW DUNN, the President, in the chair, when Mr. PLATT showed various specimens and radiograms of "loose bodies in joints"; after giving a short account of the earlier work of Hunter and Brodie he discussed at length the relative merits of the more recent theories of "trauma" and "osteo-chondritis dissecans." Drs. ASHBY and SELLERS showed specimens from a case of chloroma occurring in a boy aged 12 years, who was admitted to hospital with swellings in both temporal fossae and orbital cavities of three weeks' duration. There was marked exophthalmos, headache, and lassitude, and the boy succumbed four weeks after the commencement of the illness. Dr. Sellers also showed specimens from a case of abdominal lymphosarcoma occurring in a boy aged 5 years. Interesting specimens of a myxoma of the appendix vermiformis and a large hydronephrosis resulting from a ureterocele were shown by Mr. JOHN MORLEY. Mr. MACALPINE demonstrated an unusual specimen of carcinoma of the renal pelvis, two operative specimens of diverticula of the bladder, and a kidney from a case of massive aseptic calculous disease.

## Rebichus.

### PRACTICAL PHYSIOLOGY.

THE textbook of *Practical Physiology*,<sup>1</sup> by CATHCART, PATON, and PEMBREY, may be regarded as the successor of the well known manual by Beddard, Edkins, Flack, Hill, Macleod, and Pembrey. Accepting for the moment the statement in the preface that "practical work should have a direct relation to medicine and, as far as possible, the experiments should be performed upon man," the present work is an admirable one for the purpose and will doubtless be largely used. From this point of view the sections on respiration and on the movements of the alimentary canal are excellent, as would be expected from their authors, Professor Pembrey and Dr. Hurst respectively. It is, however, somewhat disappointing to find so few exercises on the decerebrate preparation, on the lines of those in Sir Charles Sherrington's *Mammalian Physiology*, which, it should be remembered, are part of a course in physiology as a science. It is, no doubt, a matter of difficulty to provide such preparations for a large class, and the experiments must perforce be made in the way of demonstrations. Detailed instructions for such demonstrations would be useful to many teachers and would be welcomed in a new edition. There are many things of great practical importance which cannot be shown on man, while many which can be shown are much more obvious, more easily and accurately made, on lower organisms. Moreover, this attitude, if consciously taken, is apt to suggest the unscientific view that, apart from greater complexity, there are fundamental physiological differences between man and all other forms of life. The electrical changes in muscle, which form the basis of electro-cardiography, can be shown much more intelligibly on the despised frog than anywhere else. The main facts of permeability and the influence of various agents, such as anaesthetics, upon it, cannot be better demonstrated than on slices of beetroot!

The charge of lack of scientific insight has been brought against the medical profession, and it has often been noticed by the present reviewer that the chief defect in the education of the student is the failure to implant a knowledge of great general principles. It is remarkable how often a mass of details learned at the cost of much time and weariness follows naturally from a few fundamental laws. At this point we are inevitably led to ask: What then is the object of a practical course? Is it that the student may gain a real and concrete grasp of such basal facts as are referred to above? Or is it chiefly for the purpose of learning methods and processes which may possibly be used by him in the course of his subsequent practice? To take an illustration: Will the student be likely to have to estimate cholesterol in blood? The presence of cholesterol in this place is doubtless of importance for the membrane of the corpuscles, but would it not suffice to prove its presence and leave the exact estimation until required? These quantitative methods cannot be learned adequately without repeated practice. A similar remark might be made as to the measurement of the velocity of the nerve impulse. It is of great theoretical interest that this is not instantaneous; but the student is given a false idea of the accuracy possible in physical measurements of physiological processes and is content with a low standard when he has to use apparatus incapable of giving exact numerical results. Why not be content with showing that it takes some appreciable time? Of course it is to be understood that training for research is another matter, but in that case the student will naturally have the advantage of accurate apparatus.

Thus it seems to the reviewer that a practical course should consist chiefly of experiments which throw light on general principles. There are many experiments which have this character in addition to being of practical use afterwards. On the other hand, there are many that have little or no value in either way. Even from the strictly medical point of view, it is surprising to note in the book before us that there is no experimental work on haemolysis or permeability. Simple experiments on human blood corpuscles are most instructive in making clear the phenomena of osmotic pressure and the properties of membranes. The student is usually very hazy about these matters. It is also to

<sup>1</sup> *Practical Physiology*. By Professors E. P. Cathcart, M.D., D.Sc., F.R.S., D. Noel Paton, M.D., L.D., F.R.S., and M. S. Pembrey, M.A., M.D., F.R.S. London: Edward Arnold, 1922. (Demy 8vo, pp. 244; 265 figures. 13s. net. or in two vols., 10s. 6d. each net.)



be regretted that there are no exercises on the synthetic activity of enzymes, nor on the general nature of enzymic action, although there is no more difficulty in these than in the estimation of cholesterol, already referred to. They would afford the necessity for learning methods of estimating sugar in the course of experiments of interest in themselves. In this connexion it is surprising to find it stated on page 217 that isomaltose is probably the product of the reverse action of maltase. Even Dr. Frankland Armstrong has now given up this point of view. (See *Simple Carbohydrates and Glucosides*, 1919, p. 147.) Again, we find no simple experiments on the carriage of oxygen or carbon dioxide in the blood, nor on the maintenance of neutrality in this liquid. It will be seen that much of the kind of fundamental work contemplated can be done on man, and would not therefore be inconsistent with the avowed plan of the book. (The authors may be glad to have their attention called to a misprint on page 159, line 12 from the top, where we read "nitrate" instead of "nitrite".)

Opinions will probably differ as to the main function of practical physiology in the medical student's training. However this may be, the book before us will be found useful by the teacher and student though the price seems somewhat high. There is much to be said for the practice adopted in the elementary lessons by Professor Noël Paton of studying the microscopical structure of the tissues in relation to their functions. If it were not for practical difficulties, the chemical phenomena ought to be similarly worked out in connexion with the physical. This is the ideal method, especially for the junior student, and should not be impossible to arrange in such cases. To separate the detection of lactic acid in active muscle from the phenomena of contraction is unscientific, however necessary it may be for the detailed investigation of special points. To commence with the sense organs is a plan to be recommended, both theoretically and practically. On the other hand, the performance of experiments by the junior student without knowing what to look for is more questionable. As a training for research it is admirable. But the student is almost certain to have read about the facts in his textbook before doing the experiments, and it may be held that the chief object of elementary experiments is to give that grasp of reality which ensures confidence in the truth of what is stated in the textbook.

The statement in the first paragraph of the preface that medicine must be founded on physiology, that the study of the abnormal implies a knowledge of the healthy, should be sufficiently obvious. But when it is said that the "Institutes of Medicine" is the "older and better name for Physiology," some misunderstanding may arise. The authors are well aware that the scope of physiology is much wider than its application to medical practice. Medicine, along with agriculture, fisheries, practical dietetics, eugenics, and so on, stands in the relation of an applied science or art to the abstract or pure science or sciences on which it is based. As Claude Bernard pointed out, physiology is to be cultivated for its own sake, and stands alone in the various ways even if it had no practical applications in the various ways above mentioned. It would be well therefore to add the words "for students of medicine" to the title of the book under review. But, further, it almost looks as if a new profession were needed at the present time, the training for which would be chiefly directed to the preservation of health rather than to the cure of disease. It would require a more intimate knowledge of physiology and of the sciences on which it is founded than is possible to obtain in the time available when details of many special branches of pathology have to be studied. The medical therapist will always be necessary, but the "health officer," or whatever he may be called, would need a different training, in which physiology, both in its physical and chemical aspects—the latter being what is called "biochemistry"—would form the chief part.

W. M. BAYLISS.

### OXIDATIONS AND REDUCTIONS.

The second edition of *Oxidations and Reductions in the Animal Body*,<sup>2</sup> by H. D. DAKIN, will be welcomed by all workers interested in chemical physiology. As Dakin points out, although good progress has been made with the elucidation of the complexities of biochemical oxidations during

the eleven years that have passed since the publication of the first edition, no particularly new methods of attacking the problems have evolved. The problems which the monograph discusses in a most able fashion are amongst the most difficult and most interesting which can be found. It is becoming ever more evident that it is wellnigh impossible to discuss oxidation and reduction apart from other types of biochemical reactions such as condensations and hydrolysis. The problem which is really attacked in the book, then, is that of intermediate metabolism.

The volume opens with a most suggestive chapter on the fundamental nature of the changes which may take place during oxidation, and on the nature of the oxidizing and reducing agents found in the body, with a discussion of the methods requisite in their investigation. This is followed by very full chapters on the fate of the fatty acids, of the amino acids, of the carbohydrates, of the purins, and finally of the hydrocarbons, phenols, alcohols, etc. The chapter which has undergone the most drastic revision is that on the carbohydrates. It gives a most excellent review of the whole field in the light of the most recent investigations; for example, it discusses in some detail the mutarotation changes which seem to be of primary importance in the utilization of glucose in the animal body.

The monograph may be regarded as absolutely indispensable to those engaged in metabolic research. It ought, moreover, to be in the hands of every organic chemist, so that he may have a full appreciation of the problems of commanding interest which are to be found in the chemical processes within the living organism. The volume is provided with a very full bibliography. The price is extremely moderate.

### THE SURGERY OF THE WAR.<sup>3</sup>

[SECOND NOTICE.]

#### Abdominal Wounds.

An important and comprehensive description of the abdominal wounds of war was a very necessary thing. The good results obtained in South Africa by a policy of non-interference had always been rather a puzzle to the civilian surgeon. It was held that a bullet might traverse the abdomen without tearing the gut, but even in South Africa it was recognized that if the gut was torn the chances of recovery were small. Sir Cuthbert Wallace and W. W. Wagstaffe have written a very clear and comprehensive description of abdominal wounds. They show in Fig. 5 a chart of a number of bullet tracks which, against all expectation, coeliotomy proved to have missed the hollow viscera. But this chart is a record of rare happenings, and we trust that no reactionary will seize upon it to urge conservatism at some future date. However, even if the viscera escape perforation it is quite certain that intra-abdominal vessels will not. Haemorrhage was an outstanding cause of death, usually arising from the mesenteric vessels.

The ordinary military surgeon has less chances of becoming an adept at abdominal surgery than his civilian brother. This is in the very nature of things, and it is sure that any future war of any size (if one can contemplate such a thing) will again necessitate the employment of civilian surgeons on a large scale. Even so it is most necessary that the military man should have for reference so definitive an article as this. The charts of missile tracks are of more interest than appears at first glance. There is a short section on the action of projectiles that overlaps the first chapter in the book to a certain extent. The methods of injury are discussed and several instances given of rupture of underlying viscera in non-penetrating wounds. As might have been foretold, wounds of the small gut preponderated, colon next, then liver, and then stomach. The authors allow themselves some speculations on the physiological paralysis of the gut as a protective mechanism, and cite instances from their clinical records in support. The influence of time on the operative results is illustrated in a table; up to six hours the chances favoured the patient, but later than this they were against him. Thus the lesson of early operation is once more driven home, as it had already been in the case of appendicitis and

<sup>2</sup> *History of the Great War, Based on Official Documents: Medical Services. Surgery of the War*, Vols. I and II. Edited by Major-General Sir W. G. Macpherson, K.C.M.G., C.B., LL.D., Major-General Sir Cuthbert Wallace, Sir W. G. Macpherson, K.C.M.G., K.C.V.O., Major-General Sir Cuthbert Wallace, K.C.B., K.C.M.G., K.C.V.O., and Colonel Sir Crisp English, K.C.M.G. London: H.M. Stationery Office: 1922. (Med. 8vo, pp. vii + 618 and 691 respectively; illustrated. 5s. each net, post free 23s.)

<sup>3</sup> *Oxidations and Reductions in the Animal Body*. By H. D. Dakin, D.Sc., F.I.C., F.R.S. Second edition. Monographs on Biochemistry. London and New York: Longmans, Green, and Co. 1922. (Roy. 8vo, pp. ix + 176. 6s. net.)



gastric or duodenal perforation in civil life. The condition of the patient varied greatly. The wounded man was not always as prostrated as might have been expected, though in this there was great variation. With a pulse rate of 120 and over cases did badly, those with 100 did relatively well, though Gordon Taylor had some brilliant results with high pulse rates. The authors discuss the abdominal rigidity which so often accompanies low chest wounds, and point out how it may confuse the diagnosis. Besides shock, haemorrhage, and peritonitis, retroperitoneal sepsis was a not uncommon cause of death. The statistics of the results of operative methods varied considerably. On similar kinds of cases they were probably very much the same, although it is reasonable to expect those previously adept in abdominal surgery to get the better results. However this may be, there is no doubt that treatment along expectant lines was a hopeless failure. A mortality of upwards of 80 per cent. calls for some other methods. The average operative mortality remained about 50 per cent. The reader who sees this figure will very probably feel that the abdominal surgery of war is a disappointing thing. But a saving of thirty lives out of a hundred is something to be proud of, and these high mortality figures include a large number of cases which were poor risks at the time of operation. In specially favourable circumstances, and perhaps in specially skilled hands, much better figures than these may be hoped for. But it is no aspersion on the skill of our operators in France that a lower mortality could not generally be obtained. If a classification were possible into groups of cases in which, from the nature of the injury, the observer would expect recovery to be nearly certain, doubtful, or hopeless, we have no doubt that very different mortality percentages would be arrived at.

#### Wounds of the Viscera.

Wounds of the various viscera are described in detail, and some interesting points in the pathological anatomy of these injuries are illustrated. Several illustrations are given of the eversion of the mucosa, which was so characteristic an event when the stomach and small gut were lacerated. Resection is reserved for those cases where the small intestine is practically destroyed, suture of the independent perforations being advised as the best method when possible. Resection gave a 20 per cent. higher mortality than suture, though the extent of the initial injury was greater in the resection cases. End-to-end suture gave a higher mortality than lateral anastomosis, though again these figures by no means necessarily give accurate values for the two methods. Suture was sometimes effected by a single layer of sutures. It would have been interesting to know exactly how these cases fared. The question is apposite to the present moment in view of the recent work in Baltimore.

Injuries of the liver do not always call for operative treatment; wounds of the pancreas are not always associated with fat necrosis, and splenic injuries are much as in civil life, save for the often associated lesions of stomach, intestines, or kidney.

This part of the book passes insensibly into wounds of the urinary organs, which we take to be from the pen of Andrew Fullerton. It is illustrated by some of the beautiful drawings which have already appeared elsewhere. Intraperitoneal haemorrhage is a common accompaniment of kidney injury, in contradistinction to civil cases. Those very interesting cases of injury of a branch of the renal artery with local death of the kidney parenchyma irrigated by that branch are figured. Generally a conservative attitude in kidney injuries is recommended, local excisions and suture are advocated, though not all urinary surgeons will agree to this. For secondary haemorrhage removal of the kidney is very properly recommended. Of 13 such cases 4 died, but the amount of the bleeding is not stated. Wounds of the bladder were serious and usually associated with injury to the small intestine rather than the rectum. There appears to be no information on prostatic wounds. The writer has seen one with an injury of the prostatic sinus leading to sterility but not to impotence. A series of cystoscopic drawings of injuries of the bladder and of retained projectiles are of interest.

#### Gunshot Wounds of the Head.

Gunshot wounds of the head are dealt with by Wilfred Trotter and W. W. Wagstaffe. The importance of apparently trivial wounds of the scalp is once more insisted upon. The surgeon is wisely advised against opening the dura if that membrane is not lacerated. It may often be very tempting to incise the dura, but unless the surgeon has had exceptional

experience he had better refrain, as the risks of sepsis, in cases of this nature are so great. Injuries of the superior longitudinal sinus are discussed, and the clinical picture given by Sargent and Holmes is described; it is of somewhat obscure origin and is by no means always present. Foreign bodies remaining in a healed brain should be left alone unless symptoms and signs can be unequivocally traced to them. The paragraphs on unresolved cerebral contusion contain matter of a very controversial nature, and operations for its relief are not so generally successful as the authors indicate. The same may be said of the closure of cranial defects, the results of which are often disappointing. A few words on the contraindications for this operation should have been included.

#### Face and Jaw.

H. D. Gillies and B. Mendleson describe the restorative surgery of the face and jaw. The fine work done at Sidcup, and to a lesser extent elsewhere, in this most difficult branch of surgery has been of outstanding quality, and has definitely added much which will be of lasting benefit to surgery.

#### The Spine and Peripheral Nerves.

Injuries to the spine are discussed by Sir William Thorburn. The intensive study of the war injuries of the spinal cord has resulted in a great addition to our knowledge, and British neurology can look with content on what it has reaped in these fields. "Mais avouez," Babiniski has recently said, "que les acquisitions neurologiques nouvelles sont une bien faible compensation des misères déchainées par la catastrophe mondiale." The problem of operation in these cases tended to be confined to the question of cord damage. A very important point—the avoidance of primary wound infection by early operation—has not received the attention and consideration which it deserves. Mayo-Robson's cases of myelorrhaphy and grafting of rabbit's spinal cord are mentioned. Unfortunately Sir William Thorburn has not allowed himself a dogmatic opinion on this subject, although he has nothing good to say for cord suture in general. He passes on to consider injuries of the peripheral nerves. The variety, pathology, and symptomatology are briefly dealt with, and then the operative steps necessary for repair are described. Plastic operations on the nerves are not recommended, and the results of nerve grafting appear to be disappointing. Accurate end-to-end suture is the method of choice.

#### Injuries to Blood Vessels.

Another field in which very considerable advances have been made is that of injuries to the blood vessels. This is particularly true of the pathological anatomy of these lesions, thus founding a most substantial basis for the proper development of their surgery. A great deal of most important information will be found in these chapters, information most readily applicable by civilian surgery. The use of Tuffier's tubes is described, the value of ligaturing the companion vein as well as the artery is explained, and reasons given for the step. There are some valuable remarks on the cerebral complications following injuries of the carotid arteries. The frequency of cerebral softening from anaemia after ligation of the common or internal carotid arteries cannot accurately be judged from these cases, but it is worth while to note that intracranial complications were definitely found in 29.6 per cent. in one series and 33.3 per cent. in another. One case of ligation of both common carotids at an interval of forty-three days, with recovery, is mentioned. Two cases of death from the entry of air into the subclavian veins at operation are mentioned, and may serve as a warning to those who are sceptical of the seriousness of this accident.

#### Orthopaedic Surgery.

Two hundred pages devoted to orthopaedic surgery follow. They include a great deal of information on the treatment of fractures in general, and will be found of considerable interest to the civilian as well as to the military surgeon. It is sufficient warranty of the excellence of the advice given to say that it comes from the pens of Sir Robert Jones, E. W. Hey Groves, and other orthopaedists of note. R. C. Elmslie contributes an excellent section on amputations and artificial limbs. It contains some good advice on the best methods of placing flaps and on the best levels for amputation. The recommendations will often be found to be at variance with the older books. There is a general feeling that some change might with advantage be made in the amputations described in the students' textbooks. Chopart's



and Pirogoff's amputations, for example, give such unsatisfactory results that there is no object in continuing to give descriptions of them. The length of flaps classically described is too long for these days, when pain is neither laudable nor inevitable. A combined length of flap equal to the diameter of the limb is quite long enough, for redundancy of flap (particularly below the knee) may give as much trouble as deficiency.

The chapters on injuries to the neck, eye, and ear by Douglas Harmer, Sir W. T. Lister, and C. B. Goulden and Sidney Scott respectively, are of the quality that one would expect from such careful observers.

Each of the two volumes contains an index of somewhat archaic type, so that the reader often has trouble in finding what he requires.

GEOFFREY JEFFERSON.

### OPHTHALMIC SURGERY.

A LITTLE book entitled *Ophthalmic Surgery*<sup>1</sup> is of interest chiefly because it is a personal narrative of the experience of a former surgical specialist in India, Major NESFIELD, whose field of work in certain branches of ophthalmic surgery was of an extent which only India can provide. The author had almost unlimited opportunity of observing and treating trachoma, corneal ulcers, cataract, and glaucoma, and his observations on these subjects are of value.

The removal of cataract by the usual methods of extraction from the capsule he did not find satisfactory for India, neither did he obtain the results he desired by Smith's method of intracapsular extraction, the pressure needed too frequently causing loss of vitreous, with the dangers that entails. He gives an account of an operation which he has practised largely with very satisfactory results. The method is simple, his explanation of it is clear, and it is well worth trial.

The incision is made in the sclero-corneal margin, extending to almost one-half of the corneal circumference and providing a conjunctival flap. The cornea is lifted by means of the conjunctival flap, and a "ligatome"—an instrument rather like a small and flexible squint hook—is passed into the anterior chamber to its lower boundary and beneath the iris. The smooth point of the ligatome is turned down so as to reach the suspensory ligament; it is pressed upon that structure and swept to right and left so as to tear it through without rupturing the hyaloid membrane; gentle pressure is made upon the eyeball so as to bring the suspensory ligament forward and facilitate the engagement of the ligatome. Proof that the ligament is divided is seen in the rising up of the lens. If this does not happen the manoeuvre is repeated. When the lens is seen to rise attention is transferred to the iris; a minute button-hole iridectomy is made upwards at the base of the iris. That being accomplished, the lens is expressed, the upper lip of the wound is depressed by a spatula, then pressure is applied through the sclero-corneal margin to the lens at its lower border, and as far beneath it as is possible, by a blunt hook. Sometimes the lens somersaults and comes out still attached to the ciliary processes by the unruptured upper part of the suspensory ligament.

The author states that the rupture of the ligament is difficult in the young. It is this that makes intracapsular extractions so difficult in Europeans. The fragility of the tissues of the races of the Indian plains is notorious; it is only necessary to compare the skulls of Hindus and Europeans collected in the Royal College of Surgeons Museum to realize this point. The difference extends to the suspensory ligament of the lens; it is much tougher in Europeans than in Hindus. Hence the failure of European ophthalmic surgeons to obtain satisfactory results with the several intracapsular operations that have been evolved in India.

Some of the author's descriptions of other operations are less detailed and somewhat ambiguous. For operation on a Meibomian cyst he recommends an incision of "about half an inch long." Half an inch on an eyelid is a mighty large incision and likely to be dangerously destructive, especially when the direction of the incision is not specified. Some of the nomenclature used is misleading: the lacrymal canaliculi are systematically called lacrymal ducts, which they are not; and the true duct is variously written of as a "canal" and "duct." The method of removing the lacrymal sac is not quite happy. Squint operations are dismissed in a couple of pages, and the procedure advocated, which includes the "dividing the fascial expansions" of the tendon after tenotomy, is one that was formerly much practised but now generally avoided; the risks of a worse squint in the opposite direction and the deformity of a sunken caruncle are too great.

Despite these defects the book contains much of interest to an ophthalmic surgeon, for it is the record of a long experience in exceptional circumstances.

### THE VIRTUES OF SEA WATER.

Dr. J. JARRICOT has written a book<sup>2</sup> to demonstrate the value of treatment of infants suffering from grave disorders of nutrition by injections of sea water. The method is based on a theory formulated by Quinton, of which a good deal was heard a few years ago. We will endeavour to summarize Dr. Jarricot's statement of it as follows:

The first appearance of animal life on this earth occurred when the globe, in its process of cooling, had sunk to a temperature of about 44° or 45° C. (about 112° F.). It was at this point that the maximal protoplasmic activity was possible. Surrounded by a medium of sea water of a saline concentration of 0.7 per cent., the organisms multiplied rapidly; their bodies being at the same temperature as that of their environment. As, however, the temperature of the earth continued to sink, and as the oceans became more concentrated, certain changes occurred. Organisms arose which, first, were able to elevate their internal temperature above that of their environment, and, secondly, by interposing a selective membrane between their tissues and the sea around, succeeded in keeping their cells immersed in a fluid of the original concentration. This process was repeated time after time in such a way that those animals which developed latest in the scale of evolution are characterized by a body temperature closely approximating that at which life first became possible, and a blood plasma which is of probably almost the same osmotic pressure as that of the original oceans; on the other hand, those organisms which we know to be the most primitive are, with a few exceptions, distinguished by their poikilothermic mechanism of heat regulation, and by a plasma which is of the same concentration as that of present sea water—namely, 3.3 per cent.

The natural fluid in which the human tissues should be bathed is that of the primeval oceans, or—in the regrettable absence of that—sea water diluted down and rendered isotonic with blood plasma. It is this *marine serum*, as he calls it, with its content of no fewer than 28 elements, that is the ideal menstruum for the manifestation of the highest functional activity of the body cells.

Such is the author's argument. In practice he applies his treatment to infants who are suffering from retarded growth, arrested development, gastro-enteritis, cholera infantum, specific cachexias, or skin diseases. Though treated at a dispensary, the patients are cared for at home. Accurate measurements are first made, including the height, weight, and cranial perimeter; coefficients of atrophy and hypertrophy are worked out; and from these the extent of the departure from normal is ascertained. Food is given in the early months in the form of cow's milk, which is prescribed in such a way as to allow the infant to determine for itself the quantity it chooses to take—*à la rigueur de l'instinct*. At the same time subcutaneous or intramuscular injections of sea water are given, diluted till it is isotonic or somewhat hypertonic to blood plasma, and sterilized by filtration.

It is claimed that the effect of the sea water is to stimulate metabolism, to assist in the removal of noxious products, and to place the cells in a favourable environment for the adequate performance of their functions. Statistical data dealing with 105 children treated in this manner are carefully recorded. Photographs, charts, tables, and other figures showing recoveries from the worst conditions are reproduced in abundance. So excellent are the results that the author believes the "marine" treatment to be unequalled by any other system, and for this reason urges it not merely for those who are already diseased, but as a prophylactic measure of general application. On it he founds, in short, the science of puericulture.

There are two criticisms we would offer: First, that it is a matter for regret that he has failed to satisfy one of the most essential requirements of scientific investigation—namely, that of providing adequate controls. When two or more variable functions are at stake it is notoriously difficult to adjudicate on the influence of any one in particular. And though he has provided most useful tables of normal growth, yet he has neglected to observe the effects of an exactly similar treatment, differing only in the omission of the marine injections, on a comparable group of children. Secondly, the book itself is unnecessarily bulky, and is so badly arranged as to be at times almost exasperating. Had more attention been devoted to presenting the facts clearly in a logical sequence, and less to imbuing it with the spirit of propagandism, it would have been very much more readable. None the less the results reported are undoubtedly excellent. To those who may be disposed to investigate them experimentally in an impartial manner we would willingly recommend the book.

<sup>1</sup> *Le Dispensaire Marin: Un Organisme Nouveau de Puericulture*. Dr. J. Jarricot. Paris: Masson et Cie. 1921. (Imp. 8vo, pp. vi + 271 144 figures and 54 plates. Fr. 60 net.)

<sup>2</sup> *Ophthalmic Surgery*. By Major V. Nesfield, late I.M.S., F.R.C.S. Eng. London: H. K. Lewis and Co., Ltd. 1922. (Demy 8vo, pp. 172; 12 figures. 9s. net.)



### "THE ELEPHANT MAN."

We noticed briefly last week the appearance of Sir Frederick TREVES's new volume, which promises to be one of the most widely read books of the season. *The Elephant Man and Other Reminiscences*<sup>6</sup> consists of twelve sketches drawn in the main from a perusal of old case-books. It is written with the skill and insight that we have learnt to expect from the gifted surgeon whose leisure years have been largely devoted to travel and literary craftsmanship. Most of these studies are cast in narrative form, and each tale is told in such a way as to bring out in sharp relief some aspect of human life and character. "What a strange company they are," the author remarks, "these old patients who crowd into the surgeon's memory after a lifetime of busy practice! There they stand, a confused, impersonal assembly, so illusive and indistinct as to be little more than shadows. Behind them is a dim background of the past—a long building with many windows that I recognize as my old hospital, a consulting room with familiar furniture, an operating theatre, certain indefinite sick-rooms, as well as a ward in which are marshalled a double row of beds with blue and white coverlets."

A note of tragedy and terror dominates many of Sir Frederick Treves's stories; others are frankly pathetic; and in several we perceive an undercurrent of sarcasm. His description of the old receiving room of the London Hospital, with its racy portrait of the receiving-room nurse of half a century ago, is an example of how a vivid effect can be conveyed with economy of language; the rich humour of this piece will appeal to every medical man. But there are passages in this and other parts of the book that will surely upset the sensitive general reader. For the most part, however, realism is tempered with restraint, though the episode of the young surgeon who operated upon (and killed) his wife is so distressing that we should prefer to regard it as fictitious.

The first chapter, which gives its title to the volume, tells the story of John Merrick, a young man afflicted by so terrible a deformity that he could not venture out of doors by daylight. In 1884, when he was being victimized by a showman in a room off the Mile End Road, this unfortunate creature was discovered by Mr. Treves, who two years later

found a home for him in the London Hospital; he was then helpless, exhausted, and destitute. There he received the utmost kindness from the surgeon who had rescued him, and from many others, until his death in 1890.

By reason of his dreadful deformities Merrick was known as "the elephant man," and our readers may be interested to have a few further details of his condition. He was twice exhibited before the Pathological Society by Mr. Treves, and full accounts, with reproductions from photographs, appeared in the *BRITISH MEDICAL JOURNAL* of December 11th, 1886

(p. 1188), and again in the issue of April 19th, 1890 (p. 916). Our present illustration, showing Merrick's condition shortly before he died, is derived from the latter article. His complaint was not elephantiasis (as most people supposed), but a complication of gross hypertrophy of certain bones, with pachydermatocoele and papilloma of the skin. The surface of the skull was covered with huge rounded exostoses. This enlargement of the bones of the head and the osseous deformities of the right arm and the lower limbs seemed to be congenital; disease of the left hip-joint during youth caused permanent lameness. When a child his skin was merely thickened, loose, and rough. As he grew up papillary cauliflower-like masses developed, especially over the back, the nates, and the occiput; in the right pectoral region, the posterior aspect of the right axilla, and over the buttocks the affected skin formed heavy pendulous flaps. The left arm and other portions of the body surface remained free from disease, and in no part was there any naevoid growth. From 1885 until his death the disease rapidly advanced, though his general health kept relatively good. The bony masses and the fungous folds of integument grew



THE ELEPHANT MAN IN 1889.

steadily; the head became larger and larger until at length he could scarcely hold it up. Then one night, as he slept in his customary crouching posture, the ponderous head fell back and dislocated his neck. A *post-mortem* examination was not allowed.

Such in brief were the facts of the case. Merrick's benefactor now tells something of the inner life of this poor misshapen being, more hideous far than Caliban, yet whose spirit, "if it could be seen in the form of the living, would assume the figure of an upstanding and heroic man, smooth browed and clean of limb, and with eyes that flashed undaunted courage."

<sup>6</sup>*The Elephant Man and Other Reminiscences*. By Sir Frederick Treves, Bt., G.C.V.O., C.B., LL.D. London and New York: Cassell and Co., Ltd. 1923. (Post 8vo, pp. 222. 7s. 6d. net.)

### NOTES ON BOOKS.

We have recently received from the Cuban medical journal *Asclepios* its special issue of July-September, 1922, devoted to gastro-enterology. Dr. F. Torralbas contributes clinical notes on amoebiasis and trichocephaliasis. Dr. R. G. San Martín describes a case of perforated gastric ulcer of the lesser curvature. Dr. F. S. Ramos discusses gastric heterochylia. Dr. G. A. Cuadrado writes on the chemical biology of digestion, and the issue fitsly closes with a gastro-enterological poem by a subject of Lane's link.

We have received the first issue of *Archivo de Medicina Legal*, a Portuguese journal devoted to medical jurisprudence, and edited by Dr. Azevedo Neves, professor of that subject in the Lisbon Faculty of Medicine; he has the support of more than eighty collaborators in Portugal, Spain, and Spanish America. The first two numbers of which this issue is composed contain twenty articles of medico-legal interest, of which the following call for special mention: New tests for hydrocyanic acid, by J. Peset and J. Aguilar; the importance

of leucocytes in the medico-legal determination of the origin of blood, by Ramón Alvarez de Toledo y Valero; cases of spontaneous rupture of the heart, by H. Parreira; criminality in Lisbon, by A. Morgado; the practice of medicine in Portugal, by A. da Cruz; the psychological masochism of Sister Marianna Alcofrado, and the comparative study of the ages of victims of rape and their aggressors, by A. d'Aguiar; and a Portuguese bibliography of medical jurisprudence, by L. Gomes.

The second edition of the book, *Physical Diagnosis*, by Professor W. D. ROSE, of the University of Arkansas, was reviewed in our columns on February 4th, 1922. We have now received the third edition; the text has been subjected to revision, especially in the sections dealing with the circulatory system and blood pressure, but the book remains essentially the same as before.

<sup>7</sup>*Physical Diagnosis*. By W. D. Rose, M.D. Third edition, revised and enlarged. London: Henry Kimpton. 1923. (Med. 8vo, pp. 753. 21s. figures. 45s. net.)



## THE MNEMIC PRINCIPLE APPLIED TO BIOLOGY AND PSYCHOLOGY.

BY

SIR FREDERICK MOTT, K.B.E., F.R.S.

THE book on "the Mnemo" (μνήμη, memory) by the late Richard Semon of Munich<sup>1</sup> is a work of great importance and scientific interest, for even if some of the premisses upon which the author founded his theory that memory, habit, and heredity were factors of one common principle (the mnemonic principle) are either inconclusive or even to some biologists unacceptable, nevertheless the attempt he made cannot fail to have a profound influence upon psychology and biological science.

This mnemonic theory is not new; four independent attempts to connect the phenomena of memory, habit, and heredity prior to Semon's had been made by Hering, Samuel Butler, F. Laycock, and Henry D. Orr, but not one of them seems to have made any real influence upon contemporary scientific thought, for they all omitted to explain definitely why such dissimilar processes should possess in common an obviously repetitive nature. Bertrand Russell, in his recent book *Analysis of Mind* (Chapter IV, Influence of past history on present occurrence in living organisms), adopts the term "mnemonic phenomena" for those responses of an organism which, as far as observed facts are concerned, can only be brought under causal lines by including past occurrences in the history of the organism as part of the causes of the present response.

Semon points out that the immediate effect of stimulus upon irritable organic matter is excitation, but that the excitable condition manifested is really only half the effect produced, for although the irritable substance after the cessation of the stimulus returns to an indifferent state there remains a primary latent modification, a physico-chemical change, which Semon terms an "engram." The engraphic effects of a stimulus, then, are: (1) excitation, (2) an engram. The capacity of an organic substance to be engraphically affected constitutes the mnemonic principle.

The engrams of an irritable substance are the altered dispositions of it towards recurrence of states of excitement produced by the original stimuli. The organic substance, in consequence of specific engraphic action, shows itself specifically predisposed to those states of excitement which were induced by the original stimulus or by stimuli in juxtaposition, coacting either simultaneously or successively. Coacting stimuli received by the organism are reproduced mnemically in juxtaposition. Thus two experiences A and B occurring simultaneously ecphorize (ἐκφωρῶ or ἐκφέρω, to carry out or away) A and B in simultaneous juxtaposition. Experience A can ecphorize B, or the converse. If, however, experiences A and B are successive, A can ecphorize B but B cannot ecphorize A. This is quite obvious in reciting a poem. In singing a song we know that the music can ecphorize the words and the converse, because the word and the tune are simultaneous. An interesting fact in connexion therewith is that cases of aphasia have been recorded in which a song could be sung right through, although the words could not be uttered without the musical tones. I published an interesting case of this in a soldier who was blind and suffered with right hemiplegia and aphasia in consequence of a bullet wound of the brain. Recently Professor Bianchi has published a remarkable case of a man with thrombosis of the left middle cerebral artery, causing complete aphasia, who was able to sing popular Neapolitan songs. Most people know how easy it is to sing a song after it has been started correctly, and how difficult it is to memorize the tune and the words if interrupted; indeed, it is necessary often to begin the bar or the verse again. A well known song when once started voluntarily is followed by a successive ecphory of a series of associated tonal and articulate engrams. The series of incoming auditory and kinaesthetic stimuli successively and automatically ecphorize the corresponding motor engrams in the form of a chain of reflex patterns. Attention, not being directed to correctness of tone or the memory of the words, can be devoted to expressive feeling and clear diction. Awareness of the correctness of the words and tone only enters clear consciousness demanding attention when a slip or fault occurs.

The individual stimulus does not liberate one isolated synchronous excitation and make an isolated engram. Such detachment is wellnigh impossible in nature. What we find is this: that a simultaneous excitation complex, as such, after the lapse of the synchronous excitations is engraphically fixed in its totality. That which remains is a simultaneous "engram-complex." This simultaneous complex is the product of the excitations resulting from the entire energetic condition, and by energetic condition Semon means not only the external energies affecting the organism, but also its internal energetic state. The latter is just as important as the forces acting on it from without.

Because only a small fraction of a simultaneous excitation complex manifests itself clearly on mnemonic reproduction we get the impression, not of the recurrence of a former complete energetic condition, but only of a specific section. The internal energetic condition of an organism varies greatly at different times, so that the same external energetic condition produces at various moments altogether different simultaneous excitation complexes.

*The Mnemic Principle Applied to the Three Primal Instincts.*

I will now endeavour to apply the mnemonic principle to the three primal instincts. The following quotation from Bertrand Russell (*Analysis of Mind*) shows that the application of the mnemonic principle to the primal instincts of self-preservation, preservation of the species, and gregariousness is accepted by this profound psychologist.

"The response of an organism to a given stimulus is dependent upon the past history of the organism, and not merely on the present stimulus and the hitherto discoverable state of the organism. In the case of living organisms practically everything that is distinctive both of their physical and mental behaviour is bound up with this persistent influence of their parts. Further, speaking broadly, the change in response is usually of a kind that is biologically advantageous to that organism."

An inherited permeability or tendency to "permeability of neuronic routes" (Lloyd Morgan), synonymous with "engrams," connected with the primal instincts when appropriate stimuli arise, predetermine the instinctive behaviour of animals. For this reason chicks as soon as they are hatched seek and pick up food. In the human being sucking is the only complete instinctive act; the instincts of man are nearly all overlaid and consolidated by acquired habits. Owing to the great development of his psychic neuronic system man, moreover, is enabled to inhibit and control instinctive reactions.

Now instinctive neuronic routes are permeable because the chains of neurones which form the routes have, in the long procession of ages of evolution, engraven in them engrams of successively repetitive stimuli, thereby permitting a stimulus appropriate to one of the three primal instincts (self preservation, preservation of the species, or gregariousness), immediately or very readily to excite them successively, and bring about a specific inherited series of purposive reactions—in fact, a chain reflex. As all reactions are primarily sensory-motor reflexes, once the stimulus starts a motor reaction an incoming proprioceptor sensory stimulus from the parts moved correspondingly occurs to act as an incoming stimulus to arouse successive latent engrams connected with the instinctive purposive and unforeseen end (see figure). For instinct is blind.

*Instinct of Self-Preservation.*

With respect to self-preservation we may take an example given by Semon. A dog barks with delight to fetch a stone which you pick up and throw for it to fetch and carry, and every time you bend down to pick up a stone the dog barks with delight in anticipation of fetching and carrying it; but if, instead of throwing the stone for him to fetch, you throw it at the dog and it hits him, a nociceptor stimulus of the skin is produced and the dog, when next he sees you bend down, instead of barking with delight and wagging his tail, runs away howling with tail down. Clearly the engrams produced by nociceptor stimuli are more easily revived than engrams associated with beneceptor stimuli. Adopting, again, the term of Lloyd Morgan of "permeable neuronic routes" for engrams, we may assume that the neuronic routes of nociceptor are innately more permeable than beneceptor stimuli, which hypothesis is supported by Sherrington's experiments on the spinal animal.

We see in this observation that the visual stimulus of bending down ecphorizes a previous painful experience, but

<sup>1</sup> *The Mnemo*. By R. Semon. Translated by L. Simon. London: G. Allen and Unwin, Ltd.; New York: The Macmillan Co. 1923. (Demy 8vo pp. 29). 18s. net.]



before painful experience of the stone striking the skin can occur a protective behaviour, accompanied by the emotional expression of fear, is excited. This fact shows (1) that a complete repetition of the original condition is not necessary in the application of the mnemonic principle, and (2) that painful stimuli have a more powerful influence in preservation of the individual than pleasurable stimuli.

#### The Sex Instinct.

A subtle chemical stimulus such as the sexual hormone circulating in the blood may be regarded as the initial stimulus which arouses inherited latent engrams connected with propagation; and in animals the behaviouristic series of the chain of reflex patterns once started proceeds successively through permeable neuronic routes to a purposive end. The sex instinct in human beings is likewise automatically aroused by specific male and female sex hormones. The subjective manifestations are at first vague, uneasy feelings with an unconscious desire for relief; this unconscious vague spontaneous desire sooner or later arouses latent engrams of conscious desire and purposive behaviour towards the opposite sex, such as endeavours to attract attention by display accompanied by the sentiments of pride and vanity, which finally under normal conditions culminate in a passion (love) in which the male plays the active part and the female the apparently passive part, though it is the apparent passivity of the magnet.

#### The Gregarious or Social Instinct.

As an example of the inherited instinct of gregariousness a dog in chasing a rabbit barks instinctively to call up the pack because there are pre-organized permeable neuronic routes associating olfactory and visual images of the chase with the neuronic structures connected with barking, although the dog by barking may defeat the purposive end of capture of his prey. How different is the behaviour of the solitary hunter, the cat!

#### The Mnemic Principle Applied to Ontogenesis.

Can this mnemonic principle be applied also to ontogenesis? *A priori* we should expect that it could, for ontogenesis is in a measure a recapitulation of phylogenesis. Progressive evolution in the animal series depends upon the establishment of pre-organized latent engrams (connected with the three primal instincts) in the body as a whole, but in the nervous system in particular. These latent engrams which are necessarily ephorized are so adapted to feeling and behaviour of *homo sapiens* for the preservation of the individual and the species as to promote natural selection and survival of the fittest. The male and female gonads are each respectively the bearers of latent specific dispositions peculiar to species, race, and familial ancestry. The initial stimulus to an orderly sequence of stimuli for developmental formative structural activities is the conjugation of the male and female gonads; once started there follows automatically an ephory of latent engrams peculiar to species, sex, race, and ancestry by stimuli which have been successively repetitive during the long procession of ages of evolution. The engrams of species are immutable, and in a great measure also those of race; but the particular mental and bodily characters of the individual depend upon latent engrams derived from race, and those due to familial ancestry are plastic, therefore mutable, and most subject under the influence of environmental stimuli to variations.

#### The Mnemic Principle Applied to Habit.

Habit is distinct from instinct. Habitual actions are acquired by conscious voluntary attention to trial by failure and success of sensory-motor activities for a purposive end, repeated until a successive series of engrams or permeable sensory-motor neuronic routes has been established; and it is then only necessary to will the first movement for the rest of the reflex patterns to follow automatically in orderly sequence until the end is attained. In an habitual action, once the chain of reflex patterns has been initiated, conscious voluntary attention is no longer required; but should any interruption or failure of perfect ephory of successive engrams occur, there is awareness, and effort is made to supply, correct, or adjust the defect. This may be explained by a diagram showing the permeable neuronic routes which repetitive successive stimuli have created.

#### The Mnemic Principle Applied to the Influences of Inherited Dispositions.

The transmission of acquired characters is a heresy to most biologists, but Semon says (p. 84): "In a limited but fairly imposing number of cases we are able to influence inherited dispositions so effectively that the newly added engram not

only remains in force during the individual life of the organism, but is transmitted to the offspring." Attention is directed to certain experiments, the most convincing of which are those of P. Kammerer:

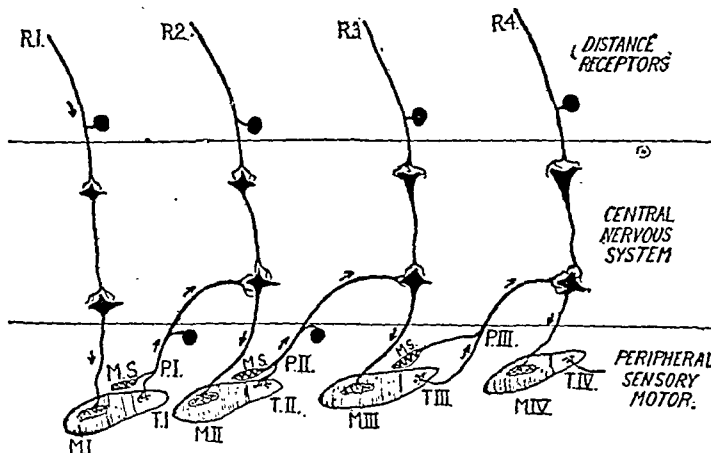
"The so called fire newt, *Salamandra maculosa*, which is viviparous, ordinarily gives birth to larvae measuring on the average 25 mm. and carrying gills. The broods may number anything from 14 to 72. These larvae are deposited in the water, and there pass a long transitional stage, until, after several months, they lose their gills, leave the water, and completely change into land newts. By change of conditions Kammerer succeeded in forcing the females to retain their offspring for a longer time in the uterus. Then, by repetition of coercion, these re-

tarded parturitions became habitual. In order to induce the females that had previously borne normally to retain their offspring in the uterus beyond the usual time, Kammerer kept them from the water-trough in which they would ordinarily have deposited their larvae." Kammerer now reared young, born of animals which had reached the highest stage of habitual late parturition, and mated them with each other. He then subjected the females to normal conditions during pregnancy, by supplying them with a water-trough and moist air, and by maintaining them at a moderately high temperature. Although there was no longer any external coercion to late parturition, the creatures departed from the normal breeding mode of their species, and without exceptions from the beginning made late and sparse births.

As the validity of these experiments of Kammerer and others, upon which Professor Semon based his views of the possibility of the influence of environmental stimuli upon the germ cells, is doubted by biologists, I will quote the following verbal communication made to the meeting of the Royal Society on January 18th, 1923, by Professor E. W. MacBride, F.R.S.:

"It is well known to zoologists that during the last fifteen or twenty years a series of experiments have been carried out by Dr. Kammerer at Vienna, which tend to show that acquired qualities, or, in other words, modifications of structure induced by modified habits, are inheritable. The results of these experiments have been received with much scepticism, both here and on the Continent, and the *bona fides* of Dr. Kammerer has been called in question.

"One of the most interesting of his experiments was in inducing *Alytes*, a toad which normally breeds on land, to breed in water. As a result, after two generations, the male *Alytes* developed a horny pad on the hand, to enable him to grasp his



Diagrammatic representation of the formation of a serial-response habit (after Dunlap, slightly modified). The series of responses is at first the result of the successive stimulation of the distance receptors shown at the top of the figure. During practice this stimulation is accompanied by the stimulation of proprioceptors in the acting muscles. This proprioceptive stimulation gives rise to nervous impulses that are drained as indicated by the arrows into the acting system, and in time the series of responses may be elicited by these movement-produced stimuli, only the first of the distance receptor stimuli being necessary. M., Muscles; P., proprioceptors; M.S., muscle spindles; T., tendon joint.



slippery partner. It has been admitted by Kammerer's critics that if he could demonstrate this pad he would to a large extent succeed in establishing the validity of his results.

"This summer, at my request, Mr. J. Quastel of Trinity College, Cambridge, when in Vienna, interviewed Kammerer, and was shown by him one of these modified males. . . . Subsequently, at my request, the Zoological Society dispatched Mr. E. Boulenger on a visit to Vienna. He too saw the modified male, and was assured by Przibram, the head of the Biological Institute, that all Kammerer's experiments had been done under his (Przibram's) supervision, and were perfectly genuine."

Semon from these and many other experiments claims "that a stimulus affecting the irritable substance of an organism and inducing excitation therein may in some cases affect also the germ cells, leaving demonstrable engrams behind, but that in other cases the germ cells are unaffected."

He claims that the mnemonic theory does not conflict with the Mendelian doctrine. He asserts that "it is not Darwin, but Weismann, who has been refuted by the more recent data acquired in the course of experimental research into the laws of heredity."

In the following statement he shows how the mnemonic principle may be applied to natural selection and survival of the fittest:

"In the mneme there is to be found a conserving principle which is indispensable for organic development, in so far as it preserves the transformations which the external world unceasingly creates. Its conserving influence is, of course, restricted by that indirect factor of the external world, Natural Selection, for, in the long run, only fit transformations survive."

## Noba et Vetera.

### THE INDIAN POLITICAL DEPARTMENT.

IN a note on the recent retirement of Major-General Sir William Edwards, the late Director-General of the Indian Medical Service, it was stated that he had passed great part of his service in the political department. This statement probably conveyed little or no information to readers in this country, to whom the nature of the Indian Political Department is unknown. This department corresponds roughly to the British Diplomatic Service. It deals with the relations of the Government of India with the independent countries bordering on India; Afghanistan, Tibet, Nepal, etc., and with the numerous semi-independent Indian native states. It has always been considered the most important department of the Government of India. In the distribution of portfolios among the members of the Indian Government the Viceroy retains that of the political department in his own hands. Under him its immediate head is the Foreign Secretary, of late years always a member of the Indian Civil Service. It has hitherto been recruited from officers of the I.C.S. and of the Indian army in about equal proportions, but for some years past the tendency has been to increase the number of civil officers at the expense of the military. But while these two services have always contributed the greater part of the personnel of the political department, the Government have always exercised the right of taking officers whose services were considered useful or necessary from any department of Indian service, medical, public works, police, etc. The highest appointments in the department are the chief commissionerships of British India and of the North-West Frontier Province; the agencies of the Governor-General, Central India and Rajputana; and the residencies of Nepal, Haidarabad, Kashmir, Mysore, and Baroda. After them come second class residents, political agents, and political assistants, the whole forming a regular graded service, with regular promotion from grade to grade. The Government, however, frequently fills up the highest appointments from outside the department. Service in the political department has always been the quickest and best route to success and fame. Many of the best known names in the middle history are those of political officers, especially in the India of the nineteenth century, while the British Empire in India was rapidly expanding: Sir John Malcolm, a century ago; Sir Alexander Burnes, assassinated at Kabul in 1841; Sir Herbert Edwards, of Punjab fame; John Nicholson, who fell in the siege of Delhi; and, greatest of all, the Lawrence brothers, John Lord Lawrence and Sir Henry Lawrence, killed at Lucknow, were all "politicals." All of these, except John

Lawrence, were military officers. Coming nearer our own times, we may add the names of Sir Louis Cavagnari, killed at Kabul in 1879; Sir Robert Sandeman, of British Biluchistan; and Sir Francis Younghusband, who is happily still living.

In addition to the executive officers of the political service, every political residency and agency, except a few of the smallest, has a medical officer attached to it. These posts have always been filled from the Indian Medical Service, and when it is stated that an I.M.S. officer is in political employ, or in the political department, this means that he is attached to the department as a medical officer, not that he is an executive political officer. As a rule, the medical officer enters political employ fairly young and is posted to one of the less popular stations, rising gradually to pleasanter and more lucrative appointments. And some of the higher posts under the Foreign Office are among the most important and lucrative medical appointments in India. But, as in the case of executive officers, it sometimes happens that a senior medical officer is appointed from some other branch of the medical service direct to one of the most important posts under the Foreign Office. As an instance may be mentioned the late Colonel Lawrie, who was transferred from being Professor of Surgery at Lahore to be Residency Surgeon at Haidarabad, a post which at that time was usually considered the best medical appointment in India.

As stated above, the Government has always selected for employment in the political department officers of any service whom they considered likely to make successful political officers. And, from time to time, many officers of the I.M.S. have been so selected, usually after a period of service as medical officers of the department. A few names may be mentioned as the best known, though there have been many others. Surgeon Graeme Mercer, of the Bengal Medical Service, in the early years of the nineteenth century was Resident at the Court of Scindia, the Maratha chief, ruler of the then independent state of Gwalior. The well-known work, *Letters from a Maratha Camp*, was written by Lieutenant (afterwards Colonel) T. D. Broughton, while commandant of the Resident's (Mercer's) escort. Sir John McNeill, while an assistant surgeon in Bombay, was appointed medical officer to the British Mission in Persia in 1820, and in 1835, after fifteen years' service in that capacity, became secretary to the embassy. He retired from the medical service in 1836, and in the same year was appointed Minister Plenipotentiary to Persia, holding that post for six years, till 1842. On April 15th, 1839, he received the Grand Cross of the Bath, being the only I.M.S. officer who has ever gained that honour. He lived till May 17th, 1883. Percival Lord, also of the Bombay service, after accompanying Sir Alexander Burnes to Kabul, in 1836, when the British restored Shah Shuja to the throne of Afghanistan and occupied the country, in 1839, was appointed Political Officer on the Uzbek frontier, where he was killed in action in the battle of Parwandara on November 2nd, 1840. Sir John Spence Login, of Bengal, after serving with D'Arcy Todd at Herat, in the Afghan war, 1839-42, joined the political department. He was appointed tutor to Dulip Singh, the child Maharajah of the Punjab, deposed in 1849, after the second Sikh war. Deputy Surgeon-General Henry Walter Bellew, author of many works on Afghanistan, was at Kandahar during the Mutiny, and afterwards served for several years in the political department, being chief political officer at Kabul during the second Afghan war, but later left it for the smoother paths of the sanitary department. The last I.M.S. officer who served as an executive political officer was the late Sir George Robertson. He entered the Bengal Service in 1878 and joined the political department ten years later. He was chief political officer in the Hunza-Nagar campaign of 1891-92, and afterwards political agent of Chitral, a small state on the North-West frontier, and as such went through the siege of Chitral, for which he received the K.C.S.I. He retired on October 12th, 1899, and since then the I.M.S. has not been represented in the executive ranks of the political department. After his retirement Robertson was M.P. for Central Bradford for ten years, from 1906 till his death on January 2nd, 1916.

THE seventy-fifth anniversary of the Société de Biologie of Paris will be celebrated on May 26th. The subjects to be discussed are: generation and fecundation, introduced by A. Brachet; physiological action of potassium and calcium, introduced by H. Zwaardemaker; the problem of immunity in invertebrates, introduced by J. Cantacuzène.



## British Medical Journal.

SATURDAY, FEBRUARY 24TH, 1923.

### THE SCHEME OF LIFE.

CIRCUMSTANCES conspired to make the celebration, last week, of the memory of John Hunter by the Royal College of Surgeons of England an occasion of more than usual distinction. In the afternoon the Orator gave an address in which, as those who read it in our columns last week will have noted, certain facts of nature were related and discussed in the Hunterian manner, and in the evening Mr. Rudyard Kipling carried away his audience—which has included a multitude greatly exceeding the guests of the College who heard him—to the border-line of science and the misty world of the spirit. Sir John Bland-Sutton is very competent—no man to-day so competent—to understand and therefore to make plain to others John Hunter's attitude towards the facts and the problems of nature; and, as may be read at length in the full report of his speech published at page 346, Mr. Kipling proved that he had a vivid understanding of the motives that actuate the students of the science and the practitioners of the art of medicine and surgery.

By way of a parable Mr. Kipling set forth a quality of man's mind, very commonly overlooked by persons who construct new social systems—that quality which makes man desire to know the how and the why of the working of nature about him and in him. The puppy destroys for fun, the child for fun too sometimes, but more often in the desire to find out how the thing works. Man, Mr. Kipling said, had always searched, in spite of the disabilities due to his own nature, and the restrictions imposed on the searcher by his fellows. He had searched openly or furtively, in safety or at the risk of his life, and had gone up against the darkness that cloaked him and every act of his being. Now the quest was called scientific research, but "it was the old quest under a new name." This is profoundly true, but Mr. Kipling might have gone on to say that, in his search for the spark Brahm hid, man has been impelled to try to understand the universe, inasmuch that astronomers speak of young stars and old, not because they suppose the young to be newly born, but because they are so far away that the light from them has taken aeons to reach us. When the light started they were young, now they must be old or at least middle-aged, as are the stars half as near again, whose light reaches us in half the time.

The point we would make is that man possesses an inborn appetite for knowledge; it is strong in some men, weak in others, but present, more or less well directed, in all. In Hunter it was voracious. He hungered for new facts, and recorded them even though he could not guess at their relation to other facts he was observing and recording. Hunter began as an anatomist, and throughout his life his main interest was always in structure. There can be little doubt, as suggested in the oration, that he began to preserve the specimens he dissected in order to serve the needs of his brother as a teacher; but as his knowledge and his collection grew his outlook enlarged. He perceived the existence of system throughout animated nature, and conceived his collection as an "illustration of life exhibited in the vast chain of organized beings, living and extinct, by a display of the various organs in which the

functions of life are carried on." Embryology attracted him, and he spent much time and labour in its study, but he seems now in both respects—his collection and his embryology—like one wandering in a wood, eagerly observing all within his range of vision, though without a sense of direction, but yet recording his observations with an inner conviction that they must eventually serve to make plain the path. While studying and dissecting animals the idea, indeed, arose in his mind that living things could be arranged in a physiological series, but he did not possess the key which the doctrine of evolution has placed in the hands of every student to-day. He had the hall-mark of a leader in scientific investigation, for he did not slur over exceptions, but gave special attention to them; though he had to be content with recording and preserving, yet he was confident that his facts would some day fall into their place in our conception of the scheme of life.

Lord Balfour, in bringing to an end last week the long course of Gifford lectures he has been giving at the University of Glasgow, attempted the remoter question of how the whole was started and is directed. He said that it was necessary to bring in at the beginning, and as transfusing the process from beginning to end, some form of reason, some element of purpose, and he did not shirk the use of the word "design," nor hesitate to affirm that theism must indubitably be a part of any system which claimed to avoid the fallacy that unreason had produced reason. At the same time he told his audience that there was nothing to fear from science, but that they should press on science by every means in their power; the warning ought not to have been necessary, for if design be a truth then no truth of science can be in conflict with it.

### MORTALITY IN OCCUPATIONS.

THE fourth part of the Supplement to the Seventy-fifth Annual Report of the Registrar-General, which has just been published, is a welcome though belated document. It is the sixth evaluation of mortality in occupations made in the General Register Office and concerns the years 1910-12. Some important improvements in detail have been made, but the general lines of the inquiries of 1890-92 and 1900-2 have been followed. The essential principle is to relate the deaths registered in three years, of which the census year is the middle, to the enumerated populations of the census year. The method of derivation of rates of mortality involves some difficulties of interpretation. In a few cases—for instance, that of an occupation such as seafaring, which is not carried out at home—the enumeration of deaths is likely to be more complete than that of those liable to die; what the actuary terms the "exposed to risk." In all cases—the specification of occupation being obtained in one way for "the exposed to risk" (namely, from the census schedules filled in by the heads of families), in another way (namely, from the information supplied to the registrar) for the deaths—there may be a lack of homogeneity between the numerator and denominator of the fraction which is the death rate. Further, there is the inevitable difficulty of deciding which is the horse and which the cart; whether, let us say, coal mining is a healthy occupation, or whether only healthy men can be coal miners. Lastly, there is the ambiguity of a classification partly occupational and partly industrial. To quote the report: "The classification is, on the whole, rather of an industrial than of a strictly occupational nature; and thus obscures in many instances the full effect of

<sup>1</sup> Supplement to the Seventy-fifth Annual Report of the Registrar-General for England and Wales. Part IV. H.M. Stationery Office. 12s. (pp. 102, 12s. 6d. net.)



dangerous processes or operations. It deals with such groups, for instance, as men making cutlery, or motor chassis, or pottery; but it does not distinguish how many of these men are grinders, or sand blast operators, or lead glaze workers, and thus precludes any estimation of the real risk to life involved in these processes by themselves. . . . It remains to be seen whether the renewed efforts made in the preparations for the 1921 Census to provide for the separate treatment of dangerous processes by framing the classification on genuinely occupational lines throughout will achieve success in practice."

When all these objections have been admitted the fact still remains that this document is one of the most important State papers issued, and should provide food for thought and material for comment to medical statisticians and hygienists for some time to come. At present we can but touch lightly a few points, but hope to return to the subject at an early date.

As a whole, the mortality of all occupied and retired males in 1910-12 was much below that of 1900-2; there was an improvement of 21 per cent. on the standardized rate of 1900-2. Not one of the specified occupations had 100 per cent. of the earlier rate; lead miners—a very small group—came nearest to equality with 98 per cent. The medical profession improved slightly more than all occupied and retired males, having in 1910-12 a mortality which was 73 per cent. of the rate in 1900-2. The greatest improvement of all was in the group general shopkeepers, with only 55 per cent. of the 1900-2 figure. Of important causes of death, cancer and valvular disease of the heart showed increases; phthisis and the non-tuberculous respiratory diseases heavy decreases.

A consideration of the details shows a certain solidarity of diseases. For instance, if the occupations in which cancer is high or low be noted, the rates of mortality from all other causes are found to tend on the whole to be also high or low. Of 18 fairly large groups which had a mortality from cancer at least 25 per cent. in excess of the rate on all males, there were only 3 which had a mortality from all other causes below the standard. Of 18 occupations with a cancer mortality at least 25 per cent. below the mean, one only had a rate for other causes above the average.

As usual, occupations exposing the workers to the effects of alcoholism were characterized by excessive mortality. In terms of the standard population of males aged 25 to 65, taking the general mortality in this standard as 100, beer bottlers and cellar-men exhibited the moderate excess of 23, brewers were up to 129, inn and hotel servants reached 148, and hotel keepers, publicans, spirit, wine, and beer dealers 160. The special sub-group bar-men had more than twice the standard mortality (218 per cent.). Motor car and van drivers enjoyed just 50 per cent. of the average mortality, easily beating even clergymen, priests, and ministers with 55 per cent. Physicians, surgeons, and registered practitioners were very slightly worse than the standard under cerebral haemorrhage and "other diseases of the circulatory system," a good deal worse under Bright's disease (an excess of 33 per cent.). Fortunately for our professional credit, the rubric "alcoholism" is notoriously worthless, else we should have to infer that doctors were 25 per cent. more drunken than all males.

A very interesting tabulation is that of coal miners in seven fields. The Lancashire field showed a great excess, 65 per cent. more than the Nottinghamshire rate. An important contributor to the excess was the accident rate, but this was not the whole explanation, for the Lancashire miners had more than double the phthisis rate of the Nottinghamshire group. The cancer rates of the highest and lowest were almost identical, and in

no coal field was the cancer rate above the standard. The correlation of mortality with the breathing of dust-laden air is again brought out, and a special tabulation shows "the comparative phthisis mortality for the workers in sandstone to be more than three times as great as that for workers either in granite or limestone."

We could easily go on quoting important results, but this is a document which should be consulted at first hand. Possibly, if and when the new school of hygiene comes to birth, candidates for diplomas in public health will be expected to know something of the contents of such official publications. We recently turned over the examination papers set for the D.P.H. of a famous university through a number of years, and failed to discover a single question to answer which any knowledge of the classical English series of reports upon occupational mortality was required.

#### AUSTRALASIAN MEDICAL CONGRESS, 1923.

At the meeting of the Council of the British Medical Association on February 14th the President, Sir William Macowen, accepted the invitation to represent the Association at the Australasian Medical Congress at Melbourne in November, 1923. The Congress, which will be held within the University of Melbourne, will be opened on November 12th and will close on November 17th. The President of the Congress is Mr. G. A. Syme, M.S., F.R.C.S., the honorary treasurer is Dr. C. H. Mollison, and the general secretary Dr. A. L. Kenny, to whom all communications should be addressed at the Medical Society Hall, Brunswick Street South, East Melbourne, Victoria. A cordial invitation has been extended to members of the parent Association to be present at the Congress. Every member of a Branch of the British Medical Association in Australia and New Zealand has the right to enrol as a member of the Congress on payment of a fee of two guineas. Legally qualified medical practitioners who are not members of the British Medical Association may be admitted to membership of the Congress on certain conditions. The Intercolonial (later Australasian) Medical Congress was first held in Adelaide in 1886; the Congresses served a highly useful purpose, but the need for a more stable and permanent constitution and for a stronger link with the body representing the medico-political interests of the profession has become increasingly evident. The forthcoming Congress is the first to be held under the direction of the Federal Committee of the British Medical Association in Australia. As already announced, the scientific work of the meeting will be organized in twelve sections, and it is intended that the dominant note of the Congress shall be that of prevention; clinicians, investigators, pathologists, and epidemiologists are invited to communicate original work connected directly or indirectly with prevention of disease and with preservation of the health of the Australasian community.

#### THE CENTENARY OF PASTEUR.

ALL members of the profession are invited to attend the social evening at the Royal Society of Medicine on Wednesday next, February 28th, when the centenary of the birth of Pasteur (he was born on December 27th, 1822) will be celebrated. The President of the Society, Sir William Hale-White, will give an address on Pasteur in relation to medicine, and Professor T. M. Lowry, one of the greatest authorities on crystallography (the subject in which Pasteur won his first laurels), will speak on Pasteur's relation to chemistry. He will be followed by Dr. Gustave Monod, who is attending as the representative of the Faculty of Medicine of Paris. He will give a short address on Pasteur as an artist, and will illustrate his remarks by some lantern slides of the pastel portraits drawn by Pasteur himself in early youth. He will also show a collection of some twenty other portraits by Pasteur. There will be a number of other exhibits and an



antograph letter addressed by Pasteur to Professor Miller in 1857, asking him to take an interest in the dispute as to the value of the researches on which Pasteur was then engaged.

#### INSULIN.

LAST November (BRITISH MEDICAL JOURNAL, November 18th, p. 991) the Medical Research Council issued a statement explaining the steps which were being taken in this country for making insulin available as rapidly as possible for the treatment of diabetic patients, under suitable guarantees of authenticity, potency, and safety. At that time the methods of producing this substance were imperfect and necessarily wasteful, and its use in the treatment of disease was, and indeed is still, in the experimental stage. The Council now announces that since then rapid and satisfactory progress has been made as a result of research work which has been undertaken at various centres in this country in confirmation or extension of that already accomplished in the University of Toronto. Members of the Council's scientific staff at the National Institute for Medical Research, Hampstead, have sought to increase the yield of product from the raw material, to simplify, shorten, and cheapen the processes of its production, to obtain accurate measurements of potency by reference to a fixed standard of value, and finally, to find the best methods of securing the bacteriological sterility of the final product. In all these directions important progress has been made. Those working for the Council have been in constant communication with the workers at Toronto, and have both received and given full information of new developments and improvements as they have occurred. The results obtained have been made freely available for the assistance of those engaged in the other work to be mentioned below. Technical information and small samples of the finished product have so far as possible been put at the disposal of approved scientific workers undertaking collateral lines of investigation elsewhere. At various hospitals where the necessary facilities existed for biological and chemical work in the laboratories and for scientific clinical studies, investigation and carefully controlled treatment under suitable safeguards has been undertaken in close association with the work of the National Institute. Insulin is being produced, standardized, and used in treatment for the relief of patients selected for the purpose, at St. Bartholomew's, Guy's, St. Thomas's, the London, and University College Hospitals, in London; in Sheffield, at the University Departments of Pharmacology and Physiology and the Royal Infirmary; and in Edinburgh, at the Royal Infirmary. Arrangements are being made to extend this work to other hospitals and institutions, where the necessary conditions, both personal and material, can be provided. The Council has also made every effort to accelerate the production of insulin upon a manufacturing scale. Experience in Canada and the United States has already shown the difficulty of passing from the small laboratory scale of production to large scale production by mechanical means, without which the product can never become generally available at reasonable cost. The Council has been in communication throughout with certain manufacturing firms in the several parts of the country with whom it has entered into agreements securing in the public interest a control of the safety and potency of the product and its sale at a fair price. The Council has at the same time given every assistance at its disposal by way of information likely to accelerate satisfactory production. In the promotion of manufacture by particular firms it has been necessary to consider the distribution of the available raw material and the special technical difficulties attending its collection and proper use. No royalties are payable to the Council under any of these agreements. The progress towards successful large scale production has been more rapid than the Council had ventured last November to hope. This has been due equally to the laboratory investigations at the National Institute already mentioned and to the experience, skill, and enthusiasm which the firms have shown

in their co-operation with the Council. The Council believes that, subject to limitations of raw material in particular districts, successful manufacture is now assured; but a period of some weeks must pass before laboratory tests and clinical use under special safeguards will have made it justifiable for a supply to be issued generally for routine use under the ordinary conditions of medical practice.

#### THE ANATOMICAL DELINEATIONS OF VESALIUS.

THE Vicary Lecture for 1922, the fourth of the series, was delivered by Mr. W. G. Spencer before the Royal College of Surgeons of England last December; it has been published in the *British Journal of Surgery*, with some well produced illustrations taken from the wood blocks in Vesalius's "Fabrica," and in the copy of the "Epitome" on vellum preserved in the library of the British Museum. The lecture, instituted in 1919 by the Barbers' Company of London, commemorated the fusion with the Guild of Surgeons, upon which ensued the making of special provision for instruction in anatomy of the members of the united company. Vicary, who was sergeant-surgeon to King Henry VIII, was four times president of the united Company of Barbers and Surgeons, and it was to him that Henry VIII handed the Act of Incorporation, as depicted in the famous painting by Holbein. He died in 1561, having continued in the office of sergeant-surgeon under Edward VI, Mary, and Elizabeth. In 1554 he was appointed surgeon to Philip II, to whom also Vesalius, for very different reasons, was surgeon at the same time. The celebration in 1914 of the quadricentenary of the birth of Vesalius was interrupted by the outbreak of war, but in May last year the foundation of the University of Padua, where Vesalius taught while composing his books, was commemorated. The great Italian artists aimed to reach the height attained by the Greeks, and before the time of Vesalius had pursued to some extent the study of anatomy by dissecting the human body. Anatomy owes much to them, for their influence helped to break down the objection to permitting the examination of the human body after death; gradually the prejudice yielded to the influence of reason, and Vesalius placed upon the monument on which the second skeleton figure leans the inscription, "Man's spirit lives, all else death's hand shall claim." Vesalius wrote an epigram describing the difficulties he had to overcome, and it has been turned into English—apparently for the first time—by Miss Joyce Lowe. Mr. Spencer considered it beyond doubt that all the illustrations in Vesalius's book were from his own designs, though the names of the draughtsmen or engravers were nowhere definitely mentioned. The frontispiece, the portrait, and the vignettes give expression to the idea Vesalius had of the way anatomical instruction should be given. The drawings of the nude figures, of the muscles, and of the skeleton all disclosed the same purpose, which was to represent the living body in active movement. Vesalius had a wider aim than to instruct students of medicine and art alone; he thought every educated man should possess a knowledge of anatomy and physiology, as he indicated in the letter dedicating the "Epitome" to Prince Philip: "You will think it base and unworthy that, while such varied courses of study are pursued, the composition of the body which accompanies us through life should be a secret from us; that man should be absolutely unknown to himself; and that we do not examine the construction of the organs formed so perfectly by the Almighty Designer of the Universe. The vital activities of these organs by which everything is accomplished we confine ourselves merely to wondering at." The drawings representing horizontal sections through the human brain were, Mr. Spencer said, of peculiar interest, because it could be demonstrated that the artist had before his eyes the anatomical preparations and drew what he saw; and further, that the sections were made in series from the same brain. The diagrams of nerve, and brain, and artery included in the "Epitome" were intended to be cut out and superimposed upon the nude female and other figures. This Mr. Spencer



made plain to his audience by placing the corresponding lantern slide one over the other in the epidiascope. These diagrams; it was pointed out, were closely related to the *Tabulae Ercellianae* preserved in the College Museum. Before the introduction of methods of preserving anatomical material from putrefaction, and of injecting blood vessels, nerves and blood vessels were dissected out and spread on boards for inspection and drawing: after being varnished over they could be preserved. Evelyn's account shows that a century after Vesalius, his successor in the chair of anatomy at Padua, Vesling, supervised the preparation for Evelyn of human nerves and blood vessels by the same method as had been adopted by Vesalius when preparing his diagrams. Mr. Spencer exhibited copies of all the "Works" of Vesalius from the libraries of the College of Surgeons, the College of Physicians, the Medical Society, and the Royal Society of Medicine.

### THE WAGES OF RESEARCH.

THE gift of Sir Alfred Yarrow to the Royal Society, splendid as it is in amount—£100,000—is made the more valuable by the purpose, conditions, and motives disclosed in his letter to the President. The purpose is to mark the giver's sense of the value of research to the community. The conditions display a wise appreciation of the ever-changing circumstances of scientific inquiry and the impolicy of tying the hands of the Society in the future. The chief conditions are that the fund shall be administered for the Society with unfettered discretion "by the best people from time to time available," care being taken that a gift from the fund shall never lessen any Government grant, and that the rules for the guidance of the committee which will administer the fund shall be reconsidered by the council every tenth year, so that they shall be constantly in accord with the needs of the day. Finally, Sir Alfred Yarrow shows his motive in the following sentence: "I should prefer that the money be used to aid scientific workers by adequate payment, and by the supply of apparatus or other facilities, rather than to erect costly buildings, because large sums of money are sometimes spent on buildings without adequate endowment, and the investigators are embarrassed by financial anxieties." This displays a true understanding of an unfortunate state of things, which has been greatly aggravated by the change in monetary values due to the war. The salaries received even by men who have lived long enough to win the highest distinction in science and who are, by reason of years, approaching the end of their active career, are often disgracefully small, so that they continue throughout their lives to be embarrassed by financial anxieties. Splendid laboratory buildings and a starved staff are no credit to a university and a reproach to the people of this country. In concluding his letter Sir Alfred Yarrow records his "firm conviction that a patriotic citizen cannot give money, or leave it at his death, to better advantage than towards the development of science," and the manner in which he wishes his gift to be used may well be an example to those rich men who may contemplate following his advice.

### THE ENERGETICS OF MUSCLE.

IN his Friday evening discourse to the Royal Institution, Professor A. V. Hill, F.R.S., gave a very striking account of the efficiency and economy of the master tissue of the body. He regarded the activity of muscle, seen in its highest skill and co-ordination in the gymnast or the first-class mechanic, as presenting a scarcely less wonderful picture than that presented by the purely intellectual processes. He began by remarking on the extreme rapidity of some of the voluntary muscular movements. The wing of the wild duck, for instance, beats nine times a second, and that of the sparrow thirteen times, and these rates are far out-distanced, of course, by the vibrations of the wings of insects. Compared with most machines, muscle was an efficient mechanism; it was more efficient than the steam engine for movements of moderate speed, but when forced over a long period it became wasteful. The true function of

muscle was to pass from one state of stress to another, and only incidentally to perform work. The ready recovery from the extreme fatigue consequent upon violent athletic exercises was rightly attributed to the circulation; if the circulation were hindered by a cramped position recovery would be greatly delayed, and in the laboratory, if the isolated muscle were deprived of oxygen, it might show no sign of recovery at all. The heat given out by muscles in activity was measurable by thermo-electrical methods, although in a single twitch the rise of temperature was of the order only of a two-thousandth or a three-thousandth of a degree. If the fatigue record, as shown by the deflection of a galvanometer, were analysed carefully it would be found that the delayed heat produced after the contraction was over might be one and a half times as great as that produced during the actual contraction. This delayed heat was connected with the recovery process. When the muscle contracted it was in a state of stress, and consequently in a state of potential energy, and when relaxed it might be expected that this energy would be released and dissipated in the form of heat. During recovery a portion of the lactic acid which had been liberated during contraction was oxidized and the rest was restored to the glycogen from which it came. In very severe muscular exercise, such as that of a man running a hundred yards at top speed, every muscle fibre in the body was strained to the utmost, and the effort was followed immediately and probably for a considerable time by panting, owing to the oxygen demand. The possibility of continuing a violent exercise for any length of time depended upon the extent of the oxygen "credit" upon which the body could draw. Certain tests which he had carried out at Manchester showed that an individual, after 1½ minutes of violent exercise, required as much oxygen to enable him to recover his equilibrium as he would ordinarily use in one hour when lying at rest. The limit of muscular activity which the body could reach depended upon the maximum rate at which it could obtain oxygen, and this maximum in its turn depended upon various factors. The amount of oxygen which the blood could carry was comparatively small—not more than one-fifth of the blood volume in any case, and probably in ordinary exercises not more than one-seventh. The efficient carriage of oxygen around the body depended very largely upon the lungs as well as upon the heart, and also upon a balance struck between the two. Professor Hill described how he had found that the maximum amount of oxygen he could take into the body was 4.2 litres a minute, and the amount for which he could obtain "credit" during severe exercise was 13 litres. Therefore he was able to run for one minute at a rate governed by 17.2 litres of oxygen, but for the second minute the total oxygen intake would be increased only to 21.4 litres, averaging 10.7 a minute. If it was possible to economize the energy required for a given series of muscular movements then less oxygen would be necessary. It seemed to him probable that the difference between the good long-distance runner and the poor one was not due to the more effective mechanism of the former for supplying himself with oxygen, but rather to the fact that he had learned to use his muscles more efficiently, and therefore more economically; he had acquired the habit of not using inappropriate muscles, or appropriate muscles in an inappropriate rhythm. It was this, rather than capacity for oxygen intake, which was the secret of athletic prowess.

### THE PSYCHOLOGICAL CONDITIONS FOUND IN CRIMINALS.

AT the last meeting of the Birmingham District Medical Women's Association Dr. M. Hamblin Smith, medical officer of Birmingham Prison, and the author of an important work published last year on the *Psychology of the Criminal*, gave a lecture with that title. He, however, began by remarking that a better title would be "Some of the psychological conditions found in offenders," since the idea that there was a definite criminal class sharply differentiated from other



classes was no longer held. He laid down the preliminary principle that criminal conduct, like all other forms of conduct, is caused by the mental content. Certain forms of physical defect might affect the sufferer's mentality, and so might become predisposing causes of criminality. The differences in the estimates made of the proportion of mental deficiencies to be found among delinquents were amazing and were due to diverging views as to the standard of comparison adopted by the examiner. He entered at some length into his objections to the German scale for the measurement of intelligence, and described his own scheme of tests. Having discussed the conception of "moral imbecility" and rejected it, he proceeded to discuss the influence which the hypothesis of the unconscious mind has had upon the conceptions of delinquency, stating that, on a most cautious estimate, the proportion of offences due to mental conflict was at least 10 per cent. A discussion of mental conflict and of the various methods of discovering its presence followed. Dr. Hamblin Smith expressed the opinion that views on this subject will be affected by the acceptance or rejection of the doctrine of scientific determinism. He illustrated the importance of these conflicts by the example of the chronic alcoholicist problem. He also briefly considered those cases of delinquency which are due to social maladjustment and to "current conflicts" set up by environmental conditions, and the mental states which are known, for want of a better word, as "psychopathic." In conclusion, he described the special arrangements made at Birmingham prison for the examination of cases suspected of mental abnormality, and pleaded for further study of these questions by his audience, so that, having understood the subject themselves, they might take their part in the education of public opinion.

#### TREATMENT OF EARLY MENTAL DISORDER.

THE treatment of early or incipient mental disorder is a matter that has engaged a great deal of attention during the past few years, and has frequently been discussed from various points of view in our columns. Several efforts have been made to initiate legislation to deal with it; one of them was Clause 10 in Part 2 of the ill-fated Ministry of Health (Miscellaneous Provisions) Bill introduced by Dr. Addison in August, 1920. A memorandum on the bill, issued soon afterwards by the Ministry, contained the following statement: "The importance of early treatment of these cases, wholly dissociated from the machinery of the Lunacy Acts, is now generally recognized." Before the dissolution of the late Parliament it was understood that Sir Alfred Mond had under consideration the draft of a bill to enable persons suffering from incipient mental disorder to be treated in public or private mental hospitals without certification. One aspect of the problem is touched on by Dr. B. H. Shaw, Medical Superintendent of the Staffordshire County Mental Hospital, in his last annual report. "Before a patient suffering from nervous breakdown becomes legally certifiable, whatever the cause may be, it is obvious," he says (p. 10), "that, from the standpoint of future complete recovery, efficient treatment, involving in most cases complete detachment from home surroundings, should be taken in hand as early as possible. In order to effect this it is in the first place necessary that the patient should come under the notice of his or her local medical man for some considerable time before certification becomes necessary." In order to estimate the number of such cases in which the medical practitioner in attendance had sufficient opportunity of observing the patient in an early stage of mental breakdown Dr. Shaw went carefully into the histories of all the first attack cases admitted under his care during 1921. Of the 73 women and 76 men the vast majority were considered certifiable by their doctor at his first attendance. Twelve of the men and 21 of the women were seen by their doctor for the first time more than three weeks before admission. Of these, 5 men and 4 women, owing to their condition, would not have benefited by any form of early treatment. Thus the number of cases

likely to be dealt with as incipient was reduced to 7 men and 17 women, making 9.3 per cent. of first attack cases in men and 21.8 per cent. in women. "On further examination of these cases," Dr. Shaw continues, "I have come to the conclusion that about 4 per cent. of the men might probably have been dealt with efficiently under some different scheme without the necessity of certification, and about 6 per cent. of the women. I am inclined to think that these numbers even are excessive, and there is little doubt, therefore, that any scheme for dealing with incipient insanity would be greatly handicapped by the fact that medical men in general practice do not themselves get the opportunity of seeing these cases early enough for efficient treatment." This expression of opinion from an experienced medical superintendent seems worthy of quotation. The history of the British Medical Association's efforts to promote legislation for the better treatment of early mental disorder was told in our columns as lately as July 8th, 1922 (p. 51).

#### MEDICAL MUSEUMS.

THE International Association of Medical Museums has begun the publication of a *Journal of Technical Methods*, to replace the series of bulletins, of which seven have been published. The first number is a memorial to Sir William Osler, who was one of the earliest members of the Association and always took a great interest in its work. Meetings are held from time to time for the discussion of technical matters connected with the upkeep of medical museums. The communications to the present number are either retrospects of technical subjects by experts or short contributions of an essentially practical nature. As examples of the general reviews we may mention articles on histological technique used in pathology, preserving fluids for gross pathological specimens, and a discussion on photomicrography. There are seven articles on war museums, seven articles on colour preservation and mounting, three on methods of making and labelling museum jars, an article on museum arrangement, three articles on photography, six on microscopic technique, and three on bacteriological technique. In addition five communications on comparative and morbid anatomy are published, together with articles on parasitology, cardiac anomalies, and monstrosities, and abstracts of current literature on microscope technique. This Association conducts an "experience department," and members are invited to forward to this department requests for information they may desire on any subject that falls within the range of this bulletin, such as museum or microscope technique, museum classification or arrangement. Another function of this Association is the development of an international system of exchange of museum specimens and pathological material for microscopic research, and the bulletin advertises what is "wanted" and what is "offered" by curators of museums in different parts of the world.

#### PROFESSIONAL SLANG.

A CORRESPONDENT this week protests against the use of the abbreviations "T.B.," "T.b.," and "t.b." He asserts that this reprehensible practice is becoming more common, and our own experience confirms him. Such terms are used, no doubt, to save the writer trouble, without regard to the comfort of his readers. One of Dr. Weatherhead's examples, "T.B. of lungs. . . T.B. not found in sputum," illustrates one of the evils of the practice, for in this instance "T.B." seems to be used in two senses—in the first place for tuberculosis, and in the second for tubercle bacilli. But the evil extends much beyond this. We often receive papers scattered through with contractions or initials which the author does not explain; some of them no doubt are commonly understood; others are known in laboratories, sometimes only in particular laboratories. Sometimes laboratory workers seem to use them without taking the trouble to ascertain how they should be defined; they have



become mere symbols, and as neither physiology nor pathology is a department of algebra their use leads to confusion. Out of consideration for his readers a writer, when first he is tempted in any article to use a slang contraction or set of initials, should be at the pains to give the term in full, following it by the contraction he intends to use later on; he ought to be quite sure also that somebody else has not used the same set of initials to mean something else. Examples of another class of slang which seems to us objectionable are afforded by such phrases as "stained with Giemsa" or "stained with Leishman"; Sir William Leishman is, happily, still with us, and it is horrible to think of his being used as a stain. Another grievance of printers and readers is the carelessness with which the decimal point is used. We saw in print the other day the phrase 535.6 per cent.; it was discovered before it was too late, but this good fortune does not always befall. Recently we had in our own pages a regrettable incident in which the decimal point disappeared altogether. It is always inconvenient to use such a form as .5; the decimal point may be overlooked by the printer or broken during the process of printing. The form should always be 0.5. It is said that language is given to man to conceal his thoughts. The application was to the diplomatists. When a man sits down to write a paper on a scientific subject his object is not to beguile or confuse, but to inform his readers.

#### VENEREAL DISEASE IN THE UNITED STATES.

THE annual report for 1922 issued by the United States Public Health Service contains some interesting facts concerning venereal disease in that country. As in England, there was a notable falling off in the number of new cases applying for treatment. In the Statistical Bulletin of the Metropolitan Life Insurance Company, quoted in the report, it is stated that there has also been a decline of 21 per cent. in the mortality rate due to syphilis amongst policy holders during the last four years, the diminution occurring chiefly in those between the ages of 25 and 55 years. It is suggested that this improvement in the early and middle years of life is the result of increasing effectiveness in the treatment of syphilis. An analysis of the figures for the total number of attendances at clinics indicates that in the United States, as in England, a small percentage only of patients suffering from gonorrhoea appear at the clinics. In 1922 the total number of patients admitted to the clinics for syphilis in the United States was 74,649, and that for gonorrhoea 60,954. As far as can be seen from available data on the subject, the normal ratio of incidence of gonorrhoea to syphilis is at least 5 to 1, and it must, therefore, be assumed that patients suffering from gonorrhoea either treat themselves or else consult private practitioners. A gratifying item in the report is the great increase in the number of persons discharged as non-infectious, the ratio between new patients admitted and those discharged as non-infectious being as high as 42.6. In many of the States of America notification is in force. Statistics show a decrease of 13 per cent. in the number of cases of venereal disease reported in 1922, compared with the number reported in the previous year. This diminution would appear not to be entirely accounted for by the decrease in the incidence of new cases, but in the opinion of the editor of the reports indicates the necessity for more active propaganda amongst general practitioners dealing with these cases. The value of educational measures has been fully recognized in the United States, and grants have been made to facilitate the spreading of knowledge concerning venereal disease amongst the various sections of the public. In addition to pamphlets, propaganda has been carried out by means of lantern slides, cinema films, lectures, and addresses. Intensive work amongst the coloured population has been carried out in most of the Southern States. The obtaining of trustworthy statistics on the subject of venereal disease is, of course, a matter of the greatest difficulty. Progress in the control of these diseases will be measured ultimately by a diminution in the number of infections and in

the control of these infections as they occur. Meanwhile, in order to determine what progress has been made, certain indices have been selected in the United States Reports. These would appear to show that definite progress has been made. The grounds for believing that the measures directed against venereal disease are already meeting with some measure of success are as follows: (1) A reduction in the number of deaths from syphilis. (2) A reduction in the number of cases of venereal disease reported, with an increase in the number of physicians reporting. (3) A decrease in the total amount of venereal disease occurring in penal and public institutions. (4) A decrease in the number of positive Wassermann tests returned from laboratories, together with an increase in the total number of examinations made. (5) A decrease in the number of pelvic operations due to gonococcal infections reported from gynaecological clinics.

#### MEDICINE'S DEBT TO ART.

THE paper on "The debt of medicine to the fine arts" contributed by Dr. J. A. Nixon to the History of Medicine Section of the Royal Society of Medicine was noticed in our issue of December 30th, 1922 (p. 1275). Substantially the same paper formed the subject of Dr. Nixon's presidential address at the opening of the fiftieth session of the Bristol Medico-Chirurgical Society, and it is printed in full, with eleven illustrations, in the January issue of the *Bristol Medico-Chirurgical Journal*. The pictures include anatomical sketches by Leonardo da Vinci and Laurentius Phries; pictures of skeletons by Caspar and Gérard de Lairese, and one attributed to Titian; one of Christopher Wren's plates illustrating Willis's *Cerebri Anatome*; sketches by Sir Charles Bell and Sir James Paget; and a reproduction of the medallion executed by Mr. J. Greig Smith—whose example and writings in abdominal surgery had so great an influence on its development—of Dr. E. Long Fox, physician to the Royal Infirmary, Bristol, and President of the British Medical Association when it met in that city in 1894.

#### CHRISTOPHER WREN BICENTENARY.

THE bicentenary of the death of Sir Christopher Wren is on Sunday, February 25th, and during next week a series of ceremonies and celebrations will be held in London to commemorate the occasion. The ceremonies will be organized by the Sir Christopher Wren Bicentenary Grand Committee, consisting of representatives of thirty eight learned, scientific, and municipal bodies. The Royal College of Physicians (whose Hall, in Warwick Lane, City, was designed by Wren) is represented by Dr. F. G. Dawtrey Drewitt; the Royal Society of Medicine by Sir William Hale-White; and the Royal Society (of which Wren was one of the original members and its President from 1680 to 1682) by Professor H. H. Turner. A sumptuous memorial volume of essays on various aspects of Wren's life and work has been prepared under the auspices of the Grand Committee and the Royal Institute of British Architects; profits from its sale will be devoted to the St. Paul's Cathedral Preservation Fund. The editor is Mr. Rudolf Dircks, Librarian of the Royal Institute of British Architects, and Sir Aston Webb, President of the Royal Academy, contributes an introduction. The publishers are Messrs. Hodder and Stoughton. The book will contain reproductions in colour of Kneller's portrait of Wren in the National Portrait Gallery and of that by Michael Wright in the possession of the Royal Society. It will include also coloured plates by seventeenth and early eighteenth century artists; facsimiles of letters and drawings by Wren; and numerous reproductions of contemporary engravings and drawings. We hope to publish next week some account of this great Englishman and his relation to the progress of science.

#### OXFORD OPHTHALMOLOGICAL CONGRESS.

THE Oxford Ophthalmological Congress will be held at Keble College from July 4th to 6th, with a possible extension to the morning of July 7th, according to the length of the



programme. On July 5th a discussion on the relation of dental sepsis to diseases of the eye will be opened by Mr. W. Lang and Mr. W. R. Ackland. The Doyno Memorial Lecture will be delivered on the morning of July 6th by Dr. H. M. Traquair on the differential characters of scotomata and their interpretation. The official dinner of the Congress will take place in the hall of Keble College on July 5th. The honorary secretary is Dr. Bernard Cridland, Salisbury House, Wolverhampton, who will be glad to receive offers of papers, pathological specimens, and descriptions of new operations.

#### INBORN ERRORS OF METABOLISM.

A course of three lectures, part of a course of advanced lectures in medicine, arranged by the University of London, on recent work on inborn errors of metabolism will be given by Sir Archibald Garrod, K.C.M.G., M.D., F.R.S., Regius Professor of Medicine in the University of Oxford, at the house of the Royal Society of Medicine on Wednesdays, February 28th, March 7th, and March 14th, at 5.30 p.m. on each day. The first lecture will contain a general review of inborn errors of metabolism, the second will deal with alcaptonuria and ochronosis, and the third with haemato-porphyrin congenita (congenital porphyria). The chair will be taken by the Vice-Chancellor of the University, Mr. H. J. Waring, M.S., F.R.C.S. The lectures, which will be illustrated with the epidiascope, will be addressed to advanced students of the University, but members of the profession will be welcomed, and we anticipate that very many will desire to hear the views of an acknowledged master on a subject of extraordinary scientific interest and of no little practical importance.

A CHANGE has been made in the regulations for the examination for the membership of the Royal College of Physicians of London. Hitherto it has been the custom for the President and Consors to grant exemption to candidates over the age of 40 years from the examination in languages and pathology; it has now been decided that on and after October next exemptions shall not be granted solely on the ground of age.

### Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

**Dangerous Drugs (Amendment) Bill.**—The Home Secretary (Mr. Bridgeman), on February 15th, introduced the Dangerous Drugs and Poisons (Amendment) Bill, which is designed to amend the Act of 1920 in certain respects. The text of the measure will be found in the SUPPLEMENT of this week.

**Medical Research Publications.**—Sir H. Nield asked, on February 19th, whether the attention of the Chancellor of the Exchequer had been called to the reports of the Industrial Fatigue Research Board published by the Stationery Office at prices varying from 3s. down to 6d., whether he would examine No. 19 of such publications entitled "Two contributions to the study of accident causation," and whether in view of the excessive burdensome taxation prevailing he would appoint a committee rigorously to cut down expenditure on such publications and confine the operations of permanent officials concerned to matters of an urgent and practical character. Mr. Baldwin replied that the series of publications gave the results of one branch of research work now being carried on by the Medical Research Council with a Parliamentary grant-in-aid of £150,000 per annum. In view of the magnitude of national expenditure resulting directly and indirectly from disease and the vital importance of all measures calculated to improve the health and efficiency of the industrial population, he could not regard this amount as excessive, and he thought that its detailed allocation might with advantage be left to the discretion of the Council. In their researches on industrial fatigue the Council were advised by a board, composed like itself mainly of eminent scientific and business men. Considerable value was attached to the work in the industrial world. The reports are issued at a price calculated to cover the cost of printing and publication.

**Indian Medical Service.**—Sir J. Hewett asked, on February 19th, what were the terms on which some thirty officers were recently recruited for the Indian Medical Service. Earl Winterton replied that the terms offered, in addition to the ordinary conditions of permanent service in the I.M.S., were a gratuity of £1,000 and free return passages for officers who might wish to leave the service at the end of five years. A similar gratuity was admissible to Royal

Army Medical Corps officers after a somewhat longer period of service. The offer was necessitated by the serious shortage of European officers in the service, resulting from a failure in the supply of candidates since the outbreak of war.

**Inspection of Morphine Factories.**—Replying to Lord Robert Cecil on February 19th, Mr. Bridgeman said that morphine factories were subject to inspection by Home Office inspectors. Manufacturers were required to keep detailed records and make periodical returns of their purchases of the raw material, their production of the drug, and their sales, and a licence had to be obtained for each consignment of the drug exported from this country. The Home Office was doing all in its power to check the abuses of the drug traffic, but until full international co-operation had been secured it would be impossible to prevent them altogether.

**Medical Retrenchments at Kenya.**—In reply to Mr. Short, on February 20th, Mr. Ormsby-Gore (Under Secretary for the Colonies) said that the retrenchments in the Medical Department of Kenya, involving the abolition of one post of senior medical officer, eight of medical officers, one of dental surgeon, and a number of other appointments, had been framed so as to affect as little as possible the principal centres of population. They concerned mainly the minor stations and those outstations where minor facilities existed or might be made available for medical attention. The reductions had been effected with great reluctance, but the principal medical officer was satisfied that efficiency could be maintained. Four nurses were affected.

**The Pensions Services.**—An amendment to the Address, moved by Mr. Adamson for the Labour party, to call for a Select Committee of Inquiry into the pensions services, was, on February 20th, defeated by 307 votes to 176, after a vigorous defence by Major Tryon, to which we shall recur next week.

**National Insurance.**—Sir W. Joynson-Hicks, on February 15th, gave, by request, the following figures as to National Insurance in England and Wales for the year 1921:

Amount paid from all sources under the National Health Insurance Acts	£35,356,000
Amount disbursed for benefits (including sickness benefit)	£7,200,000
Amount disbursed in administration	21,562,000
	4,817,000

**Medical Reassessment.**—Major Tryon, on February 15th, assured Mr. F. Roberts that any man whose disablement had been assessed by the Pensions Department at less than 20 per cent. could appeal to a medical appeal board, and if and when the award was made final, to the independent assessment appeal tribunal. Mr. Roberts had put it that men in the lower category were disadvantaged.

**Ex-service Men in Asylums.**—Replying to Mr. Lansbury and Mr. F. Roberts, on February 15th, Major Tryon said that the number of ex-service men in asylums, for whom the temporary responsibility of the Pensions Ministry had ended, was 750. Some of these cases were still under consideration by appeal tribunals and otherwise, and the figure he had given might still be somewhat reduced. All cases of the class in question had received the most careful and sympathetic consideration, both by the medical officers of his Department and by the appeal tribunals, with a view, if possible, to continuing their previous benefits consistently with the provision of the Pension Warrants. But he was not prepared to accept the suggestion that the Ministry should be permanently responsible for these or any other ex-service men whose disabilities were not connected with their war service.

**Artificial Limbs.**—Lieut.-Colonel Guinness (Under Secretary for War) stated, on February 15th, in answer to Major Cohen, that non-commissioned officers and men requiring artificial limbs were being dealt with by the Commissioners of the Royal Hospital, Chelsea. He had no reason to suppose that the best expert services were not available under the present system, but he would consider the suggestion that these men should, in future, be sent to the Ministry of Pensions' Limb-Fitting Centres.

**Special Diet.**—The average number of ex-service men who received special diet during the last six months of 1922 was, according to Major Tryon, about 165, of whom nearly 95 per cent. were cases of pulmonary tuberculosis. In addition, during the last few months, an average of about 2,600 pensioners suffering from pulmonary tuberculosis had been in-patients in institutions and sanatoriums where they received, at the cost of the Ministry, any special diet medically recommended. Major Tryon stated, on February 15th, that special diet is limited to men suffering from pulmonary tuberculosis and diabetes mellitus.

**The Dogs Bill.**—Sir Frederick Banbury, on February 16th, introduced his bill "to prohibit the vivisection of dogs." Following on the lines of the measure which he has brought forward from year to year, the bill lays down that "it shall be unlawful to perform any experiment of a nature calculated to give pain or disease to any dog for any purpose whatsoever, either with or without anaesthetics, and no person or place shall be licensed for the purpose of performing any such experiments." The penalties clause provides that any person performing, or assisting, or taking part in performing any such experiments as those to which the bill refers shall be guilty of an offence against the principal Act and punishable accordingly. Sir Frederick Banbury, not having been fortunate in the ballot for first places for private members' bills at Friday sittings, has put down this measure on the second Order for Friday, March 2nd, for second reading.



## THE HUNTERIAN FESTIVAL IN LONDON.

THE Hunterian Festival of the Royal College of Surgeons of England was marked this year by the delivery of Sir JOHN BLAND-SUTTON'S Hunterian Oration, published last week (p. 267), and by a dinner in the evening, at which Mr. RUDYARD KIPLING proposed the Orator's health.

The President, Sir ANTHONY BOWLEY, was in the chair at the dinner, which was held in the library; among the guests were the Lord Chancellor, the Lord Mayor of London, the President of the Royal Society, the President of the Royal College of Physicians, the President (Sir William Macowen), and the Chairman of Council (Dr. R. A. Bolam) of the British Medical Association, the President of the Royal Academy, the Master of the Temple, the Treasurers of Lincoln's Inn and Gray's Inn, and the Masters of several City Companies.

After the usual loyal toasts, the memory of John Hunter was celebrated in silence.

The President then gave the toast of the visitors, coupling it with the name of the Lord Chancellor, Viscount Cave, to whose work as Chairman of the Committee on Voluntary Hospitals he paid a tribute, describing its report as the second charter of voluntary hospitals in this country.

Viscount CAVE said that he became Chairman of the Voluntary Hospitals Committee with an open mind. The effect of the evidence as it was given day by day, week by week, was to breed in him deep admiration for, and a sense of real gratitude to, those who, whether as Governors or medical men, had, in spite of discouragement and criticism, kept flying the flag of the voluntary hospital system. The Committee had before it evidence from many countries, and there was impressed on his mind the contrast between the position of the patient in a hospital in this country, cared for by a capable medical staff and attended to by trained nurses, and that of a patient in some State hospitals abroad, where the sick person went in and was hardly heard of again until he came out either head foremost or feet foremost. The evidence the Committee received made him more thankful than he could well express that the genius of our English-speaking race had evolved a system which ensured the happiness and the continued health of millions of our fellow countrymen.

Mr. RUDYARD KIPLING then gave the toast of the health of the Hunterian Orator. Beginning by a reference to the Orator's quotation from Ecclesiasticus, he said that there was an alternative reading, which ran "Honour a physician before thou hast need of him"; but it was seemly to honour him after that event. (It will be remembered that Mr. Kipling is convalescing from an operation he recently underwent.) He claimed to have another excuse for speaking in such an assembly, for he was a dealer in words—the most powerful drug used by mankind. Not only did words infect, narcotize, and paralyse, but they entered into and coloured the minutest cells of the brain, very much as madder mixed with a stag's food coloured the growth of the antlers; and in man the acquired tint was transmissible. There was, he continued, a legend which had been transmitted to us from the remotest ages, and had entered into many brains and coloured not a few creeds:—

It is this: Once upon a time, or rather, at the very birth of time, when the Gods were so new that they had no names, and Man was still damp from the clay of the pit whence he had been digged, Man claimed that he, too, was in some sort a deity. The Gods weighed his evidence and decided that Man's claim was good—that he was, in effect, a divinity, and, as such, entitled to be freed from the trammels of mere brute instinct, to enjoy the consequence of his own acts. But the Gods sell everything at a price. Having conceded Man's claim, they came by stealth and stole away this godhead, with intent to hide it where Man should never find it again. But this was none so easy. If they hid it anywhere on Earth, Man, the inveterate hunter—the father of all hunters—would leave no stone unturned or wave unplumbed till he had recovered it. If they concealed it among themselves, they feared that Man might in the end batter his way up even to the skies. And, while they were all thus at a stand, the wisest of the Gods, who afterwards became the God Brahm, said, "I know. Give it to me!" And he closed his hand upon the tiny unstable light of Man's stolen godhead, and when that great hand opened again the light was gone. "All is well," said Brahm. "I have hidden it where Man will never dream of looking for it. I have hidden it inside Man himself." "Yes, but whereabouts inside Man have you hidden it?" all the

other Gods asked. "Ah," said Brahm, "that is my secret, and always will be unless and until Man discovers it for himself."

Thus, then, does the case stand with Man up to the present. Consider, for a moment, the pathos of the poor brute's position. You all know the common formula for him, "Born of Woman, on Woman designed to beget his like—the natural quarry of the Seven Deadly Sins, but the Altar of an inextinguishable Hope." Or, more scientifically (I regret I am not a scientific person), he might be defined as "An imperfectly denatured animal intermittently subject to the unpredictable reactions of an unlocated spiritual area."

It is just this search for this unlocated spiritual area, whether it be a growth or a survival, which has preoccupied Man from that day to this. The Priest and the Lawgiver have probed and fished for it all through the ages; but, more than any other, through all the ages, the Leech, the Medicine-Man, the Healer, has been hottest on its track. He has searched, wherever he dared—openly or furtively—in safety or at the risk of his life. In the early days the Astrologer-Physician, as he called himself, dreamed that the secret of Man's eternal unrest was laid up in the sun, moon, and stars; and consequently, since all created things were one in essence, that a universal medicament for Man's eternal woes would be discovered upon earth. So he searched the earth and the Heavens for those twin secrets, and sacrificed himself in the search as a matter of course. Later, when the embargoes on the healing art were lifted, when, at last, he was permitted to look openly into the bodies of mankind, the nature of his dreams changed for a while. He had found more wonders beneath his knife than earth or the planets had heretofore shown him. And that was barely ten generations ago. Once again, the Surgeon, as he had become, renewed his search, and once again sacrificed himself in the search as his passion drove him. There is no anaesthesia so complete as man's absorption in his own job.

In the teeth of the outrageous, the absurd disabilities imposed on him, Man, the imperfectly denatured animal, who cannot trust the evidence of his own senses in the simplest matter of fact; whose evidence on the simplest matter is coloured by his own iniquities; Man, always the hunter, went up against the darkness that cloaked him and every act of his being, to find out what order of created being he might be. He called it scientific research. It was the old quest under a new name. But, this time, the seekers who headed it, unlike the Priest and the Lawyer, admitted that they knew very little. Experience had taught them to be humble. For that reason their knowledge was increased. They moved forward into areas of the body, which, till then, had denied themselves to man's hand. They were bewildered by mysteries which some new marriage of observation upon accident, some predestined slip of the knife resolved into—mysteries profounder still! Is it any wonder that the old dreams came back? The dream of the essential unity of all created things—the dream that some day that which men called life might be led into matter which men called dead—the boldest dream of all, that eventually Man might surprise the ultimate secret of his being where Brahm had hidden it, in the body of Man. And, meanwhile, their days were filled, as yours are filled, with the piteous procession of men and women begging for leave to be allowed to live a little longer, upon whatever terms.

Is it any wonder, gentlemen of the College of Surgeons, that your calling should exact the utmost that man can give—full knowledge, exquisite judgement, and skill in the highest, to be put forth, not at any self-chosen moment, but dully at the need of others? More than this. Your dread art demands the instant, impersonal vision which in one breath, one beat of the pulse, can automatically dismiss every preconceived idea and impression, and as automatically recognize, accept, and overcome whatever of new and unsuspected menace may have slid into the light beneath your steadfast hand.

Such virtue, Mr. Kipling concluded, was not reached or maintained except by a life's labour, a life's single-minded devotion. Its reward was not only the knowledge of mastery and the gratitude of the layman. Its true reward was the dearly prized, because unpurchasable, acknowledgement of one's fellow craftsmen.

Sir JOHN BLAND-SUTTON, in response, said that he had studied animals all his life, though his chief concern was with man, the greatest animal because he possessed brains. Meanwhile Mr. Kipling had been studying the psychology of animals, like Hunter before him, but Hunter had no faculty of expression. The psychology of animals was mixed up not only with the religion of Brahm, Buddhism, but with every religion, as witnessed by the story of Balaam and the ass, Jonah and the whale, and Tobias and his dog. The



*Jungle Book*, one result of Mr. Kipling's study of the psychology of animals, would go down to future generations along with the story of Beauty and the Beast, Red Riding Hood and the wolf, and many others, because they were really studies of the animals themselves related beautifully, simply, and artistically by a real genius. Men of the stamp of Hunter and Kipling did great good in the world because they inspired others. Without this power no man attained permanence. Men very rarely spoke well of their friends in their presence, except in after-dinner speeches, and John Hunter was not appreciated by his contemporaries. The great work Hunter did was the collection of the specimens now safeguarded in the College, but the spirit of Hunter was a quickening influence on the surgeons of to-day.

## England and Wales.

### MANCHESTER: DR. NIVEN'S FINAL REPORT.

In his report on the health of the city of Manchester for 1921 Dr. James Niven brings to a conclusion the long series of classic reports which he has presented to the Manchester Corporation during the twenty-seven years he has held the position of medical officer of health for that city. The issue of the report affords an opportunity for comparing the present-day conditions of a large rapidly growing industrial centre with those which existed a quarter of a century ago and of emphasizing the contention that there is no more important duty cast upon a local governing body than that which is concerned with the health of the community. How an enlightened local authority, guided by the wise counsel of a skilled adviser, has accomplished that duty is shown on almost every page of Dr. Niven's report.

When Dr. Niven succeeded Dr. J. F. W. Tatham as medical officer of health for Manchester he brought with him considerable administrative experience gained as medical officer of health for the neighbouring town of Oldham, where the sanitary conditions were somewhat similar to those in Manchester, though the population was only about 150,000, whereas in Manchester it was 500,000, and has since increased to 750,000. A mere comparison of statistics in the intervening years is a remarkable revelation. In 1895 the birth rate was 33 per 1,000 of the population; in 1921 it had dropped to 24 per 1,000. The actual number of births in the two years—about 17,000—was practically identical; but whereas in 1895 only 14,000 survived twelve months, in 1921 nearly 16,000 were living at the end of their first year. Expressed in another way, the infant mortality rate fell from 202 per 1,000 births to 97. In Dr. Niven's opinion this is largely due to the long-continued education of mothers by the health visitors, the maternity and child welfare centres, the schools for mothers, and the school medical officer with his staff. The actual number of deaths in 1895 was 13,000, and in 1921 it was 10,000, giving death rates respectively of 24.5 and 13.6 per 1,000. The saving of lives thus compensated to some extent the fewer births.

In these days when water carriage is almost universal in large towns it is difficult to believe that only five-and-twenty years ago Manchester, with its population of half a million, was on the conservancy system. In the business premises in the centre of the city there were water closets, but elsewhere privy middens and pail closets abounded. The walls of the privies were pervious and many of them adjoined houses, and the pail closets were defective to a remarkable degree. The pail contents was carted to a central dépôt and sent away in its crude state as nightsoil to farmers in Cheshire. In one of his earliest reports, after stating that the vital statistics for the year did not offer much subject for congratulation, Dr. Niven wrote that when these came to be discussed in detail, in the light of a knowledge of the individual cases of fever, and of the conditions of excreta collection and removal, an accumulation of indications presented themselves pointing to those conditions as operating decidedly in the production of a high death rate. Again and again he reiterated his condemnation of the conservancy system, and in the early years of the present century a determined effort was made by the corporation to abolish it in favour of water carriage. So successful have those efforts been that nearly 86,000 pail closets and privies have been abolished in the past thirty years, and the number still in use is almost negligible. During this period the death rate from typhoid fever fell

from 0.24 per 1,000 persons living to 0.02 and that from diarrhoeal diseases from 1.19 per 1,000 to 0.52.

In his report for 1895 Dr. Niven wrote: "As a result of the knowledge which has accumulated during the last thirty years no well informed man now doubts that tuberculosis is an infectious disease." He then proceeded to put forward his views as to the preventive measures which should be adopted, placing foremost the notification of cases to the medical officer of health. At the end of 1899 a voluntary system of notification came into force in Manchester, with the result that about 1,500 cases were notified each year until 1912, when notification became compulsory. In 1921 there were notified 1,611 cases of pulmonary and 577 of non-pulmonary tuberculosis. An indication of the extent of the preventive measures in operation may be gathered from the fact that there are now engaged in carrying them out three whole-time medical officers and four part-time consultants, in addition to a staff of fourteen investigation officers and tuberculosis nurses and twenty clerks. The corporation established the Baguley sanatorium, where there are 318 beds available for adult cases at all stages of the disease, the majority of cases being of an advanced type. For early cases of pulmonary tubercle in adults, and for surgical tubercle in children, the Abergele sanatorium, with fifty-six beds, is available.

Many of the activities of the Manchester Public Health Department recorded in the report for 1921 find no place in the reports of earlier years. Among them the most important is the scheme for the treatment of venereal diseases which came into being in 1917. There are six centres for treatment at various hospitals, and two early treatment centres are in operation. Dr. Niven expresses the opinion that venereal disease seems to be diminishing, but there appears, he says, a strange reluctance to pursue the policy outlined by the Royal Commission—namely, to treat the disease as a communicable and preventable one.

It must be a source of great satisfaction to Dr. Niven to feel that his labours have borne such abundant fruit. He has benefited not alone the citizens of Manchester but the whole civilized world.

### LONDON'S UNHEALTHY AREAS.

Although in the Orient large cities housing vast populations have been known for many hundreds of years, in the West the mammoth city is a recent growth. So new is the phenomenon of millions of people aggregated in one urban community that we have no word to describe it; "town," "city," "urban county" are altogether inadequate. London, New York, Glasgow have outgrown the connotation of the terms in which they are described. That the greater cities have failed to afford what must be regarded as fundamental requirements of living conditions was demonstrated during the war in a way that has stirred the national determination to put a period to these evils. So large a part of life, especially at the period when physique is being established, is spent in the home that the house ranks among the most important factors determining health. Every medical man knows how lamentably short of essential requirements the slum houses of our great cities fall. The problem of their elimination and replacement by reasonably healthy houses is one of the greatest and most urgent that beset our civic authorities.

Mr. Topham Forrest, superintending architect to the London County Council, in his Chadwick lecture on London's unhealthy areas, naturally dealt with some of the fundamental difficulties of the problem. Not only are there, as Mr. Forrest pointed out, nearly 2,000 recognized unhealthy areas in London, but there are also square miles of streets in which the houses, while not grouping themselves technically as unhealthy areas, are nevertheless in a hygienic sense to a very large extent to be regarded as indistinguishable from such areas. Working-class London within the county was for the most part built before the essentials of house construction, as now understood, were formulated and insisted upon. The result is that large numbers of the population of London inhabit houses which are damp, dark, badly planned and ill arranged, and lacking in one respect or another the elementary requirements of a healthy and convenient home. The problem is complex. Since there are no empty houses or rooms into which the occupants of a congested area may be transferred, the clearance of the area can only be done section by section, and a beginning cannot be made unless a vacant site can be found for an initial block of buildings. Transport difficulties make it impossible to transfer many of the people to districts outside London: most of the bread-



winners work in London, and they would have to be carried to and fro each day; but the suburban trains are during the rush hours packed to their fullest capacity.

Mr. Forrest has not unduly stressed this difficulty. In the days of the jerry-builder, the problem of rehousing as it exists to-day had scarcely arisen. The suburbs absorbed the population of central London as fast as displacement proceeded. But the dormitories of London, as they were called, now pour into business London many times the numbers of people who made their exodus two or three decades ago. A new generation has arisen, and transport is strained to breaking-point. Central residential London can no longer afford the "cottage" type of house so widely and properly desired by the London worker. Mr. Forrest was, therefore, compelled to recommend a type of building of more than three stories for the areas in question. Here, however, certain important facts regarding the angle of the sun's rays in London had to be borne in mind. By means of diagrams he showed that in winter in Paris buildings (facing south) of at least a story higher, and in New York at least four stories higher, could be built without causing any greater obstruction to light than would five-story buildings in London—that is to say, buildings of nine stories in New York and of six stories in Paris would throw shadows no longer than do five-story buildings in London, so that in London buildings cannot be either so high or so close together as in Paris or New York. The law in London permits buildings of five stories to be as near each other as their own height. But this means that the ground floor rooms can only have direct sunlight for something less than six months out of the twelve, and for the greater part of even that period they will not have more than an hour or so a day. The lecturer suggested that in London buildings of, say, 45 ft. high should not be nearer together than 60 ft., and if economic considerations permitted he would prefer that such buildings should be kept away from one another to a distance equal to about twice their height.

If London is to continue manageable it will be by the recognition of fundamental principles such as these. Almost more important than the provision of houses is the insistence upon observance of sound site planning by the authorities dealing with this great problem. The replanning of built-up areas is beset with difficulties, but the best that could befall London at the present time would be a revival of building activity under such a minimum of control as would secure adherence to essential and well recognized principles not only in house planning but in site planning as well.

#### FOREIGN HEALTH OFFICERS IN LONDON.

A party of twenty-five health officers, drawn from Austria, Belgium, Czechoslovakia, Denmark, Finland, France, Hungary, Italy, Japan, Norway, Poland, Rumania, Russia, Serbia, Sweden, and the United States, will spend next week in London. The visit has been arranged by the Health Organization of the League of Nations, with the financial assistance of the Rockefeller Foundation, and the plans are being carried out by a committee of the Society of Medical Officers of Health, of which Mr. G. S. Elliston is secretary. The headquarters of the party will be at the offices of the society, 1, Upper Montague Street, Russell Square, W.C.1. On Monday the members of the party will be received by the Minister of Health and Sir George Newman, and a reception will be given in the evening by the Royal Sanitary Institute. On Tuesday morning they will visit the Ministry of Health and the R.A.M.C. College in the afternoon. On the next day they will visit Somerset House, will attend a reception by the League of Nations Union in the afternoon, and the Pasteur celebration at the Royal Society of Medicine in the evening. Thursday will be given to the Metropolitan Asylums Board, and Friday morning to the Metropolitan Water Board; in the afternoon the Lord Mayor will give a reception at the Mansion House. The morning of Saturday, March 3rd, will be devoted to the study of various housing schemes of the London County Council, and in the afternoon the party will leave to visit various provincial centres in groups of four or five. This is the second tour of the kind, Belgium and Italy having been visited on the first occasion.

#### THE CENSUS OF LONDON.

The Registrar-General is publishing the results of the census taken on June 19th, 1921, in county parts. The London part is being issued in three instalments, of which the first has been published this week. It comprises tables

relating to occupations, birthplaces and nationalities, and dependency and orphanhood; it in fact consists almost entirely of tables, which may account for the high price at which it is issued by the Stationery Office (8s.). The third instalment is to contain the explanatory text. Little of medical interest is to be extracted from the second. It appears that men are starting work at a later age and keeping on longer than was the case in 1911. Under the age of 14 employment has practically ceased. For women the principal occupations, in order of numerical importance, are "personal (mainly domestic) service," 357 per 1,000 total employed; "making of clothing," 145; "clerical," 125; "commerce and finance," 80. The institutional tables show a decline in the inmates of "Poor Law institutions" from 117 per 10,000 population in April, 1911, to 70 in June, 1921, and of 13.6 to 8.3 in the inmates of prisons and reformatories. There has been a considerable decrease in the alien population—from 338 to 266 per 10,000 inhabitants. Among the aliens, Russians, with 29,768, are most numerous, closely followed by Poles, with 26,923; French are a bad third, with 11,104, and Germans only 5,743. Stepney has by far the largest proportion of aliens, some 15 per cent. of the total population. The tables of dependency are given for the first time; their interpretation is difficult, and a fuller examination is deferred until complete results are available for the whole country, when the quality of the material can be more definitely established, and taken into account in the preparation of the subject volume, which is eventually to be issued. The tables will then be given showing for the whole country the number of married women, married men, widowers, widows, and husbands and wives jointly, with the number of children under 16 years of age, and particulars of the numbers and ages of the children in such families.

#### THE LATE DR. ELSWORTH OF SWANSEA.

The colleagues in and around Swansea of the late Dr. R. C. Elsworth, consulting surgeon to the Swansea General Hospital, have arranged to erect a memorial tablet to him within the hospital. It is thought that many of his friends would wish to be associated in this tribute to his memory, and subscriptions, limited to one guinea, may be sent to Dr. Edgar Reid, 164, St. Helens Road, Swansea, or Dr. A. Clarke Begg, 74, Walter Road, Swansea. The fund will be closed on March 15th.

## Scotland.

#### WORK OF THE CARNEGIE TRUST.

THE annual meeting of the Carnegie Trust held last week considered the twenty-first report, and as the scheme has now attained its majority a useful retrospect can be made of what it has achieved. Under the last quinquennial distribution of surplus funds, commencing in October, 1920, the sum of £224,300 was allocated among the universities and extramural colleges. Of this, £25,200 was applied towards providing books for libraries, £156,030 towards the cost of new buildings and permanent equipment, and £43,020 for endowment of lectureships and other general purposes. The St. Andrews Institute for Clinical Research is in receipt of a special grant of £1,000 for five years, and continues to give satisfactory reports of its activities. The wisdom of the scheme for giving assistance to students in the payment of class fees has been from the beginning questioned by many people. The amount so expended and the number of beneficiaries both show a progressive diminution. In the year 1920-21 the sum expended in this way was £65,284 19s. for 4,860 students; in 1921-22 the sum was £61,216 13s. on behalf of 4,779 persons; these are decreases of £4,068 6s. and 81 respectively. This particular part of the fund showed a deficit, however, amounting to over £1,000 for the year, which has been met from a special reserve fund established out of the sums voluntarily returned in this way are said to be of "not inconsiderable" amount it is generally believed that the attitude of those alumni who have benefited in the past twenty years has been disappointing, especially when the somewhat straitened present circumstances of the universities is considered. It is an interesting fact that the number of former women students who have repaid fees is considerably larger than the number of men. With regard to the second branch of this endowment—the encouragement of research by fellowships and scholarships—



the annual value of the latter has been reduced for the future to £175. The research fellows will continue to receive £250; in future they will be nominated by a professor or other head of a university department. It has been thought desirable that fellows, while devoting their whole-time service as before to the subject of their research, should spend part of this time on teaching it also. This plan should materially ease the financial difficulties of the universities in the payment of their junior staff.

#### MINE RESCUE INSTRUCTION.

A chair in mining has recently been endowed in the University of Edinburgh. The governors of the Heriot-Watt College in 1907 appointed a lecturer to give a course in this subject; it proved eminently successful, and the University later promoted an ordinance for granting a degree in mining, co-operating with the Heriot Trust so as to combine the teaching facilities of the University with those of the Heriot-Watt College. This department of mining has been very specially associated, through the researches of Professor Briggs, with the problem of increasing the safety of the miner in his occupation. For the immediate purpose of training rescue brigades attached to the collieries of the neighbouring coalfields, there has been constructed as the first instalment of a mining laboratory an underground shaft and galleries representing the actual conditions found in a coal mine after an explosion. This is situated in the Grassmarket site purchased by the governors of the Heriot-Watt College for the future laboratory, which it is hoped some wealthy benefactor may present to the University.

#### AN OLD-FASHIONED SURGEON.

The *Glasgow Medical Journal* of last month contains a lecture by Dr. J. C. McVail on the life and work of Dr. Borland, first surgeon to the Kilmarnock Infirmary. Borland was a born surgeon who practised in his own fashion, a kind of asepticism before the word aseptic had been invented. The Kilmarnock Infirmary was opened in 1868, when Listerism was in its Glasgow days, when the carbolic spray was used. Borland was too old-fashioned to have any belief in the spray and, for that matter, in the existence of harmful atmospheric germs, but he was a model of surgical cleanliness, a cool and skilful operator, and very wise in the matter of surgical treatment and dressings. His principle was dry dressing. He used silk ligatures not only for tying vessels but for drainage, bringing them out at the lower angle of every amputation wound. He avoided sponges, substituting for them old linen rags free from fibre. In compound fractures, after cutting away destroyed or dirty tissue, he applied dry lint into which blood soaked straight from the vessels, and so made a perfectly aseptic covering. By such means he achieved remarkable success. In major amputations his case mortality was less than half that obtained in the very best of the great hospitals in pre-Listerian days, and was quite as low as Lister's own under the antiseptic system of the early years. In secondary major amputations he had only two deaths in 63 cases; of 29 compound fractures all ended in recovery; in the later part of the period dealt with he had a series of 36 primary and secondary major amputations without a fatality. But the story is not confined to his work at the hospital. He was a notable man in his community, and played a man's part in the cholera epidemics of 1832 and 1849. That his life work was appreciated in his own town is manifest from the public acknowledgement his services received in connexion with epidemics, and at a great public gathering on the occasion of his professional jubilee. It is good to have the record of the doings of such a man, working away quietly in his local sphere, unconnected with teaching hospitals or medical schools, and continuing from beginning to end to do the work for the work's sake.

Kilmarnock Infirmary has indeed good reason to cherish the name and reputation of its first medical officer. He gave the institution a splendid start in its career of usefulness, and we have no doubt that the subsequent expansions of its activities, and its strong financial position at a time when many voluntary hospitals are in sore straits, is in some degree due to the impetus which it received from the great work performed by Dr. Borland.

#### GLASGOW ROYAL INFIRMARY.

The report for 1922 of the Glasgow Royal Infirmary states that the total amount received from all sources compared favourably with the previous year, while a welcome decrease in expenditure left the managers with a portion of the extra-

ordinary revenue available for the completion of the reconstruction scheme, and specially of the gatehouse block. The ordinary revenue was £80,964, which was only £928 less than in the previous year. The ordinary expenditure was £104,813, showing a decrease of £13,436, mainly in fuel, lighting, provisions, etc. The ordinary revenue failed to meet the ordinary expenditure by £23,848, but this was an improvement on the previous year. Annual subscriptions amounted to £20,517, and contributions by employees in public works, etc., to £29,030. Legacies amounting to £19,387 and donations amounting to £20,350 were received during the year, and special donations amounting to £11,845 were received from various endowments, including six more beds; eighty-three beds and six cots are now endowed. During the year 11,362 patients were under treatment in the wards, being 541 more than during the previous year; the daily average of in-patients was 657.9. The rate of mortality was less, and the average time of residence of patients under treatment was reduced from 23 to 21.1 days. In the outpatient department 44,689 patients attended, an increase of 2,800 from 1921, and the total number of attendances was 188,532; in the ophthalmic institution 778 in patients and 12,524 out-patients were treated; while 954 persons were admitted during the year to the convalescent home.

#### GLASGOW ROYAL ASYLUM.

The annual meeting of the Glasgow Royal Asylum was held on February 15th, when Dr. D. K. Henderson, physician-superintendent, presented his annual report. The total number of patients under treatment during the year was 657, and the average number resident 515. The number of admissions was 145, and 153 patients were discharged, of whom 50 had recovered, 28 were greatly improved, and 29 were not improved; there were 46 deaths. The great bulk of the cases were of a functional nature, and in the majority of the others the conditions were attributed either to alcohol or syphilis, or to the changes incidental to old age. The fact that 41 patients applied voluntarily for admission afforded gratifying evidence that the stigma attached to mental disorder was passing away, and that it was being looked upon as an illness which could be treated and benefited. It had been the custom for many years to keep a separate record of those cases which were directly due to intemperance, and not infrequently the number had been over 20 per cent.; during more recent years this percentage had shown a definite decrease, and last year the percentage of cases due to alcohol had amounted to only a fraction over 6 per cent. Dr. Henderson said that the enlightened policy of the directors in providing a nursing home for the treatment of incipient mental disorders, outside the institution, had been greatly appreciated.

#### CRIME IN SCOTLAND.

Dr. Robert A. Fleming, physician to the Royal Infirmary, Edinburgh, and senior lecturer on clinical medicine in the University, has been appointed by the Secretary for Scotland to be Medical Adviser to the Prison Commissioners for Scotland, in succession to the late Dr. Harry Rainy.

The Commissioners in their report for 1921, recently issued, state that the total number of persons convicted during the year by the criminal courts was 115,571, a decrease of 27,504, or 19.2 per cent., on the number for the previous year. This is due mainly to a diminution under the headings of such minor offences as breach of the peace and drunkenness; and there was a marked increase in the number of persons against whom proceedings were taken for serious crime, the total being 25,764. Of these, 47 persons were charged with murder and 14 with attempted murder, but there was no conviction for murder during the year. The rapid increase in the numbers sentenced to penal servitude since 1918 is a disquieting feature and is shown by the following figures: in 1918, 42; 1919, 58; 1920, 76; 1921, 117. The number of persons tried in the juvenile courts during 1921 was 7,922, a very slight increase on the number, 7,839, for 1920. There has been a steady reduction in applications for licences for inns, hotels, public houses, etc., these having numbered in 1919, 9,497; in 1920, 9,448; and in 1921, 9,251.

#### CENTRAL MIDWIVES BOARD.

At the recent examination of the Central Midwives Board for Scotland, held simultaneously in Edinburgh, Glasgow, Dundee, and Aberdeen, 123 candidates appeared; of these 113 were successful and 10 were rejected. Of the successful candidates



28 were trained at the Royal Maternity Hospital, Edinburgh, 41 at the Royal Maternity Hospital, Glasgow, 4 at the Maternity Hospital, Aberdeen, 11 at the Maternity Hospital, Dundee, 4 at the Queen Victoria Jubilee Institute, Edinburgh, 7 at the Cottage Nurses' Training Home, Govan, Glasgow, and the remainder at various recognized institutions.

#### CENSUS OF DUMBARTONSHIRE, 1921.

This thickly populated county extends along the northern shore of the tidal Clyde from the western boundary of Glasgow to Loch Long, and northwards to Loch Lomond; there is also a detached part, between Lanarkshire and Stirlingshire, composed of two parishes. Apart from the region of the lochs, the county is within the busiest part of the industrial area of Scotland, and the population has increased from 20,710 in 1801 to 150,861 in 1921. The growth of Clydebank has been phenomenal; in 1881 it was a village with a population of 1,643; it is now a burgh with 46,505 inhabitants. Shipbuilding and the manufacture of sewing machines are its chief industries. The burgh of Dumbarton, at the mouth of the river Leven, is also an important shipbuilding centre. Along the banks of the Leven, which carries the waters of Loch Lomond to the Clyde, the industries are textile—turkey-red dyeing and calico printing. Of the total population of the county engaged in occupations, 29.9 per cent. are workers in metals and only 4 per cent. are in agriculture. The urban population is 64.1 of the total, but a large part of the non-urban area is urban in character, and has been provided under county council government with urban facilities, such as water, drainage, scavenging, and lighting. In one-roomed homes there live 7.7 per cent. of the population, in two-roomed 47.4, and in three-roomed 20.3. The excess of females over males is only 3.5 per cent.; in 1911 it was only 0.5 per cent. Gaelic speakers are only 1.3 per cent. of the population, and all of them are bilingual.

## Ireland.

#### THE ASSOCIATED DUBLIN HOSPITALS AND THE TREATMENT OF INSURED PERSONS.

It is stated that agreements are being entered into between the Board of Representatives of the Dublin hospitals and branches of the workers' unions by which the latter, for small weekly contributions, will receive for themselves and their dependants not only intern treatment in the wards, but also treatment in the external departments of the hospitals. Arrangements are, moreover, being made with the Irish Insurance Commission whereby insured persons may receive hospital treatment as a benefit. For the most part insured persons receive their medical treatment as "poor persons" under the Medical Charities Acts owing to medical benefits not being included in the Insurance Act in its application to Ireland. It is believed that the arrangements made between the governors of the hospitals and the workers' unions will not be acceptable to the honorary medical staffs of the hospitals, as to do so would at once bring them into conflict with the general medical practitioners and their interests.

#### DUBLIN CORPORATION AND TREATMENT OF TUBERCULOSIS.

The Dublin Corporation is to consider a report from its Tuberculosis Subcommittee with regard to the question of payment for the treatment of tuberculous children in Cappagh Convalescent Home and Tuberculosis Hospital. The report states that in September, 1920, payments by the Tuberculosis Committee to the hospital on account of child patients were suspended. Such patients, however, continued to receive treatment, and in November, 1922, the Corporation resolved that the question of resuming the payments should be favourably considered. Prior to September, 1920, payments had been made for an average of 15 tuberculous children. The discontinuance of the payments was caused by the withholding by the Government of the grant-in-aid. It was decided to transfer the children to Crooksling Sanatorium, but the children's parents declined to allow them to be removed; the number now at the sanatorium does not exceed 15 or 20. The Committee realizes that the conditions under which children are at present treated in Crooksling Sanatorium leave much to be desired. The Acting Resident Medical Surgeon has reported that treatment of children cannot be properly undertaken unless absolute segregation is ensured.

The Committee concurs with his view that the erection of a self-contained pavilion for children, with nursing, dining, school, and recreation accommodation, with a separate nursing and domestic staff, is necessary. The city architect, after paying a visit to Peamount Sanatorium, where there is a self-contained children's pavilion, has reported that the cost of the proposed building would be approximately £8,000 to accommodate about 50 children. The extra staff would involve an expenditure of about £1,325 per annum. The number of city children at present under treatment in Cappagh for tuberculosis is between 25 and 30, and the rate of charge would be £1 1s. a week. Were the Corporation to undertake liability for these patients the cost would be about £1,400 to £1,600 a year. If the number of children at present being treated at Crooksling Sanatorium were to be transferred to Cappagh the extra cost would be about £800 to £1,100 a year.

#### MULLINGAR MEDICAL OFFICERS.

At a recent meeting of the Mullingar District Council, which is temporarily administering the Medical Charities Acts since the abolition of the local Board of Guardians, the question of increasing the salaries of the dispensary doctors of the union was considered and the following scale was unanimously adopted: An initial salary of £250 per annum, reaching a maximal salary of £350 by annual increments of £5. The scale is made retrospective, and £50 of the scale is to go towards travelling expenses. The latter condition means that a recently appointed medical officer will at once come into a salary of £300 and those with ten years' service will immediately attain the maximum of £350 per annum. Dr. Hennessy, Irish Medical Secretary, attended the meeting of the council and stated the case of the medical officers.

## India.

#### PAYMENTS BY HOSPITAL PATIENTS.

Owing to the serious rise in the cost of maintenance of all Government hospitals in India, especially those in Calcutta, it has been necessary to seek for new sources of income in order that no fresh burdens might be placed on provincial revenues at the present time. As the capacity of the hospitals in Calcutta was already taxed to the full it was impossible to restore equilibrium by closing down a few wards, and it has been necessary to institute a levy of moderate charges on all patients, whether indoor or outdoor, who could afford to pay them. There are at present 1,600 free beds in the Calcutta hospitals, and of these it has been decided to reserve 850 beds for free occupation by the poor and indigent, allocated as follows: Medical College Hospital, 40; Shambhunath Pandit Hospital, 60. The largest number of free beds has thus been allocated to those hospitals which are used mainly by the poorer classes. At the Medical College, Campbell, and Shambhunath Pandit Hospitals 8 annas a head a day is to be charged; at the Medical College Hospital an extra charge of 1 rupee a day will be made for cubicles, and of 2 to 8 rupees for private rooms; at the Presidency General Hospital, where the charges in the paying wards were recently increased, a daily flat rate of 1 rupee a head will be charged both for indoor and outdoor patients. Hospital superintendents are, however, given discretion to remit the charges of any patients who in their opinion are incapable of paying the fees.

#### RANCHI EUROPEAN MENTAL HOSPITAL.

Details have been published regarding the ultimate condition of patients discharged during the past three years from the Ranchi European Mental Hospital, the principal mental hospital for Europeans in India. There is as yet no social service organization in India through whose agency the hospital can keep in touch with its ex-patients, but information was obtained, either from the patients themselves or from their friends or relatives, which throws a very favourable light upon their treatment in hospital. Of the total number of patients treated at the Ranchi Hospital since November 1st, 1919, 78 were discharged down to November 30th, 1922; 5 had been lost sight of; of the 73 others 29 are now living with friends or relatives, but are still unable to support themselves, 14 are supporting themselves in some career or other, and 25 are known to be pursuing their



original vocation. Of the 73, 6 have been out of hospital for upwards of thirty months, 14 for between twenty-four and thirty months, 14 between eighteen and twenty-four months, 17 between twelve and eighteen months, and 22 under twelve months.

#### CHILD WIVES IN CALCUTTA.

According to the last census of Bengal, which is now nearing completion, there were 18,256 child wives in Calcutta; 14,749 were between 10 and 15 years of age; 2,696 children under 15 years were widowed. Out of a total Christian population in Calcutta of 39,154 there were 20,962 unmarried and 15,567 married; the unmarried females numbered 8,850, and the males 12,112.

#### CHILD WELFARE IN INDIA.

Lady Lytton, when presiding at a meeting in Calcutta under the auspices of the Bengal branch of the Indian Red Cross Society, said that when touring last summer in Eastern Bengal she had been much struck by the need for welfare centres and also by the eagerness of the people to have them established in their villages. She intended to do all in her power to encourage that work in order that the many divisions of Bengal might in time benefit by such centres as that in Calcutta; though welfare work was still in its infancy there, Calcutta had every reason to be proud of the St. John Ambulance and Red Cross voluntary workers, without whose help the welfare movement could not have been begun.

## Correspondence.

#### SMALL-POX AND VACCINATION.

SIR,—I have followed with much interest the correspondence on "Small-pox and Vaccination" in the *JOURNAL* during the latter part of 1922. In your issue of December 23rd (p. 1243) Dr. Millard says "that in 1915 the State of New York, acting on the advice of their health officer, Dr. Herman Biggs, virtually abolished compulsory vaccination by repealing the regulation under which all children had to produce evidence of vaccination before being admitted to school." He states further that this advice was given "because he [Dr. Biggs] had come to believe that the disadvantages, in the way of injury to health caused by child vaccination, more than outweighed the advantages to be gained by immunization against a rare disease like small-pox."

Such a statement misrepresents the attitude of Dr. Biggs, and is apt to do great harm to a procedure which has proven itself of such enormous value. I have just received from Dr. Biggs the following statement:

"The quotation as regards my attitude towards vaccination is, of course, incorrect.

"In 1915 we had a very unfortunate experience. In the course of a campaign for bringing about more general vaccination, as a result of which a very large number of vaccinations were made in the State, we had a number of cases of tetanus, with ten or eleven deaths—I think it was eleven deaths. Naturally there was an enormous amount of publicity and a violent reaction to compulsory vaccination. Legislation was introduced which would have repealed all of the provisions of the vaccination law, and the question came up as to what was the wise thing to do under the existing conditions. I felt that to insist on compulsory vaccination under the conditions was not justifiable and was unwise, and that it would injure the whole public health programme; and, furthermore, that it would interfere with the accomplishment of our purpose rather than forward it. We therefore consented to the amendment of the law, the provisions of which, as they now stand, are described in the enclosed."

It is evident that unfortunate accidents due to impure vaccine matter brought about his consent to an amendment, feeling that it would be better to do this than to lose out on the whole vaccination programme. He did not at that time believe, nor does he now believe, that vaccination in childhood produces any injury to the health of the child, and to quote him as Dr. Millard did is entirely misleading.

I may add, further, that at the present time all vaccine virus produced in the United States is under the supervision of our Public Health Service, and such deplorable accidents as have occurred in the past are not heard of at the present time.—I am, etc.,

MAYZEC P. RAVENEL, M.D.

University of Missouri, Columbia, Jan. 31st.

## PHYSIOLOGICAL CONSEQUENCES OF GASTRO-ENTEROSTOMY.

SIR,—In criticizing simple gastro-enterostomy as an operation for the cure of chronic gastric ulcer, and after discrediting the "physiological" action which has been claimed as a beneficial factor in this method of treatment, Sir Berkeley Moynihan (*BRITISH MEDICAL JOURNAL*, February 10th, p. 221) sums up by saying, "gastro-enterostomy acts mechanically, and in no other way." Is this statement as it stands entirely acceptable? I inquire; I do not presume to criticize. Is it safe, in the light of present knowledge, to assume that gastro-enterostomy is devoid of physiological consequences?

One of the essential features of a successful gastro-enterostomy is that the duodenum is more or less short-circuited. In order to appreciate the physiological consequences of this condition it is convenient to consider the effects of a complete short circuit. This note is prompted by recent experimental experiences (unpublished), in which I found that chronic peptic jejunal ulcer was the constant sequel of gastro-enterostomy with pyloric exclusion, in dogs. If careful dieting and alkali treatment was not observed, extensive acute jejunal ulceration was liable to follow the operation. The stools showed evidence of both pancreatic and biliary deficiency; at a second laparotomy the bile ducts were observed to be dilated in two instances. I interpret these observations as follows:

(a) The internal secretion of the duodenum, secretin, is deficient, because acid does not pass through the duodenum. This substance being the main source of stimulus to pancreatic and biliary secretion, an insufficiency of pancreatic juice and bile is caused.

(b) The sphincter of Oddi remains tonically contracted, as the local action of acid chyme, which causes its relaxation, is absent. A mechanical obstruction to the flow of bile results.

(c) The external secretion of the duodenum, which contributes a considerable proportion of the succus entericus, is decreased by the same cause.

(d) It may also be noted that Brunner's glands are probably deranged, though I cannot at present tell what significance this may have.

The jejunal ulceration is, no doubt, largely dependent on the combined deficiency of alkaline secretions. Clinical evidence as to the physiological consequences of duodenal short circuit points in the same direction.<sup>1</sup> While gastro-enterostomy for gastric ulcer does not imply complete short circuit, it is not probable that according as the chyme traversing the duodenum is decreased so will its functional activity be impaired and the consequences outlined above ensue in greater or lesser degree?

In view of the above considerations it is interesting to note the extraordinary success of the partial gastrectomy practised by Sir Berkeley, for in his operation the duodenum is completely short-circuited. Assuming that the pancreatic, biliary, and duodenal secretions are decreased, how is the freedom from post-operative complications, which his patients enjoy, to be explained? Is the experimental inference valueless? The explanation which suggests itself is that after partial gastrectomy for ulcer the acid secretion of the stomach is permanently diminished (a) by removal of a considerable portion of the acid-secreting tissue, (b) by removal of the pyloric antrum, the reputed source of gastrin (the hormonal excitator of acid secretion), (c) by permanent impairment of the gastric mucosa by long-standing catarrh antecedent to operation, so that it never regains its full secretory power. One is tempted, on theoretical grounds, to wonder if idealism is carried further by conservation of the normal physiological activity of the duodenum, as in the Billroth I, Kocher, and Schoemaker methods of gastrectomy.—I am, etc.,

Colinton, Edinburgh, Feb. 12th.

NORMAN M. DOTT.

#### A PLANORBIS AS THE INTERMEDIATE HOST OF SCHISTOSOMA HAEMATOBIIUM.

SIR.—The authors of the report of the mission of the Institut Camara Pestana for the study of bilharziasis in Portugal have kindly sent me a copy, and the results obtained are so greatly at variance with all former experience that I venture to draw attention to them. The chief points are:

1. Endemic vesical schistosomiasis occurs at Tavira in Portugal, the infective site being a small collection of water, built round to form a place for the washing of clothes.

2. Infection of the water is due to the washerwomen urinating there, examination of the urine of these women showing the

<sup>1</sup> "Post-operative Jejunal Ulcer," *Med. Science*, 1923, vii, 225-253.



presence of ova of *S. haematobium* (of 64 women examined, 46 were infected).

3. The only molluscs found in the pool were *Physa acuta* and *Planorbis metidjensis*.

4. In no case were cercariae found in *Physa acuta*, but they were found in *Planorbis metidjensis* (in 17 out of 253 examined).

5. The cercariae corresponded in every particular with the published description of the cercariae of *S. haematobium*.

6. In laboratory experiments miracidia were not attracted to and did not penetrate *Physa*; but were strongly attracted to and were seen to penetrate *Planorbis*, although further development up to the stage of cercariae was not observed.

7. Laboratory experiments resulted in the infection of a proportion of mice after immersion in water containing cercariae obtained from *Planorbis*; 7 mice were immersed, and of these, 4 showed later, on autopsy, the presence of adult schistosomes, already paired, and presenting the morphological characters of *S. haematobium*, in the portal vein and its ramifications; one, killed earlier for examination, showed typical eggs in the blood of the portal vein, although no worm was seen.

The authors conclude that these experiments on mice afford absolute confirmation of the statement that *Planorbis metidjensis* is the intermediate host of *S. haematobium* at Tavra.

Hitherto the genus *Planorbis* has been believed to furnish a species which is exclusively the host of *S. mansoni*, and the report quoted is the first where record is made of a species of this genus acting as the intermediate host of *S. haematobium*; it is therefore highly desirable that confirmation of these results should be forthcoming from an independent source.

If it is accepted that this species of a genus till now regarded as unconnected with the life history of *S. haematobium* is capable of acting as the intermediate host, the question of the possibility of the spread of urinary schistosomiasis is greatly enlarged; and again, there arises the possibility of bilharziasis making its appearance in Australia through the infection of a suitable gastropod host by the ova passed in the urine of Australian soldiers, infected in Egypt during the great war and not yet cured.—I am, etc.,

GEORGE A. WILLIAMSON.

Aberdeen, Feb. 13th.

### THE SURGERY OF THE PROSTATE.

SIR.—It is unusual for surgical operations involving the bladder to be associated with charm; still, Sir John Thomson-Walker's pleasantry in his reply (February 17th, p. 304) to my criticisms of "open" prostatectomy may afford amusement. I was more interested in his observations on Dr. E. S. Judd's paper (*Mayo Clinic Reports*, 1916), to which I referred in my letter of February 10th. He has looked up my reference, and finds therein "illustrations, but no descriptions, of an open operation where the prostate is being partly dissected and partly enucleated by the finger in the Trendelenburg position." I can find no illustration in that paper depicting a dissection of the prostate. The customary legends attached to each illustration—there are several of them—seem to have escaped Sir John's notice. They supply an ample description of the operation.

He condemns enucleation and dissection of the prostate in the Trendelenburg position as "cumbersome and unsatisfactory," and adds that "the operation illustrated in Dr. Judd's article, and which I saw him perform, is not the operation I described." Frankly, I am at a loss to know in what essential points of technique they differ. In the Trendelenburg position both use retractors within the bladder—though not of identical pattern; insert a haemostatic suture in the prostatic capsule, and close the bladder incision up to a tube by continuous suture. Essentially, as far as one can gather from their respective descriptions, the operations are identical.

I have previously submitted, and I trust with due deference to authority, that open prostatectomy is a difficult and unnecessary operation—unnecessary, in that it has been developed to meet those complications of haemorrhage and sepsis which, to a dangerous degree, seldom occur in the modern practice of suprapubic prostatectomy by the method of Freyer. Nor is it in any spirit of carping criticism that I have made some observations on the address of a recognized leader in genito-urinary surgery. My only desire is to remove the prostate by the method which "gives the best result for the patient." In the past I have enucleated the gland by a method commonly practised in this country; none the less, I am very interested in any method which gives "better results." If some of the "many general surgeons" known to practise the open operation described by Sir John Thomson-Walker would publish a series of cases they would go far to establish its place in the surgery of the prostate. In the

meantime, like others, I shall have to be satisfied with the proved efficiency of "blind" prostatectomy.—I am, etc.,

Dukinfield, Cheshire, Feb. 18th.

GERALD RALPHS.

### TRAUMA AND APPENDICITIS.

SIR.—Under the above heading in your issue of January 6th Dr. Taylor records two cases of appendicitis associated with, probably caused by, trauma. In a paper entitled "An analysis of 4,656 *post-mortem* examinations held at the Government Mortuary, Johannesburg" (a reprint from which I send you), I draw attention to the case of a native who, on March 2nd, 1918, was struck in the abdomen with a stone by another native. He was admitted to the General Hospital, Johannesburg, on March 3rd, and died on March 5th without being operated on. I performed a *post-mortem* examination and found the cause of death to be peritonitis due to a ruptured appendix. When I read this paper before the Witwatersrand Branch of the British Medical Association I asked the question, "Was the ruptured appendix caused by the assault?" but got no reply.—I am, etc.,

JOSEPH J. LEVIN,

Extra Honorary Surgeon, Johannesburg Hospital.

Johannesburg, Jan. 31st.

### A PLEA FOR MANUAL TRAINING.

SIR.—The Consultative Committee's report on sex and school courses, of which an account is published in the *BRITISH MEDICAL JOURNAL* of February 17th (p. 292), affords very instructive reading. In this letter I only propose to refer to one of the subjects mentioned in that report—that is, music—as it appears to me to be dealt with in rather a perfunctory and inadequate manner.

Music is more and more coming to the front, and rightly so, in the education of boys and girls, not only for its elevating and refining influence on character and behaviour generally, but also, and quite apart from the beauty of music as a fine art, for its educative power and as being one of the best possible methods for the teaching of manual dexterity. The fact that, in the new regulations of the Oxford and Cambridge Schools Examination Board, music has just been placed on a parity with the other subjects for the School Certificate and the Higher Certificate examinations is a sure proof that the authorities of our two ancient universities have satisfied themselves of its great value as an educational force.

The tendency of the present day is towards a dead and dry materialism, which music helps largely to counteract and to replace by a more spiritual and uplifting atmosphere, which cannot fail to influence for good the growing and expanding mind of youth—whether boy or girl.

For the development of manual dexterity—as, for instance, in the case of an ophthalmic surgeon, or, indeed, for any operating surgeon—I can imagine no better training than learning to play a musical instrument, such as the piano or the organ, and preferably, perhaps, the former. Such a training gives precision and ambidexterity, independence and flexibility of fingers and wrist, and delicacy and lightness of touch and manipulation, in a way that it would be difficult to overestimate. I do not mean to say, of course, that the training of the hands can only be accomplished by first learning to play a musical instrument, as there are many other methods for the unmusical by which it can be attained; but I think it is a decided defect that such training has no place in the curriculum of the medical schools of this country, except such as can be obtained in the dissecting room, which is, no doubt, good, so far as it goes. Speaking for myself I can only say that I have found pianoforte playing of the greatest possible help as a manual training in the practice of operative surgery and in the carrying out of all the various surgical manipulations that one has constantly to deal with in one's daily work.

Any amount of trouble is expended in teaching students how to carry out the details of antiseptic and aseptic surgery; might not a little of that time and energy be quite as profitably employed in teaching them how to use their hands with gentleness, lightness, and precision?

I well remember on one occasion, many years ago, going round the wards of a hospital with a very eminent surgeon in this country, when he asked a student to percuss the chest of one of the patients. After the student had completed his examination the surgeon, addressing him, said: "I think, Mr. —, we may safely conclude that you do not play the pianoforte!" It is not difficult to imagine from that remark



what the effects of the student's clumsy and rough attempts at percussion were on the poor emaciated patient.

All surgical operations, and certainly the more difficult and delicate ones, necessitate, of course, a more or less high degree of manual dexterity, but even the most difficult and complicated operative measures in surgery do not require anything like the manual skill that is requisite for a musician who has to play a difficult piece of music—say a Bach fugue—correctly and intelligently. It is a fortunate thing that such is the case, otherwise it would be a bad look-out for a large number of patients who, sooner or later, have to come under the surgeon's knife.

In general surgery there is usually a certain amount of what one may term margin for error, very little margin indeed in ophthalmic surgery, and practically none in music.

Referring once more to the Consultative Committee's Report, I would say that in music, as far as my observations go, the girls are, perhaps, equal to the boys in technique, but are very far below them in creative power, such as in extemporization or in composition.—I am, etc.,

Gloucester, Feb. 17th.

E. DYKES BOWER.

\* \* By the same post we received a note from Dr. Charles J. Hill Aitken (Kilbarst, near Rotherham) entitled, "Wool rug making an aid to surgery." He writes: A well known surgeon lecturing on abdominal surgery told his students that if they wished to become experts at bowel operations they must start by learning to darn their socks—a statement that probably amused many of his hearers. For the last few months I have been making a wool rug, and having occasion to do a small operation the other day—the first for a long time—I was delighted to find how steady my hands and deft my fingers were. To the general practitioner who rather dreads his occasional operation because of possible clumsy fingers I can recommend wool rug making.

#### THE MEDICAL PROFESSION IN WAR.

Sir,—During the recent discussion at the Royal Society of Medicine on February 12th (SUPPLEMENT, February 17th, p. 52) regarding co-operation between the medical profession and the naval and military and air branches, we listened to many useful ideas, especially those in the fine paper of Surgeon Captain MacKicown, R.N., but no definite resolution was put forward. I should like to emphasize two suggestions I made.

The bar to complete concert in war is want of understanding, want of clear grasp of the different points of view of civilians and service members. Taken broadly the civilian idea is to carry out professional duties only, with little or no sympathy for the functions of the service officer, yet the duties of the latter are so complex that pure professional work forms only a part of the wide sphere of duty for which he is strictly responsible, initially to the D.G. of his service, then to the Admiralty or War Office or Air Ministry, eventually to Parliament. To obtain efficient co-ordinated work it is absolutely essential that there should be mutual understanding, and this is to be obtained only by widespread friendly conversations, not in London alone, but everywhere throughout the Empire. How is this to be brought about?

In my opinion, the best plan is to utilize the existent machinery of the British Medical Association and of the Territorial forces. The Directors-General of the Naval and Military Medical Services should issue distinct orders to all senior officers to call upon the local Branch of the British Medical Association and to attend their meetings when possible. This act of courtesy is in accordance with the custom of the medical profession when a member is about to take up a practice in a town. It at once establishes an *entente cordiale* and leads to those social amenities, conversations, and friendships which foster mutual understanding and to a true conception of ideas and of the difficulties that each has met with or anticipates.

The Branches of the British Medical Association should on their side impress upon their younger members the duty of joining one or other of the Territorial units, and while serving therein of studying, not their professional work in particular, but the complexities in recruiting and invaliding and pensions, in case recording, dieting and clothing, in sanitation in barracks and camps, in indenting for drugs and appliances, and in economizing expenditure, in office work and financial details, in the management of the N.C.O.s and men of the R.A.M.C., and in many other points.

But, says the purely professional man, I am concerned with none of these things. Quite so. He is then apt to become the fifth wheel of a coach, ornamental and only occasionally useful. His want of understanding may indeed transform him into an actual drag. Suppose, for instance, a naval or army medical officer was attached for duty to a great civilian hospital and declined to accept or to conform to the ideas of management therein, of a system which is the outcome of long experience?

One speaker said the Aug'o-Saxons were a slow-thinking race. It is quite true. They could not realize the German menace, although Lord Roberts preached his warnings incessantly. They do not now realize that Germany, Russia, and Turkey may at any moment combine against us. They do not grasp the dangers of Bolshevism although the Duke of Northumberland, in his weekly paper *The Patriot*, sets these forth very clearly. Each citizen is concerned chiefly if not alone with his own petty interests.

War makes two demands upon each loyal and patriotic citizen: first, that he should carry out his own specialty so as to render the greatest service possible; secondly, that he should not impede the functions of others. Only by mutual understanding can these two demands be effectively combined. Schemes and systems, hard and cut and dry, are all very well, but they need the emollient influence of personal conversations, friendships, realization of each other's aims and of difficulties. Therefore in every city and every town, in every small station and in every far-away port, the method should be to bring the newcomer into touch with the older resident; and to make the resident part and parcel of the local naval or military organization.

There is much more to be said on various points, and much also upon the advantage of studying naval and military tactics and strategy in addition to medical organization, but your space is limited.—I am, etc.,

T. M. CORKER,

London, W., Feb. 15th.

Major-General A.M.S. (ret.).

#### HOSPITAL POLICY.

Sir,—In your issue of February 17th (p. 303) appears a proposal by Dr. L. S. Luckham, President of the Salisbury Infirmary League, that instead of the staff of a voluntary hospital being paid, or even receiving a nominal fee for work done for those patients who are not indigent, they should be content to enter into a pension fund scheme. He adds that this would probably meet with the contributors' approval. Probably it would; owing to its remoteness.

From repeated talks, circulars received, and schemes issued it would seem that the greatest confusion is gradually arising, and in the resultant chaos the prestige of medicine as a science will deteriorate. I would venture therefore to urge that the true position must be defined clearly, and in order to assist in this would submit the following statement for general approval:

1. Voluntary hospitals were built for the indigent poor—that is, for those unable in any way to contribute for their medical treatment.
2. The charitable found the money and doctors the services.
3. These hospitals are now required for the indigent poor only to the extent of 15 per cent.
4. The surplus accommodation (85 per cent.) is put at the disposal of those who indirectly or directly are able to pay in full for medical treatment.\*
5. For those under an agreed income limit who pay through a contributory scheme the premiums should be fixed at such a level as will allow of full payment being made from the fund to the hospital. These persons, whatever their individual financial position may be, are no longer objects of hospital charity. Any financial assistance given by the charitable public should be paid to the fund and not to the hospital direct. Those above the income limit could also pay into the scheme, but at such a premium as will make them eligible as private patients for beds either in the private wards of the hospital or at recognized nursing homes.
6. The Board of Management, therefore, should see that not one penny of the funds received from charitable sources is used for this 85 per cent. A separate account should be kept.
7. The tariff of payments fixed for this 85 per cent. should be such as to pay in full the whole cost to the hospital, including remuneration of the staff.
8. Owing to the economic conditions at present existing the staff should be willing temporarily, without prejudice and as a concession, to receive a nominal recognition of the services rendered, by means of a percentage payment.

\* These include those paid for by Ministries of Pensions, War, Admiralty, Education, and Health, municipal authorities, employers of labour, approved societies, insurance companies, etc., or under a contributory scheme where there is a stated or implied return required from the hospital.



9. By this concession the Board of Management will be able to fix a lower tariff of fees than it otherwise could for the reception of this 85 per cent.

10. If the staff gives its services for nothing to this 85 per cent. they are thereby underselling their colleagues in their district, many of whom are equally competent to be on the staff as themselves.

11. The consequent loss of experience and income to these colleagues will result in (a) the deterioration of medical skill in the district through competent practitioners being unable to obtain a livelihood and having to leave; (b) loss of a chance of skilled attention for those of the public able to pay private fees; and eventually to (c) the provision of a second or third rate staff for the hospital itself. The whole status of medicine in England will go down.

If this general statement of the position is correct it becomes very difficult to see why the staff should be asked to be content with a suggested pension scheme instead of payment for work done. One has never heard this proposal made in relation to club or national insurance domiciliary practice as an alternative to the accepted mode of payment adopted so far. Why, then, should it prove acceptable for hospital practice?—I am, etc.,

Hove, Feb. 12th.

E. ROWLAND FOTHERGILL.

P.S.—The present sentiment displayed for those who are mentally unsound or who are on the border-line, admirable as it is in the abstract, will, if allowed to develop its schemes for free medical services for all, tend to the deterioration of this branch of medicine, as suggested above. The situation requires watching very closely. It is very doubtful whether those who are giving their medical services free to these patients realize what it may lead to.

#### INDIAN MEDICAL SERVICE.

SIR,—The terms of the advertisement in your issue of December 16th, 1922, of thirty vacancies in the Indian Medical Service are likely to mislead possible applicants; and in the opinion of many I.M.S. officers it is time that the India Office altered its description of the attractions of the service to bring it more in line with the facts.

However hopeless it may be to look for improvement in one's own position, one has a right to object to the unvarying repetition of these statements, which are likely to mislead others.

(a) "*He may apply after two years' Indian service for transfer to the civil side.*" etc.—This is true literally; but if it is meant to imply that the European officer has any chance whatever of transfer to the civil side soon after two years' Indian service, it is simply untrue. Even before the war the average period was about six years; while since the war officers of ten years' service and more have been refused civil employment on the ground of military necessities. I think I am right in saying that no European officers have been given civil surrogencies since the war, except those who had held these posts before 1914 and so had a claim to them. Not one of the thirty officers now called for will have any reasonable prospect of leaving military employment under the present system.

(b) "*Private Practice.*"—As this is practically non-existent, the advertisement should not hold it out as a bait to these military officers.

(c) "*Increased Cadre.*"—It should be widely known that since 1918 no study leave, as such, has been granted to military officers of the I.M.S. That is to say, an officer desirous of doing study has to convert his ordinary leave and furlough into study leave, and so, of course, by that amount forfeit the real leave which he requires after years in the tropics. In fact, as regards study leave, their position is exactly as it was before the loudly advertised new regulations were drawn up.—I am, etc.,

January 18th.

PROTEST.

SIR,—In your issue of December 30th, 1922, an advertisement re recruitment for the Indian Medical Service is published. I would be glad if you could spare space for a few remarks on the passage headed "careers." In the third line occur the words "military side, which has medical charge of the Indian army." This is not so. The R.A.M.C. hold at the least as many administrative appointments as the I.M.S.; the relative strength of the troops is about one Britisher to four Indians. I know of at least two Indian general hospitals commanded by R.A.M.C. officers. In line 7: "or a specialist post." The possession of specialist qualifications is of practically no assistance in obtaining such posts. Later: "He may

apply after two years' Indian service for transfer to the civil side." Quite, and possibly get on the civil side after twelve to fourteen years' service. Further on a reference is made to "professorships in the medical schools." Practically all such appointments are now in the hands of the Indian Ministers of Education for the various provinces; they are no longer reserved for the I.M.S.

Pay is absolutely comfortable for a bachelor and hopeless for a married man. The effect of the "increased cadre" appears to be the abolition of the usual two months' leave in the hot weather, for Europeans at any rate, and a great curtailment of home leave.

The best advertisement for any service is a contented body of officers in that service, a fact which the authorities do not appear to realize.—I am, etc.,

January 19th.

I. M. S.

#### "T.B."

SIR,—May I once again call attention to the misuse of the abbreviation "T.B." or "t.b.," and the serious errors to which it may give rise? The abbreviation is now commonly used to signify not only "tubercle bacilli"—which is its proper use—but also "tuberculosis" or "tuberculous," which is entirely improper and often misleading. The following instances of the abuse of this abbreviation are culled from various documents:

"The patient should be under the supervision of the Dispensary T.b."

"No T.b. bacilli in sputum."

"T.B. of lungs. . . . T.B. not found in sputum."

"T.B. not found."

The last instance, owing to the confusion occasioned by the varying significance of the abbreviation, leaves one in doubt as to whether the meaning is "No tuberculosis was found," or only "No tubercle bacilli found." Properly it should signify the latter, but from a study of the context it seems probable that the former was meant, and that in fact an examination of the sputum had not been made. The same uncertainty has arisen in several other cases, in like manner.

The Ministry of Pensions seems to set the fashion by appointing special medical officers with the title "D.C.M.S. (T.b.," and by officially addressing tuberculosis officers as "T.B. Officer." As might be expected, therefore, many instances of the abuse of the abbreviation "t.b." are to be found in Ministry of Pensions reports; but unhappily the Public Health Tuberculosis Service appears to have followed suit. The matter is surely one that calls for authoritative action.—I am, etc.,

E. WEATHERHEAD, M.B.Camb.

Alderley Edge, Cheshire, Feb. 8th.

#### STANDARDS OF VISION IN COUNCIL SCHOOLS.

SIR,—Mr. Bishop Harman has added to the very great debt which school medical officers already owe him by his recent article on "Standards of vision for scholars and teachers in council schools," published in the JOURNAL of January 13th.

Both from a theoretical and practical standpoint I agree with the scale he lays down for teachers. This is substantially the scale which I have carried out for some years in Bristol. It is perhaps open to question whether six diopters of myopia should be the maximum instead of five, but five is undoubtedly to be preferred. In applying such a scale one of course decides upon each case on its individual merits, after a careful examination of the eyes and also of the general health of the student, allowing a wider latitude in the case of a thoroughly healthy person who lives as far as possible an out-of-door life.

In regard to scholarships, while I agree that the standards laid down by Mr. Harman are theoretically ideal, I do not think that in practice it is possible to enforce so rigid a scale. Many children who obtain scholarships at age 11 have not yet decided upon their future careers, and may or may not take up close work occupations. To refuse to allow such children to hold secondary school scholarships because of a myopia of three diopters, which corrects to 6/6, is, I think, scarcely possible, and I would like to suggest to Mr. Harman that he should reconsider his standards for junior and senior scholarships.

I hope Mr. Harman's valuable article will be widely read. If it is, much trouble which is caused at present by the widely divergent views held by the medical profession on this subject will be saved.—I am, etc.,

R. A. ASKINS, M.D.

Guildhall, Bristol, Feb. 5th.



## INFECTION DURING INCUBATION.

SIR,—The period of school epidemics is again with us, and measles, mumps, and whooping-cough are attacking the children. The general practitioner is constantly asked by anxious parents when a child who has been exposed to infection, and who may be incubating an infectious disease, is safe to mix with other children. It is a difficult question to answer, yet one hesitates to isolate such children at once on account of loss of work and inconvenience. Medical textbooks and the Medical Officers of Schools Association publish the incubation and quarantine periods of the different infectious diseases, but nowhere can I find any statement as to the period of safety during incubation after exposure. The object of this letter is to inquire whether it would not be possible for the Medical Officers of Schools Association or other authority to issue a statement giving the times during which it is safe for a child who has been exposed to infection and may be incubating an infectious disease, to attend school before being isolated. I fully realize that in the case of some infectious diseases, such as scarlet fever, diphtheria, and small-pox, immediate isolation is essential, but in others, such as measles, whooping-cough, German measles, mumps and chicken-pox, there could be no harm in allowing children, who have been exposed to infection to continue attendance at school for a stated period provided their clothes were disinfected. Much inconvenience and loss of work would then be prevented.—I am, etc.,

Woking, Jan. 2<sup>th</sup>,

R. THORNE THORNE.

## THE CAUSE OF A COMMON COLD.

SIR,—The note in the BRITISH MEDICAL JOURNAL, December 30th, 1922, on the cause of the common cold should be widely appreciated. One must look for other factors beside the omnipresent germs.

The symptoms of an acute nasal catarrh appear in the first place to be simply an overaction of a normal reflex. A victim to catarrh constantly asks himself, "Have I caught a fresh cold? Is this a wholesome sneeze, or is there more to follow?" In some subjects any stimulation of the nasal mucous membrane appears to overact, and the reflexes concerned become more and more sensitive and easily provoked; then follows congestion, the blocked nose, hypersecretion, more irritation, and so on. The sensation of cold to any part of the body may start the reflex.

Does not this suggest that the condition of the nervous system, or some part of it which permits reflex action on too slight a stimulation, may be a primary factor in acute nasal catarrh? I recall, thirty years ago, developing a severe cold from one sniff at a fiendish invention called a "smoke ball."

Nature's method of cure appears simple: The mucous membrane swells, smell and perhaps taste is lost, the over-irritated nerve terminals are buried—if one may use the expression—and rested until such time as they can carry on their function without excessive zeal. When the reflexes return to the normal the cold is cured.

Cold *per se* does not provoke a catarrh; no one "catches a cold" in a dry frosty air, but let one enter a warm room after a day on the ice, and the nasal mucous membrane may become congested and the nose blocked in a shorter time than it would take a thermometer to react. Then follows secretion and sneezing.

In very chronic cases of nasal or bronchial catarrh one imagines there must be some permanent enlargement of the smaller vessels from constant engorgement, such as one sees in many throats and the alcoholic nose. The congestion is naturally relieved by hypersecretion, and this, perhaps, is why an antiseptic vaccine, as in my own case, fails to give permanent or any relief. Whatever part germs play—and they can hardly fail to be present—there is no obligation to overlook other factors.—I am, etc.,

Fourisburg, O.F.S.

FRANK ELVY.

MR. MARTINUS NIJHOFF, Lange Voorhout 9, The Hague, has acquired the entire stock of the collected edition of the works of Dr. Beyerinck, professor of bacteriology and microbiology at Delft. There are five volumes, and a set is sold at 40 guilders. The same publisher has also acquired the stock of the jubilee volume presented to Dr. Pekelharing, containing forty papers on physiological subjects, and of similar volumes presented to Lorentz, Onnes, Wiukler, Zwaardemaker, and Jungbunn, an authority on the natural features of Java.

## Obituary.

It is with deep regret that we announce the death of another old member of the British Medical Association, Dr. CHARLES A. FOYL, which occurred from pneumonia at Southport on January 16th. He was a son of the Liverpool harbour master, and, showing symptoms of pulmonary weakness, he was sent to sea as a youth; it was not until he was about 30 years of age that he was considered sufficiently strong to take up the study of medicine, which had always been his wish. He became a student of the Liverpool School, qualified L.R.C.P.S. Edin., L.R.F.P.S. Glasg. in 1893, and settled in Blackpool, where for many years he was a successful and popular practitioner. His chief weakness, however, returned, and he retired from practice to seek health in many places, finally settling in Southport, which seemed to suit him best. He was of a highly sensitive nature and artistic temperament. The former often made the pursuit of his calling anxious and painful, but the latter gave him much consolation, especially in music. He was of a retiring disposition and in later life sought seclusion. But to those who enjoyed his intimacy he was a warm-hearted and thoughtful friend, and among them he seemed happiest in rendering on the piano for their enjoyment the works of his favourite composers. He was 65 years of age. He leaves a widow but no children.

Dr. ALEXANDER HERON, J.P., one of the oldest and most respected and beloved of medical men in Northern Ireland, died on February 1st at his residence, "Greenfield," Katesbridge, near Banbridge. His father and grandfather had been ministers in the district. After obtaining an Arts degree with honours he took the M.D. of the old Queen's University in Ireland in 1866, and set up in "Greenfield," the house in which he had been born, and in which he lived and died. He soon gained a large practice, and in 1882 was appointed coroner for South Down, which post he held till his death, assisted in later years by his son. The numerous warm and sympathetic resolutions that were passed by the many public boards of which he was a member, and the depth of the private grief, all testify to the ability, the kindness, and the upright character of the late Dr. Heron. In his youth he was a keen cricketer, and played against England in the days of Grace. His wife predeceased him a year ago, and he leaves two sons (one is Dr. Heron of Bristol) and a daughter, with all of whom much sympathy is felt.

The announcement of the death, on January 15th, of Mrs. RUTH MARY SLADE, M.B., Belfast, was received with much widespread regret. She had been overworked and developed bronchopneumonia, from which she was slowly recovering, when complications set in under which she sank. Dr. Slade was a daughter of Major S. Craig; she married the Rev. E. H. Hobart Slade, M.A., B.D., Government chaplain in the Punjab, but was early left a widow; she practised massage for a time, but with praiseworthy diligence took the medical course in Queen's University of Belfast, and gained the M.B. in 1919. Starting in Belfast, she gained in a remarkably short time a large practice, and was appointed assistant in the Queen's Street Hospital for Sick Children, then in the Samaritan Hospital for Women, and in the Maternity Hospital; she was also medical officer of the Salvation Army Home at Thorndale. These multifarious duties were too heavy, and no doubt undermined her strength. Dr. Slade was very popular, and her experience in life was of inestimable value to her patients, whose esteem and friendship she won. Much sympathy is felt for her aged father, her young son, and the family.

Dr. ALLAN DOUGLAS LOW, of Bridgend, died on January 28th, aged 43, from septicaemia, following an injury to a finger. He received his medical education at St. Mary's Hospital, London, and took the diplomas of M.R.C.S. Eng. and L.R.C.P. Lond. in 1903. He held a commission as captain in the R.A.M.C. (T.) and during the early days of the war examined a large number of men for military service. Later he served as captain R.A.M.C. in France, and was awarded the Médaille de l'assistance publique en argent in 1918. Dr. Low was surgeon to the Bridgend Cottage Hospital and to the Miss Bennett Charity at Laleston. He was a member of the Cardiff Division of the British Medical Association, and



was recently appointed to the Lord Swansea Physical Training School at Bridgend. He is survived by his widow and two children.

We regret to record the death on February 9th of Dr. CONNOR W. OWEN, at the early age of 50. He was born at Llanfair P.G., Anglesey, and received his medical education at Edinburgh University, where he graduated M.B., C.M. in 1894. After holding the post of assistant medical officer to the North Wales Counties Lunatic Asylum he served as civil surgeon in the South African Field Force. He then started practice at Bangor, and was appointed medical officer to the Bangor Workhouse and Union Infirmary, and public vaccinator for the area. He became honorary physician and radiologist to the Carnarvonshire and Anglesey Infirmary. He was honorary secretary to the North Carnarvon and Anglesey Division of the British Medical Association, 1912-14. He was a keen Volunteer officer, and was called up as combatant officer in the Carnarvonshire and Anglesey Artillery in August, 1914. During training his health completely broke down, and he returned to his practice much debilitated. He was an ardent Freemason and a past-master of the R. Leek Lodge. As a practitioner Dr. Owen was able, generous, and kind. As a colleague he was most straightforward and easy to work with. He will be mourned by his patients and friends, and particularly by his brother practitioners. He leaves a wife and young daughter to mourn his loss.

We regret to record the death, on February 12th, of Dr. EDWIN ARTHUR DANDO of Dudley, at the age of 50. Dr. Dando received his medical education at Birmingham, and took the diplomas of M.R.C.S. Eng. and L.R.C.P. Lond. in 1896. Although he had been in delicate health for some years, he had built up a large practice in Dudley and the surrounding district, where he was highly respected. He was awarded the Edward Medal in 1910 for his remarkable bravery in connexion with a colliery accident. Clad only in pyjamas, Dr. Dando descended a coal mine where a fire had broken out, in order to succour a number of miners who had been overcome by fumes; as a result of his efforts several lives were saved, but his brave act had undoubtedly a permanent ill effect on his health. He was for many years a member of the British Medical Association, and had contributed to the columns of this JOURNAL. He was a bachelor, and is survived by three brothers and three sisters.

We regret to record the death of Dr. BENJAMIN WAITE MACARTHUR, of Golborne, Lancashire. He was educated at Glasgow University, and took the Scottish triple qualification and the D.P.H. in 1883; he graduated M.B., C.M. Glasg. in 1884, and M.D. in 1895. After having been house-surgeon at Glasgow Lock Hospital he went into practice at Golborne, and at the time of his death he was medical officer of health for the district.

THERE was an error in the obituary notice of Professor Röntgen. It was said that the paper announcing his discovery was read in January, 1896; the correct date is December, 1895. A translation of the paper was published in the issue of *Nature* for January 23rd, 1895.

## Universities and Colleges.

### UNIVERSITY OF OXFORD.

At a congregation held on February 17th the degree of Doctor of Medicine (D.M.) was conferred on W. T. Collier, F. G. Hobson, and W. S. Dawson.

### UNIVERSITY OF CAMBRIDGE.

As already announced in this column, the Senate has accepted the offer of the Ministry of Agriculture and Fisheries of a sum of £30,000 to found a chair of animal pathology in the University, with a view to the subsequent establishment of an institute for research in the same subject. The Council of the Senate has now framed regulations to give effect to this decision. It is recommended that the duty of the professor shall be to promote the study of animal pathology by teaching and research, and to act, if required, as director of the institute when that is established. In the first instance he should be elected for five years and then be eligible for re-election. The stipend should be £1,200 per annum, payable out of the funds received from the Ministry of Agriculture, or £1,000 if the professor holds a fellowship or the headship of a college. The site chosen for the headquarters of the proposed institute adjoins the School of Agriculture, the new Biochemical Laboratory, and the Molteno Institute.

It is announced that the managers of the Nita King Research Scholarship, which has been established for the encouragement of original research in the etiology, pathology, and prevention of fevers, will shortly appoint a scholar. The names of candidates should be sent to the Professor of Pathology before March 12th.

At a congregation held on February 16th the following medical degrees were conferred:

M.B., B.Ch.—W. H. W. Cherne.  
B.Ch.—H. G. Oliver.

\* Admitted by proxy.

### UNIVERSITY OF BRISTOL.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., CH.B.—F. J. Hector, \*Marguerite G. Hughes, \*A. J. Keyvil, \*Doris M. Pullen. (Part II, Completing Examination): B. A. Crook, J. M. Evans, Frances M. Jones, J. A. L. Roberts, H. L. Shepherd, H. J. R. Spreadbury, F. K. Wilson. (Part I, including *Forensic Medicine and Toxicology*): S. H. Blacker, A. P. Bodman, E. G. Bradbeer, G. B. Bush, W. L. Cossham, Mary F. Dalton, F. R. Edbrooke, N. J. England, H. M. Golding, W. A. Gornall, J. L. Griffin, R. C. Hateher, A. G. Heron, Doris E. Joscelyne, F. C. Joscelyne, E. F. King, A. H. Marshall, J. R. Nicholson-Lalley, R. A. Sammons, A. E. Sherwell, H. Taylor, R. E. Whitby, Cecil F. Wilson. (Part I only): Naomi J. Bown, Helen M. Dixon, Lorna Dunn, Prosper G. Evans.

D.P.H.—Zaki Khalid.

\* With second class honours.

### UNIVERSITY OF DUBLIN.

#### TRINITY COLLEGE.

At the spring commencements held on Shrove Tuesday, February 13th, the degree of M.D. was conferred upon F. Y. Pratt.

## Medical News.

SIR ARTHUR KEITH, F.R.S., will deliver his six Hunterian lectures on Man's Posture: Its Evolution and Disorders, in the theatre of the Royal College of Surgeons, Lincoln's Inn Fields, on March 5th, 7th, 9th, 12th, 14th, and 16th, at 5 p.m.

On February 19th Dr. Vaillant, the French radiologist, who has lost both arms in the course of his work in X-rays, was entertained at a reception by the Paris Municipal Council in the Hôtel de Ville. Those present included M. Strauss, Minister of Hygiene; the President of the Prefectorial Council of the Seine; the American Ambassador, Mr. Herrick; and Madame Curie. Dr. Vaillant subsequently received at the hands of the American Ambassador the Gold Medal of the Carnegie Foundation in recognition of his services to science.

At the annual special meeting of the Middlesex Hospital Medical Society to be held at the hospital on Tuesday, March 6th, at 8.30 p.m., Dr. J. S. Haldane, F.R.S., will deliver an address, entitled "The Institutes of Medicine and Surgery." Afterwards demonstrations on radiology, electrocardiology, and bacteriology will be given.

WE are informed by the secretary of the governing body that the post of medical officer of the Charterhouse School, at Godalming, Surrey, will be vacant at the end of the summer quarter, and that details of the appointment will be announced later.

THE seventh annual meeting of the Japan national congress of medical practitioners was held at Tokyo on November 17th and 18th, 1922. Dr. Kitasato, president of the association, gave the opening address, on the thesis that the national health would be greatly improved by further scientific investigations. A draft of the law of health insurance, and the results of a Government inquiry on the best methods for decreasing infant mortality, were referred to a special committee.

At the meeting of the Child-Study Society to be held at the Royal Sanitary Institute, 93, Buckingham Palace Road, S.W., on Thursday, March 1st, Professor Leonard Hill, F.R.S., will deliver a lecture on "The Sun and Open-Air School"; the chair will be taken at 6 p.m. by Sir Henry J. Gauvain, M.D.

THE King has appointed Lieut.-Colonel David James Graham, O.B.E., R.A.M.C. (T.A.), to be Surgeon Apothecary to His Majesty's Household at Holyrood Palace, in succession to the late Dr. William Black Alexander.

MR. C. — HOLLAND, Ch.M., honorary medical officer, Eltham Royal Infirmary, Liverpool, will deliver a Thompson Memorial Lecture before the Röntgen Society on Tuesday, May 1st.

THE Right Hon. T. R. Ferens, High Steward of Hull, will be president of the thirty-fourth Congress of the Royal Sanitary Institute, which is to be held in Hull at the end of next July.



THE French Government continues to show its interest in the dissemination of information with regard to spas and health resorts of France, which is very rich both in climatic stations and mineral waters. Formerly these stations, with the exception of a few, were not so well organized as those of Austria and Germany, but great improvements have been made and others are in progress at those places which used to be backward. There is now published a fortnightly paper called *La Presse Thermale et Climatique*, which has taken the place of the older *Gazette des Eaux*. It contains papers on hydrotherapy and news of use to doctors in this country. Further particulars can be obtained on application to the French Touring Office at 56, Haymarket, London, S.W.1, which also issues a monthly *Bulletin* for the use of tourists in France.

In celebration of their golden wedding Dr. and Mrs. Hedley, of Middlesbrough, have been presented with a reproduction of an early eighteenth century gold vase by the members of the medical profession of Middlesbrough and district.

At a sessional meeting of the Royal Sanitary Institute in Sheffield on March 2nd and 3rd Professor E. Mellanby, M.D., will open a discussion on the prevention of disease by feeding. There will also be a discussion on extraneous matters in food, introduced by Mr. J. Evans, city analyst.

THE late Emeritus Professor A. Crum Brown of Edinburgh, who left £8,543, bequeathed to the Royal Society of Edinburgh his portrait, painted by Mr. E. A. Walton, presented to him by friends and former pupils. He made provision also for handing over his collection of portraits of scientific men in part to the Department of Chemistry of Edinburgh University and in part among his former assistants. His theological, religious, and philosophical books were bequeathed to the libraries of the colleges of the United Free Church and his scientific books to the University of Edinburgh.

THE Burrow Hill Colony, Frimley, Surrey, which has recently been opened under the auspices of the National Association for the Prevention of Tuberculosis, has received a donation of £50 from the King. In the sanatorium section of the colony, which consists of twenty beds, vacancies occur from time to time, and suitable cases are admitted on the recommendation of local authorities and private practitioners at a weekly charge of fifty shillings. Further information may be obtained from the National Association for the Prevention of Tuberculosis, 20, Hanover Square, London, W.1.

A FOURTH edition of Sir J. H. Parsons's *Diseases of the Eye* will be published shortly by Messrs. Churchill. It has been revised, some new coloured plates have been introduced, and a section on preventive ophthalmology has been added. The same publishers announce the early publication of *Practical Midwifery* by Dr. Gibbon FitzGibbon, the Master of the Rotunda Hospital.

THE proposal to change the name of the London County Westminster and Parr's Bank to "Westminster Bank Limited" was finally approved last week, and the bank will be known by its new name on and after March 1st.

Messrs. BOWES AND BOWES (1, Trinity Street, Cambridge) have issued a catalogue of books they have for sale from an important botanical library, and of other books and periodicals in other sciences, including medicine.

THE Dean of the Paris Faculty of Medicine has been authorized to accept a gift of 50,000 francs from Madame de Rothschild, the annual interest from which will be given to poor students, preferably Jews, of the Faculty of Medicine.

COSTER and HEVEY, continuing their researches on the element 72, have reported in *Nature* that they have investigated a great number of zirconium minerals from different parts of the world, and that they all contained from 5 to 10 per cent. of the new element. They have also found it in as high a percentage as 5 in commercial zirconium oxide. Further, by a chemical method they have obtained several grams of a substance in which the presence of about 50 per cent. of hafnium could be established. On the other hand, Urbain and Dauvillier, in a letter in our contemporary last week, state that they regard the element found by Coster and Hevey as identical with an element which they had already found and named "celtium." In 1911 Urbain detected two rays in the residue from a rare earth, which he held indicated the existence of an element hitherto unknown; in papers presented to the Académie des Sciences last May Urbain and Dauvillier reported confirmatory evidence. They claim to be the discoverers of the element 72 and therefore entitled to name it. It will be remembered that Dr. Alexander Scott, F.R.S., had reported to the Chemical Society that he had obtained an oxide of the new element from certain black sand obtained from New Zealand and that he had sent samples to Coster and Hevey for x-ray examination. He now states that the Copenhagen observers have failed to detect the presence of hafnium in these samples.

PROFESSOR DEPAGE has been elected president of the Brussels Faculty of Medicine.

THE spring intensive course of the North-East London Post-Graduate College at the Prince of Wales's General Hospital will begin on March 12th, and will last for fourteen days. It will include lectures and demonstrations of clinical methods and cases, and work in the general wards and special departments of the hospital.

IT is intended to have an exhibit representing thermal establishments, medicinal baths, and sanatoriums at the British Empire Exhibition in 1924, and the civic authorities of such towns as Bath, Harrogate, Leamington, Malvern, Tunbridge Wells, and Droitwich have been invited to co-operate. In the tropical diseases section it is hoped to illustrate all the important diseases of tropical countries.

A NEW organization to promote the social, ethical, and financial interests of the medical profession, the Sindicato de Médicos, has been formed in the Argentine, with its headquarters at Buenos Aires. It publishes a journal entitled the *Bulletin*, and already a quarter of the medical practitioners in the Argentine have enrolled in the association.

## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

The postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology*, Westrand, London; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY and BUSINESS MANAGER (advertisements, etc.), *Articulate*, Westrand, London; telephone, 2630, Gerrard.
3. MEDICAL phone, 2630, Ger Medical Associa *Bacillus*, Dublin 6, Rutland Squ telephone, 4361, Central.

## QUERIES AND ANSWERS.

### INCOME TAX.

"SCALPEL" is paying interest on money borrowed for the purchase of a practice. He asks if he can treat the interest as an expense for tax purposes. Also, what expenses can he deduct against an assessment under Schedule E on a parish appointment?

\* 1. If the interest is payable to a bank it can be treated as a professional expense; otherwise, tax is deductible at the full rate from the interest as and when it is paid, and in those circumstances the interest cannot be deducted but must form part of the profits on which tax is paid—for example:

Amount of interest	£50
Average profits after deducting interest	£1,000

The amount of the assessment must include the interest—say £40 on the average; the practitioner pays tax on £1,040, but recoups himself by deducting tax from the interest.

2. We understand that the Board of Inland Revenue acquiesces in the usual method of assessment in such cases, which is for a single charge to be made under Schedule D on the full income of the practice—that is, bringing in the emoluments of the appointment as receipts and deducting all proper expenses. Where this is not done, the person assessed should deduct under Schedule E such (apportioned) expenses as are incurred wholly, exclusively, and necessarily in performing the duties, and claim the balance of the total expenses of the year under Schedule D.

"H. W. F." sold his old car in 1918 and bought another to replace it in 1922. The local inspector refuses to allow a deduction for the cost "as the selling of the old car and the buying of the new did not take place in the same year."

\* We think that the inspector's attitude is incorrect. A certain expense was incurred in 1922 and the question to be decided is whether, and if so to what extent, it included capital expenditure. To decide that question all the facts must be considered and there seems to be no justification for shutting out of







# A Lecture ON THE FUNDAMENTAL CONCEPTIONS OF BIOLOGY.

DELIVERED AT KING'S COLLEGE, LONDON,

BY

J. S. HALDANE, M.D., LL.D., F.R.S.,  
OXFORD.

BIOLOGY is the branch of natural science which deals with life; and the question which will be discussed in this lecture is whether we are compelled, in dealing scientifically with the phenomena of life, to make use of any fundamental conception or axiom which differentiates biology from other branches of science. I shall endeavour to show that the answer to this question must be an affirmative one if we are to bring together a coherent and progressively developing body of knowledge relating to the phenomena of life. In other words, I shall try to show that biology is, or ought to be, an independent science.

There is at present little difficulty in distinguishing practically between what we call phenomena of life and what we call inorganic phenomena. But as to the nature of the distinction, and whether it is in any real sense fundamental, there has been no agreement. I shall first glance at the opinions which have been held on this subject in modern times, and the objections to these opinions.

## *The Mechanistic Theory of Life.*

In the writings of Descartes, and particularly in his *De Homine* and *De Formatione Foetus*, we first find quite clearly expressed the doctrine that a living body is simply a piece of physical and chemical mechanism, produced by a mechanical process of development. He describes in detail, and with great clearness, the manner in which he believed that the machinery of a living animal works or may work, and the mechanical process by which this machinery is, or may be, formed in the embryo. Although it soon appeared that most of his details were entirely wrong, his belief that physiological processes are in ultimate analysis nothing but what may, broadly speaking, be called mechanical processes has survived, and at present represents the opinion which is generally regarded as orthodox in biology. Not only biologists, but also the general public, speak of the mechanism of the living body and of all the processes occurring in it. They even regard it as self-evident that, apart from conscious action, everything occurring in a living organism is mechanically determined. I cannot, therefore, pretend that my own conclusions on this subject are other than heretical for the present.

Descartes himself was no materialist. For him the soul was independent of the body; but as to how body and soul interact his account is far from clear, and on this point his successors took divergent views. It is interesting to remark that the extremest mechanistic theories of life have often been combined with the most orthodox theological opinions as to body and soul. To realize this we have only to glance through Paley's *Evidences*, or to remember that Theodore Schwann, though he was a leader of the modern mechanistic school in physiology, was also a devout and orthodox Catholic.

## *Animists and Vitalists.*

The mechanistic conception of life, as put forward by Descartes, was only accepted by a minority of the biologists of his time, and was specially attacked by Stahl, the author of the phlogiston theory in chemistry. Stahl was so impressed by the apparent purposive character of physiological processes that he concluded that the soul acts directly at all parts of the body, though we may not be conscious of this action. For him, therefore, life was a process guided by the soul, and distinguished from inorganic processes by this fact. Stahl's teaching is known as animism, and the best known avowed modern representative of animism is Professor McDougall, whose well known book, *Body and Mind*, is a defence of this doctrine.

The majority of biologists in the eighteenth and first half of the nineteenth centuries followed neither Descartes nor Stahl, but took what may be described as a middle course. Since there is no consciousness of apparently purposive phenomena such as assimilation, growth, and reproduction,

these were attributed to an influence called the vital principle or vital force, which was conceived as something midway in character between the conscious soul and mechanism, and involved no such strained theory as that plants possess souls. On the other hand, mechanical explanation was adopted in all cases where it seemed capable of adoption. The boundary line between the action of vital force and mere mechanism was a shadowy one; but this dualistic system of explanation held its ground for long. The great comparative anatomist and physiologist Johannes Müller may be regarded as a typical representative of it as it existed last century. Liebig and Wöhler were other well known representatives.

## *The Neo-Mechanists of Last Century.*

About the middle of last century the younger physiologists became altogether dissatisfied with the conception of vital force, and at the same time believed that they were finding a way towards dispensing with it altogether. Schwann, for instance, after discovering what is now familiar to us as the cellular composition of the bodies of higher animals, believed that he had also discovered that cell formation is only a form of precipitation. Mayer applied his new conceptions of energy to the living body, and pointed out that oxidation of food material is the source of the energy of muscular contraction. On all hands the younger biologists put forward mechanical theories of what had hitherto been attributed to the influence of vital force. The conception itself of vital force was also vigorously attacked, and the attack was a deadly one—not one whit the less so though most of the new mechanistic explanations of that time turned out to be wrong, like Schwann's theory of cell formation.

It was pointed out by the neo-mechanists that all manifestations of life are found to depend on physical and chemical conditions in the environment. There is thus no evidence whatever for the existence of an influence which is independent of physical and chemical conditions, as the vital force was assumed to be. All vital phenomena are dependent on such factors as the presence of oxygen, water, various mineral constituents, warmth or light, and suitable stimuli of various kinds. The more closely we investigate, the more certainly does this appear; and for this reason biologists will never go back to vitalism or animism.

It is true that there are still professed vitalists, among whom the best known is Driesch. He bases his vitalism especially on some of the facts revealed by experimental embryology, and particularly on his discovery that when the cells of an early developing embryo are separated from one another complete embryos may nevertheless be developed from each of the separated cells. A guiding influence seems, therefore, to be present in each cell, independently of the arrangement and amount of the material which was present in the original ovum. This guiding influence appears to cause each cell to behave in such a way as to contribute towards forming a complete embryo in spite of such confusion as is produced by artificially separating the cells. In reality, however, there is nothing to show that the behaviour of each cell is not a response to influences in its environment. When the cells are separated these influences must be changed. When they are left together each cell will influence its neighbour cells, stimulating or inhibiting their development in different directions, with the result that the embryo as a whole develops in the usual way. In the behaviour of the cells in a developing embryo there is therefore nothing fundamentally different from the responses to stimuli which we observe in any living structure. We can investigate these stimuli and the corresponding responses; and when our method is delicate enough we can always discover their connexion. Biology has no use for the vitalistic assumption of an internal guiding influence which is independent of the influence of external conditions. Such an assumption is only an artificial hindrance to investigation, and amounts to an attempt to strangle it.

## *Failure of the Neo-Mechanists.*

In so far as the mechanistic movement which culminated about the middle of last century was a casting out of vitalism from biology I do not think there is anything further to be said. Nevertheless it seems to me that the coincident attempt to establish biology on a mechanistic basis has been a gigantic failure. It is one thing to conclude that the structure and activity of any living organism or part of it is dependent on its environment, but quite another thing to draw the additional conclusion that life must be a mechanical process, and can be investigated successfully on this assumption.



The usefulness within certain limits of mechanical explanations in physiology is, of course, evident, and was equally evident to the vitalists with their dualistic system of explanation. If we skim over the surface of physiology we can represent the life of any organism as if it were a series of mechanical processes such as the working of joints, the ingestion of oxygen into the lungs and blood, or of food material into the alimentary canal and blood, or the formation of images on the retina. Taken separately, each of these mechanical representations is in more or less close accordance with experience, and is correspondingly useful. Nevertheless it was the failure of attempts to extend mechanical conceptions to the phenomena of unconscious life as a whole that gave rise to vitalism; and it is quite evident now that the physiologists of the middle and later parts of last century were altogether mistaken in supposing that they were getting over this failure. The mere abolition of vitalism has in reality left physiology as an incoherent collection of details, with not even the very unsatisfactory vitalistic theory to produce some appearance of unity. The mechanistic cement which seemed so promising fifty or sixty years ago has crumbled away.

To understand this situation it is absolutely necessary to consider closely the characteristic phenomena of life. The outstanding feature which distinguishes what we call the phenomena of life from what we call inorganic phenomena is that in the case of life the form, size, properties, composition, and activity of each part of an organism and its immediate environment depend, broadly speaking, on its relations to the other parts, and that the relationship is actively maintained or reproduced in successive generations. Life is continuous from generation to generation, as was finally shown by Pasteur's famous investigations.

#### *Internal Environment.*

The specific character of each variety of organism and its mode of life have been thoroughly realized ever since animals and plants began to be classified. What has not been realized, however, is that not only are the form and activities of organic structure specific, but also its immediate environment. This feature of life is emphasized in my recently published book *Respiration*; but I wish to place before you in a broader manner the facts relating to immediate environment.

Pasteur's great contemporary, Claude Bernard, was the first to recognize the fact that in the higher organisms the living tissue elements live in an internal environment of a specific character, which is kept relatively constant by the combined activities of the various parts of the body. My own experimental work as a physiologist has been mainly in the development and extension of this conclusion. The tissue elements, for instance, are in relation with the external air through the process of respiration. If, now, we examine this relation we find that the concentration of carbon dioxide and oxygen in the air contained in the alveoli or air cells of the lung remains extraordinarily constant, particularly as regards the percentage of carbon dioxide. This is brought about by regulation of the breathing in accordance with the very variable amounts of carbon dioxide formed in the muscles or elsewhere and carried by the blood to the lungs, or also present in the outside air. Hence the concentration of carbon dioxide in the arterial blood is kept extremely steady, and the delicacy of this regulation is extraordinary. Carbon dioxide when in solution acts as a weak acid, and further investigation showed that what is regulated is not the mere amount of carbon dioxide in the blood, but its reaction or hydrogen ion concentration. This regulation of reaction is so delicate that not even the most sensitive of the available methods of measurement can follow it exactly.

The regulation of the oxygen concentration in the alveolar air is not nearly so delicate; but if we consider, not merely this oxygen concentration, but the percentage saturation with this oxygen of the haemoglobin in the arterial blood, we find an almost equal delicacy of regulation. We have also every reason to believe that if we considered the reaction and partial pressure of oxygen, not merely in the arterial blood, but in the liquid bathing the tissue elements in the central nervous system, we should find a still greater accuracy of regulation, since the rate of blood flow is, in general, regulated in such a manner as to keep the reaction and oxygen pressure steady in spite of great local variation in consumption of oxygen and formation of carbon dioxide. Let us now pass to the physiology of the kidneys. In this part of physiology recent advances have been almost as striking as in connexion with respiration. Within the last

few years it has become increasingly evident that renal excretion regulates the composition of the blood with a delicacy even greater than that connected with intake and output of gases by the lungs. To the smallest excess or deficiency of water or of chloride in the blood the kidneys react by greater or less excretion of water or chloride. To the minutest excess or deficiency in alkalinity they react similarly with a far greater excretion of alkali or acid. To excess in the percentage of sugar in the blood they react by excreting an enormously greater percentage of sugar in the urine. To minute percentages of urea and numerous other substances they react by concentrating them into the urine. By this selective action they keep the composition of the blood normal in a number of different respects and thus keep the specific internal environment steady.

When we look to what is known of other organs or parts of the body we find similar regulative activity. The influence of the liver in regulating the percentage of sugar in the blood was discovered by Claude Bernard himself, and every year adds to our knowledge of the regulative action of different organs and tissues. Perhaps the simplest case is that of the fat-storing tissues so widely distributed in animals and plants.

I have said enough to show that in higher organisms the maintenance of the immediate environment is just as striking a phenomenon as the maintenance of what we regard as the actually living structure. Is there any real difference in this respect, except in degree, between higher and lower organisms? I do not for a moment believe that there is, although in the case of lower organisms, and particularly unicellular organisms, it is difficult to obtain the clear evidence that we can easily obtain from the study of higher organisms, and particularly from the physiological study of man. In the case of unicellular organisms, or single cells of man, we are apt to assume that what has been called by the convenient but very misleading term "protoplasm" represents living structure, while anything outside the delicate cell wall represents environment. But all the probabilities are against this view. We have every reason to believe that within living cells the specific structural elements have an internal environment similar in function to the definitely known internal environment of higher compound organisms. There seems, for instance, to be little doubt that the contractile vacuoles present in fresh-water unicellular organisms are constantly engaged in excreting and pumping out the excess of water which leaks in through the semi-permeable cell wall in virtue of the higher "osmotic pressure" in the internal medium. The vacuoles are thus constantly performing the same function as the kidneys during the excretion of any excess of water that has been taken into the internal medium of a mammal.

#### *Internal Nervous Environment.*

It may appear at first sight as if the central nervous system is directly exposed through the sensory nerves to the full brunt of physical changes in the external environment, without the intervention of anything corresponding to an internal environment. In the case of any particular kind of sensory excitation we have, however, an automatic physiological raising or lowering of the threshold of excitation in accordance with the total strength of stimulus. This fact appears as the well known law of sensory excitation formulated by Weber. A light-stimulus which produces marked light-excitation with a dim general illumination may produce no excitation at all with a less dim general illumination. For instance, the light-stimulus of a bright star, which produces no excitation at all in even fading daylight, has a marked excitatory effect in the far dimmer illumination of night. Within very wide limits the unit of light-stimulus required to produce excitation varies with the general illumination of the visual field, so that the general excitation remains constant. Moreover, if all the light-stimulus is cut off there is still general excitation of the visual field. In perfect darkness an illuminated field of subjective vision still remains.

We can thus compare the general constancy of the field of sensory excitation with the general constancy of the internal environment. In different parts of the circulatory system and round different cells there are very distinct differences in the internal environment, just as there are very distinct differences in different parts of the visual field. But these differences are extremely small in comparison with differences in the external environment, since they are controlled physiologically.

It is the physiological activities of the living tissue elements that regulate the internal environment and the fields of



sensory excitation. On the other hand, however, the evidence is no less clear that not only the normal activity of the living tissues, but also their normal structural maintenance, depends on the maintenance of the internal environment. For instance, not merely abnormal function, or cessation of function, results from imperfect regulative action of the lungs or kidneys, but also grave changes in structure. Analysis of the symptoms met with in disease of different organs, or in connexion with such great abnormalities of external environment that the compensatory resources of the body are overpowered, is constantly teaching this lesson in different directions. The question whether living structure determines environment, or environment determines living structure, is thus not one that can be answered. If we say that they act mutually on one another this is no answer: for apart from their active relationship they cease to exist except in the totally changed form of dead or dying material. Both living structure and internal environment are expressions of molecular and ionic flux. If the flux is interfered with both structure and environment are rapidly changed. Living structure and its immediate environment are not things which can be separated from one another like lifeless things which we regard as mutually acting on one another. In other words, the conception itself of mutual interaction is not applicable.

Organisms will continue to live in very different external environments; but this is only because they are still capable of maintaining their internal environment. The higher organisms are capable of doing this to a very marked extent, and this is one of their distinguishing characters.

#### *Structure, Environment, and Activity.*

The environments of the individual cells in any tissue or organ are not merely a general internal environment common to all the cells, but special environments dependent on the influence of neighbouring cells, and even of cells in distant organs, such as ductless glands or sexual organs. The effects of interference with either these special environments, or the general internal environment, are seen in the cell changes studied by pathological anatomists. It is on the special environments which establish themselves round individual cells that the specific structures of organs and tissues must ultimately depend. But on the other hand these specific environments depend on the activities of the cells themselves, just as does the general internal environment. Here again structure depends on environment and environment on structure; and if we attempt to separate living structure from its active environment we simply fail. Form, composition, activity, and environment are inseparably bound up together. They only exist relatively to one another. In biology relativity is no far-off principle behind ordinary observation. It confronts us at every turn when we attempt to express life as a mechanical process of interaction between organic structure and environment, or between cell and cell.

This relativity is the rock on which all past attempts to frame a mechanistic conception of life have foundered, and on which all future attempts will certainly founder. The gross external changes in which life manifests itself can be expressed in physical and chemical terms. But when we endeavour to express in similar terms the processes by which these changes are actuated and regulated we are everywhere baffled by an indefiniteness and complexity due to the fact that each phenomenon, whether of apparent structure or apparent activity, is relative to other phenomena. Instead of definite structural machinery such as Descartes or the neo-mechanists of last century imagined, we seem to find only that unstable and physically indefinite something which we call protoplasm.

If we nevertheless assume that definite though invisible structural machinery exists in all living cells and explains mechanically all the delicate and intensely specific reactions which we discover in living cells, we are at once faced by an insuperable difficulty. All of this assumed structural machinery must have developed in the development of the organism, and must have originated from a very minute part of the structural machinery of the parent organism or organisms. We are thus compelled to assume that in each germ of a future organism there is machinery for the building up of the machinery of the future adult organism, and the building up of this reproductive machinery itself has then to be accounted for, and of the machinery which built it up in previous generations *ad infinitum*.

The mechanistic theory of life involves us, therefore, in

meaningless absurdities. It is evident also that even where we can, as in the case, say, of the working of a joint, lay our hands on a piece of what seems to be definite anatomical machinery, we are equally involved in meaningless absurdities if we attempt to account on mechanistic principles for the reproduction of the joint in successive generations. If, moreover, we try to account on mechanistic principles for the physiological maintenance of the anatomical machinery, we are again faced by the relativity of the phenomena we are dealing with. The more we discover of apparent mechanism in a living organism, and the more delicate and complex this mechanism is, the more hopeless are the problems which face a mechanistic theory of life in connexion with the phenomena of maintenance and reproduction. The discovery of what we call mechanisms in connexion with the phenomena of life is never any advance towards a mechanistic conception of life, since the more of such apparent mechanisms we discover the more completely unintelligible from a mechanistic standpoint does their maintenance and reproduction appear.

To me it seems perfectly evident that not only the vitalistic, but also the mechanistic conception of life is totally unsatisfactory. The mechanists pointed out clearly the impossibility of vitalism, but they failed to see, at the same time, that their own conception of life was equally impossible. With either a vitalistic or a mechanistic conception biology is nothing but chaos. The mechanists are in reality always being driven back on vitalistic ideas to help out their mechanistic conception, just as the vitalists were always using mechanistic ideas to help out their vitalism. But this compromise only conceals, and in reality does nothing to obviate, the chaotic position on either conception. I have tried to analyse the reasons for this unsatisfactory position, and I shall now try to point out what seems to me the only way of escape from it.

#### *Relativity and Persistent Wholeness in the Phenomena of Life.*

As was so clearly pointed out in the opening lecture of this series by Professor Whitehead, the present generation has been witnessing a definite break-up in the fundamental mathematical and physical conceptions which we have inherited through Euclid, Galileo, and Newton. We can, however, still use the Euclidean, Galilean, and Newtonian working hypotheses for nearly all practical purposes in connexion with the mathematical and physical sciences, though their ultimate authority has disappeared. In connexion with the phenomena of life, however, we are everywhere in practical contact with the relativity to one another of the phenomena we are studying, as I have already pointed out. It seems to me, therefore, that in biology it is necessary to abandon, even for ordinary practical purposes, the Galilean or mechanistic conception of phenomena, and frankly embody the principle of relativity in our fundamental working conception. When we take this step we must take care, however, not straightway to introduce confusion by returning in part to the Galilean mechanistic conceptions which Descartes attempted to apply in biology. We must, in other words, treat the phenomena of life entirely from the biological standpoint, and not from that of the Galilean physics.

From the biological standpoint organism and biological environment, structure and activity of structure, parts and other parts, are not things separable in thought from one another, but existing only in their relations. If we attempt to separate them from one another they become from the biological standpoint just as meaningless as is motion or passage of time in an empty universe. Completely separated structural elements are, or at least seem to be, no longer alive, and have thus passed out of the ken of biology, where biologists can meanwhile leave them to the discussions between the new and the old physicists.

When we have admitted that the phenomena of life must be regarded as existing relatively to one another we have only taken a first step in defining a satisfactory conception of life. We have to take into consideration the further fact that life is persistent and continuous from generation to generation. The life of any species of organism is no mere fleeting appearance, but persists in all its essential characteristics. This persistence is also prominent in the life of the individual organism, and the parts of biology which we ordinarily call physiology and anatomy are based on the fact of this persistence. The structure, activities, and internal environment of the individual organism persist, and but for this a scientific treatment of anatomy and physiology would



be impossible. It is not merely relativity, but a definite and enduring order showing itself in the related phenomena, that biology deals with.

At this point I wish to emphasize once more the fact that biology does not begin with living structure, but includes environment. Moreover, there is no sharp distinction between an internal environment under organic control and the external environment. We see this clearly in the case of the air in the lung alveoli; and the same thing is also more or less clear in the case of the contents of the intestine or the temperature of the skin. Each organism, moreover, has its own special "habitat," and either by movements or in various other ways the influence on it of its environment is controlled biologically. It is a difference in the point of view from which we are compelled to regard biological phenomena, and not any spatial boundary, that separates them from what we distinguish as inorganic phenomena. The environment is not something outside of life and acting on it from without. Nor is life something localized within the living structure of an organism. Life is an organic whole without spatial boundaries, and hence cannot be localized definitely. What we can localize in relation to one another are only its manifestations, such as special organic structures or aspects of living activity. There is no more warrant for localizing life within the structure of an organism than for localizing consciousness in the brain.

If we attempt to resolve the life of an organism into a number of separate processes we reach no intelligible result. Nature laughs at us, just as she laughed at Michelson and Morley when they innocently attempted to measure the absolute velocity at which our planet is travelling. If, for instance, we continue to ask by what special pieces of machinery the kidneys or respiratory centre regulate the composition of the blood Nature will continue to mock us until we understand that such questions are meaningless. But if we ask her the sort of questions about the details of renal or respiratory regulation that scientific biology can put she answers us fully. These questions must be asked from the standpoint of the life of the body as a whole, as it is only from this standpoint that an answer can be looked for.

Since the time of the mechanistic movement in biology last century it has been generally taken for granted by physiologists that in the investigation of life all considerations of a so-called teleological character must be left out of account; and this assumption has in every direction fettered and misled investigators. The life of any organism persists as a whole. Both the persistence and the wholeness are just parts of the essential nature of life; and biology seeks out the details of structure and activity in which both the persistence and the wholeness of life manifest themselves. To the mechanistic biologists the appearance of wholeness in the life of an organism seemed to be only superficial. They allowed themselves to be overwhelmed intellectually by the Galilean ideas of the physical sciences; and this diverted them from the proper lines of biological investigation into vain quests for imaginary mechanisms.

The wholeness in the phenomena of life is not merely externally imposed, as in the case of a machine; and if we neglect the inherent element of wholeness we are also neglecting life itself. To bring into clear relief the elements of wholeness and persistence we have only to disturb in various directions the ordinary working or structure of the body. It will then be seen that the normal state soon asserts itself. The organism adapts itself to the new conditions; and life is in reality a constant process of adaptation to varying conditions of external environment. By studying the responses of the ordinary working of respiration, of circulation, of blood composition, of excretion, of the nervous system, and of every other organ and tissue in the body, to changes in environment, we can discover how each organ or tissue plays its part in life as a whole; but if we are out of account life as a whole because this consideration savours of teleology, we reach nothing but an unintelligible jumble of unconnected observations. On this point I emphatically mean what I say.

#### *The Relations of Organisms to One Another.*

In the relations of organisms to one another, no less than in the relations of organism to environment, the wholeness of life is apparent. When Schleiden and Schwann discovered that all the higher organisms are compound it seemed at first as if the life of a compound organism could be resolved into the sum of the lives of the constituent cells. It is very evident now, however, that this would be a very misleading conclusion. The behaviour and structure of individual cells is very

different according as they are normally related to one another as in a compound organism or isolated as in a tissue culture. The behaviour of each cell in the compound organism depends on its specific environment there, which depends in turn on relations to the other cells and their environments. But, as already seen, we cannot, either in deed or thought, separate living structure from its environment. We cannot add up in a sum units which do not exist separately. Hence the life of a compound organism is no mere sum of the lives of its constituent cells.

When we consider the lives of separate organisms, whether compound or unicellular, similar considerations come in. The individuals of a species live and die in biological relation to the lives of one another and of members of other species, just as do the cells in a compound organism.

In accordance with the reasoning which has just been set before you physiology deals essentially, not with illusory quests after the mechanisms of different bodily activities, but with the particular manner in which each structural element plays its part in the life of the organism as a whole. To take an example: it is, and always has been, a vain quest to discover the mechanism of secretion by the kidneys. We can trace the complete failure of such attempts from the time of Descartes onwards through Ludwig and others to the present day. But our physiological knowledge of what the kidneys are actually doing in relation to the maintenance of the life of the body as a whole has steadily grown, and perhaps never so rapidly as during the last few years. It is the same with regard to respiration, circulation, nervous activity, and all other bodily activities. If we try to understand them from the point of view of ordinary physics and chemistry they appear as a chaotic tangle, becoming more chaotic with every advance in detailed knowledge; but from the distinctively biological standpoint which I have tried to present our knowledge of them is both coherent and steadily progressive.

#### *The Future of Anatomy.*

According to the conception which was popularized in the latter part of last century anatomy deals with the structural mechanism of organisms, and physiology with its working. This conception harmonized with the popular Galilean conceptions of the universe, and therefore appealed to what one may call "the masses," but left anatomy high and dry as soon as it became evident that with neither the scalpel nor microscope as applied to dead organisms could structure be found that was capable of throwing light on any fundamental physiological activity. The physiologists got the living organisms, and with them the living parts of biological science. In reality there ought to be no separation between anatomy and physiology except as regards technical methods of investigation. They both deal with the manifestations of life as such. Whether, in the investigation of life, use is made of the scalpel or microscope, or of other physical apparatus, or of chemical methods of different kinds, it is life that a biologist is investigating; and those who allow life to be banished from their mental vision by the nature of the technical methods they employ have no claim to be regarded as biologists. The details which their several methods reveal must be interpreted biologically or else remain outside the scope of biology as a science. The future anatomy will certainly be an experimental science, and will investigate structure as relative to environment and activity.

#### *Conclusions.*

The outcome of this discussion is that biology and the physical sciences are distinct from one another, not because they deal with spatially distinct parts of our world, but because they employ different working conceptions or axioms in interpreting their data. Relativity and persistence of a definite order in the related phenomena are of the essence of the conception of life, while they do not enter into the Galilean conception of the physical universe. Behind this Galilean conception, however, something strangely akin to the biological conception is now beginning to loom up. In addition to the conclusions of Einstein, the new conceptions, evolved by Rutherford and Nils Bohr, of what an atom is, seem to be bringing the physicists into touch with biological conceptions. In any case biology will never rest until biological conceptions have been extended to what is at present interpreted as the inorganic world. The well-meant attempt of the last generations of biologists to treat life as mechanism—in other words, to apply Galilean conceptions to life—has not only been an actual failure, but, if the reasoning



I have placed before you is correct, could not possibly be anything but a failure. In other words, the Galilean conception of the universe, since it cannot represent life, cannot possibly represent reality itself, but is only a preliminary and definitely insufficient working hypothesis with regard to reality. This universe is no disorderly spectacle of independent and self-existent things scattered about indiscriminately in infinite space and time. The facts of biology, even taken by themselves, render any such hypothesis impossible.

I chose the subject of this lecture because it seemed to me of the greatest importance at the present time that we should begin to realize more clearly that what we perceive is a matter of interpretation, and depends upon the axioms or working hypotheses which we adopt as consistent with our observations. In the distinction between biology and the physical sciences this fact comes definitely before us. Biological interpretation occupies a position midway between the Galilean interpretation and humanistic or spiritual interpretations. From the thorough-going Galilean standpoint of materialism the spiritual interpretation is mere illusion, and biology as a science independent of the physical sciences is non-existent. But the time has now come for examination of our axioms and a strict inquiry as to how far they are valid and consistent with experience.

In the course of this examination the spiritual interpretation as the supreme interpretation of our universe is coming again to its own, and a fundamental step seems to me to be the inquiry into the difference between the axioms of biology and those of the physical sciences. Had it been the case that the Galilean conceptions of the physical sciences applied to the phenomena of life the difficulties of a spiritual interpretation of our ordinary experience would have been very great. Biological interpretation provides us with a bridge towards psychological or spiritual interpretation.

Biology does not attempt to deal with distinctively psychological phenomena, although in connexion with the physiology of the nervous system it quite legitimately utilizes conscious responses as a more index of physiological responses, while not attempting to take into account the distinctive characters of conscious responses as such. Hence biology is distinct from psychology. On the other hand, as I have tried to show, the attempts to extend mechanistic conceptions to life have only resulted in proving definitely that the phenomena of life must be interpreted in terms of the distinctive conception of life. For these reasons biology must be regarded as an independent science; and this is the thesis which I set out to establish.

## THE LATE RESULTS OF MENINGEAL HAEMORRHAGE OF THE NEWLY BORN.

BY  
HECTOR CHARLES CAMERON, M.A., M.D., F.R.C.P.,  
PHYSICIAN IN CHARGE OF THE CHILDREN'S DEPARTMENT,

AND

A. A. OSMAN, M.R.C.S., L.R.C.P.,  
CHIEF CLINICAL ASSISTANT IN THE CHILDREN'S DEPARTMENT,  
GUY'S HOSPITAL.

Or cases which present themselves in later childhood as examples of infantile cerebral diplegia or paraplegia, dating from birth, what proportion owe their origin to meningeal haemorrhage occurring during or shortly after the moment of birth? It is a question which has often been asked and to which very different answers have been given. Sixty years ago Little, the orthopaedic surgeon, had made up his mind that the majority of the children brought to him with spastic paralysis owed their unfortunate condition to accidents occurring at birth. So impressed was he with the truth and importance of this discovery that, introduced as a guest, he attended a meeting of the Obstetric Society of London and read a paper, thereafter famous, in which he invited the co-operation of his obstetric friends in investigating the origin of these disturbances, with the later results of which he was familiar and which he described graphically and with singular completeness.

The response to his appeal was apparently somewhat disappointing. The discussion which followed was meagre and barren. The distinguished obstetricians present had no knowledge of these unfortunate results of their ministrations. It was not until the year 1885 that a definite investigation

was undertaken by Sarah MacNutt.<sup>2</sup> In ten infants dying at birth or soon after birth, with symptoms of asphyxia, stupor, paralysis, rigidity, and convulsions, she demonstrated the presence of extensive meningeal haemorrhage below or above the tentorium cerebelli or in both situations. Gowers<sup>3</sup> unhesitatingly accepted the views of Little and MacNutt as in accord with his own extensive experience and describes cases with symptoms similar to those of Little under the name "infantile meningeal haemorrhage." Of MacNutt's work he is reported as saying, "It is by far the most valuable contribution to medical science that the profession has yet received from members of her sex."

In 1889 Osler<sup>4</sup> published his book *The Cerebral Palsies of Children*. He adopts and adduces evidence in favour of the views of Little and Gowers.

"Facts have gradually been accumulated to show that haemorrhage, usually meningeal, is a very frequent condition in children dying shortly after birth of asphyxia or convulsions, and as the birth palsies almost invariably have this history it seems reasonable to conclude that, in the cases which recover and subsequently present signs of motor disturbance, a similar, though less intense, lesion has existed."

In the last few years investigations into the causes of stillbirth have been carried out by numerous workers. In 167 cases examined Holland<sup>5</sup> found tears of the tentorium in 81 (48 per cent.), and all of these except 6 were accompanied by subdural haemorrhage. There is general agreement that meningeal haemorrhage is by far the most common cause of death in fresh non-macerated foetuses and in infants dying shortly after the conclusion of labour. It is impossible not to conclude, with Osler, that many, and perhaps the larger number, escape with their lives, but suffer permanent damage in varying degree.

There are, however, difficulties in the way of unqualified acceptance of the view that in the numerous cases of cerebral diplegia which present themselves later in life we are encountering the aftermath of this damage at the moment of birth. The interval between the birth and the time when the crippled child is first brought for advice is often long, and it is not always possible to rely upon the mother's memory of the details of labour, if, indeed, these have ever been told her. Moreover, when after this long interval opportunity presents itself for making a *post-mortem* examination, the scarred and atrophied brain shows no evidence of the nature of the original lesion which occurred so long ago, and which has been so long extinct.

Apart from the other views have been held of the dating from birth. There are those of cases as due to infective meningo-encephalitis, intra-natal or neo-natal. Virchow<sup>6</sup> speaks of "encephalitis interstitialis congenita," Henoch<sup>7</sup> of "haemorrhagic encephalitis." If we accept this view we must conclude that in general the infants recover, since routine investigations upon infants dying soon after birth show little evidence of encephalitis, but abundant evidence of haemorrhage. Cases which have come under our own notice suggest that trauma and haemorrhage themselves predispose to encephalitis. Probably the organization of the clot is always accompanied by a varying inflammatory reaction. The following is a good example of suppuration supervening upon haemorrhage. In this case there could be no doubt about the existence of the haemorrhage, because in addition to meningeal exudation there was a large clot within the substance of the brain.

An infant born at full time, in St. James's Hospital, Balham, with a breech presentation, after a difficult labour, was to some extent asphyxiated. Seen on the sixth day of life the fontanelle was tense and bulging, the pupils were unequal, and the limbs stiff and rigid. There had been repeated convulsions. On the sixth day the temperature rose to 104° F., and continued high. Death took place on the tenth day. At the autopsy the surface of the brain showed extensive suppurative meningitis as well as effusion of blood under the pia mater. In addition section of the brain showed a very large blood clot occupying a great part of the left hemisphere.

To assess the part played by developmental defect in the production of cerebral paraplegia or diplegia is even more difficult. Collier,<sup>8</sup> in an important paper, which has clearly influenced much subsequent writing on the subject, is inclined to deny etiological significance to meningeal haemorrhage occurring at birth, and, basing his opinion upon *post-mortem* studies, to lay greater stress upon faults of development. Space will not permit a full discussion of this difficult question. We believe that in general it is true to say that in cases of diplegia due to developmental defect we find that the



whole personality of the child is upon a low plane, that there is little power of auto-education, and that physical defects are constantly associated with the mental defect. The purpose of this paper is to lay stress upon the high degree of mental development which many of these children damaged at birth ultimately achieve, however great the delay in acquiring certain functions may be in infancy and early childhood. The great improvement shown by many cases of birth injury after the first few years of life appears to us to be due, not to the completion of a developmental process which has been subject to a mere delay, but to the final success of a process of self-education which has been achieved by the child's persistence in overcoming difficulties much greater than fall to the lot of the normal infant.

To illustrate the type of case we have in mind the following three histories may be quoted.

*Case 1.*—A boy of 15, long thought to be grossly mentally defective, though his mother refused to believe it, with spastic gait, stiff and clumsy hands, exaggerated mouthing speech, a vacant expressionless face, and a loud meaningless laugh, has nevertheless two intimate and devoted friends of his own age. He is a great collector of stamps and something of an authority on them. These two friends of his have pushed their way beyond all this unpromising exterior and have found behind it something to repay them.

*Case 2.*—A girl of 17, who was brought to one of us first at the age of 7, did not walk or speak until she was 4, and was thought to be an idiot. She now speaks fluently though a little monotonously. She walks well on the level but has difficulties with staircases. She writes laboriously, her whole body stiffened with the effort to control the pen. Yet her imaginative powers are so good that she was the author of a little play performed by the girls at her school.

*Case 3.*—A boy born very prematurely walked with great difficulty and with many falls in his third year. At 4 years old he could only articulate ten words, but from the age of 3 he had fallen into the way of expressing his wants by singing. Thus when he wanted his toy soldiers he hummed clearly and distinctly and in perfect tune the air of the hymn "Onward, Christian soldiers." During all this time the parents were well aware that visitors regarded him as mentally defective. At 6 he began to be able to articulate more clearly and to speak fairly well. It was then discovered how retentive was his memory with regard to what his mother had read to him before he could speak. Asked to name the twelve Apostles he confessed himself beaten, but said, "I can see them walking in the desert. Some of them are in front, some of them are behind, and the one that takes the money is in a *taxi*." He often refers to this or that as happening "before I could speak." Now at the age of 9 he is still inefficient at certain movements which require control. His handwriting is very bad, and he feeds himself untidily and with difficulty. Yet he does well at school, is far beyond the average in mathematical ability, and has very good general knowledge. He loves games, but is very bad at them.

No one now thinks these children idiotic and imbecile—no one, at least, who judges by more than a glance at the exterior. Yet in early childhood so great was the delay in the education of the sensorimotor paths that such was the opinion in each case. Not all cases, of course, achieve so much, but all show great initial delay and a surprising degree of subsequent improvement.

#### *The Latency of Symptoms during Early Infancy.*

With the symptoms which result from the meningeal haemorrhage at the moment of birth we are not at present concerned. Though as a rule sufficiently definite, in the absence of expert examination they may pass unnoticed or their significance may not be appreciated. After recovery from the initial shock of the haemorrhage it is clear that, as a rule, a period of latency follows which lasts for many months. A consideration of the order in which the different parts of the brain are developed explains the length of the interval which usually intervenes between birth, when the damage is sustained, and the time when the child is brought to the doctor and complaint is made of failure to grasp, to sit, to walk, or to speak.

Physiologically the brain of the newborn is active only in part. Its small size and weight (380 grams) is due to the fact that it is composed almost entirely of grey matter. While the cellular elements are complete and are not to be added to during the whole of life, the myelin sheaths which surround the nerve processes of the cells and which give the white appearance to the subcortical layer of the adult brain are developed only in very small part. Only those fibres are myelinated which are of immediate and vital importance to the newly born, those which preside over the functions of respiration, circulation, and nutrition, and those which have to do with certain reflex movements such as kicking, or automatic movements such as sucking. On the other hand, the fibres from the frontal, temporal, and occipital lobes, the commissural fibres (connecting the two halves of

the cerebrum) and the projection fibres (connecting the cortex with the lower parts of the central nervous system) are not myelinated until a varying time after birth, and are therefore, so far as we know, incapable of carrying impulses either afferent or efferent. The paths, in other words, which render possible complicated and controlled motor action and equipoise of the body are not developed.

In the normal infant, therefore, at birth and for some time thereafter, the nervous mechanism at work is almost entirely that of the medulla and spinal cord. All movements are reflex in character because the psychomotor centres in the brain are not developed. It follows from this that in early infancy symptoms will result only from lesions which at the time of birth affected the medulla and lower centres, and that the permanent ill effects of lesions which at the time of birth affected the cerebral cortex will appear later. In early infancy the cortical areas, in this sense, may be said to be "a silent area" of the brain.

The medulla, on the contrary, is active from the first, and it is interesting to note that in our series, in every instance in which we were able to recognize diplegia in an infant before the end of the third month, there were present symptoms of damage to the medulla, and that it was for these symptoms that advice was sought. In two cases the chief symptom noted was dysphagia and clumsiness in sucking; in two aphonia; in two stertor, apparently from palatal paresis. One of these last was about to be admitted to the diphtheria ward. In another older child, in whom the stertor had persisted, an operation for removal of adenoids had been undertaken without producing any change. The first case described by MacNutt showed this symptom, which made her "start forward" with the thought of tracheotomy in her mind. The subsequent history of these cases showed that all suffered more or less severely from diplegia. The immediate mortality of cases with subtentorial haemorrhage and medullary injury is probably very high, and explains the rarity with which they are met.

#### *The Ultimate Effect upon the Child's Physical Condition of Meningeal Haemorrhage at Birth.*

At birth and for some little time afterwards movement is governed altogether by the older and basic cord innervation. The assumption of cortical control is gradual and can be traced throughout the first year of life. In infants with damage due to meningeal haemorrhage the supremacy of the cortex is delayed or incomplete, so that movements and reflexes characteristic of earliest infancy persist for many years or are permanent.

In mammals experimental ablation of the cortex is said to produce the following results—results which are fleeting and transitory in animals lower in the scale of development, but which are in some degree permanent in the higher apes, although the passage of time brings about very great improvement.

1. A state of rigidity or tonic contraction due to the removal of the inhibitory influences of the higher centres which normally moderate and control the reflexes which determine the muscular tone.

2. An interference with "reciprocal innervation"—that is to say, with the simultaneous relaxation of antagonistic muscles which must accompany voluntary muscular contraction if it is to be effective and precise.

3. A loss of motor power and an imperfect capacity for apprehending the position and form of objects by means of the muscular and cutaneous senses—that is, a psychical paralysis of sensibility and motion.

Such a description applies with equal truth to the state of the normal infant at birth, because of the non-development of the necessary myelin sheath of the nerve processes, and in the varying degree to older children whose cortex has been damaged at birth. The muscles of these unfortunates are not powerless. They do not atrophy. They may even, when growth and nutrition is good, hypertrophy. Their failure to grasp, to walk, to speak, is due not to paresis of muscle, but to a disordered innervation which produces simultaneous contraction of antagonistic muscles. With the failure of the cortical control to develop efficiently, the muscular response to the voluntary impulse, though it may be powerful and in very widely disseminated, is ill regulated and ineffective. In some cases, on any attempt at performing a voluntary action the unduly diffused nervous impulse provokes a spasm which involves almost all the muscles in the body, gripping the limbs in rigid tones by the simultaneous contraction of antagonistic muscles.



The area of cortical damage or destruction determines the localization of the muscular defect. In many cases the damage is strictly confined to the uppermost parts of the Rolandic area, where lie the areas for the control of movements of the lower limbs. When the oozing of blood has been more extensive the damage may extend to the arm areas on either side, or finally to the areas for face, lips, and tongue. Although it is the rule rather than the exception to find the damage greater on one side than on the other, and paralysis is therefore present in unequal degree on the two sides, it is quite exceptional to find that one side has completely escaped and that hemiplegia has resulted. In true hemiplegia at birth it is probable that the lesion is within and not upon the surface of the brain. In the mildest cases paraplegia results, and in general cases of diplegia and cases of diplegia combined with pseudo-bulbar paralysis are due to more extensive and more severe injury. To this there are, however, exceptions. In not all the cases is the vertex cerebri the part to feel most severely the effect of the injury. Occasionally we meet with children whose arms are more affected than their legs, and with children in whom marked pseudo-bulbar symptoms are present with minimal symptoms of diplegia. Occasionally we find instead of spasm and hypertonus a very marked amyotonia, although the behaviour of the muscles upon attempted movement and the attitudes and involuntary movements which result are in other respects identical. It is possible that in these cases we have to deal with the results of subtentorial haemorrhage and a similar damage to the cerebellum. With cerebellar damage atonia, asthenia, and ataxia may be added to the picture.

Whatever the extent or distribution of the damage to the limb areas, when the child's body is at rest, nothing abnormal may be noticed. It is only the attempt to perform a voluntary movement which provokes the abnormal postures and spasm. Thus in cases of paraplegia the incapacity is often not apparent until the child is held in the upright position by the shoulders with feet hanging down to touch the ground. Then upon the attempt to walk or stand the legs become rigidly extended and adducted, so that the feet tend to cross in the so-called scissor gait, while the over-extension of the ankle brings the heels off the ground. It is not surprising that a child so affected may not achieve the power of standing for many years, when we consider how greatly the adductor spasm curtails the base upon which the body must be balanced. It is literally as difficult for such a child to walk as for a normal child to balance itself upon a tightrope. Similarly, on attempting to grasp, the child with diplegia finds the arms tend to become extended and adducted, the hands pronated, and the fingers separated and overextended. Once an object is grasped it can often be held firmly, though there may be difficulty again in relaxing the grip. The degree of spasm is very variable, but whether the limbs are held rigid or remain comparatively flexible to passive movement, the postures assumed on attempting voluntary movement are constant.

When the areas for the face, lips, and tongue have been damaged the expressionless face is very characteristic. The constantly changing facial play of the normal child is absent. The paresis is most marked about the lips, which are loose, prominent, and immobile. They are generally unable to retain the saliva, and when the child is held upright, so that saliva no longer gravitates to the back of the mouth, there is apt to be a great deal of dribbling. The reflex movements of sucking and the movements involved in chewing and swallowing are generally carried out sufficiently well to meet all requirements, although close observation of them will often show some slight loss of efficiency. Aerophagy is a common trouble. In a few cases the passage to solid food is only accomplished with great difficulty and after a long time. Speech is always greatly delayed. The complicated muscular movements involved are only learned slowly and with great difficulty. In the end the movements involved are exaggerated and the speech is monotonous and explosive. Dentals and labials present the greatest difficulties. The cry is expressionless and monotonous. It lacks the varying emotional tones which the normal child imparts to it. The laugh similarly is harsh and has no feeling in it. It is not, therefore, surprising that those who do not know the children well, who have no opportunity of recognizing the intelligence which lies hid behind the stiff face, and who judge by the immobile expression, the unsmooth attempts at speech, the vacant laugh and unmeaning cry, are apt to consider the children as obviously imbecile or idiotic.

In the group of cases which we have studied and which we regard as examples of the late effects of meningeal haemorrhage occurring during labour, the Wassermann test was always negative, the optic discs were normal except in one case with extensive choroiditis, and developmental abnormalities in other parts of the body were absent. Apart from the microcephaly of slight degree which was present in some of the worst cases, the children, though often small and slim, were in no way deformed or misshapen. The bird-like face and narrow frontal region of true microcephaly were never found. The ears were not misshapen, there was no tendency to obesity. Especially when seen asleep, when the want of facial expression is not apparent, and when the awkward limbs are at rest, the impression conveyed to the eye may be that of health and even of beauty. In many of the cases a disfiguring strabismus develops at some time during early childhood. In infants it appears less common.

#### *The Ultimate Effect upon the Child's Mental Development of Meningeal Haemorrhage Occurring at Birth.*

The intellect even of an idiot is in continuous evolution, and the worst cases respond to patient and persistent education by showing improvement. The results achieved by education depend, however, upon the cause of the mental defect. In general least success will be achieved in cases, with or without spasticity, in which there is numerical deficiency, irregular arrangement, and imperfect development of cortical neurons. The greatest success, on the other hand, will follow when the delay in mental development is due to sense deprivation, as in the striking cases of children who are both blind and deaf and who have achieved a high degree of mental culture elaborated from cognitions derived entirely from sensations of touch. In this sense the children whom we are now considering occupy an intermediate position. It is true that the cortical cells have been damaged,\* yet it would appear that, as a rule, though not perhaps always, the damage is sustained by one part of the cortex only—that which is concerned with the reception of tactile and muscular sensations and with the initiation of voluntary movements—and it is in these respects only that the children are defective. By every avenue which was closed to Helen Keller or to Laura Bridgman, both of whom from a very early age were blind and deaf, impulses freely reach the brain of these children. In due course the majority of them develop a high degree both of visual memory and of auditory word memory. But the one path by which Helen Keller and Laura Bridgman achieved so much is closed to them, or at least gravely obstructed.

It is by the sensations of touch and by muscle sense that the majority of impulses reach the brain during infancy. The baby carries every object to his mouth, that he may subject it to examination by lips and tongue, because they are most plentifully endowed with sensory nerve endings. As the cortex awakens to these repeated stimuli and develops under their influence the powers of the infant grow apace. Gradually the differential perception of stimuli becomes sufficiently advanced to enable the child to recognize the position of its body and limbs and to adjust them at will. It is the failure of the infant with diplegia to develop the power to sit or to grasp that usually first excites apprehension. The gradual change from the stiff spastic movements of the newborn to the freer play and more controlled action of the normal child at the sixth month is too subtle for its absence to be noted. But every mother knows that her baby should sit up before it is much older than six months. Thereafter the normal infant, able at will to adjust its body to space, developing a greater and greater mobility, accumulates knowledge at an ever-increasing rate by refining more and more its tactile, stereognostic, and muscular senses. The diplegic infant, relatively immobilized and anaesthetic, lags far behind. Few stimuli reach the brain, and therefore few elements capable of being utilized for new and more complex mental processes. For long the brain lies fallow. Hence it comes about, as we have almost always noticed, that during the second and perhaps the third years of life the mothers of these children have been intensely depressed by the visible

\* It is possible that haemorrhage spreading over the frontal lobes may lead to a greater degree of mental defect, but we have no example of this in our series. We have, however, met with at least one case in which diplegia appears to be combined with an aurosis. It is possible that this is due to involvement of the occipital lobes. The child is under observation, and it may be possible to decide the point later. This child is backward and foolish in behaviour, but at the age of 4 can sing the air of the "Marseillaise" with spirit.



want of progress. On all sides they are assured that the child is grossly mentally defective. It is only their perception that the visual and auditory memory of the child is relatively unimpaired that accounts for their steadfast refusal to believe it. Except in a few of the worst cases with microcephaly, and especially when there have been repeated convulsions, the mothers of these children have throughout maintained that the intelligence is good, and that, although they cannot speak, they understand every word that is said and that their memory is good.

In another way also the diplegic is apt to contrast with the child who is mentally defective. In spastic idiots the attention is weak, and cannot be fixed on anything. They touch many objects one after the other, but show none of that curiosity which is truly attentive. Their actions are inconclusive; they show no joy in the exercise of their powers or patience in practising them. It is striking to watch how differently in these respects the child who suffered from injury at birth may act. More and more he works with us in the attempt to overcome his disability. Though he cannot walk, if he is held upright he works his stiff little limbs with a will, laughing aloud with delight. Little by little, with infinite pains, he learns to grasp, to balance, to walk, and when, years later, he too achieves a degree of mobility and control the improvement is striking. It is just this power of auto-education which is conspicuously lacking in the imbecile or the idiot. In later childhood the progress is often so rapid that the mother, previously so despondent, eagerly expresses her satisfaction, while she is now able to convince others easily enough that the mental powers of the child are considerable.

It is in general only when the sensory and motor loss extends to and involves the hands that the confusion with primary mental defect arises. Those who are only paraplegic walk late and with difficulty, but are not thought to be idiots. They may be excitable and restless, because their helplessness leaves them too long in their mothers' arms, without sufficient outlet for their energies, but of their cleverness there is often no doubt whatever.

But when the hands, all-important as they are for the auto-education of the infant, are insensitive and parietic, for the time being contact with environment is almost completely lost. Head has emphasized how extensive is the area of cortex which is devoted to the reception of sensations derived from the opposing surfaces of thumb and index finger. To the precision and complexity of the movements of the human hand, slowly acquired by the race in the course of ages, man owes his preservation and supremacy. And in the early months and years of life the infant, in its striving and progress, must recapitulate the story of its race. If it cannot, if the development of the hand is retarded, the avenue to the brain along which in normal infancy almost all the traffic passes is narrowed and obstructed. When there is added injury to the voluntary centres which control lips and tongue so that speech too is absent, the difficulties are still further increased. For speech is not only a means of expressing thought: speech clarifies thinking.

A long and close study of a group of some thirty of these cases--of all ages from earliest infancy to adolescence--has convinced us that they differ unmistakably from cases of primary mental defect with spasticity due to developmental causes. In a few frequent and persistent epileptiform convulsions have played havoc with the intelligence. After each convulsion the consequent deterioration in energy and achievement may be appreciable. But if convulsions are not present the defect commonly remains limited to a loss of voluntary movement and of sensation, involving a greater or a less extent of the body. The resulting retardation in development is most apparent in the first years of life, because

\* It is very probable that Lord Byron's lameness was due to paraplegia as a result of a birth injury. Whatever its nature, it is clear at least that it was not due to a "club-foot." The lasts on which his boots were made are piously preserved in the Nottingham Museum, and they are symmetrical and well shaped. Mr. John Murray, of Albemarle Street, has been good enough to show me two surgical boots made for Byron as a boy. They show a long and slender foot. By a contemporary writer the poet is described as entering a room with a curious running movement, "running rather than walking." Again, "He moved with a peculiar sliding gait." In fact, with the gait of a person walking on the balls and toes of his feet. It is clear that the disability was much greater in early childhood, and was overcome to a considerable extent as he grew older. As a child he was taken to John Hunter, to Dr. Baillie, and many other doctors. Later he played cricket for Harrow, though with someone to run for him, and as well endowed: personal beauty, false modesty at his birth. He suffered from repeated epileptiform convulsions.

education at that age proceeds by the refinement and analysis of sensation. The auditory and visual paths then are relatively unimportant. Gradually, by constant effort and with a success which varies with the extent of the original lesion, the child achieves in whole or in part that control of movement which comes so easily to the normal infant. From an early stage, however, those who know the children well can appreciate that despite the spastic limbs, the immobile face, or incoherent speech, the intelligence of the child is alert. Observation, memory, concentration of purpose, affection, intuition, and reasoning may be on a comparatively high level. No doubt the children are apt to be nervous and unstable. Like some caged animal, cut off from the stimulus of environment, they are apt to show strange traits--to have a capricious or unnatural appetite, to sleep badly, or to be unduly timid. These are drawbacks often perhaps inevitable, but with sheer mental defect they have nothing to do. In general it may be said that the response shown by these children to suitable education is remarkable. For them the methods elaborated by Dr. Montessori are especially applicable, and may give the happiest results. In later childhood, even when the voluntary movements remain very inco-ordinate, the mental powers may finally attain a very considerable development.

#### Conclusions.

1. Among cases of infantile diplegia or paraplegia it is possible to recognize a group in which the defect is confined to the sensorimotor cortical areas.
2. Probably all cases in this group are due to birth injury, although all cases of birth injury may not belong to the group.
3. Since education at first proceeds almost entirely by sensorimotor paths there is in early childhood a deceptive appearance of gross mental defect.
4. In later childhood progress may be rapid and recovery almost complete. The difficulty is overcome by the remarkable persistence in effort which is characteristic of most of these children. Even when voluntary movements remain stiff and awkward the child may be a quick learner by eye and ear. Inco-ordination may remain though character and intelligence may be on a high plane.

#### REFERENCES.

- <sup>1</sup> Little: *London Obstet. Trans.*, vol. iii, 1862. <sup>2</sup> MacNutt: *Amer. Journ. Obstet.*, vol. xviii, 1885. <sup>3</sup> Gowers: *Diseases of Nervous System*, third edition, vol. ii, p. 413. <sup>4</sup> Osler: *The Cerebral Palsies of Children*, London, 1889. <sup>5</sup> Holland: *The Causation of Foetal Death*, Ministry of Health, London, 1922. <sup>6</sup> Virchow: *Berl. klin. Woch.*, 1883, No. 46. <sup>7</sup> Henoch: *Förles u. Kinderkrankheit*, eleventh edition, 1903, p. 279. <sup>8</sup> Collier: *Brain*, vol. xxii, 1899, p. 373. <sup>9</sup> Head: *Studies in Neurology*, vol. ii, p. 716.

## THE MODIFICATION OF GASTRIC FUNCTION BY MEANS OF DRUGS.\*

BY

T. IZOD BENNETT, M.D.,

ASSISTANT PHYSICIAN, MIDDLESEX HOSPITAL; ASSISTANT TO THE  
PROFESSOR OF PHYSIOLOGY, MIDDLESEX HOSPITAL; REIT  
MEMORIAL FELLOW FOR MEDICAL RESEARCH.

(From the Department of Physiology, Middlesex Hospital.)

EVERYONE engaged in the practice of medicine is aware of the gulf separating the beliefs of the physician actively occupied in treating diseases and their symptoms, from the knowledge, precise but meagre, of the experimental pharmacologist. Whereas human hope and optimism have during many ages collected a series of remedies, often of unknown or varying composition, which may do good, the critical scientist, meticulously rejecting everything incapable of objective proof, has been unable to point to more than a very few substances which have definite organic actions, and has been obliged to condemn, as apparently inactive, large numbers of those agents which had previously been held to be of curative value.

In no branch of medicine is this contrast more apparent than in that which deals with disorders of the stomach; for medical writers, from the earliest times, have given enormous lists of remedies for such conditions, but it is with difficulty that the student can find, in any modern textbook of pharmacology, reference to drugs which can in any way modify gastric function. There has, indeed, until recent

\* A paper read before the Section of Therapeutics and Pharmacology, Royal Society of Medicine, October, 1922. The expenses incurred in connection with the researchs have been partially defrayed by a Government grant made through the Royal Society.



years been so little experimental work carried on in connexion with the stomach that the reticence of the pharmacologists is natural, and the growth of knowledge in physiology has made clear so many errors in the reasoning of earlier writers that the discrepancy between traditional belief and proven facts is to a large extent explained. In this paper it is my endeavour to collect some recent experimental work concerning substances which can be demonstrated to affect gastric function; they can, I think, be best classified into (1) those whose chief action is on gastric secretion, and (2) those whose action is rather on gastric motility.

#### SUBSTANCES AFFECTING GASTRIC SECRETION.

##### 1. Diminishing Gastric Secretion: Atropine.

For producing this effect we have an effective drug—namely, atropine. Very conflicting accounts have been published as to its gastric effects; thus Crohn<sup>1</sup> reports failure to produce any diminution in gastric acidity, whilst Bastedo<sup>2</sup> states that the atropine completely fails to affect hyperacidity and only checks acidity in hypersecretory cases in the period after the digestive stage is over. Other observers, notably Chiari,<sup>3</sup> Mathieu,<sup>4</sup> Schmidt,<sup>5</sup> and Bergmann,<sup>6</sup> speak highly of the inhibitory effects of this drug, and my own observations are in complete accord with this belief.

In Fig. 1 is seen the curve of free HCl obtained on fractional gastric analysis of a subject with a very free secretion of acid; the second curve shows the modification produced in this curve by the hypodermic injection of 1/100 grain of atropine sulphate. The effect is definite, and it must be observed that the curve being obtained from analysis of gastric contents, it could not be expected that the atropine would affect the HCl which had already been poured into the stomach before the drug was administered.

But it is by oral administration of atropine or belladonna that the most marked effects can be produced. If the empty stomach be washed with a very weak solution of atropine even for a few moments, the fluid being then withdrawn, a marked inhibition of secretion is produced. Fig. 2 illustrates such a case, the heavy line being the subject's normal curve of gastric HCl, the broken line the curve subsequent to such a washing.

This is an experiment which I have many times repeated; it has been confirmed by Roberts,<sup>7</sup> and it can be said that this local effect of atropine on the gastric mucosa is as definite as is the effect of the same drug when applied to the conjunctiva. It is probably because observers have chosen the hypodermic route that discordant results have been obtained.

Since performing these experiments it has become my custom in practice, when I desire to reduce gastric secretion, to administer atropine in small doses and in a large volume of water, the whole being given on an empty stomach.

##### 2. Increasing Gastric Secretion.

For this purpose pilocarpine has somewhat naturally been recommended, and with certain precautions an increase can

actually be obtained. By washing the stomach with weak solutions I have sometimes succeeded in raising the curve of gastric HCl, as in Fig. 3, but usually, even when very small doses are applied, a local wash is absorbed, for the subject soon observes profuse salivation, and this saliva, if swallowed, will have a diluting effect on the stomach contents sufficient to reduce the acidity below its normal figure.

##### 3. Substances Affecting the Gastric Secretion after its Evolution.

###### (a) Substances Neutralizing Acid Secretion.

In this group must be placed all the alkaline salts which have so long been used for the treatment of true or supposedly pathological excesses of gastric hydrochloric acid.

Following Pavlov, Bickel, Rosenblatt, and a score of others declared that such alkalis not only neutralized, but actually

arrested the secretion of HCl by the stomach. Du Mesnil, Bourget, von Leube, and others were, however, of opinion that the alkalis, and particularly sodium bicarbonate, were actual stimulants to gastric secretion, a belief which had the support of Claude Bernard<sup>8</sup> himself. The fractional method of gastric analysis has enabled us to procure more

definite evidence on this controversy than previously existed, and it has now been clearly shown that the effects of alkali administration are very much influenced by the time of administration.

In Fig. 4, for example, will be seen the normal curve of a healthy subject, and the curve from the same subject as influenced by giving sodium bicarbonate prior to a meal; it will be seen that during the period following the meal the alkali, rapidly neutralized, has led to an actual increase in the acid secretion.

In Fig. 5, on the other hand, is seen the effect of the administration of alkali at a later period; the acid already secreted is fully neutralized and a period of neutrality

lasting nearly an hour is followed by a rapid rise in the gastric acidity to its usual level. Magnesium hydroxide 12 grains and sodium citrate 5 grains were employed in this experiment.

In all such experiments it must be borne in mind that the gastric contents are not homogeneous, but the fractional method carefully

employed does give samples which offer a reasonable idea of the reaction of the total stomach content. In general, from the experiments of Crohn<sup>1</sup> and from my own observations, I feel that it may be said:

1. That sodium bicarbonate tends to excite the gastric mucosa to increased secretion, and that this effect more than counterbalances the neutralizing effect of the salt.
2. That other salts, particularly magnesium oxide, and bismuth oxy-carbonate, have far less stimulating effect, and the former, weight for weight, possesses greater neutralizing power.
3. That the rational method of employment of these salts in cases of hyperacidity is to administer them at such periods after meals as will lead to their neutralizing

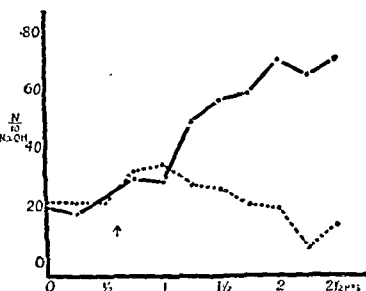


FIG. 1.—Showing effect on gastric secretion produced by hypodermic administration of atropine. Heavy line = subject's usual curve of HCl (fractional gastric analysis). Broken line = same after hypodermic injection of 1/100 grain atropine sulphate at point marked by arrow.

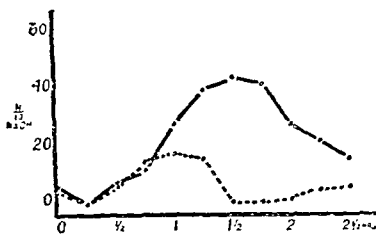


FIG. 2.—Showing effect on gastric secretion produced by washing the stomach with weak solution of atropine. Heavy line = subject's usual curve of HCl (fractional gastric analysis). Broken line = curve after preliminary wash with very weak solution of atropine.

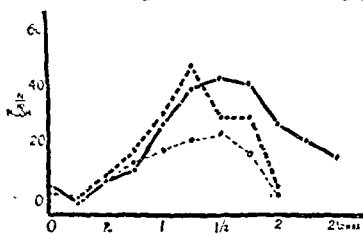


FIG. 3.—Showing effect on gastric secretion produced by washing the stomach with weak solution of pilocarpine. Heavy line = subject's usual curve of HCl (fractional gastric analysis). Broken line = curve after preliminary wash with weak solution of pilocarpine. Lowest line = more usual result, due to dilution of gastric content by saliva.

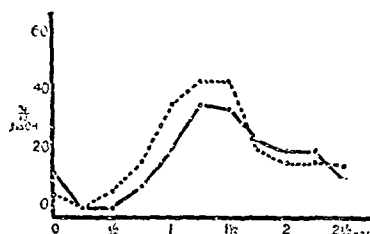


FIG. 4.—Showing increase in secretion of HCl produced by oral administration of sodium bicarbonate before meals. Heavy line = subject's normal curve. Broken line = curve when 120 grains of sodium bicarbonate had been given a quarter of an hour before meal.



effect coming into play without there being the possibility of producing any marked effect on the actual gastric cells.

4. That for producing inhibition of secretion reliance must be placed on drugs such as atropine and its derivatives.

5. That in gastric therapy sodium bicarbonate finds its greatest usefulness in those rather rare cases in which there is an excess of mucous secretion with low or absent hydrochloric acid.

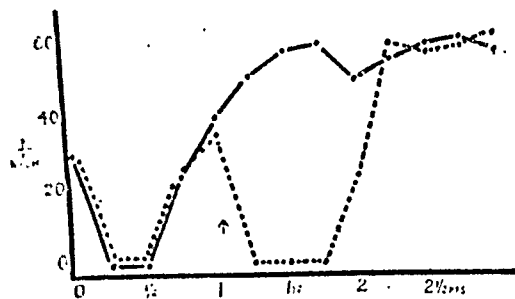


FIG. 5.—Showing neutralizing effect of magnesium oxide given after meal. The broken line shows complete neutralization, lasting three-quarters of an hour, produced by giving 12 g. of magnesium oxide.

#### (b) Substances Replacing Deficient Acid Secretion: Hydrochloric Acid.

In cases where the gastric secretion of HCl is deficient or absent it has long been customary to give HCl by mouth; the practice is justified both on logical grounds and by the results obtained, but it is of interest to consider what the mechanism may be by which the result is obtained. In the first place it must be recognized that in order to obtain a concentration of HCl anywhere near that seen in the normal subject very large amounts of the acid must be administered to patients with achlorhydria. Thus, if the volume of a meal be reckoned approximately to be about one pint, it is necessary to give nearly two drachms of the B.P. dilute acid in order to raise the concentration of that amount of water to 0.1 per cent. HCl, and as all normal meals contain protein, which readily absorbs HCl, a great deal more than that quantity must be given if a serious effort is being made to increase the acidity of the gastric contents.

These considerations apply to cases of achylia gastrica, for it is doubtful whether the administration of HCl to cases of mere hypochlorhydria has any effect at all. Boldyreff,<sup>9</sup> and more recently Rehfuss,<sup>10</sup> have shown that in normal subjects any artificial increase in the HCl of the stomach contents is followed by a compensatory regurgitation of alkali from the duodenum, which quickly restores the acidity to its normal level.

It is, then, difficult to believe that the small doses of HCl usually given in cases of achlorhydria can have any but a psychic effect; but given more rationally there can be no doubt that striking results are often obtained, particularly in cases of achylia with diarrhoea. An interesting case was recently reported<sup>11</sup> in which a doctor with severe chronic diarrhoea and anaemia was apparently cured by such means; in this case the physician administered as much as half a litre of 0.5 per cent. HCl to the patient daily, introducing the acid by means of a gastric tube. One is unable to accept this case as a proven one of Addison's anaemia—the blood picture was not conclusive; but that a striking cure of an almost desperate case was secured is beyond dispute. My experience with HCl in pernicious anaemia is less encouraging; I have often produced temporary improvement in the intestinal symptoms, but never obtained evidence of anything suggesting cure. In a recent case—a particularly severe one with little sign of regeneration—I gave as much as half a pint of 0.5 per cent. HCl daily to the patient without apparently arresting the disease in any way. It should be added that this case had no diarrhoea, and further that no trouble was experienced in giving the acid by mouth, it being sucked through a tube in order to protect the teeth.

When one comes to inquire critically as to the true effects of the HCl secreted by the stomach, one is obliged to say that in general its functions are not essential to the organism. Thus its hydrolytic effects on protein can be replaced by the action of enzymes in the small intestine; its effect on the closure of the pyloric sphincter, if definite, is not the only means of closing that valve; again, even if HCl does normally bring about pancreatic secretion on its entrance into the duodenum, it is certain that achlorhydric subjects have usually a perfectly normal secretion of pancreatic juice.

Two effects predominate, the first being that on pyloric closure. There is no doubt but that such cases of achylia gastrica, and especially those with pernicious anaemia, have rapidly emptying stomachs, and the addition of HCl slows down this process. The second great function of HCl would appear to be its antiseptic action, and here again its oral administration in cases of achylia is, I believe, fully justified. I have here a flask which contains fluid removed from the fasting stomach of a patient with duodenal ulcer; the concentration of HCl in this case was very great, being that of decinormal acid. You will observe that though this juice has now stood exposed to the air for six months it is quite odourless, and no microbial growth has occurred in it. Similar samples from achlorhydric cases are foul-smelling in the course of a day or two.

#### A NOTE ON THE BITTERS.

This section would be incomplete without reference to the bitters, a series of preparations which have long enjoyed high repute in gastric medication. Textbooks have at times attributed to the bitters an effect in stimulating gastric secretion; later they have been said merely to increase appetite, and still more recently it has been said that their effect is actually nil.

The most complete recent study is by Carlson<sup>12</sup>; he showed that in the fasting state the bitters have no effect upon the hunger contractions of the stomach, and further that no definite influence on gastric secretion could be demonstrated. His observations were largely obtained from a human subject in whom complete stenosis of the oesophagus had been relieved by the establishment of a permanent gastrostomy. This young man, who was otherwise in perfect health, made it his custom to chew up his food in the normal way, and then to inject it into his stomach by means of a syringe. Carlson made observations on the amount and quality of the juice which could readily be extracted from this subject's stomach, and in a series of experiments with bitters he measured the juice after the mouth had been washed out with gentian, quassia, columba, and other drugs. He was unable to obtain any evidence of an increase in gastric secretion, nor did this subject observe any increase in appetite.

Carlson made a further series of observations on patients with loss of appetite; it was found that though the patients often said that their appetite had been improved by these medicines, measurement of their food consumption showed an increase of little more than 2 oz. in the amount eaten at each meal.

Making observations on the gastric secretion by means of the modified Einhorn tube, I have never been able to secure any definite increase in secretion by giving the subjects bitters as a preliminary mouth-wash; in several cases there has been an apparent decrease in HCl secretion, an effect which I believe is due to the somewhat profuse salivation sometimes caused. As in the case of pilocarpine, such saliva, if swallowed, will tend to dilute the gastric contents, and so diminish acidity.

It must, then, be concluded that we have no evidence of any marked effect on gastric function produced by the bitters, but there should, I think, be added the rider that, in fatigued states, the alcohol in which the bitters of the commonly used *apéritifs* are dissolved often removes from the subject unpleasant fatigue symptoms which may be a serious factor in inhibiting appetite, and possibly digestion also. Put in cruder terms, it is probable that a whisky and soda, or the army rum ration, is as effective an aid to appetite and digestion as is the more conventional cocktail, or sherry and bitters, or the less attractive condurango or quassia water.

#### DRUGS AFFECTING GASTRIC MOTILITY.

##### 1. Atropine.

In the work to which I have already referred I found that in addition to its inhibitory action on secretion, there was evidence that atropine delayed gastric emptying. The effect was, however, not marked; whether by its hypodermic use or by its local application, the delay in emptying did not as a rule exceed a quarter of an hour with a test meal of the usual composition.

But it must be remembered that strong evidence exists showing that in cases of abnormal spasm of the gastric musculature the effect of atropine may be very marked. It has, indeed, become a matter of everyday radiographic practice to give large doses of this drug in order that the under-



lying cause of such spasms may be sought for. Thus it is no unusual thing for a patient with gastric ulcer to exhibit hour-glass constriction of the stomach on x-ray examination; if, however, he be re-examined after administration of full doses of atropine for three days, the constriction is seen to have disappeared, and the crater of an ulcer is often demonstrable. In cases of pylorospasm without discoverable organic lesion the patient's condition is sometimes remarkably improved by atropine treatment; one feels that such cases of disturbed gastric rhythm may to some degree be compared to those cases of auricular fibrillation with tachycardia which derive such striking benefit from the heart-block produced by the digitalis group.

### 2. *Pilocarpine.*

Fractional gastric analysis before and after lavage with pilocarpine demonstrates an increased rapidity of emptying after the use of this drug. The change is of a degree equivalent to the delay by atropine, and no really striking effect can be produced by doses which are within the limits of safety.

### 3. *Strychnine.*

This drug has long been given an important place in gastric therapeutics as a supposed means of increasing gastric motility.

An elaborate investigation recently published by an Italian observer, A. Berti,<sup>13</sup> enables us to examine the question to-day from a better informed standpoint.

In addition to a considerable number of experiments on cats, Berti carried out a large series of observations on human beings, more than fifty subjects being employed, some of them being healthy students, others patients with viscerophtosis. All were examined under strict experimental conditions. At 8 a.m. an euema was given to secure complete evacuation of the colon; at 9 a.m. a test meal consisting of milky gruel containing barium and bismuth salts was swallowed, and x-ray observations of the stomach were then made half-hourly until the organ was empty. Two such observations were made on each subject, one with the plain meal, the other after administration of strychnine, several weeks being allowed to intervene between the two observations.

The strychnine was given in varying doses, both by mouth and hypodermically, with results which may be summarized as follows:

#### *Nitrate of Strychnine given by Mouth.*

(a) *Half-milligram.*—At first peristaltic movements were increased both in rapidity and depth and there was a marked diminution in the size of the pyloric antrum, evacuation of the stomach began sooner, and continued more rapidly than normal. Observed an hour later the peristaltic movements had lost much of their intensity, but the net effect of the drug had been to accelerate gastric emptying by more than half an hour. (Fig. 6, A.)

(b) *One Milligram.*—Again there was marked initial increase in peristaltic movement, but after an hour the contraction of the pars pylorica was sufficient to delay emptying, and, the peristaltic waves having become very feeble, there was on the whole a delay in the complete emptying of the stomach.

(c) *Two Milligrams.*—With this dosage the initial gastric movements were precipitate, there being a marked hypertonus of the pyloric region, violent peristaltic waves coming along the greater curvature, two or three being simultaneously visible, the whole producing a marked increase in the volume evacuated from the stomach in the first half-hour. But after the first hour these movements became feeble and feeble, hypertonus persisted, and the net effect was that there was considerable delay in complete gastric emptying. (Fig. 6, B.)

(d) *Three and Four Milligrams.*—The above phenomena were further accentuated; at first violent peristaltic waves coursed along to the pyloric region, where they often became arrested, forming an appearance suggestive of a string of sausages, or even contracting this portion to such an extent that the cardiac end of the stomach alone was visible. And again there was a rapid tiring

of these waves so that final evacuation was retarded, the stomach a normal. (Figs. 6, C, and 7.) It is seen the final expression of emptying being followed by the production of an hour-glass appearance. The general hypertonus appeared to be so great as to prevent peristaltic movement, the final hour-glass appearance being due to an extreme persistent contraction similar to that often observed in cases of saddle-ulcer of the lesser curvature. (Fig. 6, D.)

#### *Hypodermic Administration.*

With this method of administration the above effects were produced with smaller doses, in general each hypodermic dose producing the effect of about double the quantity taken by mouth.

My own work with strychnine has been limited, but several observations which I have made tend to confirm these findings, and it must, I think, be concluded that to produce

any beneficial effect on gastric motility very small doses of strychnine must be employed. The effects of larger doses are of considerable interest in throwing light both on the physiology of the stomach and on the motor disturbances of chronic ulceration. They seem to demonstrate once more the essential difference which exists between the motor functions of the fundus and those

of the pyloric portion of the stomach, and they elucidate the phenomena by which spasmodic hour-glass constrictions are produced.

When speaking of the motor effects of atropine I drew attention to the power of this drug in controlling spasm; it would be an interesting experiment to see whether strychnine spasm of the stomach could be controlled in this way.

#### *A NOTE ON ADRENALINE.*

The use of this substance in gastric therapeutics is, as far as I am aware, confined to cases where it has been employed in the endeavour to check haemorrhage. It should, on theoretical grounds, be capable of affecting both gastric secretion and gastric motility if its action could be brought to bear on the sympathetic nerve fibres supplying the stomach.

In 1920 Venables and I<sup>14</sup> were able to demonstrate the very marked gastric effects which can be produced by unpleasant psychic influences—the suggestion of nausea or of fear being sufficient to delay gastric emptying for a considerable time and to inhibit the secretion of acid. It has been the custom of many physiologists to explain such effects as being the result of an increased outpouring of the internal secretion of the adrenals into the blood stream, with consequent effects on local tissues supplied with sympathetic fibres.

With such ideas in mind, I have carried out a series of experiments on normal men. On each subject two observations were made—in one the stomach was washed with water and a test meal given after, in the other the stomach was washed with adrenaline in various strengths and the test meal given as before. I have been able to obtain no evidence of any gastric effect of adrenaline by this means, though I have used strengths of as much as 1 in 5, and have used sufficient to ensure a washing of the greater part of the gastric mucosa.

In a second series of observations the substance was used hypodermically, water being used in the controls. Again I have failed to demonstrate any gastric effect, though various doses have been tried, and blood pressure and subjective effects have sometimes been demonstrable.

Whether the use of adrenaline in cases of haematemesis is wise is at present a matter of controversy; that it has any effect on gastric secretion or motility my present series of observations does not support.

It is probable that the future will produce much experi-

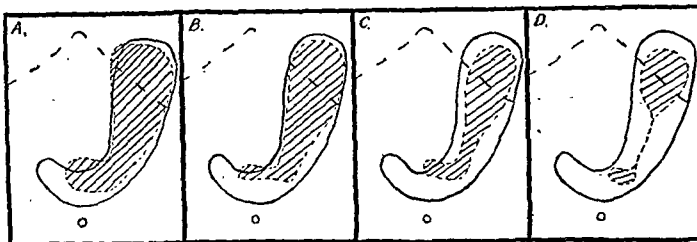


FIG. 6.—Showing the effect on gastric motility produced by strychnine. A, 0.5 milligram; B, 2 milligrams; C, 4 milligrams; D, 6 milligrams. (After Berti.)

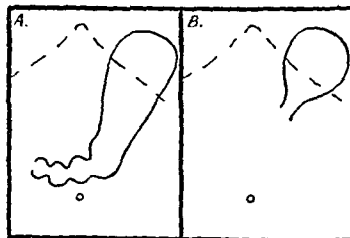


FIG. 7.—Showing effect produced by administration of strychnine. A, 3 milligrams; B, 4 milligrams. (After Berti.)



mental work which will enable us to employ a greater variety of drugs with definite effects on gastric function; it has been my endeavour in this paper to show that we already have a limited series of such substances, and I feel that the selection of those with certain properties must lead to a steady improvement in the treatment of the disease.

I would in conclusion express my thanks to my colleagues and the students of the Middlesex Hospital, in whose physiological department all my recent experiments have been conducted, and on whose generous help I have always been dependent.

## REFERENCES.

- <sup>1</sup> Crohn, R. B.: *Amer. Journ. Met. Sci.*, 1918, clv, 809. <sup>2</sup> Bastedo, W. A.: *Ibid.*, 1920, clv, 55. <sup>3</sup> Chlari: *Therap. Monats.*, 1915, xxix, 207. <sup>4</sup> Mathieu, A.: *Pathologie Gastro-intestinale*, Paris, 1914, iv, 74. <sup>5</sup> Schmidt, A.: *Journ. Amer. Med. Assoc.*, 1914, lxii, 432. <sup>6</sup> Bergmann, G. V.: *Munch. med. Woch.*, ix, 169, 1913. <sup>7</sup> Roberts, R. D.: *Guy's Hosp. Rep.*, lxxi, 446, 1921. <sup>8</sup> Bernard, C.: *Bull. Soc. Méd. des Hôp. Paris*, xi, 615, 1921. <sup>9</sup> Boldysch, W.: *Quart. Journ. Exp. Physiol.*, viii, 1, 1914. <sup>10</sup> Spencer, W. H., Meyer, G. P., Rehfuss, M. E., and Hawk, P. B.: *Amer. Journ. Physiol.*, xxxix, 403, 1916. <sup>11</sup> Blé, V.: *Lancet*, 1912, i, 631. <sup>12</sup> Carlson, A. J.: *The Control of Hunger in Health and Disease*, Chicago, 1916, 229. <sup>13</sup> Bert, A.: *Arch. Nat. de Biochim.*, lxx, 150, 1920. <sup>14</sup> Bennett, T. L., and Venables, J. F.: *BRITISH MEDICAL JOURNAL*, 1920, ii, 662.

## THE TREATMENT OF KALA-AZAR BY "BAYER 205."

BY

WARRINGTON YORKE, M.D.,

PROFESSOR OF PARASITOLOGY, SCHOOL OF TROPICAL MEDICINE,  
UNIVERSITY OF LIVERPOOL.

THE following case, in which the drug "Bayer 205" was used with success in the treatment of kala-azar, is worthy of record, more especially as the only case hitherto reported ended disastrously.

A Jaccar, aged 22, left Bengal, in apparently good health, at the end of July, 1922. He became ill on August 12th, and in September noticed a swelling in the abdomen. He was treated with quinine on board ship and also at Cape Town, but did not improve and steadily lost weight. On November 8th he was sent to the Liverpool School of Tropical Medicine as a case of malaria with enlarged liver and spleen. He was emaciated (weight 93 lb.), the liver and spleen were considerably enlarged, the tendings well below the umbilicus to within 1 inch of the brim of the pelvis; the temperature to 100°. Examination of the blood for malaria parasites was negative. A leucocyte count revealed marked leucopenia—2,000 leucocytes per cubic millimetre. On careful searching of a whole blood film a single *Leishmania* was found. The faeces were normal and negative, except for the presence of a few *Ascaris* eggs. On November 13th the weight was 94 lb. A few *Leishmania* were again found in the blood on November 15th, and a spleen puncture made the following day revealed the presence of the parasites in very large numbers. The blood gave a well marked formal-gel reaction, and the urine contained a faint trace of albumin.

It was decided to treat the patient with tartar emetic administered by the rectum, and from November 16th to 20th daily injections of 1 grain in half an ounce of water were given; from November 21st to 23rd the daily dose was increased to 2½ grains of tartar emetic. The temperature, which, except for a couple of rises to 100° F., had been normal until November 19th, commenced to rise on this date and continued to oscillate between 100° and 101° F.; the weight on November 23rd was 93 lb. No injections were given from November 24th to 26th, but on November 27th injections of 2½ grains were resumed and continued to December 20th. The temperature remained above normal, rising at times as high as 102° F., until December 2nd, when it again became normal and has since remained so. The weight, however, gradually decreased until December 17th, when it was only 88 lb. On December 11th the leucocyte count had increased to 5,000 per cubic millimetre, but on December 12th a few *Leishmania* were found in the peripheral blood.

From November 16th to December 20th the patient had received by the rectum a total of 105 grains of tartar emetic; the injections, which were only half an ounce in volume, were well retained, and that some antimony at least was absorbed there is no doubt, as the urine examined on November 21st, and on subsequent occasions, was found to contain very definite quantities of the drug. From December 21st to 27th no treatment was given. A spleen puncture made on the latter date revealed the presence of *Leishmania* in considerable numbers, but so far as one could judge, not in such great numbers as on the occasion of the previous puncture on November 16th. On December 23rd the weight was 91 lb., an increase of 3 lb. during the week.

Whilst, therefore, there is some evidence that the intra-rectal course of tartar emetic had been beneficial to the patient, and had possibly to some extent reduced the mass of the infection, and perhaps might have resulted in still further benefit had it been continued, it is obvious that it

had by no means cured the disease. Under its influence the temperature had returned to normal, the general condition of the patient had improved, the leucocyte count had risen, and the parasites in the spleen had apparently become less numerous; but, on the other hand, the weight had continued to fall, the spleen and liver had not decreased in size, and parasites had disappeared neither from the peripheral blood nor from the spleen.

It was then determined to ascertain the effect of "Bayer 205" on this disease. The formula of the drug, which is a preparation of the German chemical firm Messrs. Friedr. Bayer and Co. of Elberfeld, has not yet been disclosed. It has recently been used with great success in the treatment of trypanosomiasis of man and stock. It has also been tried in various other diseases of man and stock—namely, in malaria, recurrent fever, and general paralysis of man, and in the pyroplasmoses of domestic animals—but without any success.

So far as I am aware, the only occasion on which the drug has been used in kala-azar is the case recently recorded by Mollow (1922). In this case only a very small dose (0.2 gram) was given, but the result was disastrous, the patient quickly developing alarming symptoms—severe rigors, headache, haemorrhages from nose and gums, severe vomiting which later became haemorrhagic, and collapse; later the patient became violently delirious, and finally death occurred sixteen hours after the injection. In view of this record the treatment of the present case by "Bayer 205" was undertaken with some little trepidation.

On December 23rd an intravenous injection of 0.25 gram of "Bayer 205" was given. This injection, which in Mollow's case had rapidly proved fatal, produced not the slightest effect in the present case; the temperature remained normal, and the patient complained of no unusual sensation. On December 30th the weight had increased to 93 lb., and a second intravenous injection of 0.5 gram of "Bayer 205" was given; this likewise was attended by no ill effect—the temperature remained unchanged, the patient complained of nothing, and the urine remained normal. On January 2nd it was noticed that the spleen had shrunk perceptibly, and a third injection of 1 gram of the drug was then given, and again no reaction was observed. On the following day the weight was 96 lb. On January 5th it was noticed that the spleen had further decreased considerably in size; a final injection of 1 gram of the drug was given on this date, and, as on the previous occasion, was unattended by any rise of temperature or other sign of reaction. By January 8th the spleen had shrunk at least two inches, and was well above the umbilicus. On January 13th the weight was 101 lb., and the spleen had shrunk still further; a trace of albumin was found in the urine. On January 20th a spleen puncture was made, but no parasites were found; the weight was 103 lb. On January 28th another spleen puncture was made, and this was also negative; the spleen had decreased in size to such a degree that it now extended only about 1½ inches below the costal margin, and a somewhat comparable though less obvious decrease in size of the liver was also noted; the formal-gel reaction was still positive, the urine no longer contained albumin, and the weight had increased to 105 lb. The patient sailed for India apparently in excellent health on January 30th.

The history of this case suggests that "Bayer 205" has a very definite and rapid action in kala-azar. The injection of the drug was followed by no ill effect; the spleen rapidly decreased in size, as did also the liver, though to a less obvious extent; the general condition of the patient improved, he rapidly gained in weight, putting on 14 lb. within a month, and two spleen punctures, made respectively fifteen days and twenty-three days after the last injection of the drug, were both negative.

Possibly the violent and rapidly fatal symptoms observed in Mollow's case after the administration of so small a dose of the drug as 0.2 gram are to be explained, as the author suggests, on the ground that the patient was in an extremely poor condition at the time of the injection.

I am indebted to Messrs. Friedr. Bayer and Co. for kindly supplying me with a quantity of "Bayer 205" for trial.

## REFERENCE.

Mollow, W. (1922): *Arch. f. Schiffs- u. Trop. Hyg.*, Bd. 25, H. 2.

A ROMAN Catholic Congress on the question of population will be held at Tilburg or Breda on April 12th and 13th, when the medical aspects of the question will be discussed by Professor Frans Daels of Ghent and Dr. A. W. Aussen of Utrecht.

DR. SOPHIE A. NORDHOFF-JUNG of Washington has founded an annual prize of 500 dollars, to bear her name, for the best work on the etiology, prophylaxis, and treatment of cancer. The judges will consist of members of the Munich Medical Faculty. The first award will be made at the end of this year.



## THE TREATMENT OF ANKYLOSTOMIASIS WITH BETA-NAPHTHOL AND THYMOL.

BY

HARRY G. PHIPPEN, M.R.C.S.ENG., L.R.C.P.LOND.,  
MEDICAL OFFICER, ZANZIBAR.

THE following notes on the treatment for ankylostomiasis which I have carried out for the past eighteen months in Zanzibar and Pemba, where the disease is very prevalent and known as "safuri" and "baridi," may be worth recording.

If the patients are debilitated and anaemic, as the majority are, before commencing the treatment proper I give them thrice, daily a tonic containing ferri et ammon. citr., liquor arsenicalis, and liquor ammon. fort., which is continued in the intervals of treatment, and also afterwards until the patient is quite strong.

If possible I have them in hospital for preparation and treatment, or if they are unable to stay in hospital I get them to come in for one day weekly for treatment, which is as follows: In the evening I give a powder containing calomel 5 grains and sodium bicarbonate 10 grains. This is followed at 7 o'clock next morning with a draught of sodium sulphate 3 drachms, in water to 3 ounces. At 8 a.m. I give a mixture containing beta-naphthol 1/2 drachm, thymol 1/2 drachm, mucilage q.s., and water to 1 ounce. At 10 a.m. I repeat the beta-naphthol and thymol mixture, and keep the patients in bed until about 4 p.m., not allowing them any food or liquid whatever; after that time they are allowed fluid diet only for the remainder of the day. Those desiring to leave hospital may do so, to report again in seven days for treatment; but they send a specimen of their faeces on the day after leaving hospital for microscopical examination for the ova of ankylostoma. This is done after each treatment until free.

Of 171 cases treated I have been able to follow out the results of 116, the remainder not having reported for further treatment. The results are as follows: After one treatment, 34.5 per cent. were cured; after two treatments, 25 per cent.; after three, 17 per cent.; after four, 13 per cent.; after five, 6 per cent.; after six, 7 per cent.; after seven, 4 per cent.; after eight, 1 per cent. I have not given the fractions of the percentage, but have taken it to the nearest figure. In no case did I give more than eight treatments.

It is interesting to note that in some cases other well known treatments had been previously tried without effect, as the following cases will show:

*Case 1.*—After ten treatments of thymol ova were still present; the case was negative after three treatments with beta-naphthol and thymol.

*Case 2.*—After thirty-two thymol and three oil of eucalyptus treatments ova were still present; the case was negative after three treatments with beta-naphthol and thymol.

*Case 3.*—After three treatments with oil of chenopodium ova were still present; the case was negative after one beta-naphthol and thymol treatment.

*Case 4.*—After prolonged antimony treatment the case was still positive, but became negative after one treatment with beta-naphthol and thymol.

On examination of stools taken where the patient had no treatment after being (microscopically) free, the following results were found:

After one treatment the result of examination was negative after 7 months in one case, and after 4 months in another, but was positive after 5 months in a third.

After three treatments, two cases showed a negative result after 3 and 4 months respectively.

Of two cases which received four treatments, one was negative after 4 months, the other positive after 31 months.

Of three cases which received five treatments, the first was negative after 21 months, the second after 3 months; the third was still positive after 2 months.

One case which received seven treatments was negative after 2 months.

Two mental cases of melancholia and senile debility died after the second treatment, but showed no ill effects succeeding the treatment. In no single instance did I find the treatment affect the patients, and on the day following they were able to continue their work in the ordinary way.

It is difficult in such places as this to follow up one's patients as one would wish, and, moreover, the environment of the natives is one in which they are very likely to become reinfected after being free, because of their habits in

going about barefooted and the frequent sores on their feet owing to jiggers, etc. I think, however, that a result showing roughly 89 per cent. of cures in four treatments will justify a trial of the method.

I am indebted to Dr. B. Spearman, M.O.H. Zanzibar, and to his bacteriological department, for their examinations of the specimens of the above cases.

## A SPLINT FOR MEDIAN PARALYSIS.

BY

WALTER MERCER, F.R.C.S.EDIN.,  
EDINBURGH.

PHYSIOLOGICAL rest is a prime necessity in the recovery of a paralysed muscle. This is brought about by the mechanical approximation and retention of its two points of insertion so that its opponent is conversely elongated.

One of the difficulties hitherto in the treatment of a median lesion has been the proper retention of the median small thumb muscles in a properly relaxed position so that regeneration can take place with the greatest chance of success. A majority of cases do not show a satisfactory return to power of the opponens and short abductor of the thumb, as is evident in the number of cases of median lesions with a flat thenar eminence and inability to oppose the thumb to any of the other fingers. This is one of the most important movements in the useful hand, and is necessary for all the fine movements of the hand. Without it the utility of the hand is impaired by at least 30 per cent. As Mackenzie aptly puts it, the thumb represents one blade of a dissecting forceps.

The only method so far of in any way relaxing the short thumb muscles is by means of adhesive strapping applied round the thumb and the ulnar side of the hand. This has two important disadvantages. The skin of the hand, already without its beneficent trophic influence, rapidly becomes irritated and often becomes broken so that the adhesive plaster has to be removed. When wearing the plaster the patient's hand is entirely put out of action and he cannot use it for gripping, while the rubber solution in warm weather runs and becomes caught in anything he may attempt to grip. So irksome is it to the patient that it is usually worn only very intermittently.

The splint to be described has neither of the advantages that its only rival has, for the skin is amply protected by its chamois leather lining, while it in no way interferes with function, but rather aids it in making opposition of fingers and thumb possible.

The splint to be described has neither of the advantages that its only rival has, for the skin is amply protected by its chamois leather lining, while it in no way interferes with function, but rather aids it in making opposition of fingers and thumb possible.

### Description.

The essential part of the splint (called the "Opponeus splint") is a light duralumin plate which extends from the fifth metacarpal to the first and extends the length of the metacarpals except in the thumb, where it is rather longer, going just over the metacarpo-phalangeal joint. The plate is accurately moulded round a cast of the hand which has been made with the thumb in the opposed position in the same axis as the middle finger and with the first metacarpal abducted from the second as far as possible—that is, up towards the face of the patient when the forearm is supinated.



FIG. 1.—Showing the extreme flattening of the hand with the thumb "dash" with the palm and no power of apposition. Short thumb muscles are accordingly stretched.

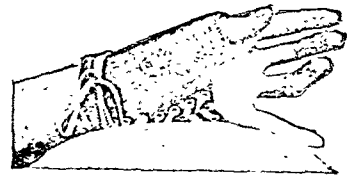


FIG. 2.—Splint applied. Thumb opposed and opponens and abductor relaxed. In useful position and splint not preventing use.

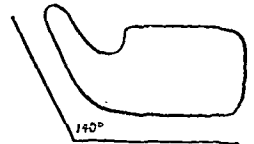


FIG. 3.—Drawing of the duralumin plate when flattened out. The thumb-piece is attached to the hand-piece at an angle of 150 degrees.



It is in this position that we get complete physiological rest for the small median muscles of the thumb.

The duralumin plate is then encased in leather and with a special pocket for the thumb part. The covering is ordinary glove leather and the lining is chamois. Along the ulnar border is the opening, which is closed after putting on by lacing through eyeholes. The photographs show the efficiency of the appliance. In Fig. 1 the thumb is flat and flush with the hand, giving little hope of any recovery taking place in the muscles. Fig. 2 shows the correct position of rest and also the fact that the hand can be easily used while the splint is worn. A rough drawing of the duralumin splint when flattened out is given to show the shape (Fig. 3).

I have to acknowledge the valuable assistance of Mr. Arch. Young, Forrest Road, Edinburgh, who makes the splint.

## THE RELATION OF SCIATICA TO THE SACRO-ILIAC JOINT.

BY

JOHN COWAN, M.B.,

MEDICAL OFFICER IN CHARGE, MASSAGE AND ELECTRICAL DEPARTMENT,  
MANCHESTER ROYAL INFIRMARY.

SCIATICA is commonly defined as pain in the distribution of the sciatic nerve. Both neuritis and neuralgia of the nerve are included under the term. The most frequent condition giving rise to the pain appears to be a much disputed point. Observers appear to be divided into two schools according to their opinion as to whether neuritis or neuralgia is the more common condition. Gowers' regards all cases with persistent tenderness of the nerve as neuritis, and consequently he considers neuralgia as rare. Oppenheim<sup>2</sup> considers that in most cases the signs of neuritis are absent. Barre and Duprez<sup>3</sup> consider that if pressure on the nerve causes acute pain the case is not one of neuralgia. As most cases have this pain on pressure, these two observers must consider neuritis as the common condition. Holmes,<sup>4</sup> however, points out that the nerve trunks are tender in facial neuralgia when no disease of the nerve can be found.

I have recently reviewed my notes on forty successive cases of sciatica which have been referred to me for treatment, and I have been struck by two facts: The first is the great frequency with which sacro-iliac joint pain is found associated with the nerve pain; I have found the joint pain present in most cases of under six months' duration, but that it tends to disappear, although the nerve pain persists. The second point is that pressure on the sacro-iliac joint, in nearly all cases, causes acute pain down the course of the nerve, which, with pressure on the joint, is much more severe than the pain caused by local pressure on the painful spots down the course of the nerve.

From the above facts I have formed the opinion that some morbid condition in or about the sacro-iliac joint (probably an arthritis or a peri-arthritis) is usually the cause of the pain in sciatica. Further, that the pain is usually neuralgic.

The connexion between the joint and the nerve in cases of sciatica has been noticed by other observers. Barre and Duprez<sup>3</sup> observed the connexion, and coined the term "sacro-iliac sciatica." They also noticed that in early cases there is frequently sacro-iliac joint pain which tends to disappear. Gowers<sup>1</sup> states: "The neuritis (sciatic) often arises by extension of adjacent rheumatic affections of the fibrous tissues, especially that form of 'lumbago' which involves the fibrous attachment of muscles to the back of the sacrum, less commonly in its ordinary site." Probably those cases of "lumbago" were painful sacro-iliac joints and the sciatica was neuralgic.

Gibson,<sup>5</sup> in an analysis of 1,000 cases, found lumbago in 132, but he considers that number too low, as many patients overlook the slight pain owing to the more severe sciatic pain. It is probable that those cases of lumbago were those with painful sacro-iliac joints, as most patients refer to any pain in the lower part of the back as "lumbago."

### Anatomy.

There is a close relation between the sacro-iliac joint and the sciatic nerve. The lumbosacral plexus is the source of origin of the nerve, and it also gives a nerve supply to the joint; a morbid condition of the joint, therefore, would cause referred pain down the nerve. The plexus lies immediately in front of the joint, being separated from it only by the pyri-

formis muscle. A peri-arthritis could, by extension, set up a neuritis of the nerve.

I do not consider that a local neuritis is common, otherwise one would expect most pain to be around the joint instead of down the nerve. On the other hand, in neuralgia the pain is frequently felt at some distance from its source of origin.

### Clinical.

Bending and walking cause severe pain in patients suffering from sciatica. Both these actions cause strain on the sacro-iliac joint. Assuming that there is an arthritis of the joint, an exacerbation of the pain would be expected.

Lasègue's sign (flexion of the hip with knee extended) is used to test for sciatica. This movement not only stretches the nerve, but also puts a strain on the joint; consequently it can be used to test for sciatica, whether due to neuritis or a morbid condition of the sacro-iliac joint.

In cases of sciatica the patient usually obtains almost immediate relief by lying down, especially in the semi-prone position with hip and knee slightly flexed. This is the position in which all strain is removed from the joint. One can readily understand how this position would give relief so quickly if the joint is the cause of the trouble, but it is not so easy to see how it would be obtained if the trouble is neuritis.

### Treatment.

Considering the sacro-iliac joint as the seat of disturbance in cases of sciatica, it has been my custom to apply treatment towards that part and not towards the course of the nerve. The results have been striking in most cases, and could not have been obtained if the joint had not been the cause of the pain.

In early cases, mainly when there is pain in the joint, I have found that radiant heat and massage to the joint is very effective. In older cases I have found that ionization with iodine ions and massage to the joint usually give relief. Anodal galvanism to the painful spots down the course of the nerve can be given conveniently with the ionization. In some cases it is necessary to break down adhesions in the joint; this can be done by Swedish remedial exercises and also by means of the movement which is adopted in nerve stretching.

Recently I have tried diathermy in all cases, and I have found that the results are better than with any other form of treatment, especially in old-standing cases.

### Analysis of Forty Successive Cases of Sciatica.

Of the 40 cases 14 were of less than six months' duration; in 2 of these the pain was situated in the nerve, and in 12 in joint and nerve. There were 26 cases of more than six months' duration; in 15 of these the pain was in the nerve, and in 9 in joint and nerve. There were 2 cases of hip disease.

Duration and Situation of Pain.	Effect of Pressure on Sacro-iliac Joint.			
	Pain in Nerve and Joint.	Pain in Nerve only.	Pain in Joint only.	No Pain.
Group 1: Under six months—in nerve and joint.	11	0	1	0
Group 2: Under six months—in nerve only.	2	0	0	0
Group 3: Over six months—in nerve and joint.	6	0	3	0
Group 4: Over six months—in nerve only.	11	2	1	1
Totals ... ..	30	2	5	1

Three cases showed definite signs of neuritis—namely, muscle wasting, sensory changes, etc. Two of these cases belonged to Group 3, and only gave pain in the joint alone on pressure on joint. One case belonged to Group 4, and gave no pain with pressure on the joint. The 6 cases which did not give any response down the nerve with pressure on the joint did not respond to treatment at all. Of the remaining cases trace was lost of 3, there was no improvement in 2, a cure was effected in 12, and in addition 15 were in different stages of improvement.

### Summary.

Out of 38 cases only 3 had neither signs nor symptoms in the sacro-iliac joint.

Thirty-two cases had a positive response down the nerve to pressure on the joint. Of these cases 21 were improved by treatment of the joint.



In 12 cases out of 14 of under six months' duration there was pain in the joint as well as down the course of the nerve.

In only 9 cases out of 24 over six months' duration was there pain in the joint.

## REFERENCES.

<sup>1</sup> Gowers: *Diseases of the Nervous System*. <sup>2</sup> Oppenheim: *Diseases of the Nervous System*. <sup>3</sup> Barre and Duprez: *Revue de médecine*, 1920. <sup>4</sup> Holmes: *Osler and McCrae's System of Medicine*. <sup>5</sup> Gibson: *Lancet*, 1895.

## PORTAL PYAEMIA SECONDARY TO UMBILICAL INFECTION.

BY

G. BRUCE WHITE, M.B., CH.M.S.D.,

HOUSE-PHYSICIAN, ST. GEORGE'S HOSPITAL, LONDON.

SUPPURATIVE phlebitis, as a result of spreading infection from the umbilicus, is rarely seen nowadays. The case here reported is of interest from several points of view, especially as there was no sign of inflammation of the umbilicus when the infant was admitted to hospital sixteen days after birth.

## History.

On November 30th, 1922, when I was house-physician to the Royal Waterloo Hospital, a female infant aged 16 days was admitted at 9 p.m. on account of swelling of the abdomen, first noted twelve hours previously. There had been no action of the bowels for two days, even after a dose of castor oil, and an enema given that morning returned clear. Some blood and mucus had been passed per rectum during the last eighteen hours. The mother stated that the child had had several "convulsions" within a few days of birth, but had appeared healthy until three days before admission, when the skin became yellow. There had been no vomiting.

The infant was fairly well nourished, it was rather deeply jaundiced, and the marked abdominal distension rendered palpation difficult. The umbilicus was perfectly healed, the temperature was subnormal, but the pulse rate was rapid (uncountable). The abdomen was hyper-resonant from distension with gas, the liver was distinctly enlarged, but no other swelling could be detected on palpation. The rectum, the anal canal, and the lower part of the rectum felt swollen and boggy, and the examining finger was streaked with blood.

Mr. Cairns Forsyth saw the child an hour after admission, and the likely causes of the condition were discussed. The onset of the jaundice was too late for physiological jaundice of the newborn, and rather early and abrupt for that due to atresia of the bile ducts. Infection spreading to the liver by the umbilical vein was regarded as improbable, since the umbilicus was soundly healed and the temperature was subnormal. No conclusion as to the origin of the jaundice was arrived at, but since the infant was obviously suffering from intestinal obstruction it was decided that exploratory laparotomy was justifiable.

## Operation.

When the child was under anaesthesia the abdomen was again palpated, but no swelling could be detected. The abdomen was opened by a small paracental incision, the right rectus being displaced outwards. Some clear fluid escaped as soon as the peritoneum was incised and coils of intensely congested small intestine protruded into the wound. No signs of mechanical obstruction of the bowel could be found. The small intestine was everywhere distended, but the large intestine was collapsed. The appendix was normal. The liver was enlarged, of a deep maroon colour, and its lower surface was smooth. The gall bladder appeared normal and bile could be seen in its interior through its translucent wall. As the intestinal obstruction was evidently due to paresis of the bowel, secondary to a grave toxæmia probably of hepatic origin, the abdomen was closed.

## Necropsy.

The child died twelve hours later, and at the autopsy the same general condition of the abdomen was observed, but on cutting through the ligamentum teres to remove the liver pus poured from the umbilical vein, which was widely distended (to three-fourths of an inch). On exposing the liver its upper surface showed a number of whitish areas which on section corresponded to small abscesses within the liver substance. The liver was enlarged and between the infected areas was intensely engorged with blood. There were a number of small haemorrhagic spots scattered throughout the lungs, but no evidence of abscess formation in any other viscera or in the brain could be detected. The lower part of the rectum and the anal canal were much congested and swollen and doubtless accounted for the passage of blood and mucus.

It is highly probable that infection took place in a clot in the umbilical vein and spread to the liver. That the navel should have healed soundly when the intra-abdominal part of the umbilical vein was full of pus is somewhat remarkable. The symptoms from which the child suffered are easily explained by the condition of the liver found at autopsy.

I am greatly indebted to Mr. Cairns Forsyth for permission to report the case.

## EXCISION OF THE FIBULA IN AMPUTATIONS BELOW THE KNEE-JOINT.

BY

CHARLES NOON, F.R.C.S.,

ASSISTANT SURGEON, NORFOLK AND NORWICH HOSPITAL.

SERVICEABLE stumps after amputations of the lower extremity must possess good movement, be painless, and be able to sustain the direct pressure of a part of the body weight upon the artificial limb. Without these attributes it is practically impossible to fit an absolutely satisfactory artificial limb. Much time and money are often wasted in making and attempting to fit artificial limb after artificial limb to unsatisfactory stumps, whereas correct operative treatment before fitting the artificial limb might have saved much time and trouble both to the artificial-limb maker and the patient.

During the last five or six years a great deal has been learned about amputations, amputation stumps, and the fitting of artificial limbs. Some amputations which were before the war considered "first class" have been of late unable to stand the tests to which they have been subjected. There are still probably many amputation cases in the country which require operative treatment before they can be fitted with really satisfactory artificial limbs. Many below-knee amputation stumps which are at present painful and unsound can be transformed into serviceable stumps by excision of the remaining part of the fibula and removal of that part of the external popliteal nerve which lies below the level of the knee-joint.

In a considerable number of cases of amputation below the knee-joint the presence of the fibula appears to cause considerable difficulty in fitting and wearing a satisfactory artificial limb. This difficulty is more especially noticeable in stumps where atrophy of the muscles covering the bones has been excessive. It is well known that structures that do not exert their normal function undergo atrophy, particularly muscles and bones, so that it is easy to explain the excessive atrophy often seen in amputation stumps. It is in these cases especially, where atrophy has been excessive and in which pressure on the prominent head of the fibula causes pain, that removal of the bone improves the condition and produces serviceable stumps.

Although the removal of the fibula has been practised by a few surgeons it does not appear to have received the consideration due to it, taking into account the benefit which is likely to be derived from its practice. The textbooks of surgery scarcely make any mention of the procedure. Muirhead Little in his recent book on *Amputations and Amputation Stumps* (Chapter II, p. 39) refers to the procedure as follows:

"When the amputation is below the knee excision of all that remains of the fibula will add to the amount of skin available, and sometimes enable the surgeon to cover the tibia satisfactorily without shortening it."

In *Orthopaedic Surgery of Injuries*, edited by Sir Robert Jones (vol. I, p. 478), there is the following reference to excision of the fibula in amputation below the knee:

"In these short stumps there is a tendency for the fibula to tilt away from the tibia and project. In these cases it is a good plan to remove the fibula. In this way a piece of bone is removed which stands pressure badly, and at the same time the bulk of the stump is diminished, so that a flap which would otherwise be too small may suffice."

A man with a serviceable stump, fitted with a satisfactory artificial limb below the knee, is often able to earn his living at a laborious occupation which may necessitate him standing for many hours a day and walking long distances in the performance of his duties. The following cases, taken from a large series of amputations which have come under my care during the last five or six years, will illustrate how excision of the fibula has been the means of obtaining serviceable and satisfactory stumps.

CASE I.—Gunshot Wound of Right Leg: Amputation below the Knee: Re-amputation below Knee with Excision of the Fibula. Result, Serviceable Stump.

J. A., a professional golfer, aged 23, was wounded in the right leg on March 16th, 1916, while serving in France; the leg was amputated, and he was transferred to England on April 6th.

Examination (May 1st, 1916).—General condition good. Local condition: The right leg has been amputated below the knee by the guillotine method. The extremity of the stump is covered by a healthy granulating area.



Re-amputation May 5th, 1916. The fibula was excised and flaps were dissected from the anterior and posterior aspects of the amputation stump; the anterior and posterior tibial nerves were cut short and the flaps brought together with a little tension as possible. Four months later the stump was soundly healed. He was fitted with an artificial limb in December, 1916, and the following May he was able to walk and stand with ease and comfort and could play a round of golf over a course of eighteen holes. In this case without removal of the fibula it would have been impossible to cover the ends of the stump with a satisfactory skin flap. Removal of the fibula enabled a satisfactory stump to be obtained below the knee-joint, and a limb could be fitted which gave the patient full use of the knee.

**CASE II.—Gunshot Wound of Right Leg: Amputation below the Knee with Excision of the Fibula. Result, Serviceable Stump.**

A. G., a fish curer, aged 25, was wounded in the right leg in May, 1916. The leg was amputated by the guillotine method, and he was transferred to England. The stump below the knee measured 2½ inches, and its extremity was covered by a layer of healthy granulation. Three months after the primary amputation a second amputation was done: the fibula was excised, the external and posterior popliteal nerve dissected out and cut as short as possible, and skin flaps were freed and brought over the stump with as little tension as possible. In six months' time the stump was completely healed and ready for fitting with an artificial limb. The patient was given his first limb in January, 1917, and his second limb in September, 1919. He has returned to his previous occupation as fish curer, and can walk two miles to his work, stand all day, and has no pain or discomfort in the stump.

**CASE III.—Gunshot Wound of Left Leg: Amputation below the Knee: Painful Stump, Unable to Bear an Artificial Limb: Re-amputation with Excision of Fibula. Recovery with a Serviceable Stump.**

H. M., aged 33, was first seen in March, 1922, when he gave the following account of himself. He joined the army in 1915, and served in France until he was wounded in the left leg in November, 1916. He passed through the various hospitals in France and was finally transferred to England and was admitted to a hospital in Sheffield, where his leg was amputated; the amputation was followed by two re-amputations to prepare the stump for the fitting of an artificial limb. He was fitted with his first artificial limb in March, 1917, and with his second in 1920. He states that neither limb has ever been satisfactory. He could at the best only wear the limb for three or four hours a day, and could only walk about half a mile with difficulty. At various times, owing to the pain and swelling, he has been compelled to leave off the artificial limb and take to crutches for two or three weeks at a time.

*Examination.*—A healthy-looking man; the left leg has been amputated and he walks with difficulty on an artificial limb. Local condition: The left leg has been amputated below the knee. The stump measures 4 inches in length. The soft tissues covering the stump are redundant. The fibula is prominent and pressure over the head of the bone causes much pain.

Removal of the remaining part of the fibula with the redundant soft tissues was advised. The operation was performed under chloroform on March 14th, 1922. A vertical incision was made over the outer aspect of the stump, the incision being a quarter of an inch behind the fibula and carried downwards over the lower end of the stump. The external popliteal nerve was exposed, dissected free, and after crushing as high as possible with strong lever compression clamps divided through the crushed area and allowed to retract. The fibula was then removed subperiosteally and the redundant tissues at the extremity of the flaps removed. A few bleeding points were ligatured, the skin sutured, and a firm gauze bandage applied. The stitches were removed on the seventh day, and the patient allowed to get up at the end of two weeks. In order to prevent the swelling of the stump which so often happens in cases of amputation and re-amputation a light plaster-of-Paris bandage was applied to the stump over a small dressing. It has been found that this procedure effectively prevents swelling of the stump, lessens pain, and allows the early application of an artificial limb.

This patient was fitted with an artificial limb early in May; he rapidly got used to the limb, and he has had no pain or difficulty in wearing it since the operation of removal of the fibula, and now, four months after the operation, he can wear the limb all day and walk four or five miles without difficulty or pain.

**CASE IV.—Gunshot Wound of Right Leg: Amputation below Knee: Painful Stump, Unable to Wear Artificial Limb: Re-amputation with Excision of the Fibula. Serviceable Stump.**

J. S., aged 42, was first seen in April, 1922, when he complained of a painful stump and inability to wear his artificial limb. He gave the following account of himself. The left leg was amputated below the knee in April, 1918; an attempt was made to fit him with an artificial limb in December, 1918, and he was supplied with a second limb in 1919. He has never been able to get about with any comfort and many attempts have been made to try and fit him with an artificial limb, without any permanent success. He has never been able to walk more than half a mile, and the stump was always painful.

*Examination.*—General condition good. Local condition: The right leg has been amputated below the knee; the stump measures 3½ inches. The tissues covering the extremity of the stump are adherent to the bones. The fibula is prominent, especially at its lower end, where it is thickened and projects and appears to be tilted away from the tibia. Pressure over the fibula is painful. Removal of the fibula was advised. The operation was done in May, 1922; the fibula was removed and the adherent scar freed

from the bone. The patient was refitted with an artificial limb in June, and since then he has had little or no pain, and has been able to wear an artificial limb with much more comfort.

**CASE V.—Gunshot Wound of Right Leg: Amputation below Knee: Painful Stump, Unable to Wear Artificial Limb with Comfort: Excision of Remaining Part of Fibula. Result, Serviceable Stump.**

F. E., aged 26, was wounded in the right leg in 1917. The leg was amputated below the knee, leaving a stump 3 inches in length. An artificial limb was fitted in 1918, and he was supplied with a second limb in 1919. He states that he has made good use of the artificial limbs, wearing them all day and walking with comfort until about six months ago, when he began to have pain in the stump and experienced difficulty in wearing the limb.

*Examination (July, 1922).*—Local condition: The right leg has been amputated below the knee-joint; the stump measures 3 inches in length. There is some wasting of the tissues covering the stump, but the tibia is well covered. The fibula, which has been divided on a higher level than the tibia, projects on the outer aspect of the stump; the scar is adherent to it, and there is a small bursa over the bone. Pressure over the fibula causes pain.

Excision of the remaining part of the fibula was advised. The operation was done on August 9th. The wound healed well and the artificial limb was fitted three weeks later. The patient now walks well and is free from pain.

**CASE VI.—Gunshot Wound of Left Leg: Amputation below the Knee: Painful Stump, Unable to Wear Artificial Limb: Excision of Remaining Part of Fibula. Result, Serviceable Stump.**

W. D., aged 26, was wounded in the left leg in 1917. The left leg was amputated below the knee. He complains that, although fitted with artificial limbs which he has been able to wear, he has never been really comfortable for any length of time. He considers that the artificial limbs with which he has been supplied fit well and that it is the pain in the stump which prevents him from wearing them.

*Examination.*—The left leg has been amputated below the knee. The stump measures 4 inches in length; the fibula is unduly prominent and the muscles covering the stump are wasted. The scar is adherent to the tibia.

Removal of the fibula with freeing of the adherent scar was advised. The operation was willingly agreed to and was performed on March 26th, 1922. The wound healed by first intention, and five weeks later the patient was fitted with an artificial limb. The stump was now painless, with a result that he could walk and stand with comfort.

Removal of the fibula adds so much to the efficiency of stumps after amputation below the knee that I think it is an advantage to perform it in all cases in which the stump will not measure more than four inches.

## BRONCHIECTASIS WITH UNUSUAL COMPLICATIONS.

BY

IVOR J. DAVIES, M.D., M.R.C.P. LOND.,

PHYSICIAN WITH CHARGE OF OUT-PATIENTS, KING EDWARD VII HOSPITAL, CARDIFF.

In the issue of the BRITISH MEDICAL JOURNAL for June 5th, 1920 (p. 767), I referred briefly to two instances of certain complications of bronchiectasis which apparently had not been recorded up to that time, and which can now be described in more detail, as the second case terminated recently.

### CASE I.

The first case was one of bronchiectasis in a man of 46, of pneumonic and pleurogenous origin, in which the necessary usual sinuses became infected in turn, requiring operation for empyema of the antra of Highmore. The fetid pus from the pulmonary cavities was often expelled in quantity and projected suddenly with much force into the mouth and nose, and infection of the accessory sinuses arose in this way. The patient frequently complained of severe frontal headache, which probably resulted from a chronic inflammatory state of the mucosa of the frontal sinuses. Severe attacks of haemoptysis occurred from time to time, and death took place after fourteen years from pneumonia and gangrene of the lung.

### CASE II.

The second case was that of a man, aged 59, of vigorous build and sound health up to the time of an attack of pneumonia and pleurisy seven years previously, after which time he suffered from a chronic cough, profuse purulent expectoration, and gradual failure of health. He was able to hold a responsible position, which necessitated much travelling, in connexion with a railway, to within a month or so of death. He had several attacks of pleurisy (and probably pneumonia) during the course of the disease, which he always attributed to a chill. He was thus susceptible to the septic complications of the disease from the nature of his vocation. The exact situation of the multiple lesions of the disease was indefinite, probably owing to the associated fibrosis and emphysema of the lungs and



to pleural adhesions over the lower lobes. The main lesions appeared to be in the upper and lower lobes of the right lung. The sputum was examined on several occasions for tubercle bacilli, with negative results. He had never suffered from syphilis, and the Wassermann reaction was negative. He indulged very moderately in alcoholic beverages and tobacco. The disease lasted for close on ten years, when death took place from bronchopneumonia.

The complications which chiefly deserve notice were a condition of chronic glossitis, and a persistent severe albuminuria from chronic nephritis, both of which were probably of toxic origin from chronic infection.

The patient was seen regularly over a period of three years up to the time of the termination. The general state of his health and nutrition was fairly well maintained, despite the secretion of a fair amount of purulent sputum daily and the presence of well marked albuminuria. There was a slight degree of cyanosis with but slight clubbing of the fingers. His tongue from the time when he was first seen was large, red, and unhealthy-looking, being deeply fissured. After coughing, and even on lightly wiping the tongue, the fissures were occupied and filled by expectorated purulent material. A condition of chronic glossitis undoubtedly arose from direct contact with the pus expelled from the lungs, and, despite careful cleansing with antiseptics, the tongue remained enlarged and chronically inflamed, with but slight inconvenience in the form of some local discomfort. There was no undue arteriosclerosis, no cardiac hypertrophy, and the systolic blood pressure never rose above 160 mm. The fundus oculi was normal. No oedema was observed.

The urine was examined on several occasions by Dr. R. L. Mackenzie Wallis of St. Bartholomew's Hospital, with the following results: The colour was pale. The quantity throughout was only a little in excess of normal and was well maintained up to the time of death. The reaction was acid. The specific gravity declined from 1020 in the earlier reports to 1014 a few weeks before death. The albuminuria was considerable and varied from 0.35 gram per cent. (Aufrecht) to 0.75 gram per cent. shortly before death. Globulin was usually present in too small a quantity for accurate estimation, but was approximately 0.65 gram per cent. on one occasion, and the ratio of albumin to globulin was about 8:1, which figures agree closely with those found in ordinary nephritis. Sugar, blood, acetone bodies, and urobilin were absent. Indican was present, from a trace in the earlier stages to a strongly positive reaction in the terminal stages of the disease. The total acidity was from 52.4 per cent. N/10 NaOH to 47.2 per cent. N/10 NaOH. Ammonia was present, from 0.05 gram per cent. to 0.03 per cent. The urea concentration test after the administration of 15 grams of urea gave a figure of 1.4 per cent. urea, whereas the urine a few weeks before death contained 2.1 per cent. urea, on a fairly liberal diet. The diastase content was usually 5 units, but was 10 units in 1921, six months before death. Microscopically, pus cells were present in fair number in the earlier stages, but became fewer in the later stages. Red blood cells were absent. Epithelial cells were usually present. The casts were generally of the granular and hyaline variety, and no epithelial and fatty casts were found at any time.

The low urea concentration and the low diastase figures in the earlier stages suggested renal inefficiency, but later examinations did not confirm this view, and shortly before death the urea percentage was normal. Blood urea tests were not performed. There was no evidence of uraemia or of its minor manifestations, so that the kidneys were probably not seriously affected despite the severe degree of albuminuria. The renal condition was probably one of toxic nephritis from septic absorption, for there was no evidence of lardaceous disease of any other organ, such as the liver, spleen, or intestines. The characters of the urine were more those of nephritis than of lardaceous disease, more especially in the absence of polyuria and of a urine of low specific gravity. No other septic complications occurred, and haemoptysis was absent throughout. No post-mortem examination was made.

I am indebted to Dr. Mackenzie Wallis for his reports, and to Dr. B. Barnard of Machen, Mon., for valuable information in the case of the second patient.

THE tenth congress of French-speaking anatomists and histologists will be held at Lyons from March 25th to 29th, under the presidency of M. Lesbire, professor at the Lyons Veterinary School.

THE second International Congress of Comparative Pathology will be held at Rome from October 7th to 14th. Medical men, veterinary surgeons, botanists, and biologists who propose to attend should communicate with the President of the Congress, Professor E. Perroncito, 40, Corso Valentino, Turin.

THE eighth French Medico-Legal Congress will be held in Paris from May 24th to 26th, under the presidency of Professor Pariset of Nancy. A discussion on international legislation to control the sale of cocaine will be introduced by Professor Courtols-Suffit. Injuries of the vertebral column by industrial accidents and the law of industrial diseases will also be discussed.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### A CASE OF ADDER BITE.

I HAVE written out these notes at the suggestion of Sir Thomas Oliver, whose paper on adder bite was published in the BRITISH MEDICAL JOURNAL of December 9th, 1922 (p. 1114).

A boy aged 6 was brought to my house at Helston, Cornwall, in the autumn of a year between 1906 and 1910. While picking blackberries he had been struck by an adder at a point half-way between the base of the nail and the last joint of the right index finger. He walked half a mile home, was dressed in his Sunday clothes, and walked again to the station about half a mile away; then came four miles by train, and walked another half-mile down to my house. During the latter part of the journey he was exceedingly sick. My waiting-room was full, and it was not till he had been in the house half an hour or so that I was told a child had fainted. When I saw him—some two and a half or three hours after the bite—he was lying on the floor, blanched and sweating profusely and practically pulseless. With an injection of strychnine, hot bottles, etc., he gradually revived, and after he had had a stiff glass of brandy and milk I was able to put him in my car and drive him home. Two tiny punctures were just visible at the time of my first examination. By the time he reached home the arm was swollen and he was semi-conscious, and moaning with pain. Hot fomentations from hand to shoulder seemed to relieve this somewhat. The semi-conscious condition lasted about two days.

The morning after the bite, when the late Dr. Edward Permerman of Redruth saw the child with me, the right arm was swollen to the size of his thigh, the skin deeply mottled with all the colours of the rainbow, the swelling and discoloration extending across the chest in front. Next day the swelling extended across the chest back and front, and down the arm to the elbow. There was some swelling of the root of the neck, but not enough to cause any difficulty in swallowing. The limitation of the discoloration was most marked. It did not extend to the neck, and was bounded below by a line drawn round the chest at the level of the lower part of the axilla.

From that time the child gradually improved, the swelling and colour dying down, and in about a fortnight he was quite restored to health.

Owing to the length of time that had elapsed before I saw him, local treatment was useless, but as a matter of precaution I incised the punctures and rubbed in some disinfectant. I think potassium permanganate. The child was so collapsed when I first saw him that I did not expect him to rally, and he must have had an exceedingly narrow escape from death.

The case impressed itself very deeply on my memory, and, though my original notes are lost, the above account is substantially correct as to the time when the various symptoms appeared.

In spite of the large number of adders to be found in Cornwall, this was the only case I heard of where a human being was bitten. I was told that when a lane was being cut through the gorse on a moor near Helston to make a 500-yards shooting range, 160 adders were killed. I asked a farmer once to get me some specimens, and he brought in five which he killed in a few minutes on the sunny side of a hedge one April morning. Personally, I had three very narrow escapes from being bitten when shooting and fishing, while my son has twice been struck on the foot. Hounds hunting at the end of the season, when the adders were sunning themselves after emerging from their winter torpor, were frequently bitten, but I believe always recovered. A terrier of mine was bitten under the jaw. The neck and face swelled up very much and the dog was unable to open its mouth for some days, and had to be fed on milk and brandy with a teaspoon. Except for deafness on the injured side, there was no after-effect. Years ago a nephew of mine, when in the *Britannia*, picked up an adder while ashore, and put it in his pocket and forgot it. Later on he put his hand in his pocket to see if the beast was still there, and was bitten on the ball of the thumb. I know no details, but remember that the boy was exceedingly ill and his people had to be sent for.

Northwich.

MARK R. TAYLOR.

#### TRIANGULAR FRONTAL HYPERAEMIA IN INFANTS.

CERTAIN infants and young children display a phenomenon which has not, I believe, hitherto been noted in medical literature. It consists of a triangular area of hyperaemia situated over the juncture of the two frontal bones and extending from the anterior fontanelle above to the nasion



below—the base of the triangle being above and the apex, which is usually blunted or irregular in outline, being below. The width of the triangle varies, but across its centre it averages from three-quarters to one inch. The area is usually punctate in appearance, and at birth is of a bright red colour, the latter gradually fading as time goes on, to become eventually just a faint blush before finally disappearing altogether at or about the end of the second year. Occasionally the macules—which are not elevated—are replaced by streaks, and the colour may be deep enough to border on purple, and so set up the impression in the minds of the parents that the child has a birth mark, but I have never known one of these patches to remain visible for very long after the end of the second year. In some instances the colour is faint at the outset and disappears entirely in a month or two.

This peculiarity has been noted in both sexes and in dark as well as in fair children; it is comparatively common—2 out of 41 children examined on one day, and 3 out of 66 examined on another day, showing it; and it appears to be of academic interest only, no practical difference having been noted between those children who show it and those who do not.

A. F. G. SPINKS,  
Maternity and Child Welfare Medical Officer,  
Newcastle-upon-Tyne.

## Reports of Societies.

### DISRUPTIVE PHENOMENA IN GUNSHOT INJURIES.

A MEETING of the Pathological Section of the Royal Society of Medicine was held on February 20th, with Professor LUDINGHAM, the President, in the chair, when Professor S. G. SHATTOCK read a paper on the disruptive phenomena in gunshot injuries and their physics.

Professor Shattock observed that whatever clinical peculiarities gunshot injuries presented, their proper pathological interest, as injuries only, was limited to the fact that the velocity of the missiles produced special effects known as explosive, or better as disruptive. As was well known, Professor Vernon Boys some years ago succeeded in photographing bullets soon after their leaving the rifle, and demonstrated the presence of a conical air wave accompanying the missile. At first the displacement of air seemed of some importance, but it was quite negligible, although under the name of "windage" much had once been attributed to it. Amongst other proofs the speaker had found that, on firing with a service rifle and pointed modern British bullet, at 20 feet, through screens of tissue paper tensely stretched on wooden frames, the aperture in the paper very little exceeded the diameter of the missile.

The late Sir Victor Horsley attributed the disruptive effect chiefly to the factor of the spin of the bullet. A close study of the casts made from the cavities produced in soft clay by firing directly and at close range into the latter did not, in the speaker's opinion, confirm the evidence of this; the ridges on such casts presented only slight indications of any obliquity, and not more than due to the open spiral of the rifling. The most conclusive proof of the absence of spin was furnished by the study of British bullets fired into sand: the apex showed fine scratches due to the sand, which were not spiral but longitudinal. The disruptive factor was thus reduced to that of forward velocity acting upon a mobile and practically incompressible medium, the lung alone being excepted, in which no such disruption took place owing to the compressibility and ready escape of its contained air. The lateral disruptive movement was imparted to the medium by the intense compression in front of the bullet, which compression was also exerted more directly sideways by the conical point simultaneously acting as a wedge. It was in the skull that the disruptive phenomenon was most marked. The effect was still often supposed to be hydrostatic, but it was a hydrodynamic one, as shown by experiments made upon objects provided with a free exit—upon tins empty and others filled with water freely open at the top: two clear circular holes were made in the first; in the others the back was split into large triangular everted flaps. The rate of the wave transmitted by the incompressible water was equal to that of the bullet, which, as soon as it impinged, was accom-

and filled with water; if the brain were left *in situ* in the inverted skull the same comminution took place.

It had been asserted, by Professor Stargardt in 1914, that the British rifle bullet was designed for expansion; that, on striking, the momentum carried the leaden core over the aluminium cone, and split the mantle. A study of bullets fired experimentally through calvariae of different thicknesses, the bullets being recovered in cotton waste behind, showed that on perforating dense bone the momentum on impact caused the lead to splay out or mushroom at the open base, and not at the junction of the lead and aluminium. In the first degree the mantle was evenly turned back over a projecting rim of the lead; in the later the mantle was split and turned out or recurved, like the sepals of a fuchsia, the splitting starting at times when scored by the rifling. On compressing bullets in a vice some of the lead was expressed from the open base, but no displacement occurred over the harder aluminium cone. The cupro-nickel mantle of the British bullet, however, was less resistant than the German, of steel. This the speaker was able to show by taking equal lengths of the two, placing a steel ball over the open end, and testing by increasing loads the pressure they would withstand. The British mantle began to yield or open out under a load of 180 lb.; the German, under a load of 390 lb.

#### The Fermentative Reactions of *B. diphtheriae*.

Dr. C. C. OKELL and Miss E. M. BAXTER read a paper on the fermentative reactions of *B. diphtheriae*. They had examined the fermentative reactions of the serological types of virulent *B. diphtheriae* described by Eagleton and Baxter, as well as their unclassified cultures. The most useful agents for differentiating the *B. diphtheriae* appeared to be glucose, saccharose, lactose, dextrin, glycerin, and litmus milk, and glucose and saccharose appeared to be the sugars of most practical use in differentiating the diphtherial from the diphtheroid groups. All the serological types of virulent *B. diphtheriae* so far examined had practically identical sugar reactions. Fermentative reactions at present available could not be used to distinguish between the various serological types or between virulent and avirulent forms.

#### The Inheritance of the Specific Iso-agglutinable Substances of the Red Blood Cells.

Dr. S. C. DYKE communicated the results of an investigation undertaken by Dr. C. H. Budge and himself in the maternity ward of St. Thomas's Hospital into the inheritance of the specific iso-agglutinable substances of the red blood cells. Ninety-seven unions were observed with 98 offspring. In no case was it found that the iso-agglutinable substances A or B of the red cells appeared in the offspring without having been previously present in the blood of the parents, this being in conformance with the hypothesis of von Dungern and Hirschfeld. Placental blood was used for ascertaining the blood group of the infants; it was found that in only 16 out of the 98 cases investigated was it possible to allot the placental blood to its group by means of the agglutinins of the serum; in the remaining 82 the agglutinins were either completely or partly absent. In determining the group of the offspring reliance was consequently placed upon the reaction of the red cells. It was pointed out that 32 of the 98 babies examined appeared to be of a different group from their mothers.

#### Carcinoma of the Skin in Rabbits.

Dr. J. A. MURRAY showed preparations of two squamous-celled carcinomata of the skin which he had produced in rabbits as the result of eight months' painting with an ethereal extract of tar. The latent period of the development of these tumours corresponded fairly closely with that seen in the mouse. Dr. Murray said that they were likely to prove of great value in the investigation of therapeutic measures, for the rabbit was a particularly favourable animal for that purpose.

#### PRIMARY UNION IN SUPRAPUBIC OPERATIONS.

A MEETING of the Urological Section of the Royal Society of Medicine was held on February 22nd, with Sir JOHN THOMPSON-WALKER in the chair. Mr. RALPH THOMPSON read a paper on the propriety of attempting primary union in cases of suprapubic operations on the bladder and prostate. Mr. Thompson first described in some detail thirty-one cases in which he had performed primary union after suprapubic my, and which he classified under the seven following



headings: simple adenoma of the prostate, malignant disease of the prostate, simple adenoma of the prostate with calculi, growths of the bladder, vesical calculi, retrograde catheterization, and exploration. In seven of the thirty-one operations there followed slight leakage. Mr. Thompson was careful to emphasize that by leakage he meant some damping of the dressing and not suppuration. In twenty cases there was no leakage. Four died, one certainly from causes unconnected with the operation. The average post-operative stay in hospital in cases of simple adenoma of the prostate with primary union was twenty-nine days. The average stay in Guy's Hospital of ten non-selected cases (apart from fistula), in which the wound was left open was 45½ days. He suggested that the closing of the wound caused a much shorter convalescence. In none of his cases was there a fistula persisting after ten days. The dressing bill was materially lessened. In malignant cases there was no post-operative spread of the growth to the skin. He thought that in certain cases primary union should not be attempted. Amongst these were some which involved a wound in the base of the bladder, excluding prostatectomy; cases of rough spiky calculi and a large prostate; cases where the pulse was not good enough to make reactionary haemorrhage improbable; and, naturally, cases with cystitis or uraemia.

Mr. Thompson then described the steps of his operation. He thought that, in spite of anatomical textbooks, the peritoneum appeared in front and at the sides of the distended bladder. He made a transverse incision through the bladder wall. Deep chloroform was the anaesthetic of choice. He invited discussion on the question of preliminary distension of the bladder and of the use of the retractor in badder surgery. He did not use one himself, preferring to bring the growth to him rather than to operate in the depths of a deep and dark pit. He believed it right to attempt primary union in suitable cases because of the comfort of the patient, the shorter convalescence, and the more normal anatomical result. Moreover, he thought that the surgeon probably took more care over the operation if he knew he was about to suture the viscus.

Mr. NICH approved the method, but emphasized the danger of haemorrhage in the closed organ. He believed the indwelling catheter led to epididymitis. The transverse incision gave more room, but every case should be treated on its own merits.

Mr. MONSON did not agree with the method in any case in which degenerative changes of the urinary tract were present. Degeneration meant an increased risk of sepsis.

Mr. JOCELYN SWAN preferred to drain. In his experience most cases sutured after prostatectomy had to be reopened for drainage. He did not think convalescence was much shortened. Usually by the old method the wound was healed in seventeen days and the patient was able to leave hospital seven days later. He used the retractor. He believed that often the growth could not be drawn up in the way Mr. Thompson had suggested.

Mr. MACALPINE liked to close the bladder in three layers, and suggested a method of maintaining the indwelling catheter in position by transfixion of penis, urethra, and catheter. He suggested the treatment of epididymitis by atropine.

Sir JOHN THOMSON-WALKER did not think primary suture made convalescence much shorter, but there was certainly less chance of hernia. Moreover, sepsis was often introduced along a drainage tube; and this was, in primary union, prevented. On the other hand, drainage was not so easy with a catheter as with a tube, and there might therefore be more danger of an ascending infection.

Mr. THOMSON briefly replied and the discussion closed.

Mr. R. OGIER WARD described a remarkable case of air embolism occurring in the course of urethroscopy. The patient was a male, aged 68. Consequent upon gonorrhoea forty years previously he suffered from a stricture in the urethral bulb. During aero-urethroscopy, in which slight bleeding occurred and in which rather more than usual air pressure was necessary, the patient suddenly became dyspnoeic, cyanosed, convulsed, and died. Cardiac massage failed to revive him. The heart could be felt to contain air, and froth issued from the right ventricle when it was later incised. Post mortem all the chambers of the heart contained frothy blood. Bubbles of gas were found in the aorta, common iliac arteries, the pulmonary vein, inferior vena cava, and other vessels. No froth was discovered in the pulmonary artery.

The case was exceedingly interesting, since it demonstrated the danger of aero-urethroscopy with laceration of the mucous membrane of the urethra and a tight stricture preventing the escape of air into the bladder. Mr. Ogier Ward suggested that the employment of oxygen might give a greater margin of safety.

Sir BERNARD H. SPILSBURY said that in his experience the danger of air embolism depended on the size of the vein and its proximity to the heart. Doubtless small air emboli were quite common. Perhaps the right auricular appendage might serve, in the recumbent position of the body, as a safe receptacle for such air during absorption.

### SUBACUTE INFECTIVE ENDOCARDITIS.

At a meeting of the Cardiff Medical Society held on February 13th, with the President, Professor E. J. MACLEAN, in the chair, Dr. IVOR J. DAVIES read a paper on subacute infective endocarditis based upon a report of eight cases. The term was applied to cases of old endocarditis with an added subacute infective process of streptococcal origin. There had been an apparent increase in the disease recently.

Clinical data were submitted in support of Poynton's view that no hard and fast line could be drawn between simple endocarditis and infective endocarditis. In four cases an arthritis of the larger joints was present, indistinguishable from that of subacute rheumatism. In one of these cases the post-mortem appearances resembled those of simple endocarditis, except that there was an extension of the morbid process to the wall of the left auricle. The clinical picture was described as briefly that of a case of valvular disease, usually aortic in the case of ex-service men, with certain general signs and symptoms added to those of the mechanical cardiac disability. These were grouped under two heads: (1) toxic; (2) embolic. The former included a low grade of irregular, remittent fever, which might be absent for days or weeks. A chart was shown in which the temperature was normal for a period of five weeks except for two elevations to 101° and 100°, separated by an interval of eighteen days, after which the typical low irregular fever was resumed. The onset of pallor, particularly in a case of aortic regurgitation, was emphasized as an early indication of a general infective process, which was also disclosed through loss of flesh and strength. Enlargement of the spleen was perhaps the most valuable early sign indicating that a general infective process had been added to the old condition of valvular disease. Clubbing of the fingers, too, occurred early in the disease. The embolic signs shown by the eight cases included petechiae, a papular and nodular eruption, mycotic aneurysms of the femoral and brachial arteries, intermittent albuminuria, and haematuria. The duration varied from three months to two years, and was on an average twelve months. The extension of the morbid process from the mitral to the aortic valve was observed in one instance. The mitral valve was badly affected on admission, the aortic valve being apparently normal, as the sound of its closure was clear and sharp. The second sound then became indistinct, later a bruit or squeak appeared, and afterwards a musical diastolic murmur was audible up to the time of death. Necropsy showed one cusp of the aortic valve badly affected, being almost entirely destroyed and replaced by vegetations, one of which was sessile and, during life, gave rise to the musical murmur. The inner end of the third left space was described as the optimum point in auscultation for evidence of early aortic incompetence, as was to be expected from the regional anatomy of the valve. Vaccine and serum therapy, as in other forms of septicaemia, appeared to be the most promising line of treatment. Death occurred from heart failure, except in two cases in which acute uraemia was the final event. In diagnosis the general disturbance, clubbing of the fingers, and enlargement of the spleen were the important early signs of the disease. A daily examination of the urine, particularly of the deposit, for blood cells would sooner or later show that embolism has occurred. Blood culture might show the streptococcus, and if negative from venipuncture, then a little blood could be withdrawn from the spleen for cultural examination.

Dr. R. PRICHARD stated that in his experience of subacute infective endocarditis there had been, in most of his cases, an antecedent history of rheumatism. He was of opinion that an infection of intestinal origin played an important part in the subsequent development of the condition; he had



frequently noted the presence of tympanitis and general atony of the bowel, and he had succeeded in obtaining temporary improvement of the cardiac state following the administration of intestinal antiseptics. In one case the etiological factor of pyorrhoea alveolaris was strikingly demonstrated; removal of the teeth was followed by relief of the valvular symptoms, and the man's condition so improved that at the end of six months he was sent back fit for light duty.

The PRESIDENT asked if the condition occurred more frequently in one sex than the other, and if auricular fibrillation had been present in any of the cases.

Dr. H. A. HAIG's contribution to the discussion was based on the post-mortem examination of 30 cases seen at a pensions hospital during 1920-21. The majority showed a streptococcal infection of either the aortic valve or the aortic and mitral valves together. In a few cases *S. haemolyticus* had been proved by blood culture to be present during life. Regarding antecedent conditions in the heart valves, especially the aortic, the question of a specific history was raised. Throughout the series of cases the kidneys were the seat of lesions referable, he considered, to the slowly acting toxæmia directly connected with the infective process. The lesions took the form of (a) a diffuse interstitial fibrosis, associated with hyaline change in partially and completely fibrosed glomeruli, and thickening of the intima and sometimes of the media of the smaller arteries; (b) collections of lymphocytes both immediately under the capsule and in the cortex; (c) at times an advanced degeneration of the epithelium lining the convoluted tubules; sometimes dilatation of the tubules had occurred with desquamation of the lining epithelium. (d) Small subcapsular haemorrhages, and an engorgement of the renal vessels generally; the subcapsular haemorrhages appeared to be of the nature of small multiple infarctions. These changes did not occur together in the same kidney, sometimes one type, sometimes another, being predominant. There was a possibility, he agreed, that some of the changes, especially in the glomeruli, were due to an antecedent attack of trench fever. On the other hand, the evidence of recent mischief pointed directly to the involvement of the kidneys in the general process. He mentioned the further possibility of war wounds having acted as portals of entry for the systemic streptococcal invasion.

Dr. HENRY EVANS related a case of subacute infective endocarditis where he had been able, also, to trace the secondary involvement of the aortic valve from the mitral. He quoted Cotton to the effect that the earliest manifestations of petechiae were to be noted under the finger-nails and in the subpalpebral conjunctiva.

Dr. IVON DAVIES, in reply, agreed with Dr. Prichard in regard to the value of treating any coexisting alimentary intoxication. He assured the President that the condition was equally common in both sexes, and that auricular fibrillation was an infrequent event. He disagreed with Dr. Haig regarding the renal lesions, being of opinion that diffuse nephritis occurred in acute infective endocarditis rather than in the subacute variety. Further, he stated that there was no reason for believing that war wounds played any prominent part in the etiology of the latter process, and that although in one of his series of cases the onset of the condition was said to date from a fall, accompanied by superficial abrasions, he was not prepared to admit any etiological significance therefrom.

#### Undile Tears.

Mr. J. W. TUDOR THOMAS gave a demonstration, illustrated by cultures, of the bactericidal action of tears. Basing his work on the technique of Fleming, with various modifications, he showed that both fresh and boiled tears killed young cultures of *Sarcina flava* in dilutions of 1 in 1,000. He further showed that heating tears to dryness and redissolving the residue had no effect on their bactericidal properties. Undiluted tears killed *Staphylococcus albus* and inhibited its growth in dilutions of 1 in 40. No bactericidal action was noted in the case of *Bacillus coli*, *Staphylococcus aureus*, *Streptococcus pyogenes*, and *Bacillus pyocyaneus*. It was suggested that in estimating the sterility or otherwise of the conjunctiva the material obtained should be diluted appropriately in order to neutralize its bactericidal action; the latter would appear to be either organic in nature or closely bound up with the albumin molecule in the tears. It was improbable that this was in the nature of an enzyme, since its action remained after boiling.

#### Lipoma.

Dr. H. SHEASBY showed a boy, 8½ years old, with a large swelling in the right thigh, which first appeared at the age of 2½ years on the outer surface of the middle third of the thigh, and had since got gradually bigger. There was slight pain when the leg was fully flexed. For three months it had been treated as a tuberculous lesion, but aspiration was negative and a skigram showed no implication of the femur. The general opinion was that the condition was due to a lipoma underlying the quadriceps extensor.

### DIPHTHERIA CARRIERS AMONG CHILDREN OF SCHOOL AGE.

At a meeting of the Medical Officers of Schools Association on February 23rd, Dr. J. GRAHAM FORBES gave an account of investigations on diphtheria carriers among London school children. He mentioned that the prevalence of diphtheria in London during the years 1920-22 had surpassed all previous records, and for any approach to it, it was necessary to go back to the eight-year period 1893-1901. The number of cases began to rise in the second half of 1919, reached its height in the last quarter of 1921, and diminished but little in 1922. The figures for the three years were as follows:

Year.	Total Cases Notified.	Cases of Children of School Age (5 to 15 years).
1920	13,780	6,499
1921	16,319	9,089
1922	15,287	7,352

During each of these years some two hundred or three hundred special visits of inspection were paid to the schools on account of diphtheria alone, and the bacteriological examinations of the throat and nose of children swabbed in the course of these special school visits gave the following results:

Year.	No. of Examinations.	Negative.	Positive.	Suspicious.
1920	5,811	4,740	721	350
1921	6,606	5,541	656	409
1922	5,401	4,543	488	370

The epidemic appeared to have radiated from a focus in the contiguous areas of Stoke Newington, Hackney, and Islington, and in 1922 to have been concentrated in the south-western districts (Battersea and Wandsworth). From April, 1921, the virulence test, as to the value of which the speaker was most emphatic, was applied, and in 553 examinations of carriers (387 children) in which the *B. diphtherias* was isolated, the cultures proved to be virulent in 343 (260 children) and avirulent in 210 (127 children). The proportion of the virulent carriers to the total number in the case of these school children was, therefore, considerably above the proportion (38.8 per cent.) given in Dr. A. J. Eagleton's series, published in the BRITISH MEDICAL JOURNAL of January 28th, 1922 (p. 139). Of these 387 carriers 243 gave evidence of throat and nose defects, and of those giving such evidence 168 were found to be in the virulent category and 75 in the avirulent. The cases with a previous history of diphtheria numbered 16, and among these the strain was virulent in 12 and avirulent in 4. There was a history of sore throats and colds in 53 cases, of which 35 were virulent and 18 avirulent. Home contacts of diphtheria cases numbered 35 (virulent 25, avirulent 10), and desk contacts at school 19 (virulent 14, avirulent 5). Dr. Forbes regarded the virulence test as extremely useful because under proper precautions those reported avirulent could be readmitted to school, whereas in the absence of such a test they might have remained excluded for months. Some cases had been carrying for as long as three years, and on being found avirulent were readmitted to school, without harmful result. So far as could be ascertained, the organism remained true to its type of virulence or avirulence. It was recognized, however, that virulent and avirulent strains might coexist, and this had, in fact, been found in two cases among the 387 children. Very rarely the strains might alternate, but the risk of the virulent supervening upon the avirulent was probably not greater than the risk of the ordinary person becoming a diphtheria carrier.



The relation of the virulent and avirulent organisms awaited further investigation. It was difficult to dogmatize, and it was difficult also to draw any hard and fast line at which the exclusion of virulent carriers became justifiable or necessary. When diphtheria became prevalent certainly the virulent carrier must become an object of grave suspicion, if not of danger. Exclusion would seem also to be justifiable under certain conditions pertaining to the individual, such as the presence of large numbers of organisms in the culture, or a defective condition of throat and nose. Otherwise, in the case of mild carriers, the middle course of non-exclusion but constant supervision seemed to be possible. Unfortunately, measures of control which were adequate to the schools could not be extended outside, and the carrier might still be a source of danger in kinemas or Sunday schools. Fresh legislation might be desirable on this point, to be enforced at times of diphtheria prevalence. The treatment of the diphtheria carrier in the school had been met partly by the use of the nasal douche or suitable gargles, and partly by the provision of treatment for enlarged tonsils and adenoids. In chronic carriers the removal of tonsils and adenoids was usually effective, but there were exceptions, and he mentioned one case of a child who was a carrier for several years after enucleation of the tonsils. The evidence forthcoming, not only from the bulk of investigations into the school incidence of diphtheria of the recent two or three years, but also from special inquiry on the point in time past, went to show that the part played by the school in the spread of the disease was of quite secondary importance compared with the influence of home and out-of-school sources, which, being more beyond immediate control and supervision, were probably far more responsible for the dissemination of infection. He referred, in conclusion, to prophylaxis and the possibility of future immunization by the adoption of the Schick test on a large scale.

### TREATMENT OF FULL-TERM ECTOPIC GESTATION.

A MEETING of the Midland Obstetrical and Gynaecological Society was held at the Royal Infirmary, Leicester, on February 13th, with the President, Dr. PURSTOW, in the chair, when Mr. Cecil MARRIOTT opened a discussion on the treatment of full-term ectopic gestation.

Mr. Marriott referred to a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine in 1919, when the late Mr. Gordon Ley presented notes of 100 collected cases, from which he showed that the maternal mortality rate was high in cases of early operation, whilst there was risk of infection of the sac if the case was left for long after full term. The mortality amongst babies delivered at the time of false labour was low, and many of these babies (50 per cent.) presented various degrees of deformity. Treatment resolved itself into early or late operation. In early operation the maternal risk from haemorrhage was very great. Although in suitable cases, after primary ligation of all big vessels, the placenta and sac might be removed without severe bleeding, it was probably wiser to marsupialize the sac and leave the placenta to natural absorption. In cases where no effort was made to save the child, operation should be delayed for at least three months, by which time bleeding would be greatly lessened and the operative risks small. Mr. Marriott reported the details of a case operated on by him successfully on those lines, three months after spurious labour.

Mr. FURNEAUX JORDAN referred to one of the earliest cases successfully operated on at term by the late Professor Taylor. Mr. Jordan also reported two cases: One was operated on two years after false labour, and the sac contained only the foetal bones and some dark brown fluid; the other was seen two months after term, and presented no operative difficulties. Dr. H. T. Hicks mentioned a recent case in which he delivered a living but deformed child. Both walls of the uterus and the placenta were encountered and incised before the sac was opened. There was brisk haemorrhage, dealt with by marsupialization of the sac and plugging. In view of the formidable nature of the operation at term and the comparatively small risks of infection, Dr. Hicks strongly favoured the late operation.

Dr. T. C. CLARE mentioned a case operated on two weeks after labour, in which severe haemorrhage was encountered, although no attempt was made to separate the sac and the

placenta. Dr. C. D. LOCHRANE reported a case operated on eighteen months after labour; the placental attachment was in the Fallopian tube, and removal presented no difficulties.

#### Cases and Specimens.

Dr. H. T. Hicks showed microphotographs from a case of endometrioma of the ovary. Both ovaries on removal at operation were found to contain multiple "larry" cysts. The microphotographs showed numerous glandular spaces in the ovarian stroma lined with cylindrical epithelium. Dr. Hicks considered that the most likely explanation of these cysts was endometrial metastasis. Dr. T. C. CLARE reported three cases of adeno-myoma of the recto-vaginal septum. Dr. C. D. LOCHRANE reported (1) a case of adeno-myoma of the recto-vaginal septum showing decidual reaction during normal pregnancy; and (2) a case of adeno-myoma of the uterus in pregnancy showing decidual reaction. The cases were illustrated by lantern slides, microphotographs, and microscopic sections. Dr. Lochrane also showed a specimen of epithelioma of the vulva following leukoplakia. The case was of interest, as when first seen there was no evidence of malignant change, but when seen again after a course of x-ray treatment there was an obvious epithelioma with some glandular involvement.

### SCIATICA.

At a meeting of the Buxton Medical Research Society held at the Devonshire Hospital on February 5th Dr. J. B. BURT, in opening a discussion on sciatica, pointed out that sciatica was a symptom and not a disease. It was perhaps the most interesting condition treated at the Devonshire Hospital. He preferred dividing sciatica into trunk sciatica and root sciatica. Primary sciatica was exceedingly rare, and neuritis and neuralgia were merely stages of one condition. The commonest cause of sciatica was fibrositis of the glutei and the fascia covering this region. This was the easiest group to diagnose and to treat. On the other hand, sciatica due to fibrositis of the pyriformis was exceedingly difficult to diagnose and to treat. It might give rise to trunk or root sciatica. Pain on coughing or sneezing was suggestive of pyriformis fibrositis. In Sweden particular attention had been devoted to this cause. Gonorrhoeal fibrositis of the gluteal region must not be forgotten as a fairly common cause of sciatica. Arthritis of the hip-joint accounted for something like 10 per cent. of the cases of sciatica. Sacro-iliac disease was not so common a cause of sciatica as it seemed at first sight. Acute tenderness along the ridge of the sacro-iliac joint occurred in many cases of sciatica where there was no disease of the joint. Inflammation of the bursae around the hip-joint might give rise to very severe sciatica.

Root-sciatica was distinguishable from trunk sciatica by (a) broad bands of pain extending from the gluteal region along the back and side of the thigh, (b) tenderness of the psoas muscle, (c) wasting of the leg muscles and glutei, and (d) sometimes by the attitude of the patient in walking. Syphilis was an important cause of this condition; it generally gave rise to bilateral sciatica.

Dr. Burt, in emphasizing the importance of diagnosing adhesions, said that the following three points were suggestive of adhesions: (1) a long-continued dull pain extending over a period of months; (2) the patient is ailing and unrelieved by rest; (3) the patient gets out of bed; (4) the patient sits with his back against the wall with his legs extended straight in front of him. With a sciatic adhesion it was practically impossible to touch the floor with the back of the knee. If the results obtained by other physicians corresponded with his, this test should prove of great clinical value.

### X RAYS IN GYNAECOLOGY.

At a meeting of the London Association of the Medical Women's Federation held at the Elizabeth Garrett Anderson Hospital on February 12th, with Mrs. FLEMING, M.D., Vice-President, in the chair, a paper was read by the President, Miss LUCIA MARTINDALE, M.D., entitled "Modern technique in the x-ray treatment of gynaecological conditions."

Dr. Martindale divided her subject-matter into two parts: First, the treatment of cases by the Freiburg method between 1914 and 1920. During this period Dr. Martindale had treated a large number of cases of uterine fibroids with intensive x-ray



At a meeting of the West Kent Medico-Chirurgical Society, held at the Miller General Hospital, Greenwich, on February 9th, with Dr. W. H. PAYNE in the chair, Dr. JOHN PARKINSON, physician in charge of the Cardiological department, London Hospital, delivered an address on palpitation. He defined palpitation as consciousness of the heart beat—a subjective and sensory phenomenon, to be distinguished from tachycardia, for it was possible to have palpitation with a normal rate. The carditis was caused by afferent impulses through the vagus to the brain, and also by the heart beating against a too sensitive chest wall, and was uncommon in children or old people, but common at puberty and the menopause. The patient should be questioned about the duration and exciting cause. Palpitation at bedtime was frequently due to extra-systoles. The site might be the heart, neck, ears, and aorta. The attacks were often circumscribed. Dyspeptics were subject to palpitation; fear and emotional states (such as that due to speech making) were causes. Palpitation was prone to occur in highly strung, easily excited persons, and in those too concerned about themselves; also in thyroid cases. A loud first sound was frequent, but not a sign of disease. The apex beat was diffuse. Alcohol, tea, tobacco, worry, grief, and exercise were causes of tachycardia, which should be treated by bromides—not brandy. Persistent simple tachycardia was caused by hyperthyroidism, also by tuberculosis of the lungs and anaemia. In paroxysmal tachycardia the rate was from 140 to 240, and irregularity was always present in auricular fibrillation.



## Reviews.

### THE AUTONOMIC NERVOUS SYSTEM IN DISEASE.

*The Sympathetic Nervous System in Disease*,<sup>1</sup> by Dr. LANGDON BROWN, now in its second edition, is based on the Croonian lectures at the Royal College of Physicians of London for 1918, with the almost identical title, "The rôle of the sympathetic nervous system in disease"; it is a clear and attractively written account of a subject not only inherently difficult, but prone to be obscured by unproved hypotheses. With the wise moderation of a general physician, Dr. Langdon Brown has so happily combined the results of wide experience, reading, and a physiologist's education that it is not surprising that a second edition has become necessary. In the first chapter, dealing with the plan of the autonomic nervous system, a well deserved tribute is paid to the pioneer work of the author's teachers, Professor J. N. Langley and the late Dr. W. H. Gaskell; our knowledge of the sympathetic nervous system in the pre-Gaskell era is compared to that of the circulation before Harvey. His consideration of the pharmacological action of certain drugs on the autonomic nervous system is useful not only in facilitating comprehension of its make-up, but in estimating the value of the conception of vagotonia and sympathicotonia due to Eppinger and Hess; in a later chapter devoted to vagotonia critical examination brings out the grave difficulties in accepting this ingenious hypothesis in its entirety, and shows that the case has been much overstated, though it contains a germ of underlying truth which deserves further investigation.

Though he does not profess to deal exhaustively with the reaction of the autonomic nervous system to disease Dr. Langdon Brown covers a wide field in the successive chapters on its relation to the endocrine glands, glycosuria, diseases of digestion, and to circulatory disorders. He argues that no theory of diabetes is adequate which leaves the sympathetic nervous system out of account, and that, if Graves's disease is a state of continuous fear, diabetes is a state of continuous mobilization of sugar, and that either of these may be due to dissociated action of the sympathetic nervous system.

After a discussion of the innervation of the alimentary canal and the work of Gaskell, Hurst, Keith, and others, its motor disturbances are summed up as (1) irregular and exaggerated contractions due to irritation of the parasympathetic, when in the region of the vagus producing colic, when in the pelvic area tenesmus; and (2) tonic spasm and atony, which are both due to the sympathetic, spasm depending on constriction of sphincters, atony, as in gastric dilatation, on inhibition of normal movements.

The chapter dealing with diseases of the circulation contains close reasoning on the relations of intracranial pressure and arterial blood pressure, and then shows the vicious circle that arises in cerebral haemorrhage and how vena-section acts adversely; similar points in practical treatment are explained in cardiac and pulmonary diseases, and recent advances in our knowledge of shock are summarized. In fact, this is one of the most interesting chapters in a book on which the author may justly be congratulated.

### FUNCTIONAL EXAMINATION OF THE LUNGS.

A short book (*Examen fonctionnel du Poumon*), beautifully printed and illustrated, and moderate in price, has just been published by Professor ACHARD and Dr. LÉON BINET of Paris. In the preface the authors rightly point to the great advances which have been made recently in the functional interpretation of disease and the application of experimental methods in elucidating functional failures. We therefore turned with much interest to their book.

The first part deals with the mechanical aspects of breathing. Graphic and other methods are described for recording and measuring the movements of the chest, the volume of air breathed, and the vital capacity. There are also sections on the x-ray observation of the diaphragm and on the time during which the breath can be held. The abnormalities revealed in disease by these methods are at the same time referred to. There is, however, hardly any reference either

to the functional significance of the physiological causes of these abnormalities; nor are the different types of increased, diminished, or otherwise abnormal breathing clearly described. We expected to find the missing links in the second part, which deals with the chemical phenomena of breathing. This part begins with methods for determining respiratory exchange, and proceeds to discuss basal metabolism and diseases in which it is abnormal. There is also an interesting section on the influence of ingestion of sugar on the excretion of CO<sub>2</sub> in normal persons, in diabetes, and in other diseases. At the end there is a description of a not very accurate method of determining alveolar CO<sub>2</sub> pressure, and a short reference to the fall of alveolar CO<sub>2</sub> pressure in diabetes. The physiological significance of this fall is hardly even hinted at; and indeed one searches in vain in the second part for any chemical or other connecting link with the abnormal breathing referred to in the first part.

The truth is that the book practically ignores the advances during the last twenty years in the physiology of breathing and of the blood gases. There is not a word about the significance of changes in the gas pressures and hydrogen ion concentration of the arterial and capillary blood, or of variations in the pressure of CO<sub>2</sub> in the lung alveoli; nor about functional nervous abnormalities of breathing. Without the connecting links supplied by physiological and clinical investigation mere descriptions of methods and symptoms are of only limited use. The authors have unfortunately missed the opportunity of writing a most instructive book, such as we might have hoped for from countrymen of Paul Bert.

### THE THEORY OF EMULSIONS.

*The Theory of Emulsions and Emulsification*,<sup>2</sup> by Dr. W. CLAYTON, is one of the series of "Textbooks of Chemical Research and Engineering" edited by Mr. W. P. Dreaper.

Professor Donnan has written a foreword, in which he points out the manifold directions in which the subject of emulsions is interesting. Milk, butter, margarine, the emulsions and ointments of pharmacy, the coal-tar disinfectants, rubber latex, and emulsified lubricants are a few examples of common and important emulsions.

Dr. Clayton gives a very clear account of the laws governing the behaviour of emulsions, and the book concludes with a bibliography of about 200 references. So far as we are aware, no previous monograph upon emulsions has been compiled. Those desiring information on this subject have accordingly had to try and find it in the textbooks of colloidal chemistry; in most of them the subject is dealt with in a very piecemeal fashion.

Considerable attention is paid to the technical problems involved, and the book should be of great value to the pharmacist who desires to learn the laws which govern the formation and stability of emulsions. It will be of great theoretical interest to the physiologist, for the recent work by Clowes and others upon emulsions of oil and water is discussed fully. Clowes showed that an emulsion of oil drops in water could be changed to an emulsion of water drops in oil by the addition of some electrolytes, and that the change was prevented by other electrolytes. This observation is of very great concern to physiologists, because living protoplasm is believed to consist of an emulsion of lipoids in proteins, and Clowes's work suggests a means by which the addition of electrolytes can alter the physical state of the surface membrane of cells and rapidly change their permeability. This is only one of the many interesting problems dealt with in the book, which will be found of value by a large variety of readers, dealing as it does with problems that range from the best methods of producing homogenized milk for ice cream manufacture to the methods employed for separating water from crude oil at oil wells.

### DISEASES OF THE THYROID GLAND.

Dr. ARTHUR HERTZLER's *Diseases of the Thyroid Gland*<sup>3</sup> is a book of unusual interest in that the information contained therein is the result of years of experience of the treatment of these diseases in a small country hospital. After mentioning the disadvantages the author points out the advantages to be derived from this method of study—for instance, the isolation

<sup>1</sup> *The Sympathetic Nervous System in Disease*. By W. Langdon Brown, M.A., M.D., F.R.C.P. Second edition. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1922. (Demy 8vo, pp. x + 161, 9 figures. 10s. 6s. net.)

<sup>2</sup> *Examen fonctionnel du Poumon*. Par Ch. Achard et Léon Binet. Paris: Masson et Cie. 1922. (Med. 8vo, pp. 151; 66 figures. Fr. 12 net.)

<sup>3</sup> *The Theory of Emulsions and Emulsification*. By W. Clayton, D.Sc., F.I.C. Textbooks of Chemical Research and Engineering. London: J. and A. Churchill. 1923. (8vo, 160 pp. 10s. 6s. net.)

<sup>4</sup> *Diseases of the Thyroid*. By Arthur Hertzler. London: H. Kimpton. 1922. (8vo, 128 pp. 10s. 6s. net.)



gives the investigators more freedom to follow their own ideas, uninfluenced by the opinion of associates; the small country hospital, drawing its patients from a stable population in the immediate community, is better able to study the end-results, and it is only by frequent re-examination of the patient that an accurate idea of the course of the disease can be obtained. As the result of his studies the author is convinced that the activity of the interstitial cells is associated with a definite clinical type of thyroid intoxication; hence the publication of this monograph.

The first and second chapters are concerned with the etiology and pathogenesis of goitre, with the pathological conditions of other organs, and with the normal and pathological anatomy of the thyroid gland. The etiology is discussed in its relation to such factors as age, sex, genital functions and disturbances, pelvic conditions, heredity, endemology, infection, previous and associated diseases, and the neurogenic and thyrogenic theories. In the chapter on symptomatology he asserts that there is no such thing as a simple goitre, holding that goitres are either toxic or non-toxic, and the physician or surgeon must consider the so-called simple goitre as one not yet toxic, and treat the patient accordingly, otherwise his treatment may quickly convert it into a toxic one. He is also of opinion that in every case of goitre, whether toxic or not, there is either enlargement or anatomical change in the gland, and that those who hold the opposite view have yet to demonstrate the existence of a normal gland in patients who have suffered during their life from any form of thyroid disease. The chapters on diagnosis and prognosis deal with the adolescent goitres, the simple—or non-toxic—colloid goitres, secondary toxicity and malignant degeneration in such, together with affections of other organs, the primary toxic goitres—exophthalmic and non-exophthalmic—secondary toxic goitres, and atypical and hyperacute forms of these. His remarks on the interstitial type (*formes frustes*) (first described by Charcot and G. Marie) are interesting, and ought to be extremely helpful. His opinion of the Goelsch test is that it is only of relative value, because many patients not thyrotoxic are susceptible to adrenaline, while some with toxic goitres are not susceptible. When the diagnosis is evident from other signs and symptoms the test should not be performed, as its use often frightens the patient, owing to the exacerbation it causes when the larger amount is injected, while the smaller injection gives inconstant results. It is chiefly useful in border-line cases; in those that appear to be simply nervous a positive reaction may be given years before any other evidence of goitre appears. The author is doubtful also of the value of the basal metabolic rate test, and thinks that it is only of use in inverse ratio to the clinical experience of the surgeon. An interesting chapter on hospital management of goitre cases has been contributed by Dr. Victor Chesky, in which pre-operative and post-operative treatment and complications are dealt with. The rest of the book is concerned with treatment, general and operative, with descriptions and illustrations of the various operations performed on the thyroid gland.

This is a well written book, the references to current and past literature are numerous, the illustrations are excellent, and the author's opinions are carefully thought out.

### THE BIOLOGY OF DEATH.

It is the common fate of those nominated to lecture upon famous foundations in this country to find that neither the size nor the enthusiasm of the audience is commensurate with the dignity of the lectureship. The lecture theatres even of the Royal Society or the London College of Physicians are rarely packed to overflowing when the Croonian discourses are pronounced. Possibly the English nation has been over-lectured; or, again, it may be that the correlation between scientific eminence and elocutionary power is small. In America, we believe, the lecture-loving public is much larger. If Professor RAYMOND PEARL had a large audience for his Lowell lectures<sup>5</sup> in 1920, he must have convinced his hearers that they were wiser than the inert English, for his course was wonderfully stimulating.

Professor Pearl begins by defining his problem; he has no difficulty in showing that natural death is not the inevitable penalty of life—that, on the contrary, it occurs only in metazoan animals as a normal event, that even highly specialized

cells are potentially immortal. He shows no mercy either to Weismann's theory that death is an advantageous adaptation preserved by natural selection; which, as he says, enjoyed a vogue "when the post-Darwinian attempt to settle the problems of evolution by sheer dialectic was at the zenith of its popularity," or to Metchnikoff's hypothesis. The chief difficulty with Metchnikoff's theory is, he says, "that it is demonstrably not true—either particularly in the case of man, where it can easily be shown that many statistically important causes of death cannot possibly be accounted for under it, or generally in the animal kingdom—because a number of cases are known where a metazoan form can be successfully made to lead a completely aseptic life, and still death occurs at about the usual time."

Why do metazoans die, then? Essentially Professor Pearl's answer is the same as that great pathologist H. G. Sutton's definition of disease—absence of rhythm. The body is not made like the wonderful "one-hoss shay"; the cellular systems fall out of balance, the environmental conditions which experiment shows to be necessary for cellular immortality are not maintained, or, as in malignant disease, there may be an outbreak of cellular bolshevism which destroys the commonwealth. What is the best way to live as long as possible? The best way of all is to be very careful in choosing one's ancestors. An analysis of Bell's statistics of the Hyde family and of the opinions of physicians on the preventability of various diseases leads Professor Pearl to conclude that, "if all the deaths which reason will justify one in supposing preventable on the basis of what is now known were prevented in fact, the resulting increase in expectation of life falls seven years short of what might reasonably be expected to follow the selection of only one generation of ancestry (the parental) for longevity." Another factor is the rate at which one lives. The world has long been of this opinion, which has been expressed by the sages of all times and in the adages of most nations. The additional support afforded by Slonaker's experiments upon four albino rats made to run a prodigious number of miles and dying at an average age of 29.5 months, while three control rats living a life of *otium cum dignitate* attained an average of 40.3 months, is meagre. This sort of experiment reminds us of the sage who could—

"Resolve by sines and tangents straight,  
If bread or butter wanted weight;  
And wisely tell what hour o' th' day  
The clock does strike, by Algebra."

Is the greatly higher rate of mortality in later adult life of our industrial districts, compared with our agricultural districts, more likely to be a function of a higher rate of transformation of mere physical energy or of a much more subtle thing—what the public calls "nervous strain"? The man in the street will certainly say that the latter is the right answer. It is necessary to try to think clearly what precise meaning can be attached to the phrase "nervous strain" and then to investigate its social and economic correlates. For once we disagree with Professor Pearl, and do not think that, "as in so many other cases, the experimental method is likely to shed far more critical light on this problem than is the purely statistical method dealing with human data. There are too many factors in the latter material that cannot be controlled." They cannot be controlled, but perhaps they can be observed and measured. There are many other points in Professor Pearl's lectures, such as his extremely interesting study of longevity in flies, well worthy of examination. The first cross of a biologist and statistician is a very attractive hybrid.

### MALIGNANT DISEASE.

In an interesting and well expressed essay on the origin of cancers and other tumours M. JOSEPH STÉFANI,<sup>6</sup> a surgeon at Nice, first reviews the existing opinions about the etiology and nature of malignant new growths and therein of course touches on many points that have aroused discussion. In opposition to the statement that cancer is contagious it has been objected that operating surgeons seldom suffer from it, but the author denies this, believing that this occurrence is common. Cancer houses are discussed, and here, as elsewhere, many authorities are quoted—for example, Gaylord and Clowes's observations on cancer cages. With regard to heredity it is considered probable that the cases which have been interpreted in this way are in reality due to familial

<sup>5</sup> *The Biology of Death*. By Raymond Pearl. Monographs on Experimental Biology. Philadelphia and London: J. B. Lippincott Co., 1923. (Post 8vo. pp. 275; 64 figures. 10s. 6d. net.)

<sup>6</sup> *Essai sur l'origine des cancers et tumeurs*. By Dr. Joseph Stéfani. Paris: A. Maloine et Fils. 1922. (Imp. 16mo. pp. 103. Fr. 10)



infection. Whilst believing that malignant disease is due to infection the author does not accept any of the current parasitic hypotheses. In the second part of his essay he elaborates his own theory to the effect that there is a special form of infection at work—namely, a process of conjugation between the cells of the host and unicellular organisms, probably protozoal, which gives rise to unicellular hybrids, the tumour cells.

*Cancer: its Cause, Treatment, and Prevention* is a reprint, with some additions, of a series of addresses published between 1902 and 1910 by Dr. A. T. BRAND,<sup>7</sup> in which he insists on the infective origin of cancer, its exogenous and specific nature, and the presence of a parasite—whether protozoal or bacterial, though he is in favour of a facultative aerobic bacterium—in the cells. The only reliable prophylactic against cancer is held to be cleanliness in its widest sense, including cremation of its victims and destruction by fire of all soiled dressings and discharges from cancerous patients. After advocating free operative removal of the growth, Dr. Brand pleads for research for a specific parasiticide.

In the tenth number of the Harvard Health Talks, delivered as a popular Sunday afternoon lecture at the Harvard Medical School, on *New Growths and Cancer*, by Professor S. B. WOLBACH,<sup>8</sup> the present state of our knowledge is clearly and simply set forth with suggestions for prevention and treatment. As statements meeting with general scientific approval, he mentions the non-hereditary and non-infectious nature of cancer, so that it cannot be transmitted from person to person. On the question of the alleged increase of cancer, the dictum of Professor Willcox of Princeton that it is probable, although far from certain, that the cancer mortality is not increasing, is quoted with approval. This common-sense lecture concludes with some wise advice on the care that should be exercised in choosing a doctor, and points out that the more rapidly the public learns to be discriminating in its choice of medical men the more rapidly will the standards in the practice of medicine become elevated.

The Provincial Board of Health, Ontario, has issued two pamphlets—*What We Know about Cancer, a Handbook for the Medical Profession*, and *What Everyone Should Know about Cancer, a Handbook for the Lay Reader*;<sup>9</sup> both of these were prepared by a special committee of the American Society for the Control of Cancer, and have been republished with the consent of the society. The increased incidence of malignant disease throughout the world is accepted; in Ontario during the last decade the cancer mortality has risen from 66 to 77 per 100,000, while that from tuberculosis has diminished from 102 to 78 per 100,000. Recent investigations show that malignant disease is rare among the Indians in Canada; although white races are considered to be more liable to cancer than North American Indians and Orientals, cancer of the uterus in America is apparently more frequent in negro than in white women. These two useful pamphlets are full of common sense and good advice.

In *Le cancer et son traitement médical rationnel*<sup>10</sup> Dr. E. BARONAKI argues that malignant disease is a local manifestation of a general dyscrasia resulting from functional disorders of the endocrine glands, which in its turn is due to age, hereditary influences, infections, especially enteric fever and syphilis, mental shocks, and to excess of calcium in drinking water. The blood shows alterations in the organic ferments, in the plasma, which is stated to be almost always acid and deficient in salts, especially of calcium. His treatment consists in intramuscular injections of neoplastin—a solution of salts of calcium, potassium, sodium, magnesium—and phosphorus, for twenty days, and in addition cachets of cholestérine, lecithine, and haemoglobin, and the administration of the liquid extracts of thyroid, the adrenal, liver, and spleen. In doubtful cases eventually proved to be free from cancer the injections

of neoplastin cause digestive disturbance, but otherwise the treatment is stated to be harmless, and thus may serve as a means of diagnosis. In early cases of malignant disease not involving any vital part a cure is claimed in 80 per cent.; in recurrences on the surface of the body, especially of the breast, without visceral metastases, cure or a stationary condition for some years is said to follow in 70 per cent.; in widespread visceral malignant growths no curative action is suggested. This unconvincing and insufficiently proved argument closes with the record of twenty cases.

#### DEAN INGE'S ESSAYS.

THE second series of *Outspoken Essays*,<sup>11</sup> by the Dean of St. Paul's, is a most attractive collection of essays on the problems of this troubled age. More than half of the book has not been published elsewhere. The first article, *Confessio fidei*, explains what and why the author, who would describe himself as a Christian Platonist, believes. The Hibbert Lectures, delivered at Oxford in 1920, on *The State, Visible and Invisible*, the Romanes Lecture for 1920 on *The Idea of Progress*, and the Rede Lecture for 1922 on *The Victorian Age*, contain much interesting matter.

Both in the Hibbert lectures and in *The Victorian Age* the principle that all human movements tend to provoke violent reactions, and that every idea or institution passes on to its opposite, is regarded as the keynote of history. The nineteenth century was the most wonderful century in human history, and the Victorian age the culminating point of our prosperity; and as an antidote to the evil fashion of disparaging the great Victorians the Dean recommends a comparison of their portraits with those of the present-day favourites. In *The White Man and his Rivals* it is argued that the peril from the coloured races, which before the war loomed in the distance, is now of immediate urgency, and that the exhausted and debt-crippled white nations will be defeated in the coming economic competition. The article entitled "*The Dilemma of Civilization*" reviews the contents of two recent books on scientific sociology by Müller Lyer and Austin Freeman, and discusses the possible escape from the conditions brought about by machinery. The concluding essay, on *Eugenics*, insists on the necessity of counteracting racial deterioration by rational selection. These essays make a strong appeal to all thoughtful men, and are clearly and convincingly written.

#### NOTES ON BOOKS.

THE third edition of Sir JOHN MCFADYEAN'S *Anatomy of the Horse*<sup>12</sup> will be welcomed by veterinary students, for it has been the standard British textbook for many years. The whole of the text has been carefully revised, and the name of the author is sufficient guarantee that it has been brought up to date, especially in regard to nomenclature, about which there are still some differences; it is necessary for the student to be aware of these when about to present himself before a board of examiners in anatomy. The system Sir John McFadyean employs is based on the principle of naming each object after the homologous object in human anatomy; at the beginning of the book is a very well arranged table showing the synonyms of the muscles; in this the first column, giving the author's nomenclature, is followed by that of Percival, Chauveau, and Legh. In the earlier chapters the dissection of the limbs, of the back and thorax, of the head and neck, and of the eyeball and ear, are dealt with in order, and then that of the various important internal organs of the thorax and abdomen. Each is lucidly described and excellently illustrated, the whole being typical, as in previous editions, of the thoroughness and care which have been bestowed upon the book. The book has long been prized, and will long be prized, by the veterinary student, and should find a place on the bookshelf of every veterinary practitioner who wishes to keep himself abreast of the times.

The third number of the fourth volume of the *Annals of Medical History*<sup>13</sup> has two portraits of Louis Pasteur—one on the cover, and a frontispiece, the familiar representation of

<sup>7</sup> *Cancer: its Cause, Treatment, and Prevention*. By Alex. Theodore Brand, M.D., C.M., V.D. London: John Bale, Sons, and Danielsson, Ltd. 1922. (Post 8vo, pp. viii+120. 8s. 6d. net.)

<sup>8</sup> *New Growths and Cancer*. By Simeon Burt Wolbach, Shattuck Professor of Pathological Anatomy in Harvard University. Harvard Health Talks, No. 10. Cambridge, Mass.: Harvard University Press; London, Humphrey Milford, 1922. (Fcap 8vo, pp. 55; 2 plates. 4s. 6d.)

<sup>9</sup> *What We Know about Cancer; a Handbook for the Medical Profession*. 1922. (Pp. 58.) *What Everyone Should Know about Cancer; a Handbook for the Lay Reader*. 1922. (Pp. 26.) Published by the Provincial Board of Health, Ontario.

<sup>10</sup> *Le cancer et son traitement médical rationnel*. Par Ed. Baronaki. Chirurgien honoraire de l'Hôpital-Dieu de Blois. Paris: A. Maloine et Fils. 1922. (Cr. 8vo, pp. xv+101. Fr. f.)

<sup>11</sup> *Outspoken Essays*. By William Ralph Inge, C.V.O., D.D., F.B.A., Dean of St. Paul's. Second Series. London: Longmans, Green and Co. 1922. (Cr. 8vo, pp. vii+275. 6s. net.)

<sup>12</sup> *The Anatomy of the Horse: a Dissection Guide*. By Sir John McFadyean, M.B., C.M., B.Sc., M.R.C.V.S. Third edition. Edinburgh and London: W. and A. K. Johnston, Ltd. 1922. (Demy 8vo, pp. xx+383; 54 figures, 48 plates. 3s. net.)

<sup>13</sup> *Annals of Medical History*. Vol. iv, No. 3, September, 1922. Serial Number 15. Edited by Francis R. Packard, M.D. New York: Published quarterly by Paul B. Hoeber. (Med. 4to, pp. 215-322. Yearly subscription 6 dollars; single numbers 2.50 dollars.)



him in his laboratory. The editor, Dr. FRANCIS R. PACKARD, continues his interesting account of Guy Patin and the medical profession in Paris in the seventeenth century. In the next article—on Robert Talbor, Madame de Sévigné, and the introduction of cinchona, an episode illustrating the influence of women in medicine—Dr. George Dock of St. Louis describes how he picked up in Shaftesbury Avenue, for a trifling sum, Robert Talbor's *Pyretologia*, of which the only other copy known to him is in the British Museum; Talbor advocated the use of cinchona in a work savouring strongly of the charlatan, but numerous extracts from Madame de Sévigné's letters breathe her belief in him. Dr. Robert Wilson discusses the origin and symbolism of the caduceus, and concludes that, whether the caduceus in its present form originated as an Egyptian or as an Assyrian device, its symbolism dates back to predynastic Egypt. The Hon. W. R. Riddell, President of the Canadian National Council for Combating Venereal Disease, gives a sketch of Dr. George Cheyne and "the English malady," in which he remarks that though usually a disease named after a nation is an expression of enmity, as is shown by the nomenclature of venereal disease, the condition was different as regards the "English malady," a combination of neurasthenia, melancholy, and dyspepsia, described by Cheyne. In a well illustrated account of the early history of anatomy in the United States Dr. E. B. Krumpholtz shows that Thomas Cadwalader of Philadelphia was the first to initiate the scientific study of anatomy, and that the first course of lectures and demonstrations was given by William Shippen junior in 1765, when, together with John Morgan, he founded the medical department of the University of Pennsylvania in Philadelphia. Dr. Burton Chance writes on some English worthies of science of interest to ophthalmologists—namely, Sir Isaac Newton, W. H. Wollaston, J. Dalton, and Thomas Young, "Phenomenon Young," as he was called at Cambridge.

The second volume of the Oxford Chapters in the History of Science, edited by Dr. CHARLES SINGER, is a translation of Professor Heiberg's *Naturwissenschaften, Mathematik und Medizin im Klassischen Altertum*. Within the compass of 105 pages the author has contrived to give a remarkable amount of information in a readable form. The difficult task of giving a non-technical account of Greek mathematics has been skilfully performed, while the account of the medical writers, if in places somewhat amateurish, is lucid and interesting.

In his book *The Problem of Population* Mr. HAROLD COX discusses in an orderly way the facts of the population problem and the ethics of birth control. The author does not, we think, bring forward any statistical or economic evidence which has not long been familiar to all serious students of the subject, but he possesses one great advantage over many other writers. He has thorough command of a clear prose style, rarely diverges from argument into rhetoric, and deserves the compliment of a comparison with Malthus.

<sup>1</sup> *Mathematics and Physical Science in Classical Antiquity*. Translated from the German of J. L. Heiberg by D. C. Macgregor. Chapters in the History of Science. London: H. Millard. Oxford University Press. 1922. (Cr. 8vo, pp. 110. 2s. 6d. net.)  
<sup>2</sup> *The Problem of Population*. By Harold Cox. London: J. Cape. 1923. (Cr. 8vo, pp. 193. 6s. net.)

## MEDICINAL AND DIETETIC PREPARATIONS.

### "Secwa."

SECWA is a dry powder product introduced by Trufood Ltd. (The Creameries, Wrenbury, Cheshire) for the preparation of sweet whey. The manufacturers claim that it contains all the components of ordinary fresh milk, except the casein and fat, and of course the water. A sample has been submitted to analysis, and is found to consist only of the dried contents of milk whey. It contains no starch or other matter foreign to the composition of milk, and it is free from boric acid and milk preservative.

The following is the composition shown by our analysis:

Protein	...	...	...	19.33 per cent.
Lactose	...	...	...	67.70 "
Mineral matters (ash)	...	...	...	9.02 "
Fat	...	...	...	0.66 "
Moisture	...	...	...	3.25 "

The characters of the sample show that the constituents have suffered no injury or alteration in nature through the process of desiccation. There is no sign of the change of colour which articles of this nature readily undergo if unduly heated, and the lactalbumin (whey protein) is perfectly soluble.

## SLEEPING SICKNESS:

### SOME NEW OBSERVATIONS ON ITS TRANSMISSION AND PREVENTION.

WHEN the discovery, in 1908-10, of scattered cases of human trypanosomiasis in North-East Rhodesia and Nyasaland led to the appointment of commissions for their investigation (the Royal Society's Commission under Sir David Bruce in Nyasaland and Dr. Kinghorn and Dr. Warrington Yorke in Rhodesia) it was found that, in its morphology, its action on animals, and its reactions to culture and serums, the new trypanosome, *T. rhodesiense* of man, was indistinguishable from a trypanosome which infested the game of the same regions. So close was the resemblance that the investigators felt that they could come to no other conclusion but that the two trypanosomes were specifically identical, and that the big game was the main or only reservoir for Nyasaland sleeping sickness. On this conclusion was based a practical recommendation—namely, that an experiment in game destruction should be made under scientific control. An area was to be selected and, after certain preliminary statistical investigations, the game in it was to be completely eradicated, and the entry into it of game from other areas prevented by a suitable barrier. In two or three years the population, the live-stock, and the tsetse fly were to be examined again. Even if the fly had not then disappeared owing to the absence of the game it might at least be found that it had become non-infective. In either event the policy would then be to kill and drive away game in the neighbourhood of human habitations and roads.

Both the experiment and the policy were recommended by the Inter-Departmental Committee, which reported in May, 1914, but the validity of the conclusion which had first prompted these suggestions had already been seriously questioned. It was pointed out that in vast areas of Africa *Glossina morsitans*, human beings, game, and *T. brucei* were present together, and that the incidence of Nyasaland sleeping sickness would be far higher were this trypanosome pathogenic to man. Taute even inoculated himself repeatedly, and, at a later date, he and Huber inoculated themselves and 129 natives, many of them debilitated, with the game trypanosome, without obtaining a single positive result.

Duke, however, in 1919, published in respect of the Uganda disease the suggestion that, man being highly resistant to trypanosome infection (a criticism of Taute's experiments which had already been made), human trypanosomiasis in epidemic form can only be brought about, and is brought about, by repeated transmissions of the trypanosome from man to man direct; in the laboratory it is often possible by this method to render virulent for a particular species of animal a strain of trypanosome to which it was previously refractory, and Duke suggested that this mechanical transmission was effected in nature by *G. palpalis* itself, and that the crowded canoes, accompanied by tsetse flies, of the Victoria Nyanza provided the ideal condition. If this were applicable to *G. morsitans* also and the scattered cases of Nyasaland, it followed that Taute's experiment had not gone far enough, and that *T. brucei*, transmitted directly from man to man, might after all be capable of giving rise to *T. rhodesiense*.

The next light on the problem has come from an outbreak of sleeping sickness of the *rhodesiense* type in the country south of the Speke Gulf, in the Mwanza District of Tanganyika Territory, about six and a half degrees farther north than the most northerly cases of the disease previously recorded, though we now have news from Dr. Archibald of a discovery of *rhodesiense* sleeping sickness in the Sudan. The Mwanza outbreak, which began probably about 1917 and comprised a few hundred cases, is interesting for at least two reasons. In the first place, the disease prevailed as an epidemic, a new feature in the Nyasaland type; and secondly, it was carried, not by *G. morsitans*, but by a new fly of the same group that has been described by Major Austen as *G. swynnertoni*. The outbreak was discovered by Dr. G. Maclean, of the Medical Department of Tanganyika Territory, and has been investigated in turn by Mr. Swynnerton and by Dr. Duke. Each has now published his account of it.

Swynnerton, studying the outbreak from its entomological aspects, has published his account of it in the *Entomological Aspects of an Outbreak of Sleeping Sickness near Mwanza, Tanganyika Territory*, by C. F. M. Swynnerton, F.R.S., F.E.S., *Bull. Ent. Res.*, vol. xiii, Pt. 3, pp. 317-350; and "An Enquiry into an Outbreak of Human Trypanosomiasis in a *Glossina morsitans* Belt to the East of Mwanza, Tanganyika Territory," by H. Lyndhurst-Duke, M.D., *Bacteriologist, Uganda Protectorate, Proc. Roy. Soc. Ser. B*, vol. 24, No. B. 660, January 4th, 1923.



side, found that, within the sleeping sickness area, the tsetse flies, which were very numerous, were exceptionally voracious in relation to man and in general presented the high proportion of females that has come to be recognized as the sign of a scarcity of food animals. Investigation showed that something not unlike the proposed experiment in game destruction had here been produced by natural causes. Tsetse flies do not frequent closely cultivated areas but live and breed in natural woodland. A corner of the woodland in this fly belt had been cut off from the rest by a discontinuous strip of native settlement. This strip acted as a partial barrier against the game animals and to an appreciable extent hindered the replenishment of the game in the enclosed section. The game inside became much reduced, though by no means exterminated, and the reduction was particularly marked at and after the time the epidemic probably began, because the normal activities of a large contiguous hunting population were then reinforced by the passage of troops and the incentive to wholesale killing that was furnished by a severe famine. In addition two important factors might be thought of as tending to diminish natural resistance: famine and influenza swept the land in the train of the military operations in Mwanza in 1917, and much ankylostomiasis was present in the population.

Sleeping sickness was definitely present in the area at the beginning of 1918. It seems to have started in the neighbourhood of a place called Igombe and to have spread with much regularity from village to village in different directions until it reached the cleared and settled "barrier." Areas of more open woodland with fewer tsetse flies, the barrier itself, and the coming into contact with a larger game population are three explanations offered by Swynnerton for an apparent check to the epidemic at this stage. He found it easy to trace a sequence between any case and preceding cases, and in this is strongly confirmed by Duke. Thus a woman sick with *malati* came from Ndagalo and stayed at two villages near Nyasambi, at the second of which she died. Shortly afterwards cases occurred at each village, and the people from neighbouring villages who regularly visited and sat with the sick and attended the mourning fell ill in their own villages, where further cases then occurred. One case taken to a clean village to be nursed introduced the disease there, and a "beer drink" at that village, where there were many tsetse flies, passed the disease on further. This was the story everywhere; going to see the sick and taking the sick in were, Swynnerton states, the commonest sources of infection recognized by the natives.

Duke believes that the outbreak originated through the development from the game trypanosome of a strain pathogenic to man, as a result of free direct transmission following game destruction and the consequent concentration of the fly on man. Swynnerton presents two alternative explanations—the first is the same as Duke's, the other the possibility of the disease having arisen through the introduction of an infected human being. In favour of the second alternative he points to the subsequent course of the outbreak, to the general analogy with Uganda sleeping sickness, and to the fact that in this very district the Germans captured Belgian native soldiers infected with trypanosomiasis, one of whom stated that he had been treated for it already in his own country. Each explanation involves what is at present a hypothesis: the first that *T. rhodesiense* can arise from *T. brucei*, and, in addition, that this happened here; the second that *T. rhodesiense*, already differentiated as a human strain, either came from far south or exists undiscovered in the little investigated Congo.

After describing the habits of the natives and the conditions in the villages, Swynnerton concludes that the tsetse flies had abundant opportunity of biting the sick, and that any infected person may be an important reservoir of the disease; he points out also that factors favouring direct transmission by this fly of the *morsitans* group were present. Duke adduces observations and arguments in favour of the probability that direct transmission was present to the exclusion of cyclical transmission. Both agree that the game, far from being a menace, is a valuable buffer between man and the fly. They hold that reduction of the game must lead to greater concentration of the tsetse on man, and consider that this factor probably contributed to the production of the epidemic. It is reasonable to suppose that the greater the number of tsetse flies driven to feed on man the more easy and frequent will be the infections and the greater also the likelihood of direct transmission such as might either render a game trypanosome pathogenic for man or help a human trypanosome to overcome man's normal resist-

ance. Swynnerton points out that in Northern Rhodesia in 1911-13 famine, with game present in abundance and with sporadic human trypanosomiasis existing, failed to produce an epidemic. He regards famine and game destruction as likely to be the most dangerous combination, but believes the latter to be highly dangerous in itself, if human infection exists; he cites instances recorded by others which suggest that sleeping sickness in the epidemic form tends to accompany a scarcity of game. This is a point worthy of further study. Meanwhile it will be well to walk warily in the matter of eradicating the game from the neighbourhood of human habitations in tsetse-infected bush.

The connexion traced by Duke between ankylostomiasis and sleeping sickness in the Mwanza outbreak seems likely to be important, and his suggestion as to its further investigation should be followed up; the rarity of the disease in children is of interest, and bears out Ingram's conclusion that "age, sex, and race incidence in human trypanosomiasis vary directly with the extent to which the individual is exposed to the bite of infective tsetse flies"; the fact that visits to the sick people in infected "bush villages" resulted in many infections, even in villages outside the tsetse forest, is also worthy of note. In a specially infested small bush village Swynnerton captured about 200 tsetse flies, and noted that the inhabitants were attended by them in all their occupations.

The chief significance of these two investigations is the evidence they afford that under the conditions described man was the important reservoir. While it seems possible that *T. brucei* is capable of conversion into a strain pathogenic to man, it seems unlikely that this often happens in nature. On the other hand, we have to remember that any of the four or five hundred persons infected in this Mwanza outbreak, travelling from the place of his infection, might "subsequently sit down and talk in a village or roadside halt in any tsetse belt in the territory in a locality in which man is for the time being the centre of attraction for the tsetse . . . and start a case or two or an epidemic." Swynnerton quotes evidence in favour of the view that it was in this way that the previous infections of *rhodesiense* in German East Africa started, and Duke also concludes that "the main danger to be avoided is the presence of infected natives in communities exposed to the tsetse."

It would seem that the practical question for future investigators will be less the conspecificity of the game and human trypanosomes (though this, and its importance, should be settled) than the prevalence of the human "carrier." Yorke has given an instance of a native laboratory assistant who, after *T. rhodesiense* had been found in his blood, was under observation for a year, and remained to all appearance perfectly well; it should be ascertained (not merely by blood examination, which may be unreliable, but by inoculation into susceptible animals) whether such cases are frequent. This seems of special importance at present, for natives from various parts of Africa have, in the course of the East African campaign, passed through the infected region of Portuguese Nyasaland, so that, if the human "carrier" should be a factor of importance, the ready-made *rhodesiense* strain may have been transplanted already to many places in which it did not previously exist.

Mr. Swynnerton describes the measures taken for the control of the outbreak. They included segregation of the sick and the evacuation of the area specially concerned, this last being rendered easy by the fact that it was surrounded by the tsetse-free areas of close settlement already referred to. He deals at some length with the general question of the control of the flies of the *morsitans* group, and in relation to the prevention of human trypanosomiasis points to the probable utility of a combination favoured by French investigators—namely, the sterilization of the sick by the administration of a suitable drug and the provision of a "screen" of immune animals. Due, but reasonable, game preservation would, he believes, in East Africa provide the "screen," and to guard against the untoward results of such local game destruction as might still take place he suggests that the natives might be required to place their villages in the centre of their cultivation and that small villages should be joined up so far as possible into large settlements in order that they may be surrounded by a larger cleared space and thus enjoy a greater immunity from heavy infestation by the tsetse flies. It would seem likely also, from Duke's observations in relation to ankylostomiasis, that due attention to this disease may in itself constitute a useful prophylactic measure in relation to sleeping sickness.



## British Medical Journal.

SATURDAY, MARCH 3RD, 1923.

## SIR CHRISTOPHER WREN AND MEDICAL SCIENCE.

Sunday, February 25th, marked the 200th anniversary of the death of Sir Christopher Wren. This "prodigy of learning" was born at East Knoyle, near the Somerset border of Wiltshire, on October 20th, 1632, where his father, Dr. Christopher Wren, was rector. He came of a learned and talented stock: his grandfather, Dr. Matthew Wren, had been bishop successively of Hereford, Norwich, and Ely; his father became Dean of Windsor. Wren was at school under Dr. Busby at Westminster, where he was contemporary with John Locke, who was just two months his senior. At the age of 13 he entered, as a gentleman commoner, Wadham College, Oxford. In his second year at Oxford his abilities attracted the attention of Dr. (afterwards Sir) Charles Scarborough, who was then lecturing in anatomy. Young Wren wrote with pride to his father in a Latin letter of his friendship with the "doctor." He assisted Scarborough as demonstrator in his anatomical lectures, and brought his mathematical knowledge, which was already remarkable, into play in studying the mechanics of muscular action. He composed later a treatise on the motion of the muscles, explaining the whole anatomy by models formed in pasteboard. They were presented to that eminent physician and his excellent friend Sir Charles Scarborough for use at the latter's celebrated lectures at Surgeons' Hall. These models were lost at the fire of London.

Dr. Plot, in his *Natural History of Oxford*, relates that among divers experiments in anatomy which Wren exhibited at the meetings at Oxford were schemes of fishes dissected . . . several things he observed very considerable in fowls. Some parts of animals he more exactly traced by the help of glasses, as the kidneys, the plexus in the brain, etc. The nerves he found to have little veins and arteries in them. He then found the lymphaducts to empty themselves into the receptacle of chyle, from all parts of the bowels, limbs, etc. Wren assisted Thomas Willis, too, in his anatomical dissections and demonstrations, and Willis testifies in the preface to his *Cerebri Anatome* that the illustrations in that book are from the pen of Sir Christopher Wren.

There can be no doubt that Wren's anatomical observations placed him among the first professors of the day. Sprat, in his history of the Royal Society of London, refers to him as "the first author of the noble anatomical experiment of injecting liquors into the veins of animals . . . by this operation divers creatures were immediately purged, vomited, intoxicated, killed or revived according to the quality of the liquor injected." Among the drugs with which he experimented in this way were scammony, opium, and wine. From these experiments he conceived the idea that blood might be transfused directly (and without coagulating) from the vessels of one individual into those of another. Aubrey quotes the Rev. F. Potter as stating that "at the Epiphaniae, 1649, when I was at his house, he [that is, Wren] then told me his notion of curing diseases, etc., by transfusion of blood out of one man into another, and that the hint came into his head reflecting on Ovid's story of Medea and Jason." This was an experiment which Wren took to be "of great concernment and what will give great light to the theory and practice of physick." But

it does not appear that Wren himself did more than suggest the possibility of direct blood transfusion. Richard Lower witnessed these experiments of injecting drugs into animals' veins, and evidently joined in discussions on the practicability of blood transfusion. It was left to him to devise a technique and put into practice for the first time Wren's suggestion. Lower added a complete chapter to his *Tractatus de Corde* (1669), in which he boldly claims priority for successfully transfusing blood from one dog into the veins of another. He describes how at Oxford, towards the end of February, 1665, in the presence of Dr. John Wallis and Dr. Thomas Millington, he demonstrated at the academy of medicine that the experiment could be safely performed. Lower does not include Wren among the spectators of the experiment which the latter had spoken of in 1649. But Wren may have been in Paris at the time, for he spent several months of 1665 in the French capital, where the plans for the Louvre, then in the course of building, won his ardent admiration. In the later part of that year he returned to London, and, like Glisson, Wharton, and a few other scientific spirits, he outstayed the Plague.

Although by now Wren was busily engaged in architectural work, his interest in anatomy and experimental medicine had by no means waned. In 1667 he wrote a letter to Scarborough in which he recounts some of his observations in this line, including the anatomy of the bones of the arm, dissections of the eel, and the operation of splenectomy in the dog. His inventions and apparatus covered nearly as wide a field as those of Leonardo da Vinci himself. He constructed a model of the eye, as large as a tennis ball, with the humours truly and dioptrically made; found a new way to grind glasses, invented new musical instruments, devised ways of submarine navigation, designed new offensive and defensive engines of war, and was the first to draw pictures of objects observed by microscopical glasses, as well as the inventor of the art of mezzotint engraving. The microscope, indeed, continued to attract his attention, and in 1677 we find him taking part in a discussion at the Royal Society on Leeuwenhoek's observations.

Wren's inaugural address before the Royal Society manifests his lasting enthusiasm for scientific medicine. There were three ways, he said, of obliging posterity—by advancing, first, knowledge; secondly, profit; and thirdly, health and conveniences of life. He foresaw the importance of studying the human organism from a biochemical standpoint: "Thus in the body of a man if we consider it only mechanically we may indeed learn the fabric and action of the organical parts, but without chymistry we shall be at a loss to know what blood, spirits and humours are, from the due temper of which (as of the spring in the barrel wheel) the motions of all parts depend." In this address he pays due tribute to Harvey's work, and outlines some of the subjects which might profitably be investigated by the Royal Society. Amongst medical subjects he mentions dissections, physiology, epidemical diseases, and diseases of grain, fruits, and grasses, with their effects upon animals. But although Wren still watched the onward march of natural science, his own labours henceforth lay in the field of architecture. His work in anatomy, physiology, and experimental medicine belonged to the earlier years of his life. How much medicine owes to his inventive genius can never be wholly known. What he achieved was important enough, what his contemporaries may have accomplished at his instigation can only be guessed at from such an example as Lower's successful experiments in blood transfusion.

Wren died in his ninety-first year; on February 25th, 1723, his servant, thinking he slept longer than usual after dinner, went into his apartment and found him



dead in his chair. His long life gave him for contemporaries all the wits, writers, artists, warriors, and ministers of the reigns of Charles I, Cromwell, Charles II, James II, William III, Anne, and George I. In his boyhood Evelyn, who met him at Oxford, had called him "that rare and early prodigy of universal science," and he never fell short of this early promise; to the end of his noble life he was distinguished for industry, love of art, placidity, modesty, communicativeness, and disinterestedness. Few men have been more generous in suggesting problems for others to work out; few, even among scientists, have cared less who claimed the fruits of their own genius. He wrote and published comparatively little. Hearne noted in 1713: "Sir Christopher Wren is a very great man, tho' he could never be persuaded to publish anything." In a French journal of 1750 he was described as possessing the failing, uncommon in an architect, of not knowing how to enrich himself. As a writer of to-day has said, "He was really an artist using the stuff of science as his material."

### BIOLOGICAL FOUNDATIONS.

DR. HALDANE, whose lecture on the fundamental conceptions of biology we print in this issue, has for many years devoted himself with conspicuous success to the investigation of the incredibly delicate mechanism by which the regulation of various physiological processes is effected in the animal body. When, therefore, we find him taking his stand against the mechanistic interpretation of life so familiar to physiologists at the present day, we must recognize the fact that he speaks with the authority derived from experience, and that his views are entitled to the most careful consideration. It is not altogether easy, however, on the basis of a single lecture, to determine exactly what those views are. There seems to be something rather elusive about them, and some will probably think that he is abandoning the safe ground of experimental science for the less secure foothold of metaphysics.

Dr. Haldane emphasizes the fact that biology is an independent science, of which physiology is one department—a fact that is too often lost sight of at the present time. The living organism, he tells us, is a whole which is something more than the mere sum of its parts, and must be studied and appreciated as such. No chemical and physical interpretation of its behaviour, however detailed, can give us a real insight into its nature. We welcome this reaction against the extreme materialistic tendency of some contemporary writers, but at the same time we cannot help thinking that he rather overstates his case, as when he tells us "that with neither the scalpel nor microscope as applied to dead organisms could structure be found that was capable of throwing light on any fundamental physiological activity." The remarkable nuclear phenomena accompanying cell division—to take only one illustration out of many—have surely thrown a flood of light upon the physiological activities involved in the processes of heredity, and yet these phenomena have been revealed to us almost exclusively by the microscopical study of dead organisms chemically treated. Possibly, however, the processes of heredity as thus revealed are not, in Dr. Haldane's opinion, fundamental. Perhaps nothing that is really fundamental is accessible by the methods of experimental science; but if so, biology, which depends entirely upon observation and experiment, can hardly be said to have any fundamental conceptions at all—for these we must look to metaphysics.

Although we by no means think that mechanistic interpretations can ever afford a complete explanation of

the living organism—or of anything else—yet it seems to us that they can take us a good deal farther than Dr. Haldane seems disposed to admit. He says that the mechanistic theory of life involves us in meaningless absurdities; but surely this is true only when it is pushed to a supposed finality. There is nothing necessarily absurd in a mechanistic theory of development. There is no need to suppose that the whole machinery of the adult organism is represented in some way in the fertilized egg. We need only assume that the germ plasm, being part of the same stock, is similar to that of previous generations, and that it is exposed during its development to similar conditions. The machinery develops gradually, as the result of the interaction between the developing organism and its environment, internal and external. The marvel is that the complex processes involved are regulated with such accuracy as to lead to practically the same result generation after generation. It is this wonderful power of regulation that constitutes the chief distinguishing feature of the living organism. The vitalists attempt to explain it by postulating a special vital force, which leaves us exactly where we were. Nor does the hypothesis of an indwelling soul help towards a scientific explanation. The mechanists alone are in a position to push the scientific analysis of vital phenomena to its farthest limits. Those limits have not yet been reached. In any case it must be left to the metaphysician to speculate as to things that are fundamental.

That the living organism is something more than a mere machine we can hardly doubt when we consider the phenomena of consciousness and intelligence as manifested in ourselves. At what point in the scale of evolution consciousness began to emerge we do not know. Nature knows no beginnings, only change. Dr. Haldane would exclude "the distinctive characters of conscious responses as such" from the domain of biological science and hand them over to psychology. But surely consciousness is the culminating manifestation of life, and if psychology is to make any progress as a real science it must be as a department of biology. What Dr. Haldane is really aiming at is the re-establishment of "the spiritual interpretation as the supreme interpretation of our universe." This is in no way inconsistent with the mechanistic interpretation of the living body. Science can never hope to explain anything completely, but that is no reason why she should not carry her explanations as far as she can. The wonderful progress in medical science, for instance, during the past century has been due almost entirely to mechanistic methods of thought and investigation, and the more these methods are developed and perfected the better will it be for the bodily health of the human race. The spiritual health is another, though a closely connected, problem, and perhaps a more important one, but it can hardly be dealt with in the same manner. From the broader point of view, however, nature and spirit are one, and there is really only one science, which we attempt to subdivide for our own convenience and in accordance with our own narrow limitations.

We could wish that Dr. Haldane had had time to elaborate his thesis from the evolutionary point of view, for it is to the study of evolution, in its broadest aspects, that we must look for more light upon the meaning of life. From this point of view the distinction between the living and the not living tends to disappear, and we find ourselves face to face with a continuous sequence of events that probably stretches back without interruption from the organic into the inorganic world. It would appear that as matter gradually acquired an ever-increasing complexity of structure, accompanied by repeated integration of lower units to form higher ones, so it gradually acquired new



properties, new methods of energy exchange. Each new product of integration was something more than the mere sum of the integrated units, and exhibited a characteristic behaviour of its own. At a certain stage of evolution, marked by the appearance of those extremely complex chemical substances which we call proteins, matter began to exhibit those particular energy relations which we have agreed to consider as distinctive of living things. One of the results of these complex energy exchanges between living matter—"protoplasm"—and its environment has been the further integration of units to form individual organisms, and the maintenance of its individuality, in spite of the disruptive tendencies of the environment, is, as Dr. Haldane rightly points out, one of the most distinctive features of the organism.

Dr. Haldane lays much stress upon the relativity of vital phenomena. The organism and its biological environment are inseparable, and exist only in relation to one another. To say, however, that life is not localized within the living structure of an organism appears to involve an extension of our ideas of life that would take us outside the customary limits of biological science. But, as we have already indicated, it is impossible to divide the field of knowledge into self-contained allotments. The chemist and physicist are concerned primarily with the inorganic world. The biologist is concerned with the world of living organisms, but he is bound to make use of the methods and interpretations of chemistry and physics to the very limit of their applicability. The speculations of the metaphysician must be based upon the results accumulated in all departments of science.

#### SCIENCE IN THE ARMY.

The appointment of Sir William Leishman to be the Director-General of the Army Medical Service is interesting, and one on which the Service and its Medical Corps is to be heartily congratulated. Sir William Leishman had active war experience as a young man during an Indian frontier expedition, and in the great war as Adviser in Pathology in France, until he was brought home in April, 1918, to occupy a similar position in this country. But it is as a pathologist and a man of science that he is known and honoured by the profession. It was in 1900 that he found the parasite now named *Leishmania donovani* in films taken *post mortem* from the spleen of a soldier who died in Netley from kala-azar contracted in India. Leishman did not publish his discovery until 1903, in which year Lieutenant-Colonel Donovan, I.M.S., observed the same parasite in blood obtained by splenic puncture during life. The discovery has revolutionized ideas with regard to kala-azar, a disease which during the last sixty years has spread widely in India. Sir William Leishman has also done important work with regard to tick fever, due to the organism of *Spironema duttoni*, conveyed by the tick *Ornithodoros moubata*. Finally, to make a long story short, we may note that his name is widely known as the deviser of a chromatin staining method, which is in general use in laboratories throughout the world. His position in the world of science is shown by the fact that he was an original member of the Medical Research Committee, now the Medical Research Council, and that he was elected F.R.S. in 1910, at the comparatively early age of 45. When the Directorates of Hygiene and Pathology were created within the Army Medical Department—a change effected by Sir John Goodwin in order that the Army Medical Service should cease to be divorced from current thought in pathology and preventive medicine—Leishman was obviously indicated for the appointment of Director of Pathology. It was frankly stated at the time that the Department was intended to furnish inducement to officers who had specialized in pathology to continue their work therein. Sir William Leishman's appointment to be Director-General is striking evidence of the deter-

mination to pursue this wise policy; evidence also that in the military services of the country, as well as in the civil profession, a man who will devote himself to science may attain to the highest position in the special department of medicine to which he gives himself. The Secretary of State for War may rest assured that his action is not only warmly approved by the civil profession, but will be a distinct encouragement to scientific workers in medicine.

#### TOOTH STRUCTURE AND DENTAL DISEASE.

In July, 1921, the Medical Research Council, in consultation with the Ministry of Health, appointed a committee, with Professor Halliburton as chairman, for the investigation of the causes of dental disease. The committee was asked to advise the Council upon the research work in this subject already aided by the Council and to initiate further researches. In presenting its first report on the structure of teeth in relation to dental disease,<sup>1</sup> the committee indicates its intention to issue reports upon other parts of the subject from time to time as completed. Mr. Howard Mummery, to whom this report is due, has considered his subject in three aspects: First, variations in the composition and structure of enamel and their relationship to dental caries; secondly, the production of artificial caries; and thirdly, arrested caries. Under the first heading he inquires whether enamel is entirely inorganic, and whether it is incomplete at the time of eruption and capable of further consolidation from without. Owing to the difficulty of microscopic examination of enamel, there are wide divergencies of opinion. Tomes is quoted in support of the view that there is no organic matter in enamel, whereas Lovatt Evans holds that there is 1 to 2 per cent. The reporter, unfortunately, attempts no explanation of these divergent findings. In discussing the second question he quotes one experimenter (Head) as of opinion that progressive consolidation may occur from dialysis of lime salts through Nasmyth's membrane, and another experimenter (Pickersill) as unable either to confirm or refute the experiments on which this opinion is based. The possibility of further consolidation from within, on the same lines as that seen in the enamel of sargus, the reporter thinks is indicated by certain microscopic appearances of the amelo-dentinal junction—spindles and bundles of apparent fibrils which take a stain. The possibility of further consolidation of the enamel after eruption of the tooth may prove of great import in the prevention of dental caries; Mr. Mummery's attitude is non-committal, and does not inspire much hope. From the report it is not easy to gather what variations are considered normal and which are defects, but the impression given is that if the teeth are kept clean the variations are all immaterial. The report on the production of artificial caries is chiefly historical. It is short, but brings into prominence the chief workers in this field, giving honour where honour is due. The important point is that caries "indistinguishable both macroscopically and microscopically from natural caries" has been produced in the laboratory by initiating ordinary food stagnation in the human mouth. The section on arrested caries of the teeth does not seem to warrant the hopeful attitude taken up by some of the lay press. It is pointed out that the stained surface of dentine showing arrested decay is more resistant to acid than unstained dentine, and that beneath this is a "translucent zone" of dentine also more resistant to acids; but it has to be admitted that unless the enamel be removed around and beyond the area of decay, decay will spread laterally in the amelo-dentinal junction, and what is gained in one direction will be lost in another. The comparatively insensitive temporary teeth may lend themselves to this very old treatment of "filling out the decay," but the sensitive permanent teeth present quite another problem. Certain appearances found by Mr. Mummery in sections of decaying enamel suggest that in this tissue also a translucent zone may be formed. The suggestion is that this, like the translucent zone

<sup>1</sup> The Structure of Teeth in Relation to Dental Disease, by J. Howard Mummery, C.B.E., D.Sc., M.R.C.S., L.D.S., Medical Research Council Special Report, No. 70, 1922. H.M. Stationery Office. (2s. 1d. 2s. 18 figures. 2s. net.)



of dentine, may represent a vital reaction and an attempt to interpose a barrier of more fully calcified tissue to the advancing caries; but Mr. Mumery asks for further investigation before drawing any such conclusion. The report is beautifully and pertinently illustrated, and is provided with a list of references. One reference, however, which might well be of interest to investigators is missing. Where is Rudas's note on the finding of magnetic iron in the enamel of diluvial teeth to be found?

#### ATMOSPHERIC CONDITIONS IN COTTON WEAVING.

In Report No. 21 of the Industrial Fatigue Research Board Mr. S. Wyatt describes the investigations he has made on the atmospheric conditions in nine large weaving sheds. The subject is of great practical importance, because of the artificial conditions under which a great deal of cotton weaving is carried on. In order to improve the quality and quantity of the cloth woven the air is humidified by blowing in steam, and frequently the wet bulb temperature is allowed to rise within 2° F. of the dry bulb temperature. The summer observations in humidified sheds showed an average dry bulb temperature of 75°, and a wet bulb temperature of 70°, though in two sheds the average wet bulb was 73.4°. Needless to say, this system of "steaming" has caused many complaints among the weavers, and there have been demands for its complete abolition. Short of this it is clearly the duty of the employers to neutralize the evil, so far as possible, by maintaining good ventilation. Mr. Wyatt made a large number of determinations of the air currents in the sheds by means of the kata-thermometer, and he found there was considerable uniformity in the various sheds, the average velocity, both in summer and winter, being 26 feet a minute. This value compares favourably with the observations made by other investigators in certain industries, such as the pottery industry (potter's shops) and the printing trade, but it is by no means adequate, for the large number of observations made in boot and shoe factories gave a considerably higher figure—namely, 36 feet a minute, on an average. In humidified sheds, therefore, the manufacturers ought to improve the ventilation till the air currents have a velocity of 50 feet a minute, or more, and in so doing they would afford considerable relief to the weavers. In addition to improving the general ventilation it is probable that much can be done by a system of local ventilation. Mr. Wyatt has shown that the air movement in the vicinity of the weaver can be greatly increased by attaching a three-inch strip of canvas to one of the moving parts of the loom.

#### THE HOME AMBULANCE SERVICE.

THE Home Service Ambulance System, organized by the Joint Committee of the Order of St. John and the British Red Cross Society, has now become well established. It may be remembered that it arose out of the fact that when the war came to an end a large number of motor ambulances which had been in use in France were returned to this country; some of these are still in use, but it has been the policy of the Home Service Ambulance Committee to make renewals whenever necessary. There are now ambulances stationed in forty-six counties in England, and thirteen in Wales; during the last quarter of 1922 seven new ambulance stations were opened, and there are now altogether 320. During the same period four stations were, for various reasons, closed. The steady increase in the number of patients carried in the ambulances at the great majority of stations shows that recognition of the value of the service is spreading, and that medical men are taking advantage of the facilities offered for the removal of patients. There are still, however, a small number of stations where the ambulances carry so few patients that it seems probable either that adequate steps have not been taken to make the existence of the ambulance known, or that local regulations as to the conditions for its use act as a deterrent. The demand

for ambulances throughout the country is still so keen that it would not be just to continue the loan of cars to localities in which they are not used to the fullest extent possible, and the Committee, in such cases, has no alternative but to ask county directors to close the station so that the ambulance may be transferred elsewhere. The Committee fully appreciates the fact that good and efficient service has been done at a great number of stations where, though the work may be spread over a wider area and entails a greater mileage, a smaller number of patients have been dealt with than in such localities as West Lancashire, where since the Service was instituted eleven ambulances have carried over 26,000 patients, and the West Riding, where twelve ambulances have carried nearly 12,000. The total number of cases carried now averages over 50,000 a year. The ambulances are manned by members of the Order of St. John or the British Red Cross Society, and it is intended that any new station shall be in charge of representatives of one or other of these constituent bodies.

#### X-RAY MEASUREMENT AND PROTECTION.

A JOINT meeting of the Röntgen Society and the Physical Society was held on February 23rd to discuss the physical aspects of the problems involved in the measurement of x rays. The demonstrations and papers were concerned chiefly with methods of measuring x-ray intensity and with the quality of x rays produced by various types of high-tension generators, and therefore scarcely lend themselves to summary in a manner interesting to the ordinary medical radiologist, although of great ultimate importance to him; moreover, as Sir William H. Bragg reminded the audience, it is a long way from the laboratory, where one wave-length can be separated from another, to the treatment room, where a great number of different conditions have to be allowed for, the relative effects of each of which are hard to disentangle. Not very much work, he said, was being done in this country on x rays from the physical point of view, for in fact not many physicists were working on x rays at all. The contribution of most immediate interest to the medical man was made by two physicists, Dr. G. W. C. Kaye and Dr. E. A. Owen of the National Physical Laboratory, who have been examining a large number of x-ray protective materials submitted to the laboratory for test, consequent upon the recommendations drawn up by the X-Ray and Radium Protection Committee (under the chairmanship of Sir Humphry Rolleston) for the better protection and general improvement of the working conditions of the x-ray operator. This Committee recommended that the protection afforded by a material should always be referred to in terms of the equivalent thickness of lead. This use of lead as a standard of reference had proved convenient, and gave the approximate accuracy which suffices in practice, when dealing with composite or laminated materials, as the lead values of the several layers could be regarded as additive. When the exciting voltage was over 100,000, the Committee recommended a protection equivalent to 3 mm. of sheet lead, and with exciting voltages below 100,000 a thickness of not less than 2 mm. In modern x-ray therapy, as Dr. Finzi observed in the subsequent discussion, the radiations, according to the findings of the physicists, are from 200,000 volts upwards. With these requirements in mind, Drs. Kaye and Owen determined the "lead equivalents" of a variety of materials. The results obtained were for x rays generated by 100,000 volts with a tungsten target, but the values hold good over a considerable range on either side of this figure, and are ordinarily diminished by from 5 to 10 per cent. when the voltage is only 50,000. A number of samples of building materials were included in order to discover the protection afforded by the walls and floors of x-ray departments. It was found that 1 mm. thickness of bricks or concrete was equivalent to about 0.01 mm. thickness of sheet lead, so that the equivalent of 3 mm. of lead would be a 300 mm. (12 in.) solid concrete floor. The majority of woods had only about one-tenth of the "lead value" of



bricks and concrete, and about 20 mm. ( $\frac{3}{4}$  in.) of steel plate would be required to give a protection equal to 3 mm. of lead. The lead equivalents of baryta plasters, which there is some tendency to use at the present time, were also determined. The thickness of a mixture in equal parts of barium sulphate, sand, and cement would have to be 60 mm. (nearly 2½ in.) to give a protection equal to 3 mm. of lead; the weight of the plaster is nearly three times that of lead. Rather less forbidding results were obtained with another mixture consisting of one-third coarse barium sulphate, one third fine barium sulphate, and one-third cement. The investigators criticized the open lead-glass bowl used as a container for the x-ray bulb. Owing to its design it might afford no protection whatever in certain directions. Such a bowl, in their view, should be provided with some kind of cover and made more effective. For screens or windows glass of the highest lead values was inadmissible on account of the impossibility of producing it in flat sheets free from streakiness and colour. It was necessary to turn to glass of a lower lead content, and which could be obtained in sheets perfectly flat, of great clarity, and almost colourless. The lead value of such glass was only about 0.12 for each millimetre, but as sheets up to 18 mm. thick could be obtained the requisite protection was readily afforded, though the weight was considerable. For aprons and gloves in which lead rubber was employed the Protection Committee recommended a minimum lead equivalent of 1.2 mm.; it was found that 1 mm. of lead rubber was equivalent to a thickness in sheet lead of 0.25 to 0.45 mm. Drs. Kaye and Owen laid stress upon the fact that different makes of lead rubber differed in protective value by 100 per cent. Papers were read also by Mr. W. E. Schall, Dr. F. L. Hopwood, who gave a demonstration of the endoscope, and others, and Professor Sydney Russ suggested some executive action by the councils of the two societies with a view to setting up an international measure of radiation.

#### SOCIETY OF RADIOGRAPHERS.

We have received from the Society of Radiographers a pamphlet setting out the objects of that body. The Society was founded two years and a half ago with a view to giving a definite professional status to those certificated non-medical assistants who work in x-ray and electrotherapeutic departments. Its aim is to comprise those approved persons at present working at the subject, and to certify new workers after due training and a strict examination. The constitution of the Society was drawn up by a joint committee containing representatives of the British Association for the Advancement of Radiology and Physiotherapy; of the Institution of Electrical Engineers; and of radiographer-assistants themselves. By general consent the term "radiologist" has come to be applied to members of the medical profession who undertake radiographic diagnosis, and treatment by means of x rays and radium; while the term "radiographer" denotes their trained non-medical assistants. It is laid down in the constitution of the Society that its members shall not undertake treatment in any shape or form except under the direction of a qualified medical practitioner, thus conforming with the spirit of a resolution of the Council of the British Medical Association passed on October 24th, 1917: "It is not desirable to encourage the practice of medical radiography by lay persons, except under the direct instructions and supervision of medical practitioners." Paragraph 27 of the constitution of the Society of Radiographers, which runs as follows, seems sufficiently explicit: "No non-medical member (i.e., no member who is without the qualifications entitling him to practise in Great Britain or Ireland as a physician or surgeon) shall accept patients for radiographic, radioscopy, or therapeutic work except under the direction and supervision of a qualified medical practitioner, and any breach of this regulation shall be deemed conduct unfitting the member guilty thereof to remain a member of the Society." The Society now numbers some 120 members. It is governed

by a council comprising members of the three bodies from whom the joint committee was formed. The president is Sir Archibald Reid, superintendent of the x-ray department of St. Thomas's Hospital; the vice-presidents are Dr. Robert Knox, honorary radiologist to King's College Hospital, and Mr. C. H. Wordingham, formerly president of the Institute of Electrical Engineers. An examination in the practical and theoretical side of the work is held twice a year, successful candidates receiving the diploma of member (M.S.R.). Hospitals are invited to co-operate with the Society in maintaining a high standard of technical efficiency by employing only duly qualified persons as assistants in their x-ray departments. An information bureau has been formed in order to bring together radiographers and institutions needing their services. Communications may be addressed to the Secretary, Society of Radiographers, 12, Stratford Place, W.1.

#### THE WREN CELEBRATION.

We refer elsewhere to Sir Christopher Wren's observations on physiology, which were of very considerable originality and importance; we will here only briefly mention the ceremonies which have taken place this week to commemorate the second centenary of his death. One of these, and perhaps the most striking, was the service at St. Paul's Cathedral on Monday, which was attended by many representatives of the City of London, of architecture and art in general, and of the medical profession. After a short service a procession was formed to the crypt, where Mr. Paul Waterhouse, President of the Royal Institute of British Architects, laid a wreath on the tomb, and M. Augustin Rey, on behalf of the Société Centrale des Architectes Français, deposited a bronze palm; a wreath was sent by the French Société des Architectes Diplômés. A representative of the American Embassy in London also laid a wreath on behalf of the Architectural League of New York. The Dean of St. Paul's then gave a short address. He began by saying that those present had assembled to do honour to one of the greatest of Englishmen, in a building which was the greatest triumph of his generation. Wren's building had accumulated more glorious memories than Old St. Paul's, because that was the centre of a little country, whereas Wren's St. Paul's was the metropolitan cathedral of the greatest empire in the world's history. Among those who attended the ceremony was the President of the Royal College of Physicians, and it may not be out of place to recall that the house of the College of Physicians contains at least one remnant of Wren's work. The home of the College in Amen Corner was destroyed in the great fire of London, and the new house in Warwick Lane was designed by Wren. Dr. Baldwin Hamer, who contributed liberally to the funds for the rebuilding, defrayed also the cost of wainscoting the coenaculum with fine Spanish oak, presenting fluted pilasters, ornamented capitals, and elegantly carved cornices. In 1820 Wren's building had become not only inconvenient, owing to its situation, but had fallen into dilapidation, and Sir Henry Hallford, who was elected president in that year, brought about the removal of the College in 1825 to the building it now occupies in Trafalgar Square. Care was taken to remove part of the wainscoting given by Hamer, and it now furnishes the Censor's room. Although there is no positive evidence, the opinion of experts, and the fact that Wren was in the habit of employing Grinling Gibbons, combine to make it almost certain that the carving is by Gibbons.

#### TREATMENT OF OPHTHALMIA NEONATORUM IN LONDON.

In the report of the Departmental Committee on the Causes and Prevention of Blindness attention was drawn to the different practices adopted in Liverpool and London for the reception of mothers and infants when the infant suffered from ophthalmia neonatorum. Liverpool arranged for the reception of the patients in one of the existing voluntary hospitals, in London a special hospital was set up by the



Metropolitan Asylums Board, the St. Margaret's Hospital. The departmental committee thought there was some disadvantage in a special hospital, which may come to be regarded as primarily associated with venereal disease, with a consequent unwillingness on the part of some mothers to enter such an institution. Further, it was thought that a single hospital in London was not likely to be sufficiently known to practitioners and people. For these reasons it was considered that in London it would be advantageous that hospital accommodation should be provided by securing beds in a few of the well known teaching hospitals in centres convenient to the great masses of the population. There would be a further advantage in such an arrangement, in that students attending the practice of these hospitals would become familiar with the care and treatment of these cases, which they will not readily do if provision is made at one special hospital alone. We have now received from Mr. M. S. Mayou, F.R.C.S., the statistics of the number of cases notified in the metropolitan area and the number admitted to St. Margaret's Hospital, which is situated close to the Kentish Town Station of the Midland Railway:—1919: cases notified, 870; cases admitted, 281. 1920: cases notified, 1,186; cases admitted, 252. 1921: cases notified, 1,076; cases admitted, 213. 1922: cases notified, 866; cases admitted, 213.

#### DISTEMPER RESEARCH COMMITTEE.

As has already been announced, the Medical Research Council has undertaken to organize an investigation into dogs' distemper, towards which funds will be provided by the Field Distemper Council. Researches will be conducted by members of the Medical Research Council's staff, partly at the National Institute for Medical Research, Hampstead, but more particularly at the new farm laboratory, for which a site near London has recently been acquired. As opportunities arise and suitable assistance can be secured, inquiries co-ordinated with these will be promoted at other centres of work. These investigations will also be brought into relation with other studies in human and animal pathology. The Medical Research Council has appointed the following scientific committee to advise on the subject and to direct the investigations: Sir William B. Leishman, K.C.M.G., C.B., F.R.S., Director of Pathology, War Office, and a member of the Medical Research Council (Chairman); Mr. J. B. Buxton, F.R.C.V.S.; Captain S. R. Douglas, F.R.S., National Institute for Medical Research; Professor F. Hobday, C.M.G., F.R.C.V.S.; and Dr. C. J. Martin, C.M.G., F.R.S., Director of the Lister Institute. Other members may be added later as the programme develops. A member of the Council's staff will act as secretary to the committee, and communications upon any scientific questions should be addressed to the Secretary, Distemper Research Committee, 15, York Buildings, Adelphi, W.C.2.

#### OSWALDO CRUZ.

DR. BELISARIO PENNA has fitly chosen the first centenary of the Independence of Brazil for the publication of his recollections of Oswaldo Cruz, whose disciple he was. Cruz, perhaps the most illustrious of Brazilian men of science, died of Bright's disease in 1917 at the early age of 44. For fifteen years he laboured incessantly in the domain of sanitary science, and to him Brazil is indebted for its rapid emancipation from yellow fever. As director of the Brazilian Public Health Service he stamped out this disease in less than three years, and was equally successful in dealing with yellow fever in Para, the principal seat of the rubber industry on the Amazon. He also carried on a vigorous campaign against plague, malaria, and small-pox, which were very prevalent throughout the country. In 1900 he founded an institute for bacteriology and serum therapy, to which in 1908 the name Instituto Oswaldo Cruz was given. It is one of the finest institutes of parasitology in existence, and its proceedings, which are issued annually in Portuguese and French, are well known to biologists throughout the world. By means of

this institute Oswaldo Cruz was able to found a school of hygienists and workers in experimental medicine, of whom the best known is probably Carlos Chagas, who discovered the cause of chronic infective thyroiditis. Dr. Penna has reproduced a number of portraits of Oswaldo Cruz, but does not attempt to give any continuous narrative, contenting himself with a collection of extracts from articles, lectures, and addresses; but we sympathize with his fervid panegyric of this great Brazilian scientist.

THE Council of the Royal Society of London has recommended fifteen persons for election into the Society: they include Dr. E. D. Adrian, University lecturer in physiology, Cambridge; Dr. Edward Fawcett, professor of anatomy in the University of Bristol; Dr. R. T. Leiper, professor of helminthology in the University of London, and Director of the Department of Helminthology in the London School of Tropical Medicine; Dr. J. J. R. Macleod, M.B., Ch.B. Aberd., professor of physiology in the University of Toronto. Among the other names are those of Dr. Guy Marshall, Director of the Imperial Bureau of Entomology, and Sir Douglas Mawson, D.Sc., who led the Australasian Antarctic expedition, 1911-14.

THE Section of Medicine at the Annual Meeting of the British Medical Association, to be held this year at Portsmouth, will meet on Wednesday, Thursday, and Friday, July 25th, 26th, and 27th. The Committee of the Section, of which Sir Thomas Horder is president, has decided that the subject to be discussed on the first day shall be diabetes; on the second day there will be a discussion on the etiology and treatment of heart disease in early life, with a special view to the prevention of chronic cardiac insufficiency; and on the third day a discussion on chronic bronchitis.

### Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

#### Pension Medical Services.

TRIBUTE BY THE MINISTER OF PENSIONS. MAJOR TRYON, the Minister of Pensions, made an important speech on February 20th in meeting a motion in the House of Commons for a Select Committee of inquiry into the work of the Pensions Ministry. The motion was submitted on behalf of the Labour party by way of amendment to the address by Mr. Adamson, who traversed familiar ground; a number of other members raised points of criticism, but did not make any personal reflections on the medical services.

The Minister of Pensions spoke first of the enormous medical responsibility of his Department for the care of the sick and wounded. The nation, he said, owed a great debt to the medical profession and the hospital staffs for what they had done, and he was sure the House would feel that no expenditure could be devoted by the country to a better purpose than to the restoration as useful citizens of those who had been disabled in the great war.

#### Definitions of Terms.

To clear up misconceptions that might still obtain, Major Tryon recapitulated primary definitions. He reminded the House as regards the term "entitlement" that the grant of pensions was made entirely irrespective of what employment a man might get. The entitlement was simply the right of compensation for the disability suffered. "Assessment" was the measuring by medical authorities of the extent of the disablement, comparing it with the condition of a normal healthy man of the same age. It was expressed in percentages. There was no other way in which assessment could be made. In respect to the pensions scale or rate, he was sometimes told that the Government had not done its duty to the ex-service men. Before the war an ex-service man, totally disabled, with a wife and two children, cost 17s. 6d. Now in such case the scale provided was 63s. 6d.

#### Appeal Tribunal.

The ex-service men had demanded and maintained the demand that the question of entitlement, whether the injury was due to the war or not, should be settled by some impartial tribunal—should be taken absolutely out of the hands of the Ministry of Pensions—and that was why the Lord Chancellor's Department had been chosen to set up



a number of these tribunals for entitlement. They consisted of a lawyer of seven years' standing, an ex-service man, and a doctor. He did not know of any other country in which the decision vitally affecting State funds was thus taken away from the control of State officials and put in the hands of three persons who could absolutely decide the issue.

#### *The Medical Boards.*

Statements had been made that secret instructions had been issued to these Boards to cut down pensions. A Departmental Committee upon which were representatives of the three great ex-service men's organizations, a member of the Labour party, members of every other party in that House, and representatives of the local voluntary workers, had thoroughly investigated the allegation, and they unanimously agreed that there was no truth in it. Members of Parliament frequently quoted cases where Medical Boards cut down the rate of pensions, but said nothing about those of enlargement. The main justification, in his opinion, for the Medical Boards in the last year or two had not been any reduction that might have been effected, but the fact that as some men were getting better and some men were getting worse, it was necessary to make adjustments. If these men were not examined, simplicity would be obtained at the cost of the men who were getting worse. The country would be spending its money, not on the men who were getting worse, but on those who were getting better. Over the whole range of cases the effect of the work of the Medical Boards had been remarkable. About two years ago, taking the increase in respect of cases getting worse, and the decrease in respect of those getting better, the net reduction of assessment by the Medical Boards was 6 per cent. A little time ago the net reduction, as the result of the service of the Medical Boards, was 4 per cent. The net reduction of assessment to-day was 3½ per cent. The lesson of these figures was that the Ministry was right when in 1921 it introduced the Pensions Bill of that date giving increased powers to grant final awards, because it was found that about 50 per cent. of the cases examined showed no change. The advantage of the power to grant an increased number of final awards was that the pensioner with his affairs thus settled felt that his pension was safe for the rest of his life. At the present time final awards were being made at the rate of 4,000 a week.

#### *Cost of Administration.*

A Departmental Committee had sat for seven months in order to ascertain what could be done in reasonable economy. The Medical Subcommittee introduced the system of clearing houses for the sick and wounded. The result was a saving of time, a lessening of the waiting list, and great financial economy. A saving of £250,000 was also made by reducing the number of doctors on Medical Boards from three to two. Legislation would be proposed this session under which a pensioner, instead of having to produce a life certificate every three months, would have to do so every six months only. That would get rid of an enormous amount of trouble to all concerned, and would save about a million a year in expenses of the issue office. Finally, in this connexion, Major Tryon mentioned with satisfaction that the cost of administration, apart from medical administration of medical service, was down to as low a rate as 9d. in the £. Moreover, 97 per cent. of the male staff were ex-service men, and that, he thought, met any suggestion that there was want of sympathy in the Department.

#### *Medical and Surgical Work.*

Major Tryon regretted that he had not more time to speak in detail of the medical and surgical work, but he gave some striking information. Since the armistice the Ministry had spent over £60,000,000 on the medical treatment of the sick and wounded of the great war, and in allowances for the men and their families while the treatment continued. The nation would, he felt sure, be grateful to the medical profession and hospital staffs for the remarkable results achieved. A large proportion of the patients had been restored to health and had resumed their civil occupation. At the present time the Ministry was responsible for—

A daily average of 25,000 patients in hospital (of these, 12,000 are in hospitals owned, managed, and staffed exclusively by the Ministry);

A daily average of 80,000 patients attending as out-patients at hospitals or clinics (of whom the larger number are attending clinics owned, staffed, and controlled exclusively by the Ministry);

Over 1,000,000 cases of treatment have been given by the Ministry in the past three years.

It must not be supposed that these cases simply went under treatment and came out again as quickly as possible. It was the aim of the Ministry's medical service to continue treatment so long as there was the smallest chance of material improvement in the man's condition. As an illustration of

the care taken he mentioned that he had recently had an investigation made into a batch of 2,000 cases, and had found that 40 per cent. had been receiving treatment, whether as in-patients, out-patients, or at home, at the expense of the Ministry, for eighteen months and over. They were cases, many of them, of gunshot wound, requiring orthopaedic treatment; some were tuberculous; many were neurasthenic. The medical service of the Ministry was not only the largest of its kind, but was by far the most comprehensive in technical equipment. The work done in the Ministry hospitals—for example, for surgical cases by orthopaedic treatment—was far ahead of anything else in the country in comprehensiveness. He had had an analysis made recently of 1,000 cases taken at random of the discharged from hospital during the last twelve months. The figures came out as follows:

General medical and surgical cases—118 out of 224 were discharged as completely recovered.

Tropical disease cases (dysentery, malaria, etc.)—51 out of 55 men discharged were either recovered or greatly improved.

Orthopaedic cases—185 out of 452 were discharged as recovered and 199 were discharged as greatly improved.

The treatment and handling of ex-service men suffering from nerve or brain trouble had been constantly under discussion between himself and representatives of ex-service men. There were three points on which they were specially concerned—the hope of cure for those already in asylums, the efforts being made to save border-line cases from having to be certified, and the restoration to health and usefulness of the mental and nerve cases. His predecessor and himself had realized fully the importance of this question, and had gone a long way to meet it. The Ministry had fourteen neurological hospitals and a large number of neurological clinics. These were staffed with the best experts, and the special emphasis which the Ministry had given to this branch of treatment had actually led to a very great increase in the number of such experts, many of whom would not have taken up this class of work but for the training given in Ministry hospitals. The Ministry had actually by its neurological work in hospitals and clinics prevented a very large number of cases becoming certified. In these hospitals and clinics every class of case was dealt with, from the slightly neurasthenic to those on the border-line, and efforts in treatment did not cease until a definite cure or substantial improvement wherever possible was shown. In one neurological hospital devoted to the most serious cases, out of 134 treated during 1922 only nine had eventually to be certified as insane; of the remainder, 68 were discharged recovered, and twelve were transferred to other institutions, including some for industrial training. At another Ministry hospital, out of 300 cases treated during the twelve months, 246 were discharged medically reported as recovered, and it was known that 121 got employment at once, while some of the remainder were transferred to the Ministry of Labour for training, or, with the help of the War Pension Committee, were given grants to set up in business. Between 1,500 and 1,600 cases passed through the neurological hospitals in a quarter. Of these on an average 20 per cent. were discharged fully recovered. He thought that the medical staff might find great pleasure in the photographs sent in token of gratitude from men who had appeared shattered wrecks, but had now emerged into civil life—to be useful citizens and happy men. Some of the best treatment given had been in teaching the man a trade—not necessarily a trade that he would follow, but for its value in curative effect.

In conclusion, Major Tryon announced that the Ministry was going to start as an experiment separate arrangements for the treatment of selected certified cases of a hopeful type. The Government felt that the experiment was well worth making. A beginning would be made tentatively with one or two small establishments, and steps were being taken to start at an early date. In thanking Members of Parliament for the help they had rendered to the Ministry, Major Tryon said this was a nation's debt, and it should be the duty of all parties in the State to assist in meeting it. The division showed a majority of 131 for the Government, the amendment being rejected by 307 votes to 176.

#### *Institutions for Mental Defectives.*

In Committee of Supply, on February 21st, a token supplementary vote of £10 was proposed in respect of work being under taken in the enlargement of the Rampton Institution for Mental Defectives. Sir John Baird explained that the provision was for defectives who had violent propensities. The existing building accommodated 220 males and 148 females. The scheme was for the erection of an additional unit to accommodate 99 persons and additional nurses, and cottages for the married staff. Three years would be required to carry it through. The administration was by the Board of Control.

In the course of discussion several speakers suggested that it would be better to have several small buildings rather than one large institution, and Mr. Pringle recalled previous estimates for



this institution; in 1921-22 there was one for £35,700 for a new female wing; in the following year the expenditure upon a wing for patients and on improved accommodation for nurses reached £51,200. There was now a further estimate amounting to £109,000. Sir John Baird admitted the existence of a difference of opinion among experts as to the relative value of treatment in large and in small institutions. The Board of Control was of opinion that an institution such as that under discussion was best adapted for the purpose. Dr. Chapple inquired whether the Minister had exhausted the possibility of using some of the derelict buildings to be found all over the country. He knew of one that cost over £100,000 to build, that had been comparatively recently bought by the Government, which was anxious now to sell it for £22,000, but there was no offer. He disagreed, however, with those who denounced institutional treatment, and thought it was generally desirable.

Sir Sydney Russell-Wells said that if there was one lot in life deserving commiseration more than another it was that of the man, woman, or child who came within this class of mental cases. Any attempt to interfere with the treatment of such persons, or to lessen the facilities for dealing with them, was to be deprecated, for such treatment was a benefit not only to the sufferers but to the nation. The saving of abuses was far more likely to be achieved in large than in small institutions, for the large had greater facilities for classifying, grading, and arranging the inmates. He asked members to recall villages in the country where in days gone by—perhaps even now—there was a village lunatic who was the butt of the children. Was it suggested that a poor wretch of this sort would not be better off in an institution? Such a place was better than the patients' own homes or a small institution. A great deal more money might be spent in adapting existing buildings than in providing new. Possibly mental deficiency was the most frequent cause of abnormal and extraordinary crime. Persons had been sentenced as criminals when they ought to have been treated as mental deficients. The vote was carried by 248 to 132.

**Voluntary Hospitals' Grant.**—Sir W. Joynson-Hicks informed Mr. Gilbert, on February 21st, that the whole of the sum of £500,000 granted to the Hospital Commission had not yet been distributed. ... to hospitals in London, and the ... tributed. The sum of £275,000 ... tside London. Of this £181,318 had been paid to date, and the Commission intended shortly to consider the distribution of the balance after the claims in respect of the 1921 deficit had been met. The Commission had not yet made any recommendations as to the continuance of State assistance after the grant was exhausted. Full information in regard to the work of the Commission was contained in the interim report which was being issued that week. The Ministry of Health had no responsibility for the combined appeal for the hospitals in London, but it had been informed by the organizing committee that it was not yet possible to state exactly the total sum contributed to the combined appeal. The sum actually paid in to the organizing committee amounted to £392,100, of which £269,000 had been contributed. But large additional sums had yet to be received from two schemes which were still open.

**Medical Treatment for Ex-service Men.**—Viscount Windsor asked, on February 21st, whether the Minister of Pensions would make arrangements in country districts—in order to obviate the long delay and physical injury which were often entailed—for ex-service men to be examined and treated by a local medical practitioner instead of having to apply to the local Ministry of Pensions office in the event of recurring illness. Major Tryon said it was the recognized duty of a local insurance practitioner to refer a patient to the local office of the Ministry if he considered that the man required special treatment of any kind for a war disability. It was competent for any disabled ex-service man to apply direct to the local office of the Ministry for this purpose.

**Institutions for Tuberculous Patients.**—On inquiry by Mr. Briant, Sir W. Joynson-Hicks stated, on February 21st, that the institutions approved by the Minister of Health for the treatment of tuberculosis in England, apart from Poor Law institutions, contained 19,240 beds. Of these, 3,310 were in children's institutions, but the remaining 15,930 were available for insured persons, although since the termination of sanatorium benefits no beds were specially reserved for such patients.

**Spaulding Treatment of Tuberculosis.**—Captain W. Benn asked the Minister of Pensions, on February 20th, whether his attention had been called to the Spaulding treatment for tuberculosis, and whether it was intended to make it available for ex-service patients. Sir W. Joynson-Hicks, in reply, said that the Minister of Health was informed that no supplies of M. Spaulding's remedies were yet available in this country. When they became available it would be open to the medical officers responsible for the treatment of ex-service men to utilize these remedies in the treatment of their patients if they considered it desirable.

**Legislation as to Mental Treatment.**—Mr. Griffiths asked, on February 26th, whether a bill would be brought forward this session to extend to other local health authorities the powers already conferred by the Public Health Act, 1875, on borough councils to conduct hospitals for any class of illness, including early uncertifiable cases of nervous breakdown; and whether, in view of the urgent need for hospitals of this description unconnected with lunacy administration and free from detention, the Minister of Health would extend the grant to enable councils to maintain such hospitals, with a view to the reduction of the £7,900,000 now spent annually in keeping up asylums. Sir W.

Joynson-Hicks said that the question of introducing legislation with regard to mental treatment was receiving the consideration of the Government.

**Visitations to Mental Hospitals.**—Requested on February 26th to take steps to see that Section 79 of the Lunacy Act was posted up in the waiting room of asylums, Sir W. Joynson-Hicks said that all mental hospital authorities had been asked to set out the effect of Section 79 of the Act in the regulations as to visitation which were sent to friends of patients. The Board of Control considered this preferable to putting up a notice in the waiting room.

**Health Insurance: Medical Benefits.**—Sir Kingsley Wood asked, on February 20th, whether in view of the expiration of the agreements at the end of this year with doctors on the panel list, the Minister of Health was taking steps to review the present scheme of medical benefits with a view to rendering it more efficient and economical. Sir W. Joynson-Hicks said that the existing arrangements were now being examined in detail by the Insurance Consultative Council of the Minister of Health.

**Maternity Service and Child Welfare in Scotland.**—Captain Elliot informed Mr. Sullivan, on February 22nd, that the amount of Government grant paid in relief of local authorities' expenditure in Scotland under schemes of maternity service and child welfare, in each local authority financial year ending in May, was in 1919-20 £64,692, in 1920-21 £90,532, and in 1921-22 £235,832. The gross expenditure of local authorities in each year would be almost exactly double the amount of grant. The figure given for 1921-22 was an approximation. The very large increase of grant in that year was due in the main to the increased supplies of food and milk given by local authorities, the cost of which amounted to more than half of the total expenditure. The grant for 1922-23 could not yet be stated, but it was not expected to exceed £111,000.

**The Registration of Nurses.**—Mr. Briant asked, on February 21st, if the proposals of the Nursing Council included the registration of nurses with less than (the interests of the public, w efficiency, the Minister c reduction in the standard of nursing. Sir W. Joynson-Hicks said that the Council had submitted a rule which had for some time been in operation in Scotland, to give it a discretion in exceptional cases to admit nurses with less than one year's training. The Minister had asked the new Council to reconsider this proposal, and until its reply was received it would be premature to make any statement.

**Unemployment and Sickness.**—Questioned by Mr. Somerville, on February 21st, whether there had been increase of sickness from lack of sufficient nourishment, Sir W. Joynson-Hicks said the latest figures available as to the expense of sickness amongst persons insured under the National Insurance Acts indicated that the aggregate amount of sickness during the past year fell short of the expectations on which the Acts were based, and also of the experience of any pre-war year. So many factors affected the total expenditure on sickness benefits that it was impossible to assign variations in that figure to particular causes. But there was no direct evidence of an increase of sickness for the reason stated by Mr. Somerville.

**Sale of Liquor to Young Persons.**—Lady Astor's bill, entitled Intoxicating Liquors (Sale to Persons Under Eighteen) Bill, will come up for second reading in the House of Commons on March 9th, when it will have first place. The measure proposes to prohibit the sale of any intoxicants to anyone under 18. As the law stands now, any child over 14 may buy intoxicants, but none can buy spirit until reaching 16 years of age. It is claimed that this bill is not essentially a temperance measure, but is promoted with the support of teachers in the interest of adolescents.

**Vaccination of Army Recruits.**—Lieut.-Colonel Guinness, in answer to Mr. Leech on February 21st, said that no recruit for the Regular Army was enlisted unless he signed the attestation paper, in which he undertook the obligation to be vaccinated or revaccinated. If a recruit subsequently refused to fulfil the obligation, it had always been the practice to discharge him without gratuity on the ground that "his services are no longer required." This system had not been changed, but the wording of the regulations had been amended, and the cause of discharge was now more exactly defined as "refusal on the part of a recruit to carry out the agreement to be vaccinated or revaccinated entered into on enlistment." The rule applied to all regular recruits without exception, but not to recruits for the Territorial Army.

**Vaccination in Germany.**—Mr. Sullivan asked a question, on February 22nd, as to a statement in a pamphlet issued by the Ministry of Health which attributed the compulsory revaccination laws which existed in Prussia since 1834 to the year 1874, that being the year in which the Prussian laws were re-enacted for the new German Empire, thus concealing the fact of a serious outbreak of small-pox under conditions of strict vaccination. Sir William Joynson-Hicks said that the statement in the pamphlet was correct. The Prussian law of 1834 referred only to soldiers in the Prussian army. Compulsory revaccination for the civil population in Prussia and the rest of the German Empire was first enacted in 1874. There was, therefore, no ground for suggesting that the pamphlet should be withdrawn.

**Vaccination Deaths.**—Sir W. Joynson-Hicks stated, on February 26th, in reply to Mr. Snowden, that during the year 1921 "vaccination" was mentioned on seven certificates of death and "general vaccination" on one. They were classified as follows: 3 to vaccination, 3 to erysipelas, 2 to purulent infection, septicæmia. The eight cases were all of children under 1 year.



## NOVA ET VETERA.

### THE FOURTH OF MARCH: A DOLEFUL ANNIVERSARY.

THE Christian Calendar, as it used to be observed, was a chronicle of joy. Though the commemorations were usually of a death, the attention of the faithful was directed to the triumph of the soul rather than to the trials and sufferings of the body. Thus each succeeding day was meant to be a fresh link in a glad chain whereby the wide world everywhere was bound around the feet of God. It was this aspect of the celebrations as much as a different theology that constrained the Puritan to their abolition. It was this, too, which preserved the few that remain to an unbelieving generation, which observes them as holidays and cares not to remember that they were also meant to be holy days. But the power of the Puritan is past, and rule is now divided between the Hedonist and the Pessimist. Should the last named ever come into his kingdom we may expect a new calendar, a calendar of calamities, in which each day will be a fresh stimulus to the remembrance of past and present evils. In such a mournful menology the fourth of March must hold a bad pre-eminence if, as many are convinced, it is the anniversary of the first appearance of syphilis in Europe. But that little word "if" conceals a sea of troubles, for the literature upon the origin of this disease is immense, very animated, not to say venomous. "Bone Deus," wrote one of the disputants in 1783, "quot sunt illico factae medicorum concertationes, disputationes, discordiae!" Happily to-day the sounds of strife are stilled and one may venture, with all submission unto maturer discernments, to outline the argument for the fourth of March.

Whatever judgement may be passed upon the alleged proof of the existence of syphilis in prehistoric man, there can be no doubt that to the practitioners at the end of the fifteenth century it was a new disease. Classical and mediaeval literature has been passed, as it were, through a fine sieve, but no unequivocal reference to it has been discovered. The medical lore of the past has been searched with zeal even greater, but in the result equally futile. Syphilis staggered the doctors of that day out of their medical catechism. In presence of the "Veneris monumenta nefandae" they recognized the "inextricabilis error" of the maze they had been treading, and found the thread that ultimately guided them into a new world untrammelled by authority. By the year 1500 the portent had appeared in every country of Europe. In the British Isles the first notice comes, curiously enough, from Aberdeen, where, on April 21st, 1497, the town council issued regulations "for the eschevin of the infirmitey cumm out of Franche and strang partis." Six months later, September 22nd, Edinburgh was forced to take measures "for the eschewing of the greit appearand danger . . . fra this contagious sickness callit the Grandgore." Both these documents agree with other early notices from Northern Europe in attributing the new disease to France.

In France various notices of earlier date are available, but the edict issued in Paris on March 6th, 1497, is of special interest because of its opening words:

"Pourceque en ceste ville de Paris y avoit plusieurs malades de certain maladie contagieuse nommee la grosse verole, qui pai deux ans en ça a eu grand cours en ce Roiaume, tant de ceste ville de Paris que d'autres lieux."

Without reading a too strict chronology into this document it is safe to say that the disease had not been evident to the public before March, 1495. We learn also from Lyons and elsewhere that the outbreak in the locality was due to the advent therein from Italy of soldiers suffering from it. Of the famous expedition of Charles VIII into Italy much has been written, but a few piquant phrases from Dr. Pangloss must suffice here:

"Personne n'ignore combien cette expédition fût inutile et brillante. Nos chevaliers y développèrent l'héroïsme le plus admirable et le plus infructueux. Ils prirent avec rapidité Milan, Florence, Rome, Naples et—la grosse verole. . . Ce fut à peu près l'unique fruit . . . d'une campagne si glorieuse."

A few dates will fix the sequence of events. Leaving Lyons with his army in August, 1494, Charles crossed the Alps on September 2nd, and after being laid up at Asti with an attack of small-pox he reached Rome on December 31st. He did not enter the kingdom of Naples, the direct object of

his enterprise, till February 22nd, 1495. The prize fell into his hands almost without a blow, but he only remained within the territory till May 20th, when his army began the homeward march. But he had been too successful, and this made all the Italian States his declared enemies. Had they been united his doom was sealed. As it was, he had to fight his way back, and even his great victory over the Venetians only enabled him to withdraw the army into France, which was reached in October. Meanwhile Naples had been lost as quickly as it had been gained. The few French troops were shut up within strongholds here and there, but had to surrender one after another, so that the last of them reached France early in 1496. As for syphilis, we have the records of two surgeons in the Venetian army who note its appearance at the time of the French retreat, while the French alleged that it first broke out among them when they were in Naples—that is to say, some time after February 20th, 1495.

So far we are on common ground. All are agreed as to the epidemic at Naples and as to the part the French army played in its spread through Italy into France and so to other countries. But what about the disease before February, 1495? The condition of Italy at that time was indeed deplorable. Fracastor has described it in poetic diction but with sober truth:

Ergo hanc per miseris terras Saturnus agebat  
Pestem atrox, nec saeva minus crudelis et ipse  
Miscebat Mavors, conjunctaque fata ferebat.  
Quippe lue hac nascente, putem simul omnia diras  
Eumenides cecinisse fera et crudelia nobis.  
Tartareos etiam barathro dira omnia ab imo  
Excivisse lacus, Stygiaque ab sede laborem,  
Pestemque, horribilemque famem, bellumque, necemque.

These lines are rendered as follows by Nahum Tato, afterwards Poet Laureate, who published a translation of Fracastor's poem in 1686:

From hence malicious Saturn's Force is known,  
From whose malignant Orb this Plague was thrown,  
To whom more cruel Mars assistance lent,  
And club'd his Influence to the dire Event:  
Nor could the malice of the Stars suffice,  
To make such execrable Mischief rise;  
For certainly e'er this Disease began,  
Through Hell's dark Courts the cursing Furies ran,  
Where to astonish Ghosts they did relate,  
In dreadful Songs, the Burthen of our Fate;  
The Stygian Pool did to the bottom rake,  
And from its Dregs the curst Ingredients take,  
Which scatter'd since through Europe wide and far,  
Bred Pestilence, and more consuming War.

If ever the dragon womb of Stygian darkness could beget a plague it was here. Little wonder that the spontaneous generation of syphilis found acceptance. But nowadays one must look for carriers or sporadic cases. The latter no doubt occurred, but were missed because they were sporadic. But whence came the infection to Italy? Benedictus offers a clue: "novus . . . morbus gallicus ad nos ex occidente—irrepsit." Does he refer to Spain? If so the path of infection was easy. A Spanish family ruled in Naples, and their relations with the mother country were intimate. Many Spaniards came to Italy in search of fame or fortune. One of these, Roderigo Borgia, was then seated on the papal throne. Thousands of Jews came thither on their expulsion from Spain in 1492, and they were joined in the immediately succeeding years by numbers of the Marani or cryptic Jews about whose conversion to Catholicism Ferdinand was doubtful. Opportunities for infection from Spain were therefore abundant.

But neither the Jews nor the Moors of Spain are noted as being affected by diseases different from those of their Christian neighbours. One direct piece of evidence we have, however. It is from Roderigo Diaz, who practised for many years in Barcelona and was there when Columbus and his companions after the first voyage to America came to pay homage to their sovereigns (April, 1493). He explicitly states that some of the sailors were affected by the new disease, and that it rapidly spread through the city and thence to Europe. He also adds that the sailors were infected by the natives in Hispaniola. Oviedo is no less emphatic. He was at the Court at Barcelona when Columbus arrived; he had conversations with him then and in after years; he knew personally many of those who accompanied Columbus on his voyages. In 1515 he went to Hispaniola as a government official, had visual corroboration of the presence and frequency of the disease there, and obtained from the natives confirmation of its antiquity among them. Oviedo had no medical training, but the subject was one in which he was much



interested, and he took great pains to ascertain the truth. According to this story, therefore, syphilis accompanied the Spaniards on their first voyage home. They first touched land at Lisbon, where they rested for nine days, passing thereafter to Seville and thence overland to Barcelona. As they landed at Lisbon on Monday, March 4th, 1493, that day may rightly be regarded as "dies Europae fatalis." But if anyone feels too depressed on that sad anniversary he may gather some solace by recalling the event which marked the preceding day, for it was upon March 3rd, 1905, that Schaudinn discovered the spiral protozoon to which he gave the name of *Spirochaeta pallida*.

Fallopian, in speaking of America, said: "Inventum est certo pretiosissimum metallum, inde delata est copia. . . Sed est etiam adjuncta spui, et alio melli admista. Detulit enim Columbus tirremes Gallica lue refertas." And he was right. But if we robbed America of its precious metal in the past, we have suffered sorely for the wrong. And the end is not yet, since the debt of gold we are burdened to repay at compound interest for many a year to come. The philosophic mind, however, might be tempted to regard this material loss as clear gain if only the Western world would recall from us what it originally bestowed as a spontaneous gift.

G. M. C.

## England and Wales.

### THE NEW SPIRIT IN PSYCHIATRY.

We have received from Dr. H. Dove Cormac, medical superintendent of the Cheshire County Mental Hospital, a copy of the report by Dr. C. Hubert Bond, Commissioner of the Board of Control, on his annual visit of inspection to that institution. The concluding sentences of the report are as follows: "The fact that a substantial pecuniary recognition is available here to any member of the medical staff who obtains a diploma in Psycho-logical Medicine prompts me to express the hope that it will be found possible to bring into activity a school in that subject, which it is understood that the authorities at Manchester University are willing to arrange. I also desire to express my conviction that, could it be found feasible to establish at a general hospital out-patient treatment, to be undertaken by the medical officers here, for mental cases sent by their family doctor, much advantage would be derived thereby, especially towards the prevention and cutting short of cases of mental illness arising in the area served by this hospital."

### THE CANCER HOSPITAL, LONDON.

An appeal for funds is being made on behalf of the Cancer Hospital (Free), Fulham Road, London, to commemorate the services to the hospital of the late Sir Charles Ryall. The present operating theatre is no longer adequate for its purpose, and it has been resolved to double the present accommodation. The erection of this new unit will involve other alterations, as existing structures will have to be modified. During the last few years the work of the out-patient department of the hospital has greatly increased and new departments have been opened for medical, dental, and laryngological cases, while now deep-therapy apparatus has been installed in the electrical and radio-therapeutic department. A rearrangement of the out-patient department is, therefore, also necessary in order to make better use of the space available. In 1910 a research institute was erected, but the research work has been limited by the amount which the committee could appropriate for the purpose. It is hoped that a sufficient sum will be raised to provide for the endowment of research, as well as to pay for the structural alterations contemplated in the hospital.

### CENTRAL MIDWIVES BOARD.

A meeting of the Central Midwives Board for England and Wales was held on February 23rd, Sir Francis Champneys presiding. Letters were read from the respective bodies informing the Board of the re-election of Sir Francis Champneys, Mr. Leonard Henry West, Mr. John Shields Fairbairn, Mr. Charles Sangster, and Dr. Lyster as their representatives on the Board for the ensuing year. Letters from the Hampshire and Surrey County Councils were considered, and it was agreed to inform the clerks of these councils that the Board does not see its way to prohibit the application or administration of any drugs other than a

simple aperient except under proper medical advice, and that it was the intention of the Board to convey this view by the resolution which it passed at its last meeting. A letter had been received from the London County Council with reference to the resolution as to the duty of a midwife to call in medical aid in any case of ruptured perineum which requires stitching passed at the last meeting of the Board, and drawing attention to a letter addressed to the council's medical officer by the Board, in 1918, upon which the council had based its practice of considering the question of a serious rupture upon its merits and not upon the fact that the perineum required to be sutured; also that the council now assumes that any case in which a midwife sutures a perineum should be treated as a case of negligence or misconduct and reported to the Board for decision. It was decided to inform the London County Council that the circumstances under which the letter of 1918 was sent by the Board are no longer in existence and that the local authority should find a *prima facie* case whenever, in its opinion, the judgement of the Board is required.

A letter was considered from the Medical Secretary of the British Medical Association stating that the Council of the Association is of opinion that midwives should not administer anaesthetics except when they are acting under the direct personal supervision of the doctor in charge of the case, and expressing the hope that the Board will give the matter its serious consideration. It was agreed to inform the British Medical Association that the Board is in agreement with the view expressed in the letter, and that for special reasons only no action was taken in the case to which reference was made.

### SUNDERLAND EYE INFIRMARY.

At the annual meeting of the Court of Governors of the Sunderland Eye Infirmary the chairman, Mr. G. O. White, said that there had been a decrease of 54 in the number of cases treated in the institution during the past year, but the number of attendances had increased by 2,515, the total amounting to over 49,000; the number of patients admitted into the infirmary had also increased. There was, he believed for the first time, a deficit of £195 on the year's working, but trade had been very bad. The chairman then made the presentation of a gold watch to Dr. Boyd Cunningham, in recognition of his able and generous services to the institution as honorary surgeon and senior surgeon; it was now thirteen years, he said, since Dr. Cunningham came to the institution, and the work he had done had been most valuable.

## Scotland.

### EDINBURGH UNIVERSITY WAR MEMORIAL.

The Earl of Balfour, as Chancellor of the University, last week unveiled the memorial to the students and graduates of the University who fell in the great war. The memorial, which bears over one thousand names, consists of a series of handsome bronze panels let into the wall on the west side of the quadrangle, under the portico where formerly stood the statue of Sir David Brewster, which has now been removed. Above the memorial are sculptured the words, "*Vivere nos doceant qui didicere mori*," and, as the Chancellor said in his brief but eloquent address, "We cannot estimate our loss, but we have lost men who would have been great statesmen, great poets, great writers, great thinkers, leaders in science, leaders in religion, leaders in all social effort." Laurel wreaths and other floral tributes were laid at the base of the memorial by the Principal of the University, the President of the Students' Representative Council, and by representatives of the French, Serbian, and Polish students. A striking incident in the ceremony was the sounding of the "Last Post" by buglers placed out of sight in one of the stone galleries at a corner of the quadrangle; the sound dominated the whole quadrangle from above and was echoed from the surrounding walls.

### ROYAL MEDICAL SOCIETY DINNER.

The annual dinner of the Royal Medical Society took place on February 20th, the guest of the evening being Sir Humphry Rolleston, K.C.B., M.D., LL.D., President of the Royal College of Physicians of London. The dinner was held in the Hall of the Royal College of Physicians, and the company numbered about one hundred, including the Principal of the University, the President of the Edinburgh College of



Physicians, the Vice-President of the College of Surgeons, Vice-Admiral Sir John F. E. Green, Lord Murray, Lord Alness, the Deputy Director of Medical Services, the President of the Royal Faculty of Physicians and Surgeons of Glasgow, Professor Robertson, Professor Cushny, Professor Torrey, and Sir Norman Walker. The Chairman, in proposing the health of the guest of the evening, mentioned that 115 years ago the Society had honoured a very distinguished ancestor of his, Sir Humphry Davy. Sir Humphry Rolleston replied, and also proposed the toast of "The Royal Medical Society." In his speech he recalled that the Society was the oldest medical society in the United Kingdom, having been founded in 1734 by six students meeting in a tavern. Of the six original students—George Clegborn, Cumming, Russel, Hamilton, Archibald Taylor, and James Kennedy—Clegborn served with the army in Minorca, and subsequently became professor of anatomy at Dublin; and Russel wrote a *Natural History of Aleppo*, and at a later period was chiefly instrumental in starting the Medical Society of London in 1773. These two men were typical of the Scottish character in spreading, like missionaries, all over the empire and world the lessons learnt in Edinburgh. Other toasts proposed were "The Edinburgh Medical School" and "Sister Professions." Dr. Pearce, of the Rockefeller Institute, in replying to the latter, acknowledged the references that had been made to sister societies in America. The Royal Medical Society has recently instituted the new office of honorary president, and has elected Dr. Byrom Bramwell to be the first honorary president.

#### DEVELOPMENT OF LEITH HOSPITAL.

At the annual meeting of subscribers to Leith Hospital reports regarding the past year's work were submitted and reference was made to the projected building of a new wing as the Leith War Memorial. During the year 1,634 in-patients and 11,548 out-patients had been treated, the present accommodation of the hospital being 100 beds. For the year the ordinary income had been £8,782, and the ordinary expenditure £12,258, but the deficit had been more than covered by a gift of £5,000. The general decrease in hospital costs is shown by the figures for the previous year, which were £7,200 and £11,000 respectively.

#### GLASGOW EYE INFIRMARY.

At the annual meeting of contributors to the funds of the Glasgow Eye Infirmary Sir Hector Cameron, who presided, said that it was a matter for gratification that the subscriptions showed no diminution notwithstanding the present financial and economic conditions. There was an excess in expenditure over income of £1,273, as against a credit balance last year of £1,385. A considerable amount of work on the buildings had, however, been carried out during the year, including the installation of a new central heating system at a cost of over £2,000.

## Ireland.

#### THE GOVERNOR OF NORTHERN IRELAND.

The Duke of Abercorn, the Governor of Northern Ireland, made his state entry into Belfast on February 26th. Among the outstanding events of the day was the presentation of addresses in the Ulster Hall from various bodies, including Queen's University, Belfast, the Ulster Medical Society, the Royal Victoria Hospital, Belfast, the Order of St. John, and the British Red Cross Society. The Governor has made the following medical and dental appointments to his household:—Honorary Physician: Dr. J. A. Lindsay, F.R.C.P., Professor of Medicine in Queen's University, Belfast. Honorary Surgeon: Mr. Thomas Sinclair, C.B., M.Ch., F.R.C.S., Professor of Surgery, Queen's College, Belfast. Honorary Dental Surgeon: Mr. Herbert Williams, Londonderry, Ex-President of the Irish Branch, British Dental Association.

#### IRISH PUBLIC HEALTH.

At a conference arranged by the Irish Nurses' Union held recently in the Mansion House, Dublin, the following resolution was unanimously passed:

That this meeting calls upon the Government to appoint a Ministry of Health and Public Welfare so that the very urgent needs of the community in regard to health services may be considered.

Miss Louie Bennett, president of the Nurses' Union, in proposing the resolution, said that since the Government had not

yet formed a Ministry of Health it was important and urgent that public opinion should be aroused in connexion with the present state of public health in this country. Mr. R. J. P. Mortished gave details of a nursing scheme which might be carried out under the proposed Ministry of Health.

Dr. R. J. Rowlette (medical representative on the Irish Public Health Council) agreed that the health of Ireland had been neglected by those who governed the country in the past, and by creating a Ministry of Fisheries and neglecting to create a Ministry of Health the country had shown that it paid more regard to the welfare of the fish in the seas round the Irish coast than to the health of the people on the soil of Ireland. At present, health administration in Ireland was a generation behind that in any other civilized country in the world. In the twenty-six counties of the Free State there was only one whole-time medical officer of health, whereas in Great Britain every county and every considerable town had its health officer. There was no field of preventive work more fruitful than the medical inspection of schools, but, although such inspection had been the law of the land since 1919, no county had yet put it into force. In many instances the school buildings were themselves a danger to the health of the children. As to housing, one-fourth of the tenement houses of Dublin were in 1914 declared, not merely unfit for human habitation, but incapable of being rendered fit. There had been no improvement since. As regards reform of the Poor Law there had been important changes in the past few years, but they had been incomplete and not without fault. The concentration of all hospital treatment into one centre in each county brought great dangers to the sick, and district hospitals could not be dispensed with. He hoped the nurses would demand a national nursing service, just as the medical profession demanded a national medical service. He thought it better at the commencement to work to educate the public to the need of reform in health matters than to put forward partial and incomplete schemes in detail.

Dr. T. Hennessy, Irish Medical Secretary of the British Medical Association, said the truism that prevention is better than cure was fairly well appreciated in most countries if judged by the measures taken to give it effect. In Ireland, however, it would appear to be even scarcely enunciated.

It is true, he continued, that we have Public Health Acts in Ireland which, though somewhat ancient, would have served in their time useful purposes if efficiently administered. Public Health Acts, like other Acts of Parliament, require money for their administration. Public health measures are, in many instances, very unpopular with the public. They restrict the liberty and movements of people who have the misfortune to contract infectious and contagious diseases. For instance, there are parents who send their children to school for the twofold purpose of (1) having them educated, and (2) securing quietness in the home as the result of their absence. It is on occasions necessary in the interests of public health that school children, either suffering or convalescing from infectious diseases, should be kept at home so that they would not convey their diseases to other children. There are parents, however, who will tell a doctor that this is all nonsense and that their freedom and the freedom of their children should not be restricted for the benefit of other people. One would almost think they owed the children of other parents a grudge. Moreover, the same people, whether they are food producers or food retailers, will neither go to the trouble nor the expense to prevent the foods they offer for sale from becoming the vehicles oftentimes of fatal diseases to the consumers. Indeed they will treat it as an act to be strongly resented on the part of a medical practitioner who prevents them, in the interests of the public health, from disposing to the best advantage of their foodstuffs in the usual way.

Much of this could be prevented, or at least mitigated, even by the existing Public Health Acts in Ireland, only that the late Local Government Board seemed for some reason or another determined, whatever else might clash with the selfishness of certain people, that public health administration should not. In no other way can it be explained why the late Local Government Board never took any steps to have a whole-time county medical officer of health appointed to administer public health in Ireland, as was done in Great Britain. It will be readily understood, from what has been already said, the difficulties under which a medical attendant on a family was, in many instances, called upon to discharge also the duties of a medical officer of health. This was the unenviable position of almost every dispensary doctor in Ireland: he was called upon to discharge the dual duties of medical attendant and medical officer of health. Perhaps with the



view of keeping him inert the Local Government Board considered a salary of £15 to £20 a year quite sufficient. For this princely salary, as stated recently in the press, a dispensary doctor, in his capacity of medical officer of health, is solemnly expected to take care of the public health of some 7,000 human beings, and to prevent the occurrence and spread of typhus fever, diphtheria, and other virulent infectious diseases. If in the discharge of his duties he contracted, with fatal results, one of the deadly diseases the spread of which he was trying to combat, the fate of his widow and children was the workhouse—so far, at any rate, as the State was ready to come to the help of such cases. The obvious remedy was and is to appoint a whole-time county medical officer of health, who would be independent of private practice, and thus in a position to take the necessary steps, without any ill consequence to himself, to protect the health of the public.

Another Public Health Act which could have served very useful purposes is the Inspection of Cowsheds and Dairies. This Act had for its main objects the production of milk, butter, and cheese under good sanitary conditions. For the administration of this Act one official to a union was considered sufficient, and he may be a veterinary surgeon or he may be anybody—and he was invariably "anybody." The area of the district inspected by one official was generally some twenty-five miles in length by as many in breadth. For the work to be done the Local Government Board either approved or directed that a salary of £25 or £30 per annum should be paid. Such a salary would not cover the travelling expenses which would be necessary for an inspection lasting for fourteen days. Needless to say the inspection was of a more or less perfunctory character, and if it were meant to be anything else at the salary allowed, the Local Government Board alone could tell. Intentionally or unintentionally the Local Government Board took very certain measures that the Public Health Acts should be inoperative in Ireland. Apart from the health of the Irish people the Local Government Board did not, during its existence, even appreciate the commercial value of a national reputation for an up-to-date public health in a country like Ireland which exported so much of its food products. The part played by the late Local Government Board in Irish public health leaves very little reason to regret its demise. It must, however, be said that the medical department of the late Local Government Board was in no way responsible for the condition of affairs mentioned. The medical administrators, in late years, especially Sir Edward Coey Bigger, did an immense amount of very important public health work, but they could make no headway as the medical side of the Local Government Board was run as a mere side-show of little or no importance. This is the position of public health and preventive medicine in this country in 1923, which, on the whole, is only a little better than a hundred years ago. The immunity we enjoy to-day from the more virulent infectious diseases is entirely due to the medical practitioner. In his individual capacity he has been trying to do what the State neglected.

Drs. K. Lynn, W. M. Crofton, and J. P. Shanley also spoke in connexion with the means to be adopted for the prevention and treatment of tuberculosis, especially in children.

## Correspondence.

### EDINBURGH UNIVERSITY WAR MEMORIAL.

SIR,—The solemn ceremony which took place here on February 19th, when Lord Balfour, as Chancellor of the University, unveiled memorial tablets on which the names of nearly one thousand victims of the war are inscribed, is an event that will appeal to Edinburgh graduates all over the world. May I take this means of letting them know that it is still open to them to share in the commemoration? Subscriptions to complete the cost are required and will be welcomed from members of the University who have not yet subscribed. It is the desire of those who are responsible that the cost should be met by many gifts of small sums, so that the scattered sons and daughters of the University may feel that they have a part in this beautiful and appropriate mark of honour to our dead.—I am, etc.,

Edinburgh, Feb. 21st.

J. A. EWING,  
Principal and Vice-Chancellor.

### NEW REGULATIONS FOR THE D.P.H.

SIR,—The proposed new rules for Diplomas in Public Health which are criticized by the Committee of Management of the Examining Board in England of the Royal Colleges of Physicians and Surgeons have for their object the raising of the academic status of those who desire to enter the public

health service as a career. The fact that they make it increasingly difficult for members of the R.A.M.C. and possibly for those who take up medical practice abroad to obtain the diploma is not a sufficient reason for relaxing the stringency of the rules. The D.P.H. is essentially a civilian qualification, and is primarily intended for home practice; it is not a necessary adjunct to the medical equipment of a R.A.M.C. officer, for whom adequate instruction in matters of hygiene is provided in the army curriculum. For those who enter medical service abroad a more appropriate extra qualification is a Diploma in Tropical Medicine, as it is obvious that a course of instruction which is quite applicable to conditions obtaining in the industrial centres and rural districts in the homeland would not necessarily be of equal service under vastly different conditions of colonial life.

It is to be hoped that the General Medical Council will not be influenced by special pleading on behalf of a very limited section of prospective candidates for the D.P.H.—I am, etc.,

JAMES J. PATERSON, M.D. Lond., B.Sc., D.P.H.

Maidenhead, Feb. 24th.

### ENDOCRINE ACTIVITY AND FOETAL LIFE.

SIR,—For some time I have been engaged in the investigation of an abortive type of cattle offspring which, besides showing certain features characteristic of achondroplasia in the human species, displays certain abnormalities of the endocrine system which suggest another issue of medical interest—namely, the time at which the ductless glands begin to function.

It is well known that " " tissue " is differentiated long before " " probability that the adrenal medulla is " " functional at an early stage in ontogeny. In medical literature one finds not unfrequent references to foetal cretinism, implying that this is also true of the thyroid. But I am not aware that this view has been tested by critical experimentation. Recently I have been able to compare the action of thyroid from 2-months-old and full-time foetal calves by its specific power (Jensen and others) to induce metamorphosis in the Axolotl form of the Mexican salamander, a variety which in nature permanently retains and breeds in the larval condition. The results were negative in the former and positive in the latter case, showing that the foetal thyroid certainly begins to manufacture its active secretion before birth actually takes place. In view of the paucity of evidence on this question, it is proposed to extend the inquiry by quantitative experiments with thyroid from foetuses at different ages, at the same time testing the activity of post-pituitary extracts from the foetal animal by the extremely facile and delicate response evoked by their action in the frog's skin. (Hogben and Winton, 1922.)

The question of endocrine activity in foetal life is of such importance in connexion with the etiology of developmental disorders that I trust in the meantime to benefit by suggestions from any of your readers who have data, direct or clinical, bearing on the time at which the endocrine organs of the foetus become independently operative.—I am, etc.,

F. A. E. CREW, M.D., D.Sc., F.R.S.E.,

Director.

Animal Breeding Research Department,  
The University, Edinburgh, Feb. 22th.

### PRIMARY UNION AFTER OPERATION FOR SUPPURATIVE APPENDICITIS.

SIR,—As one who has interested himself in this subject for some time (vide BRITISH MEDICAL JOURNAL, October 28th, 1911, *ibid.*, May 25th, 1912), I am in complete accord with Mr. Robert G. Riddell when, in primary closure of the wound in suppurative appendicitis, he states (BRITISH MEDICAL JOURNAL, 1923, p. 322) that "the tissues of the abdominal wall have not the same capability as the peritoneum of dealing with infective organisms."

In a series of eighty-five cases of acute appendicitis published by me (*Glasgow Medical Journal*, September, 1913)—two and a half years' cases—eighty were closed primarily. Those cases only were included in the list in which (1) the appendix was gangrenous, either in whole or in part, with local or general infection of the peritoneum, and (2) those cases in which there was a localized abscess completely shut off from the general peritoneal cavity, the appendix being the *fons et origo mali* and in varying degree of inflammatory destruction. No case was included in the list which did not come under one or other of these groups. Fifty-seven out of the eighty-five cases healed primarily. In twenty-seven there was some



infection of the wound. Seven cases died—in one case death occurred six hours after admission; in every case save one death was due to general peritonitis. No drainage will arrest a streptococcal infection of the peritoneum. Like Mr. Riddell I tried to obtain primary union by protecting the wound against infection from the already infected peritoneum, and agree with him that it is necessary to use some antiseptic to the wound in spite of the damage done to the cells by the chemical. What I found most satisfactory to begin with was iodoform emulsion, 10 per cent., poured into the wound before the peritoneum was opened and again after the peritoneum was closed. This was combined with a stock vaccine of *Bacillus coli* given subcutaneously. For some time, however, I have abandoned this in favour of iodine, 4 per cent. in rectified spirit, applied to the wound in the same manner as was the iodoform emulsion, with excellent results.

I congratulate Mr. Riddell on obtaining seven consecutive cases, with one exception, of primary union following the use of flavine; personally, however, I do not like the employment of an aqueous solution of any antiseptic—Mr. Riddell flushed the wound with a solution of flavine, 1 in 1,000—because I believe that all wounds heal better when kept dry, and the rectified spirit in the iodine is an important factor in this connexion.

I am still of opinion that the vast majority of these cases of suppurative appendicitis can be treated by primary closure of the abdominal wound, provided the focus of infection is removed and the appendix stump effectively closed. No case of appendicitis, however, should be allowed to go to the stage of gangrene, of perforation, or of abscess, but that time is evidently not yet.—I am, etc.,

Bournemouth, Feb. 25th.

J. GRANT ANDREW.

#### HOSPITAL POLICY.

SIR.—The discussion on this policy has been continued under every head except one—namely, the development and improvement of the profession of medicine and surgery. My opinion is that before another twenty-five years the hospitals, as on the Continent and, I believe, in some of our colonies, will become State owned. The devices which are now being tried to raise funds will soon become stale, will cease to appeal to the public, and funds will become exhausted.

If we face the inevitable frankly and at the same time suggest a way out of the present difficulties, we shall get a sympathetic hearing from Government and public. The remedy is to institute a State qualification on a par with a good university degree, and make this the sole right to practise. Inferior qualifications would be automatically abolished, but the professors of these institutions need not starve—they could still continue as teachers.

The State would furnish the necessary buildings and equipment in each locality; the staffs would consist of local men, all State examined and all competent. Each man could pursue a specialty, first as a junior, and after some few years as a full surgeon or physician.

Private practice would not necessarily be debarred. The rich, if they chose, could consult any doctor privately and make adequate arrangements to be treated at home if they wished. The ordinary run of humanity, and especially the middle class, would be in a much better position than they are now. People would be as well treated under such conditions, for the medical profession would not cease to maintain the high standard which it has hitherto held. Why did we, until quite recently, so slavishly bow down to German and Austrian medical opinion? In those countries the hospitals are all State owned.

Collapse of the present system is inevitable; let us, for once at least, anticipate events, and give to the State a workable method of dealing with these problems.—I am, etc.,

Fulham, S.W., Feb. 19th.

JOHN FLETCHER.

SIR.—By a careless oversight I omitted from the letter appearing under this heading on page 353 of your last issue the section intended to answer the question: "What about having consultations and treatment provided at the out-patient department of a voluntary hospital for members of a contributory scheme, under which there is a stated or implied return required?"

These persons, being insured, are not objects for charity, and therefore the procedure suggested should be somewhat as follows:

(a) All services of a consultative nature should be given by the consultant either at his own address or at the patient's home, in so

far as it is possible and consistent with the best interests of the patient. In large towns at clinics organized and controlled by the medical profession the fee should be paid from the contributory fund.

(b) The contributor should be free to choose the consultant from a list prepared by the governing body of the British Medical Association covering the area of the scheme, such list being prepared in accordance with paragraph 31 (d) of the Memorandum on the Hospital Policy of the Association (SUPPLEMENT, BRITISH MEDICAL JOURNAL, October 7th, 1922, p. 134). The list should not be limited to members of the staffs of hospitals.

(c) All consultations should be arranged by the private medical attendant.

(d) Treatment at an out-patient department of a hospital should be given only where no other arrangements are practicable; or in case of emergency.

As is well known, the greatest abuse in the past has been through the out-patient departments—abuse of charitable funds and abuse of the charity of doctors. If not carefully watched the powerful influences interesting themselves in the forty to fifty schemes now floated in England will further develop this abuse. There is a popular fallacy that none of the specialized medical services can be obtained apart from a voluntary hospital. It is up to our profession to disabuse the public mind on this point by adopting a scheme under which the majority of such special services can be obtained elsewhere, promptly and in comfort for all concerned.

The premiums adequate for insurance can be well within the capacity of all. If it is kept in the forefront of all negotiations that these persons, having insured, are no longer objects for charity, whatever their individual financial position may be, it will become easy, when advising how to secure for them any special service, to turn one's mind in that direction in which one looks when making arrangements for a patient who will pay the fee out of his own pocket. The tendency to look to a hospital as the be-all and end-all is becoming accentuated.

May one venture to urge staffs of hospitals to approve the propositions outlined above and in the previous communication (p. 353), and to refuse to co-operate in any scheme which to all intents and purposes is dependent on the misappropriation of funds subscribed for the indigent poor and on the underselling of their own services, with the consequent deprivation of the means of livelihood of their professional colleagues who are competent to be on the staff for one or other of the special services required under these schemes? Is it not imperative on each one of us to consider seriously the position gradually arising as the result of present-day attempts by the State and by private enterprise to organize and control medicine? Will it be found eventually to be for the good of the people—for the good of medicine?—I am, etc.,

Hove, Feb. 24th.

E. ROWLAND FOTHERGILL.

#### SMALL-POX AND VACCINATION.

SIR.—Dr. M. P. Ravenel (February 24th, p. 351) says that I have misrepresented the attitude of Dr. Herman Biggs towards vaccination. If I have done so I hasten to express my regret. I am glad that I guarded myself to some extent by saying "as I understand." It is satisfactory, however, to find that the main facts of the case upon which I based my argument are not disputed. I did not think that they could be, as I received them direct from a medical officer who had held an important position in the Health Service of New York State at the time the repeal of the compulsory vaccination law came about, and who assured me that he was thoroughly conversant with the circumstances. I made a written note of what he told me at the time.

We now have it, in Dr. Biggs's own words, that it was on account of serious injury to health (eleven deaths from tetanus arising as a sequel to vaccination) that the vaccination law in the State of New York was repealed. Therefore it is difficult to follow Dr. Ravenel when he states, at the end of his letter: "He [Dr. Biggs] did not at that time believe, nor does he now believe, that vaccination in childhood produces any injury to the health of the child." I would suggest that perhaps Dr. Ravenel is himself misrepresenting the views of Dr. Biggs. Of course, Dr. Ravenel may reply that it was not vaccination but the tetanus which followed that was to blame, just as other untoward sequelae are so often explained away as being due not to vaccination but to sepsis. The dangers of most operations can be "explained away" by the same method of reasoning.

However that may be, I think we may assume that Dr. Biggs could not have believed that any very serious results



would follow from the repeal of the compulsory law or he would hardly have consented thereto. That is all the inference I wish to draw.—I am, etc.,

Leicester, Feb. 21th.

C. KILLICK MILLARD.

#### PENAL DISCIPLINE.

SIR,—Since Sir Wemyss Grant-Wilson has come at me (February 17th) with fresh matter, and has now made me responsible for a more gentle instrument of restraint than any known to me, may I briefly remind him that, whether the facts are given to the "general reader" by the Prison Commissioners, or through him, or me, or anyone else, "put in irons" is put in irons. We may possess, in handcuffs, an effective, temporary, life-saving apparatus, but its use will not absolve us from blame, if, by our system, we have first endangered the life which we subsequently save in that way. That is the point in my argument which Sir Wemyss has missed.

No reasonable being is, I think, likely to pass "hasty and unmerited criticism" on officers for doing their duty. Nothing in my book applies to them; therefore I should not consider that "speaking for" them would necessarily be doing them a service. "We"—not "they"—are responsible for the forms in which our penal discipline develops. It is for us, not for them, to realize first what is amiss. As this correspondence is really outside any matters contained in my book, I hope Sir Wemyss will agree with me that it may suitably stop at this point.—I am, etc.,

Zürich, Feb. 21st.

MARY GORDON.

#### THE DESTRUCTION OF HUNTER'S NOTES.

SIR,—I should like to say a word relative to the observation made by Sir John Bland Sutton in his Hunterian oration appearing in the BRITISH MEDICAL JOURNAL (February 17th)—namely, that the transcripts made by William Clift from some of Hunter's notes were afterwards destroyed by Everard Home. Now I remember my grandmother, Home's daughter, very well, and she always declared that her father never destroyed any of Hunter's manuscripts, but that a secretary or steward of Hunter's, having a personal spite against Home, in a fit of jealousy burnt many of Hunter's papers and laid the blame on Home! I remember her speaking of this man with the greatest loathing.—I am, etc.,

Scarborough, Feb. 22nd.

BERNARD HALE WOODYATT.

### Obituary.

CONSTANCE E. LONG, L.S.A., M.D.BRUX.,  
London.

We regret to announce that Dr. Constance Ellen Long of London died in New York on February 16th from pneumonia. She was born in Reading, and studied at the London School of Medicine for Women, taking the L.S.A. in 1896 and the degree of M.D.Brux. in the same year. She practised in London, and was formerly clinical assistant at the Royal Free Hospital and the New Hospital for Women, and medical officer to Dr. Barnardo's Home, Hawkhurst. She had held the office of president of the Association of Registered Medical Women, and represented the Medical Women's Federation on the Insurance Acts Committee from 1911 to 1914. Dr. Long was one of the earliest exponents in this country of the school of psychology that derived from Professor Jung of Zürich, and edited a volume entitled *Collected Papers on Analytical Psychology*, which included translations of many of Jung's articles. She wrote several papers on psycho-analysis and allied subjects, and a number of her contributions were published in a book, in 1920, with the title of *The Psychology of Phantasy*. She had been in indifferent health for some time, and had been making a prolonged visit to the United States as the guest of her friend and colleague Dr. Beatrice Hinkle of New York.

Dr. H. CRICHTON MILLER writes: By the death of Dr. Constance Long the profession loses a notable pioneer and a somewhat remarkable figure. She was best known as the first exponent in this country of the analytical views of Jung and the Zürich school. Just ten years ago she brought to England the first restatement of psycho-analysis, which had hitherto been practised only on strictly Freudian lines. As the editor of the English translations of Jung's books, her name soon became widely known. By her original papers,

by her lectures, and by her book *The Psychology of Phantasy*, she enhanced this reputation. During her seven years of general practice she not only built up a very valuable connexion, but she established a surgical nursing home that possessed many features well worth perpetuating. In these years she learned to recognize the frequency with which the functional factor enters into common complaints, and this brought her to the study of suggestion. Under the influence of Dr. Lloyd Tuckey she became a successful practitioner of hypnotic suggestion, and in 1912 she contributed to the discussion on insomnia at the Annual Meeting of the British Medical Association. But she remained unsatisfied by suggestive therapeutics, as was bound to be the case with anyone so bent on progress. Thus she came to the analytical phase of her life which was its culmination. Such was the road by which Dr. Long arrived at specialization in the teaching and practice of analytical psychology. Those who know her will agree that it was not the path of least resistance. She was not one of those for whom the new and the unconventional has a strong attraction. The intellectual interest of psychological work was not a compelling force with her, for she had not a specially critical mind, and its bent was practical rather than speculative. Indeed the analytical work she did was not cheaply achieved, but rather through indomitable and earnest application. Those who admired her most will agree that the driving factors in her make-up were unflinching generosity and sincerity. Nobody could ever imagine that Dr. Long was acting from any ulterior or selfish motive. While she talked and wrote a great deal about that spiritual freedom which analytical treatment is intended to procure, her life showed forth much more evidently a selflessness attained in a much more old-fashioned school. Brought up as she had been in the tradition of middle-class and Nonconformist puritanism, she no doubt had many "complexes" to submit to analytical treatment; but she also had that heroic urge towards the "better-than-what-is" that made her contribution to her day such a notable one. During the twenty-six years of her professional career she found time to take a considerable share in work for the profession. She was President of the Association of Registered Medical Women, and at one time was a member of the Insurance Acts Committee of the British Medical Association. She helped to found the Psycho-Medical Society, and was at the time of her death a member of the committee of the Medical Section of the British Psychological Society. In all these offices her place will no doubt be filled; but her place will not readily be filled in the hearts of many friends and patients who had learned to appreciate her wisdom, her integrity, and her sympathy.

Dr. JAMES YOUNG writes of Dr. Long: By her death the profession loses one who strove always to further the interests of medical science, and who bravely fulfilled the arduous function of pioneer in its most difficult and exacting department—that of medical psychology. She will be mourned by all those, friends and patients alike, who knew her for what she was—a woman of kindly and sympathetic understanding, who maintained an untiring devotion to duty in the teeth of the adversities of ill health and of those incidental to all attempts to broaden the basis of knowledge in any branch of human thought.

WILLIAM PRIOR PURVIS, M.D., M.S., F.R.C.S.,

Senior Surgeon, Royal South Hants and Southampton Hospital.

Mr. W. P. Purvis, who died at his residence at Southampton on February 13th, was born at Belize, British Honduras, and received his medical education at St. Thomas's Hospital Medical School. He took the diplomas of M.R.C.S.Eng. and L.R.C.P.Lond. in 1891, graduated M.B.Lond. in 1892 with honours in medicine, obstetrics, and forensic medicine, B.S. in 1893, M.D. in 1894, and M.S. in 1896; he also became F.R.C.S.Eng. in 1894. After serving as house surgeon and house-physician at St. Thomas's Hospital he was appointed house-surgeon to the Royal South Hants and Southampton Hospital, subsequently becoming senior surgeon and surgeon in charge of the ear, nose, and throat department of the institution. He was also consulting surgeon to the Free Eye Hospital, the Fenwick Memorial Cottage Hospital, Lyndhurst, the Lymington Cottage and the Milford-on-Sea Cottage Hospitals. Mr. Purvis served with the Southampton Volunteer Ambulance Corps during the South African war, and on his return he together with Dr. R. E. Lauder, the present M.O.H. for Southampton, received the freedom of the borough of



Southampton in recognition of services. He took a prominent part in the school clinic work, and was well known socially in the district.

Dr. JOHN FREDK. BRISCOE writes:

The death of William Prior Purvis is mourned by the united profession in Southampton. He practised the art of surgery for upwards of twenty years in Southampton, specializing, too, in diseases of the ear and throat. Quick, keen, and accurate in diagnosis, he showed himself to advantage in the operating theatre. Nothing tired him in endeavouring to unravel the vagaries of anomalous cases. He was very exacting in the out-patient department, for his clinic was a model of perfection in its thoroughness. Mr. Purvis was very attentive to his poor patients, giving them the most thoughtful consideration. Formerly he was house-surgeon, and step by step for over twenty years he assisted materially in modelling the Royal South Hants and Southampton Hospital to a high state of efficiency. His patients were always carefully noted and detailed, and this tabulation was also noticeable in the out-patient department. Nay, his out-patient clinic was schemed on the lines of the teaching hospital, to the great advantage of the resident staff. As a warm supporter of the British Medical Association he filled all the important offices of the Southern Branch to its presidency. At the Divisional and other meetings Mr. Purvis introduced important clinical material for debate, and, not least, showed interesting surgical cases. Not only was the town of Southampton favoured by his skill and dexterity in the science and art of surgery, but Mr. Purvis was a good citizen. After the Boer war, in which he served, the freedom of the town was conferred upon him. Likewise Mr. Purvis realized the obligations of Freemasonry, and was past-master of the Southampton Lodge and of the Twelve Brothers. He was a past-president of the Southampton Medical Society and its treasurer, while the Southampton Public Medical Service received his valuable support as its chairman. Whatever he did was accomplished with all his might, and here he excelled in detail. He leaves a wife and four sons, one of whom is at Cambridge, and four daughters. Mr. Purvis was cremated, and his ashes were solemnly taken to the grave in Southampton cemetery on February 19th, followed by the whole profession of the town and neighbourhood; and with his confrères were numerous civil followers from all parts of the district.

PETER CALDWELL SMITH, C.B.E., M.A. GLASG., M.D.,  
C.M., D.P.H. CAMBR.,  
Lieutenant-Colonel R.A.M.C.(T.).

We record with great regret the death, on February 21st, of Dr. P. Caldwell Smith, medical officer of health for the metropolitan borough of Wandsworth. While travelling in a tramcar on the previous day he became suddenly unconscious. He was taken to the West London Hospital, where he died without regaining consciousness of cerebral apoplexy. He was due to retire on pension in a short time, and was looking forward to a period of leisure after many strenuous years, not only as a public health officer, but in active service during the war. He had only just returned from two months' leave of absence, which he had spent in Italy, and his anxiety to resume work no doubt hastened his end.

Peter Caldwell Smith was a native of Lancashire, where he was born in 1858, but of Scottish parentage. His father was the late James Smith, LL.D., who for many years was secretary of the Educational Institute of Scotland. Caldwell Smith had a very distinguished career at the Glasgow University, where he graduated M.A. in 1878, M.B., C.M. in 1881, and M.D. in 1884. In 1888 he obtained his D.P.H. at Cambridge. For a short time he was lecturer on hygiene at Anderson College Medical School, Glasgow. In 1893 he took up general practice in Wandsworth, and the following year was elected medical officer of health for the Wandsworth parish of the Wandsworth district board. When the five parishes, each with a separate medical officer of health, which constituted the Wandsworth district were formed into the metropolitan borough of Wandsworth in 1901 he was elected medical officer of health for the new borough. He was a prominent member of the Society of Medical Officers of Health, acting on the council of the metropolitan branch of the society. In his presidential address he referred to the effect during half a century of the metropolitan main drainage on the mortality of the metropolis. He was not a prolific writer, contenting himself with taking part in discussions on public health

subjects at the meetings of various societies. He expressed himself clearly and to the point, and was always listened to as one having sound judgement and as a master of his craft. But Caldwell Smith will be held in remembrance, not alone as a distinguished medical officer of health, but as an enthusiastic member of the Territorial Force, which he joined soon after its formation. To him is largely due the success of the London Sanitary Companies. He was Sanitary Officer of the 2nd London Division when war broke out, and after serving abroad for a short time was appointed president of the London district travelling medical board. He was twice mentioned in dispatches and received the well earned honour of C.B.E.

Caldwell Smith will be remembered by his colleagues as one with decided opinions, but ever ready to adjust them to well reasoned argument. He could see the weak point in an opponent's case, but was too kindly disposed to take advantage of it by a smart or ill natured retort. To this trait is largely due the success of his public health administration in Wandsworth. He leaves to mourn their loss a widow a daughter, and two sons.

The death took place on January 29th of Dr. WALTER WILLIAM SINCLAIR of Ipswich. He was the son of the late Mr. T. S. Sinclair-Sparke, a solicitor, of Aberdeen and Banchoory, and received his medical education at Aberdeen University, where he graduated M.B., C.M. in 1891. After holding appointments at the Royal London Ophthalmic Hospital and the Birmingham and Midland Eye Hospital he settled in ophthalmic practice at Ipswich. He became a member of the honorary staff of the East Suffolk and Ipswich Hospital in 1896, and took charge of the ophthalmic department until 1920, when he was appointed consulting ophthalmic surgeon. During his time of active hospital duty Dr. Sinclair contributed a number of papers to the ophthalmological journals. He was an enthusiastic musician, and was prominently associated in the foundation of the Ipswich Orchestral Society; he also took an active interest in the Ipswich Amateur Opera Company and in the formation of the East Anglian Association of Musical Societies. He is survived by his widow and three daughters. A colleague writes: Dr. Sinclair established a great reputation as an ophthalmic surgeon in Ipswich and throughout the whole of East Anglia, a reputation which was thoroughly deserved. He was most thorough and conscientious in his examination of every patient and was a very skilful operator. His work at the East Suffolk Hospital did very much to enhance the reputation of that institution and was fully recognized by the Board of Management, who named the recently established ophthalmic wards the "Sinclair" wards to perpetuate his memory. He did much to encourage music in Ipswich. He originated the Ipswich Orchestral Society, and conducted in every concert from 1903 until 1915, when failing health compelled him to relinquish some of his activities. His success as a conductor was universally recognized and his enthusiasm inspired the society to reach the very high standard which it attained. He had a keen sense for literature and a highly cultivated and critical intellect. He was one of the most modest and unassuming of men, of a nature transparently honest and straightforward. He thought ill of no one, and no trouble was too much for him if he could do a service to a fellow creature.

We record with deep regret the death in Grenada, through a motor accident, of Dr. CONRAD J. ARTHUR, of the Grenada Medical Service. Dr. Arthur was the son of Canon Arthur, a native of Barbados, highly esteemed by all classes in Grenada. He took the diplomas of L.R.C.P., L.R.C.S. at Edinburgh in 1910, subsequently obtaining the degree of M.D. BRUX. He also spent some time at St. Thomas's before entering the Grenada Medical Service in 1911. In that service he had already made his mark, though a comparatively young man, for the introduction of the intensive treatment of yaws in 1919 was largely due to his zeal and initiative, and he also distinguished himself by his energetic prosecution of the local campaign against venereal disease. An active and able practitioner, a keen sportsman, and a good friend to the poor of the island, he will be missed by many, but by none more than his colleagues in the medical service, in whose interests he worked indefatigably during two years' tenure of office as Honorary Secretary of the Grenada Branch of the British Medical Association. To those who can appreciate the peculiar difficulties of the post during a period of



unceasing and unavailing efforts for reform, his loyal and courageous service to the profession will long stand as an example and encouragement. His loss at the moment, when the central body of the Association is entering upon the critical phase of the negotiations he conducted locally with marked ability and devotion, is an unlooked-for disaster.

## The Services.

### THE DIRECTOR-GENERAL, A.M.S.

It is officially announced that Major-General Sir William Boog Leishman, K.C.M.G., C.B., of the Army Medical Staff, has been appointed to succeed Sir John Goodwin, K.C.B., as Director General of the Army Medical Service, with effect from July 29th next, when the latter will vacate the appointment after five years' tenure. Sir William Leishman was born in Glasgow on November 6th, 1865, the son of the late Professor W. Leishman, and was educated at Westminster and at the University of Glasgow, where he graduated M.B. and C.M. in 1886. He entered the Army Medical Department, as it was then called, as surgeon, on July 27th, 1887, passing fifth into Netley. He became Major R.A.M.C. after twelve years' service, and on April 15th, 1905, was promoted to Brevet Lieutenant-Colonel, in recognition of his services and of the distinction he had obtained in original investigation and research. On December 11th, 1911, he became substantive Lieutenant-Colonel, on October 15th, 1912, Brevet Colonel, Colonel on March 1st, 1915, and Major-General on October 24th, 1918. Three years after obtaining his commission Captain Leishman (as he then was) went to India, where he served for six and a half years. He took part in the Waziristan expedition in 1894-95, and received the medal and clasp. He held the appointment of staff surgeon to Sir George Wolsley at Lahore, and did a considerable amount of work in bacteriology. His researches in connexion with kala-azar are well known. The parasite was first observed in 1900, but Leishman did not publish his discovery until 1903, when the same observation had been made by Lieut.-Colonel Charles Donovan, I.M.S., afterwards Professor of Pathology in the Madras Medical College. On return to England Sir William Leishman was posted to Netley, where he worked at bacteriology in Sir Almroth Wright's laboratory. He was Assistant Professor of Pathology at the Medical Staff College and R.A.M. College from February 1st, 1903, to January 31st, 1910; he was then appointed Professor of Pathology at the R.A.M. College, which post he held until January 31st, 1914. When war broke out he was War Office expert on tropical diseases on the Army Medical Advisory Board. He was sent to France in 1914 as Adviser in Pathology, which post he held until he was brought to England in April, 1918; he was appointed Director of Pathology at the War Office (June 1st, 1919). He was created a knight in 1909, C.B. in 1915, and K.C.M.G. in 1918; he was elected a Fellow of the Royal Society in 1910, and has received honorary degrees from the Universities of Glasgow and McGill. He was President of the Society of Tropical Medicine and Hygiene in 1912, and of the Section of Tropical Medicine at the Annual Meeting of the British Medical Association at Brighton in 1913.

## Universities and Colleges.

### UNIVERSITY OF OXFORD.

#### Appointment of Demonstrators.

THE Vice-Chancellor has approved the following appointments of Demonstrators for one year from Michaelmas term, 1922:  
*Department of Human Anatomy.*—M. H. MacKeith, B.M., M.A., W. W. Wagstaffe, B.M., M.A., Beatrice Blackwood, M.A.  
*Department of Physiology.*—H. M. Carleton, M.A., C. G. Douglas, B.Sc., D.M., F.R.S., E. G. T. Liddell, B.M., M.A. (for three years).  
*Department of Biochemistry.*—P. C. Raimont, B.A., M.R.C.S., L.R.C.P., G. L. Peskett, B.A.

### UNIVERSITY OF CAMBRIDGE.

THE Council of the Senate  
Right Hon. Sir T. Clifford  
Professor of Physics, to represent  
centenary celebrations of S  
on June 5th, 6th, and 7th.  
Professor F. Gowland Hopkins, Mr. G. E. Wherry, and Dr. L. Cobbett have been appointed members of the M.D. Degree Committee.

### UNIVERSITY OF LONDON.

At the January matriculation examination of the University of London 163 passed in the first division and 862 in the second division; 42 took a supplementary certificate for Latin.

The Graham Legacy Committee has reappointed Dr. V. R. Khanolkar to the Graham Scholarship in Pathology for two years from April 1st next. On this occasion the value of the scholarship is £300 a year. The reappointment was made on the recommendation of the School Committee of University College Hospital Medical School, at which Dr. Khanolkar's researches have been carried on during the past three years.

### UNIVERSITY OF BIRMINGHAM.

THE prize medals awarded by the University Clinical Board for the past session, together with the Arthur Foxwell memorial medals for 1921 and 1922, were distributed on February 19th by Principal Grant Robinson. The following were the recipients: Senior Medical Prize (gold medal) and Senior Surgical Prize (gold medal): H. S. Savage. Midwifery Prize (gold medal): P. Quinet. Junior Medical Prize (silver medal): S. H. Cookson. Junior Surgical Prize (silver medal): A. G. Taylor. Arthur Foxwell Memorial Gold Medals (for excellence in Clinical Medicine): 1921, A. S. Cookson; 1922, R. J. Gittins.

## Medical News.

A SPECIAL course in tuberculosis will be held at the Brompton Hospital for Consumption during the week beginning March 19th. A preliminary meeting will be held at 11.30 on that day; on other days the course will occupy practically the whole day—from 10.30 to 3 or 4 p.m. It will consist for the most part of demonstrations, and will include a few lectures. Full particulars may be obtained on application to the Secretary of the Hospital.

DR. J. H. SEQUEIRA will give a lecture on "Advances in the Treatment of Skin Disease by Light" on Thursday, March 8th, at 5 p.m., in the Anatomical Theatre of the London Hospital Medical College. The lecture will be open to senior students of the hospital and to post-graduates.

THE Prix de Carthage, a biennial prize founded in 1921 for scientific or historical work, has been awarded to Dr. Nicolle of the Pasteur Institute of Tunis for his investigations of typhus fever, kala-azar, trachoma, and Malta fever.

THE *Times* correspondent in Shanghai announces that the Associated British Chambers of Commerce there have passed a resolution welcoming the British Government's decision to devote the Boxer indemnity to purposes beneficial to Great Britain and China, and urging that the money be expended on the education of Chinese on British lines and the support of British medical work, educational and clinical, in China. The financial claims of Hong Kong University were pressed, and it was recommended that only a limited number of travelling scholarships to Great Britain should be granted.

THE next series of lectures to medical students and practitioners, arranged by the staff of Queen Charlotte's Lying-in Hospital, Marylebone Road, N.W., will be given on Thursdays at 5 p.m., commencing on March 15th, when Dr. C. Hubert Roberts will deal with rupture of the uterus, and terminate on April 19th, when Mr. Leonard Phillips will speak on the scope of Caesarean section.

THE sum of £48,487 was collected by the Hospital Sunday Fund last year as against £50,173 collected in 1921. During forty-nine years the sum collected by the Fund amounts to £1,835,711.

A DINNER to celebrate the twenty-fifth anniversary of the foundation of the Röntgen Society will be held on Thursday, March 15th, at the Hotel Cecil, Strand, London, W.C. Tickets, price 17s. 6d., including wine, may be obtained by members from the honorary treasurer, Mr. Geoffrey Pearce, 33, Newton Street, W.C.2.

A BELGIAN Pediatric Society has been founded at Brussels under the presidency of Professor Fèchère, and a congress of the Association of French-speaking Pediatricists will be held at Brussels in September under his chairmanship.

IN connexion with the course on children's diseases arranged by the Fellowship of Medicine at the Children's Clinic, Western General Dispensary, Cosway Street, N.W.1, Sir William Bayliss will deliver a lecture on the use of saline injections in the treatment of disease on Monday next, March 5th, at 5 p.m. Members of the medical profession are invited to attend.

A CHADWICK Public Lecture on the principles and practice of sanitary legislation will be given on Monday, March 12th, at 8 p.m., in the Inner Temple Hall, by Dr. Charles Potter, medical officer of health for the borough of St. Marylebone.

THE Council of the University of Paris had decided to confer the honorary degree of Doctor of Medicine on Professor W. W. Keen of Philadelphia and Professor Golgi of Pavia.



## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

The postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Attitology*, Westrand, London; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand, London; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra*, Westrand, London; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Practitus*, Dublin; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate*, Edinburgh; telephone, 4361, Central).

### QUERIES AND ANSWERS.

#### EXPIRATORY SPASM IN A CHILD.

SIR JAMES DUNDAS GRANT, in reply to "P." (BRITISH MEDICAL JOURNAL, February 24th, 1923, p. 358), suggests the possibility of the case of "expiratory spasm in a child" being one of infantile masturbation, as in a case referred to him as one of possible laryngeal disease. It was described by him in the BRITISH MEDICAL JOURNAL of April 27th, 1901, p. 1005, in a paper on "Traps and pitfalls in general and special practice," as follows:

"A curious instance of trap for the specialist was the case of a male child of about ten months old, brought to me on account of attacks of suffocation attributed to some obstruction in the throat. On inquiry I elicited that the attacks were characterized by evidences of intense nervous excitement culminating in a climax, followed by intense depression approaching collapse. This closely answered to the description of the orgasm given in Braun's work on diseases of children under the heading of infantile masturbation (*Selbst-Belebung*), that I ventured to diagnose it as such, the father confirming my opinion by the observation that during the attacks there was an obvious priapic condition. I found an elongated and tight prepuce and recommended circumcision, with, as I afterwards heard, the most satisfactory results."

#### INCOME TAX.

"C. J. H. A." asks: If on April 6th I return "Tom Jones £2" (booked the previous January), must I in the following January pay 10s. income tax, although Tom Jones has paid me nothing or a part only of the £2 due to me?

"We assume that "C. J. H. A." is making his returns on the basis that his "receipts" are his cash takings, plus the value of his book debts at March 31st, 1922, less the corresponding value at March 31st, 1921. If Tom Jones ultimately pays his £2 the result will be that "C. J. H. A." will pay tax before he receives payment of the debt; this is in accordance with the income tax statutes. To the extent to which the debt is considered irrecoverable it will disappear from the value of book debts outstanding at the end of a future year, and so go to reduce the "receipts" on which some future year's profits will be calculated—for example, suppose in 1922-23 Tom Jones pays nothing, and that the debt of £2 is written off as bad, then the "receipts" will, as a whole, be reduced by £2, because the closing value will be reduced by £2 as compared with the opening value.

### LETTERS, NOTES, ETC.

#### HICCUP.

DR. WILLIAM BRAMWELL (Liverpool) writes: Dr. H. J. Fardon's account (BRITISH MEDICAL JOURNAL, February 3rd, p. 220) of the cure of his hiccup by trying Mr. Money's remedy is, as he says, amusing; but this remedy, though "partaking of the nature of folklore," is, I think, capable of scientific explanation. Dr. Fardon tells us that he lay across the bed on his abdomen and, leaning over the edge with head downwards reaching almost to the floor, "managed to perform the feat of drinking water from the far side of the tumbler." The result being that, in spite of his scepticism, he was immediately cured of his hiccup. I agree with Dr. Fardon that the temporary cessation of breathing necessary to accomplish the performance was not the "item of cure." For an explanation we must look to the phrenic nerve, in this case, rather than to the vagus. The pressure exerted upon the abdominal contents by lying in such a position would in turn press upon the peripheral distribution of the phrenic nerve on the under or peritoneal surface of the downward jerk of the muscle, mechanical interference with the terminals of the nerve, check or by direct action on the nerve itself. And if so, pressure in their impulse and so inhibit the spasm. And if so, pressure in this position would be more effectual than pressure on the trunk of the nerve over the scalenus anticus muscle, a procedure which is not always successful and perhaps not without danger. Presure, too, on the ensiform cartilage, by relaxing the tension of the central tendon of the diaphragm, and thereby weakening the pull of the muscle on the cartilage, would also aid in inhibiting

the spasm. That pressure on the ensiform cartilage could bring about such a result will, I think, be shown by the following note of mine which appeared in the BRITISH MEDICAL JOURNAL of September 25th, 1915, in reply to a query by Dr. J. Numa Rat:

"In a case of persistent hiccup—a woman of about 35 years who

with the microscope the hiccup instantly ceased, but commenced again the moment the pressure was removed. Judging that the beneficial effect of the pressure was due to relaxation of some undue tension in the central tendon of the diaphragm, I made a pad of lint and bound it tightly on so as to exert firm pressure on the cartilage. The hiccup completely ceased so long as the pad remained in position, but returned whenever it was displaced. The patient wore the pad for two or three months with great benefit, but the hiccup finally returned so that no longer pressure over the cartilage would relieve it, and I lost sight of the case. I have had no opportunity of testing the efficacy of this method in other cases, but it is perhaps worth a trial in Dr. Rat's case if no osseous or other impediment exists in the cartilage."

I judge the primary success in this case was due to an unusually flexible ensiform cartilage yielding to a pressure sufficient to lessen the tension in the central tendon of the diaphragm, and that the ultimate failure was due to tuberculous irritation on the peritoneal surface of the muscle, and that the spasm in the later and more advanced stages of the disease, probably owing to a thickening and therefore less flexible tendon, refused to yield to the pressure on the cartilage.

Years ago a man was brought to Sir Patrick Dun's Hospital, Dublin, who had had incessant hiccup for several days. The hiccup continued during the whole night after his admission, but ceased on the following morning at the moment Professor Finny brought the students round the man's bed. The cure was instant and complete, and so far as I am aware the hiccup did not return. Dr. Finny said a few words about mental impressions in hiccup—surprise, shock, etc. I quote the incident as an example of the kind of case that would have brought great credit to the psychotherapist.

#### DETERMINATION OF SEX.

DR. F. HYDE MABERLY (London) writes: Dr. Reginald Maple's account (February 17th, p. 303) of the production of bull or female calves at will, provides strong confirmation of Dr. Rumley Dawson's theory of sex determination; which exactly parallels Dr. Maple's experience. In each case the ovulations produce alternately males and females.

#### "T.B."

DR. G. NORMAN MEACHEN (Westcliff-on-Sea) writes: Like Dr. Weatherhead, I have often been struck by the incongruous, not to say ignorant, use of the initials "T.B." to designate alike "tubercle," "tuberculosis" and "tuberculous," even in official documents. In my opinion, the simplest manner of abbreviating one word is to utilize the first or the first two of three letters. Thus, "T.O." should be sufficient to mean "Tuberculosis Officer," for the confusion with "Transport Officer" is one that is now hardly likely to arise. Personally, I always add "T.O." to my signature upon official documents—I never "T.B.O." Why should not the letter "T." alone be allowed to stand for tuberculosis and all that pertains to it? We have long been accustomed to "T.B." for tubercle bacilli, never "T.B.B."! If "B" must come into it at all, which it need not, let us have "Tub." A small committee, composed of representatives of the Royal Colleges and of the Ministries of Health and Pensions, might well be established to discuss the matter and prevent the continued perpetration of a ludicrous error.

#### A DISCLAIMER.

DR. EDW. JAS. DECK (London, W.) writes: It has been brought to my notice that a paragraph appeared in the 6.30 edition of the *Evening News* mentioning my name at some length in connexion with a method of treatment. I did not authorize or consent in any way to this publication, and it was published entirely without my knowledge.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 35, 37, 40, and 41 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 38 and 39.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 75.

### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words. All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive postage letters addressed either in initials or numbers.



## A British Medical Association Lecture ON PSYCHOLOGY AND MEDICINE.

DELIVERED TO THE BROMSGROVE AND DUDLEY DIVISIONS  
ON NOVEMBER 30TH, 1922,

BY

SIR FREDERICK W. MOTT, K.B.E., F.R.S., M.D.,  
LL.D., F.R.C.P.,

DIRECTOR OF THE PATHOLOGICAL LABORATORY OF THE LONDON COUNTY  
COUNCIL MENTAL HOSPITALS; CONSULTING PHYSICIAN  
TO CHARING CROSS HOSPITAL.

MR. PRESIDENT AND GENTLEMEN.—Permit me to thank you for the honour you have done me in asking me to address you on the subject of Mental Hygiene. It is especially a pleasant task for me, inasmuch as the City of Birmingham and the University have shown by their recent action how much they are interested in research into the causation, prevention, and remedial treatment of disorders and diseases of the mind. A Research Board will be established, and I have been asked to act as Honorary Director of Research and Lecturer at the University.

### BODY AND MIND.

The fundamental basis of mind is begotten with the body. There can be no mind without memory; there can be no memory without body. All psychic processes are subordinate to and dependent upon physiological processes.

No progress was possible in the advancement of our knowledge of mental disease until we had shaken off the spell of metaphysical speculation and the tradition of doctrine of the mind as an invisible intangible spirit with a separate existence in the body. We now generally recognize the brain as the seat of the psyche, but the functions of mind are dependent upon the whole body, and the harmonious interaction of all its parts.

The time-worn dictum, *Mens sana in corpore sano*, implies that if the body is healthy, then the mind is healthy, but there are numbers of people who suffer with bodily disease who nevertheless have a healthy mind; and again, there are numbers of people who have a disordered or diseased mind, but, so far as we can discover, have a healthy body—for example, various types of neuroses and psychoses, and of moral feeble-mindedness. But because we can by our present methods of investigation find no material cause for abnormality, it does not follow that subtle biochemical and biophysical changes, which are dependent upon inborn functional or bodily defects, are not there. Especially do I refer to the latest structures of evolutionary development—for example, the cerebral cortex.

### Pathological Processes in Relation to Body and Mind.

Pathological processes occurring in the brain may serve as a magnifying glass and help or point the way to the study of mind from a physiological point of view. At present we do not know the complex physiological processes underlying mental processes; but we do know that without oxygen, which is essential for all vital activities of the body, mental processes cease. The biophysical and biochemical processes are fundamentally the same in a simple reflex, the first term of a series, as in volition, which is the last. We now know how important are the internal secretions of the endocrine glands for vital activities of body and mind. Thus the adrenal acts as a reservoir of energenic substance which in emergency can be called upon automatically to discharge adrenalin into the circulation to excite through the sympathetic nerve the bodily reactions required for fight or flight in response to the emotions of fear and anger. The thyroid secretion, we know, is essential for the development of the organ of mind, for when this gland is absent cretinous idiocy is the result. If the cretin is fed upon thyroid the brain develops and with it the mind. Again, we know that mental energy is dependent upon thyro-iodin, for slowness of thought and action are associated with hypothyroidism and myxoedema. Administration of the gland cures the myxoedema and restores the mental energy.

There is definite clinico-anatomical evidence of the inseparability of body and mind. Thus mental deficiency is associated with, and proportional to, the arrest of development of the supragranular layer of pyramidal cells of the cerebral cortex. In dementia paralytica the dementia is proportional to the extent and degree of destruction of the

cortex cerebri which is due to the colonization of the *Spirochaeta pallida* in the brain; therefore, its cause being known, it is a preventable disease, and if preventable why not prevented? Every measure, whether educational, prophylactic, or remedial, which tends to diminish the spread of syphilis will tend to diminish enormously the proportion of cases admitted to asylums, hospitals, institutions for the blind, the deaf, and the dumb, and for mental deficiency due to congenital syphilis.

I do not see anything like the number of cases of congenital syphilis that I formerly did, and this diminution is the general opinion of physicians. If it had not been for the war I have no doubt there would have been a great fall in the incidence of syphilis among the population, but the war, unfortunately, has led to a great recrudescence of infection. Still, education, the Report of the Royal Commission, the change in attitude of the press regarding publicly, the introduction and knowledge of new and more efficient methods of diagnosis and treatment, will certainly diminish the number of infections. Again, the enormous number of men of all ranks in the army who were incapacitated for service at a critical period of the war has aroused public opinion in Britain and the colonies to the necessity of taking effective steps to mitigate this great peril. The campaign of two societies and the public interest aroused in the divergent views regarding the desirability of advocating self-disinfection for the civil population have also done much to awaken the interest of all classes of people. This public interest has stirred the Ministry of Health, and a Commission is at present sitting to investigate the best methods to be adopted for the prevention of the spread of venereal infection. Unfortunately the lowest stratum of society is incapable of appreciating the dangers of communicating infection to others, especially innocent women and children, by neglect of treatment. Yet there can be no doubt the establishment of free treatment centres throughout the country will, together with a wider distribution of knowledge of the causes of the spread of these diseases, and how they may be prevented and cured, lead to an increasing reduction of constitutional syphilis and all the various organic diseases of the nervous system for which it is directly responsible. Statistics indicate that about 10 per cent. of syphilized individuals subsequently die of organic disease of the nervous system, of which about 5 per cent. are general paralytics. A cure has not yet been found for general paralysis, and this makes it all the more imperative to adopt all measures which will lead to the prevention of infection.

### THE PSYCHO-NEUROSES, PSYCHOSES, AND MENTAL DEFICIENCIES.

But let us leave these acquired organic brain diseases and turn our attention to those psycho-neuroses, psychoses, and mental defects which we rightly regard as more or less due to inborn dispositions or defects. The last two classes—the insane and mentally deficient—are, owing to their antisocial tendencies or conduct, segregated for economy, with few exceptions, in huge institutions; these so-called mental hospitals have as a general rule no separate buildings for acute recoverable and convalescent cases. This mixing of acute, and possibly recoverable, cases with the chronic incurable is now being recognized as a thoroughly bad system, for it leads to a prevailing idea not only of hopelessness in the patients, but of helpless despair, even in those who have the care of them, of employing any medical aid towards assisting them to recover and preventing a relapse.

We may well turn, therefore, to what Francis Bacon said regarding supposed incurable diseases:

"A work therefore is wanting upon the cures of reputed incurable diseases, that physicians of eminence and resolution may be encouraged and excited to pursue this matter, as far as the nature of things will permit, since to pronounce disease incurable is to establish negligence and carelessness as it were, by a law, and screen ignorance from reproach."

### Psychology in Relation to the Study of Individual Characters.

Bacon thus advocated a treatise on the mind so that "better knowledge may lead to rules for the treatment of Mind."

"Wherefore out of these materials (which are surely rich and abundant) let a full and careful treatise be constructed. Not, however, that I would have their characters presented in Ethics, as we find them in history, or poetry, or even in common discourse, in the shape of complete individual portraits, but rather the several features and simple lineaments of which they are composed, and the various combinations and arrangements of which all characters whatever are made up, showing how many and of



what nature these are, and how connected and subordinated to one another, so that we may have a scientific and accurate dissection of minds and characters, and the secret dispositions of particular men may be revealed; and that from a knowledge thereof better rules may be framed for the treatment of the mind. And not only should the characters of dispositions which are impressed by nature be received into this treatise, but those also which are imposed upon the mind by sex, by region, by health and sickness, by beauty, deformity, and the like; and again those which are caused by fortune as sovereign prosperity and the like."—*De*

Bacon is here advocating a work upon character founded upon "dispositions impressed by nature" and those which are imposed upon the mind by nurture. Really this is a study of what an individual was born with and what happened after birth.

#### *Psychology in its Application to Medicine.*

The late Dr. Mercier, in the preface to his work on insanity, said that he had studied academic psychology as taught in the schools, and it may be remarked there were few who knew it better; yet he states that he found it as useful in practice as the cuneiform language. He asserted that it was disorders of conduct which should be studied.

We can only judge a man's mental state by what he says and what he does, and by the bodily expression of the emotions and passions, which often indicate the thoughts and secret dispositions of men more surely than speech, which, in many instances, is given to man to hide his thoughts.

Dr. Jung, in his remarkable work on analytical psychology, thus expresses his views upon the same subject:

"Modern experimental psychology is very far from being able to afford him any connected insight into the most vital psychic processes—that is not its aim. As far as possible it tries to isolate those simple elementary phenomena which border on the physiological, and then study them in an isolated state. It quite ignores the infinite variation and movement of the mental life of the individual, and, accordingly, its knowledge and its facts are so many isolated details, uninspired by any comprehensive idea capable of bringing them into co-ordination. Hence it comes about that the inquirer after the secrets of the human soul learns rather less than nothing from experimental psychology. He would be better advised to abandon exact science, take off his scholar's gown, say farewell to his study, and then, strong in manly courage, set out to wander through the world; alike through the horrors of prisons, lunatic asylums and through the dreary onlilying taverns, through brothels and . . . ant drawing-rooms, the Stock Exchange, . . . has, revival gatherings of strange religion. In his own person love and hate and every . . . would return laden with richer knowledge than his yard-long textbooks could ever have given him, and thus equipped he can indeed be a physician to his patients, for he understands the soul of man. He may be pardoned if his respect for the 'corner-stones' of experimental psychology is no longer very considerable. There is a great gulf fixed between what science calls 'psychology,' on the one hand; and what the practice of everyday life expects from psychology on the other."

The medical practitioner, much less the student of medicine, is unable to follow Jung's prescription to obtain the knowledge of psychology which will fit him best to understand human nature in all its varied characters and phases. Yet one must admit that this psychology of experience will be of infinitely more use to him than the academic psychology of the schools.

It may be asked, Where can we find the psychology of human character better portrayed than in the dramas of Shakespeare?—for as Schlegel, the great student and translator of Shakespeare into German, in his lectures on the drama says:

"Never perhaps was there so comprehensive a talent for the delineation of character as Shakespeare's. It not only groups the diversities of rank, sex, and age down to the dawns of infancy; and not only do the king and the beggar, the hero and the pick-pocket, the sage and the idiot, speak with equal truth." Then he goes on to say: "If Shakespeare deserves our admiration for his characters, he is equally deserving of it for his exhibition of the passions, taking this word in its widest signification as including every mental condition, every tone from indifference or peculiar mirth to the wildest rage and despair. He gives us the history of minds, he lays open to us in a single word a whole series of preceding conditions. His passions do not at first stand displayed to us in all their height, as in the case of so many tragic poets, who, in the language of Lessing, are thorough masters of the legal style in the language of Lessing, are thorough masters of the gradual of love. He paints, in a most inimitable manner, the gradual progress from the first origin. 'He gives,' as Lessing says, 'a living picture of all the most minute and secret artifices by which a feeling steals into our souls; of all the imperceptible advantages which it there gains, of all the other stratagems by which every other passion is made subservient to it, till it becomes the sole tyrant of our desires and our aversions.'

"Of all poets, perhaps, he alone has portrayed the mental diseases—melancholy, delirium, lunacy—with such inexpressible, and in every respect definite truth, that the physician may enrich his observations from them in the same manner as from real cases."

In Shakespeare we find the psychology of character revealed in all its aspects, the knowledge of which is so important for the success of a medical man.

Recently a valuable and philosophical work on character, by Mr. Hugh Elliot, has appeared; it is the first attempt which has been made (with the exception of Mr. Shand's *Foundations of Character*) to deal with the subject. He admits that the study of character is not and cannot for a long time be in a state which would justify the introduction of any name ending in "ology." It cannot begin to be a science until we can explain the cause of variations in characters. He remarks that wide knowledge is essential, and yet mere knowledge by itself avails little towards an understanding of character. Some of the most learned men in the world are as children in the comprehension of their fellow men; it is experience, as Jung has said, of the world from many and varied points of view that counts, combined with an intuitive sense.

#### *Intuitive Knowledge of Character.*

In all grades of society individuals exist who largely owe their success in life to an intuitive ability to read the motives and secret dispositions of men, and especially is this faculty of importance in the learned professions of Law, Medicine, and the Church. Most intelligent people in all ranks of life are more or less practical psychologists, for they judge of the conduct of their fellow men by analogy of their own thoughts and feelings which would be associated with that conduct; but although they may have practised this intuitive psychology all their life, they would be as surprised as the *bourgeois gentilhomme* in Molière's play was when told he had spoken prose all his life. By study and application this intuitive knowledge can be improved where it is present, and acquired where it is only feebly represented. Our object should be to develop this practical psychology.

#### THE TEACHING OF PSYCHOLOGY APPLIED TO MEDICINE.

I have been leading up to a thorny question, and that is, whether it is right to introduce any fresh instruction in the medical curriculum; the adage, *ars longa, vita brevis*, is too true for the medical student to-day. Yet I am constrained, owing to the experience of the war and its aftermath, to support a proposition—namely, that a short course on psychology in its application to medicine should follow a student's teaching in physiology—which I made to the Dean of the Faculty of Medicine of the Victoria University, Manchester, and which has been carried into effect. A letter to me from the Dean of the Medical Faculty states:

"Professor Pear gives four to six lectures in the second or third year as an introduction to psychology, in the course of lectures on the physiology of the nervous system, prior to the Second M.B. In the summer of the third year a short course of six or eight lectures is given on the psychology of human behaviour, and in the Lent Term of the fifth year a similar short course on morbid psychology as an introduction to the lectures on mental diseases, which the students take in the fifth summer."

Sir J. H. Parsons,<sup>1</sup> in a valuable address on medicine and psychology, points out that "the scientific study of the behaviour of human beings has been neglected by the medical profession." Medical students are compelled to spend years in acquiring a knowledge of the structure and functions of the human body, but are left with little or no instruction in the activities of the mind which the body subserves. No one would dream of teaching pathology without a preliminary course of physiology, yet every doctor is daily called upon to treat neuroses and psychoses with inadequate training. If medical students are taught psychology it should be by a more real and vital psychology based upon behavioural, biological, physiological, psycho-pathological, and sociological foundations, and the teacher should be a medical man who has acquired a thorough theoretical and practical knowledge of these subjects.

Formerly the subject-matter of psychology was almost entirely limited to what was called the content of "consciousness"—that is, to the thoughts and feelings of which we are fully conscious; its methods consisted of analysing the feelings and thoughts, and from them generalizing the feelings and thoughts of the human mind generally. This is the introspective method of analysis of mind; more and more



it is being realized that the behaviouristic method, applied primarily to animals and secondly to man, affords a far more sound approach to the vital problems awaiting solution. It must be admitted that introspective psychology is the final court of appeal, because, as Stout<sup>2</sup> says:

"All depends on accurate resolution of his own complex consciousness into its constituents and on recomposing these in such a way and in such proportions as to explain the nature and order of the signs which indicate to him the mental processes of others."

But consciousness is too narrow, for, owing to Freud and Jung's researches, the great importance of the unconscious in the study of mental processes has been demonstrated. This new psychology of psycho-analysis has created a wide-spread demand for instruction in psycho-pathology, but, as Sir J. H. Parsons truly says, "Freudism has been elevated into a cult, its truths have been overlaid with speculation, and the unconscious usurped an autonomy which it is scarcely likely to maintain."

#### THE INBORN FOUNDATIONS OF CHARACTER.

The dispositions impressed by nature are, in their order of evolution, species, sex, race, and family ancestry. Their ontogenesis is in great measure a recapitulation of their phylogenesis.

##### 1. Dispositions Impressed by Species.

"The life of a species is relatively continuous; from generation to generation it animates a fresh collection of individuals. They are the vessels of life, always being renewed, the old ones passing away, the new ones rising into existence; the life of the species is the only life that lasts. The lives of individuals are but passing phases of it." I may here remark that the grasping reflex of the newborn child is an illustration of a pre-organized neuro-muscular reflex mechanism reminiscent of its ape-like ancestry.

##### 2. Dispositions Impressed by Sex.

Human motives and conduct originate not only in the desires necessary for self-preservation but also in great measure from the depths of the passion engendered by the natural attraction of the sexes necessary for the procreation of the species.

In respect to the dispositions impressed by sex we know that every cell of the body possesses both male and female characters, but the male characters are dominant; Nature provides in the internal secretion of the interstitial gland of each sex a means of determining the specific characters of body and mind for either sex. Before birth and for some months after, the testis contains the interstitial cells; they, having fulfilled their function of fixing the male characters, disappear until the period of puberty, when they reappear. Observation and experiment show that the secretion of these cells determines the secondary physical and mental male sexual characters. In the female soon after birth Graafian follicles develop from the primordial follicles, and though these follicles do not undergo delisescence their formation leads to the development of the internal thecal cells, the secretion of which maintains the dominance of the female characters in the cells of the body. Removal of the ovaries in hen pullets shows that the male characters are dominant, for these birds thus operated upon grow up so as to be indistinguishable from cockerels, with spurs and comb; moreover, they behave as cockerels. Again, the effects in behaviour by numbers of experiments on animals and castration in man show the important influence of the sexual organs in the development of body and mind.

The specialization of the difference in sex characters becomes evident as the reproductive organs gradually mature after puberty. The various devices impressed by Nature, for example, display characteristics of each sex leading to attraction of the sexes. The evolution of the specific sex characters is all-important in the development of the sentiments and passions. The sex instinct is the great urge of adolescence; it is the *élan vital* of Bergson; or, as the Freudians term it, the "libido," found throughout organic nature. The *joie de vivre* accompanying it is poetically expressed by Romeo when the love of Juliet urges him to say:

"My bosom's lord sits lightly in his throne;  
And, all this day, an unaccustomed spirit  
Lifts me above the ground with cheerful thoughts."

We may contrast this with the soliloquy of the intellectual but melancholic, introspective Hamlet, who says:

"I have of late (but wherefore I know not) lost all my mirth, foregone all custom of exercises; and indeed it goes so heavily with my disposition that this goodly frame, the earth, seems to me a sterile promontory; this most excellent canopy, the air, look you, this brave o'erhanging firmament, this majestical roof fretted with golden fire, why it appears no other thing to me than a foul and pestilent congregation of vapours."

##### 3. Dispositions Impressed by Race.

Everyone knows the great influence race has upon character; and McDougall in a recent interesting work has shown how very little fundamental racial dispositions are influenced by environment. The great difficulty in determining whether racial characters can be modified by environment is that few races are pure; another difficulty is to find a pure race that has been subjected to similar environmental conditions for a sufficient period of time to impress by natural selection and survival of the fittest a change in disposition. The Jews afford the best instance of a pure race whose history is known since they were an agricultural, pastoral, and warlike people. The remarkable description of the Jew by Nietzsche in *The Dawn of Day*, which I will quote, affords an explanation.

"One of the spectacles which the next century will invite us to witness is the decision regarding the fate of the European Jews. It is quite obvious now they have cast their die and crossed their Rubicon; the only thing that remains for them is either to become masters of Europe or to lose Europe as they once centuries ago lost Egypt, where they were confronted by similar alternatives. In Europe, however, they have gone through a schooling of eighteen centuries such as no other nation has ever undergone, and the experiences of this dreadful probation have benefited not only the Jewish community, but even to a greater extent the individual. As a consequence of this the resourcefulness of the modern Jews both in mind and soul is extraordinary. Amongst all the inhabitants of Europe it is the Jews least of all who try to escape from any deep distress by recourse to drink or to suicide, as other less gifted people are prone to do. Every Jew can find in the history of his own family a long record of instances of the greatest coolness and perseverance amid difficulties and dreadful situations, an artful cunning in fighting with misfortune and hazard. And above all, it is their bravery under the cloak of wretched submission, their heroic *sperrere se sperni* that surpasses the virtues of all the saints. People wished to make them contemptible by treating them contemptibly for nearly twenty centuries, and refusing them access to all honourable positions and dignities, and by pushing them further down into the meaner trades, and under this process indeed they have not become any cleaner, but not contemptible. They have never ceased for a moment from believing themselves qualified for the very highest functions, nor have the virtues of their sufferings ever ceased to adorn them. Their manner of honouring their parents and their children, the rationality of their marriages and marriage customs, distinguish them amongst all Europeans. Besides this, they have been able to create for themselves a sense of power and eternal vengeance from the very trades that were left to them (or to which they were abandoned). Even in palliation of their usury we cannot help saying that without this occasional, pleasant, and useful torture inflicted on their scornors, they would have experienced difficulty in preserving their self-respect for so long. For our self-respect depends upon our ability in making reprisals in both good and evil things. Nevertheless, their revenge never urges them on too far, for they all have that liberty of mind, and even of soul, produced in men by frequent change of place, climate, and customs, of neighbours or oppressors; they possess by far the greatest experience in all human intercourse, and even in their passions they exercise the caution which this experience has developed in them. They are so certain of their intellectual versatility and shrewdness that they never, even when reduced to the direst straits, have to earn their bread by manual labour as common workmen, porters, or farm hands. In their manners we can still see they have never been inspired by chivalrous and noble feelings, or that their bodies have ever been girt with fine weapons; a certain obtrusiveness alternates with a submissiveness which is often tender and almost always painful. . . . Europe may some day fall into their hands like a ripe fruit, if they do not clutch at it too eagerly."

It appears as if Nietzsche's prophecy is likely soon to come true.

We cannot think that even twenty centuries have changed the bodily condition of the Jew or even his mentality in its fundamental characters, but the highest psychic level of the brain which has been latest developed evolutionally (being the most plastic) is the most capable therefore of being modified in its modes of adjustment to environment. Only those Jews who were possessed of the highest mental faculties and capacity of making new adjustments in the struggle for existence during this long period of adversity have survived. It may be assumed that quickness of apperception



and readiness to seize opportunities have developed a high degree of racial plasticity of the cerebral cortex in connexion with its evolutionally latest functions associated with the social instinct—an instinct which by natural selection and survival of the fittest in the course of eighteen centuries of persecution has taken on certain specific racial characters described by Nietzsche. But this high degree of plasticity is necessarily associated with a greater liability to mental instability, and I believe this more than intermarriage is responsible for the high percentage of psycho-neuroses and psychoses in Jewish stocks, often, however, associated with genius or great talents in the arts and sciences.

#### 4. Dispositions Impressed by Familial Ancestry.

"Like tends to beget like."

All the broad facts concerning dispositions impressed by familial ancestry were known to the ancients, as is clearly shown by the poet and philosopher Lucretius, who in *De Rerum Natura* says:

"Sometimes, too, the children may spring up like the grandfathers, and often resemble the forms of their grandfathers' fathers, because the parents often keep concealed in their bodies many first beginnings mixed in many ways, which first proceeding from the original stock, one father hands down to the next father, and then proceeding from these, Venus produces forms after a manifold chance, and repeats not only the features but the voice and hair of the forefathers; and the female sex equally springs from the father's, and males go forth equally from the mother's body, since these distinctions no more proceed from the fixed seed of one or other parent than our face and bodies and limbs. Again, we perceive that the mind is begotten along with the body and grows old along with it."

It was the custom, you remember, of noble Romans to carry in their triumphant processions the masks of their ancestors, consequently many of these facts became apparent to them.

A study of numbers of pedigrees has clearly demonstrated the fact that it is necessary in the study of hereditary mental dispositions to ascertain the presence or absence of a neuropathic tendency in all the members of the parental stocks. A neuropathic tendency may show itself in many ways—for example, eccentricity, genius, insanity, hysteria, epilepsy, neurasthenia. These mental dispositions may, like bodily conditions, be transmitted. It follows, therefore, that fundamental mental dispositions are likewise inherited.

#### The Raw Material of Character.

The raw material of character is a complex of dispositions impressed upon the individual by sex, species, race, and ancestry, giving each individual a specific predetermined plasticity to receive and store certain impressions and react to them in a particular way. This raw material of inheritance, upon which psycho-physical energy, durability, educability, imagination, temper (for example, sanguine, phlegmatic, irascible, timorous, melancholic), emotivity, moral sense and aesthetic sense, upon which personality so largely depends, is inborn. That these fundamental dispositions of mind are begotten with the body, and predetermine in great measure character and conduct, was clearly proved by the results of Francis Galton's inquiry into the history of similar and dissimilar twins, which showed that dissimilar twins remained dissimilar in mental and bodily characters although brought up together under the same conditions, while similar twins brought up in different environment remained similar in mental and bodily characters.

A good raw material inheritance requisite for survival in the struggle for existence postulates an adequate combination of mental energy and mental sagacity. Nurture can exercise a marked influence on the development of mental energy by ensuring bodily health and strength during development, and by education and upbringing in a healthy mental environment it can develop, without wasting mental energy, the inborn potentialities essential for efficiency in the struggle for existence. Nurture, however favourable, cannot give mental sagacity if it is not inborn, nor can it do more than bring out the good qualities that the raw material of inheritance has provided; but it must be remembered that nurture plays an all-important part in the preservation or the spoiling of good raw material in all classes and grades of society. However paradoxical it may seem, nevertheless it is true that the inborn virtue of an unselfish, confiding, amiable, and optimistic nature may be the cause of an acquired vicious character under the influence of evil suggestion and imitation; whereas a calcu-

lating, suspicious, and selfish nature under similar circumstances would escape contamination.

"Virtue itself turns vice, being misapplied,  
And vice sometime 's by action dignified."

Romeo and Juliet.

#### Inborn Qualities in Relation to Mental and Nervous Diseases.

If inborn good qualities are deficient or absent there will be, in spite of favourable environment after birth, intellectual, aesthetic, or moral feeble-mindedness of various forms and gradations, which in extreme cases can be shown by defective brain, the organ of mind. If there be inherited a disproportion and lack of harmony and integration of these inborn factors of the raw material in a family or stock, upon which mentality is based, an unbalanced mind is likely to develop in one or more members of the family or stock, which will show itself in various departures in conduct from that of the normal stable individual; it may be in the form of eccentricity, of fanaticism, of mysticism, of insanity, of genius, for, as Dryden said,

"Great wits are sure to madness near allied,  
And thin partitions do their bounds divide."

Again, the unbalanced mind may show itself in the form of such neuroses as hysteria, neurasthenia, epilepsy, or in one of the forms of the true insanities. The etiology of the psycho-neuroses and psychoses and their clinical symptomatology point to the fact that they belong to one great group.

#### The Neuropathic Inheritance.

There are individuals born of sound stocks that no acquired conditions—for example, drink, poisons engendered within the body or taken from without, head injuries, emotional shock, distress, and even profound misery and destitution combined—can render insane. A striking fact of this was shown in a report of Bonhoeffer, who had charge of 10,000 Serbian prisoners who had been subjected to every form of stress from disease, famine, and hardships of every kind, yet there were only five insane among them. There are others, generally from a neuropathic stock, whose mental equilibrium may be disturbed by any one of these conditions of stress, or, very frequently, without any apparent cause except the conditions appertaining to the sexual functions and reproduction in adolescence, and the puerperium and the climacteric period in women.

A careful inquiry into the family histories of the progenitors and the collateral members of ancestral stocks will in the great majority of cases show that a child born sound in mind and body is begotten by parents sound in mind and body themselves, whose stocks are free from any neuropathic or physical taint. Such a child with a good inheritance is very unlikely to suffer in later life with feeble-mindedness, epilepsy, insanity, or functional nervous disease. Occasionally, however, from some inexplicable cause parents of sound stocks may beget an idiot or imbecile child, or a child who in later life becomes insane or epileptic. In some of these cases there is a history of insanity or neurosis in grandparents or in collaterals.

The child may give evidence of mental defect by being dull and backward in learning, or it may exhibit fits of uncontrollable temper without cause, or other signs of nervous irritability, such as convulsive attacks, which may be precursors of true epilepsy or of dementia praecox. If the child escapes any distinct morbid manifestation during childhood there is a danger of its showing vicious tendencies later, or developing insanity or epilepsy at the period of adolescence when the sexual instinct is aroused and new desires and passions stimulate the brain to a new activity.

#### Natural Selection and Survival of the Fittest.

Dr. John Macpherson<sup>3</sup> has shown that the psycho-neuroses and psychoses are found in primitive people, in savages, and in all civilized nations in different parts of the world. The symptoms have a local coloration according to the beliefs, customs, usages, and traditions of the people, but they are essentially similar and doubtless have a similar causation. We may not know what this bodily causal condition is, but the clinical signs and symptoms point to its being some process causing disorder of the latest developed structure of the brain—the cerebral cortex. In cases where the psychosis terminates in a progressive dementia an organic disease of this structure is found, which would account for the symptoms.



In the primary dementia of adolescence there is a degeneration of the cortical neurones which would account for the disintegration of the psychic unity, and I have shown that associated with this is a regressive atrophy of the reproductive organs. These are obvious bodily changes, but it is probable that there is throughout the body a defective vitality—*élan vital*. There is certainly a lowered resistance to disease, as shown by the evidence of deficient oxidation processes.

I have found, by a study of the age of onset of insanity of parents and offspring in over 4,000 relatives who are at present or have been in the London asylums, a signal tendency of the offspring of insane parents to develop signs of insanity in adolescence. The average age of the parents is about 17 years more than that of the offspring. This accords with Darwin's law of Antedating or Anticipation. Those individuals who suffered with dementia in adolescence would have little chance of surviving the struggle for existence among primitive people and savages. Among civilized people insanity leads to segregation, and thus prevents propagation. The regressive atrophy of the testes in males would also interfere with propagation. Again, females predisposed by hereditary tendency break down in adolescence under the stress of normal physiological conditions, such as pregnancy, parturition, or lactation. These cases of so-called puerperal mania often terminate in dementia, and we find in them a regressive atrophy of the ovaries. Only about 10 per cent. of the primary dementia female cases in asylums are married women, and very few of these have had more than one or two children. If it were not for this natural process of preservation from breeding of such unsound members of a stock by bringing the disease on at an earlier age and in an incurable form, racial degeneracy and extinction would be inevitable in a civilization where altruistic sentiment has interfered with the struggle for existence and survival of the mentally and physically fittest.

#### *The Effect on the Individual of the Social Instinct.*

The three primal instincts, common to men and animals, of self-preservation, propagation, and the instinct of the herd, are the springs from which the streams and rivers of mental activity have their source. The bond of union of the herd is based upon the willingness of each member to sacrifice self-interest, and even life, for the common good, and by thus doing directly ensuring the preservation of the species, and indirectly the individual. The herd instinct has played a most important part in peace and war; in fact, the history of nations has depended upon it. This gregarious instinct has been the great stabilizing force in the fixation of traditions, customs, and social usages of successive civilizations in the world's history. Patriotism, moral, and discipline have their roots in this instinct, yet every successive age has shown that progress in religions, ethics, the arts and sciences, has originated in men and women with a belief in their individual mentality—so strong, indeed, that they were willing to court death, torture, or exile in their endeavour to overthrow traditional dogma and superstitions, or to incur disapprobation by not conforming to the traditions, customs, and social usages of the herd. Patriots, preachers, prophets, philosophers, artists, and scientists have in all ages and in all civilizations, at one time or another, been regarded by the herd either as bad men or mad men when, inspired by imagination and courage of conviction, they have refused to admit the truth of the accepted doctrines of the society in which they lived. What an inestimable benefit such men have conferred upon mankind, for have they not made the world's history and averted a petrified civilization? A just balance between the influence of the independent original and imaginative mind of the few, and the stabilizing influence of the collective mind of the many, is the secret of social progress and the building up of a sane social heritage. Mental hygiene should, then, be largely concerned in ensuring this just balance by encouraging all those factors and conditions in education which support moral, discipline, self-sacrifice, and esprit de corps, in the home by respect and pride of family, and in schools, universities, in the services, and in industries by respect and pride of such institutions. But it must be effected without repressing or destroying that individual self-control and independent originality in thought and purposive action which is essential for national progress. All games of skill in which the individual plays not for himself, but the side, such as cricket and football, foster the right spirit, and tend to an establishment of a code of honour in which the amour-propre is centred not in the individual, but in the school or university. It must be remembered that

man by this herd instinct is eminently imitative, and therefore suggestible to good or bad influences. We can therefore understand the important part esprit de corps plays in the regiment, the ship, or the factory. The great value of esprit de corps, discipline, and moral was strikingly shown in the retreat from Mons of the Expeditionary Force. Again it was shown by the fact that the proportion of cases of shell shock and war neurosis in great measure directly depended upon the moral, discipline, and esprit de corps of the regiment, because these stabilizing forces of the group mind were always operating against individual fear and collective imitation by suggestion.

#### PSYCHOTHERAPY IN MEDICAL PRACTICE.

Medical practitioners are now realizing that the successful treatment of a vast number of patients suffering with mental and bodily disease depends largely upon the practical study of individual and social psychology. The war has borne home to us how important it is to know the nature, inborn disposition, upbringing, education, conduct, and nurture of the individual. No one has a better opportunity of acquiring that knowledge and utilizing it than the family practitioner, who by his sympathy and sound judgement has become the friend and adviser of the family. To him the patient can come, not only for the relief of his bodily pains and disease, but for relief of his mental troubles and anxieties, which are so frequently the source of the bodily disorder. I always make it a point of asking, Have you any financial difficulties? Have you any domestic difficulties? Have you anything troubling your mind which prevents natural sleep? Do you have dreams? Are they of a terrifying nature or directly or indirectly related to the sex instinct? It is a matter of experience and tact to obtain the information required, especially in matters relating to a mental conflict with a sexual basis. Great care must be taken not to put into the mind ideas of sexual perversion, although great benefit to an afflicted conscience can be effected by explaining the physiological processes of sex, and calming apprehension relating to masturbation and impotence. A practitioner who has inspired confidence will often do more to cure some of his cases of functional neuroses with attendant bodily ailments by helping to remove anxiety and its attendant depression than by medicines. Moreover, he may be consulted by parents in the upbringing and education of children, not only from the physical but the mental side.

There is an ever-growing disharmony between the physiological conditions of the sex instinct and sociological conditions. The non-gratification of this instinctive desire may be the source of a mental conflict accompanied by fear and anxiety in a large number of men and women, especially the latter. It must be a constant experience of the members of this Association to find in the history and behaviour a sexual basis for the mental trouble of their patients who are suffering from either a psycho-neurosis (for example, hysteria, hypochondriasis, or neurasthenia) or a psychosis (for example, religious mania, manic-depressive insanity, involutional melancholia, or primary dementia).

While fully admitting the fact that the study of dreams and psycho-analysis by word association, or by free association, can lead to the discovery and uprooting of a repressed mental complex of a painful nature, or of a nature which would by society be considered wicked, yet I am of opinion that there are but few doctors who possess, or who can possess, all the necessary qualifications of experience, knowledge of technique, high moral principles, tact, and delicacy of feeling to carry out successfully the psycho-analytical methods of Freud and Jung. Human beings, especially women, are suggestible, and the class of people who seek relief on account of psycho-neuroses are eminently suggestible; consequently, unless the greatest care is taken, instead of the treatment being remedial, new and worse conflicts may be installed in the mind. It has always seemed to me that the literature relating to the truths in the new psychology of the unconscious has been deprived of much of its general practical utility by enshrouding it with mythological, mystical, atavistic speculations, and pornographic and coprologic details. Such literature has been not only eagerly seized upon by pseudo-scientists who practise psycho-analysis after their own fashion, but also seized upon and read by a section of the general public impelled by curiosity regarding sexual matters. The danger thereby arises of perverted sex ideas being implanted in the minds of such people, causing them to become in some instances antisocial in behaviour.

Introversion of the mind accompanied by contemplative



fear causes loss of voluntary attention to the world around and its diversion to the personality of the individual. The result of this is a disorder of the involuntary automatic functions of the body—a disordered coenaesthesia. Such organs as the heart, the lungs, the stomach, and the intestines, which under normal conditions function automatically with phasic or periodic regularity and without the intervention of attention, now, owing to the effects of introspection and contemplative fear, are disordered in function, and consequently obtrude themselves in consciousness. This causes hypochondriasis and various forms of neurosis.

A local colour of deranged organs gives rise to various types of neurasthenia, and obsessional psychasthenia with phobias. But besides these bodily disorders of the vital functions contemplative fear and anxiety upset the delicate poise of the internal secretions of the reproductive and endocrine glands, the functions of which we are only vaguely conscious of by the bodily effects produced.

An intelligent understanding of the influence of mind on body and body on mind—mental hygiene—and its practical application by the doctor, would avoid recourse of the public to faith healing, Christian Science, the Coué cult, and other forms of treatment by suggestion, which now receive so much popular attention and acclamation.

## REFERENCES.

<sup>1</sup> *British Med.-Chir. Journ.*, March and June, 1922. <sup>2</sup> *Analytic Psychology*. <sup>3</sup> *The Identity of the Neuroses and Psychoses*, *Journ. of Mental Science*, 1922.

## THE OUTLOOK OF NEPHRITIS IN CHILDREN.\*

BY

HUGH T. ASHBY, B.A., M.D.CAMM., M.R.C.P.LOND.,  
PHYSICIAN TO THE MANCHESTER CHILDREN'S HOSPITAL, ETC.

As a general rule cases of nephritis in children do better than in adults; one reason, no doubt, being that the cardiovascular system is in good order, and any rise of blood pressure which may take place has less effect.

The examination of urine in infants is often neglected because of the difficulty in obtaining a specimen. The best way to do this is to put the infant on a mackintosh so arranged that the urine runs into a small pool at the end of the bed. Another way is to hold the infant out after a long sleep.

A simple method of estimating how much urine a child (over 4 years of age) should pass in the twenty-four hours is as follows. The age of the child in years multiplied by two and a half gives the amount in ounces. Thus a child of 6 years will pass about 15 oz. ( $6 \times 2\frac{1}{2} = 15$ ); a child of 12 will pass 30 oz. ( $12 \times 2\frac{1}{2} = 30$ ).

Acute inflammation of the kidneys occurs more often as a secondary than as a primary disease in childhood. Scarlet fever is by far the commonest cause, the nephritis coming on at any time from about the fourteenth to the twenty-sixth day of the disease; it is often impossible to determine the exact date of the commencement of the nephritis, and many cases are the result of mild attacks of scarlet fever not recognized at the time. The severity of the attack of scarlet fever plays no part in the occurrence of nephritis, which may come on after severe and mild attacks alike; often, indeed, the most fatal are those which come on after an attack only recognized by the peeling. It is likely that the patient has not been looked after during the convalescence and has been exposed to cold, etc. In any child under 10 years of age who develops nephritis, scarlet fever should be borne in mind and desquamation looked for very carefully.

The occurrence of nephritis after scarlet fever varies in different epidemics, but it may be roughly estimated at about 10 per cent. The outlook is usually good, and it is rare for the nephritis to become chronic. The amount of albumin in the urine does not seem to alter the outlook, for a case with a large amount may get quite well while one with only a small amount may do badly. The worst cases are those which have remained untreated for some days and in those where there is suppression of urine, as uraemia is liable to occur. The preventive treatment consists in the greatest care being taken during the two and three weeks after the acute onset of scarlet fever, especially as regards catching cold.

Acute nephritis does, however, occur as a primary disease, or at any rate as far as we know. Thus a schoolboy, who had apparently been in good health, was noticed by his parents to be puffy in the face one morning, and on examination a large quantity of albumin was found in the urine.

Unlike the post-scarlatinal nephritis, the outlook is mostly bad in these insidious cases. They run a course of perhaps three months to two years, but complete restoration to health does not often occur. The child may get fairly well, but he is liable to further attacks, which damage the kidneys still more, till he grows waterlogged and dies. Towards the end very little urine is passed, and dyspnoea becomes a very marked feature, so that the patient has to be propped up in bed. Uraemic convulsions are also common.

It is, however, often difficult to give a prognosis, which is what the relatives want to know. The prognosis depends on (1) the general condition of the patient; (2) whether the nephritis is post-scarlatinal or idiopathic; (3) the results of the renal function tests, etc., the chief being for the ordinary man the urea concentration test.

Recently the renal efficiency test has been elaborated by Maclean and de Wesselow, of St. Thomas's Hospital. It is simple, needs no clinical laboratory, and from my own experience gives reliable information as to the state and efficiency of the kidneys. Until lately the condition of the kidneys of patients suffering from nephritis was judged solely by the amount of albumin and by the presence of casts. Now, a large amount of albumin does not necessarily mean that the outlook is bad; nor is the converse true, for a patient with a small amount of albumin may do badly.

This is where the urea concentration test or renal efficiency test is useful. It depends upon the fact that when a large dose of urea is administered to a patient with defective kidneys he is incapable of excreting urine with a high urea concentration. The Ministry of Pensions has used this test to assist in assessing patients for pensions. The details of the test are as follows:

## Renal Efficiency Test.

Starting at a convenient time, say 8 a.m., the child empties his bladder and immediately afterwards takes 10 grams of urea (15 grams for an adult) dissolved in about 3 oz. of water, flavoured with tincture of orange. The urea solution is not unpleasant to take, and there is seldom any difficulty.

At 9 a.m., or an hour later, he passes urine.

At 10 a.m., or two hours later, he passes urine again, and this specimen is kept for the estimation of urea.

The test is easily carried out, the urea being estimated by the hypobromite method and an apparatus which gives the volume of gas evolved. The apparatus can be bought complete, or it can be arranged by oneself. The percentage of urea equivalent to the amount of gas evolved may be ascertained from a table.

If the percentage of urea after the test exceeds 2 the kidneys are fairly efficient, but if below 2 their condition is unsatisfactory. The test can be carried out each week during an illness, and we can see how the kidneys improve or otherwise. The general reliability of the test and its ease of application (it takes about three minutes) should make it of great assistance in clinical medicine, and also in certain surgical conditions, such as prostate and kidney cases.

Again, if it is suggested that a patient with chronic nephritis should undergo an operation, we can, after performing the test, say whether the nephritis precludes it. There is also the test where the blood urea is estimated, but the test is beyond the scope of anyone who is not a trained pathologist.

Little need be said of the general treatment of nephritis until we come to the question of diet. It is clear that in the past we have restricted the diet too much, especially in the amount of protein allowed. Everyone needs a certain amount of protein to keep in good health. If very little or no protein is given in the food the body itself will supply waste products, so that we cannot eliminate altogether the work of the kidneys. There is no retention of nitrogenous products in a case passing albumin in the urine, and therefore there is no need to restrict the diet. Again, there is a large loss of protein each day, and all the more reason for giving a liberal supply in the food to make good this loss. When protein is given in the diet the amount of albumin in the urine is not increased and often diminishes.

A high protein diet is the best means we have of relieving a patient who has much dropsy from nephritis, and helps to make him more comfortable. This is most probably to be explained on the ground that the protein diet raises the urea percentage in the blood and so causes a diuresis, for urea is

\* A paper read to the Lancashire and Cheshire Branch of the British Medical Association, January, 1923.



one of the best diuretics we have. A dose of urea, 10 to 15 grams each morning, will often get rid of obstinate oedema. It should be noted that there is no excess of urea in the blood during uraemia; if there were there would be a good diuresis and no uraemic convulsions.

To sum up, I would advise that a patient with nephritis should have a slop diet for about ten days, and that the diet should gradually be increased to include fish, eggs, and meat, although there is still albuminuria. Also do not keep a nephritic patient in bed too long. A certain amount of exercise in a warm room helps to lessen the oedema, besides giving the child a happier time.

## IONIC MEDICATION.

BY

DAVID CAMPBELL, M.C., M.A., B.Sc., M.B.,

FOLLOK LECTURER IN MATERIA MEDICA AND PHARMACOLOGY, UNIVERSITY OF GLASGOW; PHYSICIAN TO OUT-PATIENTS, WESTERN INFIRMARY, GLASGOW.

That particular branch of therapeutics known as ionic medication or ionization is one about which very little information can be obtained in any recognized textbook of pharmacology and therapeutics. Yet the subject is not a new one. Lewis Jones states that Leduc, in one of his publications, gives references to a great many papers on the subject, and mentions one published in 1833.<sup>1</sup> Turrell goes even farther back and declares that the theory of ionic medication was enunciated by Verratti in 1747.<sup>2</sup> The general application of this theory as a practical question in therapeutics appears, however, to date from the publication of a series of papers by Leduc in 1900. In spite of this most textbooks ignore the subject. A few mention that there is such a method of treatment, but offer little or no criticism of its efficacy.

The reason for this reticence on the part of authors is fairly obvious. The majority of those who practise this method of treatment acclaim with enthusiasm the wonderful results which follow. Those who criticize it exhibit an almost equal degree of vehemence in their condemnation. It is difficult for the therapist, who may have little or no practical experience of the method, to know where the truth lies. It seemed to me, therefore, that it might serve a useful purpose to undertake a critical examination of the whole subject, basing my views on a considerable number of experiments and clinical observations.

The first difficulty which arises is in the definition of the term "ionic medication." According to those who speak with authority on the subject the term embraces (1) the introduction of drugs into the body through the skin or a mucous surface by means of an electric current, and (2) the modification of the chemical composition of parts of the body by the setting up of chemical changes throughout the tissues.<sup>3</sup> If the second part of the definition means that the chemical composition of the tissues is modified by the drugs introduced, then it is understandable. If, however, as is generally held, it means that this modification is the result of the passage of a current through the body, without any reference to the drug introduced, it is very difficult to see how this process can be termed "medication." It is obvious, in any case, that the two parts of the definition involve quite different conceptions, and will require to be considered separately.

The first question therefore which has to be considered is: Can drugs be introduced through the skin by means of an electric current? The answer to that question is undoubtedly in the affirmative. In animals Leduc showed that it was possible to introduce strychnine ions through the skin of a rabbit in this way.<sup>4</sup> Finzi proved that the ferri-cyanide ion could be carried through the skin of a monkey.<sup>5</sup> Inchley repeated these experiments on cats, rabbits, and guinea-pigs, and showed further that it was possible to introduce a number of other alkaloids, some metals, and certain negative ions.<sup>6</sup> In man exact records of experiments are few, though numerous writers have mentioned that it is possible to prove the penetration of the iodine ion. In my experiments I have been able to confirm this, and I have further been able to demonstrate quite conclusively the presence in the body of another anion, the salicylic ion, and of two cations, pilocarpine and atropine, after they have been carried through the human skin by a current of electricity.

The next question is: Has the ion thus introduced into the body any special pharmacological action in virtue of its being

so introduced? If we are to believe the ionic theory of the action of drugs—namely, that soluble salts exist in the body mainly as ions, and that each ion possesses an independent pharmacological action—then we must believe that the method of administration will make no difference to its intrinsic action. That this is so has been shown by the experiments of Leduc and Inchley on animals. The strychnine ion introduced electrically exhibited its ordinary action on the spinal cord and caused convulsions, while the atropine ion exhibited its ordinary action by producing paralysis of the cranial autonomic nerves. In man it can be shown quite easily by using a solution of pilocarpine nitrate underneath the positive pole. After the current has passed for some time the individual exhibits salivation, sweating, and disturbance of vision—in other words, the ordinary signs of the action of the pilocarpine ion. It may seem that I elaborate this point rather unnecessarily, but the suggestion has frequently been made, or at any rate implied, that by introducing an ion through the skin by means of an electric current you thereby endow it with some peculiar properties. That this is not so is obvious. The essential pharmacological action of any particular ion is the same whether it be passed through the skin into the body by innunction, a hypodermic needle, or an electric current.

If that be so the critic will very naturally ask: Wherein lies the particular merit of this method of introducing drugs into the body? The technique is expensive, complicated, and wasteful of valuable drugs, compared at any rate with the hypodermic needle or innunction. What advantages does it possess to compensate for these very obvious drawbacks? The answer is given that "in treatment by ionization a cloud of ions is introduced into the place where the disease exists"; that the ions are limited to the diseased region, and that therefore the local concentration is high. As a result the action is more intense, and the effect consequently greater.

If we examine these statements we must inquire: (a) What quantity of drug can be passed through the human skin by means of the currents used for therapeutic purposes? (b) What evidence is there of a local concentration of the drug? (c) How deeply can the drug be made to penetrate in this way?

I have investigated the first question with special reference to the iodine and salicylic ions, which are the two remedies most extensively employed in the treatment of medical conditions in this way. The method adopted was to "ionize" a number of patients, using a 2 per cent. solution of potassium iodide or sodium salicylate under the negative electrode. The process was continued for a period of thirty to forty minutes, and the urine was collected for analysis during the twenty-four hours following the experiment. The method described by Kendall<sup>8</sup> was employed to estimate the amount of iodine present in the urine, and the amount of salicyl bodies was estimated by Hanzlik's method.<sup>9</sup> The following table gives the results when potassium iodide was used.

Current in milliamperes ... ..	25	50	100	200
Milligrams of iodine in 24 hours' urine	30	55	56	145

It must be pointed out, of course, that it is not possible to raise the current all at once to the amperage indicated. For the comfort of the patient that has to be done gradually, and accordingly the currents mentioned were not acting during the whole period of the experiment. The rapidity with which the current could be raised varied with different individuals, but the quantities of iodine noted in the table were the maximum found for each particular current. In the case of the current of 200 ma. the duration of the experiment was forty minutes, the current being raised from 100 to 200 ma. during the last thirty minutes of the period. The duration in the other cases was thirty minutes.

It is known that from 60 to 80 per cent. of the amount of iodide taken into the body by any channel is excreted in the urine in twenty-four hours. From the figures given it is possible therefore to estimate approximately the amount of the iodine ion which has entered the body. Taking even the lowest percentage, the maximum amount of iodine which was introduced into the body by each current was 50, 92, 160, and 245 mg. respectively. In other words, it will be seen that, with the ordinary currents used in therapeutics, and for the ordinary duration of treatment, the total amount of iodine introduced was not greater than 0.77 grain, 1.4 grains, and



2.46 grains. Even with the huge current of 200 ma. the amount was only 3.74 grains.

When sodium salicylate was used the amount of salicyl bodies excreted in the urine, after the employment of ordinary currents, was so small that it could not be estimated with any degree of accuracy. Using a current rising to 170 ma. during a thirty-minute period, the total amount of salicyl bodies found in the urine was only 9 mg. It is interesting to note that this result coincides with that of Inchley, using a cat as the subject of experiment.<sup>6</sup> He found only very small amounts of salicyl bodies in the urine, and comments on the fact that the salicylic ion is not carried through the skin to the extent that enthusiastic writers on the subject would lead one to suppose.

Objection may be taken to this process of reasoning. It may be argued that the amount excreted would give no true indication of the amount passed through the skin. The objection has very little weight, but it can easily be overcome by considering the results when pilocarpine nitrate and atropine sulphate were used. With pilocarpine nitrate, using a current rising to 50 ma. over a period of twenty minutes, there was produced in the subject of the experiment salivation, sweating, and slight disturbance of vision. All these effects could be produced on the subject and to the same degree by injecting 1/5 grain hypodermically. In the case of atropine sulphate it was not considered advisable to use large currents because of the poisonous effects of very small quantities of that drug. But using a current of 5 ma. for thirty minutes resulted in sufficient atropine being introduced to produce a rapid pulse (135 a minute), marked dryness of the mouth and throat, and paralysis of accommodation lasting for eighteen hours. All these symptoms could be produced by injecting hypodermically 1/30 grain of atropine sulphate. In these experiments the amount of the drug introduced into the body was estimated, not from the amount excreted, but by its physiological action, and in each case it will be seen that this amount was small. It will be noted, further, that the action of these drugs differed in no way from what is seen when they are given hypodermically.

While the salient feature of all these results is that the amount of drug introduced is very small, there was another feature which is of considerable importance and which bears on the question of local concentration. In "ionizing" a patient with potassium iodide it was possible to demonstrate iodine in the saliva collected during the first twenty minutes of the period of treatment. Again, when pilocarpine nitrate was used, salivation made its appearance twelve minutes after the current was started; exactly the same time as after hypodermic injection. Where, then, is the evidence of local concentration? It must be quite obvious that as soon as the ion is carried through the skin it is whisked off in the blood stream and that therefore no local concentration ever takes place. Otherwise how is it possible to explain its appearance so quickly in parts of the body so far removed from the seat of entry, and in such amounts as to produce its physiological action on these parts?

The next question to consider is the depth of penetration of the ions. In man it is difficult to produce any experimental evidence to bear on this question, but the discussion in the previous paragraph throws some light upon it. If the ions introduced through the skin appear so rapidly in distant parts of the body, it must be obvious that they are set free from their function of carrying the electric current as soon as they pass through the skin. That they penetrate deeply is therefore unlikely. It should be noted further that although, until it passes the barrier of the skin, the current can be conveyed only by the ions of the solution underneath the electrodes, as soon as this barrier is passed the ions of the body fluids will take on the task of carrying the current. That fact renders even more unlikely deep penetration of the foreign ions introduced. A number of experiments have been related to prove that ions penetrate deeply. These experiments are, however, useless for this purpose. They only show that it is possible for considerable penetration to take place in dead or isolated tissue and in parchment. In the living body there is quite a different state of affairs.

In the few cases where attempts have been made to show deep penetration of ions in man they have signally failed. Finzi, in monkeys, claimed that he had been able to obtain penetration of the ferri-cyanide ion into the knee-joint.<sup>6</sup> Grave doubt has to be cast on this experiment because of the possibility of the ferri-cyanide ion found in the joint being carried there by diffusion after the animal was killed. Finally, Inchley, repeating this experiment on a rabbit, found

that there was no deeper penetration into the joint than could be obtained by simple subcutaneous injection of the drug under the skin covering the joint.<sup>6</sup> The whole weight of experimental evidence in living animals goes to show that the penetration of ions is not deeper than the subcutaneous tissue.

It would appear, therefore, that the following statements are true:

1. The amount of any drug introduced in an ionic state into the body by currents which can be used therapeutically is very small.
2. The drug, as soon as it is carried through the skin, is swept away in the blood stream and produces its specific action on the system generally. There is therefore no local concentration.
3. There is no evidence of deep penetration. On the contrary, in animals the experimental evidence is all against the drug penetrating farther than the subcutaneous tissue. In man it seems to be quite clear that a similar state of affairs exists.

We have now to examine the second part of the definition—namely, that in the process of ionization chemical changes are set up in the tissues, and that the resulting modification of the chemical composition of the body produces a therapeutical effect. That statement, as will be obvious, has really nothing to do with medication, but is a claim for the action of a constant current of electricity. An example of this is the claim that there is a "lytic" action underneath the negative electrode, and that this "lytic" action affects principally exudates and recently formed bands of lowly organized tissue.<sup>10</sup> It is quite true that, when an electric current is passing through the body fluids, there will be movement of anions towards the positive pole and of cations towards the negative pole. But it does not follow that any chemical changes are set up in the tissues between the poles. Faraday demonstrated long ago that when a current is passed through a solution of an electrolyte no apparent change occurs in the fluid, and that chemical changes take place only at the electrodes. To take a concrete example: when a current is passing through a solution of sodium chloride no chemical change can be observed in the solution, although the ions are in motion to their respective poles. At the negative electrode the sodium ion will give up its electrical charge, become a sodium atom, and combine with water to form a caustic alkali which will act on any tissue in contact with it. But that is at the electrode and, in the cases considered, on the skin. To suggest that any ion of the body fluids can produce a "lytic" action on the tissues underneath the skin before it has reached an electrode is manifestly absurd. There can be no "lytic" action except on the skin underneath the negative electrode. Further, it is difficult to conceive, and there is no evidence to suggest, that the mere migration of an ion, which is normally a constituent of the body fluid, to another part of the fluid can cause any chemical change which would have a therapeutical effect.

Certain authorities, recognizing the difficulty of explaining their therapeutical results on the basis of chemical changes in the tissues, have claimed that it is the movement of the ions which is the important factor. They suggest that there is a bombardment of millions of tissue ions on the affected part and that this "ionic massage" may be of benefit. In the present state of our knowledge of the forces bound up in matter it is hardly worth while discussing such a hypothesis. Two facts, however, are worth mentioning: (1) Though the number of ions set in motion must be enormous, the total mass of ions acting on any part must be very small; (2) the greatest migration velocity of any ion, the hydrogen ion, with a potential gradient of one volt per centimetre is only 0.0032 cm. a second.<sup>11</sup> It is difficult to see how a "bombardment" carried on by a small mass moving so slowly can have much effect. It can be in no way comparable to massage at the hands of a well trained expert.

In view of these facts I have been inclined to regard closely the therapeutical value of this method of treatment in a number of cases in the Western Infirmary, Glasgow. In a number of cases in the Western Infirmary, Glasgow. Potassium iodide and sodium salicylate, each in 2 per cent. solution, were the drugs used, and the cases which were treated were patients suffering from fibrositis of the lumbar and other regions, sciatica, and rheumatoid arthritis. As a general rule currents up to 100 ma. for thirty to forty-five minutes were employed; in one case a current of 170 ma. was reached during the last ten minutes of a thirty-minute period of treatment. The results can be briefly summarized. In no case was there any real benefit. The results agree with those



obtained by Stockman in an extensive investigation of the treatment of the same conditions by ionization. These were not published in detail, but an epitome of them is to be found in his book on *Rheumatism and Arthritis*.<sup>12</sup> Nor could it be expected that it is possible to cure such diseases in this way. For iodides and salicylates can be administered by the mouth in doses sufficient to produce a continuous concentration of iodine or salicylic ions in any part of the body far greater than could possibly be produced by ionization. Further, very much greater quantities of salicylic ions can be passed locally through the skin by applying methyl salicylate, and much greater quantities of iodine ions by applying iothion (di-iodohydroxypropan), an oily liquid having the chemical formula  $\text{CH}_2\text{I} \cdot \text{CHOH} \cdot \text{CH}_2\text{I}$ . Yet none of these methods of treatment benefits the conditions mentioned.

Although no real and permanent benefit followed this method of treatment, in a number of cases there was a temporary relief of pain. This relief persisted for some hours after the process of ionization, but in every case the pain returned, though in a few cases not to the same extent. This diminution of pain could in no way be ascribed to the introduction of the iodine or salicylic ions, for an exactly similar diminution of pain was obtained when the current was reversed and therefore no iodine or salicylic ions were being introduced. Similarly, when a pad soaked in a solution of sodium chloride was used over the affected part the same relief was observed.

It would be of interest to inquire as to the particular factor to which this is due. It has been shown conclusively that it is not due to the specific action of any ion. It must be due, therefore, to the galvanic current. Two different factors will thus require to be considered: (1) the current passing between the poles, and (2) the action of the current at the poles. Turrell suggests that the action of the current passing between the poles has the effect of generating an appreciable increase of temperature in the tissues, and to this increase of temperature he ascribes the beneficial result which follows.<sup>13</sup> It is true that Joule's law applies to electrolytes, and that therefore all the energy of the current spent when traversing the electrolyte is used simply in the production of heat, and not in causing chemical changes. But the most of the heat produced in this way is on the skin where the resistance to the current is greatest, while that produced in the tissues underneath the skin is small, is slowly evolved, and is dissipated quickly throughout the body. The experiments Turrell brought forward in support of his view merely showed an increase of the surface temperature of the limb to which the electrodes were applied, and that could quite easily be caused by dilatation of the cutaneous vessels. He admitted further that the more powerful heat-producing action of the diathermy current was not nearly so good as the ordinary galvanic current. His attempt to explain this obvious difficulty is not convincing.

It has to be admitted that the passage of an electric current through the tissues will have a general stimulating effect on them which may be of some benefit. But to me it seems clear that it is the action of the current at the poles which is the chief factor in the relief of pain. In every case treated in this way there is some irritation of the skin under the pads, which is evident from the sensations of the patient and from the marked hyperæmia of the skin seen when the pads are removed. This irritation is produced partly by the electrolysis of the substances in the solution employed to moisten the pads and partly by the stimulating action of the current on the skin, and it is sometimes sufficient to cause a tender part of the skin to remain red for several days. Nor is it necessary to use very large currents to produce this irritation. For, while the amount of irritation varies directly as the current, it varies indirectly as the size of the electrode. It is possible, therefore, to get a considerable amount of irritation even with small currents, if small electrodes be used. Here, then, is the ordinary counter-irritant action. It is difficult to account for the manner in which counter-irritants produce their beneficial effect, but that they do relieve deep-seated pain, at any rate temporarily, is undeniable. It seems to me therefore that, while it is possible that the interpoler current has some general stimulating effect on the tissues underneath the skin, the great factor in producing temporary relief of pain is the counter-irritant action on the skin underneath the electrodes.

So far only the medical aspect of ionization has been discussed. As far as its surgical application is concerned, those who practise this method in the treatment of many different varieties of septic sinuses, lupus nodules, and septic diseases

of the vagina and uterus, claim that the results obtained are excellent. I have had no practical experience of its use in these conditions, and can therefore offer no opinion as to its therapeutical efficacy. But, as far as the theory is concerned, attention may be drawn to the following facts. Zinc is the ion which is used in practically all cases. A number of electrotherapeutists use simply a zinc probe, which is put into a sinus, or a zinc sound, which is passed into the uterus, the metal forming in each case the positive electrode. When a current is passed the metal will have a destructive action on any tissue with which it is in contact. The chlorine ions of the tissues will move to the zinc electrode, give up their electrical charges, and the chlorine atoms thus set free will combine with the zinc of the electrode to form nascent zinc chloride. This substance will produce its well recognized caustic action on the tissues and its antiseptic action against any organisms which are present. But that is not "ionic medication." It is simply a method of producing nascent zinc chloride electrolytically in a place where its action may be of value. That a similar state of affairs exists when the zinc rod is placed in a cavity containing a solution of zinc sulphate is most likely, for here there will be constantly produced, electrolytically, nascent zinc sulphate by the sulphuric ions giving up their electrical charges at the zinc electrodes, and the atoms thus formed combining with it. In addition, the irritation of the tissues under the electrode will cause an increased blood supply to the part, which, in the chronic conditions in which ionization is employed, will be of some benefit. That there is any deep penetration of zinc ions is very doubtful, and it is not desirable in view of the powerful coagulating effect which zinc ions have on the albumin of the tissues. It appears to be entirely unnecessary to invoke the conception of the deep penetration of zinc ions in order to explain the therapeutical results which follow ionization. The combined action of the compounds formed electrolytically at the zinc electrode and the irritation of the tissues is quite sufficient to produce all the effects which have been described.

In conclusion, it will be obvious that, if the argument presented above is accurate there is very little scientific basis for the theory of ionic medication, and—as far as, at any rate, as the medical aspect is concerned—for the practice thereof. To those who strongly support this theory I may appear guilty of an excess of zeal in attempting to undermine their hypothesis. In defence I can only draw their attention to the words of Claude Bernard: "In science the word criticism is not synonymous with the word disparagement; to criticize means to seek the truth by distinguishing what is true from what is false."

## REFERENCES.

- <sup>1</sup> Lewis Jones, H.: *Ionic Medication*, 1913, London, Lewis, p. 20.
- <sup>2</sup> Turrell, W. J.: *Proc. Roy. Soc. Med.*, 1921, xiv, No. IX, p. 52.
- <sup>3</sup> Jones, H.: *Ionic Medication*, p. 1.
- <sup>4</sup> Ledue, E.: *Electric Ions and their Use in Medicine*, 1908, London, Rebusan.
- <sup>5</sup> Fietz, N. S.: Some experiments with ionic medication. *Arch. Roent. Ray*, 1912-13, p. 423.
- <sup>6</sup> Inchley, O.: *Journ. Pharm. and Exp. Therap.*, 1921, xviii, pp. 241-255.
- <sup>7</sup> Friel, A. R.: *Electric Ionization*, 1920, Bristol, Wright, p. 17.
- <sup>8</sup> Kendall, E. C.: *Journ. Biolog. Chem.*, 1920, xliii, p. 255.
- <sup>9</sup> Thorburn, T. W., and Handlik, P. J.: *Journ. Biolog. Chem.*, 1915, xxiii, p. 175.
- <sup>10</sup> Friel, A. R.: *Electric Ionization*, p. 55.
- <sup>11</sup> Watson, W.: *A Textbook of Physics*, 1899, p. 773.
- <sup>12</sup> Stockman, R.: *Rheumatism and Arthritis*, 1920, Edinburgh, Green, p. 51.
- <sup>13</sup> Turrell, W. J.: *Proc. Roy. Soc. Med.*, 1921, xiv, No. IX, p. 45.

## RHEUMATOID ARTHRITIS TREATED WITH INTRAVENOUS BACILLUS COLI VACCINE.

BY

ROWLAND J. PERKINS, M.D., B.S. LOND., M.R.C.P.,  
PHYSICIAN WITH CHARGE OF OUT-PATIENTS, ROYAL WATERLOO HOSPITAL;  
AND

G. BRUCE WHITE, M.B., CH.M. SYD.,  
LATE HOUSE-PHYSICIAN, ROYAL WATERLOO HOSPITAL.

By rheumatoid arthritis we mean the type of chronic arthritis of infective origin attacking the small and large joints, and characterized by proliferative changes in the ligaments and effusion into the cavity of the joints, and going on to ankylosis. Commonly, this type of case is considered to be of chronic infective origin, the infection arising from some hidden focus in the body, common foci being the teeth, tonsils, alimentary canal, and urogenital system, the latter being particularly common in women. We wish to draw a distinction between this type of case and the type of osteo-arthritis occurring in old people and characterized by



osteophytic growths and erosion of the articular surfaces, but showing practically no tendency to ankylosis. In this type the changes are rather of a degenerative nature.

Treatment of rheumatoid arthritis may be classified under three headings—namely: (1) Elimination of the focus of infection; (2) increasing the resistance of the patient to the infection; (3) local treatment to the joint—(a) to prevent deformity; (b) to alleviate pain; (c) to preserve movement of the joint.

Frequently, however, the focus of infection is difficult to locate, and, although routine search was made in all cases under our care, in most no such focus could be found. It is in these cases, in which the preparation of the vaccine from the focus of infection was impossible owing to a definite focus being absent, that the protein shock method by the intravenous use of *B. coli* vaccine was employed. Our search for foci of infection was necessarily limited owing to our patients (all except one) being out-patients during the treatment, except when admitted for the actual injection for twenty-four to forty-eight hours.

The normal defences of the body in the average case of rheumatoid arthritis are low, as is shown by the absence of leucocytosis in most cases, even in those in which a pyogenic coccus can be demonstrated in the focus of infection. The object of the protein shock is to make a sudden call on these defences with the idea of arousing them from their apathy. The *B. coli* vaccine was used owing to its being a form of protein suspension convenient to administer, and the material for its preparation is always easily obtainable. Possibly there may also be a specific action as well in some cases, in that *B. coli* may be the infection of some of those in which no focus of infection could be discovered.

The vaccine was given intravenously in doses varying from 50 to 200 millions for a first dose, the patient being admitted for twenty-four hours, as it was considered that the reaction was too severe for the patient safely to remain an out-patient whilst it was in progress. A certain amount of difficulty was experienced in judging a suitable initial dose. This should be as large as possible, and we found that the general condition of the patient was a much better guide to the initial dose than the condition of the joints.

The reaction usually consisted of a rise of temperature occurring a few hours after the injection, the temperature varying from 100° to 103° F., and frequently accompanied by a rigor. Nausea and vomiting may also occur. The duration of the reaction varies from twelve hours to two days. If any improvement as a result of the treatment is to take place it does so rapidly, and, as a rule, within two days, though in one case (F. S.) there was very little immediate improvement, but this occurred three weeks after the injections. If the reaction is too severe it can be checked by giving min. 5 of 1 in 1,000 adrenaline chloride solution intravenously; but in none of our cases did we find this to be necessary. Those cases with the severe reaction showed the best results.

#### Case 1.

Mrs. W., aged 43. Attended July 10th, 1922, complaining of swelling and pain of finger-joints of eight years' duration. On inquiry she stated that she had slight vaginal discharge.

Examination showed swelling of wrists and finger-joints, and a good deal of tenderness and limitation of movement. Heart: Mitral regurgitation present, but good compensation. Vagina and cervix uteri: No evidence of discharge found, and no cervicitis.

One hundred million *B. coli* vaccine were given intravenously with moderate reaction. Marked improvement followed; pain disappeared, and the swelling diminished considerably; stiffness was, however, still present.

On July 27th 500 million were given with moderate reaction and good result to joints.

The patient still has slight swellings of the joints, but movement is practically normal and painless.

#### Case 2.

Doris M., aged 26. Attended June 21st, 1922, complaining of pain and swelling in finger-joints for some time, and recently pains in shoulders and knees.

Examination showed early rheumatoid changes in fingers, with limitation of movement. No swelling, but slight limitation of movement of right shoulder-joint. No oral, nasal, or other septic foci discovered.

On June 26th she was given 100 million *B. coli*. There was a severe reaction, with marked fever (103° F.) for three to four days, intermissions, pallor, asthenia, and sweating. Within twelve hours of the injection there was distinct improvement of the joint condition. The swelling and pain disappeared, and movements became free. Five weeks later there was some return of symptoms, and the patient was readmitted and given 500 million intravenously, with improvement. The patient has remained well since.

#### Case 3.

F. S., aged 59. Admitted June 6th, 1922, with extremely marked rheumatoid changes of about five years' duration in all the joints of both upper and lower limbs. There was inability to extend the elbows beyond the right angle, practically no movement in wrists, inability to extend knee-joints above 150 degrees; she was unable to walk, but could stand with difficulty. Patient had previously had treatment at various spas, including vaccine treatment, subcutaneously by vaccines from teeth. The teeth were found to be very septic, and marked pyorrhoea was present, but there were no dental abscesses.

Weight extension was applied to the knee-joints, extraction of all teeth was performed, and three doses, of 500 million, 1,000 million, and 2,000 million respectively, of *B. coli* vaccine were given intravenously at intervals of ten days. The reactions were mild, though after the second dose an additional soft swelling appeared in the metacarpo-phalangeal joint of the right index finger, and persisted a few days before disappearing. Immediate improvement in the joints was practically nil, but since her discharge considerable improvement has occurred, and when last seen (September, 1922) she could walk moderately well with the aid of two sticks, and she was then able to extend both knee-joints. The pain was less but still persisted; subsequently, however, except for slight recurrences during damp weather, this disappeared.

#### Case 4.

L. G., aged 37. Attended February 2nd, 1922, complaining of pain and stiffness in fingers and wrists. On examination there was found to be considerable swelling of all the small joints of the hands, with marked stiffness. No Heberden's nodes were present. Some pyorrhoea alveolaris was present in the mouth. Dental sepsis was healed by extraction, and a trial made of potassium iodide and guaiacol carbonate by mouth, with little or no improvement.

On March 30th the patient was given 50 million *B. coli* intravenously. The reaction was slight and consisted of two days' pyrexia. The affected joints became less swollen and freely movable. A relapse occurred about six weeks later, and 150 million were given on April 13th and 250 million on April 18th, the latter dose being given because the former failed to produce sufficient reaction. A slight reaction was produced by the second dose and the results to the joints were good. Since then the joints have remained free from pain and stiffness, but slight spindle-shaped swelling of the fingers persists.

#### Case 5.

A. R., aged 44. Attended May 4th, 1922, complaining of "rheumatism" for two months. Examination showed rheumatoid arthritis in smaller joints of the hands, oral sepsis, and septic tonsils. The teeth and tonsils were treated by extraction and antiseptic paints respectively, and the patient was given a mixture containing potassium iodide and guaiacol carbonate, but no improvement resulted. She was then given 50 million *B. coli* vaccine intravenously, and there was immediate improvement in the affected joints; the swelling subsided and the pain was relieved. Seven weeks later there was some return of the symptoms, and 200 million *B. coli* were given intravenously and improvement again resulted. Since July 6th the patient has not reported to the hospital.

#### Case 6.

E. B., aged 52. Attended on February 21st, 1922, complaining of pains in wrists and legs for two months. Examination showed swelling of small joints of hands and right knee; some oedema of ankles present. Some dental sepsis present.

The patient was under treatment for five months with local applications and medicine, and dental sepsis was treated. On June 22nd the patient was admitted and was given 100 million *B. coli* vaccine intravenously, with very good results to the joints and a moderate reaction. Since this the patient has reported fortnightly, and now states that she is practically free from pain, and that, whereas prior to treatment she was unable to dress herself, she can now do so.

#### Conclusions.

The number of cases under review is small, so that it is premature to draw any hard and fast conclusions. However, though we do not claim in any way that this treatment is a final and lasting cure for the condition, to us the treatment does appear to have definite value, especially as an adjuvant to the more recognized methods of treatment. It is also too early to state whether any benefits that may have resulted are permanent.

We consider it to be indicated under the following conditions: (1) Cases in which no definite focus of infection can be located. (2) Cases in which the more recognized methods have failed. (3) Early cases in which the process in the joints is still active, especially if swelling and effusion be present. Case 3 indicated that little can be hoped for when adhesions are present in the joints.

A great difficulty experienced with the treatment was to estimate the dose of vaccine required to produce a beneficial reaction which would not be too severe for the patient. We are of the opinion that we erred on the side of leniency in this respect and that too small doses were given.

In conclusion, we desire to express our indebtedness to Dr. Woodwork for the loan of beds for our cases during the period of reactions.



FOREIGN BODIES IN THE AIR AND FOOD  
PASSAGES.

## REMARKS ON FIVE CASES.

BY

C. A. SCOTT RIDOUT, M.S.LOND., F.R.C.S.ENG.,

SURGEON TO THE EAR, NOSE, AND THROAT DEPARTMENT OF THE  
PORTSMOUTH AND SOUTHERN COUNTIES EYE AND EAR  
HOSPITAL; ASSISTANT SURGEON TO THE ROYAL  
PORTSMOUTH HOSPITAL.

The following series of 5 cases of foreign bodies in the air and food passages form an interesting group illustrative of the value of modern treatment for these conditions, and of the necessity of having at hand the most up-to-date instruments for dealing with them; this was shown especially by the one failure to remove the foreign body by endoscopic methods, recourse to the older and cruder surgical method of external incision becoming a necessity.

## CASE I.—Toothplate Impacted in the Right Bronchus.

J. S., a mechanic aged 22, was referred to the Eye and Ear Hospital by my colleague Mr. Bosworth Wright on October 25th, 1922, with the following history. On October 24th he lay down about 6 p.m. and fell asleep; he woke about an hour later, coughing, and felt pain in the right side of the chest. He then missed his lower toothplate, which contained ten teeth and had one holding hook. Past history elicited that on a few occasions he had suffered from petit mal, becoming unconscious for a short period. The cough and pain in the chest continued, and he went to the Royal Portsmouth Hospital, where by screening with x-rays a foreign body was located to the right of the middle line of the chest opposite the fifth rib posteriorly. An oesophageal bougie passed easily. He was transferred to my care next day, and on further screening the foreign body was seen in the same place as before to the right of the middle line of the chest, whether screened from front or back. A radiograph confirmed the appearance seen in the screen. Cough was frequent and painful. Loud rhonchi were heard over the centre of the right pulmonary area. It was obvious therefore that a foreign body was present in the right bronchus, but its size (length as seen about 1½ inches) did not correspond to the description of the missing toothplate, though its contour corresponded to a smaller plate than the one described.

The patient was then anaesthetized by Dr. C. Mayhew, anaesthetist to the Eye and Ear Hospital, with a C.E. mixture, after injection of the pre-tracheal tissues with 2 per cent. novocain and adrenaline 1 in 20,000. A deliberate tracheotomy was performed, the second, third, fourth, and fifth tracheal rings being incised after division of the isthmus of the thyroid and injection of 1 per cent. cocaine into the trachea. The interior of the trachea was then mopped with 5 per cent. cocaine as far as the bifurcation, coughing being thereby prevented. The anaesthetic was now changed to oxygen and chloroform, given through a Eustachian catheter directly into the trachea.

Irwin Moore's internal illuminating bronchoscope was then introduced into the right bronchus, where the curve of the hook attached to the vulcanite body of the toothplate was seen. By the aid of Irwin Moore's forceps the plate was seized and brought to the tracheotomy wound, where, unfortunately, it slipped from the forceps grip, and, before the assistant was able to secure it, was sucked back into the trachea and again lodged in the right bronchus. It was again seen, seized, and brought upwards, but once more slipped from the forceps grip (the vulcanite surface was rendered extremely difficult to hold owing to much mucus) while still in the trachea, and this time fell back into the left bronchus, where it was ultimately secured and brought out through the tracheotomy wound. The trachea and bronchi had previously to this been mopped with 50 per cent. cocaine as the frequent manipulations had rendered their surface irritable.

The plate when removed was found to contain the hook end, a portion of which was missing, and five tooth sockets holding three teeth, two being empty, and the plate had evidently been broken exactly in the middle line. In order to be quite sure that nothing was left behind the bronchial tree was explored on both sides with the bronchoscope, a good view being obtained. The patient subsequently passed the other half of the plate with five teeth in five sockets per rectum, having evidently smashed the plate in half while in an epileptic spasm, and broken off two teeth as well—these latter were not recovered. After-progress was uneventful save for some mild bronchitis, for which due precautions were taken.

Noteworthy points about the case are:

(a) It would seem that, in similar cases where large and slippery foreign bodies are present in the bronchi, the position of the patient should be oblique with head slanting downwards in case of slipping of the forceps grip.

(b) The assistant should be ready with a pair of Spencer Wells forceps to secure a good grip on the foreign body whenever it appears in the wound.

(c) Tracheotomy would seem advisable in this class of case, as the foreign body was too large to be drawn through the bronchoscope, and had to be brought up together with the withdrawal of the tube, and would otherwise have certainly damaged the glottis.

(d) Anaesthesia as carried out in this case, by means of chloroform and oxygen administered through a large-size Eustachian catheter introduced alongside the bronchoscope, proved very satisfactory.

## CASE II.—Foreign Body in the Hypopharynx just Above the Entrance to the Oesophagus.

M. K., a schoolgirl 9 years of age, was admitted to the Portsmouth Eye and Ear Hospital on September 18th, 1922, with a history of having swallowed a drawing-pin while at school. A radiograph showed the drawing-pin lying slightly to the right of the middle line opposite the ring of the cricoid cartilage.



FIG. 1.—Case I: Toothplate, measuring 1½ inches in length, removed from right bronchus.

The patient was anaesthetized with C.E. mixture and an oesophagoscope introduced. At first the foreign body was not seen, the oesophagus being entered and found normal in appearance; but on withdrawing and examining the right lateral wall of the hypopharynx it was easily observed and removed with forceps.

The value of endoscopic methods was well illustrated in this case as any blind manipulation with coin catchers, etc., could only have been productive of injury owing to the sharp point of the drawing-pin, and the danger of pushing it downwards with a probang or other means is obvious. External incision would have necessitated a severe operation and probably a tedious convalescence.

## CASE III.—Mass of Fish Bones Impacted Across the Oesophagus Opposite the Sterno-clavicular Articulation.

Mrs. A. J. was seen by me in consultation with Dr. Lyth of Southsea in the spring of 1921, with a history of having swallowed a mass of fish bones whilst eating a meal, and that this was followed by great pain radiating over the lower neck and clavicular region on both sides, and inability to swallow.

The patient was anaesthetized and the oesophagoscope introduced, when the fish bone mass was seen lying transversely across the oesophagus opposite the site of pain—that is, the inter-clavicular region. The mass was seized with forceps and easily came away, affording complete relief.

This case, again, shows the advantages of endoscopic methods as opposed to the more barbarous probang which in olden days alone would have been available; a mass of bone thus situated could easily wound the walls of the oesophagus, and in such a position sup-puration or damage to large vessels in the vicinity might easily prove fatal.



FIG. 2.—Case II: Drawing-pin in hypopharynx.

## CASE IV.—Toothplate Impacted in the Oesophagus; Failure to Remove it owing to Lack of Necessary Appliances.

A. B., a female patient aged about 35, was admitted to the Royal Portsmouth Hospital in September, 1921, with a history of having swallowed a metal toothplate with pointed lateral extremities but no hooks. A radiograph confirmed the history, and showed the plate lying horizontally across the oesophagus just below the ring of the cricoid.

Under local anaesthesia an oesophagoscope was introduced and the upper edge of the plate easily located; the plate was seized with forceps, but could not be shifted owing to the fixity of its pointed lateral extremities in the walls of the oesophagus.

As I was not then in possession of Irwin Moore's shears for dividing such plates in the middle line and removing them in two halves, freeing their points of attachment in this way, and also not then having Paterson's recent expanding oesophagoscope, I was unable to continue endoscopic methods and had to have recourse of necessity to external oesophagotomy. This I performed through a somewhat unusual route. As I knew exactly the location of the toothplate, I incised the middle line of the neck, divided the isthmus of the thyroid, and retracted the left lobe of the thyroid away from the trachea and opened the antero-lateral



aspect of the oesophagus. Having removed the foreign body, I closed the oesophageal wound and allowed the left lobe of the thyroid to fall back, placing a small drainage tube down to the oesophageal incision, and otherwise closed the skin wound. A temporary oesophageal fistula supervened, but healed within a fortnight; otherwise after-progress was uneventful.

The failure to remove the foreign body in this case by endoscopic methods was entirely due to lack of the necessary implements. External oesophagostomy in the face of modern appliances must now be regarded as unnecessary, if not almost bad surgery, when applied to foreign bodies of a non-penetrating variety; and when one contrasts the rapid recovery with the minimum of inconvenience to the patient of endoscopic methods, as compared with the more serious character of and prolonged convalescence from external surgical procedures on the oesophagus, the latter should be considered by all surgeons as out of date, unless the circumstances are very exceptional; such methods as blindly groping with probangs, etc., should only be mentioned to be condemned.

**CASE V.—Meccano Wheel Impacted in the Oesophagus Opposite the Third Dorsal Vertebra.**

The patient, a boy aged 6½, was admitted to the Portsmouth Eye and Ear Hospital on December 5th, 1922, with a history of having swallowed a meccano wheel, through which he was trying to whistle. The radiograph (Fig. 3) shows its position as stated above.

This is the type of case where up to recent years (and even possibly nowadays) a probang would be used to push the foreign body downwards, to be passed per rectum, with probably no great inconvenience to the patient; but the case with which it can be seen and removed by endoscopic methods, as was done in this case, with the elimination of any possible subsequent complications or damage to the oesophageal walls, still further renders the use of such instruments as the probang inadvisable when other methods are available. As regards the technique to be observed in endoscopic manoeuvres such as the foregoing cases entailed, the conclusions arrived at from these and other cases are as follows:

1. *Position of the Patient.*—If the manoeuvre is to be carried out under a local anaesthetic, which is only possible in a certain proportion of cases, the patient should sit on a low stool, with the head in the "sword-swallowing" position

—that is, extended fully, chin pointing upwards; if under a general anaesthetic, the patient should lie in the dorsal position, head over the end of the table, supported so as to bring the chin as nearly as possible level with the prominence of the thyroid cartilage. The patient as a whole should be on an inclined plane, head lowest, so as to obviate the occurrence which happened in Case 1, of the foreign body slipping back if escaping from the grip of the forceps.

2. *Before operation*, in the case of adults a hypodermic injection of 1/150 grain of atropine should be given fifteen minutes before commencing, and in the case of children under 12 years of age 5 to 10 drops of tincture of belladonna, according to the age of the child, by the mouth. This will

be found very useful in preventing undue accumulations of mucus. In nervous adults also 1/6 to 1/4 grain of morphine hypodermically will assist by calming the patient.

3. *Choice of Anaesthetic.*—As it is of great importance that the field of vision be unimpeded by collections of mucus, C.E. mixture, followed by pure chloroform, has been found of greatest service. In the case of adults, whose control is good, a local anaesthetic may be used with advantage; it will, however, take from ten to fifteen minutes to prepare the fauces and pharynx by painting with from 5 to 10 per cent. cocaine before complete tolerance is obtained, and a stimulant such as sal volatile should be at hand in case of fainting or collapse. Some distinguished endoscopists claim to use little or no local anaesthetic and to be able to induce their patients to allow them to pass their instruments. One regrets that one's own experience differs from this.

4. *Position of Surgeon.*—If the patient is under a local anaesthetic, the surgeon stands while the patient sits on a low stool. If the patient is under a general anaesthetic, the surgeon sits on a low stool—a dressing-box makes an admirable seat.

5. *Treatment of Tubes.*—The tube should be warmed and smeared with glycerin as a lubricant; a cold tube excites spasm.

6. *Lastly*—a small but practical point—if the surgeon is wearing glasses himself, these should be well warmed or smeared with Sterilla soap, otherwise he is liable to find his own vision fogged just when he most particularly wishes to see clearly.



FIG. 3.—Case v: Meccano wheel in oesophagus.

## "LUNG SPLINTING" IN THE TREATMENT OF PULMONARY TUBERCULOSIS.\*

BY

SAMUEL HENRY STEWART, M.D. EDIN.,

MEDICAL SUPERINTENDENT, BELFAST MUNICIPAL SANATORIUM, WHITEARBY.

This paper represents an attempt to work from evidence ascertainable by the clinician towards treatment in pulmonary tuberculosis. Practically any organ in the body may be attacked by tubercle; the frequency and course of the pulmonary lesion then raises the question of the significance of this particular condition. Fuller appreciation of Koch's experiments, which demonstrated the behaviour of immunized cells to tuberculous infection, forces the attitude that pulmonary tubercle is a phase in tuberculosis having defensive properties, and probably supplementing the lymphatic system in guarding against spread to other parts. This defensive element must receive consideration in treatment. The majority of serious therapeutic attempts have at their end the discovery of foci of immunity. This phase of treatment with marked febrile or other directions. The action there was of tuberculous. The swelling and to establish rest of the treatment. The dis-

cussion of the introduction of rest by lung splinting in the treatment of pulmonary tuberculosis can be dealt with most logically under three headings.

### I. *Facts which Point to Immobilization as being a Rational Procedure in Treatment.*

I first studied the deaths incident to the various tuberculous lesions. The following list, representing the deaths in a large Midland city, is cited as a basis of argument:

Pulmonary tuberculosis	...	...	...	1,171
Tubercle of abdomen	...	...	...	55
Tubercle of spinal column and joints	...	...	...	31
Tuberculous meningitis	...	...	...	74
Disseminated tuberculosis	...	...	...	40
Tubercle of glands and other parts	...	...	...	11

In the above table we notice that mortality from tuberculosis is mainly associated with organs whose function involves movement. Tubercle in what may be described as stationary organs accounts for a comparatively small number of deaths.

I next considered this association of tuberculosis and mobile organs clinically. To this end I divided up the various common lesions for comparison as follows: (a) Disease in the stationary organs—for example, glands; (b) disease in organs which are mobile but capable of being immobilized—for example, joints; (c) disease in mobile organs which are uncontrolled—for example, lungs. The large majority of cases falls into the third category.

These chronic types of tuberculosis soon



reveals the fact that natural or mechanical immobilization is not associated with anything like the systemic toxæmia or the incidence of metastases that are so common in cases of pulmonary disease. Those who have been associated with considerable numbers of patients suffering from progressive pulmonary tuberculosis and, say, osseous lesions, must have noticed that Nature can exert healing properties in the latter conditions when resting, while the pulmonary disease is slowly increasing. That this is due to secondary infections in the lung is improbable since the manifestations are those of tuberculous infections. Or again, it may be necessary to make allowance for tissue susceptibility, but, comparing one tuberculous joint immobilized with another free, there is little difficulty in deciding that movement is trauma—when it is in a joint. The fact I want to emphasize is that the introduction of movement produces a baneful influence.

As a corollary to this reasoning, if movement be a factor responsible for the progressive toxæmia and the spread of the disease to other parts of the body, then immobilization should unquestionably produce beneficial results. As far as toxæmia is concerned we have proof of the beneficial effect of low-tension artificial pneumothorax.<sup>1</sup> With regard to metastasis, trustworthy evidence of spread of disease from a lung whose respiratory excursion is restrained is not available.

There are probably several factors which determine the incidence of tuberculosis, but once disease is established movement would doubtless be of importance in causing extension to other parts of the lung or body, and, on the analogy of the tuberculous joint, would retard healing.

Again, let me remind the reader that one of the earliest manifestations of tuberculous disease in a joint is muscular rigidity—that is, Nature attempting to splint and produce rest. This same effort at restraint by Nature is also found in pulmonary disease, though less manifest. The reduced movement occurring over a diseased lung indicates the possibility of lung splinting, despite the bilateral character of respiratory movement.

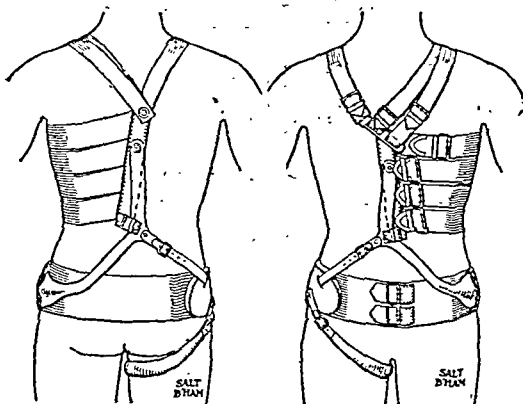
With regard to the question of auto-intoxication, I think we may assume, considering the effect of immobilization, that the chief factor involved in the dissemination of tuberculous toxins is the respiratory disturbance of the diseased lung.

Consideration of these facts would suggest that treatment should have as its object the promotion of healing of the lung lesion and also the prevention of metastases and toxæmia. With this end in view it is absolutely necessary to produce a resting condition not only of the lesion, but also of the adjacent healthy, or comparatively healthy, lung tissue.

## II. Immobilization by Means of an External Splint.

If the introductory reasoning be regarded as sound, it is necessary to develop a means of immobilization which is applicable to the widest application. From time to time a means has been made to restrain or prevent lung movement. The most outstanding instance is that of artificial pneumothorax. Other methods of restraining lung activity have been employed, such as mechanical restraint by means of adhesive strapping or by a belt, introduced by Denison<sup>2</sup> and Sallow<sup>3</sup> respectively. Webb<sup>4</sup> has introduced rest of individual lung by posture. More recently Knopf<sup>5</sup> has suggested a method of pronounced diaphragmatic breathing by means of which respirations may be reduced to 5 to 10 a minute. All of these workers were convinced of the beneficial effects following lessened activity.

Working on the lines indicated I set about inventing a device which would take cognizance, at least to some extent, of the three factors in respiration—namely, rib movement, diaphragmatic movement, and lung movement. The device I have called a lung splint. Its character will be evident from a study of the accompanying illustration.



Left lung splint. Total weight = 2½ lb. A small elbow-lever on hip pad prevents perineal strap chafing right thigh. Fulcrum of supporting lever about point where spinal movements independent of pelvis cease.

All parts were suitably padded and made so light and comfortable that it was possible to wear the splint continuously. A light woollen garment was preferably worn next the skin. The patient expired completely and the straps were just comfortably tightened on the chest wall in this position, a small pad being used above and below the clavicle. The degree of immobilization was gradually increased, so that the patient became inured without any real discomfort. Notable features of this appliance are that the limbs have free movement; there is no vital impairment of the opposite lung; a certain amount of lateral spinal movement is possible, a striking feature being that leaning to either side increases the tension of the restraining belts. This apparatus was perfected by Messrs. Salt and Son, Ltd., 5 and 6, Cherry Street, Birmingham, and is manufactured by this firm.

## III. Effects of Lung Splinting.

The fact that tuberculous lesions in one part can exert healing properties while those in other parts are progressing unfavourably, would suggest that healing in tuberculosis is primarily a local effort. The effects, then, of a procedure which recognizes the importance of the local condition demand consideration. I shall indicate briefly how it appears to me restriction by means of this splint is effected.

By relaxation of the costo-sternal portion of the diaphragm contraction of the crus does not bring about the piston action which results in the lowering of the diaphragm. With regard to the ribs, these are intimately associated in producing enlargement of the thoracic cavity. Enlargement in turn causes expansion in all parts of the lung capable of functioning. Tendeloo's law is not now accepted, as Keith has shown that lowering of the diaphragm produces an effect even at the apex of the lung. No doubt the degree of expansion in different areas has some relation to the adjacent portion of the expanding mechanism. It is quite evident, therefore, that fixation of the ribs in the position of expiration together with impairment of diaphragmatic function will effect very considerable diminution of lung movement. Splinting takes

these facts into consideration and, what is equally important, recognizes the fact that rest which does not extend to the healthier part of the lung defeats its own object.

The first effect of lung splinting that has to be recorded is that it is possible to restrain lung activity. Respiratory function seems to fall mainly on the lower two-thirds of the free lung. The reader is referred to the spirometric readings, shown for each of the cases reported below. This opens up an interesting field of research in that the relative functioning of the lungs can be investigated.

Since my object in this preliminary investigation was not so much to publish results as to determine effects of splinting, I chose four afebrile patients who had been resident over periods as indicated below, and whose response to routine sanatorium treatment had been unsatisfactory or had been outlived. In this way contributory factors were eliminated as far as possible.

### CASE I.

J. J., male, aged 18; admitted January 14th, 1921. He was chosen because he was a case of pulmonary tuberculosis for whom apparently nothing could be done. His condition was getting worse. Right lung splinted March 13th, 1922.

Right lung splinted, 3,500.

Lung infiltrated with crepitations throughout. Crepitations in left lung, with slight infiltration of upper third. There was morning and evening cough. Sputum (twenty-four hours): 1 ounce; numerous tubercle bacilli. There was frequent pleuritic pain. Haemoptysis: Clots four months previously. Musculature poor; marked languor, and poor capacity for work; variable appetite; frequent night-sweats; marked dyspnoea. Blood pressure, 114/70.

Condition After Wearing Splint Seven Months.—A few crepitations in right lung, above clavicle and at lower apex. No moisture in left lung. No cough, sputum, tubercle bacilli, or pleuritic pain. Haemoptysis: Staining during influenza four months ago. The musculature was greatly improved; he felt fit for work; his appetite was good; there were no night-sweats, and the dyspnoea had greatly improved. Blood pressure, 125/80.



This patient has made phenomenal progress. The improvement in the left lung has probably something to do with the limitation of antero-posterior thoracic enlargement.

## CASE II.

T. W., male, aged 34; admitted July 19th, 1921. Chosen because he was a case of chronic bronchitis with clinical pulmonary tuberculosis. I thought sputum might be retained where the bronchial tubes were inflamed if immobilization were attempted. The condition was getting worse. He was particularly unsatisfactory at the time of splinting as he had just suffered from a sharp attack of influenza. Left lung splinted March 13th, 1922.

Spirometric Readings: Free, 3,006. Left lung splinted, 2,900. Right lung splinted, 2,470.

Condition Before Splinting.—Crepitations in left lung to sixth rib anteriorly and angle of scapula posteriorly. Rhonchi throughout chest. Cough troublesome in the morning. Sputum (twenty-four hours): 1 ounce; no tubercle bacilli. The musculature was good; there was marked languor, and poor capacity for work; appetite good; occasional night-sweats; marked dyspnoea on exertion. Blood pressure, 122/70.

Condition After Wearing Splint Seven Months.—Crepitations apex to second rib and in suprascapular region. Rhonchi throughout chest. No cough. Sputum, half an ounce; no tubercle bacilli. Languor gone, and capacity for work greatly improved; appetite good; no night-sweats; marked dyspnoea on exertion. Blood pressure, 124/80.

This patient claims that he feels greatly improved and is anxious to go out to work. No evidence of sputum retention.

## CASE III.

W. G. C., male, aged 19; admitted May 31st, 1921. Chosen because he was an advanced case having very frequent haemoptysis. The left lung was the more actively diseased, and I guessed the blood had its origin in this lung. He was very weak and the outlook was unfavourable. In addition infiltration in the right lung extended below the third rib. I was anxious to see what effect would be produced in the right lung if the left were splinted. Left lung splinted March 13th, 1922.

Spirometric Readings: Free, 2,210. Left lung splinted, 1,900. Right lung splinted, 1,755.

Condition Before Splinting.—Crepitations and infiltration throughout left lung; cavitation at inferior angle of scapula. Crepitations over upper half of right lung; less marked infiltration throughout. Cough severe in early morning. Sputum (twenty-four hours): 1½ to 2 ounces; numerous tubercle bacilli. Frequent haemoptysis; sometimes twice in same week. Musculature poor; marked languor; felt unfit for work; appetite fair; no night-sweats; marked dyspnoea. Blood pressure, 104/58.

Condition After Wearing Splint Seven Months.—Crepitations in upper half of left lung; evidence of fibrosis going on; cavity dry. Disease more active in right lung. Very slight cough. Sputum, 1½ ounces; few tubercle bacilli (both sputum and bacilli less at end of June). Free from haemoptysis up to July 10th; faint streaks occasionally since. Musculature improved; feels well; capacity for work improved; as also had appetite to end of June; dyspnoea not so marked. Blood pressure, 115/70.

This patient claims that he is no doubt is no doubt he made considerable progress up to the end of June. I noted then that the right lung was not so satisfactory. Sputum, etc., increased slightly. I am doubtful with regard to the ultimate result, though the feeling of well-being remains.

## CASE IV.

E. M., female, aged 28; admitted August 12th, 1921. Chosen because she was a well marked case of pulmonary tuberculosis showing evidence of failing resistance, also because she was physically frail. Left lung splinted May 1st, 1922.

Spirometric Readings: Free, 2,030. Left lung splinted, 1,920. Right lung splinted, 1,640.

Condition Before Splinting.—Marked disease with crepitations throughout left lung. A few crepitations at apex of right lung. Severe cough, causing vomiting each morning. Sputum (twenty-four hours): 1 ounce; tubercle bacilli fairly numerous. Haemoptysis once, nine months previously. Musculature poor; marked languor; poor capacity for work; appetite fair; marked dyspnoea on exertion. Blood pressure, 105/80.

Condition After Wearing Splint Five Months.—Left lung: Post-tussive crepitations only above and below clavicle and in suprascapular region. Right lung: No moisture. No cough. Sputum practically gone; no tubercle bacilli. Musculature good; fit for work; appetite good; dyspnoea greatly improved. Blood pressure, 110/72.

There is no doubt about the improvement in this patient.

The question of blood pressure is interesting. One would expect a certain lowering as a result of impaired thoracic movement. Having regard to this, and also the possibility of patients in the circumstances manifesting a certain amount of excitement, I am bound to say that I think there is room for feeling that the increase in pressure, especially diastolic pressure, is evidence of lessened toxæmia.

My object, however, was mainly to record effects, and this I have done as faithfully as I can. Perhaps I should emphasize that my observations do not include a claim that complete immobilization of the diseased lung is established. My contention is that movement would seem to be restrained to a degree approaching what might be termed rest. Excision

of a portion of the second rib as an adjunct is contemplated if necessary.

So far I am not sure that there are any contraindications to the use of this lung splint. Even in the very advanced Case III there is little doubt that the patient benefited. Apart from slight retraction of the side splinted no untoward effect noticed has escaped record.

## REFERENCES.

- 1 Tuberculosis Report, City of Birmingham, 1918.
- 2 Gwerder: Some Observations on Low Tension Pneumothorax, *Tubercle*, vol. iv, 1922.
- 3 Denison, C.: Traction Plaster for Temporarily Contracting an Affected Lung, *Trans. Colorado State Med. Assoc.*, 1893-99, p. 392.
- 4 Sewall and Swezey: The Effects of Limiting the Expansion of the Thorax in Refractory Cases of Tuberculosis, 1921, v, 547.
- 5 Webb, G. I.: The Individual Lung by Posture, *Rest of*, p. 132.
- 6 Knopf, S. A.: A Physiological Adjunct in the Rest Cure of Pulmonary Tuberculosis, *Tubercle*, vol. iv, p. 1.

## Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

## A FEATHER IN THE PAROTID DUCT.

In the abstract No. 168 of the *Epitome* of February 24th, on the subject of salivary calculi, reference is made to the possibility of a foreign body forming the nucleus of the concretion. This reminds me of an instance of a foreign body in the parotid duct, which is unique in my experience.

Some years ago a small child was referred to me at the Central London Throat and Ear Hospital on account of inability to open the mouth and the presence of a large painful swelling extending backwards and downwards from the right parotid region. The swelling was obviously an abscess on the point of bursting externally. I was able to force the mouth open sufficiently to allow me to see a small white object projecting from the orifice of Steno's duct. I pulled it out and found it to be the tip of a feather, which was about an inch in length. Evacuation of the pus by a simple incision was soon followed by complete recovery. The feather, which had evidently come out of the child's pillow, had been accidentally drawn into the mouth. The stem had entered the parotid duct, and the feather had apparently worked its way inwards in the same fashion as a spike of grass when put inside the coat sleeve, in the familiar trick of our childhood.

JAMES DUNDAS GRANT, K.B.E., M.D.

London, W.

## MENINGITIS DUE TO PFEIFFER'S BACILLUS.

MENINGITIS associated with the presence of Pfeiffer's bacillus in the cerebro-spinal fluid is still sufficiently uncommon to deserve record. In the following case, as the cerebro-spinal fluid eventually became normal, it would appear that recovery ensued from the meningitis, the patient dying from pulmonary complications.

S. G., aged 62, had been operated upon twenty years previously for bilateral empyema of the antrum of Highmore; the sinuses were kept open by gold fillings in tooth sockets, and the patient continued to irrigate the antra daily. For the past five years he had suffered from recurrent attacks of nasal catarrh at very frequent intervals. The nose was examined, polypi diagnosed, and operation advised. At the time of removing the nasal polyp and operation what appeared to be a small deficiency in the cribriform plate of the ethmoid was noted.

Rigors occurred within a very short time of the operation, and three days later, the temperature having risen to 101.8° F., with pulse rate of 90, the patient began to complain of intense backache and frontal headache. His mental condition was normal, pupils small but active to light and accommodation, optic discs and other cranial nerves normal. The remaining physical signs were as follows: general cutaneous hyperæsthesia, slight rigidity of cervical muscles, no apparent spinal rigidity, Kernig's sign positive, abdominal reflexes sluggish, the five, knee and ankle jerks sluggish, abdominal withdrawal of the five, knee and ankle reflexes flexor with active withdrawal of the leg; heart and lungs normal. On lumbar puncture a turbid yellowish fluid under slightly increased pressure was obtained; when microscopically examined numerous polymorphonuclear cells and a few mononuclears were seen, but no organisms. On culture, Dr. Clement Lovell reported the presence of an organism showing the following characteristics: "A short Gram-negative bacillus growing only on blood agar or agar smeared with blood. Subcultures are more vigorous. A slight deposit in broth. The organism is maltose, or saccharose, a slight deposit in broth. The organism is non-pathogenic to the guinea-pig (Pfeiffer's bacillus)."

During the following week occasional delirium and retention of urine occurred, but the physical signs remained practically unaltered. Two doses of Pfeiffer's bacillus vaccine were administered, 5 and 10 million organisms respectively, the second dose being



given four days after the first. Lumbar puncture was performed and the intrathecal sac drained every other day, each successive sample of cerebro-spinal fluid withdrawn being less turbid than the preceding one.

After the first week the patient developed pulmonary complications and increasing drowsiness. The cerebro-spinal fluid, however, continued to become clearer to the naked eye and to show a decreased cell content; finally, fifteen days after the onset of meningitis, a perfectly normal sample was withdrawn. The general condition of the patient became worse, and he died on the twenty-first day of illness, apparently from bronchopneumonia. An autopsy was not permitted.

CECIL WORSTER-DROUGHT, M.D.  
S. W. QUARTLEY, L.M.S.S.A.

London, W.

### ISOLATION OF B. ANTHRACIS FROM A SHAVING BRUSH.

Five years ago a malignant pustule developed on the cheek of a male after a few days' shooting in the veldt. The lesion appeared to develop on the site of an insect bite, and the condition was successfully treated in the Municipal Hospital, Bulawayo.

There has been anthrax in S. Rhodesia, but not of recent years, and infection might have resulted from camping on an old cattle kraal, or from the use of an infected shaving brush. The one which was in use had been purchased shortly before, and had been imported from Japan. The shaving brush was submitted to me in February of this year, and by placing the bristles in broth and incubating for forty-eight hours colonies were obtained on subculture which had the appearance of *B. anthracis*. Morphologically, too, the micro-organism resembled *B. anthracis*. A pure culture was obtained and a small quantity injected into two mice, both of which died within thirty-six hours. In both instances the spleen was much enlarged and diffident, and the bacillus was recovered.

The interest in this case lies in the length of time elapsing between the infection and the isolation of *B. anthracis* from the shaving brush, and illustrated the fact that an infected shaving brush is of potential danger for a very long time.

A. NEAVE KINGSBURY, M.B., B.S.,

The Bland-Sutton Institute of Pathology, B.Sc., D.P.H.  
The Middlesex Hospital.

## Reports of Societies.

### TREATMENT OF CANCER OF THE TONGUE.

At the Medical Society of London on February 26th Mr. JAMES BERRY gave an address, preliminary to a discussion, on the treatment of cancer of the tongue. Lord DAWSON OF PENN presided.

#### Opening Paper.

Mr. BERRY commented upon the extraordinary differences of opinion as regards the details of operative treatment, and on the misleading character of many published statistics. The number of operations he had performed for the removal of the tongue in malignant disease—about forty altogether—was rather small, but he had at one time considerable opportunities of studying the pathology and clinical course of such cancers. He realized early that the ordinary mode of extension of carcinoma of the tongue was in a downward and backward direction towards the hyoid bone. Operations for the removal of primary growth should always extend widely in these two directions. He insisted on the necessity for free removal of the growth. Opinion was unanimous on the importance of early diagnosis and treatment. The public must be educated as to the importance of showing to a doctor any ulcer or growth that appeared on the tongue, and general practitioners must be impressed with the importance of not wasting time by attempting to treat suspicious growths by caustics or mouth-washes or other harmful or inefficacious remedies. Diagnosis presented little difficulty. Any doubtful ulcer should be excised and examined microscopically, and if found malignant treated forthwith by the larger operation, not by cauterization of any kind. He believed that he operated somewhat more willingly and freely in advanced cases of cancer than many surgeons; it was not that he operated with much expectation of permanent cure, but if the whole of the primary disease could be completely eradicated an extensive operation did afford to many patients who were in a miserable state of pain and distress a good prospect of speedy recovery for the time and immunity from suffering for some months.

He favoured the external or submaxillary operation, rather than the intraoral; to split the cheek to obtain better access to the posterior part of the tongue was an unnecessary mutilation, and to saw through the symphysis of the jaw seemed too severe, except perhaps for certain rare cases in which the body of the jaw was actually involved in the growth. He objected to the term "Kocher's operation," because the use of proper names for any operation was inadvisable, and because there were two distinct operations, both of which were known in the textbooks as Kocher's. The operation described as Kocher's submaxillary operation was widely different from the submaxillary operation which the speaker and other surgeons did at the present day, and he did not doubt that Kocher in his later days did not do anything like the textbook description.

Carcinoma of the tongue was essentially a local disease, with scarcely any tendency to affect distant organs. It tended, however, to infect at the earliest stage the nearest lymphatic glands, and if the growth originated in the anterior part of the tongue the removal of the glands *en bloc* could and ought to be performed when there was reason to fear such infection. If, however, the growth originated in the posterior part, the deeper cervical glands were those likely to be affected, and as they could not be removed *en bloc* a permanent cure was scarcely to be expected unless the primary growth was excised at a very early stage indeed. He had grave doubts whether so-called block dissection at one or both sides of the neck, which was very popular in certain quarters, was ever worth doing. It was not really a block dissection at all, but the picking out of certain lymphatic glands and ducts from among other structures which could not be removed. The procedure in early cases and cases situated in the anterior part of the tongue was seldom necessary, and in advanced cases, especially at the back of the tongue, was generally useless. He was by no means convinced that an unsuccessful attempt to dissect out the affected glands in the lower part of the neck did not often favour the spread of the disease.

Mr. BERRY then proceeded to give a list of 27 operations he had done in hospital during thirty years, all of them submaxillary, nearly always very extensive, and mostly involving the removal of one-half or the whole of the tongue, right back to the hyoid bone. He had had very few opportunities of treating early cases. He gave a detailed account of the large operation he had practised in these cases, his submaxillary operation differing in certain points of technique from that ordinarily done. He accompanied his description by photographs of the different stages of the operation done on a dead body. It was important that the mucous membrane should not be cut nor the mouth opened until all the muscles in the anterior and median portion of the tongue had been freely divided. A sponge must be put into the angle of the pharynx and the tongue to prevent what little blood there was trickling down into the pharynx. He indicated various other points and precautions. After the operation the patient should be got up betimes and made to wash his mouth out thoroughly. He usually told his patients that they had nothing else to do but to wash out their mouths, and for this purpose lotion and tumbler were by the bedside. He did not practise diathermy, and he did not wish to speak against it; but diathermy necessarily left the wound covered with a slough. It was of no use saying that it was a dry slough. It was dry at first, but within a week of the operation he could not understand how a slough of that kind could be other than septic.

#### Discussion.

Mr. CLAYTON-GREENE upheld the use of diathermy, which enabled him by an intraoral method to destroy the tongue right back to the epiglottis; diathermy also eliminated any possible chance of cancerous dissemination in the wound. By the time the slough became septic the lymphatic spaces of the neck were shut off by their natural protection. Mr. HAYWARD FISCH spoke of the value of radium, though he admitted that absolute cures were extremely few, if they occurred at all. He instanced three cases of continuing good results from the insertion of small powerful emanation tubes. Mr. GORDON TAYLOR said that he performed the much decried block dissection of the neck, the extirpation of the tongue itself being carried out at a subsequent operation. Where there was any extension of the growth to the floor of the mouth he did not hesitate to split the jaw and wire the bone again at the end of the operation.

Mr. A. EDMUNDS said that he had recently, to his disappointment, to do a second operation on his most successful



case, which had gone on so long—fourteen years—after the removal of half the tongue that the patient's friends were saying that it could not have been cancer at all. The man had returned with growth on the tip of the tongue, unquestionably malignant, but, fortunately, still removable.

Mr. H. S. CLOGG said that he had given up the so-called block dissection; he divided across the sterno-mastoid, and made a direct attack upon that region of the neck which lay round about the mastoid and the belly of the digastric muscle, and if any glands were enlarged he had no hesitation in excising. Mr. CECIL ROWNTREE had found results disappointing; it did not seem to make much difference what kind of operation was done. This was the most hopeless kind of cancer, and apparently only palliative measures could be attempted. Mr. W. G. SPENCER pleaded that the general practitioner should take more seriously any lesions in the mouth. Dr. LAPHORN SMITH was convinced that the new attention to dental hygiene would make cancer of the tongue an extremely rare condition in the future.

Mr. BERRY, in replying, remarked that little had been said about results, and he suspected they were extremely bad. He knew of only two cases which had survived more than five years. His most successful case was that of a medical student who had a small epithelioma on the side of the tongue which he had only noticed for six weeks. Half the tongue was removed, and, two months later, the glands in the submaxillary; the patient had no return whatever, but, five and a half years later, died of epithelioma of the lower end of the oesophagus.

### DIABETES INSIPIDUS.

A MEETING of the Medical Section of the Royal Academy of Medicine in Ireland was held on February 16th, with Dr. O'CARROLL (in the absence of the President, Dr. T. G. Moorhead) in the chair. Dr. F. C. PURSER showed a middle-aged man who had been suffering from diabetes insipidus for about four years. The smallest quantity of urine passed in twenty-four hours was 480 oz.; the average was 520 oz.; on an average 34 oz. were passed at a time. The patient was feeble and thin, and much bothered with frequent micturition, but no evidence of disease of any sort other than the diabetes could be elicited. Professor Scott had demonstrated inosit in the urine. Thyroid extract had been administered without any result, and pituitrin had been tried for several days hypodermically without any appreciable effect. Cerebro-spinal fluid, to the amount of 7 c.cm., was withdrawn after the failure of the pituitrin: the fluid was perfectly normal, its Wassermann reaction was negative, and the pressure was not excessive. The patient suffered no unpleasant symptoms afterwards, but the quantity of urine passed rose to a very constant 640 oz. in the twenty-four hours. Dr. CROFTON thought that if thyroid extract was given in bigger doses, in severe cases such as this it might prove beneficial. Dr. G. E. NESBITT said that the results obtained by pituitary extract in many of these cases seemed very striking; he was of opinion that specimens on the market must be often inert, and they were apt to forget this in case of failure. He suggested that Dr. Purser should try a different brand of pituitary extract in the case. Dr. O'CARROLL and Dr. KIRKPATRICK also discussed the case.

Dr. J. O'DONNELL showed a patient aged 70, who, while under treatment for chronic nephritis, developed herpes zoster associated with considerable pain in the distribution of the fifth to the eighth cervical areas on the left side. This was followed in the course of a few days by atrophy of the muscle of the shoulder girdle. Subsequently there was some herpes in the region of the distribution of the seventh cervical area on the right side, but this was not followed by muscular atrophy. The condition of the patient was improving slowly. Sir JOHN MOORE said that he thought there was not much doubt regarding the diagnosis of the case, as it seemed to him to be almost certainly a case of anterior and posterior myelitis. Dr. F. C. PURSER said that he had treated a somewhat similar case, who died about two years afterwards from myelitis.

Dr. H. F. MOORE read a paper entitled "Insulin and diabetes—the present position." He made a comprehensive survey of the literature to date; the ideas conceived in 1920 by Banting were explained, and the work carried out by Banting, Best, Collip, and others in Macleod's laboratory in Toronto on the preparation and study of active pancreatic extracts was described. The various stages in the experimental work on the improvement of the methods of prepara-

tion of the extract and the possibilities for the future in this direction were discussed. The physiological actions of insulin on the lowering of blood sugar, abolition of acidosis and glycosuria, and the raising of the respiratory quotient were discussed, as well as its use and possible abuses in the treatment of diabetes mellitus. The importance of dietetic treatment in conjunction with insulin was emphasized. Some experiences of the author with cases of diabetes treated with insulin were mentioned.

The paper was discussed by Dr. O'CARROLL, Dr. CROFTON, and Dr. G. E. NESBITT.

### DEEP X-RAY THERAPY IN GYNAECOLOGY.

A MEETING of the Obstetrical Section of the Royal Academy of Medicine in Ireland was held on February 23rd, with the President, Dr. BETHEL SOLOMONS, in the chair.

Dr. G. E. PEPPER read a paper on deep x-ray therapy as used in the Schauta Klinik, Vienna. He described the "symmetrie" apparatus devised by Professors Seitz and Wintz of Erlangen, the essential points being the division of the coil into two symmetrical parts, and the inclusion in the circuit of two water-resistance tubes, with an enclosed point and plate spark-gap so as to destroy all oscillations and inverse currents and to prevent formation of poisonous gases. The various instruments used for measuring the dosage and the method of estimating the penetration of the rays by means of the water phantom were described, emphasis being laid on the great difficulty and importance of these preliminary calculations. The dosage table formulated by Seitz and Wintz was quoted, and the method explained by which a carcinoma dose could be given to a tumour 10 cm. deep, by irradiating over six different fields of the abdomen. The importance of accurately centring the tube in each field was pointed out. The susceptibility of the different patients to radiation was referred to, and the great necessity of making a blood count before each treatment, owing to the destructive action of x rays on leucocytes and red corpuscles. The Vienna method of treating carcinoma of the uterus, with its advantages and disadvantages, and the application of x rays in cases of essential bleedings, amenorrhoea, menopause, and myomata were described. X rays were compared with radium in the treatment of malignant disease, and the combined use of both was advocated in order to obtain the best results. The action of x rays on malignant cells was said to be due to ionization, which caused lecithin to split up and liberate cholin, which poisoned and killed the cells. Cholin was set free in the very cells where its action was required, because malignant cells and tissues particularly sensitive to x rays, such as the testicles and ovaries, contained higher percentages of lecithin than other tissues.

Dr. W. C. STEVENSON said that a great deal of constitutional disturbance occurred when x-ray and radium treatment was being given—in his opinion as much as after an operation. It took a great deal out of a patient to get thorough treatment from x rays or radium, and it did not give him a proper chance if he only had one treatment; he should have at least two or three treatments. He thought if the growth was extensive there was a chance of increasing it by radiation, unless deep x-ray therapy was used; unless the dose in these cases lasted for eight hours he did not think it would do much good. A great number of patients in whom the cervix alone was involved were operated on, though in America as good results were obtained with radium alone, or combined with x rays, as by operation. Dr. L. L. CASSIDY said that his experience in hospital regarding radium had been rather unfortunate, as in two cases its application had appeared to stimulate the growth, although in another case of inoperable carcinoma the patient was very much improved.

Sir ANDREW HORNE said that the effect of x rays in stopping haemorrhage was undoubtedly wonderful. He had had one patient in whom, at the time the x rays were given, the condition was desperate, but the giving of x-ray treatment prolonged her life for a year, and made her feel much more comfortable. He agreed with Dr. Stevenson about the constitutional effects produced by x rays, as this patient suffered from a great deal of pain after treatment, which had to be relieved by the injection of morphine. Dr. G. TIERNEX said that, according to Erlangen technique, an eight-hour dose of x rays was not strictly correct; but on that matter



they might have different opinions in Vienna from Erlangen. In Erlangen Coolidge tubes were now used exclusively, and with them the unit skin dose was obtained in a little over twenty minutes. He was of opinion that in some cases constitutional reaction was severe, but he thought it was never anything so severe as it was after operation. Generally speaking, there was no difference between x-ray and radium treatment, and the indications for radium treatment were exactly similar to those for x-ray treatment; the contra-indications also were identical. The advantage radium had over x-ray was that screening was much more effective. The constitutional symptoms were much more marked in x-rays than in radium.

The PRESIDENT had read of collapse and anaemia following the Erlangen treatment, and he inquired if these were usually present, and also if prophylactic transfusion was often done. He believed that the x-rays often stimulated potential cancer cells, and his feeling was that when a growth had been satisfactorily and entirely eradicated post-operative x-rays were dangerous for this reason. He thought the treatment of fibroids by x-rays was incorrect, unless in exceptional circumstances. There was no method of excluding malignant degeneration, and he had published several cases of inoperable malignancy following the x-ray treatment of fibroid. The difficulty in insisting on hospital patients returning for radium treatment in cancer of the cervix made the results of the treatment difficult to complete.

Dr. PEPPER, in reply, said that undoubtedly constitutional effects were produced after the application of x-rays, but they did not last, and often the patients were able to return home in two or three days, whereas after operation they could not return for three or four weeks. Emanations were not used in Vienna, as they had such a considerable stock of radium; gas tubes were also used entirely, as they were much cheaper than Coolidge tubes.

Dr. R. E. TOTTENHAM exhibited a modification of the Rotunda siphon douche, which he stated was cheaper than the Rotunda siphon douche, and had the advantage that if any part of the rubber gave way it could be renewed without purchasing a whole new douche. Sir ANDREW HORNE showed two specimens, the first a malignant ovarian tumour, and the second a fibro-cystic tumour. Dr. GIBSON FITZGIBBON showed a specimen of a septic uterus. Dr. A. H. DAVIDSON read a paper on a case of traumatic subcutaneous emphysema complicating labour. Dr. L. L. CASSIDY read a paper on a rare case of maldevelopment of the female genital organs, and showed specimens.

### "PINK DISEASE."

A MEETING of the Midland Medical Society was held in the Medical Institute, Birmingham, on February 14th, when the President, Dr. PUNSLow, took the chair, and some fifty-two members were present.

Dr. PARSONS showed a case of "pink disease" (erythredema). He gave a short summary of the literature of the disease, and stated that he had seen six cases. All had suffered from the condition for many weeks, but previous to the onset of the disease had been well nourished and healthy children. The outstanding symptoms in this series of cases were: (1) The presence of a rash varying in degree and character, but always accompanied by intense itching; (2) red, swollen, and cold feet and hands, showing desquamation; (3) striking mental changes, the patient often presenting a picture of the most intense misery; (4) gingivitis and stomatitis, with falling out of the teeth; (5) a varying degree of hypotonia and pseudo-paralysis; (6) the frequent occurrence of respiratory disorders; (7) the liability to sudden death.

Dr. G. H. NELSON showed a man who had complained of severe pain in the left side for several months. This man had been seen by several surgeons and physicians, without a definite diagnosis being made. X-ray examination was negative. The pain was eventually found to be due to a loose costal cartilage on the ninth rib, which was removed, and a complete cure resulted. Dr. LEONARD PARSONS described a similar case following an accident, in which the fourth costal cartilage was separated from its rib, causing severe paroxysmal pain; this case recovered without operation.

Dr. O. KÄUFFMANN exhibited the organs from a case of lymphadenoma. Blood films and microscopic sections from the same case were shown on the epidiascope. Dr. J. G. EMANUEL read a paper on the treatment of auricular fibrillation by quinine sulphate.

## Rebels.

### A HISTORY OF MILITARY MEDICINE.

THE remarkable series of *Notes on the History of Military Medicine*,<sup>1</sup> which appeared in the *Military Surgeon* between November, 1921, and August of last year, have been reprinted in a convenient pamphlet of 206 pages. They were originally intended for the information and instruction of medical officers of the United States army, and are an expansion of two lectures delivered by Lieut.-Colonel FIELDING H. GARRISON at the Field Medical School in Pennsylvania in June, 1921. The author has had at his disposal the matchless treasures of the Surgeon-General's Library at Washington, the Index Catalogue of which has now reached its fortieth volume and contains a list of some 600,000 books and pamphlets. Into this vast bibliography Colonel Garrison has dipped deeply, and his notes will be read with profound interest by all who are attracted by the fascinating study of the origin and results of wars throughout the ages; for he does not confine himself to describing the details and various stages in the practice of medicine, surgery, and hygiene in connexion with campaigns, but enlarges in clear language on the circumstances and psychologies which gave rise to and resulted from the conflicts of peoples from the earliest times to the present day. Although he has thus explored the literature of his subject widely and draws on historians, novelists, and poets for apt quotations and illustrations, his notes bear evidence of having been largely culled from the writings of Frölich, one of the surgeons-general of the Saxon army from 1895 to 1900, and a warm personal friend of Colonel Billings, formerly librarian of the Surgeon-General's Library. Frölich was the most prolific of all writers on the history of military medicine, and embodied most of his studies in his treatise *Militärmedizin* published in 1887. One of his most remarkable achievements was to make out a list of all the wounds mentioned in the *Iliad*, 147 in number, and classify them according to weapon, anatomical region, and total and percentage mortality. Incidentally it may be doubted whether Colonel Garrison is correct in the meaning given to the Homeric *ιγρός* as an "extractor of arrows," as if derived from *ίός*, an arrow. The more correct derivation is probably from *ίάσμαι*, to heal, and *ιγρός*, or *ιαρός*, thus means "healer."

Colonel Garrison devotes a chapter to the practice of medicine in prehistoric times, in ancient Egypt and Greece, and in the Assyro-Babylonian, Jewish, and Indian civilizations. It is followed by an account of the status of military medicine under the Roman Republic and Empire, the battle losses, the organization of the Roman army and the establishment of a medical service in it, Roman military hospitals and military sanitation. Passing to mediaeval times, Colonel Garrison gives England the credit of being the first to attempt an organized military medical service, at the time of the crusades. Efforts were also made to organize a public health service in the Middle Ages, when wandering soldiers and outlaws were spreading diseases of all kinds amongst the squalid and crowded populations of the walled towns. In these efforts "rulers, physicians, and public officials did their best work." Carriers of disease were isolated; they were prevented from entering the towns, and lazarettos were established. Another interesting record of this period is the organization of camp hospitals and an ambulance service by Queen Isabella of Spain during the wars with the Moors. The Queen herself visited the wounded in the field, and her chronicler, Dr. Withington, described her as the "*mater castorum*."

The sixteenth century, or the period of the Renaissance, produced Ambroise Paré, whom Colonel Garrison regards as the greatest of military surgeons. It was a time when prostitution prevailed on a very extensive scale and syphilitic diseases were rife; it was followed by a period of continuous wars, devastating diseases, and starvation. A Polish knight, Abraham a Gehema, then arose to denounce the indifferent care of the sick and wounded soldier by "the half-baked medical personnel of the period." Colonel Garrison describes him as a "notable exhorter and hot gospeller of the soldiers' welfare."

In the eighteenth century military medicine became a definite function of governments. The outstanding figures of

<sup>1</sup> *Notes on the History of Military Medicine*. By Lieut.-Colonel Fielding H. Garrison, Medical Corps, United States Army. Washington: Association of Military Surgeons. (10 in. x 7½ in., pp. 206. 1.50 dol.)



the period were Frederick the Great, Marlborough, and the Maréchal de Saxe, all of whom took an intense personal interest in the medical work of their armies. But Colonel Garrison omits to mention the influence of Joseph II of Austria, who of all other monarchs of his time was the most noteworthy in connexion with army medical organization. It was he who with the advice and assistance of his body surgeon, Brambilla, completely transformed the character and training of the army medical service and introduced a field medical organization, which Brambilla's successor, Sax, developed during the Napoleonic wars into that system of collection, evacuation, and distribution of wounded that was afterwards adopted by all the Continental armies and also by the British Army in more recent times. Yet Colonel Garrison makes no reference to these famous military surgeons or to the institution of the great military medical school in Vienna, the "Josephinum," founded by Brambilla in 1785; and he names as the greatest of military medical officers Baron Larrey, of Napoleon's day, and Letterman, the medical director of the Army of the Potomac in 1862. Most of us would regard Brambilla's and Sax's influence on army medical organization as greater than theirs.

Again, there is no mention of the famous Sir James Wyllie (Baron Willy of Russia), who was the head of the Russian army medical services during the Napoleonic wars and founded the medical academies at St. Petersburg and Moscow in the reign of Alexander I, and who was a graduate, like his contemporary, Sir James McGrigor, of Aberdeen University.

In describing the wars of the nineteenth century Colonel Garrison gives a full and interesting account of the medical, surgical, and sanitary work of military medical officers and of the results of the great military advances in scientific knowledge of disease. The last chapter of his Notes is devoted to "the European war" of 1914-18. He introduces it with a dissertation on the philosophy of Nietzsche, which is described as "once a private luxury of antique despots and more recent artists and literary virtuosi," but became a dangerous dynamite in a society based on industrialism and inimical to the principle of "the greatest good of the greatest number" upon which modern medicine, sanitation, and social endeavour are based. A table is given of the battle losses during the great war in all nations, amounting to a total of killed, wounded, and missing of 34,299,314 out of a mobilized strength of 61,140,177. According to this table the Russian losses were greatest, exceeding nine million, the German next, nearly seven million, the Austrian over five million, the French over four million, the British three, and the Belgian just under three million. The United States lost 351,207 out of 4,175,367 mobilized. It is difficult to gauge the accuracy of these and other statistics given by Colonel Garrison, but they are no doubt supported by documentary evidence. Unfortunately he is not free from the common error of his contemporaries in substituting for well-understanding facts.

... famous march to the ... miles in 86 days. The march commenced on March 19th, 1704, and the battle was fought on August 13th. Colonel Garrison has evidently taken the 86 days covered by these dates as days of continuous marching and calculated the distance by multiplying the number of days by a daily march of 13 to 14 miles, whereas the celebrated march ended on June 27th at Gingen, within striking distance, 20 to 30 miles, of Schellenberg and Blenheim, and covered a distance of some 300 miles only in less than six weeks. Again, he quotes Sir John Goodwin as estimating the casualties among Regular and Territorial medical officers as 23,504 during the recent great war, of whom 3,181 were killed in action, 1,429 died of wounds, 1,887 of disease and other causes, and 17,007 were wounded, figures which Colonel Garrison says make an impressive showing. An impressive showing indeed, but happily untrue. Sir John Goodwin's figures refer to all ranks of the R.A.M.C., and not to officers only, of whom 743 were killed or died of wounds or disease. The statement that Great Britain was forced to adopt compulsory service on May 25th, 1915, is erroneous. There are several other errors regarding the British medical services. The British entry into Baghdad in March, 1917, is attributed to Allenby's invasion of Palestine. But this invasion did not take place till October of that year. Rutherford Morison, the inventor of bipp, is called Rutherford Brown. The meningitis incidence is stated to have been lowered by vaccination and "even dysenteries were rendered comparatively innocuous through preventive vaccination." This was certainly not the case in the British

Army. There are also several statements which suggest some misunderstanding of the strategical and tactical employment of the medical services during the war. Such are his remarks regarding the origin of the casualty clearing station, which was due to the faulty reorganization of the field medical units after the South African war and not, as stated by him, to the organization of these units during that war; and his remarks to the effect that they were able to come closer to the front line during the final advance to victory and the onset of mobile warfare are due to misapprehension, for the contrary was the case. Barrage fire he seems to have regarded as a screen which enabled the stretcher-bearers to collect the wounded during daylight, as if this had not been done previously. On the whole, however, the interesting figures which he gives of the incidence of disease amongst the United States troops justify the remark that they show "the extraordinary advances made by preventive medicine in the twentieth century."

W. G. MACPHERSON.

#### PERICARDITIS.

THE monograph on acute pericarditis by Dr. GERMAIN BLECHMANN<sup>2</sup> will be of considerable interest to British readers. The subject is dealt with in a very comprehensive manner, and, though there are many references to the writings of many workers in France and other countries, the author takes a judicial attitude and expresses his opinion in a way which suggests careful thought and wide experience. Some of his statistical tables indicate the need for fuller knowledge and more accurate methods of diagnosis of this disorder. When out of 238 cases collected from four London hospitals only 40 per cent. were diagnosed during life, and of 100 cases of purulent pericarditis in children under 12 years only 6 per cent. were so recognized, Boraïd's statement that there is no malady of a similar gravity so frequently discovered for the first time in the post-mortem room seems amply confirmed.

In discussing the etiology of this affection the author finds it convenient to treat four different age periods separately—namely, to the end of the second year, when pneumonic conditions prevail; from 2 to 15 years, when rheumatism, pneumonia, scarlatina, and other septic conditions predominate; from 15 to 30 years, when pneumonia, tuberculosis, and septicaemia give rise to most cases; and after 30 years, when Bright's disease and other debilitating diseases make their influence felt.

The section of the book dealing with the signs of pericardial effusion is very instructive, and the various signs are discussed from both the experimental and the clinical aspect. One sign which must have been more frequently quoted in France than in this country has led the author into an historical by-path of some interest. We have referred to the matter (September 16th, 1922, p. 522) in a note on a paper Dr. Blechmann had then recently published, but the story is so interesting and instructive that its main points may here be repeated. Sibson's notch (*l'encoche de Sibson*), an obtuse angle in the left border of the dullness, has apparently been noted at examinations by a generation of French students as a first and decisive sign of pericardial effusion, since attention was drawn to it by Potain in 1867. The author was unable to find a description of any such notch in Sibson's writings, but found instead that he stated that the pericardium when distended with fluid encroaches on the left lung. He believes that this word has been erroneously translated as *encoche*. The term has, in this country at least, practically disappeared from current descriptions, and is not of diagnostic value, being present in other conditions. The interest lies in the fact that a sign of at most doubtful value should have been introduced into France with a faulty English title, been reimported into this country, and finally laid low in the country of its illegitimate birth. All the ... with a similar thoroughness, and much ... the views of Ewart. Those which seem to appeal to the author most are dullness in the fifth right intercostal space, the angle which the right border makes with the liver dullness, the symmetrical increase in cardiac dullness, and the patch of tubular breathing and aegophony at the angle of the left scapula. It is unnecessary to dwell further on the other signs and symptoms which are described and analysed. No part is left undone.

<sup>2</sup> Les péricardites aiguës. By Dr. Germain Blechmann. Paris: Ernest Flammarion. 1922. (Cr. 8vo, pp. 282; 27 figures. Fr. 10.)



We would draw attention to the author's method of exploring or aspirating the pericardial sac. After an exhaustive investigation into the position taken by the fluid as determined after experimental and clinical observations, he strongly recommends the procedure first practised by Professor Marfan in 1911. The epigastric route is chosen, the needle being inserted in the middle line under the tip of the xiphoid. For the first two centimetres the needle is kept close to the under surface of the bone, and thereafter it is advanced a little obliquely from below upwards through the cellular tissue till it penetrates the pericardial sac. It has been demonstrated that a small quantity of fluid is most likely to be found at this part, and that the danger of puncturing the heart is much less than by the other routes that have been suggested. For exudates found to be purulent the various surgical procedures are discussed.

The book will be found to contain much valuable information, and we have much pleasure in recommending it to our readers.

#### PHYSICAL EXAMINATION OF THE CHEST.

In his book entitled *Physical Examination of the Chest*,<sup>3</sup> Dr. JAMES CROCKET has gathered together into a compact form a series of lectures customarily delivered to students. As becomes such lectures, they are characterized by directness, lucidity, and dogmatism. Careful classification, frequent headings and subheadings, and divisions annotated numerically combine to produce perfect clarity, and to avoid that confusion which is only too frequently the bane of the most eminent clinicians. The arrangement is straightforward, commencing with a description of the surface anatomy of the thorax, followed by a chapter each dealing with inspection, palpation, percussion, and auscultation. There follows a description of the radiographic examination of the chest, in which particular attention is paid to the appearances manifested in its earliest stages by pulmonary tuberculosis. The insertion of a chapter on laryngoscopy, containing a valuable differential diagnostic table between tuberculous and syphilitic lesions, is amply justified by the importance of the indications so often afforded by affections of the throat. Finally, various classifications of pulmonary tuberculosis which have been suggested, including the Turban-Gerhardt classification and that of the National Association of America, are very suitably added in conclusion.

From the student's point of view especially the book should prove of the greatest value. The subject under consideration is adhered to strictly throughout. The author writes as a clinician, and himself exhibits and encourages others to exhibit those qualities of careful observation and attention which are so difficult to acquire in the present state of crammed curricula and abundant subjects of subsidiary or specialized importance. In its directness, its conciseness, and its eminent readability, the book reminds us of the classical writings of Dr. Gee, and we wish it all the success which attended the works of that famous physician.

#### BACTERIOLOGY: GENERAL, PATHOLOGICAL, AND INTESTINAL.

KENDALL'S *Bacteriology* is a well known textbook in America, and the second edition<sup>4</sup> has been brought up to date. Dr. Kendall, who is professor of bacteriology in the Northwestern University School of Chicago, has made many contributions to the study of the bacteriology of the intestinal tract, and a section of the present volume contains a special chapter devoted to the gastro-intestinal flora of normal infants, adolescents, and adults; in this chapter also the significance of intestinal bacteria and the wholesome activities of the industrious inhabitants of the intestines are justly appraised. Another branch of the science in which Dr. Kendall has carried out valuable research is that which deals with the metabolism of bacteria. It is to this department more than to any other that we must look for the unravelling of the mysteries which attend the subject of the parasitism of bacteria. The physiological method will also probably come to be the only method of classification available, since morphological appearances and even cultural characteristics have failed to differentiate between closely allied strains.

The book before us is divided into five sections. The first deals with general bacteriology and is concerned with the morphology, general physiology, and chemistry of bacteria. Then follows a chapter on bacterial metabolism, in which the author contrasts the growth of organisms in media containing utilizable nitrogenous substances and carbohydrates and in media containing only utilizable nitrogenous substances; in the former case the carbohydrate is used for energy requirements in preference to the protein, which is not at first attacked by the bacterial ferments, whereas in the latter case the protein is made use of from the beginning. This phenomenon is known as the "sparing effect of carbohydrates on proteins"; but the rules the author lays down can scarcely be said to be of universal application, for there are some bacterial species which do not show any selective preference for carbohydrates, and seem, in fact, to hesitate before they finally make use of these sugars. The remainder of this section deals with immunity, questions of technique, and sterilization, antiseptics, and disinfection.

The second section, on pathogenic bacteria, passes in review the different groups of disease producing bacteria. The main facts about each organism are clearly presented, but though the author describes in detail the recent work carried out on the other side of the Atlantic on the grouping of such an organism as the pneumococcus he says little about similar researches undertaken in this country on dysentery, perhaps because they have not been so widely advertised. In general it may be said that this section of the book is not so comprehensive nor so helpful to students as the descriptions found in other standard textbooks.

Section 3 deals with the higher bacteria, moulds, yeasts, filtrable viruses, and diseases of unknown etiology. Reference has already been made to Section 4, on gastro-intestinal bacteriology, and the last section on applied bacteriology explains the bacteriology of milk, soil, water, and air. There are two minor merits of this textbook to which reference should be made, one the manner of printing and the other the illustrations. The headlines and spacings of the paragraphs make the book easily readable, and the 8 coloured plates and 99 engravings illustrate the points described with great clearness. This book is not likely to take the place of the standard textbooks used in this country by students, but it will be a useful reference book, both because the author speaks with the authority of an original investigator in many provinces, and because he has supplied liberal references to articles and monographs dealing with subjects for which he has not felt justified in sparing more space.

#### BRONCHOSCOPY AND OESOPHAGOSCOPY.

Dr. CHEVALIER JACKSON has produced a book entitled *Bronchoscopy and Esophagoscopy*,<sup>5</sup> which is based on an abstract of his larger work, *Peroral Endoscopy and Laryngeal Surgery*, published in 1915. The new book is especially welcome, since it contains everything essential that was to be found in the earlier work, but the bulk has been greatly reduced by the omission of redundant matter and of many unimportant illustrations. The present volume naturally has been brought up to date in certain details.

In the first chapter, one of the most important, entitled "Instrumentarium," the author now describes only the apparatus with distal illumination, with which his name is so closely associated. He thus gives the fruits of his own unique experience in the designing and manipulation of instruments for this work, and any attempt to seek completeness by compilation is avoided. It is a little difficult to understand how anyone can continue to use the older instruments with proximal illumination after experience with Jackson's distally illuminated tubes and specula, the objections to which are purely theoretical. Those who do so continue will find here no support. In this branch of surgery improvisation plays no part; a complete and appropriate selection of instruments and a detailed knowledge of every manoeuvre or manipulation that may be necessary to expose and disengage an impacted foreign body are essential to success. Advice as to all this is to be found in the present invaluable book. The author is equally helpful when he writes on the diseases to the examination and treatment of which endoscopy may be applied.

A particularly complete and helpful account of diseases of

<sup>3</sup> *Physical Examination of the Chest*. By James Crockett, M.D., D.P.H., M.R.C.P.E. London: H. K. Lewis and Co., Ltd. 1922. (Cr. 8vo, pp. viii + 251; 53 figures, 14 plates. 5s. net.)

<sup>4</sup> *Bacteriology: General, Pathological, and Intestinal*. By A. I. Kendall, D.M., Ph.D., D.P.H. Second edition. Philadelphia and New York: Lea and Febiger. 1921. (Med. 8vo, pp. xi + 650; 99 figures, 8 plates. 6dols.)

<sup>5</sup> *Bronchoscopy and Esophagoscopy: A Manual of Peroral Endoscopy and Laryngeal Surgery*. By Chevalier Jackson, M.D., F.A.C.S. Philadelphia and London: W. B. Saunders Company. 1922. (Med. 8vo, pp. 345; 114 figures, 4 plates. 27s. 6d. net.)



the oesophagus from the point of view of the endoscopist is given. For example, twenty-nine causes of oesophageal dysphagia are enumerated, an indication of the difficulty and complexity of this aspect of the subject.

The subject of tracheotomy is perhaps scarcely comprised in the title of the book, but it is so closely related and the chapter describing it so full of information derived from the mature wisdom and experience of the author, that he is heartily to be congratulated on including it. A careful study of it should do much to reduce the mortality following this operation. If any portions of the book can be chosen as valuable beyond the rest they would be this chapter on tracheotomy and those entitled "Bronchoscopic foreign body extraction" and "Esophagoscopy for foreign body." No laryngologist can afford to neglect a careful study of this book nor to be without it or its larger parent for reference in case of emergency. There is much, too, that will be helpful to several surgeons, who are frequently confronted with problems on the border-line between general and special surgery.

### MEDICAL APHORISMS.

PROFESSOR J. A. LINDSAY of Belfast has published the *Medical Axioms, Aphorisms, and Clinical Memoranda*<sup>6</sup> that have been familiar to several generations of his students. The title recalls and indeed suggests a resemblance to "Clinical Aphorisms from Dr. Geo's Wards" first collected by Sir Thomas Horder in the *St. Bartholomew's Hospital Reports* for 1896, to the latter's *Medical Notes* published two years ago, and to Sir James Fowler's chapter of *Obiter dicta* in his recent (1921) *Pulmonary Tuberculosis*. That there is some resemblance is unavoidable; but there is this wide difference, that whereas his predecessors' collections were practically confined to their own remarks, Professor Lindsay supplements his own aphorisms by a judicious selection from the sayings of over 140 authorities, beginning with Hippocrates and including many still active in teaching. Some of the quotations are from non-medical thinkers, such as Benjamin Jowett, Francis Bacon, and Beethoven.

The contents are arranged under the heads of general remarks, lungs and pleura, the cardio-vascular, digestive, and nervous systems, and miscellaneous (such as alcohol, renal disease, and fevers); the contents of the final category, headed philosophical, are nearly all quotations from others. It is not perhaps safe to assume that the aphorisms without someone's name attached have all been constructed by the author, for among those there is the well known "A man is as old as his arteries," which has not got Cazalis's name appended; and again, "For one mistake made for not knowing, ten mistakes are made for not looking," is certainly familiar in sense if not in this exact form. "Nature is a good physician but a bad surgeon" rings new and true; but "Tell the elderly not to forget *Anno Domini*" does not appear to be entirely a wise counsel, though there may be some ambiguity about what is to be remembered. But as there are nearly a thousand separately numbered expressions of opinion, and the field covered is very wide—with references to quinidine and insulin—it would indeed be remarkable if there was no one open to discussion; besides, many of us derive a good deal of pleasure from reading the aphorisms of others in a critical spirit. To these and other members of the medical profession Professor Lindsay's handy little volume will be a happy hunting ground and source of reference.

### SEQUELS OF ENCEPHALITIS LETHARGICA.

THE immense body of literature on epidemic encephalitis which has accumulated in the last few years has so far failed to provide the practitioner with any very clear ideas as to the sequelae or the final prognosis of this distressing disease. Hence Dr. Lévy's monograph<sup>7</sup> comes as a timely addition to our knowledge and confirms the terrible results which may follow an acute attack of encephalitis lethargica. Her account and conclusions are based on a study of 129 cases in the clinic of Professor Pierre Marie at the Salpêtrière; many of the patients have been followed for several years, and some down to their death. After distinguishing between the

symptoms which arise during the acute period of the disease, even when this is prolonged, and those which follow after a period of latency, the author points out that this latent period may vary very much—from, in fact, a few weeks up to or even more than two years. Another point of great importance is that the initial form of the disease is no criterion of the form which any sequelae may assume. Thus a case which in the acute period has shown the myoclonic syndrome may later develop the Parkinsonian syndrome, and so on.

In a classification of the sequelae the author found that no fewer than 73 showed the Parkinsonian syndrome, the so-called symptomatic paralysis agitans, a fact confirming the experience of many in this country; 43 cases showed excitomotor syndromes, including various forms of involuntary movements, choreiform, myoclonic, localized movements of the face, and what the author terms bradycinesis, by which we understand a slow involuntary movement rather resembling the movements of athetosis. Other sequelae of especial interest are obesity and disturbances of the respiratory rhythm.

The clinical descriptions of these various syndromes are full of detailed interest and are a monument of careful study, the account of the Parkinsonian syndrome being particularly good. It is perhaps to be regretted that the author has not been able to include a more detailed study of the mental disturbances which may follow the disease, for greater knowledge of such forms of psychosis is badly needed.

There are short sections on the morbid anatomy and the pathogenesis. In four cases of the Parkinsonian syndrome atrophy of the cellular elements was found in the basal ganglia and locus niger and in one case degeneration of the myelin in the centrum ovale. It is especially interesting to note that in one case the persistence of signs of active lesions was observed—for example, perivascular infiltration—in the mesencephalon. The author concludes that it is reasonable to suppose that in a certain number of cases the virus remains active. There is a useful chapter on the changes in the cerebro-spinal fluid and their diagnostic value.

There are a good bibliography and some valuable illustrations. Enough has been said to show that Dr. Lévy has given us a very valuable study. We hope that neurologists in this country will follow her example and let us have the benefit of their experience in this very important matter.

### THE COMPOSITION OF SCIENTIFIC PAPERS.

"Every man who understands the art of writing, and has tried to write well, is aware that the process of composition is commonly not the simple transference of thought into language, but the laborious attempt to work into a coherent shape ideas which have been in his mind, but which have still to be clarified and arranged."

COMING upon these words one day in an article on "The decay of syntax," our thoughts turned at once to Sir CLIFFORD ALBUTT and his book of counsel to medical writers. At that time the second edition of *Notes on the Composition of Scientific Papers* had been out of print several years, and those needing literary first aid were complaining that they had to borrow the book or go without. The third edition,<sup>8</sup> so many years overdue, has now appeared, and we welcome it almost like the return of a long expected friend. Scanning its features with the affectionate interest proper to such occasions, we find at first glance everything much as before; the familiar green cover is there, the print is the same, the size and shape of the page are unchanged. The author's accumulated honours and distinctions of eighteen years have, of course, left their traces on the title-page. A few pages—some twenty or so—have been added in all; there is now a short index to help the diligent reader, and a still shorter appendix forming a kind of kennel for dog-latin words.

On closer study, and comparison with the edition of 1905, we perceive many marks of a pruning knife wielded with a firm hand. This is by no means a reprint, but a new edition very thoroughly revised in every part. Sir Clifford Allbutt has edited himself unflinchingly; it is the same book, yet not quite the same; here a little has been put in, there a little taken away. Let it be said at once that every word of the added matter is good and to the point, but rigorous revision has cast out some familiar passages which many will think

<sup>6</sup> *Medical Axioms, Aphorisms, and Clinical Memoranda*. By James Alexander Lindsay, M.A., M.D., F.R.C.P., Professor of Medicine in the Queen's University of Belfast. London: H. K. Lewis and Co., Ltd. 1923. (Cr. 8vo, pp. viii + 192. 6s. net.)

<sup>7</sup> *Contribution à l'Étude des Manifestations Tardives de l'Encéphalite Épidémique*. By Dr. Gabrielle Lévy. Paris: Vigot Frères. 1922. (Roy. 8vo, pp. 314; 53 figures. Fr. 18.)

<sup>8</sup> *Notes on the Composition of Scientific Papers*. By the Right Hon. Sir T. Clifford Allbutt, P.C., K.C.B., M.A., M.D. Third edition. London: Macmillan and Co., Ltd. 1923. (Cr. 8vo, pp. 192 + xiv. 6s. net.)



too good to lose. Remembering its purpose, few would have grumbled had the book grown with the passage of time.

The preface seems largely new. In Chapter I we find a fresh paragraph on names and terms, a greater emphasis on the need for lucidity in composition, and a caution against the abuse of hospital, laboratory, and military slang. In Chapter II the section on participles and gerunds has been expanded; and the "woolly style," with its "litter of idle words," is now attacked with a larger battery. Time, we note with satisfaction, has deepened the author's dislike for such borrowed words as questionnaire, résumé, and rôle; and we may feel sure that he would subscribe to Mr. John Bailey's opinion that "the only safe rule when writing English is to write it, never using a foreign word where an English one exists." The split infinitive and other uncouth suspensions tease him as much as ever. His indictment of the split infinitive is as good as anything in the book; yet we cannot help thinking that, while the general rule is sound, it may be pedantic always to invert the phrase in order deliberately to avoid the split. But we must not be tempted into detailed discussion; nor must we, by debating verbal niceties, suggest to those who are not familiar with this little classic that Sir Clifford Allbutt puts form above substance, style above stuff. A sentence from the preface may therefore be quoted:

"It is far from my intention in these simple instructions to advocate a manner of writing in which pith and character are lost in polish or affected elegance; indeed, my purpose is literary only so far as to insist on the qualities of clearness, precision, and definition."

Enough has been said, we hope, to commend this new edition to our readers, young and old. Changes have been made, but the spirit of the book burns as brightly as ever. If we should seem to write of it with too much enthusiasm we reply that the medical editor by the nature of his work feels more often than others the need of such advice. Some may think the standard set too high for ordinary mortals; nevertheless the reading and re-reading of this small treatise will help us so to order our thoughts and fashion our language, that when we have something to say we may write it in the fewest and the best words and no one can doubt our meaning.

# NOTES ON BOOKS.

*The Yearbook of the Universities of the Empire*<sup>9</sup> has become a reference volume indispensable to all interested in university and professional education. It summarizes the calendars of the sixty-six universities and colleges of the British Empire, and into a volume of manageable size, without sacrificing intelligibility to brevity, the editor compresses details of their degrees, courses of study, staffs of professors and lecturers, and other essentials. In the present edition the new University of Delhi, the West Indian Agricultural College, University College, Colombo, and the King Edward VII College of Medicine, Singapore, appear for the first time. One section of the appendix deals, in a rather briefer way, with foreign universities all over the world; another section gives a summary of British medical and dental qualifications and the requirements necessary for registration; and another is devoted to a short account of the scholarships and grants for research available in this country and abroad. The index of names at the end of the volume we have in previous years found useful and accurate for ascertaining quickly the university or college at which any particular British scientist holds an appointment and its precise title.

*The Minutes of the General Medical Council and of its Various Committees for the Year 1922* (Vol. LIX) has been issued.<sup>10</sup> The volume contains twenty appendices, of which the most important are those giving the Education Committee's report on the revision of the curriculum in medicine, and the Public Health Committee's report on the revision of the regulations and rules for the diplomas and degrees in sanitary science, public health, and State medicine. In 1903 the Council issued an index to its minutes, and it was then determined not to allow so long an interval to elapse in future. A new edition was issued in 1908, and the index has since been kept up to date. The issue for this year<sup>11</sup> covers the twenty years 1903-1922.

Some years ago Dr. E. LE BEC wrote a book, *Preuves Médicales du Miracle*, which is well known to the majority of those who have taken an interest in Lourdes. It has now been translated into English by Dom H. E. IZARD, O.S.B., L.R.C.S., M.R.C.P., under the title *Medical Proof of the Miraculous*.<sup>12</sup> It is almost entirely concerned with Lourdes, where Dr. Le Bec holds an official position. Dr. Ernest E. Ware, senior surgeon, Hospital of SS. John and Elizabeth, London, has written a brief introduction for the English edition.

In the footnote to the notice of the *Annals of Medical History* published last week (p. 383) it should have been stated that Messrs. Baillière, Tindall, and Cox are the English agents and that the annual subscription is £2 2s. post free.

<sup>12</sup> *Medical Proof of the Miraculous: A Clinical Study*. By E. Le Bec, Honorary Surgeon to St. Joseph's Hospital, Paris. Translated from the French by Dom H. E. Izard, O.S.B. L.R.C.S., M.R.C.P. London: Harding and More, Ltd. 1922. (Cr. 8vo, pp. xv + 128. 6s.)

# A CONTRIBUTORY HOSPITAL SCHEME.

WE have received the following letter, dated February 26th, from Major P. A. S. Crawley, chairman of the Sussex Provident Scheme for Hospital and Specialized Medical Services (4, St. George's Place, Brighton):

Since you first drew attention to the Sussex Provident Scheme, a little over two years ago, a number of similar contributory schemes have been established all over the country, and it may interest some of your readers who are connected with the other organizations to learn how the Sussex Scheme has fared during the past year.

The Group Scheme started on April 1st last year and has proved a great success. The number of co-operating hospitals has increased from nine to eleven, but the administration remains in the hands of a neutral body not connected with any particular hospital, and not seeking representation upon the boards of management of the hospitals. The membership—that is, 4,200 subscribers, and those of their dependants who are beneficiaries under the scheme—amounts now to over 10,000, and is rapidly increasing.

Although in two cases during the year we have had to pay a hospital over £60 for one member, we have been able to pay every co-operating hospital in full the out-of-pocket cost of their services to our members, based upon the average cost of such services in the year 1921, with the result that since the scheme has been in existence none of our members has depleted the charitable funds of any of the co-operating hospitals of one penny.

With regard to the hospitals not co-operating with us, we are unable to deal direct, and can only repay our members such charges as may have been made to them, but our co-operating hospitals have agreed that when presenting themselves for treatment with their card of membership, and a letter of recommendation from their private doctor, our members shall not be subjected to any almoner's inquiry as to their means or asked for any contribution for their maintenance or treatment while attending the hospital, the bill being subsequently sent to the committee of the scheme by the hospital for payment.

We have sustained a great loss in the death of Viscount Selby, who was our honorary secretary, and to whose disinterested service the success of the scheme is mainly due.

I enclose the balance sheet of the year's working.

The document to which Major Crawley refers as the balance sheet may perhaps be more accurately described as a statement of receipts and expenditure for the period January 1st to December 25th, 1922. This document may be summarized as follows:

Receipts.		£	s.	d.
Subscriptions:				
Individual Scheme	...	419	7	6
Group Scheme	...	1,501	4	0
		1,920	11	6
Less received in advance for 1923	...	654	14	0
Total subscriptions, 1922	...	1,265	17	6
Add interest on deposit account	...	9	9	5
		£1,275	6	11
Expenditure.		£	s.	d.
Payments to hospitals	...	1,010	17	0
Other payments	...	55	7	0
Administration	...	159	5	10
Sundries	...	4	13	6
		£1,230	3	4

Leaving a balance on the year's working of £45 3s. 7d., which, added to the amount brought forward from 1921, £54 12s. 5d., gives the total balance in hand and carried forward £99 16s.

The statement does not make it clear whether there are any liabilities outstanding against this, nor does it appear by what asset this balance is represented.

<sup>9</sup> *The Yearbook of the Universities of the Empire*, 1922. Edited by W. H. Dawson, and published for the Universities Bureau of the British Empire. London: G. Bell and Sons, Ltd. 1923. (Cr. 8vo, pp. x + 612. 7s. 6d. net.)

<sup>10</sup> London: Constable and Co., Ltd. 1923. 12s.

<sup>11</sup> London: Constable and Co., Ltd. 1923. 7s. 6d.



## Pasteur Centenary Celebration in London.

### ADDRESSES ON PASTEUR AS A BACTERIOLOGIST, CRYSTALLOGRAPHER, AND ARTIST.

#### MEETING AT THE ROYAL SOCIETY OF MEDICINE.

The centenary of the birth of Pasteur was celebrated at the social meeting of the Royal Society of Medicine on Wednesday, February 28th. Among the guests received by Sir William Hale-White (the President of the Society) and Lady Hale-White were Count de Saint-Aulaire (the French Ambassador in London), M. Bonzon (French Consul-General), M. Billecocq and M. Marchat (Assistant Consuls), M. Audra (Institut Français), M. André Simon (President of the Alliance Française), M. Leroux (President of the Committee of French Societies in London), and M. Pierret (Chairman of the French Hospital). A number of the delegates at present in London from seventeen countries attending the second Interchange of Health Officials, organized by the League of Nations, were also present, and there were representatives from the various offices of the British Dominions. The Fellows of the Society and their friends were present in such numbers that the Barnes Hall was overcrowded. The British and French flags were draped over the President's chair, and over a portrait of Pasteur in his laboratory which was exhibited on the platform.

Sir William Hale-White, at the outset of the proceedings, read a letter which had been received from the President and secretary of the Academy of Medicine of Paris, expressing good wishes for the success of the celebration, and stating that they had appointed an Associate of the Academy, Sir Almroth Wright, to represent them. The letter went on to say that the Academy was deeply grateful to the Royal Society of Medicine for rendering this homage to the great Frenchman. "The bonds which unite to-day French science and thought with British science and thought are very strong, and the mutual affection between the two countries is so cordial that every celebration of a great man, be he of one or other nation, is sure to evoke on either side of the Channel the same enthusiasm. Therefore France and Great Britain will march proudly hand in hand for the glory of science and the benefit of humanity."

Three addresses on different aspects of Pasteur's life and work were then delivered. Sir William Hale-White spoke of Pasteur in relation to medicine; Professor T. M. Lowry, F.R.S., on Pasteur in relation to chemistry; and Dr. Gustave Monod, delegate of the Faculty of Medicine of Paris, on Pasteur as artist. Dr. Monod presented to the Royal Society of Medicine for its library a portfolio of reproductions of portraits done by Pasteur as a youth, published in Paris in 1910 with the title "Pasteur, dessinateur et pastelliste." Dr. Monod said that he made the presentation as an expression of admiration for the Society and his "everlasting gratitude towards the noble and hospitable city of London." With the kind permission of M. René Vallery-Radot we are able to reproduce on a reduced scale three of the portraits from the portfolio—that of Pasteur's mother, drawn when he was 13 years of age; that of his father, drawn at the age of 16; and that of Constance Parpaudet, a member of a religious community, made when she was 82 years of age and Pasteur 18.

#### PASTEUR IN RELATION TO MEDICINE.

Sir WILLIAM HALE-WHITE, President of the Royal Society of Medicine, said:

Louis Pasteur was born on December 27th, 1822, at Dôle. It was a remarkable time in the history of medicine. Jenner, whose fame was world-wide, was still alive. Laënnec, that prince of observers, had, two years before, published *L'auscultation Médiate*, and the thin, bony man, already marked for death by phthisis, began his first course of lectures at the Royal College of France three weeks before the day of Pasteur's birth. Bright, who became the best known British physician since Harvey, had settled down at Guy's Hospital, where he made his immortal observations. All these four were for a month alive at the same time; the three elders owe their celebrity to having had, to an exalted degree, the faculty of observing the experiments made by nature; the infant just born attained his by observing the

experiments he made himself; but all four were indomitable workers, marvellously accurate observers, and with them all mere doctrines were made to yield to truth.

Pasteur's father was a tanner who had, in the Napoleonic wars, been created a Chevalier of the Legion of Honour on the battlefield. He was fond of reading and had much influence on Louis, who said on the death of his father: "For the last thirty years I have been his first and almost his only interest in life. I owe everything to him." The old soldier was intensely patriotic and impregnated his son with ardent patriotism, which led him in 1871 to return to the University of Bonn the diploma of the honorary degree of M.D.

"The sight of this parchment is now hateful to me, and I feel it an insult to have my name . . . associated with one doomed from henceforth to the execration of my fellow countrymen—that of Rex Guilielmus."

Likewise in 1895 he refused the Prussian Order of Merit.

Pasteur was appointed Professor of Chemistry at the University of Strasbourg in January, 1849, within a fortnight he had fallen in love with the daughter of the rector, M. Laurent, and they were married on May 29th of the same year. She, during the whole of their married life, appreciated that she had become the helpmate of a great genius. When he was working on a problem he became oblivious to the outside world. He once forgot that he had promised to take her to an important festivity; she waited hours, he did not come, but there was no reproach from her. On occasions she had either to send or to fetch him home from the laboratory to his meals; if not he worked on for hours forgetful of time; she shielded him from all domestic worries. She was never jealous of his devotion to science; in the evening she took down notes of the day's work from his dictation, and helped him to state things clearly by asking him for explanations; not only was she an incomparable companion but his best collaborator. That he would have given less to humanity had he married a different wife must be true. The world owed much to Pasteur's wife. Sir William then related how Pasteur was led to study micro-organisms by the observation that the common mould *Penicillium glaucum*, growing in a liquid containing para-tartaric acid, consumed only the dextro-rotatory tartaric acid, leaving the laevo-rotatory untouched.

Pasteur went from Strasbourg to be Professor and Dean of the Faculty of Science at Lille, where alcohol was manufactured from beetroot by fermentation. The father of one of his pupils was in difficulties because sometimes the process turned out badly. The nature of fermentation was not then understood, but Pasteur showed that the formation of alcohol from sugar was a vital process connected with the growth of a specific micro-organism which performed the conversion, and that another specific micro-organism had the property of forming lactic acid from sugar. From Lille he went to the École Normale in Paris, where his laboratory was two attics, and he had no assistant. The studies on fermentation were continued, and he showed that butyric acid fermentation, several diseases of wine, vinegar, and beer were all due to micro-organisms, which he divided into two great classes: aerobes, requiring free oxygen to maintain their life; and anaerobes, capable of living without free oxygen, but able to wrest this element from its combinations with other elements. All this is common knowledge, and it is difficult to put ourselves back fifty years when it was not. Dumas the chemist begged Pasteur to study silkworm diseases, which were then causing thousands of people to be without a means of livelihood. Pasteur went to live in the district, spent five or six years on the subject, showed that there were two diseases, that each was due to a micro-organism, and each was communicable from worm to worm. Having found the cause, it was easy for Pasteur to show how to prevent the malady, and the large poverty-stricken districts were restored to prosperity.



When investigating chicken cholera, a disease of fowls due to a micro-organism, Pasteur discovered that if these micro-organisms were left for a long while in the laboratory to live on a suitable soil they gradually lost their excessive virulence owing to the long exposure to the oxygen of the air. If now fowls were inoculated with these micro-organisms of weakened or attenuated virulence, the birds were made only slightly ill, and, if subsequently inoculated with the virulent micro-organism, showed no signs of disease, although fowls inoculated with the same micro-organism, but not previously inoculated with the attenuated virus, quickly died. He had made the grand discovery that it was possible to attenuate the virulence of a micro-organism outside the body, and that inoculation with the attenuated virus protected against the disease. This doctrine of attenuation of the virus is of fundamental importance in bacteriology and preventive medicine, and its discovery was one of Pasteur's greatest achievements.

Sir William Hale-White then sketched the manner in which Pasteur succeeded in attenuating the virus of anthrax and that of swine fever, and the application of the attenuated virus for the protection of flocks and herds; considering, he said, Pasteur's work on diseases of wine, beer, vinegar, silkworms, chicken cholera, anthrax, and swine fever, it was easy to see the truth of Huxley's remark: "Pasteur's discoveries alone would suffice to cover the war indemnity of five milliards paid by France to Germany in 1870."

Soon after Pasteur began the study of micro-organisms he saw that his work must bear on medicine, for in 1863, in an interview with the Emperor, he assured him that all his ambition was to arrive at the knowledge of putrid and contagious diseases. Pasteur's work on fermentation led him to the conclusion that putrefaction, like fermentation, was due to micro-organisms which were usually derived from the air. Quite early he showed that when urine decomposed to form ammonia a special micro-organism was at work, and that its activity could be inhibited by boracic acid; consequently this acid was successfully used in medicine for this purpose.

He had not any medical qualification, nor any clinical training; nevertheless, to his great delight, he was in 1873 elected by a majority of one vote to the Academy of Medicine. He was a constant attendant, always urging the importance of micro-organisms in disease, always fighting old-fashioned members who denied this.

But the greatest of all the triumphs that followed from his investigations was, unknown to him at the time, evolved in this country. The mortality due to putrefaction of wounds, whether accidental or inflicted by the surgeon, was appalling. But when Lister learnt that Pasteur had shown that putrefaction was a fermentation caused by the growth of microbes, and that these could not arise *de novo* in the putrescible substance, a solution of the problem appeared. He revolutionized surgery by proving that putrefaction after operations could be abolished if the patient's skin, the surgeon's hands, the sponges, dressings, and instruments were all so treated that they had no living micro-organisms attached to them, and also that if micro-organisms were already there, as they often were after injury, the wound would heal without the onset of blood poisoning if they were rendered inert or removed. At the meeting of the International Medical Congress at Copenhagen in 1884 Lister, addressing Pasteur, said:

"Truly there does not exist in the whole world an individual to whom medical science owes more than to you. . . . Thanks to you surgery has undergone a complete revolution, which has deprived it of all its terrors and has increased its efficacy to an almost unlimited extent."

Hydrophobia or rabies, Sir William said, was communicated by dogs or wolves to man by biting. The suffering was dreadful. He had seen people die of it, and could testify that the illness was the most horrible of those with which mankind could be afflicted; untreated it was fatal. The micro-organism was unknown, but Pasteur showed that the virus resided in the nervous system, by injecting an emulsion of the spinal cord of a mad dog into a healthy dog and thereby causing rabies in it which did not show itself for fourteen days. This, then, was the incubation period. He transmitted the disease by inoculation to a rabbit and from rabbit to rabbit until the ninetieth rabbit was reached, and found that by this means the incubation period was reduced to seven days. By suspending in air the spinal cord of a rabbit dead of rabies having this short incubation period he was able, because of the oxygen in the air, to attenuate the virus so that when an emulsion of such a spinal cord was injected into a dog the animal did not suffer from rabies, nor did he get rabies when inoculated with a virulent spinal cord from a mad dog. In other words, the healthy dog had been successfully vaccinated against rabies. In man the incubation period was long; Pasteur inoculated human beings recently bitten by a mad dog with a rabbit's spinal cord containing the attenuated virus having the short seven days' incubation period, and found, to his intense delight, that they did not get rabies. By this treatment, he said, rabies in human

beings bitten by mad dogs and wolves could be prevented if they came for treatment sufficiently soon after the bite. An English commission appointed by Government to investigate the matter reported that he had proved his claim.

Pasteur was a tremendous worker; I have not mentioned the immense labour he spent in refuting the doctrine of spontaneous generation. But he was much more than a worker—he was an enthusiast; when he gave up chemistry he wrote: "I who did



SOUVENIR MEDAL OF THE CENTENARY OF PASTEUR'S BIRTH (SLIGHTLY ENLARGED). The medal is issued by the Association for the Extension of Pastorian Studies (11, Rue de Valenciennes, 17). The portrait was selected by Madame Valéry-Radot (Pasteur's faithful likeness of her father. The object of the Association is to encourage men and women to take up biological research in relation to medicine, agriculture, and industry.

so love my crystals." He rushed about the country in pursuit of his investigations; at the age of 46 he had a cerebral haemorrhage, but doctors' directions that he must work less made no impression; he never attended social gatherings nor theatres, but he fought all who disagreed with him; his friends thought he wasted time on this, but, as Tyndall said: "Pasteur is combustible and contradiction readily stirs him into flame." This was not because he sought personal glorification—he was most modest—but because he must at all costs uphold what he knew to be correct. He was a marvellous experimenter, proving his assertions up to the hilt by simple but uncontrovertible experiments in which he had guarded against every error. He was an implacable critic of his own and other people's experiments. He had the infinite capacity for taking pains and an intuition for devising just the right experiment. If an analogy suggested itself no use was ever made of it until it had been submitted to experimental verification, but facts fell upon his mind like seeds on a fertile ground, and he had a wonderful faculty for discerning their relative importance. He was fond of saying that "In the fields of observation chance only favours the mind which is prepared."

Then, too, he had the magnetism which made others love to work with him and follow his inspirations; he attempted so much that if it had not been for helpers much must have been left undone. He was a genius, a seer, and a prophet, always adding to knowledge, always looking forward to more additions. "Science," he said, "has no nationality because knowledge is the patrimony of humanity, the torch which gives light to the world. Science should be the highest personification of nationality, because, of all nations, that one will always be foremost which shall be first to progress by the labours of thought and of intelligence."



## PASTEUR AS A CHEMIST.

Professor T. M. Lowry, F.R.S. (Cambridge), said:

In the brief time at my disposal I shall attempt only two things: first, to present in outline a picture of the work which won for Pasteur the chemist a place in the ranks of the Immortals; second, to indicate the bridge by which his chemical work is linked to those biological researches which enabled a mere chemist to claim the attention of a society such as that which I have the honour to address. My task has been made easy by Pasteur himself, since rather more than sixty years ago he delivered to the Chemical Society of Paris two lectures which cover precisely the same field as that into which I propose to guide you to-night.

Pasteur claimed that in his work on tartaric acid he was following in the footsteps of three physicists—Malus, Arago, and Biot. Malus, in 1808, had announced the discovery of the polarization of light by reflection—that is to say, that light reflected from a sheet of glass was altered in such a way that the vibrations in one plane entered the glass, whilst the vibrations in the perpendicular plane were reflected from it. The plane which contained the incident and reflected ray was described as the *plane of polarization*. Arago, in 1811, discovered that when a ray of polarized light was passed through a plate of quartz the plane of polarization was distorted, giving rise to beautiful chromatic effects. Biot, in 1812, made the further discovery that this distortion took the form of a uniform rotation of the plane of polarization, but that some plates of quartz rotated this plane to the right and others to the left. He also discovered, in 1815, that a similar rotation of the plane of polarization was produced by many natural products, such as oil of turpentine and solutions of sugar, of camphor, or of tartaric acid.

We now pass on to consider the relation between the geometrical form of the crystal and its ability to rotate the plane of polarized light. A typical crystal of quartz consists of a hexagonal prism capped by hexagonal pyramids. Haily, however, detected the presence of tiny facets on the alternate corners, which made the crystals lopsided or asymmetric; he also found that these hemihedral facets could be distributed in two ways, giving rise to crystals which could not be superposed upon one another, although they could be converted into one another by reflection in a mirror. Quartz crystals could, therefore, assume two different geometrical forms, whilst plates of quartz could rotate the plane of polarization of light in two opposite ways. It was left to Sir John

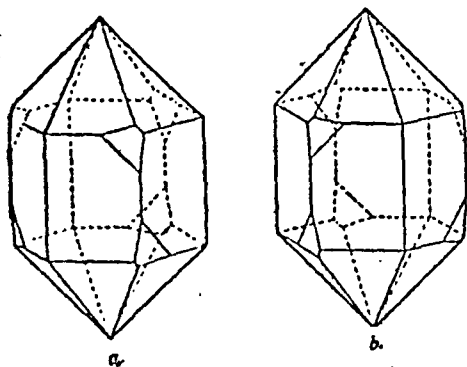


FIG. 1.—(a) Dextro-rotatory quartz.  
(b) Laevo-rotatory quartz.

to discover the correlation between these facts, and to show that crystals having one geometrical form always rotated the plane of polarization to the right, whilst those of opposite form rotated it to the left.

I now pass on to consider Pasteur's discovery of similar phenomena in tartaric acid. This acid was known in two forms—the ordinary dextro-tartaric acid, which rotated the plane of polarization to the right, and a modification (which Pasteur called *para*-tartaric acid), which possessed identical chemical properties, but was devoid of optical rotatory power. Pasteur found that tartaric acid and its salts all gave asymmetric crystals, like quartz, whilst the *para*-tartrates gave symmetrical crystals. It appeared, therefore, that there might exist a correlation between the asymmetric crystals of the tartrates and the optical rotatory power of their solutions, similar to that which existed between the asymmetric crystals of quartz and the optical activity of solid plates cut from the crystal.

At this stage Pasteur's attention became fixed upon an observation of Mitscherlich's to the effect that one of the salts of *para*-tartaric acid gave rise to crystals of precisely the same type as the corresponding tartrates. When Pasteur investigated this anomaly he found that, contrary to all previous experience, hemihedral facets appeared on the crystals of the optically inactive *para*-tartrate as well as

of its dextro-rotatory isomer. Further examination of this anomaly showed, however, that whereas in the dextro-rotatory tartrate the hemihedral facets were always of one kind, in the *para*-tartrate both types of crystal were formed side by side from the same solution. It appeared, therefore, that when this particular salt was crystallized the *para*-tartaric acid resolved itself spontaneously into two opposite forms of tartaric acid, one of which had been known for nearly a century, whilst the other, its mirror image, was new to science. It is of interest to notice that in no other known case does this spontaneous resolution of an inactive tartrate

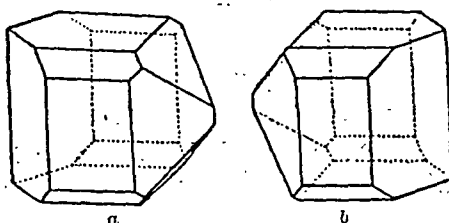


FIG. 2.—(a) Dextro-tartaric acid.  
(b) Laevo-tartaric acid.

take place, and that even the two sodium ammonium salts unite to form a double salt above 26°C. It is, therefore, quite possible that Pasteur's life work might have taken a totally different

course if he had begun his work in a tropical instead of in a temperate climate.

Pasteur was a young student at the time when he made this important discovery, and before communicating the results to the Academy Biot insisted that Pasteur must come to him and repeat before his own eyes the decisive experiment. "He provided me," says Pasteur, "with some *para*-tartaric acid, which he had already studied with particular care and which he had found to be perfectly neutral towards polarized light. I prepared the double salt in his presence, using for the purpose soda and ammonia, which he had also wished to provide for me himself. The liquor was left in one of his rooms to evaporate slowly, and, when it had furnished 30 or 40 grams of crystals, Biot asked me to come to the Collège de France in order to collect them and to separate them under his eyes by their crystallographic

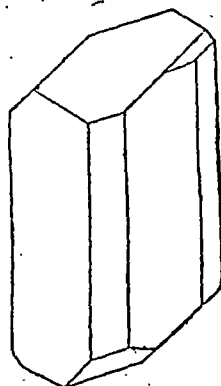


FIG. 3.—Racemic acid.

character into right and left crystals. He also asked me to state again whether I could assert that the crystals which I placed to his right would rotate the plane of polarization to the right and the others to the left. That done, he told me that he would do the rest. He prepared the solutions of carefully regulated strengths, and, at the moment when he was about to observe them in the polarimeter, he invited me afresh to come into his room. He placed in the apparatus first the most interesting solution, that which would rotate the light to the left. Without stopping even to make a measurement, he saw, by a single glance at the colours of the ordinary and extraordinary images in the analyser, that there was a strong deviation to the left. Then, visibly moved, the illustrious old man grasped my arm and said to me, 'Mon cher enfant, j'ai tant aimé les sciences dans ma vie que cela me fait battre le cœur.'

The optical rotatory power of quartz is due, as Fresnel had suggested, to a spiral packing of the molecules, and by the kindness of Sir William Bragg I am able to exhibit a model in which the spiral distribution of the atoms of silicon is clearly shown. This spiral structure can be built up in two opposite ways, but when it is destroyed (for example, by melting the quartz) the optical rotatory power vanishes. The asymmetry, then, is in the crystal, but not in the molecules of silica from which it is built up. Tartaric acid, however, displays its optical activity in solution, and we owe to Pasteur the momentous declaration that the molecules of tartaric acid, as well as the crystals, must be asymmetric. Here, again, through the kindness of Sir William Bragg, I can show you a model which illustrates both the spiral arrangement of the carbon atoms in tartaric acid and the way in which these spiral molecules are packed together in an asymmetric crystal.

Just a word in reference to the biological applications of these discoveries. Pasteur called attention to the fact that in the mineral kingdom, and by the artificial operations of



the chemical laboratory, asymmetric molecules are always produced in equal quantities of opposite types, giving rise to optically inactive compounds or mixtures. Nature, however, almost invariably produces optically active products; and all the materials of the living tissue are branded with this symbol of their divine origin. This, then, is the real distinction between the organic and the inorganic, between nature and man, and this "middle wall of partition" Pasteur was the first to break down. It is indeed a remarkable fact that the three methods which to-day enable us to accomplish the final stage in the synthesis of natural compounds, by endowing our synthetic products with optical activity, were all described by Pasteur more than sixty years ago.

One other link between Pasteur's delicate chemical studies and biology may be mentioned. The mould which ferments ordinary tartaric acid has but little action upon its optical isomer. It was therefore possible by fermenting *para*-tartaric acid to destroy the common dextro-rotatory form, whilst preserving the laevo-rotatory isomer. The yeast, trained for countless generations to assimilate dextro-tartaric acid, refuses to ferment laevo-tartaric acid, and turns away with loathing from the unaccustomed food. This phenomenon has been widely extended, and applies not only to humble organisms but to man himself. Thus, whilst one form of asparagin tastes sweet in the mouth, the mirror image has an insipid taste. If, therefore, through some freak of nature the asymmetry of the vegetable kingdom were reversed, whilst leaving that of the animal kingdom unchanged, we too, like the yeast, might starve in the midst of plenty, unable to digest the unaccustomed sugar with its facets at the wrong corners, or to nourish ourselves upon the finest wheat flour containing starch and gluten of the wrong sign.

This, surely, is the real tragedy of "Alice through the Looking-Glass." The bans and cakes beyond the mirror would present a tempting appearance: the toffee and the barley sugar would still attract her; but if she should stretch out greedy hands and grasp them through the mirror, she would be doomed to disappointment. The fats she would be able to digest, and it might still be necessary to warn her to leave the wine decanter alone, since the alcohol has a symmetrical molecule, and would be equally potent from whichever side of the mirror it was derived; but the carbohydrates and proteins would probably "turn to ashes" in her mouth and provide her with little or no nourishment. Even if she should succeed, however, in finding sufficient food, her growth would certainly be arrested by lack of optically active vitamins of the right sign, and death would certainly await her, perhaps the more merciful if not long delayed. Would insulin be of any value to her in the terrible state into which she would inevitably lapse as a result of wandering to the wrong side of the looking-glass? Even the seven happy years that I spent at Guy's have not qualified me to attempt a prognosis, even when as in this case my diagnosis must be accepted as correct. But, greatly daring, I will assert that all the efforts of the Medical Research Council would fail to save Alice, for the remedies that they would prepare on this side of the looking-glass would have no potency in enabling her to assimilate the strange food on the other side of the glass. Alice must begin all over again, and beyond the mirror organize a medical research council of her own. We should recognize them easily, for the wise inhabitants of that other world would know that they could not do better than to reflect "our" choice, and confirm "our" nomination (I speak on behalf of all the inhabitants, both fanna and flora, of our side of the mirror). But they would have some strange habits. Their hair would be parted on the wrong side; they would carry their watches in their right-hand pockets and listen to the beating of hearts on the right side of their patients. In their moments of leisure they would play golf with clubs of an

unfamiliar type, with which they would make magnificent left-hand drives; but their handicaps and their feelings would remain the same, since these things are not altered by reflection in a mirror. They would then manufacture from materials gathered on the other side, suitable and potent remedies for the diseases of that other world; and they would apply these to Alice. At last she would look forward to a cure, but only to meet with fresh disappointment, since the cure would prove to be only a treatment of her disease, for after all Alice herself must undergo optical inversion, limb by limb and molecule by molecule, turning her right hand into a left and reversing the sign of her tissues, as her body passed through the plane of the mirror, before she could fit harmoniously into the framework of the universe beyond. And there at last we may leave her, happy and contented; and enjoying all the good things that life "through the looking-glass" has to offer.

Such, briefly, is the concept which Pasteur places before us as his earliest contribution to natural knowledge; and we cannot but admire the perfect fashioning of the foundation stone upon which in his riper years he built up the splendid monument, which generations still unborn will visit, in order to lay before it a tribute of laurel leaves such as we bear in our hands to-night.

#### PASTEUR AS ARTIST.

Dr. GUSTAVE MONOD, M.R.C.P. Lond., gave a short lecture on Pasteur as an artist, illustrated by reproductions of some of Pasteur's drawings.

Great men, he said, presented themselves for our study under many different aspects, and we had to regard Pasteur as pioneer, professor, advocate, patriot, and believer, and still more intimately in his home. Pasteur was an artist, not only in the usual sense of the word, but also in the sense of the Latin word *artifex*—a man who translated his ideal of beauty into his life's work. From his childhood Pasteur had known how to observe and how to depict what he observed. Twenty of the portraits he made when a boy were published in 1910, in a limited edition, but, excellent as the reproductions were, they could not give the impression of intense life which the originals preserved in the house of Pasteur's son-in-law, M. Vallery-Radot, conveyed. In that house the home of the Master lived again; his furniture, his work table, his books, and his favourite pictures were all there; his whole life was told in pictures—from the portrait of himself as a young man by Lebayle,



HOUSE WHERE PASTEUR WAS BORN IN DOLE (with a commemorative plate above the door).

passing on to the picture by Eberfeldt, and ending with the poignant drawing of the serene face of the great man sleeping his last sleep.

"Arbois," continued Dr. Monod, "is a little town of eastern France at the foot of the Jura; its hills and clear, rapid streams recall the Highlands of Scotland. Taking ourselves back to 1831, we could imagine a band of noisy children coming home along the river bank from fishing. One of them, a boy small for his thirteen years, attracts attention by his thoughtful expression, and the passers-by smile, saying, 'This is Louis, the son of M. Pasteur, the tanner, our young artist.' For Louis Pasteur, without being in any way an infant prodigy, early distinguished himself by his aptitude in drawing. Doubtless, if we possessed his boyhood's exercise books, we should find in the margins more or less unskilful sketches of his comrades taken from life, and, I should wager, caricatures of his first masters, among them naturally that of the teacher of drawing at the school, M. Pointurier; he was a jovial man, not devoid of talent; he drew as naturally as he breathed and allowed his pupil to develop faculties according to their natural bent. But Louis at the age of 13—the age of daring—dared to attempt a real portrait. Ah! if he could fix upon the paper the most familiar, the dearest, the loveliest of faces. . . . His heart tells him that, though the busy grown-up folk will not find time to sit for him, his mother will understand her child. The others have faces that are unknown and difficult; but



the face of his mother is a landscape of which he knows every secret. 'Oh, mamma, you must put on your pretty shawl and your Sunday bonnet!' Here is the portrait; nearly a century has passed over the powder of the pastel, but we see how seriously she played her part. She sits rather stiffly within the rigid folds of her plaid shawl; the



PASTEUR'S MOTHER. (Pasteur del., aged 13.)

perfect order of her coiffure is framed in an impeccable bonnet. At a first glance her features seem rather severe; doubtless the length of the sitting had its effect... but if we look a little closer do not her lips appear a little—very willingly—compressed? Can we not detect a desire to smile—a desire suppressed so as not to discourage her boy who is struggling to do his best? I think so, for in the eye glistens a happy light which sees

a little artist, silent, grave, absorbed in his work, dominated by the creative effort. . . . "Three years afterwards Pasteur, on the eve of leaving for the first time for Paris, tried to catch the features of his father. As you will recognize, there is a certain poignant sadness in this portrait: is it produced by the coming separation, or by a secret uneasiness due to the leaning towards an artistic career of a son for whom he dreamt of a more certain destiny—for his ambition was to see his son a future rector of the college of Arbois! Or is it the bitterness of the ex soldier of the Grande Armée who knows the vanity of glory? 'I can still recall,' said Pasteur forty years later, on looking at this portrait—'I can still recall this sadness of my father.' This drawing is not signed. Doubtless it remained unfinished. In my opinion it is the most impressive of Pasteur's drawings—the technique is more assured, and the analysis remains as moving in its keen, observant tenderness."

Pasteur went to Paris in November, 1838, but he was miserable there, and his father soon brought him back to Arbois. This was a period of crisis, for the voices of Art and Science were calling him at the same time. It was from this period that most of the drawings shown dated. Dr. Monod called attention to the careful observation and minuteness of the detail in the drawings: "Nothing was missed, neither the embroidery of the mayor's collar, nor a detail of his cross of honour, nor the squint which afflicted him." The last pastel bore the date 1842. It was the portrait of Marcou, who afterwards taught geology at Cambridge, Massachusetts. Durant-Groville, who saw this portrait in America, wrote of it: "Many painters awarded medals at the Salon have never drawn or modelled a mouth with such precision. If Pasteur had wished he could have become someone of standing among painters, and—who knows?—perhaps a very great painter." In the year this portrait was made Pasteur entered the Ecole Normale; he had passed through his crisis; he loved his art with passion, but he saw that his duty lay elsewhere. That was not to say, Dr. Monod insisted, that the

artist was dead within him. Throughout his life he was faithful to his interest in painting; he never missed a Salon, and found time frequently to visit great national galleries. At Dresden, for example, his first visit—to the astonishment of his hosts, who awaited him at the laboratories—was devoted to the Museum. Among his intimate friends

were many artists, among them the sculptors Paul Dubois and Perrault, the painters Henner and Eberfeldt. But Pasteur drew no more. Dr. Monod had it from a friend who had passed his youth in daily intimacy with Pasteur that he had never suspected the draughtsman in the scientist, so much had scientific research monopolized his spirit. He remained, however, a being in whom the faculties of observation and imagination predominated. He



PASTEUR'S FATHER. (Pasteur del., aged 16.)

turned first to chemistry; his youthful curiosity drew him to one of the most arid branches of that science, but one in which investigation was carried out solely by the eye—namely, optic chemistry, crystallography. Dr. Monod suggested that his eye was trained for the analysis of crystals by the analytical drawings of his boyhood; he drew the portrait of racemic acid with similar rigorous observation and passionate imagination. "It was necessary to have seen Pasteur at his microscope," wrote Dr. Roux, "to form an idea of the patience with which he examined a preparation; moreover, he examined each object with the same minute care. Nothing escaped his myopic eye, and we used to say in jest that he saw the microbes growing in the media." The study of racemates bridged the gap between chemistry and biology, and with the study of fermentations began the ascent: investigations of wine; silkworm disease; investigations of beer; virulent diseases; virus vaccines; the prophylaxis of rabies. Link by link the artist built and the experimenter forged the chain of genius. The word "genius" recalled to Dr. Monod the recent estimates of Pasteur at the Academy of Medicine (see JOURNAL, January 6th, 1923, p. 37), and he tried to reconcile the different conceptions of his genius. "Pasteur," he said, "soared above concrete experience. Without imagination the scientist would have stopped at experimental facts. Artist, he swept the infinite with a single cast of his line."



PORTRAIT OF A NUN, with the Inscription, "Sœur Constance Parpandet, âgée de 82 ans." (Pasteur del., aged 18)

Sir Humphry Rolleston, in moving a vote of thanks to the three lecturers, said that there was one note in the President's address which must have found a response among many in that audience—namely, the President's estimate of the great extent to which Pasteur owed his success to the devotion and self-forgetfulness of his wife. Many of them, although much smaller men than Pasteur, would be more than ready to make the same acknowledgement. The Royal Society of Medicine was to be congratulated on having seized this opportunity of paying a well deserved compliment to Pasteur's genius. It was pleasant to feel that the society had been able to



reciprocate in this way the gracious courtesy of the Academy of Medicine of Paris earlier in the year when that body held a celebration in honour of Edward Jenner. This year would be distinguished by the two celebrations, the centenary of Pasteur's birth and of Jenner's death, and by the fact that both men were honoured in London and in Paris.

Sir St Clair Thomson, in seconding, said that in his opening speech the President had rightly remarked that science had no frontiers; but although they welcomed science whether it came from one side of the Channel or the other, or from one side of the Rhine or the other, after all, scientific men had their countries, and it was a great delight to have had placed before them in the address of the President the personality of Pasteur as one of the greatest of Frenchmen. The speaker recalled an occasion when he was motoring through the Savoy in company with a French doctor, and the motor car broke down. They were surrounded by a little crowd of village urchins, and to them his friend put a few questions. Addressing a wee child who was not past the primary in school, he asked her who was the greatest of Frenchmen. "Louis Pasteur," she lisped. He added, "Tell me another great Frenchman—a soldier." "Napoleon," was the answer. "And who was Shakespeare?" "An English poet." The appreciation of great men was a thing to learn from France, and there even the little children were taught that the greatest of Frenchmen was Pasteur.

## RESEARCHES ON ANIMAL NUTRITION AT THE ROWETT INSTITUTE.

### VITAMINS AND MINERAL SALTS.

The first report of the Rowett Institute for Research in Animal Nutrition<sup>1</sup> contains a summary of the very important work which has been done at that institute by Dr. Orr and other workers upon many aspects of animal nutrition. The investigations upon the effects upon farm animals of deficiency of vitamins and of minerals are of special interest to the medical profession.

Most people have probably felt that the continual resort to rats, pigeons, and guinea-pigs, as the subjects of experiments upon vitamin deficiency, is rather unsatisfactory, since these few animals form a very narrow basis upon which to frame any general conclusions as to the importance of vitamins in the economy of animals in general and of man in particular. The animals mentioned are of course subjects of choice because they are inexpensive, easy to keep, and happen to show effects of vitamin deficiency relatively quickly. It is, however, very important to remember that the different species of animals vary enormously in their susceptibility to vitamin lack—for example, deprivation of vitamin C kills a guinea-pig from scurvy within a month, but a rat can live indefinitely on such a diet, although it is soon affected by deprivation of either vitamin A or vitamin B.

Cats, dogs, and human beings are moderately susceptible to vitamin lack, but the report of the Rowett Institute shows that farm animals are remarkably resistant to vitamin deficiency. Their results agree on the whole with those of Sir Arnold Theiler, who found in South Africa that cattle, sheep, goats, horses, and pigs were not affected when fed on vitamin deficient diets for periods of from six to twelve months.

Experiments at the Rowett Institute showed that pigs, when fed on a diet deficient in vitamin C for 124 days, grew perfectly normally, and showed no signs of disease. Deficiency in vitamin A produced no ill effects for about 100 days in young pigs, but more prolonged experiments gave results which suggested that deficiency was producing injury. Young pigs were fed on a basal diet of bran and oats with a little blood meal and mineral salts; one group was given cod-liver oil, and another group an equal amount of linseed oil; the second group were therefore on a diet deficient in vitamin A. Both groups grew normally for 120 days; after this period growth in both groups slowed down, but the linseed oil group stopped growing altogether after 150 days, whilst the cod-liver oil group continued to grow slowly. The authors conclude from this and other experiments that cod-liver oil has a definite beneficial effect on the health and rate of growth of pigs, but that the effect is greatest when the animals are on a diet in which the mineral matter is deficient or ill balanced. Experiments upon lambs gave more definite

results, for in a period of six months lambs given cod-liver oil increased in weight 66 per cent., whereas control animals in which linseed oil was given instead of cod-liver oil only increased 25 per cent. Experiments at Reading<sup>2</sup> upon pigs showed that pigs deprived of vitamin A grew for about seventy days, but that ultimately growth ceased, and signs of defective nutrition appeared. Experiments at Reading also showed that pigs at a certain stage of vitamin deficiency might grow and appear to be in normal health, and yet might be incapable of producing normal offspring.

These results seem to suggest that young pigs and sheep have very low vitamin requirements, but that they cannot thrive indefinitely when the vitamin A supply is reduced below a certain level.

Dr. Orr, however, points out that the vitamin requirements of farm animals are so low that there is very little likelihood of any animal on an ordinary diet suffering from vitamin deficiency. This conclusion is rather important, for it indicates that it is possible for a cow to continue in perfect health when it is receiving so little vitamins that its milk is practically vitamin free. Such a result might be satisfactory to the cow but would not be beneficial to any infant living on its milk.

The researches upon pigs at the Rowett Institute showed that, while their vitamin requirements were very low, yet on the other hand their requirements of mineral salts were very high. It was found that a young pig which puts on about a pound of weight a day could retain about 5 grams each of lime and of phosphorus daily. Moreover, deprivation of minerals in the food produced signs of malnutrition within thirty days.

Rickets is a common disease in young pigs, and experiments showed that deprivation of a proper supply of mineral salts regularly produced the disease, whereas deprivation of vitamin A did not produce the disease. This last result is, of course, in sharp antagonism to Mellanby's results upon puppies. The report concludes:

"The results of these experiments seemed to show that, in pigs at least, the chief factor in the production of rickets is the lack of proper amount and balance of the mineral matter of the food, and that the beneficial influence of fat-soluble A and sunlight on mineral metabolism is most marked in cases where the mineral balance of the food is defective. It is probable that rickets in children is to some extent due to the same cause as the disease known as rickets in pigs. The disease usually comes on between the age of six and eighteen months, which is the period when the child is being weaned on to foodstuffs derived largely from cereal grains. These refined products are even more deficient in essential minerals than the grain and offal fed to pigs."

There is general agreement that deficiency of vitamin A, lack of mineral matter in the food, and lack of sunlight, are all factors in the production of rickets in children. The experiments of the Rowett Institute seem to show clearly that in the pig the lack of mineral matter is the dominant factor in producing rickets. This is to be expected since the pig has a low vitamin requirement and its rapid growth imposes a very high mineral requirement. It does not, however, seem safe to assume that the same will be true of human infants, for these grow at only about one-twentieth the rate of pigs, and the available evidence suggests that man is fairly easily affected by vitamin lack.

The differences between the results recorded above and those obtained by Mellanby in dogs suggest that rickets is produced by different causes in different animals, and therefore it is very desirable to have information as to the mode of production of deficiency diseases in as many different species of animals as possible. Metabolism experiments on large animals are of course only possible at institutes which, like the Rowett Institute, are specially equipped for this purpose, and hence work of the kind under review has a very special value.

<sup>2</sup> Zilva, Golding, Drummond, and Coward, *Biochem. Journ.*, xv, p. 427, 1922.

THE report of the Inchcape Retrenchment Committee has been published in India, but copies have not yet reached this country. The total saving contemplated appears to be nearly thirteen millions sterling, of which over half is to be obtained by a reduction in military expenditure. It is stated that the Committee proposes to abolish the office of Director of Medical Research and to hand over the duties to the Director of the Kausali Institute, and to abolish also the office of Sanitary Commissioner with the Government of India. Comment must be reserved until the text of the report is received.

<sup>1</sup> The First Report of the Rowett Institute, Aberdeen. 1922. Director, Dr. J. B. Orr.



## British Medical Journal.

SATURDAY, MARCH 10TH, 1923.

THE RECRUDESCENCE OF EPIDEMIC  
KALA-AZAR IN ASSAM.

KALA-AZAR is little known except by name to the profession in this country, and occurs only sporadically in most parts of India; but it is endemic in Assam, where it occasionally becomes epidemic. It is a very serious disease, characterized by splenic, and often hepatic, enlargement, accompanied by subacute or chronic fever and progressive wasting and anaemia. It is due to infection by *Leishmania donovani*, which lives especially in the endothelial cells of blood vessels and lymphatics, and is particularly numerous in the spleen, the liver, and bone marrow; it, however, occurs also in other organs including the mesenteric lymphatic glands, and in ulcers of the intestinal mucous membrane. After a rapid onset with high fever a chronic condition commonly ensued, and though the patient might survive for months the mortality was very high. Though the parasite has been identified the method of infection is still unknown, but the fact that it can be cultivated into flagellate form indicates that this is part of the life cycle. It is thought possible that it is carried by some biting insect, or that when it is excreted in the faeces and gets into water it may be ingested by some aquatic arthropod in which it passes another stage.

The terrible epidemic of the disease which spread up the Assam valley in the last two decades of the nineteenth century culminated within ten years, but not before it had caused the loss of one-third of the inhabitants and a decrease by two-thirds in the area of cultivated land in the Nowgong district. After being long quiescent the disease became active again in 1917 in the division of Sibsagar in Upper Assam, previously uninfected; in 1919-20, for some unknown reason, an extensive recrudescence took place throughout all the districts previously decimated by the disease. Fortunately, however, the value of segregation in stamping out the disease on tea gardens had in the meantime been demonstrated by Rogers and Dodds Price, and the remarkable curative properties of antimony tartrate, which reduced the mortality from 96 to about 10 per cent., had been established. The Public Health Department, under the energetic Sanitary Commissioner of the Province, Lieut.-Colonel McCombie Young, I.M.S., was therefore able, with the help of liberal grants from the Assam Government, to deal much more effectively than was formerly possible with the threatened devastation of the important tea districts of Sibsagar and Dibrugarh; the results of the measures taken have been recorded by Young in a recent paper read before the Assam Branch of the British Medical Association.<sup>1</sup> With the help of a staff of assistant and subassistant surgeons, special kala-azar hospitals, outdoor dispensaries, and out-centres for detecting early cases have been established throughout the province. The Sanitary Commissioner himself has superintended the work on the spot throughout the cold weather touring season, and has in many instances been able by his personal influence and action to detect, isolate, and cure the earliest cases in newly affected villages in a way that was formerly impossible, for the onset of the disease is insidious. The striking result has been that of 36 villages where the first case was detected and dealt with, in 28 no further cases occurred in the following year, and that in nearly two-thirds of 66 villages in which the dread

disease was discovered before the cases exceeded 5 no cases occurred in the following year; on the other hand, in 14 villages in which 5 cases were found when the disease was first discovered only one was free in the following year, and in nine of the remaining thirteen the new cases in the next year numbered from 11 to 30. These facts show clearly that, unless the first few cases are detected by an efficient organization, serious loss of life and not rarely decimation of the village will ensue and great expense will be incurred in segregating the people of the new severely infected villages. The success of the hospitals and dispensaries has been remarkable; during 1920 and 1921 over 32,000 cases have been treated with prolonged courses of antimony tartrate given by intravenous injections. It is estimated that in this way a direct saving of 23,000 lives has been effected, and that, in addition, a much larger number of new infections has been indirectly prevented; this is a wonderful record in a country so medically backward. By this policy it has so far been just possible to keep the renewed epidemic in hand, but the danger is still far from being over.

In the face of these facts it hardly seems credible that the Assam Government should have suggested as a measure of economy the abolition of the post of Sanitary Commissioner of the Province, and that all the work of that officer should be handed over to the already overburdened civil surgeons, who cannot possibly spare the time necessary for the prolonged touring involved in carrying out the kala-azar preventive work of the Public Health Department. The proposal has, however, recently been made.<sup>2</sup> We strongly protest against a policy so penny wise and pound foolish. Anyone personally acquainted with the conditions during the epidemic in the Nowgong district thirty years ago is aware that the result must be untold suffering and loss of life, as well as eventual decrease of land revenue many times as great as the proposed immediate economy; the suggestion could only have been made because the generation of officials has passed away who had experience of the appalling epidemic of three decades ago, when the dead remained unburied, calling to mind the horrors of Russia of to-day.

LUNACY LAW AND THE TREATMENT  
OF THE INSANE.

Dr. J. R. LORD, medical superintendent of Horton Mental Hospital, has recently drawn attention to some of the defects in English lunacy law. He shows that while the Lunacy Act of 1890 was most carefully and conscientiously framed from the local point of view as a measure designed to secure the best treatment of the mentally unsound, it is extremely incomplete. It portrays almost entirely the legal attitude of mind to the insane. The "patient" it deals with means every person received or detained as a lunatic or taken charge of as a lunatic; he is not a "patient" in the medical sense. It is not the onset of disease which makes him a "patient" but an act under the law. It is not the cessation of disease which occasions him ceasing to be a "patient" but the failure to find sufficient cause for detention. To the medical view of insanity a secondary importance is assigned, and respect for the liberty of the subject is accounted of more importance than that those who are afflicted with mental disease should have every opportunity of obtaining the best treatment at the earliest possible moment, and under the most favourable circumstances for their recovery. In effect, the attitude the law takes to a person suffering from mental disease is that he shall not enter an asylum for treatment unless circumstances force it, nor shall he remain there if it is

<sup>1</sup> See p. 179 of this week's SUPPLEMENT.<sup>2</sup> Indian Medical Gazette, February, 1923, p. 75.



possible for him to be outside. Nowhere, Dr. Lord goes on to point out, does the law urge upon citizens the duty of taking prompt steps for the proper treatment of the mentally afflicted; on the contrary, it treats such steps with suspicion and imposes restrictions, with the result that those primarily concerned avoid invoking the law's aid. Dr. Lord considers that the lunacy law wants "completing," as it were, at both ends, in order to cover more appropriately and effectively the early stages of mental disease and the convalescent period. He suggests also that much of it needs recasting to bring it more into accord with the spirit of the time.

A number of factors thus act as barriers to the adequate treatment of the psychoses in their early and more curable stages. The irksome legal restrictions, the abnormal attitude of the patient, the resistances of the relatives, and the reluctance of the doctor—all combine to prevent early and effective treatment. In no form of illness is hospital treatment and removal from the home environment more desirable in the interests of all concerned than in mental disorder; and yet such measures are usually only undertaken when the conduct of the patient renders them imperative. It has to be admitted that there is undoubtedly a "stigma" attached to an ex-mental hospital patient, and the relatives are placed in a very difficult position when the question of certification arises. If treatment in mental hospital be avoided the condition of the sufferer may become hopeless; by adopting it, a life may be partially wrecked. It is this "stigma" which, in Dr. Lord's opinion, constitutes the real difficulty, and he suggests that only a bold attempt to teach the rising generation better ideas regarding insanity will remove it. He advocates the inclusion of a course of mental and physical hygiene in the educational code schools, and considers that if more enlightened notions were to prevail generally among the community most of the troubles regarding the treatment of mental diseases would disappear. It would not matter where a patient were treated or what the institution was called so long as the most effective treatment was secured. Very little is to be said in favour of home treatment, especially in the case of the poor. Home treatment would, in fact, never be dreamt of had people confidence in mental hospitals; the main problem is to discover how such confidence can be gained.

Towards the solution of this problem Dr. Lord makes a number of useful and practical suggestions. He urges that mental hospitals should, as far as practicable, be thrown open in the same spirit as are general hospitals; that they should be part and parcel of the everyday life of the community, and not an exerescence hidden away from the public eye; that social visitors should be appointed; that asylums should be free to experiment, expand, evolve, and progress with the general advancement of medicine like general hospitals; that out-of-date institutions should be abolished and replaced by smaller mental hospitals of modern type; and that there should be better provision in all mental hospitals, preferably in detached buildings, for the treatment of voluntary boarders and incipient insanity—to permit this the law must be altered.

## A STATISTICAL STUDY OF SUICIDE.

THE second number of the Monographic Series issued by the *American Journal of Hygiene* is a thorough study of the statistics of suicide by Dr. John Rice Miner of the Department of Biometry and Vital Statistics in Johns Hopkins University.<sup>1</sup>

In the first section of the monograph international comparisons of rates of suicide are made; particular

attention is devoted to seasonal distribution. In all the European countries (except Switzerland, 1889-1893) the maximum rate is in May or June. There is no obvious connexion with geographical latitude; the statistics of Japan for 1888-1892 show a maximum in May, but a nearly equal incidence in July; for the period 1896-1905 the relations are reversed, the July peak is the taller. In New York City, 1871-1912, the maximum rate was in May. The distribution of suicides by days of the week is shown for Prussia and for the United States. We are a little suspicious of these data. Thus, while in 1907 Prussian female self-destroyers showed a distinct preference for Thursday as the fatal day, no such peculiarity is found in the data of 1908. Dr. Miner suggests that the distributions are probably based upon too few cases to be significant. The total number for both sexes and the two years is 15,133, but the greater proportional frequency of suicide in men may result in the numbers becoming really small for the female experience. In the United States both men and women prefer to kill themselves on Sunday or Monday, particularly Monday. Dr. Miner remarks that "it is conceivable that the greater proportion of suicides on Sunday in the United States than in Europe may be due to the lesser opportunities for Sunday recreation in the former"; it is certainly conceivable—it is also conceivable that the author is experimenting in the ironical. Dr. Miner then confronts the statistics of suicide ordered by the religious confession of the victims. "In the various cases," he writes, "we see exemplified the same law: the conservative and authoritarian cults show lower suicide rates than the liberal denominations. We find this even among the various divisions of Protestantism, where, as in Hungary, they are given separately; the Evangelical church shows a lower rate than the Reformed or the Unitarian. The rapid increase in the Jewish rate accompanies a decay of the influence of orthodox Judaism. These are all further examples of the effect of the group spirit on suicide which we have already seen in the increase of the suicide rate during the nineteenth century and in its decrease during wars." Dr. Miner then deals with sex, age, and occupation. In the tabulation of Ogle, which, however, relates to forty years ago, medical practitioners suffered a very high rate of suicide, being exceeded only by soldiers and those connected with the supply or sale of alcoholic drinks. As might be expected, the choice of means of self-destruction is dependent upon opportunity. Thirty-five per cent. of suicides in the army (Ogle's data) were by gunshot; 60 per cent. of suicides amongst medical men were by poison, 86 per cent. of suicides amongst chemists and 85 per cent. amongst photographers were by the same means.

The second half of Dr. Miner's monograph is devoted to a very careful analysis, with the help of the method of correlation, of the relation between the suicide rate and a number of climatic and demographic factors in cities of over 25,000 inhabitants within the United States Registration Area in the years 1909-11. He reaches the following conclusions: "The net correlations of suicide with mean per cent. of sunshine, altitude, mean temperature, industrialization, and number of negroes are not significant; those with precipitation, age, density, and general mortality are low, but possibly significant, high suicide rates being associated with low precipitation, density and general mortality, and high mean age. The correlation of suicide with proportion of males is  $0.41 \pm 0.04$ ." He states also that "the fundamental factors underlying differences in suicide rates are probably (1) difference in strength of the group spirit, (2) adverse economic changes, (3) racial factors, (4) health of population." A full bibliography is appended, making the monograph as complete a study of a depressing but important subject as we are likely to see.

<sup>1</sup> *Suicide and its Relations to Climatic and other Factors*. By John Rice Miner, Ph.D. Baltimore: American Journal of Hygiene, 1922. (Sup. vol. 510, pp. 145.)



## THE OLD ENGLISH HERBALS.

He must be a very hard man in whom the word "garden" does not awaken some pleasant memory. Bacon was not tender-hearted, but he wrote: "God Almighty first planted a Garden. And indeed, it is the Purest of Humane pleasures. It is the Greatest Refreshment to the Spirits of Man; Without which, Buildings and Palaces are but Grosse Handy-works." The veriest Cockney, to whom most of the herbs in Miss Rohde's book are nothing but names, may read with pleasure that "Violet is a lytyll herbe in substaunce and is better fresshe and newe than when it is olde. And the floure thereof smellyth moost. . . And the more vertuous the floure thereof is, ye more it bendyth the heed thereof downwarde. Also floures of spryngynge tyme spryngeth fyrste and sheweth somer. The lytylnes thereof in substaunce is nobly rewarded in gretnesse of sanour and of vertue" (a fourteenth-century translation of Bartholomew). Master Gerard's garden in Fetter Lane is gone; none may lease a garden (two acres) east of Somerset House for four pence a year; nor gather the yellow-flowered figwort "in the moist meadowes as you go from London to Hornsey"; but violets may still be had—in bunches and not very "fresshe and newe"—within the Bills of Mortality. Miss Rohde has traced the story of our English Herbals from Anglo-Saxon times to the eighteenth century, from the *Leech-Book of Bald* to the work of John Archer (1673). She is not a "superior" person, but that much more gracious being, a scholar. "Many of us," she writes, "miss all that is most worth learning in old books through regarding anything in them that is unfamiliar as merely quaint, if not ridiculous. This attitude seals a book as effectually and as permanently as it seals a sensitive human being. There is only one way of understanding these old writers, and that is to forget ourselves entirely and to try to look at the world of nature as they did. It is not 'much learning' that is required, but sympathy and imagination." So she is able, with the help of the old books, to conjure up a picture of the days when both men and beasts were often elf-shot and and one fashioned a salve for flying venom from a "handful of hammer wort and a handful of maythe (camomile) and a handful of waybread (plantain) and roots of water dock." We have more modern defences against "the on-flying things," but not—in the case, let us say, of an influenza—always more efficacious. But we do not know that the picture is an attractive one; we are rather of the mind of Johnson in his rejoinder to Monboddo. Our imagination is haunted, not by the romantic beauty of those days, but by the sense of fear which, as R. L. Stevenson said, is master of the primitive mind.<sup>1</sup> "Go on Thursday evening when the sun is set where thou knowest that helenium stands, then sing the Benedicite and Pater Noster and a litany and stick thy knife into the wort, make it stick fast and go away; go again when day and night just divide; at the same period go first to church and cross thyself and commend thyself to God; then go in silence and, though anything so ever of an awful sort of man meet thee, say not thou to him any word ere thou come to the wort which on the evening before thou markedst; then sing the Benedicite and the Pater Noster and a litany, delve up the wort, let the knife stick in it; go again as quickly as thou art able to church and let it lie under the altar with the knife; let it lie till the sun be up, wash it afterwards, and make it into a drink with bishopwort and lichen off a crucifix; boil it in milk thrice, thrice pour holy water upon it and sing over it the Pater Noster, the Credo, and the Gloria in Excelsis Deo, and sing upon it a litany and score with a sword round about it on three sides a cross, and then after that let the man drink the wort; soon it will be well with him." We should justly incur Miss Rohde's censure were we to call this prescription either quaint or ridiculous; rather is it an

illustration of the gloom and dread by which the minds of the people of those days were haunted. Miss Rohde says, truly enough, "suburban life has separated the great concentrated masses of our people from their birthright of meadows, fields, and woods; of Nature, in her untamed splendour and mystery, most of them have never had so much as a momentary glimpse." But with that untamed splendour has gone a heavy burden of fear. As Miss Rohde brings us nearer to modern times there is more beauty and less horror in the lore of plants, and she explains why Gerard's *Herball* has secured an immortality denied to other and intrinsically better books. It is the same reason which keeps Isaac Walton's memory green. Gerard could write. We may conclude our notice of Miss Rohde's pleasant book with a short proof that Gerard could write: "The Plant of Roses, though it be a shrub full of prickles, yet it hath become more fit and convenient to have placed it with the most glorious flowers of the world than to inserte the same here among base and thornie shrubs; for the rose doth deserve the chiefest and most principall place among all flowers whatsoever, being not only esteemed in his beautie, vertue, and his fragrance and odoriferous smell, but also because it is the honor and ornament of our English Scepter, as by the conjunction appeereth in the uniting of those two most royal houses of Lancaster and Yorke. Which pleasant flowers deserve the chiefest place in crowns and garlands."

## VITAL STATISTICS OF HOLLAND IN 1920.

THE *Statistiek van de Sterfte over het Jaar 1920* of the new series of *Bijdragen tot de Statistiek van Nederland* may be compared with our own vital statistics, although, owing to differences of age grouping, this is not always easy. The census population of Holland in 1920 was 3,410,262 males and 3,455,052 females. The proportion of females to 1,000 males was 1,013. In the census population of England and Wales, 1921, the proportion was 1,095. Holland was not a belligerent country, and the constitution of her population in 1920 was not unlike that of England and Wales before the war, and somewhat more favourable to low rates of mortality than ours, as it included a larger proportion of males of military age. The crude death rates were 12.09 for males and 11.66 for females; in 1913 the rates were 12.61 and 12.01. The corresponding rates for England and Wales were 13.4 and 11.5 in 1920, and in 1913 14.7 and 12.8. The infant mortality in the first year of life per 1,000 live births has fallen from 104.3 in 1909-13 to 72.8 in 1920. The mortality in England and Wales fell from 108 in 1913 to 80 in 1920. The difference between the rates in the provinces was very great. For instance, the rate for Noordbrabant in 1920 was 112.6, in Friesland 49.4, and in Noordholland 52.7. Holland has notifications of stillbirths and the vital statistics of infancy are elaborately tabulated. The per mille ratio of stillbirths to all births has not varied substantially since 1910 (37.6 in 1910-19 and 37.4 in 1920). A great contrast is shown in the deaths from infectious diseases in the two countries. England and Wales is only superior to Holland in its death rate from typhoid. In 1920 the crude rate for Holland was 4.6 per 100,000, and the rate for England and Wales only 1.4. On the other hand, the Dutch figures for diphtheria and croup were 7.37, less than half the England and Wales rate of 15. Fifty years ago, 1870-74, the death rate from diphtheria and croup in Holland was 41.14, and the rate for England and Wales 30.5 (1871-75). In the quinquennium 1895-99 the Dutch figure dropped from 33.52 in the previous quinquennium to 17.01, and has remained below that figure up to 1920. The English figures in 1891-95 were 32.3 and in 1895-1900 30.7. Scarlet fever mortality in Holland was 1.84 in 1920 and 5.39 in 1919. The corresponding figures for England and Wales were 3.8 and 3.3. The death rate from measles in Holland was 9.21 in 1920 and 19.1 in England and Wales. The rates of mortality for all forms of pneumonia were 14.03 per 10,000 males and 12.12 for females, and in England and Wales 12.06 and 7.78. The death rates from tuberculosis show a very

<sup>1</sup> *The Old English Herbals*. By Eleanor Sinclair Rohde. London: Longmans, Green, and Co. 1922. (Cr. 4to, pp. xi + 243; illustrated. 2s. net.)

<sup>2</sup> "For it is scarce possible to exaggerate the extent and empire of his superstitions; they mould his life, they colour his thinking; and when he does not speak to me of ghosts, and gods, and devils, he is playing the dissimular and talking only with his lips." (*In the South Seas*, Part II, Chapter VI.)



high mortality for women, 11.84 per 10,000 females against 10.02 for males. In 1901-05 the male rate was higher than the female—13.77 and 13.31. The crude rates for England and Wales in 1920 were 10.15 males and 7.75 females. Comparing the female death rates at ages in the two countries, the rates of Holland are in excess of the English rates at every age group, and especially at the early and later ages. If the rates of Holland are expressed as a percentage of the English rates, at all ages over 50, the Dutch women die from tuberculosis at 205 per cent. of the rate for the English women, and 272 per cent. at ages under 1 year. The mortality rate from all forms of cancer was 11.26, almost identical with that of England and Wales, 11.61. In one province only, Limburg, has the rate diminished over the past twenty years. The report suggests that this may be due to the fact that the mining industry has greatly developed there and the constitution of the population by age has become unfavourable to high cancer rates. The most striking feature of the site rates is the more favourable position of Dutch women regarding cancer of the female genital organs and breast, and the higher mortality in Holland ascribed to cancer of the stomach and liver. Roughly speaking, the Dutch rate for the two former sites is little more than half of that of England and Wales, and for the group including stomach and liver more than 60 per cent. higher.

#### BENVENUTO CELLINI.

IN a recent essay on Benvenuto Cellini's diseases and doctors Professor A. Castiglioni<sup>1</sup> remarks that among the biographical documents handed down to us from the sixteenth century none possesses the freshness, spontaneity, and fascination of Cellini's autobiography, which, strange to say, has received more attention from foreigners, such as Goethe, Dumas, and Symonds, than from his fellow countrymen. Like Casanova in his *Memoirs*,<sup>2</sup> which give a vivid picture of social life two centuries later, including much of interest to the medical reader, Cellini describes his illnesses, which included malaria and syphilis, and an account of contemporary medical men and quacks not unfrequently accompanied by scathing criticism of their methods of treatment. Both writers were boastful, unscrupulous, and almost if not entirely destitute of moral sense, but both preserved their mental and physical powers until the end. Cellini's first illness was a malarial infection which he contracted in 1517 at the age of 17 in Pisa, where prior to the extensive hygienic improvements carried out by Cosimo I malaria was rampant. He had a second attack at Mantua in 1528, a more severe one in 1535 at Rome, where he was attended by Francesco da Norcia, one of the most distinguished physicians of the time, and a fourth attack during the casting of the celebrated Perseus statue. During the epidemic of plague in 1524 Cellini was at Rome, where he made the acquaintance of the celebrated anatomist and surgeon Berengario da Carpi, to whom he sold some of his vases. The illness which Cellini contracted at this time was probably not, as he imagined, an attack of plague, but a simple cellulitis of the arm with lymphadenitis due to septic infection of the hand. At the age of 32 Cellini contracted syphilis at a time when the disease was almost endemic. Although no mention is made of a primary lesion, the history of exposure to infection, the occurrence of an eruption and an inflammation of the eyes (specific iritis), which interfered with his professional activities, leave no doubt as to the nature of the affection. He promptly submitted to two courses of treatment—by guaiacum, then known as "lignum," "sanctum lignum," "spes hominum," "gloria novi mundi," which had recently been introduced from America, where the Spaniards had observed that decoction of guaiacum was used for treating various ulcerative diseases of the skin. "Probably no remedy in the history of medicine," says Professor Castiglioni, "has enjoyed a wider, more rapid, and undisputed success." Its efficacy in Cellini's case is shown by the fact that there is

no subsequent mention in the autobiography of any symptoms suggestive of further syphilitic or parasymphilitic manifestations. During his stay in Paris in 1537 Cellini became a firm friend of the celebrated anatomist Guido Guidi, who has given his name to the Vidian artery and nerve, and was at that time court physician to François I. The privations which Cellini underwent during his prolonged imprisonment in Rome in 1538 and 1539 do not appear to have had a permanently injurious effect upon him any more than the imprisonment in the "Leads" at Venice did on Casanova, although he was suffering from a broken leg caused by an attempt at escape, and was living in deplorably insanitary surroundings. An attempt to poison him during his imprisonment by one of his enemies, who mixed powdered jewels in his food, was discovered in time, but a subsequent attempt with sublimate ten years later was more successful; he did not completely recover from the effects for over a year. According to Professor Castiglioni, the charges of homosexuality and sexual perversion which were also brought against his contemporaries Michael Angelo and Sodoma do not rest upon a sure foundation, nor can his frequent quarrels with his fellow artists and others be regarded as evidence that he was suffering from delusions of persecution. The story of his life as told in the autobiography stops abruptly in the year 1562, but he survived another nine years, dying of angina pectoris at the age of 71, in full possession of his faculties. The translation into English by J. A. Symonds, first published in 1887, has truly been called masterly; it is a fascinating book.

#### MILK UNDER SPECIAL DESIGNATIONS.

For several years past milk has been sold as "graded" and "certified" under the provisions of Orders made by the Food Controller and later by the Minister of Health. Since January 1st of this year the sale of milk under these and other designations has been regulated by the Milk and Dairies (Amendment) Act, 1922, and by Orders made by the Minister of Health under that Act. Milk may now be sold under four special designations—namely, "certified," "Grade A (tuberculin tested)," "Grade A," and "pasteurized." In a memorandum issued by the Ministry of Health for the information of those specially concerned particulars are given of the conditions under which these designations may be used and the steps which must be taken to secure authority for their use. The producer of certified milk must obtain a licence from the Minister of Health, for which he has to pay an annual fee of £5. Those who deal in this milk must obtain a licence costing five shillings from the local authority in whose area their trade is carried on. The herd must be tested by tuberculin prior to the granting of the licence and subsequently every six months, and must be examined every three months by a veterinary surgeon nominated by the Minister. The milk must be bottled on the farm immediately after production. The cap of the bottle must form a seal and must bear the address of the producing farm and the day of the week on which it was produced, together with the words "certified milk." At any time before delivery to the consumer the milk must not contain *Bacillus coli* in one-tenth of a cubic centimetre or more than 30,000 bacteria per cubic centimetre. It must not be pasteurized. The regulations with respect to Grade A (tuberculin tested) milk are similar to those for certified milk as regards the testing of the herds and prohibition of pasteurization, and the licensing authority for the producer is again the Minister of Health. Otherwise the production and distribution of tuberculin tested milk is governed by the regulations for Grade A milk. For Grade A milk the council of the county or county borough grants the licence at a fee of one guinea in respect of the farm and two guineas in respect of the bottling establishment, whether at the farm or elsewhere. The distributor is licensed by the local authority, the fee being five shillings. The herd must be examined every three months by a veterinary surgeon nominated by the licensing authority. If the milk is pasteurized the fact must be stated on the cover

<sup>1</sup> *Bollettino dell' Istituto Storico Italiano dell' arte Sanitaria*. November-December, 1922, p. 221.

<sup>2</sup> J. D. Rolleston in *Janus*, 1917, xxii, p. 215.



of the containing vessel; the milk must not contain *B. coli* in one-hundredth of a cubic centimetre or more than 200,000 bacteria per cubic centimetre. The milk must be dispatched from the farm in an unventilated sealed container on which is placed the address of the farm, the day of production, whether produced morning or evening, and the words "Grade A milk." For pasteurized milk a local authority grants the licence for a fee of one guinea in respect of each pasteurizing plant, and of five shillings with respect to each establishment at which such milk is sold. Pasteurizing must not be carried out more than once. The containers must be labelled with the date of pasteurization and with the words "pasteurized milk." After pasteurization there must not be in the milk *B. coli* in one-tenth of a cubic centimetre or more than 30,000 bacteria per cubic centimetre, subject to the provision that, until January 1st, 1924, no test for *B. coli* will be imposed, and the maximum bacterial content may reach 50,000 per cubic centimetre. In an address which Dr. John Robertson, the medical officer of health for Birmingham, recently delivered before a sessional meeting of the Royal Sanitary Institute in Birmingham he stated that average milk when it reached Birmingham contained over 2,000,000 bacteria per cubic centimetre, which meant that it had been milked under more or less dirty conditions, that it had not been properly cooled, and that it had been delayed for a considerable time on its journey to the city. He considered that the cost of producing certified or graded milk was practically prohibitive to the ordinary consumer, but recommended pasteurization on a uniform basis, the pasteurization being controlled. He urged that farmers and dairymen must recognize as essential to the production of clean milk that every article in which milk is received, from the farmer's milking cans to the railway churns and bottles, should not only be cleaned, but subsequently sterilized by steam.

#### SMALL-POX PREVALENCE.

From the returns of the Registrar-General it appears that in the first eight weeks of the year—from December 31st to February 24th—305 cases of small-pox were notified in England and Wales outside London. In the successive weeks the numbers were 12, 48, 46, 48, 37, 27, 41, and 46. The counties chiefly affected have been Derby with 115 cases, the West Riding of Yorkshire 82, the North Riding 43, Notts 39, and Durham 11. Cases have occurred also in the counties of Stafford, Lancaster, Lincoln, Hertford, Hereford, and the Soken of Peterborough. Included in these figures are the towns of Doncaster (60 cases), Middlesbrough (42), Nottingham (12), and Ilkeston (10). The other districts with the largest numbers of attacks are in Derbyshire—Heanor having had 59 cases and Clown 34. At Basford in Notts there have been 15 notifications. The disease appears to be of a mild type. Fortunately the outbreak of a very severe strain of small-pox which attacked the inmates of Poplar Workhouse was stamped out in its limited and well defined area by the concentrated efforts of the several authorities concerned. It has been said that in some parts of America an exceedingly mild type of small-pox has become practically endemic, no doubt owing to its being so lightly regarded in respect of the calling in of medical aid, and of notification, vaccination, isolation, surveillance of contacts, and so forth. What the present position in America is we cannot say, but great vigilance may be required to prevent endemicity of the infection in Britain; and it must never be forgotten that though mild small-pox often breeds true, that is not always the case, and virulence may develop as an outbreak proceeds. It is locally reported that at Clown, where seven more cases have been notified two or three days ago, the disease is taking on an increasingly virulent character. It would be the falsest of false economy if the staff of the Ministry of Health were so starved of personnel as to be unable to give the country the fullest benefit of the unsurpassed knowledge of its medical department in the investigation and control of small-pox. It is said that the disease has appeared in Aberdeen, where the last case occurred in 1918.

#### VISIT OF FOREIGN HEALTH OFFICERS.

The foreign health officers now visiting England and Scotland to study methods of health administration, under the auspices of the Health Organization of the League of Nations, left for the provinces after a strenuous week in London. The party, numbering twenty-nine, is drawn from fourteen European countries, from the United States, and from Japan. By request of the Ministry of Health the arrangements were made by Society of Medical Officers of Health, and it was at the house of the Society that the visitors were welcomed on their arrival by Dr. W. J. Howarth (chairman) and the other members of the reception committee. The occasion offered an informal opportunity for guests and hosts to become known to one another, and Sir George Newman, in a speech of greeting, indicated the great benefits that might be expected to result from the comparative study of methods of health administration in various countries. On the following day (February 26th) the visitors were officially welcomed at the Ministry of Health by the Earl of Onslow, Parliamentary Secretary to the Ministry, and Captain Walter Elliot, M.P., Under Secretary for Health for Scotland. Sir George Newman gave an illuminating address on the whole system of public health administration in England and Wales. In the afternoon and on the following morning explanatory lectures on the various activities of the Ministry were delivered by Lieut.-Colonel S. P. James, Dr. Barbara Cunningham, Dr. F. J. H. Coutts, and Dr. J. Smith Whitaker, so that the visitors started their tour with a good insight into the scheme of central administration. On Tuesday afternoon a visit was paid to the Royal Army Medical College, where the guests were received by the Director-General (Lieut.-General Sir John Goodwin) and the Commandant of the College (Colonel C. B. Martin). An address on "The present-day trend of military hygiene," by Major N. V. Lothian, was followed by a series of demonstrations in the laboratories by the staff of the College. Later the visitors were entertained at tea at the R.A.M.C. Mess, where they had an opportunity of talking with Sir William Leishman, Sir William Macpherson, and a number of civilian guests who had been invited to meet them. The whole of March 1st was spent with the Registrar-General and his staff examining the statistical methods at Somerset House and the compilation of the Census returns. The following day was occupied to great advantage in visiting institutions of the Metropolitan Asylums Board. The system for the collection of fever cases and their allocation to the most convenient hospitals was explained during a visit to a typical ambulance station. An inspection of the Brook Fever Hospital at Shooter's Hill under the guidance of Dr. J. B. Byles was followed by a visit to Queen Mary's Hospital at Carshalton, where Dr. W. T. Gordon Pugh explained the methods of orthopaedic treatment, which greatly interested the foreign delegates. On their way back to London the party were shown round the Tooting Bec Mental Hospital by Dr. E. H. Beresford, and the day closed with a comprehensive account of all the Board's undertakings by the clerk, Mr. G. A. Powell, C.B.E., whose lecture was illustrated by lantern slides. The party was much impressed by the magnitude of the Board's work. On March 2nd it was the turn of the Metropolitan Water Board; after a formal reception by the vice-chairman and other members of the Board, Sir Alexander Houston gave a lantern lecture on the work of his laboratories in connexion with water examinations, and then accompanied the party to the reservoirs, filters, and chlorinating plant at Hampton. The final fixture of the week enabled the party to see something of the housing schemes of the London County Council. Escorted by Lieut.-Colonel C. B. Levita (chairman of the Housing Committee), Dr. William Butler, Mr. David Edwards, and other officials of the Council, they were shown the clearance scheme in the Tabard Street area and the new houses at Roehampton. Throughout the week the visitors have been greatly interested in the programme arranged for them, and in every case they have been supplied with reports and other documents which will enable them to



understand the full significance of what they have seen. Although the visit is not intended to be of a festive nature the guests have enjoyed some pleasant hospitality during the week. On Monday the Royal Sanitary Institute held a reception in their honour, which was attended by the diplomatic representatives of most of the countries that have sent delegates; on Wednesday the whole party attended the Pasteur celebration at the Royal Society of Medicine. In groups of four or five they are now pursuing their course of study at Glasgow, Newcastle-on-Tyne, Liverpool, Manchester, Bradford, and Birmingham, until they return for a second week in London after Easter.

#### THE MEDICAL AND DENTAL REGISTERS.

THE *Medical Register* for 1923 has been issued.<sup>1</sup> From a table prefixed to the list it appears that it contains 46,477 names; of this number 22,713 (48.88 per cent.) are shown as registered in England, 14,605 (31.42 per cent.) in Scotland, and 6,814 (14.66 per cent.) in Ireland. There are 2,239 (4.81 per cent.) on the colonial list, and 106 (0.23 per cent.) on the foreign list. The names newly registered in 1922 numbered 1,984—a larger number than in any previous year, and exceeding the number registered in 1921 by 224. The number of names removed was 1,045; of these, 725 were removed on evidence of death and 311 under Clause XIV of the Medical Act of 1855, which requires the Council to erase from the *Medical Register* the name of any person who failed to reply to an inquiry addressed to him by the Registrar as to whether he has ceased to practise or has changed his address. The volume contains also the warning notices issued by the General Medical Council and by the Dental Board of the United Kingdom. The latter appear also in the *Dentists Register* for 1923, together with the regulations of the Dental Board. Owing to the operation of the Dentists Act, 1921, the number of names on the *Dentists Register* has been more than doubled; the number in the issue for 1922 was 5,831, the number in the issue for 1923 is 12,762. The number added by registration since the last issue is 7,603, and of these only 334 were registered with qualifications. Altogether 712 names were removed; of these 7 were removed for failure to reply to an inquiry, and 636 owing to failure to pay the required fee. The number of dentists with a colonial diploma has risen from 5 to 10, and those with a foreign diploma from 3 to 6. The General Medical Council has also issued a volume containing lists of medical and dental students registered during the year 1922; the total number of medical students so registered was 1,833 and of dental students 424.

#### BRITISH CONGRESS OF OBSTETRICS AND GYNAECOLOGY.

The fourth Annual British Congress of Obstetrics and Gynaecology will be held in Edinburgh on April 19th and 20th, with a possible extension to the 21st. The gathering is really a conjoint meeting of the various obstetrical and gynaecological societies in the United Kingdom and Ireland—namely, the Royal Society of Medicine (Section of Obstetrics and Gynaecology), the Edinburgh Obstetrical Society, the Glasgow Obstetrical and Gynaecological Society, the Midland Obstetrical and Gynaecological Society, the Royal Academy of Medicine in Ireland (Obstetrical Section), the Ulster Medical Society, and the North of England Obstetrical and Gynaecological Society. On this occasion the Edinburgh Obstetrical Society hopes to welcome a large number of representatives from the other societies. The Royal College of Surgeons has kindly granted the use of its hall for the discussions, and the Royal College of Physicians is allowing the use of its hall for a dinner which will be held on the evening of April 19th. The main discussion on the first day of the Congress will be upon intrinsic dysmenorrhoea, regarding the main features of which a report embracing information and statistics from different parts of the country will be pre-

sented. Opportunity will also be afforded for a number of short papers on other subjects, and for the exhibition of specimens of special interest. The secretaries of the Edinburgh Society, Dr. H. S. Davidson, 52, Melville Street, and Dr. James Young, 29, Manor Place, will be glad to receive notice of such papers or specimens as soon as possible. Those who intend to be present are also requested to inform the secretaries either directly or through the secretary of their own society.

#### NORTH PERSIAN FORCES MEMORIAL MEDAL.

We have been asked by the War Office to announce the institution of a Memorial Trust Fund, commemorative of the services of the late North Persian Forces, which has been subscribed by officers of the Royal Army Medical Corps and Indian Medical Service who served with these Forces. In accordance with the desire of the subscribers to encourage the study of tropical medicine and tropical hygiene it has been decided that the Memorial should take the form of a silver medal, to be known as the "North Persian Forces Memorial Medal," to be awarded annually for the best paper on tropical medicine or tropical hygiene published in any journal during the twelve months ending December 31st by any medical officer, of under twelve years' service, of the Royal Navy, Royal Army Medical Corps, Royal Air Force, Indian Medical Service, or of the Colonial Medical Service. The first award will be for the best paper published during the twelve months preceding December 31st, 1923. The award will be announced in the latter part of the year following that in which the paper was published, provided that the Memorial Committee considers the papers published to have attained a standard of merit justifying an award.

SIR RICHARD HAVELOCK CHARLES, Medical Adviser to the India Office and President of the Medical Board, will shortly attain the age limit, but, owing to the exigencies of the service, his retirement is for the present postponed. Statements which have been published with regard to his successor are entirely devoid of foundation.

#### Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

##### Dangerous Drugs and Poisons (Amendment) Bill.

THE Home Secretary (Mr. Bridgeman) moved the second reading of the above-named bill on February 28th. He said that at present any constable could enter the premises of any person carrying on the business of a producer, manufacturer, seller, or distributor of drugs and inspect his books. That was inadequate, for while search could be made only of the premises of known dealers in these articles those who carried on the trade secretly were missed. Accordingly powers were asked to search the premises, persons, and papers of any person suspected of being in illicit possession of drugs. The second clause was intended to bring within the penal provisions of the bill acts done in this country with a view to illicit transactions abroad. Enormous profits were made by this trade. In a recent instance it was believed that someone got as much as 2,400 oz. of morphine and 2,500 oz. of cocaine, which represented several million doses. For such an offence a fine of £200 was far from adequate. France had already set the example of increasing penalties, and the Council of the Assembly of the League of Nations recommended the Governments concerned to consider the question of more substantial sentences of imprisonment. Therefore it was proposed to substitute for the existing penalties a maximum of ten years' penal servitude, or a fine of £1,000, or both, in cases of conviction on indictment, and, secondly, a maximum penalty of twelve months' imprisonment, or a fine of £250, or both, in cases tried summarily, and it was proposed to do away with the provision for increasing the penalty for a second offence. In Clause 3 were provisions to meet the difficulty which the Pharmaceutical Society had brought to the notice of the Home Office in regard to the supply of drugs to duly qualified medical practitioners. Under the Pharmacy Act, 1868, there was a "poison book" which everyone was expected to sign on buying these drugs at a chemist's shop, but in practice it was impossible to observe the provision, and he thought it had been largely allowed to fall into disuse.

<sup>1</sup> London: Published for the General Medical Council by Constable and Co., Ltd.







Until the report was presented the Minister could not say whether it would be published. In view of the necessity of placing orders for the printing of cards some months in advance of their issue, it would not now be possible for the proposal for a joint card, if it were recommended, to be brought into operation by July next.

**Expenditure on Health Insurance.**—In a written answer to Mr. Rhys Davies, on February 28th, as to certain particulars of expenditure on National Insurance, Sir W. Joynson-Hicks said that the amounts annually expended in England and Wales out of National Health Insurance funds on the two accounts mentioned were approximately:

1. Provision of medical benefit (excluding drugs) by insurance practitioners ... £6,520,000
2. Provision of drugs and appliances ... 1,280,000

The amounts similarly expended in Scotland were (1) £870,000 and (2) £160,000. Medical benefit was not provided to insured persons in Ireland.

**Tuberculosis Treatment.**—Mr. Rhys Davies asked, on February 28th, the number of persons suffering from tuberculosis who had failed to secure admission to sanatoriums. Viscount Wolmer said that the number recommended for and awaiting treatment in residential institutions from local authorities in England and Wales on February 1st, 1923, was 2,902, on which date 16,393 persons were receiving such treatment, and there was a number of vacant beds. The Minister was not aware of the number of notified cases which had not been admitted to residential institutions; but not all notified cases received or were willing to receive such treatment.

**The Supply of Insulin.**—Dr. Chapple asked, on February 28th, whether, in view of the fact that the cost and scarcity of insulin were depriving many poor sufferers from diabetes of the measure of cure which it was able to provide, the Ministry of Health would make a special grant for its more rapid and abundant production. Viscount Wolmer replied it was not the poor only who were deprived of the advantages of insulin. It could not be made available until a supply of known efficiency, potency, and safety was attained upon a manufacturing scale. Considerable progress had been made by the Medical Research Council, which believed that, subject to limitation of raw material in particular districts, the successful manufacture of insulin in the near future was assured. No special grant-in-aid would accelerate the production at this stage.

**Pasteurization of Milk.**—Mr. Hope Simpson asked, on February 28th, whether the provisions of the Milk (Special Designation) Amendment Order, 1922, now lying on the table at the House, required employment of a plan for pasteurization, the expense of which was beyond the means of the smaller retail dairymen; and whether the application of this Order would tend to increase the power of the milk combine. Viscount Wolmer replied that some such representations had been made to the Minister, but he did not regard them as sufficient to justify a departure from the principles on which the Order had been made. "Pasteurization" was a designation applied to milk which had been subjected to certain heating processes as set out in the Order. Such processes could not be undertaken except by the adoption of the necessary means or machinery entailing some capital expenditure. There was nothing in the Order to compel any dairyman to pasteurize the milk he offered for sale.

#### Answers in Brief.

Approximately 3,000 ex-service men were at present receiving residential treatment in institutions for tuberculosis. The average cost of treatment was £2 17s. 6d. a week for each patient, and, in addition, treatment allowances averaging £2 a week for each patient were paid by the Department.

According to the annual returns 3,555 persons were proceeded against for alleged offences in the adulteration of food, drugs, etc., in 1921. Of these, 2,329 were convicted. In 1922, 2,400 persons were proceeded against, and of these 1,586 were convicted. These figures were provisional only.

Viscount Wolmer has stated that a medical officer of the Ministry of Health, who is about to visit Northumberland, will report on the disability of insured inhabitants on Holy Island owing to the fact that no doctor resided there.

In the cases of the ex-service men whose insanity had been adjudged not to be due to military service, there have been 328 appeals, of which 225 have been heard. Of these 77 have been decided in favour of the men.

If the existing system of taxation of income were so altered that the income of married persons were taxed separately, it is estimated that the immediate loss to the Exchequer would be £12,503,000, and the ultimate loss approximately £35,000,000.

The Home Secretary has stated that the Home Office Committee which dealt with compensation for industrial diseases had reported that there would be great difficulty in bringing pneumoconiosis under the Act, and

was passed to enable the different lines. He had received the working of the scheme.

Sir W. Joynson-Hicks has stated that the effect of the report of the medical officer of health for the West Riding of Yorkshire, dealing with the condition of cowsheds in the administrative area, appeared to be that the existing law was not satisfactorily enforced in the county by reason of the small amount of inspection carried out by the district councils who were responsible for its enforcement. Under Section 11 of the Milk and Dairies (Amendment) Act, 1922, the county council could apply to the Minister of Health to transfer to it the powers of any defaulting district council.

Of the 977 voluntary boarders resident in licensed houses and registered hospitals for mental patients during the year 1922, in the first named 85 were detained and certified and 3 were certified and sent to other institutions; in registered hospitals 57 were detained and certified and 5 were certified and sent to other institutions.

#### An Address

ON

### RELIGION AND SOME MEDICO-SOCIOLOGICAL PROBLEMS.

DELIVERED TO THE MARYLEBONE DIVISION

BY

THE DEAN OF ST. PAUL'S.

At a largely attended meeting of the Marylebone Division of the British Medical Association on March 2nd the DEAN of ST. PAUL'S (the Very Rev. W. Ralph Inge, D.D.) gave an address.

The DEAN said that when he was honoured with the invitation to address that gathering it was suggested that he might take one of those subjects which were interesting alike to the physician of the body and the physician of the soul. A closer co-operation between the medical and the clerical professions had long been a matter very near to his heart. There were so many respects in which the work of the two professions overlapped or even coincided, and with knowledge and goodwill the clergy and medical men might be brought closer together, to the great benefit of mankind.

#### Mental and Spiritual Healing.

It was very necessary that religion should become scientific, and that science should cease to be—if it ever was—materialistic. Nevertheless, when one left generalities of that kind, the difficulties of the position became obvious. There were in evidence, for example, various methods of faith healing, from Christian Science to the creed of M. Coué; it was difficult to say how far these methods had any scientific value. Before the war he was a member of a committee sitting at Westminster, composed half of clergymen and half of doctors, the object of which was to investigate the methods of mind cure and faith healing which were advertised or followed. When the committee examined those who professed to work miraculous cures by religious means his own impression was far from favourable. It seemed to him that not only did their evidence break down, but their whole attitude was unsatisfactory. The committee had just begun on Christian Science—whose advocates were very ready to furnish it with information—when the war broke out, and the committee had had no further sittings. The only witnesses who impressed him at all were two doctors who had been engaged in treatment by suggestion. They stated that they never attempted to treat any organic disease, but he began to be a little dissatisfied the other way after hearing their evidence, for it seemed to him that they regarded it as a dogma that no organic disease could be successfully dealt with by these methods, and therefore when they cured patients whose cases had been so diagnosed by other doctors they assumed that the diagnosis was incorrect. He could not help pointing out to them that that was exactly what the committee had met to decide—whether treatment by suggestion could benefit organic disease. All were agreed that hysterical and nervous cases were benefited by these methods, and equally that such a thing as a broken leg could hardly be benefited; but there was a large class of intermediate cases, including diseases caused by micro-organisms, about which more evidence was desirable. He wanted to know whether or not the encouragement of the patient and the awakening in his mind of a lively faith that something was going to happen might have some effect, possibly by the production of some kind of hormone, actually to destroy the germs of disease. At all events, of late years the functions of the ductless glands had excited very great interest, and there was still much to learn about their action. When Edward VII, not many years before his death, was in Germany he was found to be suffering from a mild form of diabetes, and a consultation took place, attended by four German doctors and one English doctor. The Germans became so furious with each other as almost to get to blows, and after the altercation had gone on for some time the English doctor said, "Really, gentlemen, I believe that if we took our tests we should find that most of us were suffering from glycosuria." Rather impressed by this idea, the Germans did make the test, and found that three out of the four had sugar. If this could be the consequence of anger, as seemed probable in this instance, it was possible that the awakening of a lively hope in the mind of the patient might have effects not yet determined in the opposite direction.

#### The Storm Centre of Morals.

The Dean then turned to the subject of psycho-analysis. It had been stated that Freud, whom he had never read, had only one idea, and that a nasty one; but he imagined that



there was a great deal more in Freud than that. The vulgarization of psycho-analysis was doing an enormous amount of harm by encouraging young people to think that they had a right to indulge their passions, and that to repress them was bad for health both of body and mind. The special subject on which he was venturing to speak that evening was difficult and delicate, but he thought that no apology was needed for choosing it, for it was really the storm centre of morals at the present time, and it was a subject on which the clergy and all who were not doctors required a good deal of instruction. Some years ago he preached in St. Paul's to a medical congress and hinted that he thought the medical profession had been a little wanting in candour and courage because it had not told the public certain things which the public ought to know. He touched especially on the subject of venereal disease, which at that time was still taboo. He urged that the question ought not simply to be shelved, but should be thoroughly thrashed out and discussed. Since then, of course, the question had been brought out into the open, and newspapers no longer refused to give it publicity.

He did not intend to say much on the question of prophylaxis, which had divided medical opinion, though here one would wish that clergy and doctors should work together. No defence was possible of the former attitude of the majority of Churchmen that these diseases were sent by God as a punishment for sin, and therefore ought to be left to run their course. The real question to be faced, if the clergy were to co-operate with the doctors whole-heartedly on this matter, was the attitude to be taken towards prostitution. Was prostitution to be considered a necessary fact in civilization? All those present would agree with him that if that institution, said to be the oldest in the world, could be suspended for five or ten years, these diseases would be brought within manageable compass, and probably within a single generation would be wiped out. Prostitution was not only antichristian but antidemocratic, cruel, degrading, and indefensible, and however impossible it might seem at present to wage war against it successfully, such warfare was a thing they must never give up. Plato, speaking of the unnatural vice which was common in the Greece of his time, said that its abolition, however desirable, was a castle in the air; yet, owing to various causes, of which Christianity was one, that particular vice had been driven underground, and had become enormously less common than in pagan times. Plato also spoke in a very fine way on the general question of continence, reminding his readers that a great many athletes maintained perfect continence during their training, and if these men exercised this self-restraint for a corruptible crown, how much more should they all for an incorruptible. The clergy wanted to be assured that doctors were doing all they could to discourage young men from promiscuous intercourse. He had been reading a German book on population—he did not think the author was a religious man—which declared that every doctor ought to warn his patients that there was only one certain way of escaping these diseases, and that was by avoiding promiscuous intercourse altogether.

#### *The Preaching of Continence.*

Much more knowledge was needed on the whole question of continence. The strangest views were propounded, as, for example, that continence was impossible—a view very freely held on the Continent, even by physicians. He had not himself heard many confessions, but, so far as his observation had extended, human nature presented enormous differences in this respect, and there were a very large number of people who not only remained chaste during boyhood and youth, but were never very seriously tempted to be otherwise. When he was at Eton he believed the very large majority of the boys lived cleanly, and he was very decidedly of that opinion with regard to his friends and companions at Cambridge. On the other hand, there were some who held that continence was easy and harmless for all. The facts, so far as he knew them, were that there were a very large number of people who would be much healthier and happier married than single, but that probably in no case did any serious physical consequences result from the pure single life. That, he thought, was what most doctors would say so far as men were concerned; whether they would say the same about women was more doubtful. Vital statistics were sometimes appealed to to show that celibacy shortened life; but these statistics were vitiated by the fact that a good many unmarried people shortened their lives, not by continence, but by promiscuous intercourse, and by the fact that the reason why many people did not marry was ill health or general weakness. On the

other hand, there were the unusually long lives of many celibate priests.

Many years ago he was asked to subscribe to a religious society for the encouragement of sexual purity. This society circulated a sermon by Dr. Pusey, which contained a very lurid but not altogether untrue description of venereal disease, and then went on to speak in even stronger terms of those solitary bad habits into which the schoolboy and the schoolgirl are prone to fall. Dr. Pusey said that his brain reeled when he thought of the punishments of God upon this sin—insanity, blindness, and so forth. He (the Dean) wrote back and said that he could not give the society any support so long as it circulated that sermon, because not only were the statements untrue and cruel, but they were almost certain in many cases to produce sexual hypochondria. Many would be familiar with a monograph by Sir James Paget showing the terrible mischief done by threats which had no scientific support at all. The society promised that the sermon should be withdrawn.

He next touched upon public school morality. Many people considered that a form of immorality which was sometimes found in public schools was utterly unnatural and monstrous. But it was desirable that it should be known that during the first two or three years after puberty the sexual impulse was quite undifferentiated, and there was nothing at all unnatural in boys falling in love with each other or in girls doing the same. Of course, those in charge of the schools must prevent such affections finding any impure outlet, but there was nothing innately shocking in such affections, and in normal cases, he imagined, the impulse died away before 21. One heard occasionally also of elderly men who had lived a more or less respectable life falling suddenly into this vice, perhaps bringing about their social ruin. In the majority of cases he believed this was purely a pathological thing, indicating not only the approaching extinction of the sexual powers, but in many cases a tumour of the brain or some other condition of oncoming insanity. It might be that very cruel injustice was done by condemning as utterly reprobate and abominable men who were not responsible for their actions. Here, again, there was need for enlightenment from medicine.

#### *Birth Control.*

Finally, the Dean spoke on birth control—a social, racial, and economic, as well as a moral and medical question. He reminded the audience of the facts with regard to the increase of population. The birth rate in this country reached its maximum of 36 per 1,000 in 1877, when the death rate was 21 or 22. The birth rate had declined, almost in a straight line, except for the war years, until last year the figure was 20 per 1,000. The death rate, thanks mainly to the skill of the medical profession, had declined in a parallel line, and last year was 12 per 1,000. Were there any in that room who would hold that the old birth rate of 36 per 1,000 could have been maintained, in view of overcrowding and unemployment, with a death rate of 12? It seemed to him quite obvious that in some way or other the birth rate had to decline, and also that a time must be reached—not very far ahead—when this country could no longer support a further increase in the number of its inhabitants. That being the case, it did not seem very creditable either to their profession or his own that they should have joined in discountenancing and condemning any attempts to regulate the birth rate, and he said this with the more confidence because the statistics showed that the very bottom place in the birth rate was held by the members of their two professions. That was not satisfactory, nor even honest. The differential birth rate, of course, was a very striking and dangerous symptom—the birth rate was two and a half times as high among unskilled labourers as among members of the learned professions. With regard to methods of controlling births, opinions differed both as to moral and medical aspects. He would plead only for candour and honesty.

His main object in that address had been to ask the medical profession to enlighten the public more than in the past. A great amount of ignorance, not confined to uneducated people, prevailed on all matters relating to sex. He wondered whether it was not possible for a handbook to be issued by an influential and authoritative body of doctors setting forth those facts which it was most useful for clergy and teachers and parents to know. This handbook should include some information on eugenics and the diseases which were strongly inheritable with a view to impressing it as a patriotic duty on those suffering from such diseases that they should abstain



from parentage. Doctors in these days had entered into the position of the priests of the Middle Ages. They heard confessions, they imposed penances, sometimes fantastic ones. They were listened to, and what they said was accepted as authoritative. The physical and moral welfare of the country was largely in their hands. Let them tell the public what it was good for the public to know, and especially the clergy, to save them from making all manner of disastrous mistakes.

#### Discussion.

The CHAIRMAN (Dr. F. W. Goodbody) said that much of the credit of bringing the question of venereal disease out into the open belonged to the British Medical Association. He recalled that a large proportion of the signatures to a letter on the subject which appeared in the general press in 1913 were obtained at the Brighton meeting of the Association.

Mr. McADAM ECCLES said that he had the privilege of being present on most of the occasions when the committee of which the Dean had spoken was sitting at Westminster to consider the question of spiritual healing, and he recalled what a great amount of illumination both the clergy and the medical members received. As an outcome of the deliberations, the idea in his own mind was fixed that there were certain conditions upon which no amount of faith or any other form of mental healing would have any effect. He did not agree with the Dean, however, in putting a fractured leg out of account, because the patient who was suffering agony from a fracture could be helped by a process of mental solace combined with a slight physical action in the shape of massage. This produced no direct effect upon the fractured ends, but it put the patient into such a condition that nature could come in and help to unite the fracture. With a congenital deformity, however, he did not believe that any type of spiritual or mental healing would have the slightest effect. Mr. McAdam Eccles also made some remarks on the question of public school morality.

Dr. CRICHTON MILLER thought that the Dean's argument on birth control left a fallacy which was continually creeping into this question. If it were correct from the eugenic point of view that racially they should propagate less, it was no less necessary, but even more necessary, that the next generation should come from the above-par and not from the below-par portion of the population. Whether the indications of eugenics were that the birth rate should go up or come down, the above-par section of the population should be fully represented in the birth rate.

Mr. BISHOP HARMAN said that he was not afraid that the people of this country would degenerate because the professional classes did not breed at the same rate as the hardy labourer. If the pedigrees of any well born family were traced it would be found again and again that the family had been rejuvenated by stocks from very lowly ranks, and it was clear that often genius had come by way of this lowlier introduction. Referring to what the Dean had said about Dr. Pusey's sermon, Mr. Harman expressed the opinion that a great deal of harm was done by certain lurid pamphlets which depicted in overdrawn terms to frightened youths the consequences of a habit into which they had fallen, not always as the result of bad example or natural depravity, but more or less innocently. He could not understand the attitude of mind of those who cried out against a legitimate measure of birth control and the spacing out of the family, and when people who themselves were celibate cried out against it the position became absurd. Birth control began with the postponement of marriage; from plain physiological facts it was evident that the later the marriage the less would be the procreation. He did not believe that the professional classes practised birth control so much by deliberately reducing their families after marriage as they did by postponing marriage to such an age that the resulting families could not be large. He saw nothing immoral in a properly regulated practice of spacing births. In conclusion, he thought it something to be proud of that in a great city like London there was so much happiness and well-being, so much mutual forbearance and good humour, and so much comeliness of person and dwelling.

Dr. C. F. HARFORD believed that psychotherapy was only just at its beginning. While not himself a Freudian, he thought that the revelation which had come through Freud ought to be recognized, and when it was considered how extraordinarily the sexual problem came into prominence, some care ought to be exercised in criticizing Freud. The best results would be secured in dealing with the abuses of the day from mental hygiene.

A VISITOR whose name was not given declared himself to be the fourteenth child of his parents, and he himself urged the advantages of large families. It was the solitary child, not the child in a large family, who became addicted to self-abuse. If England practised birth control she would lose her empire.

Dean INGE, in reply to a warmly accorded vote of thanks, said that still more discussion between the two professions was desirable. He had been laying stress on what was, perhaps, the more important side of such discussion—namely, the advantage the clergy would derive from more instruction from the medical profession. But he knew that many medical men in their practice realized the importance of religious belief in curing the sick body as well as the sick mind. Nothing was more untrue than the French proverb that where there were three doctors there were two atheists. He had found in his own experience of the profession a deep spiritual sense and the feeling of a priestly vocation. Some of the most famous physicians owed a great deal of their success to their power, not only of reading character, but of acting upon character, and very often by purely religious or spiritual methods. The new psychology had thrown a great deal of new light on the nature of temptation and the best way of resisting it, and it was to be hoped that before very long this new knowledge might be co-ordinated and systematized, and put into a form available for responsible teachers.

## England and Wales.

### PRESENTATION TO SIR DAVID DRUMMOND.

THAT it was a happy thought and a gracious act on the part of his colleagues to entertain Sir David Drummond to dinner on the occasion of his knighthood, and to present him with a piece of silver, was proved by the large number of friends who gathered in the King's Hall of the Armstrong College, Newcastle-on-Tyne, on February 28th. The dinner was, practically speaking, confined to the teaching staffs of the College of Medicine, the Royal Victoria Infirmary, the Maternity, Fever, and Dental Hospitals, and representatives from Armstrong College. Between eighty and ninety ladies and gentlemen were present. Dr. Cecil A. Cochran, chairman of council of Armstrong College and honorary treasurer of the University of Durham College of Medicine, presided. After the loyal toast had been honoured, the chairman proposed the health of "Our Guest." In a well arranged and thoughtful speech, masterly in detail yet in no wise savouring of redundancy, Dr. Cochran briefly reviewed circumstances in the life and professional career of Sir David Drummond which had led to his being recognized as worthy of the honour which had been conferred. In the College of Medicine he had held the chairs of therapeutics, physiology, and pathology, and finally of medicine; on the death of Sir George Hare Philipson he was appointed president of the college, a position which he had filled with dignity and to the benefit of all concerned. To the Royal Victoria Infirmary he had given many years of useful service, and by the patients his visits had been much appreciated. Two years ago Sir David was appointed vice-chancellor of the University of Durham. It was a timely appointment, for his year of office coincided with the visit to Newcastle-upon-Tyne of the British Medical Association, of which he had been elected president, one of the highest honours of the medical profession. All knew how well he discharged the duties of that office. Sir David Drummond's kindly manner and urbanity contributed considerably to the success of that meeting. Of their guest's professional abilities he would in such a gathering say nothing other than that several years ago he had been through his hands, and could therefore add his own testimony of appreciation to that of others of his patients. It was his pleasure not only to wish Sir David and Lady Drummond all the good things possible which an extended life might bring to them and to their family, but to ask their guest to receive, in the name of the members of the College of Medicine, the staffs of the Royal Victoria Infirmary, the Maternity and Fever Hospitals, a loving cup bearing the London hall-mark 1765, as a souvenir of the occasion, and to express the hope that it would be treasured by himself and by his family.

Sir David Drummond was not less happy in his reply than the chairman in his speech. There came, he said, occasions in the life of most men when they were embarrassed and



overcome by the kindness of their friends. Such was his position at the moment. In no words could he adequately express his feelings. He was much touched by the many indications of friendliness which the conferment of the honour had elicited, as revealed in the several hundreds of letters he had received. Many of these alluded to the honour having been long delayed. To that circumstance he himself took no exception. Others alluded to his youthful appearance and asked him for the secret. He had no secrets that he would give, other than that in having his two sons living with him he was constantly in touch with modern opinions and with the changing thought of the times. Nor was he above playing with his grandchildren. From these and other sources he drew the influences which kept him young. There were several things which had contributed to such success as he had achieved. Shortly after he came to Newcastle a vacancy occurred on the staff of the infirmary, and he obtained the appointment, and for over thirty years, as they had been told, he was an active member of the staff. Other appointments gradually came his way, for opportunity had befriended him. On one occasion he asked a well known predecessor in office in the College of Medicine as to how success and honour had come to him, and the friend replied that it was by always having the best of everything and by compliance with conformity. There was much in this attitude to men and things which was true and worthy of copy. So far as his own professional career was concerned he had always attached great importance, as Professor Stuart McDonald knew, to frequent visits to the *post-mortem* room in the infirmary. Correlating the present with the past and looking to the future he too could only express the hope that there was still some useful work left for him to do. To him at any rate there were solace and comfort in the words:

"Grow old along with me,  
The best is yet to be,  
The last of life for which the first was made."

Sir Theodore Morison, Principal of Armstrong College, proposed a vote of thanks to the chairman, who in responding thanked those who had so successfully contributed by voice and instrument to the harmony of the evening.

#### POST-GRADUATE WORK OF THE UNIVERSITY OF BRISTOL.

Arrangements have been made for a series of post-graduate demonstrations to be given in the medical theatre of the University of Bristol during April and May. The demonstrations will be given at 3.30 on Thursdays, beginning on April 12th, and will be followed by discussions. The demonstrations of the present course will deal with nasal catarrh, conjunctivitis, painful feet, endocrinology, cardio-vascular disease, the treatment of stricture and prostatic enlargement, hysteria, and normal and acquired resistance to disease. The fee for the course is one guinea. Further particulars can be obtained from the Director, Post-Graduate Medical Studies, Pathological Department, University of Bristol, who will also supply information with regard to the subjects which will be available for the selection of courses of study at local centres during 1923.

#### NEW AMBULANCE STATIONS IN LONDON.

The London County Council proposes to establish three new ambulance stations—at Highbury, Paddington Green, and Capham Junction. When the service was established in 1915 six stations were provided, and a definite area allotted to each. For a few years the stations were able to deal with the calls within their respective areas, but as the efficiency of the service became known calls from other districts became increasingly frequent, leading, on occasion, to two or even three ambulances being absent from their own districts. During a recent period of eight months the average time taken to reach each case dealt with by the service was 8.7 minutes from the receipt of the call at headquarters, but in certain boroughs, more particularly those to be served by the new stations, the average time was 10, 11, or even 12 minutes. The cost of the new stations, in buildings, ambulances, and equipment, will be £7,650, and in annual maintenance about £6,300. As an experiment in economy, at one outlying station only one attendant instead of the usual two (in addition to the driver) is to accompany the ambulance in response to calls.

## Scotland.

#### REPORT OF THE ROYAL EDINBURGH ASYLUM.

THE 110th annual report of the Royal Asylum at Morningside, Edinburgh, which appeared last week, affords as usual much interesting information. The patients treated during the year number 1,536, of whom 123 were discharged recovered, 221 were discharged unrecovered, and 167 died. An appeal is made for subscriptions to help relatives who are endeavouring to pay for the maintenance and treatment of patients, so as to prevent their falling into the category of pauper lunatics. It is pointed out that the current cost for a patient in this asylum is between £60 and £70, and that if the charitable support of mental hospitals were as great as that of hospitals for bodily diseases the managers would be enabled to make grants to the friends of patients for this purpose. The managers have in contemplation the erection of an out-patient department to the east of the entrance to the asylum. It is intended that this should be available both for purposes of consultation, like the out-patient department of an ordinary hospital, and also, since beds would be available in the clinic, for the reception of patients for short periods of treatment without the necessity of any legal formalities. Four nursing homes for nervous or mild mental disorders already exist in Edinburgh, and here early cases can be treated by the family physician without the patient being certified or sent to an asylum. This practice is legal in Scotland although not in England, and these homes have received much attention from visitors from England, the Dominions, and America. With regard to the practice of psycho-analysis, it is admitted that no dramatic recoveries are to be expected by such means in the vast majority of cases of definite mental disorder. Nevertheless the employment of psychotherapy gives to the attendant an understanding of the patient's symptoms and mentality which is of the utmost value in general treatment and management. The substantial decrease of the annual deaths from general paralysis in England and Wales during the three years 1919-21 amounts to 28 per cent. in the case of men and 41 per cent. in the case of women, but is not so noticeable in Scotland, where the reductions amount to 12 per cent. for males and 6 per cent. for females, as compared with the average of the previous twelve years. The explanation offered is that the severe influenza epidemic of 1918 may have exerted a protective influence such as malaria is alleged to afford, or that the recent lessened consumption of alcohol may be the effective factor.

#### RECTORIAL ADDRESS IN EDINBURGH.

The Right Hon. D. Lloyd George last week delivered his address as Lord Rector to the students of Edinburgh University, taking as his subject "The qualities of a politician." On this occasion the reception accorded to the Lord Rector was even more boisterous than usual. Paper streamers hanging from the sounding wires, coloured balloons filled with buoyant gas, and a gigantic look suspended over and in front of the speaker decorated the McEwan Hall, in which the address was delivered. Mr. Lloyd George had in which the address was delivered. Mr. Lloyd George had a fairly good hearing, though there were constant impromptu interruptions, to which he retorted with a readiness that won the enthusiastic applause of his student audience. He regarded courage as the first requisite of the politician who desired success, and next after it he placed a training in clear effective speech. At the luncheon in the Students' Union which followed the address Mr. Lloyd George referred to the fact that seven of his colleagues in the late Government had been graduates of the University of Edinburgh. The occasion ended with the usual torchlight procession in the evening, which was remarkable in the history of these carnivals for the great number of women students who took part.

#### DECLINE OF TUBERCULOSIS.

The Committee of Management of the Royal Victoria Hospital Tuberculosis Trust in its eighth annual report submitted statistics showing that the mortality from tuberculosis had fallen during the twenty-five years 1890-1915 by 30.9 per cent. in England and by 42.4 per cent. in Scotland. Tuberculosis had not been increased by the war, and in 1920 a further drop had taken place, which was maintained in 1921. During the past year this Trust had opened the Southfield Sanatorium Colony, which it was hoped would soon be expanded to one hundred beds.



## ROYAL (DICK) VETERINARY COLLEGE CENTENARY.

At a recent meeting of the governors of the Royal (Dick) Veterinary College it was intimated that the Secretary for Scotland, through the Board of Agriculture, had agreed to discharge obligations of the College, and to provide an annual sum to meet the financial deficit in future between income and expenditure. This promise of help is satisfactory since the College, in addition to training veterinary students, does a large amount of valuable research work and forms an important adjunct of the University in regard to the diplomas of B.Sc. and D.Sc. in Veterinary Science. The College celebrates this year the hundredth anniversary of its foundation, as it was in November, 1823, that William Dick, the founder, delivered his first lecture. Originally little more than a lecture room and a shoeing forge, repeated additions were made until the school was rebuilt, first in 1886, in Clyde Street, and again, on its present site at Summerhall, in 1916. Valuable scientific and educational work has been done in the past century by the college, and its old students are scattered all over the world. As a permanent memorial of the centenary it is proposed to found a post-graduate research fellowship, on such a basis that the holder may be able to study the cause and prevention of animal disease, not only in this country, but also in institutions abroad. For the purpose of the endowment of this fellowship a bazaar is to be held in Edinburgh at the end of November; this, on account of the close relation of modern veterinary science to preventive medicine, will, we do not doubt, have the support of the medical profession.

## Ireland.

## SUPERANNUATION OF DISPENSARY DOCTORS AND DISPENSARY MIDWIVES.

At a recent meeting of the Dail (Irish Free State Parliament) Sir James Craig, M.D. (Dublin University), moved the following amendment to the Local Government (Temporary Provisions Bill):—To add to Subsection (5) the following:

"A dispensary doctor or a dispensary midwife, who has become incapable of discharging the duties of his or her office with efficiency, by reason of a permanent infirmity of mind or body, and who has served as an officer of a local authority for not less than twenty years, may, with the permission of the Minister, be allowed to resign his or her office, and he or she shall be entitled to receive from the local authority an allowance not exceeding two-thirds of the salary, fees, and emoluments which he or she was in receipt of at the time of his or her resignation."

Sir James Craig said that he was aware that the amendment might be ruled out of order because it suggested something of a permanent character in dealing with a temporary bill. There was, however, a strong case for the amendment. If we know that dispensary medical officers, and midwives also, remained in office long after they were capable of performing their duties, because the pension to which they would be entitled was so small that they would not be able to live on it. That dispensary medical officers or midwives should remain in office when by reason of infirmity of mind or body they were unable to perform their duties properly was unfair to them and a most serious matter for the poor of the district. Sir James Craig quoted the case of a dispensary doctor in Connaught who had to cover fourteen square Irish miles, and continued as follows:

He is getting £220 a year as dispensary medical officer. He is getting £15 a year as medical officer of health. Ye Gods! think of £15 a year—£101 a day for looking after the public health in an area covering fourteen Irish miles. He tells me also that under no circumstances could he possibly make more than £50 a year in private practice. He has possibly to keep a motor and possibly comparison (I think justly) with his neighbourhood, who receives six hours a day. The doctor is liable to be called out at all hours of the day and night to cover this huge district, and he has to go into houses where typhus fever is frequently rampant. The point I make is that an attempt should be made to encourage people of good education to go to those districts, and unless they are going to get a decent salary and pension when no longer fit to perform their duties I do not think that such men would go there.

Mr. Lyons (Labour) in supporting the amendment, said that some country doctors were certainly very badly hit. It had been the custom to include emoluments and bonuses when calculating superannuation; the bonuses would only count since the war, but were any proposal made to do away with it he would wish to see the amount added to the salary. It was essential to give a professional man a living wage, and he heartily agreed with Sir James Craig that steps

should be taken to encourage the best men to go to the country districts. For this they must be suitably paid and no member of a local council should try to repudiate standing orders to the effect that doctors shall receive superannuation up to two-thirds of their salaries. He approved Sir James Craig's amendment that midwives and dispensary doctors in feeble or delicate health should be allowed to resign and receive two-thirds of their salaries.

Mr. Ernest Blythe (Minister of Local Government) said that the bill, if carried, would only run for twelve months, and it was not right to propose any change not required by an immediate emergency or to correct some confusion that had arisen. He understood that the fixed rule was that a medical officer of twenty years' service, on retiring on account of infirmity or any other cause, was entitled to receive two-thirds of his salary as a pension; this had the appearance, at least, of undue generosity. He knew cases where doctors, like other people, had got medical certificates to the effect that they were unfit for work, who afterwards proved not to be so ill as supposed. At present a dispensary medical officer was entitled to a pension if with ten years' service; if with less than ten years he was entitled to a gratuity. The pension could not be less than one-third of the salary, and if the doctor appealed it was possible for the Department in its discretion to increase the pension up to two-thirds. If a doctor retired on account of ill health after twenty years his position, which before the Act of 1919 was perhaps somewhat unsatisfactory, was now reasonably satisfactory; he could not accept the amendment.

Sir James Craig said he did not wish to press the amendment if the Minister would not accept it; if the principle were accepted he would be satisfied.

Professor W. Magennis (National University) appealed to Sir James Craig to stand his ground and to obtain recognition of the principle. A pension was deferred pay, and he appealed to every democratic member to remember that one of the fundamental principles of democracy was that the labourer is worthy of his hire. The amendment was designed to encourage medical practitioners with high qualifications to enter the service; he hoped that Sir James Craig, if the principle were accepted, would ask as a corollary that the amount given by the Act of 1919 should be increased. In reply to the argument that a permanent change should not be made in a temporary bill, Professor Magennis contended that the Minister had himself strongly defended a clause which would alter permanently the financial resources of the people it affected. He called on the Dail to place on record that it did not approve of the niggardly treatment of the medical servants of the public, particularly in the poor districts.

Mr. Blythe, in reply, promised that a permanent Act should at once be prepared and that every consideration would be given to the proposal of Sir James Craig, who thereupon withdrew his amendment.

## Correspondence.

## DR. HALDANE'S CONCEPTIONS OF BIOLOGY.

SIR,—The attention of all your readers must have been arrested by the masterly and impressive Lecture of Dr. Haldane in your columns of March 3rd. The law of reciprocal reaction could not have been set forth and illustrated in a more telling way. May one of your readers, unversed in philosophy, venture, for others' sakes perhaps as well as for his own, to ask one or two questions of the accomplished writer? Dr. Haldane makes much use of the words "mechanism" and "mechanistic"; he uses also the words "machine" and "mechanical." If there be a difference may we have it defined? If there be none, we artless persons would find "machine" (or machinery) and "mechanical" more familiar, more lucid. If "mechanistic" be more abstract is it not the more vague? Now by a machine do not we mean some tool—say a chisel or a locomotive engine—which is but an extension and fortification of the human hand or limb? Apart from man's hand it has no energy, no life; it cannot direct itself, it cannot grow or feed itself, it cannot repair itself. If this be so, how can a living creature be called in any sense, or in any philosophy, mechanical? Yet Dr. Haldane speaks of "the mechanism of kidney secretion" (p. 362). It is true he says that such it cannot be, but does he not use a great deal of protestation about it! Nay, may he not be deceiving himself if he concedes something more to the word than he would attribute, say, to a hammer or a spade? May he not be tending to use the word "mechanical" to mean an inviolable order of events? If so does he resent or discredit this inviolable order?

One more question: Dr. Haldane's conception of the peculiar qualities of life in action is as large and vivid as it is intimate; but where are we to begin? Where do we take off? If life is a circle, not vicious but virtuous, how and where does the circle establish itself? In other words, where are the marches, if any there be, between life and not life? For example, Dr. Haldane—who of course cannot in one



lecture deal with every side of his vast subject—says little of biophysics, and, I think, nothing of the properties of colloids? But is he of opinion that there are no features in these activities, inward and outward, of molecular groups or of colloids that verge or even trespass upon those of life?

Before I close, may I reflect upon the word "environment," as ugly and ineffectual? Dr. Haldane probably feels this defect, as we all have felt it. In certain of his sentences, especially in such sentences as the "internal environment of a cell" the phrase hardly speaks for itself; it does not tell. Cannot some other and better word be found?—I am, etc.,

Cambridge, March 6th.

C. A.

#### FUNCTION OF THE ADRENAL GLANDS AND ITS RELATION TO CONCENTRATION OF HYDROGEN IONS.

SIR,—Further work has led me to modify the final conclusion of my paper on the above subject—an abstract of which appeared in the *BRITISH MEDICAL JOURNAL* of January 20th. In the full paper, appearing in the April number of the *Indian Journal of Medical Research*, this conclusion will read as follows:

"While the attempted exercise of an emergency function by the adrenal glands may be expected to occur in conditions of grave acidosis the effect of lesser degrees of acidosis will be to enhance the action of such amounts of epinephrin as are normally discharged by the adrenal glands."

—I am, etc.,

Coonoor, India, February 13th.

R. MCCARRISON.

#### THE ORIGIN OF PITUITARY SECRETIONS.

SIR,—It is generally admitted that the terminology of the pituitary and of the extracts prepared from the gland is regrettably confused. The lack of uniformity is partly due to the fact that pharmacological investigation into the effect of pituitary extracts has not been brought into satisfactory relation with the histological differentiation of this organ. The following suggestion, which emerges from work on amphibia, may indicate a line of inquiry which can perhaps throw light on the question in its medical bearing.

On the medical side, at least two categories of response are of interest in connexion with the action of "posterior lobe" extracts: the pressor effect and the more general influence exercised upon plain muscle, such as that of the uterus. The recent work of Dale, and of Dudley and Dale, provides very strong confirmation for the view, due originally to Schafer, that these responses are evoked by distinct autacoids, the "pressor" and "oxytoxic" substances. The pars intermedia, hitherto regarded as the sole glandular portion of the posterior lobe, has generally been recognized as the source of these secretions, which are supposed to diffuse into the pars nervosa. This interpretation is not without difficulty. Herring (1914) showed that whereas extracts of the pars intermedia of the mammalian pituitary have an oxytoxic activity little less than that of the pars nervosa, the pressor effect is almost exclusively restricted to extracts of the latter. Since the work of Herring new light on the comparative physiology of the pituitary has been shed by the researches of Tilney and Atwell, who have shown conclusively that there are three epithelial constituents of the gland—the pars anterior, pars intermedia, and pars tuberalis. In mammals the pars tuberalis lies dorsal to and sometimes in contact with the pars intermedia, being applied closely to the floor of the brain, so that anatomically the two are not distinguishable except in certain cytological peculiarities and by their totally different derivation in the embryo. In many lower vertebrates, on the other hand, especially in frogs and toads, the three lobes are both histologically distinct and anatomically discontinuous, the pars tuberalis forming two separate glandular plaques on the sides of the tuber cinereum. Judged from the pressor, "galactagogue," and pigmentary responses which they elicit posterior lobe secretions are physiologically equivalent in amphibia and mammals; and it has been conclusively shown by Allen (1920) and Swingle (1921) that the pars intermedia secretion and not that of the pars tuberalis is responsible for the pigmentary response which occurs in amphibia. Since the pigmentary response is almost certainly not elicited by the pressor, but probably by the oxytoxic or uterine stimulant (Hogben and Winton, 1922), it is not unnatural to suppose that the two posterior lobe secretions originate in the two distinct glandular components of the posterior lobe, the pressor secretion in the pars tuberalis and the oxytoxic substance in the pars intermedia. This would satisfactorily

explain Herring's observations, and if substantiated provide an agreeable basis for a more uniform nomenclature.

The suggestion is amenable to experimental test, since all the lobes of the gland can be readily separated for testing with the assistance of a binocular in the case of the common frog. It may, therefore, be of interest to those who are studying the pituitary from the pharmacological standpoint.—I am, etc.,

LANCELOT T. HOGREN,  
Lecturer in Experimental Zoology, University  
of Edinburgh.

February 22nd.

#### PRIMARY UNION AFTER OPERATION FOR APPENDICITIS.

SIR,—I was surprised to read in Mr. Riddell's paper on primary union after operation for suppurative appendicitis (*February 24th*, p. 322) that he had had unfavourable results by treating similar wound conditions with bipp.

In Mr. Willan's clinic in the Royal Victoria Infirmary, Newcastle, it has been the practice for some years to treat the cut abdominal wall by the bipp method in all cases of suppurative appendicitis. It should be stated that in most cases it has been customary to drain the abscess cavity for a few days as a precautionary measure.

Mr. Willan alone, in his war service and in his clinic here, has done considerably over eighty cases. The results have been uniformly good; suppuration in the abdominal wall wound, formerly an expected result, is now quite rare, thanks to bipp. Convalescence is materially shortened, important alike for patient and for the earlier freeing of a much needed public hospital bed. Further, post-operative hernia following suppurating appendicitis is now seldom seen. The bipp should be applied to the cut abdominal wall before the peritoneal cavity is opened, both to the subcutaneous tissues and the muscles; but it should be emphasized that success by this method can be assured only if the surgeon faithfully adheres to the details laid down by Professor Rutherford Morison; these details can be obtained on referring to his book on *Bipp Treatment of War Wounds*, published by the Oxford Press.—I am, etc.,

JOHN BRUMWELL,  
Hon. Surgical Registrar.

Newcastle-on-Tyne, March 2nd.

#### HOSPITAL POLICY.

SIR,—"I told you so" is usually the most irritating and ungracious reminder of past errors that had better be forgotten. But there are occasions when it is legitimate to remind ourselves and others that what we foretold has come to pass, and to suggest that such an experience of successful judgement is a good augury for a continuance of correctness of judgement in related subjects.

The first or interim report of the Voluntary Hospitals Commission provides a useful text on which to base a claim for correctness of judgement by the British Medical Association on the trend of hospital affairs. The Association gave evidence before the Cave Committee and put forward, amongst several propositions, (1) a definition of what is the characteristic feature of voluntary hospitals, and (2) a proposition as to how a Government subsidy could be given to such hospitals without jeopardizing the essential feature of such hospitals.

1. The Association stated that the feature of a voluntary hospital which was worthy of maintenance in all interests was its voluntary method of administration; and later this was put into shape as a clear definition, which is now the policy of the Association:

"The Association maintains that the essence of the voluntary hospital system is the independent and voluntary management, and that this is not necessarily related to the conditions of service of the medical staffs."

This, the first attempt at such a definition, was severely criticized by many, and with not a little attempt at ridicule that the Association should be so impudent as to attempt to propound a new definition of so old a word as "voluntary." Wisdom is justified of her children. For the Voluntary Hospitals Commission has arrived at a definition which is as nearly the same as two tongues can voice it. In par. 3 of their report the Commission say their first task was to determine what was a voluntary hospital, and state:

"We were clearly of opinion that voluntary management by a responsible committee was an essential condition."

Their readers are left in no doubt as to what they mean by "voluntary management"; it is shown on page 13 to be the antithesis of "Government and municipal control."



The supporters of "voluntary contributions" as the feature of voluntary hospitals may derive some small comfort from the fact that in deciding to which of the many voluntary hospitals the Commission should disburse their grants they limited their interest to those hospitals which are "wholly or mainly supported from voluntary sources" or endowments. Since these emergency grants were necessitated by abnormal conditions, it may be supposed that those voluntary hospitals which derived their funds mainly from patients paid for by various authorities would need no emergency grant, for they could vary their charges with the variations of money value.

It is noteworthy that in defining a voluntary hospital the Commission made no reference to the medical staff. This is an interesting negative commentary by the successors of the Cave Committee, which in its report published the *obiter dictum* of two (unnamed) witnesses who claimed that the "bottom" of the voluntary system was an unpaid medical staff, for did not these "two distinguished physicians" state that with a paid staff "the bottom would drop out of the voluntary system"? Apparently the Commission agreed with the Association, and did not find that the terms of service of the medical staff had any necessary relation to the voluntary hospital system, neither as bottom, top, sides, handles, nor even as a decorative feature.

2. The Association, in giving evidence before the Cave Committee, stated that in its opinion there was only one way in which the Government could subsidize the voluntary hospitals without jeopardizing that independence which was their characteristic feature. This was by handing over in bulk such sum as it proposed to disburse to some intermediary body which would allocate the funds as it deemed most fitting, and the Association cited as a precedent for this mode of action the University Grants Committee. That proposition was accepted by the Cave Committee—it became one of its recommendations to the Government, and was accepted and acted upon by the Government. The report of the Voluntary Hospitals Commission shows that this policy has worked well; early suspicions on the part of some boards of management of voluntary hospitals have been allayed by the evident good faith of the Commission and its local committees; they find that the work of these committees does not threaten their proper independence.

The Association made a great break with old and cherished traditions when it recognized that the voluntary hospitals had duties to perform other than those of charities for the treatment of the very poor. This is set out in the statement of policy, thus:

"The Association recognizes a dual policy as regards the voluntary hospitals: (a) that the purely charitable side should be continued wherein the whole cost of the maintenance of indigent patients is met by the gratuitous contributions received by the hospital and on whose behalf the services of the honorary medical staffs are given gratuitously; (b) that other patients who are not indigent may be received for treatment at voluntary hospitals when they cannot pay for or cannot obtain adequate treatment elsewhere and that for them payment should be received by the hospital either from the patients themselves or on their behalf from the authority or body referring them to the hospital, and that on account of their treatment some method of remuneration of the honorary medical staff should be arranged."

Strong confirmation of this judgement of the Association is to be found in the report of the Somerset Voluntary Hospitals Committee, which is the first of these local committee reports to hand. The report reads:

"In a country where hospitals come into existence haphazard ... it is inevitable that the hospitals' position generally should disclose many defects, the most important of which seems to be the following [nine points are cited—of these I quote two]:

(a) The lack of ... patients of moderate means.  
(b) A too low ... tradition that hospitals are charitable institutions, poor, and the failure to give active recognition to the fact that the population wants a much better hospital service, open to all classes, and is willing to pay for it."

The satisfaction of a demand such as this will make the position of the medical staffs of the hospitals totally different from that which they willingly assumed in the old days when the hospitals were pure charities, and the policy of the Association requires the recognition of this change.

Again, the Association policy has given a clear lead in the matter of contributory schemes. Its standards of what should be found in such schemes deserve the close study of those interested in hospitals. And I learn that the more they are considered by hospital financiers the more they are found to give correct indications of policy. The report of the Voluntary Hospitals Commission states:

"Considerable progress has been made in organizing schemes of mass contribution, and this method of securing additional income has the hearty support of the Commission and the local committees. But very little definite information is yet available, and the Commission have issued a questionnaire to all local voluntary hospital committees asking for particulars of the methods adopted in their respective areas for the collection of income."

These schemes may prove of the greatest value in establishing the voluntary hospitals on a sure basis, or they may be destructive; which of these results is to come about will depend largely on the action of the medical staffs. If the staffs clearly insist that from the beginning these schemes are to be run in the best interests of the patients, the public, and of medical practice, then they will be genuinely self-supporting schemes by which both hospitals and patients will benefit; if they are regarded as merely devices to catch money without regard to sound principles they will bring discredit upon hospitals, engender irritation amongst the contributors, and breed suspicion between hospital boards and staffs, with resulting failure and possibly disaster to the voluntary system. There is urgent need in these matters for close co-operation between lay boards and medical staffs. Too often a board is so absorbed in making ends meet as to become greedy of money no matter how it comes, or how it may affect the medical staff, the mainstay of the hospital. So also with the local voluntary hospitals committees, there is need for more effective medical representation. This is recognized by the Somerset Committee, which suggests:

"That the local committees should be so constituted as to give to hospitals a fuller representation and to include a stronger expert element."

The moral of this letter in the "I told you so" form is to suggest that the Association, which has so well foreseen the problems which have confronted the new Commission and its local committees, is likely to be correct in its other anticipations, which indeed are based upon those which have already been tested and found to be true. I would therefore appeal with some confidence that those points of the Association policy which are as yet awaiting confirmation may be regarded as the necessary corollary of the changes in being, and that there should be given to the proposals of the Council for the next Representative Meeting a united support. I recognize the point of view of those who cling to old ideals, but I would suggest to them that in clinging too closely to the past they may endanger the future. The fascinating swaddling clothes of infancy are a trammel and a danger to lusty youth. There are some—I have heard their public statements—who declare that they will cling to and labour for a hospital that is a charity pure and simple, but that if change is to come let it come by sweeping all into a State hospital system with a fully paid staff. Such extreme utterances show a lack of vision, which does not agree with the versatility of Englishmen, who are accustomed to evolve measures suitable to changed conditions, rather than to plunge into the turmoil and destruction of revolution. The voluntary hospitals should continue to be charities in so far as charity is needed, but we must be glad that the need of charity is diminishing, and that there is now the greater need for these hospitals to provide for those who can with proper pride and self-respect pay their way. I believe that when this is done the voluntary hospitals will make a greater appeal than ever to the benevolent, and be more likely to swing the State hospitals into their own orbit of efficiency rather than to be swallowed up in a uniform State system.—I am, etc.,

London, W.1, March 3rd.

N. BISHOP HARMAN.

SIR,—I would comment briefly on the letters of Dr. Fothergill and Dr. Fletcher in the issues of the JOURNAL for February 24th and March 3rd. The latter considers that the voluntary system is tottering to its fall. On the other hand, the Voluntary Hospitals Commission, with Lord Onslow as chairman, which has been most carefully studying this question for six months, has had every facility for its accurate investigation, and includes the Chairman of the Council of the British Medical Association, states in its interim report just published, that "the results of our investigation and experience during the period under review show conclusively that the voluntary system possesses strong vitality, and that its chances of permanent survival are increasingly hopeful." The Commission also produces evidence that Lord Cave's Committee, which nevertheless strongly affirmed their belief in the voluntary system, were quite unduly pessimistic in their estimate of the financial position of hospitals. It would be interesting to



learn on what information hidden from this special committee Dr. Fletcher bases his opinion.

With much contained in Dr. Fothergill's letters I find myself in agreement; but when he affirms that "The tariff of payments for 85 per cent." (of hospital patients) "should be such as to pay in full the whole cost to the hospital, including remuneration of the staff," I am amazed. Whence is this money to come, and what patients, save those few paid for by public bodies, and the small "private" class, can raise it directly or indirectly? The hospitals of Brighton, where he resides, are distinguished as the birthplace of a contributory scheme, largely advertised at one time both in the medical and lay press as about to introduce a financial millennium in the hospital world; yet a deficit of £15,000 at the Royal Sussex County Hospital has just been the subject of investigation by a special committee and of considerable comment in the local press. I can conceive nothing likely to militate more seriously against the success of appeals to the public to remedy by their charity this lamentable condition, which seems to be, in such serious dimensions, peculiar to Brighton among county hospitals; than the propagation of a notion that 85 per cent. of the patients are able, directly or indirectly, to pay their full cost and remunerate the staff as well. Who will subscribe if this be true?

In conclusion I would quote from Lord Onslow's Committee again: "Some 976 approved societies have agreed to devote a portion of their surpluses to payments in respect of the hospital treatment of their members, and schemes have been approved up to the next valuation results (five years)." These schemes will yield about £200,000 a year. Again: "Up to July only about £30,000 had been paid out, although a considerable sum of money had accrued. We think that the societies are genuinely anxious to facilitate the disbursement of the money to the hospitals." This statement from such authority will, I hope, finally dispose of that ridiculous boggy of "manipulation of funds," set up so prominently without a particle of evidence by the Council, which, like the grotesque suggestion of "token payments," seems to me to be patently but a last desperate effort by the Council and Hospitals Committee to save their face, in retreat from a position which surely they must now perceive was hopelessly untenable from the first. The Chairman of the Hospitals Committee has not, I believe, the support even of his own colleagues on his staff. Mr. Eccles assuredly lacks that of his. What the attitude of the London Hospital staff may be I know not, but if, which I doubt, they support Mr. Souttar, they must be almost unique among the teaching staffs of London, and in such case would not have the remotest chance with their chairman and lay board, in the extremely unlikely event of their approaching these laymen with their policy.—I am, etc.,

G. C. GARRATT.

Chichester, March 3rd.

#### NAVAL HYGIENE.

SIR,—I observe that the Admiralty have appointed a committee "to deal with the accommodation required and available on H.M. ships and the complements that can be borne with the best possible advantage," and I note the marked absence on such committee of a representative of the Naval Medical (Sanitary) Department. Surely it would be in the direct and best interests of the service if an authority on naval hygiene were to have a place on such a committee when important factors in their deliberations—for example, cubic air space and ventilation—have to be considered.—I am, etc.,

MEDICUS NAVALIS.

February 26th.

#### Obituary.

J. BEATTIE MCFARLAND, M.D., M.Ch.,  
Lincoln.

We regret to record the sudden death of Dr. Beattie McFarland of Lincoln, which occurred in the house of a patient on March 2nd. Dr. McFarland was born sixty-six years ago at Omagh, co. Tyrone, and received his medical education in Belfast; he graduated M.D. in 1881, and M.Ch. in 1883, of the Royal University of Ireland. After assistant-ships in Glasgow and Sheffield he went to Lincoln, where he built up a large general practice. For many years he held the post of medical officer to the Lincoln Workhouse and of one of the local union districts. During the whole of the war he was on the staff of the 4th Northern General Hospital, having attained the rank of major when he was demobilized.

Dr. McFarland had long been a pillar of the British Medical Association, of which he first became a member in 1885. He was the Representative of the Lincoln Division of the Midland Branch from 1910 to 1914, and from 1917 to 1922; he was vice-chairman of his Division in 1915, 1916, and 1919, and chairman in 1920. He was one of the best and most faithful of British Medical Association men, and his death is a great loss to the medical profession in Lincoln.

A colleague (G.J.R.L.) writes: Everybody liked Dr. Beattie McFarland—he was a friend to all. During the war his professional brethren naturally saw much of him and learned to appreciate his thorough-going earnestness and kindness of heart. He would do anything to help, and when things were at their busiest he was always cheerful and ready to take any duty that lay to his hand. For many years he was the Representative of the Lincoln Division in the Representative Body of the British Medical Association, and the Association had no more loyal adherent. Many times at meetings of the Division he would say, "The B.M.A. has decided so-and-so," or "The B.M.A. does not approve of this or that." He loved attending the Annual Meeting and greeting his old friends, and he always brought back something new in the way of ideas to his fellow members at home. He had been chairman of the Lincoln Panel Committee since the commencement, and took an intense interest in the working of the Insurance Acts. He was a pattern of what the "panel doctor" should be—always as kind, thoughtful and thorough over the case of the "panel patient" as over that of any of his more wealthy patients. The profession in Lincoln and indeed in the country is the poorer for his passing.

THE LATE DR. W. P. PURVIS.—We regret that in the obituary notice of the late Dr. William Prior Purvis (JOURNAL, March 3rd, 1923, p. 399) it was stated that he was born at Belize, British Honduras. Dr. Purvis, we are authoritatively informed, was born on March 18th, 1869, at Greenwich, the eldest child of Dr. J. P. Purvis of Greenwich, and grandson of Dr. Prior Purvis of Blackheath (who was amongst the first batch of M.D.'s of London University). Dr. W. P. Purvis was educated at Roan School, Greenwich, of which he was a distinguished pupil.

#### Universities and Colleges.

##### UNIVERSITY OF LONDON.

At a meeting held on February 21st the Senate appointed Mr. H. J. Waring, M.S., F.R.C.S., to be its representative at the celebration of the 800th anniversary of St. Bartholomew's Hospital, in June, 1923; and Mr. Waring and (in respect of University College) Professor H. R. Kenwood, C.M.G., M.B., to be its representatives at the 34th Congress of the Royal Sanitary Institute, to be held at Hull in July-August, 1923.

##### ROYAL COLLEGE OF PHYSICIANS OF LONDON.

THE following supplementary list of candidates for the College licence who have conformed to the bye-laws and regulations, and passed the required examinations, will be proposed to the College for the granting of licences to practise physic:

H. C. Beecle, W. C. M. Berridge, F. Bishara, W. G. Booth, C. H. Budge, H. G. R. Canning, de Saram, R. V. Facey, G. E. Fisher, S. L. Joan O. Geldard, R. M. Geldart, F. Guiver, P. G. Harvey, A. I. Hall, H. Jackson, A. L. P. Jeffery, H. V. M. Jones, J. W. Joutle, B. Joynton-Bechal, G. Kitionsky, M. A. Mackay-Ross, M. Markiles, R. G. Lingford, \*Barbara V. Lucas, J. A. Lautre, L. B. Nichol, R. G. Morrison, A. L. de W. Naudé, \*Elizabeth M. Nicholson-Smith, \*Judith E. M. Ormerod, E. Orsmond, A. R. V. Patel, M. K. V. G. Pillai, \*Mary F. R. Pitt, \*Ethel B. Poole, T. P. Rees, \*Emily V. Saunders-Jacobs, P. G. Sedgwick, I. I. A. Shabed, G. D. Summers, S. E. Tanner, R. W. Taylor, \*Blanchette Thomas, \*Kathleen Tresilian.

\* Under the Medical Act, 1875.

##### SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have passed in:  
Surgery.—M. Hawke, L. D. A. Hussey, C. M. John, \*S. W. Turtle, A. Vasudev.  
Medicine.—K. C. Chock, S. E. Hymans de Tiel, C. S. Laurence, \*J. A. Marriott, O. F. W. Robinson, S. W. Turtle, A. Vasudev.  
Forensic Medicine.—K. C. Chock, S. E. Hymans de Tiel, J. A. Marriott, O. F. W. Robinson, A. Vasudev.  
Midwifery.—F. Bienaschewitsch, E. W. Hicks, J. A. H. Sykes.

\* Section II.

The diploma of the Society, entitling them to practise Medicine, Surgery, and Midwifery, has been granted to Messrs. J. A. Marriott and S. W. Turtle.



## Medico-Legal.

### BIRTH CONTROL LIBEL ACTION.

STOPEs v. SUTHERLAND AND ANOTHER.

AN action for damages for libel brought by Marie Charlotte Carmichael Stopes, wife of Humphrey Verdon Roe, against Halliday Gibson Sutherland and Harding and More, Ltd., was heard before the Lord Chief Justice and a special jury in the King's Bench Division, on February 21st, 22nd, 23rd, 27th, and 28th. Judgement was delivered on March 1st.

The plaintiff was described in the statement of claim as a doctor of science of the University of London, a Fellow of University College, and a doctor of philosophy of the University of Munich; president of the Society for Constructive Birth Control and Racial Progress, and one of the founders and controlling and responsible for the conduct of a charitable clinic for birth control at 61, Marlborough Road, Holloway, N.

Dr. Sutherland, a doctor of medicine and bachelor of surgery of the University of Edinburgh, wrote a book entitled *Birth Control: A Statement of Christian Doctrine against the Neo-Malthusians*, which was printed and published by Messrs. Harding and More towards the close of March, 1922. The passages complained of in this book (pp. 101-102) were as follows:

"Exposing the Poor to Experiment."

"Secondly, the ordinary decent instincts of the poor are against these practices, and indeed they have used them less than any other class. But, owing to their poverty, lack of learning, and helplessness, the poor are the natural victims of those who seek to make experiments on their fellows. In the midst of a London slum, a woman, who is a doctor of German philosophy (Munich), has opened a Birth Control Clinic, where working women are instructed in a method of contraception described by Professor Melfroy as 'the most harmful method of which I have had experience.' (Proceedings of the Medico-Legal Society, July 7th, 1921.)"

"It is truly amazing that this monstrous campaign of birth control should be tolerated by the Home Secretary. Charles Bradlaugh was condemned to jail for a less serious crime."

The plaintiff alleged that by these words the defendants meant and were understood to mean that she (Dr. Stopes) was taking advantage of the ignorance of the poor to subject them to experiments of a most harmful and dangerous nature; that she was guilty of disgraceful, illegal, and criminal practices for which she should be punished by a term of imprisonment; and that she was a person with whom no decent or respectable persons should associate. Plaintiff (the statement of claim continued) had been thereby greatly injured in her credit, character and reputation, and in the way of her position of controller and organizer of the said clinic, and had been brought into public scandal, hatred, and contempt.

Dr. Sutherland in his defence maintained that the words complained of by the plaintiff were incorrectly set out in her statement of claim, and that material parts of the passage were omitted. He denied that the words did or could bear the meaning alleged by the plaintiff; in their natural meaning (he said) these words were true in substance and in fact—fair and bona fide comment, made and published without malice, on matters of public interest. Particulars were filed in support of this plea of justification and of fair comment.

Mr. Patrick Hastings, K.C., Sir Hugh Fraser, and Mr. H. Metcalfe, instructed by Messrs. Braby and Waller, of Dacre House, Arundel Street, Strand, appeared for the plaintiff; Mr. Ernest Charles, K.C., Mr. H. V. Rabagliati, and Mr. Harold Murphy, instructed by Messrs. Chalmers and Co., 11, Abchurch Lane, Strand, appeared for Dr. Sutherland; Mr. T. Mathew, instructed by Messrs. Mathew and Weld of 1, Gray's Inn Square, appeared for Messrs. Harding and More, Ltd.

#### The Plaintiff's Case.

Mr. Hastings, opening the plaintiff's case, said that although the alleged libel was an attack on Dr. Stopes's character, it was also an attack on her life work. She had devoted a great deal of time to promoting the theory and practice of what was known as birth control. Dr. Sutherland's book, which contained the libel, was largely concerned with advocating the views of the Roman Catholic Church, of which Dr. Sutherland was an ardent supporter. If Dr. Sutherland saw fit to criticize the plaintiff's works nobody could complain; but she was entitled to complain when a man in his position went out of his way to say that what she had done amounted in effect to a criminal offence. His book was directed against any system of birth control; she objected to

his statement therein that her work was experimentation on poor people unable to protect themselves. She objected, too, to the words which suggested that she was a person probably of German origin who was foisting her opinions upon the poor. Counsel then reviewed his client's parentage, upbringing, and academic distinctions in this country; and touched on her unhappy first marriage, which was annulled at her suit, and the effect of that experience upon the direction of her scientific outlook. Of her works written for the furtherance of the propaganda of birth control the best known was perhaps *Married Love*. Her teaching was that the only chance of happiness for married people was to realize that marriage was intended to be a joy to both, and not a curse to either of them; they should have children at a time when these could be properly cared for. Large sums had been received from the sale of the book, but Dr. Stopes had a wealthy husband, and practically every penny had gone to support her clinic and the society of which she was president and various distinguished persons were vice-presidents. That book, remarked counsel, the defendants had described as an obscene and criminal publication.

The first witness for the plaintiff was Sir James Barr, M.D., consulting physician to the Liverpool Royal Infirmary. He said he was acquainted with the plaintiff's work and with the establishment of her clinic, and thought it was doing an enormous amount of good. Information which normally all wealthy people had at the present day should, he held, be given to the poor as well. So far as he understood them, the methods employed (the cap and the quinine pessary) were very effective and very safe. Sir James Barr added that he was not appearing in the capacity of a vice-president of the British Medical Association, because the Association had not expressed any opinion upon this matter; he was a vice-president of the Constructive Birth Control Society. In cross-examination he expressed the view that Dr. Stopes's *Married Love* and *Wise Parenthood* were more suited for the married than for the young, though he did not think it would be utterly demoralizing if these books, describing sexual acts and practices, came into the hands of young people. He agreed that the "gold pin" device, of which he had no experience, would be an abortifacient if inserted into the uterus of a pregnant woman. He did not agree that the occlusive or check pessary was a dangerous thing, even when adjusted by the patient herself. The essence of the clinic was teaching the use of the check pessary.

The plaintiff, Dr. Marie Stopes, giving evidence, referred to her academic career, scientific travels and researches, educational work, married life, and writings on birth control. She said that a total reduction in the birth rate formed no part of her campaign; she advocated a decrease of the birth rate at the wrong part and an increase at the right end of the social scale. The object of her society was to counteract the steady reduction of the birth rate among the thrifty and sound, and the reckless breeding among persons at the other end of the social scale. Her clinic was founded, as a part of the campaign and with her husband's assistance, in March, 1921, in order to reach in a helpful manner the overburdened working-class women who were ignorant of the knowledge contained in writings on the subject. Besides the midwife in charge there was a visiting doctor who saw patients at the clinic. There had been no experiments upon any persons, rich or poor.

In cross-examination by Mr. Charles, witness agreed that she was not a medical practitioner; she was a doctor of science. When Dr. Sutherland's book came out she wrote for a copy, and two or three weeks later her husband, as honorary secretary of the Birth Control Society, wrote inviting him to debate his views with them at the Essex Hall. Counsel read a review that appeared in the issue for May, 1922, of *Birth Control News*, the journal of Dr. Stopes's society:

"Dr. Sutherland's book will impose only on those who are more ignorant than he is. It is nicely calculated to encourage the biased in their prejudices, for now, when speaking against birth control, they can say 'A doctor says so!' They will probably forget he is a Roman Catholic doctor. The omissions from the book are quite as remarkable as its lies. We could fill our columns in illustration of this, but space is too valuable."

Witness agreed that individual doctors had, in a scattered way, said the same sort of thing as Dr. Sutherland before he wrote that book. There was correspondence in the *British Medical Journal* in which a certain number of opponents published letters. She agreed also that very much worse things than the alleged libel had been said of her as a private individual by the "gutter press," in which term she included the *New Witness*. She knew there was a strong feeling both for and against contraception. Her book, *Wise Parenthood*, was described by her as "a practical sequel to *Married Love*." In the ninth edition she omitted a paragraph addressed to the "more careful women" on the "aesthetic" value of the gold pin (or wish-bone) pessary, which appeared in the seventh edition, because she found that English doctors were not so familiar with contraceptive technique as American doctors. Later she said: "I have since writing my books been approached by hundreds of medical practitioners,



giving me advice, offering me knowledge; many, many of them offering me a share in business concerns if I would take up and advertise various instruments." She added that she had no personal experience of this gold pin. The method she especially recommended was the small occlusive pessary for the cervix, invented in 1881 by a medical man—the cervical cap which adhered by natural suction. To have had some sort of declaration attached to her books, to be signed by the purchaser, would in her opinion have been an incitement to prudence. Witness was next taken over a passage in *Married Love* dealing with the artificial impregnation of a married woman with the semen of a man not her husband. Lastly, Mr. Charles questioned her regarding a work by her entitled *A New Gospel to All People*, from which he quoted. In the course of a long cross-examination by Sergeant Sullivan the plaintiff said there were many passages in *Married Love* which it would be an outrage to read aloud—passages written to be read with the book complete, in solitude and with a thoughtful mind. Asked about Bradlaugh's pamphlet, *The Fruits of Philosophy*, written by Dr. Knowlton, plaintiff said she did not think it obscene, but undesirable. Asked if there was anything in that pamphlet approaching the passages to which counsel had drawn attention in her book, she answered that it was dealing with a different subject. In reply to his Lordship, she said she had not ascertained what the word "obscene" meant in a legal sense. The method of contraception taught in her books could not be used by a virgin. Harmful and misleading information on the subject had been circulating freely in this country since 1823.

Maud F. Hebbes, a certified midwife, said she had been employed at the plaintiff's clinic in Holloway Road since March 17th, 1921. During that time 1,700 women had visited her with regard to birth control; no experiments were made there and she had never received a complaint from any woman attending. If they were having babies too quickly she taught them how to adjust the check pessary over the cervix, having herself first made a simple examination. She might never see them again (this in reply to Mr. Charles).

Sir William Arbuthnot Lane, Bt., F.R.C.S., consulting surgeon to Guy's Hospital, and a vice-president of the plaintiff's society, said that in the course of his practice he had seen intense misery and distress entirely due to multiple pregnancies. When he got to know the work of Dr. Stopes he felt he had come across a real and intelligent philanthropist at last. He had read all her books but had never been to her clinic. Assuming cleanliness there was no danger in the measures advocated at plaintiff's clinic. He had advised numbers of women to use the occlusive pessary. During cross-examination Sir W. A. Lane suggested to Mr. Charles that the preface to *Married Love*, by one of the most distinguished of living physiologists (Professor Starling), expressed the opinion of the medical profession as he (Sir William) knew it. He did not know, however, whether Professor Starling was coming to give evidence; nor whether Lord Dawson (whom Mr. Hastings had mentioned) was coming to give evidence. An expert midwife knew as much as a doctor about applying a check pessary.

Mr. Harold Chapple, M.Ch., F.R.C.S., obstetric surgeon and gynaecologist to Guy's Hospital, said he was quite familiar with the work carried on at plaintiff's clinic, though he had not visited it; he approved of her works and the things she advocated. In his opinion, the ordinary check pessary, if used with average intelligence, could not be injurious; he had never seen it do any harm. In a perfect world all such cases would be dealt with individually by a doctor. So far as the gold pin was concerned he had no knowledge of it from practical experience. In reply to his Lordship, who asked: "Is it your view, most sincerely held, that it is desirable that the public generally should know about the use of a check pessary?" the witness answered: "Yes; this is a woman's problem, and in particular, it is a married woman's problem." In order to go into the whole problem, when giving instruction about sex, it was necessary to talk about check pessaries. Sex education and contraceptives could not be separated. Closely questioned about extracts from the plaintiff's works, Mr. Chapple insisted that the sense of a book was lost if isolated passages alone were taken from it.

Sir William Bayliss, F.R.S., professor of general physiology at University College, London, said he was a vice-president of the plaintiff's society, and saw nothing objectionable in any of her books, which served a most excellent purpose of instruction in the matters of sexual relations. He had no personal knowledge of the clinic. He did not think there was any harm in teaching young people about the use of the check pessary; they would not be interested in it.

Dr. Meredith Young, M.O.H. for Cheshire, said he had read everything the plaintiff had ever written; and he adopted the words used by Mr. Chapple—that they were clean, well and beautifully written books with a high ideal. He considered the clinic extremely well and ably run. He could not see that any injury was to be apprehended from the use of the check pessary if employed in a proper manner by an ordinary intelligent person. In reply to Mr. Charles, he could not see that any harm could

result from the widest possible circulation of books like these. He was closely questioned about artificial insemination, and about the gold pin. He admitted that if conception took place the effect of the pin would be to produce abortion. Re-examined, he had had experience of very similar things, but not actually of the gold pin; it could only be used under medical supervision.

Dr. Janie Lorimer Hawthorne said she worked very largely among women and children and acted as honorary consulting surgeon for the plaintiff's clinic. She thought the effect of the plaintiff's books would be to help people to understand the marriage relationship; in her experience lack of such knowledge led to great unhappiness. She found nothing at all objectionable in any part of *Married Love*. Cross-examined, she thought a qualified midwife was quite capable of advising and fitting a check pessary. She had very little experience of the gold pin and therefore would not advise its use. She did not attend the clinic very regularly—perhaps once a fortnight; at each visit she saw perhaps three or four patients; perhaps six patients in a week were sent on to see her from the clinic during the intervals between her visits. Dr. Hawthorne was taken very closely over a publication by the plaintiff, entitled *A Letter to Working Mothers*, but maintained in effect that young people could come to no harm from reading this or *Wise Parenthood*.

Dr. George Jones, giving evidence, warmly praised the plaintiff's books, her clinic, and the midwife employed by her. He was emphatic that no possible danger attached to the use of the check pessary: the whole thing was "pure moonshine and nonsense." About the gold pin, of which he admitted he knew very little, Dr. Jones was closely cross-examined. In regard to the references to artificial insemination witness said that all knowledge was interesting, filth or no filth. Counsel remarked that if that be the true doctrine it seemed a little absurd to have a law against obscene publications. Witness replied that that law had gone a good deal farther than it ought to have done, and probably it would be altered as time went on: Common Law was always growing.

The Right Hon. G. H. Roberts, formerly Minister of Labour, said he had lived with the poor all his life, and, because of his appreciation of Dr. Stopes's work, took the chair at her meeting in the Queen's Hall in May, 1921; he had not visited her clinic. Cross-examined, he saw no objection to passages in her works indicated by counsel; normal girls and young men should, he thought, be educated in these matters; but he had never posed as an authority on particular methods. All depended on how the books were written; a book should be read as a whole.

#### Case for the Defence.

Mr. Charles, opening the case on behalf of Dr. Sutherland, said that, however conducted, the plaintiff's campaign was dangerous, and as conducted in this case it was monstrous. Hence she must not object to strong criticism. Dr. Sutherland had criticized the campaign but not the campaigner, against whom he had no malice at all. Neither Bradlaugh nor his colleague, Annie Besant, had gone nearly as far as plaintiff in her books. Counsel argued that Dr. Stopes's principal book was not merely a physiological treatise: it contained pages of common erotic stuff.

Miss Louise McIlroy, M.D., professor of obstetrics and gynaecology at the Royal Free Hospital School of Medicine for Women, said she had been a specialist in diseases of women since 1898. In July, 1921, she read a paper before the Medico-Legal Society, and in reply to the discussion she had said that the check pessary was the most dangerous form of contraceptive she knew of. In her opinion the unrestrained use of contraceptives without medical advice was extremely bad. Insertion of the check pessary might induce sepsis. If it did not fit the cervix it would not serve its purpose, and if it fitted the cervix it was liable to close up natural or unhealthy secretions. The use of a condom or sheath was not harmful to women. In cross-examination by Mr. Hastings, Professor McIlroy reiterated that she had known cases in which a woman could not have a child because of the previous use of artificial contraceptives. She agreed that there was a very large difference of opinion, both within the medical profession and outside it, about the advisability of using contraceptives. She was not opposed to contraceptive methods in medical cases; she recommended them in certain cases. In advising she considered the individual patient. She thought the plaintiff was genuinely trying to deal with the problem, but was misguided in her methods. In reply to his Lordship she regarded the use of contraceptives as being at most the second best. Her experience of occlusion of the womb was large, but did not include any case of a woman who had worn a check pessary. In reply to Mr. Hastings's questions about *Married Love*, she knew of women who were made miserable by their marital relations, but she did not think writing could do any good. Apart from individual cases, she agreed that it was possible to deal satisfactorily with the problem as a whole, but only in simple scientific language, not in a sympathetic and romantic strain.



Dr. Halliday Sutherland then gave evidence. He was taken over his medical career and his experience of practice and research in civil life at home and abroad, and in the Royal Navy and Royal Air Force during the war. As a result of what he heard at the Medico-Legal Society meeting on July 7th, 1921, he decided to study birth control and write a book on it; this was because he thought it good to make known to the public certain arguments against artificial birth control. He was a Roman Catholic, but it was not at the behest of any Roman Catholic that he wrote this book. Mr. Charles then asked the witness about the subject-matter of his book, and his observation of various public notices of the plaintiff's works. His book was published on March 27th, 1922; Dr. Stopes had written for a copy on March 24th, and a few days later it was sent to her. Her husband wrote on April 12th inviting witness to debate his views with their society. He sent no reply to the invitation because he did not want to do anything to further advertise plaintiff's campaign. The writ of libel was issued on May 12th. By the words "exposing the poor to experiment" he referred to the indiscriminate distribution of knowledge of artificial contraceptives among the poor for the purpose of attempting to redistribute the birth rate, contrary to the law of Nature: he considered this a bad social experiment. Further, from a medical point of view, the advocacy of the occlusive check pessary was harmful. By the words "a doctor of German philosophy (Munich)" he wished to make it perfectly plain that plaintiff was not a doctor of medicine and had no scientific degree which qualified her by knowledge to teach these methods; moreover, he had in mind that underlying this movement was a philosophy of materialism, associated since the war in a loose popular way with German philosophy. By "monstrous campaign" he meant the whole campaign—press campaign, books, lectures, interviews, and the clinic—and his point of view was both medical and national. He had never spoken to Dr. Stopes and felt no sort of personal malice against her. His reference to Bradlaugh meant that the movement should be stopped.

In the course of a long cross-examination by Mr. Hastings, Dr. Sutherland said he meant his book to be controversial. He claimed no gynaecological experience since 1907, but he had studied this question and written a book. Counsel read passages from witness's book and from a speech by Lord Dawson at the Church Congress, and witness said that what he had written about Lord Dawson's views was a piece of strong writing. He thought the question of the advisability and the disadvantages of contraceptives had been thrust upon the general public; the opinion of the British Medical Association, with which he agreed, was that the means of knowing of such things should be obtained through a doctor; indiscriminate broadcasting of that kind of knowledge would do no good. Teaching in regard to matters of sex should be individual, and children should, emphatically, not be told about contraceptives. He considered that Dr. Stopes in her writings on sex was most unfortunate, because these contained a nauseating mixture of physiology and emotion instead of the cold language of physiology; the good idea in *Married Love* (written with the very best intentions in the world) was absolutely spoilt by the unnecessary details that followed and by its indiscriminate distribution. He held the firm conviction that the poor were among the sanest people in this country in regard to sex. By indiscriminately spreading knowledge about contraceptives and starting a birth control clinic the plaintiff, in his view, had done a more serious thing than Charles Bradlaugh did. When he wrote to this effect in his book he knew the contents of the Bradlaugh pamphlet but had not read it. He recognized that plaintiff wished to restrict the population among the poor; he knew, too, that she wanted to get healthy children at the best times, but that could not be done. As to the word "experiments" he did not mean surgical experiments; but the fitting of poor women with the harmful check pessary was an experiment, and the whole thing was a social experiment. In re-examination witness said he had collected a great deal of literature on the subject before writing his book. Lord Dawson had made no complaint whatsoever about what he (Dr. Sutherland) wrote; he understood that Lord Dawson disapproved of the indiscriminate broadcasting of information about these contraceptives.

Dr. A. E. Giles, senior surgeon to the Chelsea Hospital for Women and consulting gynaecologist to the Prince of Wales's Hospital, Tottenham, said that the so-called check pessary (handed to him in court) was intended to cover up the cervix completely so as to close its orifice. Were the instructions given in *A Letter to Working Women* carried out effectually there might or might not be danger according to the woman's condition at the time; unhealthy secretions would tend to be drawn back into the system, with a chance of great inflammation. It was difficult to understand how a woman could fit this pessary properly for herself, and a nurse or midwife was certainly not capable of saying whether a woman ought to use it or not; it should only be fitted by a doctor who thought it safe and proper after satisfying himself there was no disease. The gold pin or wish-bone pessary was advertised by

its makers as favouring conception; if conception occurred with it in place a miscarriage would be the almost certain result; it would be dangerous for a woman to wear it for any length of time, and it might affect her future fertility. Cross-examined, Dr. Giles said it would be very difficult for anyone not a doctor to apply the gold pin. In reply to the judge, he thought a skilled female abortionist could insert it, though she was likely to do very great damage thereby.

Dr. F. J. McCann, surgeon to the Samaritan Hospital for Women, maintained that the general effect of artificial contraceptives was contrary to the best interests of a woman's health. Assuming that the check pessary was properly placed and doing the work for which it was intended, there would be chronic uterine congestion with a subsequent impairment of fertility. To broadcast this device and the quinine pessary would be most injurious. The gold pin hindered but did not stop conception; it was a dangerous abortifacient; he had removed one which had been fifteen months in the cavity of the uterus, causing a discharge. Cross-examined, witness said he held a very strong view, on national grounds, against the use of contraceptives save for reasons of health—in the presence of disease. He was closely questioned regarding his personal experience of any women who had been injured in health by the use of a rubber check pessary, and he gave details of one case in which he attributed menorrhagia to congestion arising from this cause. In his view all contraceptive methods used by women were injurious.

Mrs. Mary Scharlieb, M.D., consulting gynaecologist to the Royal Free Hospital, and consulting surgeon to the New Hospital for Women, expressed the view that if the instructions and advice as to the check pessary given in *Wise Parenthood* were applied to women damage was likely to follow, because it would restrain the natural secretions, and lead to a mild continuous sepsis if retained *in situ*. She believed the gold pin to be exceedingly dangerous; it was not so much a bar to conception as an instrument likely to cause very early abortion; if retained for months (as the book said it might be) and the woman aborted, this was too likely to be a septic abortion. Cross-examined, Dr. Scharlieb had no doubt as to the plaintiff's sincerity and good intentions, but held that no useful work had been done by publishing these books; she had read them all and objected to them all. In writing a few lines introductory to *Wise Parenthood* she had said that she differed entirely from the author regarding the views expressed, and the author acknowledged her disagreement. In her view the enlightenment of the public was imperative, but this should be undertaken in perfectly simple non-provocative language; it should not be emotional, nor make any appeal to the passions. Re-examined about a letter she had written to plaintiff's publisher, she repeated her opinion that the encouragement of people to use artificial contraceptives was materialistic—a thing that grieved her.

Dr. Norman Haire, who attended on subpoena, said, in reply to Mr. Rabagliati, that he was an obstetric and gynaecological surgeon now practising in London. He held the post of honorary medical officer in charge of a welfare centre in Watworth, where, besides ordinary welfare work, birth control knowledge was given by a doctor to all married women who desired it. He had written on this subject. In 1921 he went to plaintiff's clinic and discussed the gold pin. After that he made further inquiries which led him to judge that the pin would be unreliable and dangerous. He wrote to her expressing admiration for her work and begging her not to recommend a thing that might be dangerous. He was strongly in favour of a medical man or woman conveying knowledge of contraceptives to all married women. Dr. Haire was cross-examined by Mr. Hastings as to his communications with plaintiff about patients; he might have said he would be pleased to see any further patients she cared to send, but he had in no way canvassed for patients. He still thought her books served a very useful purpose, though he did not agree with all her points of technique, and he disagreed very greatly with the *New Gospel to All Peoples*. He used to recommend and fit the check pessary in appropriate cases, but found that women could not reintroduce it properly, so he gave up advising it. He had seen cases in which harm had followed its use, but he could not say that this was due to its use.

Mrs. Agnes Savill, M.D., said she was a general physician dealing largely with electrical treatment, and in the course of her experience had seen two unmarried women, one aged 25 and the other 40, whose health had been adversely affected by reading *Married Love*. Cross-examined, she did not think the book could do harm to married people; but it was making a natural function like eating and drinking a high art; it made married people think too much about sexual details; it was like a gourmand with food.

Dr. William Ernest Falconar, physician to out-patients, Paddington Green Children's Hospital, said he disliked very much the contraceptives advocated by the plaintiff. At the end of last September a young woman brought him a gold pin, asking him to insert it, and handed him a copy of *Wise Parenthood*. Having examined the pin he pointed out the danger and refused to insert it; he regarded it, not as a contraceptive, but as an abortifacient.



Sir Maurice Abbot Anderson, M.B.—whose evidence was taken on commission, by reason of ill health—stated that, broadly speaking, he favoured some sort of contraceptive procedure up to a point, but not that which the plaintiff advocated.

This concluded the case for the defendant, no evidence being called on behalf of Messrs. Harding and More, publishers of the book. Serjeant Sullivan then addressed the jury for the publishers, Mr. Charles for Dr. Sutherland, and Mr. Hastings for the plaintiff.

#### *The Summing Up.*

In the course of his summing up the Lord Chief Justice pointed out that the plaintiff—a lady of remarkable ability—was bringing this action to recover damages for a particular piece of writing which she said was a libel upon her. The passage complained of was a particular passage, with some omissions, in one of the later chapters of a book purporting to be a general examination of the problem of what was called "birth control." His Lordship reminded the jury of certain dates. The plaintiff's two chief works were published in 1918, one in the spring, the other in the autumn. In March, 1921, she opened the clinic. A few months later Professor McIlroy addressed the Medico-Legal Society on some topics connected with birth control. Dr. Sutherland's book was published on March 27th, 1922. Plaintiff's husband wrote to Dr. Sutherland inviting him to take part in a public debate, and a review of the work appeared in plaintiff's paper on May 3rd. Then, without any further warning, no letter before action, no remonstrance, there came upon May 12th the writ in this action. The defendants in their defence admitted publication, but said that so far as concerned statements of fact in what was complained of, those were true statements; so far as concerned expression of opinion, that was fair comment. It was not denied here that the subject-matter of this discussion was matter of public interest. Where the plea "This is true" was put in, that plea must in the proper and reasonable sense cover all the allegations of fact. This did not mean that every little detail had to be established, but that the gist of the libel—the real sting—must be established. In regard to the defence of fair comment the question for the jury was not at all "Do you agree with the criticisms the defendant has written?" but rather "Could a fair-minded man holding a strong view, holding perhaps an obstinate view, holding perhaps a prejudiced view—could a fair-minded man have been capable of writing this?" But the foundation of the structure upon which fair comment was to be built must be a foundation of truth: "a man cannot invent things, call them facts, and then base comment which shall be fair upon them as if they were facts." Two ingredients were needed: true statement of fact; and, upon the statement of fact, comment which a reasonable fair-minded man might make, whether the jury agreed with him or profoundly disagreed with him.

Now in this case the phrase "birth control" had been used in many different senses: but some precision of thought was necessary. Nobody so far as this case was concerned disputed for a moment the wisdom of explaining in innocent helpful language to young persons of both sexes some of the mysteries and implications of sex. Once depart from this admitted truth and the region of controversy was entered. Controversy began with the question of what should be the method of making these truths known. In much of the evidence that had been given, the next step seemed to be taken by a kind of jump: because it was desirable that young people should be taught in an innocent and pure-minded fashion the truth about sexual matters, therefore it was important that they should be taught the truth about what were called contraceptives. The next step was a further jump: because contraceptives were desirable for some persons in some circumstances, therefore everybody should be taught about them. Then it became at the next step a duty to differentiate between contraceptives; and then they came down to the check pessary. So that, starting from the large general unobjectionable statement that somebody, speaking to one person in private, should instruct the young innocently upon the implications of sex, it became a sort of public duty to spread about on the widest possible scale, without discrimination of sex or age, or marriage or absence of marriage, the truth about the check pessary; and the check pessary, when that stage of the argument was reached, had become something like a talisman, a goal, or a standard—a panacea for social ills, both public and private. There obviously were those who held that view. But might there not be those who stoutly held the opposite view: who said that these were matters of great delicacy and difficulty, that contraceptives might be in some cases a deplorable necessity, but that this information ought not to be published broadcast to all and sundry, and that, if so published, great care should be taken with the language, tone, and manner employed? It might have occurred to the jury that if the whole object was to diffuse as widely as possible the important truth that with the help of a check pessary a man and a woman

need never have a child—might not that information be put in words of two or three syllables on half a sheet of notepaper? Whatever might be the mischief of broadcasting such information, that mischief (said many of the witnesses) was greatly exaggerated when the information was conveyed in a romantic, emotional, rhetorical fashion. There being thus profound differences of opinion, was it not plain that these might with vigour and vehemence be expressed?

His Lordship next examined the general purpose and arrangement of the defendants' book and the extracts from it which had been made the subject of these proceedings. He completed the second extract by quoting the words omitted in the plaintiff's statement of claim. In its complete form the second part of the passage ran:

"When we remember that millions are being spent by the Ministry of Health and by Local Authorities—on pure milk for necessitous expectant and nursing mothers, on Maternity Clinics to guard the health of mothers before and after childbirth, for the provision of skilled midwives and on Infant Welfare Centres—all for the single purpose of bringing healthy children into our midst, it is truly amazing that this monstrous campaign of birth control should be tolerated by the Home Secretary. Charles Bradlaugh was condemned to jail for a less serious crime."

His Lordship then discussed at some length the meanings put upon the word "experiment" by the plaintiff and by the defendants, and in this connexion reviewed the medical evidence regarding the "gold pin." He then touched on the other phrases alleged to be libellous, and noted the difference of opinion among the medical witnesses in regard to the check pessary. Coming to the closing words of the passage complained of, he observed that the plaintiff said these amounted to an accusation of crime, whereas the defendant said that what he meant was, "Here is the Home Secretary tolerating something which is really worse than that which in the case of Charles Bradlaugh was held to be a crime." Whether they thought these words imputed criminality or not, the jury ought not to draw an inference from the fact that there had been no prosecution with regard to the plaintiff's books. In the Bradlaugh case the charge was the publication of an obscene book. At this point his Lordship made some observations on the meaning of the word "obscene," and continued:

Now what is said here? Dr. Sutherland says that this is as bad as the Bradlaugh pamphlet and worse; and he says that in two respects. You have passages, he says, in these books to which no parallel can be found in the pamphlet published by Mr. Bradlaugh—no parallel at all. Your attention has been directed to certain passages; I am not going to re-read them to you. I daresay you have taken the trouble to read, as I have done, other passages. But just consider. The argument is that these are books which may be exposed for public sale indiscriminately, in great quantities, in order to fulfil a mission. The mission is variously described at various points of the argument. The teaching about sex is mixed up with the teaching about contraceptives; the teaching about contraceptives is mixed up with other matter; but it is all said to have been done in pursuance of a mission.

Whatever view the jury took about that question, they might ask themselves what legitimate purpose could be fulfilled by the insertion in these books—to be read by married and unmarried, young and old, persons of both sexes—of passages that described certain matters relating to sexual intercourse and analysed others. The jury knew the passages, knew the context, knew the circulation of these books. Could they say that these fell short of being obscene publications?

#### *Verdict and Judgement.*

The jury, after considering their verdict for three hours and three-quarters, returned the following answers to the questions put to them by the Lord Chief Justice:

- (1) Were the words complained of defamatory of the plaintiff?—Yes.
- (2) Were they true in substance and in fact?—Yes.
- (3) Were they fair comment?—No.
- (4) Damages, if any?—£100.

Counsel for the plaintiff and for the defendants each formally claimed judgement for their clients, and on the following morning his Lordship heard argument on the legal effect of the findings of the jury. Sir Hugh Fraser maintained that plaintiff was entitled to judgement for £100. Mr. Charles submitted that on the answers to judgement for £100. The defendants were, by every rule of law, to the first two questions the defendants were, by every rule of law, entitled to judgement; the plea of justification was a complete answer to the action; if the words were true, there was an end of the matter. Serjeant Sullivan argued that a plea of fair comment did not arise if a plea of justification was made good.

His Lordship, in giving judgement, said he always understood that it was a good defence in libel if the words complained of were true in substance and in fact. On the findings of the jury in this case there was no course open to him but to give judgement for the defendants.

Mr. Charles asked for costs and these were granted; his Lordship agreed also to Sir Hugh Fraser's request for a stay of execution on the usual undertaking.



## The Services.

### TERRITORIAL DECORATION.

THE Territorial Decoration has been conferred upon the following officers of the R.A.M.C.(T.A.): Colonel F. W. Higgs, C.B.E., Major H. L. Gregory, Major S. R. Gibbs, M.C., and Major D. Shannon.

### FOREIGN DECORATIONS.

THE following decorations and medals have been awarded by the Allies indicated for distinguished services rendered during the war 1914-19, and the King has given unrestricted permission for them to be worn:

By the President of the French Republic: *Médaille de la Reconnaissance Française en Argent*—Lieut.-Colonel John Miller, D.S.O., M.C., R.A.M.C.(T.F.).

By the King of Italy: *Order of St. Maurice and St. Lazarus*—Commander: Major-General Sir Foster R. Newland, K.C.M.G., C.B., retired pay; Officer: Colonel John Vincent Forrest, C.B., C.M.G., retired pay; Cavalier: Captain Thomas Douglas Inch, O.B.E., M.C., R.A.M.C. (R. of O.). *Order of the Crown of Italy*—Officer: Brevet Colonel Arthur Chopping, C.B., C.M.G., R.A.M.C.; Cavalier: Temporary Captain Ambrose Emerson, R.A.M.C.

## Medical News.

THE Senatus Academicus of the University of Aberdeen proposes to confer the honorary degree of LL.D. on Sir George Henry Makins, G.C.M.G., C.B., consulting surgeon to St. Thomas's Hospital.

PROFESSOR G. ELLIOT SMITH, F.R.S., will give the foundation oration of the Union Society of University College, London, on Thursday, March 22nd, at 8.30 p.m.

THE Denison House Committee on Public Assistance is about to present a petition to the Prime Minister asking for information as to the growth of expenditure from rates and taxes on public assistance and for a commission of inquiry and control. The expenditure, which in 1890 was 25 millions, had risen in 1920 to 233 millions, excluding 93 millions for war pensions. The expenditure on education in 1920 was 72 millions.

THE Medical Women's Federation has arranged to hold a dinner in the Empire Rooms, Trocadero Restaurant, on Thursday, May 10th, at 7.30 for 8 p.m.

A MEETING of the Tuberculosis Society will be held in the Council House, Bristol, on Friday, March 16th, at 10 a.m. At the morning session, tuberculosis and pregnancy will be discussed by Professor Lyle Cummins and Dr. E. Ward; and reactions relating to tuberculosis by Drs. Henry Ellis and Campbell McClure. At the afternoon session, the physique of the phthisical will be discussed by Dr. H. de Carle Woodcock; difficulties in diagnosis by Drs. Halliday G. Sutherland, T. Nelson, and Richard Clarke; and the domiciliary treatment of osteo-articular tuberculosis by Dr. W. C. Rivers. On March 17th at 10 a.m. Dr. T. Nelson will demonstrate the results of treatment by artificial pneumothorax.

THE London County Council has hitherto employed a woman doctor to examine, under the direction of the medical examiner (Sir John Collie), all women candidates selected for appointment on the staff of the Council or as school nurses, and any women members of the staff who were required to undergo medical examination and desired to be seen by a woman doctor. Mrs. Dickinson Berry, who has held this appointment for some years, having resigned, it has been decided to appoint a panel consisting of three women doctors, so as to obviate the inconvenience from any one part-time woman doctor being not always available. The medical examiner, who will be responsible for their certificates, and under whose direction the examinations will be made, proposes to pay them not less than 75 per cent. of his fee in each case.

AN Act has been passed in Spain giving the Spanish Government powers to proceed with the ratification of the "Maternity Convention" adopted by the first international labour conference held at Washington, under the auspices of the League of Nations, in 1919. Under the terms of this convention a woman who works for her living is not allowed to work during the six weeks following confinement, and has the right to leave her work six weeks beforehand on production of a medical certificate. During this time she is paid benefits provided either out of public funds or by means of a system of insurance, and is also entitled to free medical attendance; if nursing her child she is allowed half an hour twice a day during working hours for this purpose. The same Act authorizes the Spanish Government to institute a compulsory maternity insurance system. The "Maternity Convention" has already been ratified by Italy, Bulgaria, Greece, and Rumania.

ON March 3rd, at the Medical Society's rooms, Bournemouth, the members of the Dorset and West Hants Branch of the British Medical Association presented Dr. Walter Asten with an illuminated address, an armchair, and a selection of books on the occasion of his leaving Bournemouth, as a mark of their appreciation of his services as honorary secretary of the Branch during the last four years.

ON Friday next, March 16th, Sir Leonard Rogers will read a paper at 4.30 p.m., before the Dominions and Colonies and Indian Sections of the Royal Society of Arts, on recent advances towards the solution of the leprosy problem. The chair will be taken by Earl Winterton, Under Secretary of State for India.

AT a meeting of the Medico-Legal Society on Tuesday, March 20th, Dr. H. A. Burridge, lecturer on forensic medicine and toxicology at King's College Hospital, will open a discussion on State effort to rescue drug victims, with special reference to the Dangerous Drugs Act. The meeting will be held at the house of the Medical Society, Chandos Street, Cavendish Square, at 8.30 p.m.

THE first regional centre of the campaign against cancer in France was inaugurated by M. Strauss, Minister of Hygiene, at Bordeaux, on February 12th. It has been organized in the medical electricity department at the St. Raphael annexe of the Bordeaux Faculty of Medicine, under the direction of Professor Bergonié.

AMONG the courses of lectures arranged by the National Health Society is one of six on infant and child welfare by Dr. Eric Pritchard; the first will be given on Friday, April 20th, at 5 p.m. Dr. Mary Schärlieb will give the second of two lectures (for women only) on venereal diseases on Thursday, March 15th, at 4.30 p.m. Full particulars can be obtained on application to the Secretary of the Society, 53, Berners Street, W.1.

WE regret to announce the death, on February 20th, of Sir Thomas Roddick, M.D., F.R.C.S., who was President of the British Medical Association when it held its Annual Meeting in Montreal in 1897.

## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 43, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Litology*, Westrand, London; telephone, 2630, Gerrard.

2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand, London; telephone, 2630, Gerrard.

3. MEDICAL ASSOCIATION, *Medical Assoc*, Bacillus, Du. F. Rutland; telephone, 4361, Central).

### QUERIES AND ANSWERS.

A MEDICAL man, aged 62, with high blood pressure and arteriosclerosis, who must not visit, seeks advice (1) as to the best locality to live in, and (2) the most suitable employment in order to make a living.

"J. R." asks whether the tetanus bacillus or its spores has ever been found in commercial milk, fluid or dried, and whether milkers and dairy workers are ever infected.

### SEVERE REACTION TO MOSQUITO BITE.

"X" (who resides in Wiltshire) writes: A lady, aged 50, suffers severely whenever bitten by a mosquito; within a few hours there is considerable oedema of the part, and at the site of the puncture a large blister forms, about the size of a pigeon's egg, which breaks, leaving a raw surface, just as after a scald. As the neighbourhood is never free from stray mosquitoes, the patient's susceptibility is becoming a serious matter, for whenever she is bitten on the leg she is compelled to lie up for several days until the oedema has gone and the blister has healed. While it is not practicable to protect her from occasional bites, "X" would be glad of suggestions as to how he may prevent these severe local reactions.



## EXAMINATION FOR DIPLOMA IN PSYCHOLOGICAL MEDICINE.

A CORRESPONDENT who proposes to sit for the examination in psychological medicine asks for suggestions as to books which would give a beginner a grasp of the subject and the new nomenclature used in psychology.

"\* The knowledge required must depend on the examination contemplated. The requirements for the diplomas in the various universities and the London Conjoint Board vary to some extent, but with all a wide range of reading is necessary. A good clinical knowledge of psychiatry and neurology, as well as of asylum administration, is also necessary. For these diplomas a course of instruction such as that given at the Maudsley Hospital or Bethlem Hospital is almost imperative, as practical examinations are held in anatomy and physiology of the nervous system, psychology, clinical psychiatry, and neurology. The following books for psychological medicine may be recommended:

## GENERAL PSYCHOLOGY.

*Psychology: A Study of Mental Life*, By R. S. Woodworth. Methuen and Co.

*Psychology: The Study of Behaviour*. By Wm. McDougall, Home University Library. Williams and Norgate.

## ABNORMAL PSYCHOLOGY.

*The Psychology of Insanity*. By B. Hart. Cambridge University Press.

*Medical Psychology*. By T. W. Mitchell. Methuen and Co.

## TEXTBOOKS OF PSYCHIATRY.

*Mind and its Disorders*. By W. H. B. Stoddart. Lewis and Co.

*Mental Diseases*. By R. H. Cole. University of London Press.

*Psychological Medicine*. By Sir Maurice Craig. J. and A. Churchill.

A textbook of neurology should be read, and works giving an account of the anatomy and physiology of the nervous system.

## INCOME TAX.

"A. F. M. B." puts the case of two partners, A and B, the practice being divided on a two-thirds and one-third basis. The firm rents A's surgery from him, and also uses B's house and a room or two of the remainder of A's premises. What can be claimed for rent and rates, etc.?

"\* (1) The surgery rent paid to A, (2) the actual cost of lighting, heating, and cleaning it, (3) a reasonable proportion of the total expenditure on B's house and the remainder of A's. On the facts B does not seem entitled to a proportion of one-half, and A's proportion of the remainder of his house must clearly be less than half. A test of the reasonableness of the amount charged as (3) might well be that it should be such a figure as would bring the total to approximately one-half of the total costs of A's house and surgery and B's house together.

"Novice" inquires what proportion of the following can be claimed as professional expenditure: (1) Rent, rates, etc., of house; (2) man's wages; and (3) maid's wages.

"\* Assuming that "Novice" is in general practice, the answer depends legally on the third rule applying to Cases I and II, Schedule D; this rule excludes expenses of maintenance of the person assessed and his family, etc., or for private as distinct from professional purposes, and the rent paid for such part of the house, etc., as is not used professionally. In practice a useful working rule is that in the average case half the rent and the board and wages of one maid are considered allowable. When a man is kept to drive the car a proportion of that expense should be charged based on an estimate of the time he spends on professional as distinct from private duties.

## Car Transactions.

"J. A." who sold his old car in January for £80 and bought a new one for £100, can deduct £20, less the amount, if any, by which £400 exceeded in January the cost of a car similar to the old one. As the expense was incurred in January of this year it does not affect the calculation of the average profits forming the assessment for 1922-23; it is an admissible professional expense in the ordinary way—for example, if "J. A." makes up his accounts as at the end of March it will first affect the income tax average for the financial year ending April 5th, 1924.

"C. R. J." bought a Morris coupé in 1918 for £360; at that period he was using a cycle when the car was undergoing repair. He then (in 1921) bought a 8-h.p. Rover for £235 to replace the cycle, and it is used both privately and professionally—say half and half. He now proposes to sell the Rover for £110 and buy another Morris four seater for £355, keeping the old one in reserve.

"\* While the old Morris car is retained the cost of the new one represents capital outlay. Assuming that the expense of purchase of the 8-h.p. Rover was not changed, and that only one-half the running cost was deducted for tax purposes, the amount of deduction that can now be claimed is half of (£235 - £110) = £62 10s., which is the extent to which the cost of the new Morris car represents replacement of professional equipment.

## LETTERS, NOTES, ETC.

## SMALL-POX AND VACCINATION IN THE PHILIPPINES.

We have received from the President of the Council of Hygiene of the Philippines a letter enclosing a copy of a report on small-pox and vaccination, the occasion being the publication in the BRITISH MEDICAL JOURNAL and elsewhere of comments on the position in the islands. The letter is dated January 19th, so that the detailed examination and analysis by Dr. McVail of the facts as disclosed by the Reports of the Philippines Health Service, which appeared in our issue of January 27th, cannot have been seen by the Council, but only the earlier notices in the JOURNAL. We are therefore intimating to the President our intention to defer dealing with the matter further until the Council have had the opportunity of seeing the JOURNAL of January 27th (which is being posted to Manila) and furnishing any further facts.

## HICCUP.

DR. J. D. GIMLETTE (Bath) tells us that an old-fashioned method of treating hiccup which he has found useful is for the patient to stop his ears tightly with his fingers and gulp down a glass of water while a friend pinches his nostrils.

"C. K." has noted an unusual prevalence of hiccup recently in his neighbourhood (in the Midlands). During the last six weeks he has seen five troublesome cases; continuing for twenty-four to forty-eight hours. Two of the patients were octogenarians, two were practising solicitors, and one a young postman. He has heard of two other cases; both middle-aged men, occurring in the same district. In four of the five cases under his care after simple remedies had failed relief quickly followed small doses of morphine and atropine by the mouth. In only one of the cases (the postman) was there any concomitant disease—a febrile cold.

MR. PERCY BLUMER, F.R.C.S. Edin. (Muswell Hill), writes: In the BRITISH MEDICAL JOURNAL of March 3rd, p. 402, I read Dr. Wm. Bramwell's note on his treatment of persistent hiccup. Late on the same evening a patient came to consult me complaining of hiccup, which had been troubling him for several hours, and nothing that he had tried had given him relief. I applied pressure with the stethoscope to the ensiform cartilage for about four or five minutes. The result was immediate relief, and there was no return when the pressure was removed. I met the patient's wife the next morning, and she informed me that her husband had had a good night and had gone to business as usual.

DR. ELEANOR E. BOURNE (Carlisle) writes: With reference to the remedy for hiccup by drinking out of the far side of the glass, this method was invariably employed by our family when children, and was described as "drinking water backwards." We never experienced any difficulty in the act, simply applying the mouth to the far side of the glass and bending head and body forwards and downwards from the hips; I was amused at the contortions, such as lying across a bed and hanging the head downwards over the side, considered necessary by some of your correspondents. The remedy must be an old-fashioned one, as it was handed down to us from my grandmother, who probably knew it before her arrival in Australia, about 1850. I have considered the effect due to the stimulation of the higher centres, owing to unusual co-ordinative impulses being necessary by reason of the unaccustomed attitude, and perhaps partly to a slight compression in the diaphragmatic area from the act of bending forward.

## WHOOPIING-COUGH.

DR. W. J. MIDELTON (Bournemouth) writes: I treat all my cases by painting the chest once a week with lin. crotonis (B.P.) or ol. crotonis co., which contains some cantharides; front and back alternately. I have never failed to cure a case by this means within one month.

## VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 36, 37, 40, 41, and 42 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 38 and 39.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 63.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE  
BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Whole double column	...	...	3 15 0
Half single column	...	...	10 0 0
Half page	...	...	20 0 0
Whole page	...	...	...

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 472, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive postal restante letters addressed either in initials or numbers.



## Hunterian Lectures

ON

## MAN'S POSTURE: ITS EVOLUTION AND DISORDERS.

GIVEN AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

BY

PROFESSOR SIR ARTHUR KEITH, F.R.C.S., F.R.S.,  
CONSERVATOR OF THE MUSEUM.

[Abstracts.]

## LECTURE I.—THEORIES CONCERNING THE EVOLUTION OF MAN'S POSTURE.

The true story of how anatomists abandoned the belief that man's body was a special creation and became converted to the theory of evolution commences in 1809, the year of Darwin's birth—when England and France were striving for mastery in the Spanish peninsula. The new idea was born in Paris—not, as one might well expect, in the famous schools of human anatomy hid amongst the crowded streets on the south bank of the Seine, but in the Museum of Natural History, situated in the neighbouring Jardin des Plantes. Three officials of the Museum—Cuvier, the Professor of Comparative Anatomy, Geoffroy St. Hilaire, who had charge of the collection of Vertebrate animals, and Lamarck, who was responsible for the Invertebrata—were effecting, amidst war and political change, a complete revolution in man's conception of the animal kingdom.

In 1809 the magnificent Cuvier, then in his fortieth year, standing, so far as concerned the public eye, head and shoulders above his colleagues, was bringing together the material for his famous work on *Ossements Fossiles*, awakening men to the knowledge that boundless ages of teeming life had come and gone before the present era began. While Cuvier was thus unconsciously enlarging man's conception of the past, his colleague, Geoffroy St. Hilaire, somewhat Cuvier's junior in years, was seeking for the common plan or design on which the bodies of vertebrate animals were built, thus preparing the way for those who were to preach the doctrine of a common descent for all living things. Lamarck, the least favoured of the three in the estimation of the learned men of his time, was twenty-five years Cuvier's senior. In the bustings of contemporary science he could scarcely make his voice heard, but we now know he had probed deeper into the secrets of Nature than either of his two colleagues. All his life long he had been a retiring but systematic student of living things and of the conditions under which they live. He was already an old man—a man of 65—when in 1809 he published two small volumes under the title of *Philosophie Zoologique*, in which we see that this retiring pioneer, as a result of a half-century of patient study, had reached the conviction that all the living things to be found on the earth to-day were but the twigs of a common tree of life, whose branches, trunk, and root were buried deeply in the past ages of the world. It is in this work, written in the seclusion of the precincts of the Museum, away from dissecting-rooms, and during stirring years of war, that we find the first clear statement of the belief—now universally held by human anatomists—that man's posture of body has been evolved from one which was simian or ape-like.

## LAMARCK'S THEORY.

To do Lamarck full justice it would be necessary to make lengthy extracts from those chapters which deal with the evolution of man, but the following quotation (vol. i, p. 349) will give a just estimate of the manner in which he explained the evolution of man's posture:

"Indeed, if any race of primates (quadrumanes) whatsoever, particularly the more highly evolved of them, were to lose, either from force of circumstances or any other cause, the aptitude for tree climbing and other such uses with their feet, as with their hands, the individuals of this race, for a series of generations, would use their feet only in walking, and cease using their hands as feet; then there is no doubt, from the evidence produced in the foregoing chapters, that these apes would finally be transformed into man (Bimanes), and that the great toe would no longer be separated from the other toes like a thumb, the feet serving merely the purposes of progression."

From this passage we see that, in the first place, Lamarck supposed man to have been evolved from a chimpanzee-like anthropoid, for we know that of modern and living anthro-

poids he regarded the chimpanzee as "the more highly evolved." The gorilla, it may be mentioned here, was not discovered until 1847—eighteen years after Lamarck had been laid in his grave. In the second place we note that Lamarck regarded the erect posture as a result of the chimpanzee-like ancestor having abandoned an arboreal mode of life for one in the open country. In the third place we note that he held the belief—one which we still regard as unproven—that the progress made by one generation in accommodating itself to an erect posture would, age upon age, be transmitted to the next generation. He was fully alive to the fact that any anthropoid which had acquired the human mode of progression had gained an enormous advantage; it would no longer be confined to tracts of tropical jungle but would have the whole length and breadth of the earth open to it.

## DARWIN'S THEORY.

Lamarck was a pioneer, but so far as concerns the evolution of man he did not induce a single anatomist of his own or of a succeeding generation to follow in his footsteps. We have to pass to the year 1871, when the *Descent of Man* was published, to find the first effective step in the development of our modern knowledge of man's evolution. The Philosophy of Zoology had remained sixty-three years in neglect, and Charles Darwin, who declared he had read and studied the book to no profit, was then 62 years of age. We turn at once to the *Descent of Man* to see what conception Darwin had formed concerning the evolution of the human posture. At page 76 of the first edition the following passage occurs, which contains an explicit statement of Darwin's explanation:

"As soon as some ancient member (elsewhere defined as some species of anthropoid like the chimpanzee) in the great series of the Primates came to be less arboreal, owing to a change in its manner of procuring subsistence, or to a change in the surrounding conditions, its habitual manner of progression would have been modified, and thus it would be rendered more strictly quadrupedal or bipedal. . . . Man alone has become a biped; and we can, I think, partly see how he has come to assume his erect attitude, which forms one of his most conspicuous characters. . . . As the progenitors of man became more and more erect, with their hands and arms more and more modified for prehension and other purposes, with their feet and legs at the same time transformed for firm support and progression, endless other changes in structure would have become necessary. The pelvis would have to be broadened, the spine peculiarly curved, and the head fixed in an altered position, all which changes have been attained by man. . . . It is very difficult to decide how far these modifications are the result of natural selection and how far of the inherited effects of the increased use of certain parts, or of the action of one part on another. No doubt these means of change often co-operate."

When the explanations advanced by Lamarck and by Darwin are compared it is at once seen that, as regards the manner in which the human posture has been evolved, there is much in common. (1) Both supposed that man had been evolved from a chimpanzee-like anthropoid and in the course of evolution the anthropoid posture had become human. (2) Both agree that the transformation had been initiated by a change from an arboreal to a terrestrial mode of existence. (3) Both believed that the results of habit or of function, acquired by one generation, could be inherited by the next generation. Darwin, however, made important additions: (1) he applied the law of natural selection—the tendency for successful individuals to survive and prosper; (2) he recognized the action of sexual selection; (3) he perceived that there was a law of correlation of parts—an obscure mechanism by which a number of structures were modified together to suit some particular function of the body. We now realize—or rather begin to realize—that the development and modification of various systems of structures are regulated or influenced by various internal secretions or "hormones." Darwin's law of correlationship of parts is but an intelligent anticipation of the more recent discoveries of physiology. We expect that fuller knowledge will yield the key to many problems in the evolution of posture which are at present unexplained.

In their bald outlines the explanations given by Lamarck and by Darwin of how man came by his erect posture have much in common. Why was it that for sixty-two years the one was regarded as an idle curiosity, while in the course of ten short and strenuous years the other had spread into every anatomical workshop throughout the civilized world, revolutionizing the worker's point of view and endowing his labour with a new aim and a new zeal? Both *Philosophie Zoologique* and *Descent of Man* were founded on a lifetime of inquiry and observation, but Darwin conquered—as men always will conquer—because he permitted a masterly array of facts to tell their own story, while Lamarck always wished



to tell the story of his facts. However that may be, there is no doubt of the fact that the *Descent of Man* is the starting point of our modern knowledge of all that pertains to the origin and evolution of the human body. The student of history will also note the fact that neither Lamarck nor Darwin was a professional anatomist, and yet they did more to alter our conception of the human body than any professional anatomist of their time.

#### How the Theory Now Stands.

Much has happened in the fifty-two laborious years which followed the publication of the *Descent of Man*. The time has come, so it seems to me, for a fresh survey of our knowledge of all that relates to man's posture in order that we may ascertain how far it is now necessary to modify, extend, or amplify Darwin's explanation of its evolution. My aim in this lecture is to pass in brief review recent inquiries and investigations which throw fresh light on how, when, and where man came by his erect attitude. I have also another object in view—to show that the problems relating to the evolution of posture have a very direct bearing on medical and surgical practice; many of the obscure and distressing conditions which require treatment are in reality manifestations of a disturbance or derangement of the elaborate mechanism which regulates and maintains the remarkable posture of the human body.

#### EVIDENCE FROM FOSSIL REMAINS.

The fossil remains of man, so far as they have become known to us in recent years, do not provide any certain clue as to the date, place, or manner in which the human posture was evolved. We cannot say that any fossil form of man yet discovered shows a foot in a stage intermediate to that of anthropoid and man. The most important discovery for our present purpose is that made by Dr. Eugène Dubois during 1891 and 1892 when he was resident in Java. He discovered the remains of a strange and distinct genus of man, to which he gave the name of *Pithecanthropus erectus*. No part of the foot, leg, or trunk was found, only three teeth, the roof of the skull, and the left thigh bone. The thigh bone leaves us in no doubt as to the posture of body; it is human in all its characters; we cannot explain its characters unless we suppose that *Pithecanthropus* was human in posture and gait. The stratum in which the remains of *Pithecanthropus* were found belongs either to the beginning of the geological epoch which precedes the present—the Pleistocene—or to the end of the still older epoch—the Pliocene. We thus know for certain that the human posture was fully evolved at least before the beginning of the Pleistocene period. There are many reasons, however, for supposing that *Pithecanthropus* represents a persistence of a primitive type which had appeared long before the beginning of the Pleistocene; in size of brain we must regard him as representative of man at the beginning rather than at the end of the Pliocene period. The thigh bones show that the lower extremities were used as in us, but the characters of the skull are incompatible with the poise of head seen in modern man. In the fossil man of Java the head was hinged to the neck as we see in living anthropoids—so that the head is carried with a forward slouch.

In recent years we have greatly extended our knowledge of that peculiar and extinct type of human being now known as Neanderthal man. The bones of the foot, leg, and thigh all show certain features which manifest a closer resemblance to the corresponding parts of the gorilla than do the same bones in modern man. The head was set on the neck in a manner which clearly represents a modification of the anthropoidal fixation. The earliest trace of Neanderthal man so far discovered is the Heidelberg or Mauer mandible, which was found in 1907 by the late Professor Otto Schoetensack in a stratum belonging to the older deposits of the glacial or Pleistocene period. The Heidelberg mandible clearly belongs to a very primitive type of Neanderthal man; the more humanized type became extinct long before the close of the Pleistocene period, and apparently long after men of the modern type had come into existence. There thus persisted into the Pleistocene period a race or species of man in which the body was less perfectly adapted for holding the head and body erect than is the case with modern man. Yet in the Pittdown type of *Pithecanthropus*, the head, in a geological sense, was the contemporary of *Pithecanthropus*, the conformation of his mastoid process and the muscular impressions of his occipital bone leave us in no doubt as regards this matter.

Thus in recent geological periods there have been race types of mankind showing degrees in their adaptation to posture and gait of modern man.

A survey, then, of our present knowledge of extinct forms of man permits us to make only a guarded statement regarding the date and manner of the evolution of our posture and gait. It is apparent that the adaptations which permit the head to be balanced on the neck are comparatively acquisitions; they appear to have been evolved since commencement of the Pleistocene period. The lower limb assumed a human form at a much earlier date. *Pithecanthropus* had a fully evolved human femur, and we may infer that the foot was equally human. If I am right regarding *Pithecanthropus* as representative of mankind the beginning rather than at the end of the Pliocene, then in the strata of an older period, at least the Miocene, perhaps the Oligocene, that we must look for those ancestral forms which will show us the anthropoid foot and leg assuming the characters which we regard as human. "We are far," said Darwin, "from knowing how long it was since man first diverged from the Catarrhine stock, but it may have occurred at an epoch as remote as the Eocene period." We see, then, that Darwin was prepared to find fossil remains showing changes in the foot and leg such as I have just mentioned even earlier formations than the Oligocene.

#### EVIDENCE FROM THE ANATOMY OF ANTHROPOIDS.

Having thus surveyed the evidence afforded by the fossil remains of man I propose now to inquire how far our present knowledge of the structure and habits of man's nearest allies—the anthropoid apes—will assist us in solving the problem of human posture. Our knowledge of these allies, both living and extinct, has greatly extended since Lamarck and Darwin formulated their theories, and we realize that both of these great men grossly underestimated the complexity of the problem and failed to realize that the structural adaptations which made plantigrade progression possible for man were not sudden transformations produced for man's particular benefit, but had come into existence during the evolution of the anthropoid body. It is in the evolution of the early anthropoids that we have to seek for the rise and development of the chief postural modifications of man's body. This truth was brought home to me very forcibly over thirty years ago when, as a medical officer and naturalist attached to a mining company exploring the mineral wealth of the Malay Peninsula and of Siam, I was drawn into a study of the apes and monkeys living in the jungles of these countries. These were regions in which malaria was endemic, and I set out to ascertain if the apes of the jungle suffered as much from fever as did the people of the villages. There were in my neighbourhood wandering troops of three kinds of ape, all of about the same size—weighing from 15 to 20 lb.: (1) the gibbon, the smallest and by far the most primitive of anthropoid apes; (2) various species of *Semnopithecus*, best known by their Indian cousin—the langur or holy monkey; (3) various species of the macaque monkey. My attention was soon transferred from the primary object of my investigation to the remarkable anatomical features of the gibbon's spine and trunk; in their arrangement the bones and muscles of the gibbon were altogether human, while the same parts in the *Semnopithecus* and macaque, which outwardly looked as if they might be cousins to the gibbon, were altogether different. It was then I realized that the history of many of man's postural adaptations had to be traced back to the evolution of the gibbonish or hylobatid body (*Hylobates* is the generic name for the gibbons). Nor was there any difficulty in ascertaining that these structural features of the gibbon's body were postural adaptations. In his flight from tree to tree the gibbon's manner of progression differs altogether from that of monkeys. It is true that before starting their flight the resting posture of gibbon and monkey is much the same; both sit in a semi-erect posture, resting on their ischial callosities. In progression the gibbon uses his long arms as the chief means of support and of propulsion; he leaps with his arms; the lower limbs are deftly used as accessory means of support or as the chief means when running along horizontal branches. The body is held, in all movements, upright to the plane of progression. The gibbon is *orthograde* in its gait, whereas his neighbours, the monkeys, are *pronograde*; as they passed from branch to branch, or from tree to tree, their bodies are held parallel to the plane of motion. The *Semnopithecus* was a heavy jumper; in a forward leap the impetus came from the hinder limbs and loins; the hands and arms were used to clutch the branch on



which he lighted, but were never lifted in the hand-over-hand method which is habitual in the gibbon—a true trapeze athlete. These early observations convinced me that if we are to seek for the beginnings of human posture we must first unravel the history of the gibbons.

#### *The Evidence Afforded by Gibbons.*

In point of structure the gibbon occupies a central position among the higher form of primates. It is linked to the three surviving great anthropoid apes—the gorilla, chimpanzee, and orang; all of these show a greater degree of adaptation than the gibbon to the orthograde posture. We have also good reason for believing that they are later in date of evolution. The gibbon, when allowance is made for its postural modifications, stands out as the cousin of old-world monkeys; all of these are pronograde in their gait, but in some the arms are used and developed to a much greater degree than in others; this is particularly true of those forms in which the tail has become reduced in length and strength. We shall see that the development of the tail depends on posture and gait. The gibbon is also cousin to the higher forms of South American monkeys; in some points of structure it is more nearly allied to them than to the monkeys of Asia and of Africa. The higher new world apes, although essentially pronograde in their gait, show a specialization of their hinder limbs, and in many cases a peculiar use of their tails, in grasping and climbing. While in the evolution of the gibbon the upper limbs have been exploited as means of support and progression, the specialization of function in South American monkeys has been concentrated on the lower limbs—they are used for suspension rather than for support. The structural similarity which unites gibbons, old-world monkeys, and new-world monkeys is such that we must regard all three as arising from a common ancestral form, from which has arisen a series of postural types represented in the small anthropoids and monkeys of the old and of the new world. The chief problem in the evolution of the gibbon, as of man, is the discovery of the machinery which Nature employs to mould structural form to postural function; the nature of this machinery we shall consider later. Meantime, so far as concerns the group of primates to which man belongs we may safely say that the greatest structural revolution which marks the history of this group occurred with the evolution of the gibbon. It is to this ancient structural revolution that man owes the chief of his postural modifications.

#### THE ANTIQUITY OF THE ORTHOGRADE POSTURE.

All the evidence at our disposal points to an ancient origin for the small anthropoids of the hylobatian or gibbon type. Fossil remains of them have been found in the Pliocene and Miocene deposits of Europe, and so like are they to the corresponding parts of modern gibbons that we feel certain that in the living gibbon we are dealing with an ancient and conservative type which has come through long geological epochs almost unchanged. It is highly probable that the orthograde gibbon and its pronograde cousins of the old and new worlds began to be differentiated towards the end of the Eocene period. In the Eocene formations of North America and of Europe are found fossil remains of numerous primates, but all of those so far discovered are tarsoid in form—more generalized in structure than gibbons or monkeys. The common stock from which gibbon and monkey arose will probably prove to be an Eocene tarsoid. That the orthograde hylobatian type had been differentiated from the ancestral pronograde monkey type at an early period is proved by the discovery of the remains of fossil apes in the Oligocene deposits of Egypt, which in point of geological age are intermediate to the older Eocene and more recent Miocene formations. Amongst these Egyptian fossil remains, which were described by Professor Schlosser in 1910, was the left half of a mandible of a small and primitive form of gibbon. Whether or not this early gibbon possessed the orthograde posture we have as yet no certain means of telling; but there is good reason for presuming that it did.

#### THE TROGLODYTE OR GREAT ANTHROPOID STAGE.

The first or hylobatian stage in the evolution of man's posture came during a remote geological epoch, with the appearance of the small type of anthropoid ape now represented by the gibbon. The second stage came with the evolution of the great anthropoid apes; and because the chimpanzee is the most generalized surviving member of this group and in former times was given the generic name of

Troglodytes, this stage in the evolution of man's posture may be named the "Troglodytian." All available evidence points to the great anthropoids as having been evolved from a small anthropoid ancestry. In bulk and strength of body man and the chimpanzee are nearly alike, but the male orang, and particularly the male gorilla, outstrip the strongest man in strength and weight of body. With the evolution of the great anthropoids from the small, the weight of the body undergoing then an eight- or twelve-fold increase, adaptations for the orthograde posture and gait were necessarily modified as well as strengthened. In none of the great anthropoids do the arms reach the high degree of specialization in structure and function to be seen in modern gibbons; none of them are pure brachiators as are gibbons. In the orangs, it is true, the arms are much more important and more developed than the legs for arboreal progression; in the gorilla the opposite has happened; the lower limbs are the more specialized. The chimpanzee holds an intermediate position, both limbs being developed to an equal degree, as was probably the case in early anthropoid forms. One other point deserves mention; in the gibbon, as in old-world monkeys, there are ischial callosities to serve as natural rests in the sitting posture; in the great anthropoids these callosities have disappeared. As in man, true rest is obtained by the great anthropoids only when the body is laid prone upon bed or tree scaffold.

Such scanty evidence as we now possess leads us to believe that the troglodytian, or second, phase in the evolution of man's posture, took place about the end of the Oligocene period or the beginning of the Miocene. We know of the fossil remains of at least six species of *Dryopithecus*, an anthropoid which was neither less nor more primitive than any of the surviving giant anthropoids. The earliest traces of *Dryopithecus* come from deposits belonging to the middle of the Miocene period; it will probably be found that the great or giant form of anthropoid is pre-Miocene in date of origin.

#### THE THIRD OR PLANTIGRADE PHASE.

We come now to the third phase in the evolution of man's posture—the plantigrade stage. The first, or hylobatian, stage came with the appearance of the gibbons; the second, or troglodytian, with the evolution of the great anthropoids; and the third, the really human stage with which we are now dealing, when the line leading on to man branched off from the great anthropoid stock. The structural changes which occurred in the third stage were confined almost entirely to the lower limbs. The knees and thighs became more extended and strengthened until the lower limbs came to appear as if they were a downward continuation of the trunk. The pelvis or iliacum of the lower limbs, as also of the spinal column, was modified; the hip and knee joints became adapted to the new posture; the muscles and bones of the leg assumed a human form; and, above all, the foot was transformed. We shall see, however, that underneath all that is so peculiarly human in our lower limbs there still lurk numerous vestiges and arrangements which we can only explain by supposing that at one time all the parts had passed through a troglodytian stage in their evolution. In the third stage only minor alterations occurred in the structure of the trunk. The chief adaptations to fit the thorax and the abdomen to the erect posture had been nearly perfected before the third or plantigrade stage had commenced.

In which geological period the third stage was entered and the plantigrade posture evolved we cannot as yet fix with any degree of certainty. No fossil form has yet been found in which the lower limbs are in process of transformation. It is true that the lower limbs of Neanderthal man show minor anthropoid traits, but it is also true that the femur of *Pithecanthropus* is a fully developed human form. No one who accepts evolution as a working hypothesis will have any difficulty in regarding the three great anthropoids—the gorilla, the chimpanzee, and the orang—as divergent branches from the common giant stem. Seeing that man shares so many characters in common with these we are compelled, I think, to regard man as an aberrant branch from the troglodytian stock or stem, and it is therefore probable that the plantigrade posture was evolved as soon as the common giant stock began to break up into its various living and fossil forms. We know for certain that this stock was in existence before the middle of the Miocene period; and it is therefore prior to that very remote date, most likely about the beginning of the Miocene or end of the Oligocene—two or three millions of years ago at the lowest estimate—that the plantigrade posture began to be evolved.







## THE PROBLEM OF ARTERIO-SCLEROSIS.

As Sir Clifford Allbutt<sup>4</sup> has often insisted, arterio-sclerosis is not a disease. The word should only be used in a pathological sense to define a lesion which is common to many diseases. There are three distinct aspects of the problem—namely, the description of the vascular lesion, the relative importance in the production of this lesion of various pathological and physiological processes, and lastly its causation. There is fair measure of agreement as to the description of the lesion; there is, however, no accepted opinion as to the nature of the processes concerned in its production, and its causation is largely hypothetical.

## CLASSIFICATION OF ARTERIO-SCLEROSIS.

Arterio-sclerosis is too large a subject to be considered as a whole in detail. It is conveniently divided into four main types based on anatomical changes—namely, nodular, diffuse hyperplastic, senile, and Mönckeberg's sclerosis.<sup>5</sup> This is Councilman's classification<sup>6</sup> with the addition of Mönckeberg's sclerosis. The classification of arterio-sclerosis is fully discussed by Sir Frederick Andrewes,<sup>7</sup> but I have not followed his classification, since several forms of arterial disease, such as syphilitic mesoarteritis and arteries undergoing involution, which he includes under the term "arterio-sclerosis," are excluded by definition from this review.

At the same time the four main forms of arterio-sclerosis mentioned do not include all varieties of arterio-sclerosis commonly met with. There are among others more or less mixed forms that must be placed in the class to which the more prominent lesions belong, and there are forms of diffuse intimal thickening, particularly in the aorta and larger vessels, which are fibrotic rather than hyperplastic, and which seem to undergo fatty degeneration at an early stage in their evolution. For the present I am chiefly concerned with the type of arterio-sclerosis termed "diffuse hyperplastic sclerosis,"<sup>8,9,10,11</sup> and its relation to the other three types of arterio-sclerosis will be considered later.

## DIFFUSE HYPERPLASTIC SCLEROSIS.

This type of arterial disease is the same as that termed "diffuse arterio-sclerosis" by Osler, "secondary arterio-sclerosis" by Thoma,<sup>12</sup> and "arterio-capillary fibrosis" by Gull and Sutton.<sup>10</sup> It is found in children<sup>13</sup> with renal disease and in adults with chronic nephritis (chronic parenchymatous nephritis) and true chronic interstitial nephritis,<sup>14</sup> also (as will be discussed later) in association with left ventricle hypertrophy and raised blood pressure, and lastly, in certain cases as an incident when death has resulted from some other not related cause. My observations on the histology of the lesion are based on the opinion that the nature of the arterial lesion and its evolution is the same in these different conditions and diseases, excepting that in the case of chronic nephritis it may be limited in its distribution and may indeed exceptionally be limited to the kidneys. The histology of diffuse hyperplastic sclerosis was the subject of controversy between Johnson and Gull, but Jores has made the greatest contribution to our knowledge of the lesion.<sup>15</sup> Aschoff and Gaskell<sup>16</sup> have followed up his work, and I have used the latter's method of gelatin imbedding in all my material for microscopic examination.<sup>17</sup> A short résumé of the main features of the lesion as previously described in detail<sup>18</sup> will now be given, with the addition of the description of the earliest stage of the lesion which I have not previously published.

*The Histology of Diffuse Hyperplastic Sclerosis.*

The essential lesion is a thickening of the intima in the smaller and smallest arteries. This observation is in complete agreement with Jores, and there can no longer be doubt on the matter. Reference will be made later to some observations on the histology and physiology of capillaries, and it will perhaps be shown in the future with more perfect histological technique that the earliest and most important changes are in the capillary endothelium. The intimal thickening is very uniform in the circumference of the vessel, and it may be so great as completely to occlude the lumen in the terminal arterioles, while the lumen of the parent arteries is often greatly reduced. In serial sections of kidney tissue the intimal change is fairly uniform in the length of the vessel both as regards the terminal arterioles and their parent vessels. There is no fatty degeneration in the small arteries, whereas in the arterioles there is marked fatty degeneration of the swollen intima. In a cross-section of the arteriole stained with Sudan 3 the lumen may appear completely

filled with a plug of fat, or lying a little eccentrically may be seen a rosette of nuclei, the remnant of degenerated endothelial cells.

All vessels in a single organ are by no means equally affected. In slight or early cases the affection is limited to occasional vessels. When only occasional arterioles are affected, even when the lesion is complete and the arteriole lumen appears to be completely occluded with a plug of fat, the term "diffuse hyperplastic sclerosis" is not of course applied to the condition. For example, in the case of an apparently healthy young man, aged 19, who was killed by accident, I found two arterioles in the spleen in this condition; the rest of his cardio-vasculo-renal system was perfectly normal. The lesion is regarded as one of diffuse hyperplastic sclerosis when both arterioles and their parent vessels are affected, and as a rule it is found that the lesion in the parent vessels is more uniform, though it varies in degree, than in the terminal vessels. The changes found in capillaries will be considered later in discussing nephritis; their walls undergo hyaline swelling and focal fatty degeneration, the lumen becomes occluded, and they become empty of blood.

The intimal lesion in diffuse hyperplastic sclerosis is the structural change by which this form of arterio-sclerosis is recognized. Its chief incidence is on the finer ramifications of the vascular system, the terminal arteries and their parent vessels being chiefly or only affected; when the arteries from which the so-called parent arteries are given off are affected, they show similar changes to those seen in the parent arteries, while the intima of vessels of the size of the renal and radial artery is fairly normal in appearance. I have not identified a characteristic change in the larger vessels such as the aorta and its branches apart from the medial hypertrophy which is apparently present in marked cases of diffuse hyperplastic sclerosis associated with a raised blood pressure and left ventricle hypertrophy. In some cases the larger arteries show structural changes characteristic of nodular or senile arterio-sclerosis.

The distribution of the lesion in the several organs of the body shows considerable uniformity. The kidney and spleen are most commonly affected; so far as I have observed the spleen is not affected independently of the kidney, but since there are occasional cases in which the kidney is affected without the spleen being involved, it follows that of the two organs the kidney is rather more often affected than the spleen. The incidence of the lesion in the splenic vessels is a criterion of its general incidence in other organs, the kidney affection being a less reliable criterion because of the association of the vascular lesion with chronic nephritis. The brain appears, from my observations, to be the next organ most liable to this vascular lesion; and after this come the pancreas, liver, suprarenal glands, and, less often, the vessels of the stomach and intestines. I have seen no specimen in which the lesion was present in the heart; 70 cases have been examined, including many in which the lesion was well developed in other organs, hence it follows that its presence in the heart vasculature must be uncommon. The lesion has not been found in skeletal muscle. Other organs have been examined, and the lesion has been found in lymphatic glands and in one case in the ovaries; no example of the lesion has been found in skin, pituitary, thymus, urinary bladder, prostate, or uterus, but too few specimens have been examined to lend weight to the absence of the lesion in these organs.

*Nature of the Intimal Thickening.*

The sequence of changes that take place in the thickening of the intima cannot be determined by the investigation of the condition of the vessels in a single subject, and it is of course an assumption to describe as occurring in a sequence the various changes observed in different vessels in organs taken from different subjects; at the same time I believe that the changes in the arterial wall occur in the order that I now intend to describe. The first change to occur in the arterioles is a swelling and proliferation of the endothelial cells (Fig. 1). The new endothelial cells become flattened and undergo hyaline swelling, and the next stage in the process is the appearance of fatty granules in the cells (Fig. 2). The stainable fat increases, the granules coalesce, the cell outline is lost, and finally the cell protoplasm is replaced by fat. It is at this stage that the arteriole is frequently seen in cross-section with its lumen plugged with fat and the nuclei forming a tiny rosette in the centre. Ultimately the nuclei disintegrate and disappear, and the last cells to survive are those



nearest to the lumen, perhaps because they are the youngest, most recently formed cells, and because of their situation have the best supply of oxygen. In serial sections of arterioles parts that have undergone hyaline swelling merge insensibly into areas, or rather lengths of fatty degeneration; there is also a variation in the amount of Sudan 3 taken up, and its colour varies between yellow and vermillion red. When the arteriole is traced into the vessel from which it springs the fatty degeneration is seen to stop short at the wall of the parent vessel. This vessel characteristically contains no fat within its walls, and is in this in striking contrast to the fatty degeneration in the terminal arteriole.

#### *Changes in the Parent Vessels.*

The thickened intima of the parent vessels—a thickening which may be so marked as nearly to obliterate the lumen—consists of cells, fibrils of connective tissue and elastic tissue, and hyaline intercellular substance. The prominent feature of the thickened intima is the amount of hyaline substance present, the new formation of connective tissue, and the fine fibrils of elastic tissue that permeate the whole coat. In active and early lesions there is a considerable increase in the number of cells present, but more often there is a relative paucity of cells, though allowing for the great increase in the thickness of the intima there is even in these cases an increase in the number of cells over those present in the normal intima.

1. *Cellular Proliferation.*—Endothelial proliferation is more difficult to demonstrate in the parent vessels than in the arterioles, but there is no doubt of its occurrence. Fig. 3 shows an active stage of endothelial proliferation in a vessel taken from a section of a kidney with chronic nephritis. Fig. 5 shows a later stage, an appearance more frequently seen; the inner layers of cells are flattened endothelial cells, and they are seen lining the lumen in a close-up view of the same artery shown in Fig. 6. It is probable that some of the cells in the thickened intima arise by proliferation of the subendothelial cells.

2. *Origin of Elastic Fibres.*—Elastic fibrils are laid down by cells morphologically identical with connective tissue cells,<sup>22</sup> and in addition to this method of formation it has been suggested by Jores that the elastic tissue of the hyperplastic layer arises by a process of growth and splitting of the internal elastic lamina. The appearance of some sections of diseased arteries suggests the possibility of elastic fibrils being laid down directly by endothelial cells. In a case of endarteritis obliterans (type of Winiwarter) affecting the anterior tibial artery there was great thickening of the intima arising suddenly, almost like a shelf, in the lumen of the vessel. The thickened intima was enormously cellular and the cells had the appearance of flattened endothelial cells, in between which were found fibrils of elastic tissue almost enfolding the cells in their meshes. At one place the endothelial cells were arranged in a number of concentric layers enclosing a lumen, and near the lumen of this vessel, which seemed to be in the process of formation *in situ*, was a thick folded layer of elastic tissue, and lying flat on it, almost like slugs on celery, were endothelial cells.

3. *Origin of Hyaline Substance.*—The formation of hyaline is not without doubt a degenerative process. Adams<sup>19</sup> uses the word "inflammation" as reaction following injury, and the response to it. For the sake of clearness for my present purpose I would add the words "and to the effects of it." In distinction from a process of inflammation a process of degeneration is one in which there is no reaction on the part of the affected tissues to the change in their environment, the changes observed being a passive result of the alteration in environment, and the later phases of these changes are loss of function and cell death. I apply the term "degeneration" when fat appears in cells that do not normally contain it. Thus if an intimal cell contains fat it is regarded as undergoing the process of degeneration, whereas, of course, the appearance of fat in a liver cell has no such significance. It is agreed that the appearance of amyloid and calcification is evidence of degeneration. It is with the interpretation of the earlier phases of the process of degeneration that the difficulties occur. Thus it seems that cloudy swelling and a hyaline change may be either inflammatory in the sense that I have defined the word (that is, in its widest sense) or degenerative. Hyaline change is indeed commonly classed among the processes of degeneration in textbooks of pathology, and is in fact referred to as hyaline degeneration. In many instances the origin of the hyaline

material is difficult to determine, in other cases there is little doubt as to its origin. Thus masses of hyaline deposit may become hyaline, as may blood coagula in thrombi of aneurysms, and similarly the thrombi of a vessel may undergo hyaline change. The hyaline change occurring under these circumstances is regarded as a degenerative change, and the clearest example is the material of dead protoplasm washed with tissue fluids to hyaline material.<sup>23</sup> Hyaline material appears also to be derived directly from cells, either as a secretion by glandular epithelium or as an accumulation of hyaline substances in the protoplasm of the cells. It is probable that the hyaline in the intima of the thickened arteries now under discussion arises in this way by a process of secretion by the endothelial cells or by the subendothelial cells. The coincident appearance of hyaline substance and cellular proliferation, the fact that the change does not progress to fatty degeneration, and lastly, the clear outline of the cells in the thickened intima and the good staining of their nuclei, are reasons for refusing to accept the presence of hyaline substance as evidence of a degenerative change. This point of view is clearly stated by J. Lorrain Smith, who writes:

"Hyaline material is deposited in the walls of capillaries causing a gradual leading to closure of the lumen. The appearance of the endothelial cells. This change is seen in senile conditions, and also in chronic inflammation, where it extends beyond the vessel newly formed connective-tissue fibrils. In these examples it originates chiefly in the endothelium and may be regarded as secretory in form."

4. *Origin of Connective Tissues.*—The question of a degenerative process being involved in the formation of the fine connective tissue fibrils that permeate the thickened intima in diffuse hyperplastic sclerosis does not arise. There is no doubt that the process involved is one of inflammation in the sense in which that word has already been defined; in fact, the definition need not be so wide, and the word in this connexion can be used in the limited sense of "reaction following injury and the response to it." As has already been seen there is no necessity for regarding the hyaline substance as a degenerative change, and therefore there is no need to explain the formation of connective tissue as an effect of the presence of hyaline substance. It is generally held that the connective tissue which often forms an appreciable part of the intimal thickening is derived from the subendothelial cells which by their proliferation contribute to the cell increase in the thickened intima. In addition to its origin from these cells it is possible that some of the connective tissue is derived from the endothelium. Thus Baumgarten has made observations which indicate the origin of fibroblasts and connective tissue from vascular endothelium under mild grades of irritation. Sir Bernard Spilsbury allows me to quote his observation of the appearance of connective tissue fibrils immediately under the growing layer of endothelial cells as they spread over a newly formed thrombus on a heart valve; in this latter case there were no cells in the neighbourhood from which the connective tissue could have been derived other than the endothelium.

#### *Summary and Discussion of Changes in Intima, Media, and Adventitia.*

Joseph Coats<sup>21</sup> maintained that the essential constituent of blood vessels is the intima. The endothelium is the universal lining of the vascular system; every vessel, in fact, has an intima, but only the arteries and veins have a media and adventitia; also in the formation of new vessels the primary event is the formation of a tube composed of endothelium by a process of budding from existing vessels. The paramount importance of the intima in health is maintained in disease, and I believe that the endothelial changes are the key to the interpretation of the lesion in diffuse hyperplastic sclerosis. It may be possible in the future to be more explicit in this statement and to bring forward convincing evidence that the endothelium plays the greater part in the intimal change. The specimens have been shown in which there is active proliferation of the endothelium; evidence has been brought forward that raises the question of elastic tissue formation by endothelium; the formation of hyaline material by a process of secretion from endothelium has been discussed; and finally, the formation of connective tissue by endothelial cells may be accepted as a fact. In short, the various constituents of the thickened intima in diffuse hyperplastic sclerosis, the proliferation of cells; the increase of elastic tissue, the formation of connective tissue, and the production of hyaline substance



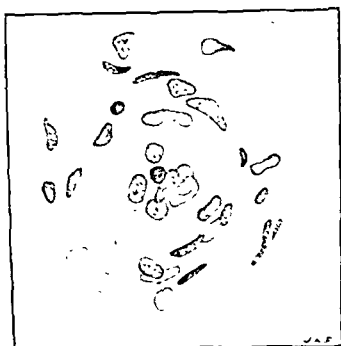


FIG. 1.—A terminal arteriole showing proliferation and swelling of endothelial cells; the lumen is almost obliterated and is occupied by a mononuclear cell. The earliest stage of diffuse hyperplastic sclerosis.

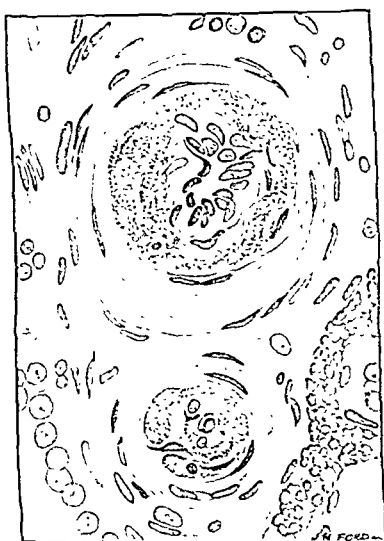


FIG. 2.—A later stage of the lesion, showing an arteriole with having undergone transformation (shown in section 3), with shows a still later stage, in which the lumen is completely obliterated and the cells further degenerated. The media is intact in each arteriole.



FIG. 4.—Same vessel as Fig. 3, stained with Weigert's elastic stain to show new formation of elastic tissue.

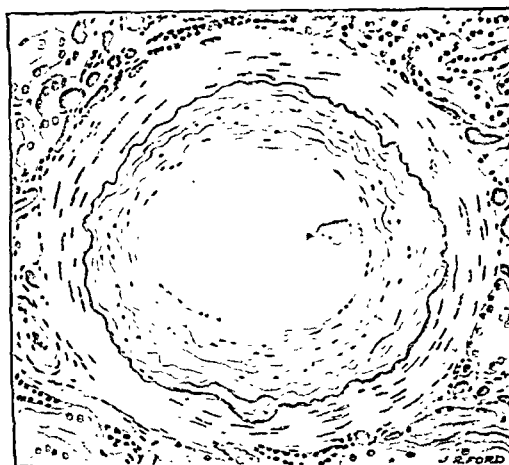


FIG. 5.—A later stage of the same process. The endothelial cells are now flattened; the new-formed elastic tissue is more regularly disposed.

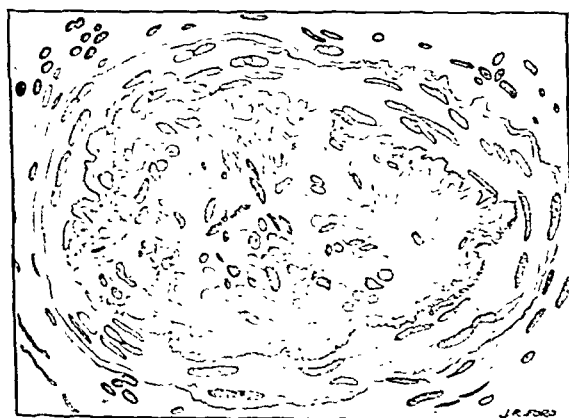


FIG. 3.—Endothelial proliferation in a parent vessel with simultaneous formation of elastic tissue. No fatty degeneration present. Early stage of lesion.



FIG. 6.—Close-up view of part of wall of same vessel to show the flattened endothelial cells, the new-formed elastic layers, the internal elastic lamina, the media, and surrounding kidney tissue in this order from above downwards.



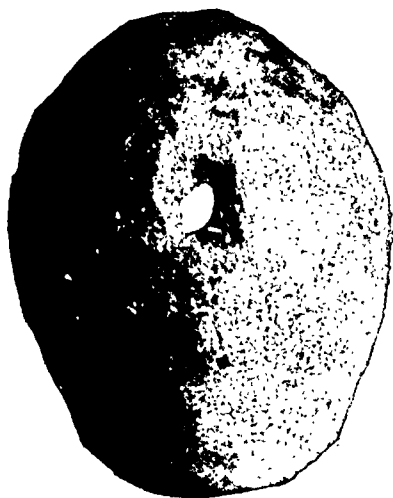


FIG. 1.—The "Thames" prehistoric trephined skull. (London Museum.)



FIG. 6.—Trephined Neolithic frontal bone from a long barrow, near Bisley, Gloucestershire.



FIG. 2.—Experiment showing method of scraping skull.

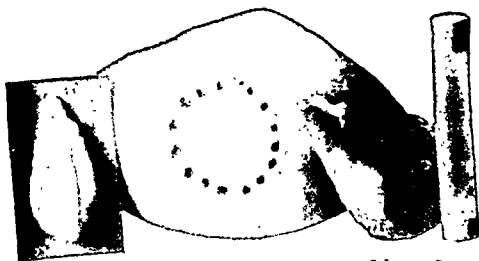


FIG. 3.—Boring and sawing by hand borers.



FIG. 7.—Experiment showing how Bisley skull was probably trephined.

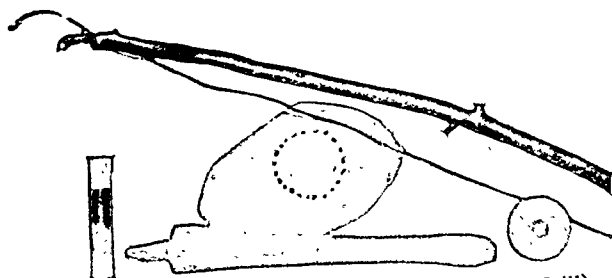


FIG. 4.—Boring and sawing by mechanical borer (bow drill).

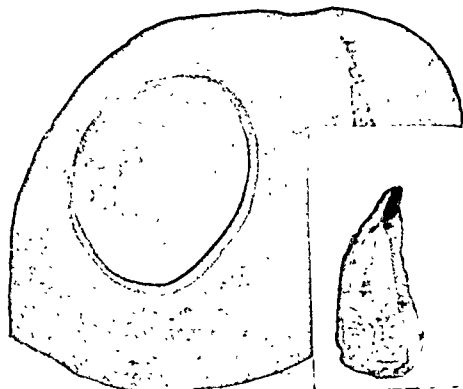


FIG. 8.—Push-plough method. First stage.



FIG. 9.—Push-plough method. Second stage.

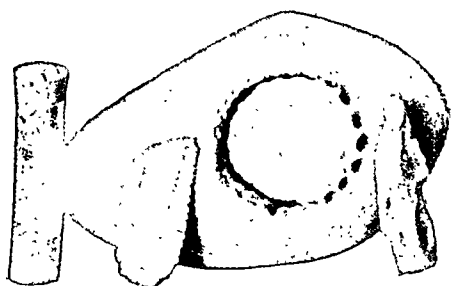


FIG. 5.—Boring and sawing. Final stage of either of the two former methods.

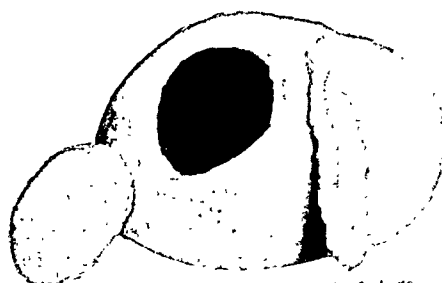


FIG. 10.—Push-plough method. Final stage.



may all result from the increased activity of the endothelium. It will be remembered that in pure forms of diffuse hyperplastic sclerosis—and in speaking of "pure" forms of diffuse hyperplastic sclerosis I mean to exclude those cases in which senile arterio-sclerosis complicates the picture—fatty degeneration is confined to the terminal arterioles of the kidney and the smaller vessels in other organs. The presence of fatty change in these vessels will be referred to later, but the point that I would make now is the absence of any change that is beyond doubt degenerative in the vessels of second size—that is, the parent vessels of those affected by fatty change.

In addition to the thickening of the intima there is sometimes hypertrophy of the media in diffuse hyperplastic sclerosis. This is the only change in the middle coat, pathological changes being characteristically absent. The medial hypertrophy cannot otherwise be regarded than as a physiological response to the increased blood pressure that is present in the majority of cases of diffuse hyperplastic sclerosis. I have previously called attention to the fact that diffuse hyperplastic sclerosis of limited extent may be found after death in bodies in which the heart is not increased above 15 oz. in weight, and in which the blood pressure during life was below 180 mm. Hg. Hypertrophy of the media is not evident in these cases. There are also cases of diffuse hyperplastic sclerosis in older cases in which fatty degeneration of the media occurs and the media appears stretched in section and apparently thinner than expected in a normal artery of the same size. I have not made exact comparison in these cases, and can only express the opinion from my observations that medial hypertrophy is a common accompaniment of marked cases of diffuse hyperplastic sclerosis, and that it is present in cases in which there was a definitely raised blood pressure during life or marked hypertrophy of the left ventricle after death, though there are slighter cases of diffuse hyperplastic sclerosis in which no medial hypertrophy occurs. This medial hypertrophy is neither the essential element nor a constant feature of diffuse hyperplastic sclerosis. It is possible that the raised blood pressure precedes the vascular lesion in some cases, and it may be, therefore, that medial hypertrophy precedes intimal thickening under these conditions; in any case the medial hypertrophy is frequently so pronounced that it is regarded by some observers as the essential element in this form of arterio-sclerosis.<sup>12</sup>

Gull and Sutton emphasized the thickening of the adventitia in arterio-capillary fibrosis. This is present in some cases, and I have noticed it in the renal vessels and perhaps also in the spleen. It is difficult to distinguish between an increase in the adventitia and an increase in the perivascular connective tissue which is present in considerable quantity in both these organs. It has escaped my observation in other organs of the body, and needs closer study than I have given it.

#### Conclusion.

The main feature of diffuse hyperplastic sclerosis is a thickening of the intima, accompanied sometimes by hypertrophy of the media. The intimal changes are the essential lesion. Activity of the endothelial cells is largely responsible for the intimal thickening. In this thickening the process of degeneration plays a secondary part; it is only certainly present in the terminal arterioles of the kidney and the smallest vessels of the other organs. The characteristic feature of the lesion is an intense tissue activity, which is the very antithesis of a process of decay. The nature of the process concerned in the production of this lesion will be considered in the next lecture.

#### REFERENCES.

- <sup>1</sup> Osler, Sir William: *Principles and Practice of Medicine*, eighth edition, 1918, 831. <sup>2</sup> Thorel, Ch.: *Lubarsch-Ostertag*, 1915, 1, 171. <sup>3</sup> Marchand: *Archiv. des Comp. f. inn. Med.*, 1924, 21, 58. <sup>4</sup> Allbutt, Sir Clifford: *Diseases of the Arteries and Anemia Pectoris*, 1915. <sup>5</sup> Mönckeberg: *J. G. Amer. Phys.*, 1891, 6, 179. <sup>6</sup> Reports, 1911-12, Suppl. <sup>7</sup> *Arch. Oxfor.*, 1921, 14, 215. <sup>8</sup> Thorel: *ibid.*, 1896; *Arch. Oxfor.*, 1921, 14, 433; further reference, *ibid.*, 1921, 14, 433. <sup>9</sup> Quart. Journ. Med., 1915, 8, 201. <sup>10</sup> *ibid.*, 1921, 14, 215. <sup>11</sup> Path. and Bact., 1912, July. <sup>12</sup> Ruescher, Leo: *Amer. Journ. Med. Sci.*, 1908, 136, 567; and 1910, 139, 107. <sup>13</sup> *Med. Wissen*, 1876, No. 4. <sup>14</sup> Adams, J. G.: *Medicine*, 1911, 1, 785. <sup>15</sup> Smith, Lorrain: *Medicine*, 1913, 1913, 207. <sup>16</sup> Coats, Joseph: *Manual of Pathology*, third edition, 1935, 466. <sup>17</sup> Jores, L.: *Ziegler's Beitr.*, 1893, 24, 438.

## An Address

ON

## TREPHINATION OF THE LIVING HUMAN SKULL IN PREHISTORIC TIMES.\*

BY

T. WILSON PARRY, M.A., M.D. CANTAB., F.S.A.

[With Special Plates.]

SIXTY years ago not even the most eminent scientist in Europe was aware of the fact that, in prehistoric times, our primitive ancestors used to trephine the living skulls of their fellow tribesmen with implements made of stone. The knowledge of this was rendered possible by a discovery made by a general medical practitioner. And here I should like to say that such of you as are about to enter general practice will find, I think, this branch of our profession of a peculiarly satisfying nature, in that not only does it have for its aim the carrying out of ethical ideals by sound practical methods, but there is scope, at leisure moments, for the study of those wider interests that do not actually belong to our profession, but which are stimulated by the atmosphere created by our education, trend of thought, and environment.

Prunières, a general practitioner of Marvejols in the department of La Lozère, France, was a man who spent much of his spare time in antiquarian research. While examining a large dolmen, near Aiguères, in 1865, he discovered a skull with a curious hole in it. The hole had smooth, shelving edges which looked as if they had been polished. Prunières was puzzled as to the nature of this hole and came to the conclusion that, finding the skull in a dolmen, it had belonged to a Neolithic savage and had been converted into a drinking cup, a custom which not infrequently exists among savage tribes, and that this smooth-faced hole had been specially designed for the application of the lips. Now these dolmens were constructed during the third or Carnac stage of the Neolithic period, which ended in north-western Europe about two thousand years before the Christian era. The whole of the Neolithic period is computed to have lasted some twenty thousand years, the third and last division probably occupying from four to six thousand years, so that the age of these dolmens may be estimated as being not less than four and even as much as eight to ten thousand years old—the last word in these megalithic buildings being that magnificent pile known as Stonehenge, which was erected at the beginning of the Bronze Age.

Prunières was not correct in his surmise about the drinking cup. To Broca belongs the credit of explaining that the smooth, polished-looking surface of the sides of the hole in this skull was due to a healing process that had taken place in a wound of the bone during life. After this first discovery many other specimens were unearthed from the dolmens existing in those regions, so many, indeed, as to compel one to believe that, during the latter part of the Neolithic period in France, a fetish of a most extraordinary kind was prevalent among the inhabitants, and this fetish consisted in trephining the healthy human skull for some purpose of a superstitious nature, for none of the skulls showed any sign of either fracture or disease.

And now comes the point when it might very reasonably be asked, How can you definitely prove that these holes, which we now know were made during life, were the result of an operation, deliberately planned and carried out by Neolithic man? Is not this suggestion merely guesswork? Broca, having found out all he could from the nature of the specimen itself, and from the place where it was found, and the associations, turned his eyes in another direction.

Here it may be explained that all primitive tribes, on their way upward from savagery to civilization, pass through the same phases. Every nation starts with its so-called "Stone Age," when the chief material used for the making of their implements is stone. Wood, slate, shell, bone, and teeth are also used during this period. When culture has proceeded farther, metals are discovered, the first being the more malleable ones—copper and tin. By accident or experiment they find that a harder and much more serviceable metal is obtained by blending these two metals by heat, bronze being the outcome—thus the Bronze Age. When iron is discovered a stupendous advance has been made, and the early Iron Age.

\* Given before the Listerian Society of King's College Hospital on January 17th, 1923.



of any tribe denotes that great progress has been effected by that tribe. My point in mentioning this is to demonstrate that if only we study the life and customs of those tribes who are still going through their age of stone culture we are able, by analogy, to explain what our own ancestors did when they were passing through this early stage of evolution.

Information had been brought by travellers from certain of the South Pacific islands that the natives there actually performed this operation, at that time, on their living comrades with implements made of obsidian, shell, or shark's teeth. Since the white trader had visited those islands and introduced glass bottles—unfortunately usually in the form of whisky receptacles—the natives had manufactured implements from this glass and used these in preference to those of obsidian formerly employed. Broca had heard tales of this, and he actually made an experiment on a dead infant's skull with a piece of sharp-edged glass, and found that a hole could be made quite quickly and easily by its means. Broca had, however, only been imperfectly informed, as he came to the conclusion that all these trephine holes, in the many specimens found in France, had been made when the subjects were infants. He had not been told and he did not believe that the operation was actually performed during life on adults.

#### EXPERIMENTS TO DEMONSTRATE METHODS OF PRIMITIVE TREPHINATION.

Ten years ago, in order to get a correct and practical understanding of how primitive man (Neolithic and Modern) performed this operation, I began a series of some fifty experiments on both recent and dry human skulls with all the primitive implements that have been used for the purpose—namely, flint, obsidian, shark's teeth, shell, glass, and even slate. The only material likely to have been used in north-western Europe was stone, and the kind of stone best suited for the purpose is flint. Flint is, as you are well aware, of sedimentary formation, and it possesses the power when force is brought to bear upon it in a certain way of being split into flakes. These flakes can be made, according to the skill of the knapper, with sharp points and edges, and make excellent knives, saws, scrapers, and borers, such as would be required in any primitive household. Neolithic man also constructed most exquisitely shaped arrow-heads, spear-heads, and javelin-heads, for defence of the home and offence in the hunting and fighting field.

With these crude implements at his disposal Neolithic man, in different parts of the world, conducted this somewhat hazardous operation without anaesthetics, without antiseptics, and with dressings which would have shocked the susceptibilities of any member of the Listerian Society. And yet with all these drawbacks he got, like the present-day quack, amazing successes. I make out there were four principal methods by which he performed this operation—namely: (1) by scraping the bone (Figs. 1 and 2); (2) by boring a circle of holes and sawing the intervening spaces (Figs. 3, 4, and 5); (3) by furrowing the bone by the push-plough method (Figs. 6, 7, 8, 9, 10, and (?) 11); (4) by sawing out a quadrilateral button of bone (Figs. 12 and 13).

##### 1. Scraping.

Whether the scraping be done by flint flakes, sharp-edged pieces of obsidian, or pieces of strong sharp shell, such as are found on the shores of the South Pacific islands, the principle and method of procedure are precisely the same. For scraping a hole in bone, metal not being considered, there can be no better natural implement than a well flaked piece of flint. Where flint cannot be obtained, as in volcanic regions, obsidian makes a good substitute. Obsidian is a natural volcanic glass, and can be flaked in the same way as flint by a sharp, well directed blow. The obsidian I used came from the Lipari Islands, north of Sicily. Contrasting these two substances I would give flint the first place. A hard, sharp edge can be obtained in flint, which is more resistant to counter-pressure than is obsidian. Obsidian, like glass, can give an even sharper edge than flint, but it is much more brittle and the operator stands in some danger as regards his eyes, from the sharp spicules that fly in every direction. I may recall that while flint is a siliceous sedimentary deposit, obsidian is of igneous formation; both flint and obsidian, when freshly flaked, are excellent substances for surgical purposes. Their newly fractured surfaces, which are smooth—and in this respect obsidian would take pre-eminence—are aseptic, and this is a point of great practical value of which the primitive operator stood in blissful ignorance. It surprised me at first, in no small measure, to find how cleanly and easily a flint

knife could cut through the scalp, and obsidian I found equally as good if not better. At the present day the natives of the Andaman Islands shave their heads with obsidian knives. The method I employed for scraping the trephine-hole with both flint and obsidian was the following. Having made a V- or Y-shaped incision in the scalp, as is done by the primitive Melanesians, over the selected site of the operation, I scraped as nearly as possible along a single line on the bone with a flint flake, which I held between the thumb and forefinger of my right hand. [Although Sir John Evans believed that our Neolithic ancestors used to haft some of these small flakes, I am convinced that no hafted implement was used in this case. This can be substantiated by the Melanesian method employed in these days, when the obsidian flake or piece of glass is held between the finger and thumb.] This line I gradually converted into a groove, which soon showed two more or less prominent ridges. The outer table of the skull is by no means as easy to remove in this manner as might be expected. The next step was to attack the edges of the groove with a curved movement of the scraper till a depression was produced in the bone, which gradually assumed an elliptical shape. It is now only a question of time and manipulation to convert this elliptical depression into a circular one, and thence, having penetrated the inner table of the skull, to expose the dura mater and enlarge the foramen in the bone to the size and shape required. In only one case can I remember slightly damaging the dura mater, and the reason of this was that my supply of Neolithic implements was limited and I had not to hand at the moment the particular shape I required. It must be remembered that when Neolithic man did this operation he would be bountifully supplied with probably hundreds of sharp, newly cut flakes, and immediately one became blunted, or was not to his fancy in any other way, he would naturally fling it aside and choose another. The average time taken by me to do this operation on a fresh adult skull was half an hour.

Trephining by shell was probably never attempted by Neolithic man in Europe, as our shells are not nearly strong enough to compete with such a substance as flaked flint, of which we possess a remarkable abundance. Primitive man, in the South Pacific islands, most certainly used shell for trephining, shell knives for ordinary use, and shell lancets for opening abscesses. I experimented, however, with an ordinary beach-worn oyster shell, and found I was able to trephine the skull of a 9-months-old infant in about twenty-five minutes, and, to my amazement, with a larger and stronger shell I made a large hole in the somewhat soft skull of a Maori in thirteen and a half minutes. What could not, therefore, be done with some of the powerful shells that are so prevalent among the islands of the South Pacific Ocean?

##### 2. Boring with Sawing.

Whether hand flint borers (Fig. 3), hafted flint borers, flint-tipped mechanical borers (Fig. 4), or hafted shark's teeth be used, the method employed is precisely the same. A series of holes, packed as closely together as possible, were bored in the form of a circle. These would number perhaps from fifteen to twenty-two, according to the size of the bone required to be removed. Having done this the bridges of bone between the holes would be cut through either by the side-to-side action of a strong flint flake or by means of a flint saw (Fig. 5). The enclosed rondel of bone was then liberated. This is a very arduous operation, especially if the holes are made by a hand borer (Fig. 3). A hand borer is a flint implement tapering to a point, held either directly in the hand or hafted into a wooden handle and used as if it were a clumsy bradawl. A quicker and much more effective method of drilling holes was most probably used. The bow drill (Fig. 4) is one of the oldest mechanical contrivances in existence. Canadian Indians, in pre-Columbian days, used one of these, without having any hard material affixed to its end, to make fire by friction against another piece of wood, touchwood or dried leaves being placed in near proximity to catch the spark. With a sharp point of some hard material this contrivance was used for drilling holes. I show you a lantern slide of an Incan skull on which this operation has been performed. I think the regularity of the holes and their proximity to each other will convince you, as it has convinced me, that they have been bored by mechanical means. This operation takes a considerably longer time to perform than one done by scraping, but, of course, a much larger hole can be made. It took me twenty-five minutes to do the first stage alone (drilling the circle of holes) on the cadaver of a male 68 years



of age, and it took me sixty-five minutes to remove a rondel from the skull of a female 40 years of age.

Another method of boring holes, and one which was formerly used in Melanesia, was by shark's teeth. As regards shark's teeth as surgical instruments, I am satisfied that, metal being again excluded, there is no more excellent natural implement for boring holes in bone than a hafted shark's tooth. Its keenly serrated edges and its strong, sharp point make it an instrument invaluable to the primitive surgeon. It moreover possesses a natural flange, which converts it into a trephine of undeniable utility, for the flange is so placed as to prevent the point penetrating too deeply into the thickness of the bone to the wounding of the dura mater. A ring of holes, packed closely together as before, followed by the breaking down of the bridges between them by a scraping and saw-like action of the implement, makes a hole, after removal of the rondel, with which any surgeon may be happily satisfied. Although it took me only twelve minutes to do this operation on the skull of an infant aged 14 months, it took me one and a quarter hours to do the first stage only of the same operation on an adult dry specimen and one and three-quarter hours to do a complete operation on another dry specimen.

### 3. The Push-plough Method.

Coming under neither of the two previous heads (scraping or boring) is, I am convinced, another primitive surgical procedure to which I find no reference in the literature of the subject. Lucas-Championnière does not successfully tackle the problem of how those skulls, found in the French dolmens, exhibiting extremely large trephinations, were

operated upon to produce such extraordinary effects. As the edge of the trephine ring shows a partial healing process they cannot be classed as examples of *post-mortem* mutilations of the skull for the purpose of making amulets. In the Museum of the Royal College of Surgeons casts of some of these skulls can be seen, and it fills one with amazement to consider the daring of the primitive surgeon, a feeling which, unfortunately, is mingled with a lack of admiration for his

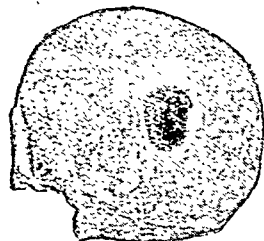


Fig. 11.—The "Edinburgh" prehistoric (?) trephined skull. (Wellcome Hist. Med. Museum.)

quality of judgement. Lucas-Championnière was inclined to believe that those trephinations that were not done by scraping were done by boring and sawing in the way we have already described. Now no one could possibly imagine that these large trephinations of which I speak were done merely by scraping the bone with a flint scraper; they are much too large for that, consequently it is inferred they were done by the boring method.

It is inconceivable to me that a large boring operation could be performed without there being left behind indisputable evidence of this method having been employed, for when the bridges of bone separating the perforations are cut through a large very ragged ring, comprised of half-holes and half-bridges, remains to tell the tale of how the rondel had been removed. No amount of new bone formation could completely obliterate this. It is possible, I grant, that by extending an already abnormally long operation the surgeon, by a special scraping manipulation, could have done this. But was this likely? In a carefully planned burglary the expert thief thoughtfully leaves behind no trace of his criminal work whereby he may be identified. The Neolithic surgeon was not placed in this position. An operation of this kind would take some hours' hard work, and even if the patient had not become weary of it the surgeon himself would begin to show signs of fatigue and would not be anxious to prolong the proceeding merely for aesthetic reasons.

In the Geological Section of the Museum of Lisbon is a cranium that was taken from the grotto of Casa da Moura at Peniche in Portugal. This grotto contained the remains of no less than 140 individuals of the Neolithic period. This cranium exhibits an unfinished trephination on the left parietal bone, the piece to have been removed being elliptical in shape, 60 mm. long by 20 mm. broad. There are no signs of reparation, which means either that the patient died before the operation was completed or the surgeon gave up either for his own or the patient's sake. I think we may

perhaps best describe it as the first stage of another kind of operation. To me it furnishes a valuable clue as to the nature of the finished operation, which would when completed have represented, in my opinion, the method employed by the "French" Neolithic surgeon to bring about those large trephinations of which I have spoken. I think this operation was done by pushing forward a beaked flint implement, used in such a way as to first make a line, then a shallow groove, then a furrow, which, when deepened by continually traversing the same direction, eventually would plough through the diploë and reach the inner table of the skull. When nothing but the vitreous layer remained the rondel would be levered out by a stone or bone elevator (Figs. 8, 9, and 10). Professor Sir Arthur Keith, Conservator of the Museum of the Royal College of Surgeons, agrees with me that this was probably the method employed in removing the great pieces of skull bone which specimens prove were actually accomplished—unhappily, alas! not to the benefit of the patient so treated.

### 4. Sawing.

There is yet another method that was made use of in prehistoric times. We have no proof, however, that this method was employed in Europe, in Africa, or in any of the islands of the Australian Archipelago.

It was a very dangerous operation, and there is not on record a single case of success. It consisted in sawing out, with a stone implement, a quadrilateral button of bone, by four straight cuts, leaving on the skull a figure closely resembling a parallelogram with extended sides, such as we were wont to draw as children when playing the game of naughts and crosses (Figs. 12 and 13). If the skull were a level plane there might have been a shadow of a chance of success; but, the skull having a contour of its own, it stands to reason that in order to penetrate the inner table of the skull equally in every direction, which was necessary for the removal of a piece of bone, that part of the skull which was most convex would have to be cut deeper

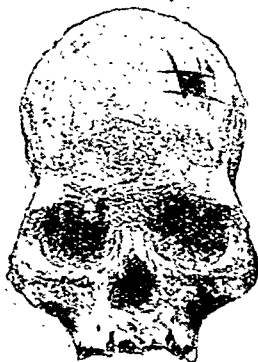


Fig. 12.—Skull of prehistoric Peruvian, discovered by Mr. E. G. Squier in 1867.

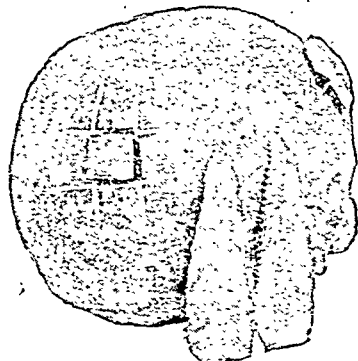


Fig. 13.—Experiment on dry skull, with flint saw, to show how the Incan skull had been trephined.

E. G. Squier (Fig. 12). Both Broca and Nélaton examined this skull, the former giving it as his opinion that the patient lived no longer than seven days after the operation, while the latter put it down as ten. This was judged, of course, by the amount of reparation exhibited by the edges of the aperture. I show you a lantern slide of this skull, as well as of two others which were also excavated in Peru.

### SHOCK AND ANAESTHETICS.

There is very little shock, I am convinced, with this operation. There is no feeling in bone; if an exposed piece of healthy bone be tapped with a probe the patient does not flinch. Moreover, the scalp has not the keen sensitiveness of other sentient surfaces in the body. I was very fortunate,



during the war, in coming across a Polish doctor from Warsaw who had been doing research work on this very subject in Germany, but had been obliged to take refuge in our country. He would not permit me to make known his name, so I very much regret I cannot give him that personal acknowledgment he deserves in this branch of research. He was working with Dr. Klaatsch of Breslau, who was professor of anthropology in Dresden. He performed operations (primitive and otherwise) on cats and dogs in connexion with trephination (occipital and frontal) to test the amount of shock occurring in connexion with them. Cats and pigs are particularly nervous subjects and show glycosuria on the least provocation of shock. Dogs and rabbits show shock or pain by intestinal contractions; thus shock can be scientifically estimated. The results of the experiments were that no glycosuria occurred from performing the primitive operation of trephination, with flint, on cats, and shock was found to be very slight with the same primitive operation performed on large dogs.

Probably the two earliest discovered anodynes were mandragora and opium, as both these drugs are mentioned in the Papyrus Ebers, which was found near Thebes, and dates from the eighteenth dynasty, about 1500 B.C., some five hundred years after the age of stone culture had closed for France and Great Britain, and indeed for the greater part of Europe. The first mention of opium in Europe is by Theophrastus, which did not occur till 300 B.C. In the first century Dioscorides describes the method of obtaining the juice from the capsules, and Pliny describes its medicinal uses. Dioscorides describes how "Cyprus wine" was made from the mandragora root, and that a dose of it was given to a patient before operating to induce sleep. Among the Swiss lake dwellings a whole cake of the seeds of the garden or opium poppy was found at Robenhausen, but as these seeds are destitute of narcotic properties, which are almost entirely confined to the capsules, the seeds were no doubt pressed for the extraction of oil, or, it has been suggested, they may have been eaten scattered on bread.

About twenty years ago an interesting custom was discovered amongst the Peruvian Indians. They fill a wound with powdered coca leaves, which contain some 9 per cent. of cocaine, and they find after waiting a little while they can do what they like with the part affected without inflicting pain. It is not unlikely that the Incan and pre-Incan races availed themselves of this local anaesthetic when they performed their trephinations, though we have no evidence that this method was used in Europe. Mr. Hilton-Simpson has lately been studying primitive surgery among the Arabs in Algeria. Trephination, which is not at all uncommon there, is always performed without an anaesthetic. He told me that he had witnessed an operation on a young girl, who, becoming restive and noisy, was only silenced into operative subjection by a terrible outpouring of oaths and foul language administered by the operating surgeon himself. I have no doubt that some such hypnotic anaesthetic was employed by the Stone Age medicine man.

#### DISTRIBUTION OF PREHISTORIC TREPHINATION.

The distribution of prehistoric trephination is almost world-wide. It is found in parts of both the eastern and western hemispheres. It must be understood, however, it was never synchronous in these different regions of the earth, thousands of years sometimes separating the practice in one part of the world from that in another. To give just one example. In this country it was practised some four thousand years ago, while in Melanesia—that group of islands situated in Oceania to the east of New Guinea and Australia—primitive trephination is performed to-day with all the simplicity and crudeness it was practised in prehistoric times thousands of years ago. There is no doubt that an ethical need for it arose at a certain time among diverse primitive civilizations when in the state of stone culture, demonology, with special reference to epilepsy, being the primary cause of its being first suggested and then practised. Although migration may have had influence upon this strange custom being disseminated, I do not believe it was answerable for its unified spread, the reason being that it was used in one part of the world for an entirely different reason from what it was in other parts. In one part of Melanesia it is actually employed to promote longevity, handsome youths and beautiful girls being specially singled out for its practice.

In the eastern hemisphere Europe has the distinction of being the leading continent, and in Europe France is the first

country, by a long way, to be able to exhibit the largest number of specimens of this unique fetish. Great Britain, Scandinavia (particularly Denmark and Sweden), Germany, Bohemia, Poland and Russia (especially the Caucasian region), Portugal, and Montenegro, have all some skulls to prove its practice in those countries. I know of none that have been yet found in Spain or Italy. Passing over the Mediterranean Sea we find it has been practised in Algeria amongst the Kabyles from very early times, and it is to-day performed by the Arab Shamans, with primitive metal instruments, in the most primitive way, without anaesthetics, without antiseptics, and with the crudest possible dressings. Specimens have been found in the Canary Isles. In Tenerife von Luschan collected 210 Guanche skulls, ten of which had been trephined. He found others in which the outer table only had been scraped away. Professor Elliot Smith has examined 15,000 skulls from ancient Egypt and Nubia, but tells me he has never found a trephined specimen. I should like to show you a lantern slide of one of them. I have not seen this skull, but the specimen seems to me to so clearly illustrate a depressed fracture that has been treated in this way that I bring before your notice two pictures of it—one a front view and the other a profile one. The Guanches are supposed to have migrated from Egypt, so one would have expected to have found specimens there. It is possible, of course, that the custom was acquired in the Canary Isles after they had been separated from the mainland of north-west Africa.

In Asia, Daghestan can exhibit primitive specimens, and they have also been found in Japan; but the vast area of Asia has hitherto been unexplored from this view-point, and one day, no doubt, other specimens will be unearthed, when new classifications will have to be made.

In the western hemisphere we find no specimen whatever to prove that this operation was attempted on the living skull in North America; but post-mortem specimens have been discovered in Michigan, Illinois, and Ohio.

In Mexico, among the ancient Tarahumares, Lumholz discovered two skulls that had been trephined in a primitive manner, one during life and the other after death.

Very many specimens have been excavated in South America, notably in Peru, where the Incan and pre-Incan races practised this art for surgical and most probably for medical and ethical purposes, though not a single human amulet has yet been discovered there. In Bolivia specimens have also been found.

The imaginary line separating the eastern from the western hemisphere cuts through the group of islands in the South Pacific known as Melanesia. In this group it was practised. There are specimens in the Museum of the Royal College of Surgeons from both New Britain (Nou Pommern)—where the operation is performed for fractures only—and New Ireland (Nou Mecklenburg)—where the operation is performed for epilepsy and insanity. In 1874 Ella described an operation that he had himself witnessed in Uvea in the Loyalty group, and as early as 1831 William Ellis described an operation that he had seen performed in the island Bora-Bora in the Society group, over 2,500 miles to the east of the Loyalties. It is still practised in many of these islands, sometimes for fractures of the skull produced by sling-stones or by clubs, and sometimes for epilepsy or other head disorders supposed to be caused by demoniacal possession.

I will finish by showing you the lantern slide of a skull mounted in an elaborate glass-sided reliquary, which is to be seen in the cathedral at Avranches in Brittany. The skull is supposed to have belonged to Saint Aubert, who became Bishop of Avranches in the year 708, founded the church on St. Michael's Mount, and died in 725. This skull has a circular hole in it which was supposed to have been made by the forefinger of the Archangel Michael. If you will examine the hole carefully you will find it is an exact replica in size, shape, and shelving edges of one of those holes I have been showing you to-night—a facsimile, indeed, of a prehistoric trephination; and I suggest to you that if it is not what it purports to be it is a Neolithic trephined skull that must have been found in one of the many dolmens that exist in Brittany, the Carnac region of which has played such an important part in European Neolithic history. The individual in question, therefore, who owned this skull must have lived some three thousand years before Saint Aubert, the learned Bishop of Avranches, was born!

#### REFERENCE.

The Prehistoric Trephined Skulls of Great Britain, together with a detailed description of the operation probably performed in each case. *Proc. Roy. Soc. Med. (Hist. Sect.)*, vol. xiv, No. 10, August, 1921.



## THE VALUE OF LABORATORY TESTS IN DISEASES OF THE LIVER AND PANCREAS.\*

BY

W. LANGDON BROWN, M.A., M.D.CANTAB., F.R.O.P.,

PHYSICIAN TO ST. BARTHOLOMEW'S HOSPITAL; CONSULTING PHYSICIAN TO THE METROPOLITAN HOSPITAL; EXAMINER IN PHARMACOLOGY AND THERAPEUTICS, UNIVERSITY OF CAMBRIDGE.

It is clear that in the time at my disposal nothing more than a very general review of this large subject can be attempted. The liver and pancreas are both developed as outgrowths of the alimentary tract, and their ducts are innervated in the same general way as the canal from which they develop. Their close co-operation is further shown in the way they pour their secretions into the alimentary tract at the same point, in their complementary rôles in the utilization of fat and in carbohydrate metabolism, as well as by the circulatory conditions which ensure that any internal secretion from the pancreas shall pass straight to the liver. Situated on the path by which all the blood from the digestive organs enters the systemic circulation, it is not surprising to find that the liver helps to prepare all three foodstuffs for utilization by the tissues. The bile it forms is at once an excretion and a secretion. But further, the liver is an important agent in detoxication and in maintaining the constant composition of the blood.

The earlier and simpler attempts to estimate the functional efficiency of the liver failed because its great reserve capacity was not realized. For, like the heart, lungs, and the kidneys, the liver does not normally exert its full activity, and so does not reveal its failure of function to ordinary tests until this has fallen to so low a limit that grave hepatic damage is no longer in doubt, and the time for successful treatment is past. Moreover, not only must the power of the liver to undergo compensatory hyperplasia be remembered, but, its various functions not being equally inhibited by disease, it is necessary to apply tests covering different fields of hepatic activity.

In the first place I shall consider tests related to the action of the liver in preparing the three foodstuffs for the tissues.

### I. TESTS FOR HEPATIC METABOLISM.

#### (1) Protein.

It has been clearly recognized for some years that the protein molecule is broken down into its ultimate amino-acids before absorption, and that these end-products are less toxic than the intermediate proteoses and polypeptides from which they arise. Further, as there is a chemical specificity of tissues, by no means all of such end-products are capable of being utilized for tissue repair at the time of their entering the blood stream. Those which cannot be used at once by the tissues are turned into urea and other excretory products. Indeed, the method of maintaining the nutrition of the body is as far as possible the same on an ample protein diet as in starvation. In both, amino-acids are used to make deficiencies good, though in starvation they are obtained by pooling the autolytic products obtained, as it were, by levying a tax on all the cells of the body. From this pool individual organs are allowed to draw, according to their functional importance to the body. But even in the well fed body the excess of protein food above what is required for tissue repair is not stored but excreted. Naturally, therefore, much more nitrogen is excreted by the well fed than by the starving body, any storage being provided from non-nitrogenous sources.

It would appear that each amino-acid has its own method of breakdown, and very probably its own ferment for achieving that purpose. This has been brought out clearly by Garrod in his study of the inborn errors of metabolism. He says:

"If any one step in the process fail, the intermediate product in being at the point of arrest will escape further change, just as when the film of the biograph is brought to a standstill the moving figures are left, foot in air."

Now it happens that most of such inborn errors as alkaptonuria, pentosuria, and cystinuria are inconvenient rather than serious. They are also rare, and although their study has established points of great theoretical importance as to protein

breakdown, they do not throw light on the estimation of hepatic efficiency. The ferments involved are evidently very resistant normally, since these substances do not appear in extensive degenerations of the liver, although porphyrinuria, which is sometimes an inborn error, may also occur in hepatic disease. The detection of leucin and tyrosin in the urine was thought at one time to be evidence of failure of the liver to turn them into urea, but they are now regarded merely as signs of hepatic disintegration. Though most prominent in acute yellow atrophy, they may be found in other diseases. Thus I saw them in a case of cirrhosis, where a severe hæmatemesis had been followed by coma for forty-eight hours, yet ultimately recovery took place. But it must be admitted that nothing has been found clinically to correspond to the experimental results obtained by Eck's fistula, even, for instance, after the Talma-Morrison operation, and certainly nothing that would form the basis for a test of hepatic inefficiency in respect of protein metabolism.

The nitrogen partition test aims at doing this by determining any loss of the dis-aminating and urea-forming functions of the liver. *A priori* one would expect to find that in failure of hepatic efficiency the urea excretion would fall, while the excretion of the precursors of urea such as ammonia and amino-acids would rise. But in practice we are met with the following difficulties: (1) Quite a small proportion of the total liver substance is adequate to make the normal amount of urea. (2) As so much of the urea comes direct from the food, the total amount excreted varies with the diet. On a liberal protein diet the urea forms about 85 per cent. of the total nitrogen, while in the healthy fasting individual it forms a much smaller proportion. This variation seriously affects nitrogen partition, without implying any disease. (3) An absolute increase in ammonia formation may be, and usually is, simply a protective step against acidosis, and is not evidence of a failure of urea formation. (4) Variations in the kidney threshold may materially affect nitrogenous excretion. This last difficulty can be surmounted by examination of the blood rather than of the urine, but the other three seem to me largely to vitiate the nitrogen partition test.

Again, in normal pregnancy de Wesselow and Wyatt have shown that a low urea excretion is the rule, because nitrogen is being diverted to the use of the foetus, so much so that a rise of blood urea above 40 mg. per cent., which would be within normal limits otherwise, implies a failure of renal function in pregnancy. This adds to the difficulty in applying nitrogen partition tests to the hepatic toxæmias of this condition.

#### (2) Carbohydrates.

All sugars are absorbed as monosaccharides. Although they can be rapidly stored in the liver and muscles, the absorption from the alimentary tract of any such sugar, with the important exception of levulose, leads to a rise of blood sugar from the fasting level of 0.1 per cent. to something like 0.16 per cent., falling again in about one and a half hours. This would imply that levulose, although its limit of tolerance tends to be rather lower than that of dextrose, can within that limit be stored as rapidly as it can enter the blood stream. Years ago H. Strauss regarded a diminished tolerance for levulose as evidence of impaired hepatic function, but this did not afford a satisfactory basis for a test. It is not sensitive enough, and the kidney threshold for the excretion of sugars is not a constant. Maclean and de Wesselow, having determined that levulose when given by the mouth in doses of from 30 to 50 grams does not raise the blood sugar in healthy subjects with an intact liver, went on to show that when the liver is defective it is not able to store levulose fast enough to prevent it from entering the blood stream, and thus increasing the blood sugar proportionately to the hepatic defect. This is the basis of the modern levulose test, which seems to me one of the best we have for hepatic efficiency. According to Spence, it shows that so-called catarrhal jaundice cannot be due to mere ascending catarrh of the main bile ducts, but must involve some hepatitis, since administration of levulose raises blood sugar in this disease even before the onset of jaundice. It has enabled several observers to show a similar change in safranine poisoning, while Mackenzie Wallis has found that in every case where a course of such an arsenical preparation has been given, some degree of hepatic inefficiency exists for at least three months. Clearly a second course should not be given within this interval; while, if levulose cause a rise of blood sugar of 0.05 per cent. above the fasting level, careful treatment is required, however slight the other clinical manifestations may be. In pure obstructive jaundice this rise of blood

\* A paper read to open a discussion at the Medical Society of London, March 12th, 1923.



sugar does not occur, or is very slight. As further evidence that catarrhal jaundice may involve a toxic hepatitis I should like to refer to a group of cases I saw last year where, in addition to a large and tender liver, with jaundice, there was cyanosis, air hunger, and almost complete suppression of urine, followed by intense albuminuria, sometimes with haematuria and casts. Yet the patients made a good recovery and soon became free from albumin. Sometimes they showed an increased diastase output, which might be held to prove pancreatic involvement as well.

It is perhaps convenient to discuss the diastase test here, even though this anticipates the subject of pancreatic tests. It was originally designed by Wohlgemuth as a test for renal efficiency. He took the amount of urine which could digest 2 c.c.m. of a 0.1 per cent. solution of starch paste in half an hour as the measure of its diastatic activity, which normally may range between 10 and 33.3 units. He claimed that if renal efficiency were impaired the output of diastase would fall. Working with Mackenzie Wallis in cases of war nephritis I was of opinion that this method of using the test was a guide to the amount of renal damage, for cases showing 5 units or less proved more obstinate than those with a more normal output. But subsequent work has shown that the diastase in the urine does not necessarily run parallel with the diastase in the blood, which is perhaps what we might expect from what we know of the behaviour of the kidney threshold towards substances useful to the body. The test has proved of more value in the recognition of pancreatic disease because here the alteration of the amount in the blood is so gross that the renal threshold is, as it were, flooded. In acute pancreatitis one might find 300 to 500 units—in one case of mine 1,000 were present—while in less acute cases 50 to 100 units may be found. In very chronic conditions there may be no excess, but even a deficiency. In ordinary clinical diabetes a low value is the rule. It was at first assumed that this diastase was merely pancreatic amylase reabsorbed into the blood stream, and was evidence of some obstruction to the pancreatic ducts, though in that case it would not be easy to explain its presence in normal urine. But Cammidge,<sup>2</sup> with Forsyth and Howard, has adduced cogent reasons for believing this diastase is hepatic in origin. The diastase value rises as more and more of an animal's pancreas is excised, right up to total extirpation. As it is clearly impossible for a non-existent gland to produce an enzyme, diastase cannot come from the pancreas. On the other hand, hydrazine phosphate, which has a toxic effect on the liver but not on the pancreas, reduces and may completely abolish the diastase output. These authors conclude that diastase is the agent which converts glycogen into sugar, and that its action is controlled by the internal secretion of the pancreas. If such control fails there is for a time a greatly increased production of diastase by the liver, though this may not by itself produce glycosuria. So far, however, though gross increase in diastase output certainly suggests pancreatic insufficiency, a defect of diastase in the blood has not helped much as evidence of hepatic insufficiency. Harrison and Lawrence<sup>3</sup> found in twenty cases of hepatic disease that the blood diastase was low in three severe cases. In two this rose again as the clinical condition improved. Certainly defective output in the urine could not provide such evidence because of the behaviour of the threshold of the kidney.

One thing appears clear about the glycogenic function of the liver: in the presence of an ample supply of glycogen the metabolism of the liver proceeds more smoothly. It was first stated that it was the antitoxic power of the liver which chiefly was affected by the glycogen store. But it seems more far-reaching than this, though it is certainly true that a liver is less liable to post-anaesthetic poisoning if it is well supplied with carbohydrate, while starvation, which would deplete the glycogen store, increases the liability to this catastrophe. And Colonel Harrison, at Maclean's suggestion, has found giving sugar, usually dextrose, of material benefit in preventing toxic jaundice after salvarsan. In a group of patients receiving sugar before injection there were only two or three cases, while in another group not receiving sugar there were nearly fifty cases of toxic jaundice.

### (3) Fats.

Leathes has shown that the fat normally present in the liver is in the more active unsaturated form, but that the fatty deposit which occurs there in poisoning by phosphorus or tetrachlorethane or after anaesthetics is in the more inert, saturated form. He makes out a good case for regarding as

a function of the liver the conversion of saturated fat into the more active unsaturated form for utilization by the tissues. When the liver is thrown out of gear by various toxins the tissues, starving for prepared fats, send unprepared fats to the liver, but in vain, for it is unable to deal with them. The liver may be compared to a miller—the saturated fats are the wheat he grinds and the unsaturated fats are the flour that results.

Foulerton pointed out that chloroform, ether, and tetrachlorethane are solvents of fat, while phosphorus, dinitrobenzol, and trinitrotoluene are readily soluble in fats, so that the destructive effects of these poisons on the liver may be due to their being conveyed with the fats to the liver in the attempt to carry out this process. In some cases, such as phosphorus or post-anaesthetic poisoning, this carriage of fats may lead to a gross increase in the size of the liver, but we require a much more sensitive test than this. Whipple devised the lipase test to this end. Normally blood contains a very constant amount of fat-splitting ferment, but in diseases of the liver this lipase is increased, as measured by the power of the blood to split ethyl butyrate. It has been supposed, therefore, that normally the liver inhibits the formation of lipase, so that its increase in the blood is a measure of hepatic damage. Whipple has applied this to chloroform poisoning, and Mackenzie Wallis<sup>4</sup> to salvarsan poisoning. The damage has, however, to be rather gross before the lipase increase is enough to be relied upon.

The latter observer has further reported that in toxic jaundice due to salvarsan poisoning the cholesterol in the blood is diminished, while in this condition and in phosphorus poisoning the liver is found loaded with cholesterol esters post mortem. This suggests that the liver normally plays the same part both in cholesterol and fat metabolism. It may be, however, that the cholesterol is merely on its way to be excreted in the bile, but the diseased liver cannot accomplish this. Its presence in the kidney under similar conditions may be an attempt at an alternative channel of excretion. In the toxæmia of pregnancy, including a case of icterus gravis, this cholesterol disturbance was not found.

## II. TESTS OF ANTITOXIC FUNCTION.

Apart from the reactions against bacterial poisons the antitoxic processes of the body are few and simple—such as toxic oxidation, reduction, hydration, dehydration, and methylation. The protective substances are few, and the process of rendering a poison harmless by conjugating it with a protective substance is most often carried out by the liver. Thus the toxic indol is conjugated with sulphuric acid into a harmless ethereal sulphate, indican. Although we regard marked indicanuria as evidence of intestinal toxæmia, we must remember that we are testing for that part of the indol which has been rendered innocuous. A more accurate method is to estimate the ratio between ethereal and total sulphates; the larger fraction the former constitutes of the latter the nearer are we to the limit of the antitoxic power of the liver. But if the liver cells are diseased such conjugation cannot occur, so that toxic substances like indol, skatol, and phenol can pass direct into the blood, even though the urinary output of ethereal sulphate is low. There does not appear to be any simple test for recognizing this.

Glycuronic acid is another important protective substance, and the formation of harmless glycuronates after administration of camphor, morphine, and the like is a function of the liver. It is claimed that 7½ grains of camphor given by the mouth should be completely conjugated with glycuronic acid and recognized by its reducing action in the urine, but if the liver is diseased no such glycuronic acid is formed. A simpler test is that introduced by Roch.<sup>5</sup> He gives half a grain of sodium salicylate an hour before food. This should be turned into a glycuronate which would not yield a purple colour with 1 per cent. ferric chloride solution. If the urine excreted for the four hours after a meal does give this colour hepatic insufficiency is present.

The hæmolytic crisis may also be regarded as due to a failure of the antitoxic power of the liver. As C. M. Wilson expresses it, under this rather forbidding name is concealed a test disarming in its simplicity. Widal<sup>6</sup> maintained that when the liver was diseased the normal post-prandial leucocytosis was replaced by a leucopenia, which was accompanied by a fall of blood pressure. This was believed to be due to the hepatic failure permitting the entrance of incompletely digested proteins into the systemic circulation. It recalls the anaphylactic reaction to material unsuitable for assimilation. Before breakfast a white count is taken, then 7 oz. of



milk are drunk, and another count taken twenty minutes later. Wilson concludes that, with the possible exception of the levulose tolerance test, this is the only test which gives an early warning of hepatic insufficiency.

### III. TESTS OF BILIARY FUNCTION.

Turning to the external secretion of the liver, the bile, we may first consider tests for alterations in its discharge into the bowel. The gall bladder not only regulates the occurrence of this discharge at the time it is required, but by adding cholesterol and mucin to the bile while absorbing water alters its composition, making it more concentrated and viscid. Therefore with complete obstruction to the cystic duct, the bile entering the intestine is unusually dilute. H. E. Griffiths<sup>7</sup> confirmed the general clinical impression that gall stones produce reflex hyperchlorhydria by finding this in 90 per cent. of the test meals on his cases. If this was not accompanied by regurgitation into the stomach there was usually x-ray evidence of marked pylorospasm. He attributes this regurgitation to the unregulated flow of bile into the duodenum which follows such diseases of the gall bladder as render it incapable of acting as a reservoir. A rise in the alkalinity of the duodenum at inappropriate times would relax the pyloric sphincter. This would occur when the cystic duct is occluded, or where the muscle of the gall bladder has been replaced by fibrous tissue as the result of prolonged disease, but would not follow complete obstruction of the bile duct, which would diminish the alkalinity of the duodenal contents. If it agrees with the other findings we may consider hyperchlorhydria to be the rule with disease of the gall bladder and bile ducts, while if there is regurgitation as well there is probably chronic disease of the gall bladder itself. Additional interest has been aroused in this part of the subject by the claim that if 1 to 4 drachms of magnesium sulphate in concentrated solution be introduced into the stomach a sharp flow of bile into the duodenum is excreted by reflex contraction of the gall bladder. By the use of an Einhorn tube this can be removed from the duodenum for examination. This claim has been disputed, and it is clear that if there is complete obstruction of the bile ducts the method is not applicable. But that it is occasionally of service is shown by a case in which I diagnosed inflammation of the gall bladder as the cause of dyspepsia. By this method purulent fluid was obtained, and at operation empyema of the gall bladder was found. Lyon<sup>8</sup> has extended this method by collecting three samples of bile by the duodenal tube. The first sample should be of transparent, yellow-golden colour from the common duct, the second darker and more viscid from the gall bladder, and the third much thinner and lighter in colour from the hepatic and intrahepatic ducts. By examination of these he claims that infection and inflammation of the various parts of the biliary system may be located.

If bile fails to enter the bowel the ill effects are principally due to the absence of bile salts, which may be regarded as the main secretion, the other ingredients being largely excretory. As they help in the emulsification and absorption of fats which have been previously split into fatty acid and glycerin by the pancreatic juice, the steatorrhoea which follows biliary obstruction is due to the increase of soaps and fatty acids in the stools, while in failure of the pancreatic secretion it will be the unsplit or neutral fat that will be in excess. Interference with absorption of proteins will lead to increased intestinal putrefaction with a consequent increase in the indican of the urine. The absence of bile pigment from the stools causes the familiar clay colour, but as the excess of fat may mask the presence of a small amount of bile we must not conclude from this colour alone that no bile is entering the intestine. Extraction of such faeces with acid alcohol or amyl alcohol may still show the presence of urobilin by the band in the blue of the spectrum or by green fluorescence on the addition of zinc chloride and ammonia. This would indicate incomplete obstruction, such as is usual with gall stones, while the entire absence of urobilin is suggestive of the more complete obstruction produced by new growth of the head of the pancreas. The presence of obvious bile pigment in the stools in a case of jaundice is, of course, against its being of obstructive origin.

I am obliged to Sir Humphry Rolleston for calling my attention to the phenol-tetrachlor-phthalein test. When phenolphthalein is given subcutaneously it is only excreted by the liver, but when this organ is damaged by phosphorus or chloroform, or when cholangitis is present, the output of the dye into the bile is diminished, as determined by faecal

analysis or by Einhorn's tube, and it appears in the urine. This test is naturally inapplicable when the common duct is completely obstructed.

*Van den Bergh's Test.*—Of late, however, interest has chiefly centred round the distinction between obstructive and toxic jaundice, based on van den Bergh's test. It has long been recognized that bile pigments originate from haemoglobin, but recently it has been urged by Brule<sup>9</sup> that the liver merely separates bilirubin from the blood as the kidneys do urea, and Whipple regards the star-shaped Kupffer cells of endothelial origin along the capillary walls as responsible for this work. Van den Bergh<sup>10</sup> has described two varieties of bilirubin, which can be distinguished in the serum by Ehrlich's diazo-reaction. In obstructive jaundice the test comes off directly, while in haemolytic jaundice the bilirubin, being linked with some constituent of the serum, does not give the reaction until the combination is broken up—for example, by alcohol. McNee has suggested that it is normally the work of the Kupffer cells to do this, and that when they are damaged the bilirubin escapes this modification and gives the indirect reaction only. Dr. Christopher Andrewes has been trying this test at St. Bartholomew's Hospital, and I am much indebted to him for placing his as yet unpublished results, based on 108 cases, at my disposal. He says:

"Practically all the cases are compatible with the theory that the direct reaction is due to obstruction (either of larger or finer ducts) and that the indirect reaction is due either to disordered function of liver cells or to increased haemolysis. So that the cases might be classified into (1) gross obstruction, including cholelithiasis, new growths, etc.; (2) haemolytic jaundice, such as in the factors of liver necrosis; (3) conditions such as in which the factors of liver necrosis can probably occur together or separately. Other observers have found that cases of this third group may give an indirect reaction at first, and go through a biphasic to a direct reaction. It is this mixture in many diseases which seems to me to limit seriously the clinical value of this test. My cases of catarrhal jaundice show 8 direct reactions. Others have found more numerous cases giving indirect reactions. Schiff and Eliasberg<sup>11</sup> in an 'epidemic' in children found all indirect reactions at one stage and all direct reactions at another."

The general conclusions to which Dr. Andrewes comes are these:

1. As a test of liver function it is very gross, being, however, a little more sensitive than clinical evidence of jaundice. Thus several cases of cirrhosis gave normal results.
2. As an aid to diagnosis of the cause of jaundice, it is of very little value. A well marked indirect reaction indicates catarrhal jaundice rather than stone. A direct reaction may mean either.
3. In anaemia an indirect reaction above normal indicates a haemolytic cause, probably pernicious rather than secondary. The test is probably rather more reliable than examination for urobilinuria.
4. The estimation of bilirubin in blood-stained fluids (pleural, peritoneal, cerebro-spinal) can decide whether the bleeding is old or produced at the time of puncture.
5. With direct reactions above 3.5 units, bile will be present in the urine; with direct reactions below this figure, and with indirect reactions, bile will be absent there.

One must conclude, I fear, from this careful study, that in its present form the test is of very limited value. It will be noted that the levulose test has given more positive evidence than van den Bergh's that catarrhal jaundice is often a hepatitis.

*The Fate of the Bile Pigment.*—It will be gathered from what I have already said that I lean to the view that urobilin or its chromogen is formed in the intestine by reduction of bile pigment through bacterial agency. The evidence in favour of this seems very strong, for when all bile escapes through a biliary fistula, or when complete obstruction prevents bile from entering the intestine, no urobilin is found. Again, it is absent from the faeces at birth, not appearing till bacteria have had time to establish themselves in the bowel, while if bilirubin is inoculated with intestinal bacteria urobilin is formed. Normally this urobilin colours the faeces, where it is often called "stercobilin," while a small amount is reabsorbed and appears in the urine. If there is polychromia from increased haemolysis there will be increased formation of urobilin, while if there is partial or complete obstruction to the bowel there will be increased reabsorption of urobilin. In either case urobilinuria will occur, but it has most significance as evidence of haemolysis. Against this view has been urged the presence of urobilin in the duodenal contents—that is, above the point at which bacterial activity begins. But I do not think this is sufficient to counter-



balance the mass of evidence in favour of the intestinal origin of urobilin. I am aware that urobilinuria is often regarded as evidence of "floating gall stones" or of cholangitis. I can only say I have far more often seen this diagnosis made than confirmed, when based on this test.

Bile salts in jaundice are by no means always to be found. Matthew Hay's test with flowers of sulphur is the simplest way of detecting them. I have found them present at the beginning of obstructive jaundice, and in one case even before bile pigment appeared in the urine. But later on they are generally absent, probably in part because the biliary cycle is interfered with. When bile is drained through a fistula the amount of bile salts in it soon sinks to one-tenth of the normal (Copeman). This suggests that the reabsorbed bile salts are used over again ten times. Naturally, then, in obstructive jaundice such bile salts as escape into the urine at the beginning are permanently lost, and the amount available sinks below the kidney threshold. In toxic jaundice bile salts are not likely to appear in the urine at any stage, both because they can get into the bowel and because their formation throws greater labour on a diseased liver than the excretion of bile pigment. The presence of bile salts, therefore, in the early stages of jaundice suggests an obstructive rather than a toxic cause.

#### IV. TESTS FOR PANCREATIC INADEQUACY.

I can deal quite briefly with this part of my subject, because our views have now crystallized into something like definite form.

##### (1) Signs of Defective External Secretion.

(a) *Failure of Tryptic Digestion.*—Unaltered muscle nuclei may be found in the faeces after a meat meal, but this is not always easy to do, nor does it help much to stain the muscle fibres and give them with lycopodium grains as a guide. Sahli's method of administering iodine in gelatin capsules hardened by formalin, and testing for iodine in the urine and saliva, cannot be recommended. It is also claimed that trypsin can be demonstrated in normal stools by placing a small quantity of faeces on a gelatin plate, when a small area of digestion will result. Apart from detection of muscle nuclei I have not found these methods much help. A negative result is of no value.

(b) *Failure of Starch Digestion.*—Starch granules may be detected in the stools after unboiled starch has been given. Boiled starch can be digested by saliva. Chronic pancreatitis may cause oxaluria from intestinal fermentation of carbohydrates (Cambridge and Mayo-Robson).

(c) *Failure of Fat Digestion.*—As already explained, the steatorrhoea of pancreatic defect takes the form of an excess of neutral, unsplit fat. This is the most valuable of the tests for deficient external secretion.

##### (2) Signs of Defective Internal Secretion.

(a) *Diminished Sugar Tolerance.*—This may be expressed in glycosuria, and almost certainly in hyperglycaemia, two hours after a dose of 50 to 100 grams of dextrose. The normal tolerance for dextrose is 150 to 200 grams. It must be remembered, however, that this may be a comparatively late symptom, and that it can be also produced by chronic alcoholism, hyperthyroidism, hyperpituitarism, and probably by hyperadrenalism.

(b) *Diastase Test.*—This has already been discussed. In my opinion it is one of the best tests for recent pancreatic damage.

(c) *Adrenaline Eye Test.*—Loewi showed that if adrenaline is instilled into the eye the pupil does not normally dilate. But if the pancreas is inadequate the pupil dilates in twenty to sixty minutes after one drop of the 1 in 1,000 solution is instilled, and another drop five minutes later. This is based on the antagonism between the adrenals and pancreas, of which there is other evidence. But if there is hyperthyroidism the test may also be positive, as this upsets the balance by reinforcing the adrenals. The dilatation is often an eccentric one. The test may fail if repeated within a week. Taken in conjunction with other signs, it is a simple test of some value and is easily applied. Recently, however, I saw a positive reaction in a case of acute appendicitis.

##### (3) Signs of Pancreatic Disintegration.

(a) If pancreatic lipase escapes into the circulation it can be found in the urine by the ethyl butyrate method (Opie).

(b) A pentose may sometimes be found in the urine from the breakdown of pancreatic nucleo-proteins. This is also the

basis of Cambridge's test, which, however, does not seem to be very much relied upon at the present time.

To sum these tests up: If the adrenaline eye test and the diastase test are negative it is seldom worth while to undertake more elaborate investigations. If they are positive, and there is excess of unsaponified fat in the stools, it is very suggestive of pancreatic disease. If there are also muscle nuclei in the stools, it greatly strengthens the diagnosis. If all these signs are present in addition to glycosuria, the diagnosis is almost certain.

But here, and still more with the liver tests, clinical evidence must not be neglected. When Falstaff asked his page, "Sirrah, you giant, what says the doctor to my water?" the boy replied, "He said, Sir, the water itself was a good healthy water; but for the party who owned it, he might have more diseases than he knew for." I think I know that doctor; entrenched in the laboratory, he is quite prepared, without seeing the patient, to diagnose the existence of many more diseases than the medical attendant ever "knew for" or even suspected. The reaction against this was shown in a recent discussion on renal tests, when several surgeons expressed their willingness to abide by clinical signs alone. I am neither so bold nor so sceptical, but I would urge that these laboratory tests are still themselves on trial; and that the ultimate diagnosis must rest on the clinical as well as the biochemical findings.

#### REFERENCES.

- <sup>1</sup> *Quart. Journ. Med.*, January, 1921. <sup>2</sup> *Proc. Roy. Soc. Med.*, Urological Section, 1922, xv, pp. 37-39. <sup>3</sup> *BRITISH MEDICAL JOURNAL*, 1913, i, 317. <sup>4</sup> Medical Research Council's Report on Salivarian, No. 2. <sup>5</sup> *Brit. Med. J.*, 1922, xlii, p. 291. <sup>6</sup> *Presse Méd.*, Paris, 1920, xxviii, p. 830; 1921, xxix, p. 121. <sup>7</sup> *Lancet*, 1923, i, 270. <sup>8</sup> *Amer. Jour. Med.*, 1922, cxiii, pp. 60, 223. <sup>9</sup> *Recherches récentes sur: Méd.*, Paris, 1921, xxix, pp. 441-443. <sup>10</sup> *Klin. Wo*

## THE USE OF RADIUM IN THE TREATMENT OF DISEASE.

BY

DAWSON TURNER, M.D.,

IN CHARGE OF RADIUM TREATMENT AT THE EDINBURGH ROYAL INFIRMARY.

IN a previous paper published in this JOURNAL (January 20th, p. 100) I discussed the dosage of radium; I now desire to deal briefly with the principal conditions in which radium has been found useful in the Edinburgh Royal Infirmary. They include malignant disease, exophthalmic goitre, spleno-medullary leukaemia, Hodgkin's disease, keloids, and naevi.

The records show that radium has been chiefly used for malignant disease, and on the whole with encouraging, and in some cases with excellent, results. As cases of undoubted malignant disease, confirmed by operation and pathological examination, which remain perfectly well for more than seven years after the primary treatment are relatively rare, I quote the following case of recurrent sarcoma:

A woman, aged 49, recommended by Dr. MacLagan of Ayrton, had developed sarcoma four years before. Several operations for the removal of the growth were unsuccessful. She was admitted to the Royal Infirmary by Mr. Miles on July 15th, 1915. A large nodular mass projected in the left suborbital region; it interfered with vision and was adherent to the maxilla. Pathological examination showed that it was a large spindle-celled sarcoma. As Mr. Miles considered the tumour inoperable, radium treatment was recommended. By internal and external applications a dose of 5,180 milligram hours was given. In November, 1915, a further external dose of 5,180 milligram hours was given. During the applications the growth diminished markedly. In February, 1916, the tumour had greatly shrunk and was movable; it had been fixed before. The patient was better, stronger, and could see normally. The condition had so much improved that Mr. Miles removed what was left of the growth; this was followed by a prophylactic dose of 4,120 milligram hours. In November, 1916, the growth had disappeared and Mr. Miles could detect no sign of recurrence. Seven years have now elapsed since the radium treatment was begun, and Dr. MacLagan writes on January 19th, 1923: "The patient keeps well without any trace of recurrence."

Of malignant affections, rodent ulcers, epitheliomata, lympho-sarcomata, spindle-celled sarcomata, malignant disease of the cervix, sarcomata of the nasal passages, and of the non-malignant affections, exophthalmic goitre, early keloids, and certain naevi are, in my experience, very amenable to radium treatment. They might be termed first-class subjects, because they admit under favourable conditions of actual cure. Under second-class subjects—meaning thereby conditions which may be ameliorated but in which a cure can rarely be expected—might be placed carcinomata, lymphadenomata, and spleno-medullary leukaemia.



Small rodent ulcers not affecting the mucous membrane or bone are easily cured by a dose of from 500 to 800 milligram hours through a filter of silver,  $1\frac{1}{2}$  mm. thick. A much smaller dose would suffice to cause the ulcer to heal over, but it would probably recur. Rodent ulcers at the side of the nose where the alae nasi join the cheek are more refractory; so too are those affecting the ear and just below it. Unless completely cured by the first applications they tend to become radio-resistant and further exposures may do harm.

Small epitheliomas of the lip are quite amenable to surface applications. I have had tubes prepared with an eyehole at each end so that they can be sutured by both ends to the lip and maintained in close apposition to the growth for the necessary time. When the floor of the mouth, tongue, or fauces are attacked the condition is difficult to benefit materially by radium.

Of all new growths the most susceptible to radiations are the lympho-sarcomata. They melt away in a surprising manner but tend to recur or form metastases. Sarcomas affecting the nasal passages are favourably influenced by radium. The writer has had cases which have remained free from the disease for many years and still are free.

Much experience has been gained in recent years regarding the use of radium in gynaecology, but I must limit myself in this article to a few general remarks. In malignant disease of the external genitals treated by radium the prognosis as a rule is bad; in early and limited disease of the vaginal wall the prognosis seems better, and I have seen one complete cure. It is in early malignant disease of the cervix that the best results are obtained; all observers are agreed upon this. Big doses of 6,000 to 10,000 milligram hours should be given, and at the first treatment. Smaller doses repeated are a mistake. Recurrence, after a longer or shorter interval, is, however, the rule, because of the difficulty of efficiently raying the more distant portions of the disease. Few cases are sent for radium treatment which are not in an advanced condition; even in these cases, however, some improvement is always observed both locally and generally. Pain is relieved, discharges cease, ulceration heals, and the patient gains in general health, strength, and weight. An important question is, How far does the beneficent activity of radium extend? Professor Bumm found in post-mortem examinations of the radiated cervix that cancer cells were only destroyed to a distance of three centimetres from the radiating source. It must, however, be remembered that the sphere of beneficent activity would depend upon the length of the exposure as well as upon the quantity of radium—the longer the exposure the greater the cumulative effect upon outlying cells; moreover, those cancer cells, which appeared to Professor Bumm to be normal, may yet have been rendered incapable of proliferation. Wassermann radiated small bits of mouse cancer *in vitro*. In certain experiments the tumour retained its vitality when inoculated, but did not grow. He concluded that the rays did not kill the cancer cells, but stopped their power of proliferating.<sup>1</sup>

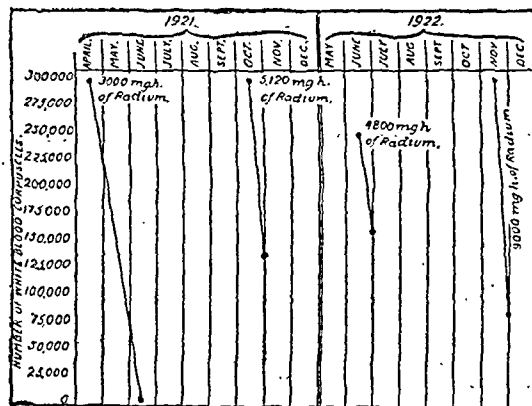
Exophthalmic goitre is a condition for which in recent years radiation has been found consistently useful. The writer has now treated with radium upwards of 200 cases, and with two exceptions all derived more or less benefit both in their general condition and special symptoms. Thus the patients regain strength, put on weight, and lose the tired feeling, and at the same time the tachycardia, tremor, and breathlessness are diminished and may disappear altogether. Not much change need be expected in the size of the thyroid or in the exophthalmos, except in early cases. It is well to warn patients of this lest they suffer disappointment; but operative measures might now be considered, to reduce the size of the gland, both because its vascularity is diminished and because the patient is better able to stand an operation. A dose of 300 to 500 milligram hours, properly screened so as to avoid injury to the skin, may be given to each lobe, to the isthmus, and over the thymus. The latter organ should not be neglected. I have had cases which were somewhat refractory so long as the applications were confined to the thyroid but which yielded rapidly when the thymus was exposed.

Under second-class subjects recurrent scirrhus nodules, even when attached to or growing from the bone, will disappear; but they recur. Carcinoma of the rectum is refractory except in limited annular strictures, where, by placing tubes inside the stricture considerable benefit may follow. In Hodgkin's disease amelioration may be expected by applications over the glands or by burying tubes inside them. In

spleno-medullary leukaemia, by exposures over the spleen it will be reduced in size, the white blood corpuscles diminished, and the general health improved; but in a few months the patient will return with a recurrence; this will again yield to treatment, but will be followed by another recurrence, and each recurrence requires larger doses, and in time the patient succumbs. The following case with graph illustrates the fall in white blood corpuscles following the application of radium.

A man, aged 32, suffering for the last nine months from spleno-medullary leukaemia, was recommended by Professor Gulland for radium treatment in April, 1921. The spleen was considerably enlarged but did not cross the middle line. The white blood corpuscles numbered 310,000. He was given a dose of 3,000 milligram hours, screened by  $1\frac{1}{2}$  mm. of silver over the spleen. This produced a good effect, the spleen decreased, and in two months, when he was discharged, the white blood corpuscles numbered 9,600.

For four months he remained fairly well, but was then readmitted; the spleen had crossed the middle line and was also lower down. The white blood corpuscles had increased to 316,000. A dose of 5,120 milligram hours was now given under the same conditions as the previous one. In a fortnight the white blood corpuscles numbered 136,000 and he was discharged.



He had no further treatment until June, 1922, when the spleen was found to be just over the middle line and the white blood corpuscles numbered 250,000. A dose of 4,800 milligram hours was given. In a week's time he felt much better, the white blood corpuscles had fallen to 152,500, and he was discharged.

In three months (November, 1922) he was readmitted in a worse condition; the spleen was hard and reached to within one inch of the umbilicus, the liver was enlarged and painful, and the white blood corpuscles were up to 300,000. He was now given a larger dose, amounting to 9,000 milligram hours. In a week he felt better, and the white blood corpuscles had fallen to 80,000. He was able to return home, but a month later died suddenly.

In the treatment of exophthalmic goitre and of naevi in children by radiation, radium has the following advantages as compared with the x rays: (1) Absolutely constant emission of rays, and therefore exact dosage possible. (2) Greater penetration of its rays, so that the deeper parts are reached. (3) Saving of time, as the radiation is maintained night and day until the necessary dose has been administered. (4) No noisy, exciting apparatus, so that the treatment can be applied at the bedside without in any way alarming or disturbing the patient.

#### REFERENCE.

<sup>1</sup>F. E. Simpson: *Radium Therapy*, p. 90.

## SUDDEN DEATH FROM ANAPHYLACTIC SHOCK.

BY

LIEUT.-COLONEL F. W. SUMNER, M.D. CANTAB.,  
F.R.C.S. EDIN.,  
INDIAN MEDICAL SERVICE.

In my capacity of medical officer to a girls' school in Simla I was called, in October, 1922, to see a sick girl; the condition of the throat was suggestive of diphtheria, and a throat swab confirmed the suspicion. I advised the head mistress that all contacts be given a prophylactic hypodermic injection of diphtheria antitoxin and be segregated for fourteen days, and that the rest of the school be placed out of bounds. This was agreed to.

The syringe I used for inoculation was one of 10 c.cm. capacity; it was thus capable of holding the contents of several  $2\frac{1}{2}$  c.cm. bottles (each containing 2,000 units), and it



was possible to inject several girls out of one syringe-ful. The routine was as follows: A girl in room (1) would have her loin uncovered, would come into an adjoining room (2) and lie on a couch; here iodine would be applied; she would receive 1,000 units, and, holding an iodine swab to the needle-hole, would pass on to an adjoining room (3).

As I was injecting the fourth girl (the first and second girls being sisters), out of one and the same syringe-ful, a mistress hurriedly came to me from room (3), saying that a girl (the second of that syringe-ful) was not feeling well. I immediately went and found this girl (aged 8) lying on a bed; she was obviously *in extremis*, was foaming at the mouth, and breathing in a very shallow manner; her pulse was scarcely perceptible; she was almost comatose, making no sound, and incapable of speech. She was lying on her right side and was endeavouring to turn on to her face; there was some cyanosis of her face and congestion of her conjunctivae, with protrusion of her eyeballs; the region round her nose was pallid in comparison with the rest of her face; the lower part of her face had the appearance of being somewhat swollen, as also the tongue and mouth; there was no rigidity or spasm of muscles.

I immediately commenced artificial respiration, controlled the tongue by a ligature passed through its tip, periodically swabbed the mucus out of the fauces, got the head low down, had the trunk massaged, and gave a stimulant hypodermically; but there was no response or sign of life after the first minute or two. Nevertheless, the artificial respiration was kept up for half an hour.

The condition of the girl during the interval between her leaving room (2) and my seeking her in room (3)—about one to two minutes—I found, by questioning the mistress there present, to be as follows: "On entering room (3) she stood for a few seconds and laughed with the other girls; she then started whimpering, and said, 'My throat is paining me.' She began to cough, a kind of cough which a child gives who is forcing herself to cough and making herself sick; she did not stagger; her face went white round the nose and mouth (she was normally a pale child); a utensil was brought to her as it was thought she might be sick. She was then placed on the bed on her back; she foamed at the mouth, turned on her right side, had some slow movements of her left hand and arm; there was no twitching or other movements of muscles."

She had never had any previous injection of any sort.

No other of the ten cases injected had any anaphylactic symptoms, nor had the diphtheria child herself, who was given a large curative dose.

Deceased was, I understand from the school mistresses (never having myself seen her previous to this occasion), a girl of average size for her age, rather heavy in the face, and one who struck them as having enlarged tonsils and adenoids.

A careful investigation of her history brings out the following points:

1. She was always apparently a healthy child.
2. She had had only one illness, bronchopneumonia, in 1918.
3. She was subject to colds.
4. She slept with her mouth open.
5. A wheezing at her mouth could be clearly and frequently heard; a doctor said she had asthma.
6. In 1917 she was examined in St. George's Hospital, Lucknow, where the report is stated to have been: "It was necessary that the bone of her nose at the back should be scraped."
7. Her eyes would become inflamed and her nose would run whenever she took a drive behind horses, which was a frequent occurrence, but this would not happen after a motor drive; this lasted up to 1920, since when the symptoms did not occur although she had a drive behind horses every evening for months.
8. She never allowed the top button of her dress to be fastened; she gave no reason for this. (Enlarged thymus gland?)
9. She had had a fainting attack three weeks before after a heavy picnic lunch; she did not get out of breath easily; she, generally speaking, was pale and looked puffy under the eyes.
10. She had been at school for several months, and there had been no necessity to bring her to me for any treatment or examination.

#### Family History.

She had one sister and two brothers; the sister was at the same school, was quite healthy, had had no illnesses, and was given a prophylactic injection at the same time as her own fatal one. One brother died of heart disease after rheumatic fever; the other brother had congenital heart disease (a patent foramen ovale being diagnosed); his face was of a grey colour for six months, but this has passed off and the boy is apparently quite well.

Her father's brother, six years after a heat-stroke, died

suddenly within an hour; "a necropsy was done and a large blood clot found in the head."

There is no history of bleeders in the family, and no consanguinity of the parents.

#### Remarks.

In this case the striking features are:

1. The likelihood of a condition of "status lymphaticus" with probable enlargement of the tonsils, adenoids, and persistent thymus.
2. The intolerance to the vicinity of horses during life (conjunctival, nasal, and bronchial catarrh and spasm resulting).
3. The intolerance to the subcutaneous injection of horse serum, causing rapid death.
4. The individuality of the intolerance; deceased's sister was one of the girls injected from the same syringe-ful and suffered no ill effects.
5. The diagnostic cry, "My throat pains me."
6. The diagnostic frothy viscid mucus on the lips.
7. So rapid a fatal result occurring within five minutes after injection is unique in a human being, though such rapid effects were experimentally produced in dogs.
8. Severe anaphylaxis is a rare occurrence after a first injection of serum, anaphylactic shock being still rarer, and fatal anaphylactic shock practically unknown. A very rough estimate of the mortality from anaphylaxis among first injection cases at 1 per 1,000,000 and among subsequent injection cases at 1 per 10,000 would not be wide of the mark.
9. The sudden death was such an unexpected and overwhelming blow to the parents that an autopsy was out of the question.
10. A War Office pamphlet entitled *Memorandum on the Use of Curative Sera* says: "It may be remarked that sometimes anaphylactic shock occurs after a primary injection of horse serum such as is given in diphtheria, especially in persons suffering from Graves's disease, or subject to asthmatic attacks, or who are affected by emanations from horses. But this is so rare (1 in 50,000) that it may be ignored in practice."

The post-mortem changes as seen in Professor Dean's case<sup>1</sup> of a soldier dying of anaphylactic shock following antitetanic serum injections, Gurd, Fraser, and Roberts's similar case<sup>2</sup> and anaphylaxis studies in dogs<sup>3</sup> show, in brief, that, with a rapidly occurring death from anaphylactic shock, the primo lesion is in the liver, consisting of engorgement with leucocytes, and haemorrhage into its substance; there is pro- leucocytes, and haemorrhage into its substance. This found disturbance and death of the liver elements. This acute and fatal turmoil of the liver may be compared to that occurring in late chloroform poisoning and in the eclampsia of pregnancy. A similar engorgement of the lungs occurs, becoming more and more marked the longer the patient lives; death results from oedema of the lungs.

These deaths, appallingly sudden and unexpected and regrettable, merge, however, into insignificance when one reflects on the enormous saving of life by the use of various serum injections—for example, tetanus in the great war, and diphtheria in civil life; the risk to life is less than that of the most trivial surgical operation.

Doubtless in process of time the vehicle of the antibody content—the horse serum—will be modified in some way to prevent any chance of anaphylaxis occurring, whether by using some other less toxic animal serum or by adding some protective bodies to give it a colloidal character.

Till such a time a preliminary intravenous injection of 1/2 c.c.m. of the 10 per cent. diluted serum and, if no adverse symptoms arise in an hour, the subcutaneous injection of remainder of the dose should eliminate the possibility of anaphylactic disaster; a preliminary intravenous injection of sodium carbonate 5 grains, gum arabic 1 drachm, glucose 1 drachm, in normal saline solution up to 30 c.c.m., together with an intramuscular injection of a sterile solution of 1 grain of calcium chloride dissolved in 10 minims of normal saline solution an hour before the serum injection, should also do away with any chance of anaphylaxis.

#### REFERENCES.

- 1 Dean: Case of Anaphylactic Shock. *Journ. of Path. and Bact.*, July, 1922, vol. xxv, No. 3.
- 2 Gurd, Fraser, and Roberts: Fatal Anaphylaxis following the Prophylactic Administration of Tetanus Serum. *Lancet*, 1920, vol. i, p. 753.
- 3 Wells: Study in Anaphylaxis in dogs. *Journal of Immunology*, 1921, vol. ii, p. 525. Wells and Eggleston: Also vol. ii, p. 571. *Wells: Anaphylaxis*. Liverpool University Press, and Constable and Co., London, 1913, p. 32.



## AMPUTATION AT THE SHOULDER.

BY

F. R. PARAKH, M.D., M.R.C.S.,

CONSULTING SURGEON TO THE SURAT GENERAL HOSPITAL, INDIA.

DURING the last eighteen months I have seen three cases of rapidly growing endosteal sarcomas of the upper end of the humerus, growing into the shoulder-joint, and with distinct enlargement of the axillary glands, which required immediate and complete amputation. In the first two cases I followed the old and recognized method of first dividing the clavicle for ligation of the main vessels and exposure of the cervical plexus, before proceeding with the interscapulo thoracic amputation. In the first case, which was one of a very thin and emaciated male, I had some difficulty in getting at the main vessels, although I had taken good care to remove as much of the clavicle as circumstances demanded. It took me nearly thirty-five minutes to do this part of the operation, and I was disappointed at the time lost in this preliminary step. The second patient was a well developed young man weighing 155 lb. The operation was commenced in the usual way, and many difficulties were encountered in satisfactorily exposing the vessels and plexus. It took me nearly two and a half hours to complete the operation, and, possibly owing to the length of time and the shock of the operation itself, the patient died four hours after the operation.

In July, 1922, the third case was admitted to hospital, and, as previous experience of the two former operations was anything but happy, I made up my mind not to divide the clavicle, but to try to ligate the vessels as the first step of the operation. As the growth was much more marked in the front than the back and invading the joint, I made a large flap, commencing from the clavicle near the sterno-mastoid attachment, carried it along the axillary border of the scapula down to its angle, divided the muscular attachments of the scapula, and, as the whole extremity fell forwards of its own weight, there was very little difficulty in getting at the deep vessels, with which I immediately dealt. The whole operation did not last more than fifty minutes and was done with comparative ease.

I must confess that I had never heard nor read of the above method of doing the operation until, soon after my third operation, I received the BRITISH MEDICAL JOURNAL of March 11th, 1922, and I was gratified to find on page 381 an article describing more or less exactly the above procedure by no less an authority than the late Mr. H. Littlewood. With me it was only a case of necessity being the mother of invention, without any previous experience of such dissection either on the cadaver or the living subject.

## Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

## DERMATITIS FROM DYED FUR.

A CURRENT epidemic of "fur dermatitis" among out-patients is worthy of notice.

Except for degree of reaction, the type of dermatitis has not varied, and the patients mostly entered the department with its etiology on their shoulders. The eruption was limited to the lateral aspects of the neck and to the chin, but in one case the mucous membrane of the lips was dry and cracked, and in another, after three months of facial involvement, the reaction had spread to the forearms. A greater or less degree of oedema of the eyelids was, or had been, present in all the cases. This is a common and well recognized symptom of dermatitis artefacta from the use of hair dyes.

The eruption consisted of a blotchy erythema, limited in the early cases to the lateral aspects of the neck and face, but spreading thence, in cases of over a month's duration, to the whole of these areas, and resulting in considerable oedema and disfigurement. The later cases showed pronounced infiltration, with a tendency to vesiculation and "weeping." Itching and burning were complained of in a degree transcending the clinical manifestations, and in one case had prevented sleep for several nights.

The diagnosis from seborrhoeic dermatitis—the only dermatosis at all resembling it—rested on the localization, the absence of scalp involvement, and the history. In every case the direct association by contact of the fur collar with the neck and chin could be demonstrated, and none of the

patients had ever suffered from "eczema" antecedent to their purchase of the coat. Further support to the diagnosis was obtained in two cases by applying a scrap of the fur under strapping plaster (and against a control) to the anterior aspect of the thigh. Erythema occurred in both subjects of the experiment where the fur was applied within twenty-four hours of the application.

The coats responsible all had fur collars of a dark flat variety, of very poor quality, and known to the trade as "dyed coney." It is probably rabbit fur dyed by one of the paraphenylenediamine group of textile dyes. A sample has been submitted to expert investigation, and an attempt to trace the place of manufacture will be made.

London, W.

HENRY C. SEMON, M.D.

## TRAUMA AND APPENDICITIS.

WHILST visiting a patient I was requested to examine a boy belonging to the same household. I was informed that three days previously he was struck in the abdomen by a perambulator, and that since then he had complained of violent pain. The high temperature, rapid pulse, tenderness over McBurney's point, and rigidity of the right rectus muscle gave me the impression that the boy was suffering from appendicitis. I visited him early the following morning and found that the temperature was still high and the pulse very rapid, and in addition he was doubled up with pain. I advised removal to hospital, where he was operated upon that afternoon. Laparotomy revealed a gangrenous condition of the appendix. Recovery was retarded by an attack of bronchopneumonia; but eventually the boy left hospital fit and well.

Derby.

H. W. WILD, M.B.

## Reports of Societies.

## THE VALUE OF LABORATORY INVESTIGATION IN DISEASES OF LIVER AND PANCREAS.

A DISCUSSION on the value of laboratory investigation in diseases of the liver (including the biliary system) and of the pancreas took place at the meeting of the Medical Society of London on March 12th. Lord Dawson of Penn presided, and the discussion was opened by Dr. W. LANGDON BROWN with a paper which is printed in full at page 461.

Dr. F. LANGMEAD, after a reference to Dr. Langdon Brown's excellent and exhaustive treatment of the subject, said that he himself had approached this matter in the endeavour to apply laboratory tests to the elucidation of the cases which came forward in ordinary hospital practice, and to gauge to what extent these tests might form part of the practitioner's armamentarium. At the outset the number of the tests was a disadvantage; in medicine numbers were a weakness, not a strength. If by the "value" of this investigation the immediate practical usefulness of the laboratory test was intended, it must be confessed that, excluding the blood-sugar estimation in suspected or true diabetes, the tests had at the moment little usefulness from the point of view of ordinary diagnosis. With the exception just mentioned, he could not recall any instances within his own experience in which a laboratory test for the efficiency of the liver or the pancreas had provided him with a correct diagnosis which otherwise would have been missed. He did not mean that the test usually failed to correspond with the clinical findings, only that one was never first put upon the right track by means of the test. Discussing the tests individually, he said that the diastase content of the urine was a test which was losing rather than gaining adherents. The fat content of the stools was more helpful, but it could not be relied upon to decide, save in a case of obstructive jaundice, in what organ lay the disease. The levinose test was applicable mainly to acute destruction of the liver cells, and could not be depended on for chronic cases. He would be sorry to appear to speak disparagingly of tests so scientifically worked out, but there was a danger of the efficiency test being accepted as a kind of "ready reckoner," and he held strongly that the investigation was not sufficiently matured to permit of this.

Dr. J. W. McNEE was very much in agreement with Dr. Langmead. The subject was still only at its beginning, and the time was not ripe for a full-dress discussion. It was obvious that no one test could give information in more than one or two directions. The levinose test, for example, had



definite value only in acute conditions of the liver—in cases in which there was hepatitis or toxic damage of the liver cells; the usefulness of the lipase test also was confined to cases of acute damage, and in more chronic hepatic diseases had nothing like the same value. He was extremely doubtful as to tests which involved the use of Einhorn's tube for taking out the contents of the duodenum. With regard to tests which concerned the pigmentary metabolism of the liver, he had been doing a good deal of work on van den Bergh's test for distinguishing obstructive and toxic jaundice. The chief value of this test in hepatic diseases was that it had transferred the general idea with regard to bile pigments away from the urine and faeces back to the blood. This had opened up a view of latent jaundice which had definite value. With regard to its direct application in practice to clinical cases, all he could say was that when there was complete direct reaction he had never had any difficulty; cases in which there had been complete indirect reaction had been either cases of haemolytic jaundice or of catarrhal jaundice, but not all the latter gave this reaction. At first he thought that all cases of catarrhal jaundice would give the indirect reaction, but he had found that this was not so. His conclusion was that none of these tests alone provided much information of value, though some of them might be useful.

Dr. MACKENZIE WALLIS agreed that no one test would give any valuable information. Only by a combination of tests could information of value be obtained. The most positive results were obtained in acute injuries to liver and pancreas. The investigation of salvarsan jaundice furnished an opportunity of applying the various tests and working out their relative values. The results he had himself obtained in salvarsan injections led him to recognize that the levulose tolerance test had the advantage of being extraordinarily accurate and delicate; it gave evidence of liver injury which no other test could furnish. Its disadvantage was the time it occupied, but a simplified method had been worked out. Another test which yielded interesting results in salvarsan cases was the lipase content of the serum. This by itself was of little value because it was not so delicate as the levulose test, and when it was positive it signified that considerable damage to the kidney cells had taken place. Like other speakers, he was sceptical of the Einhorn tube method of investigating biliary function. With regard to tests for pancreatic inefficiency, he drew attention to an investigation which he and Mr. H. E. Griffiths had made on gall stones. A large number of cases, both obvious and obscure, were investigated, and as many tests as possible were applied. These were particularly favourable cases to investigate from the point of view both of liver function and of pancreatic function, because they mostly came to operation, and there was no possibility of further appeal, for either they had stones in the gall bladder or they had not, so that the diagnosis, whether based on clinical or laboratory findings, was either proved or disproved. In a large number of cases of gall stones he and his colleague found that there was hyperchlorhydria with regurgitation. The lipase content of the blood was raised in some and normal in others; diastase in the urine was considerably raised in several. In conclusion, he emphasized the importance of not placing reliance on one test alone. One test taken by itself would often give false results. If these tests had not been of value in diagnosis, at least they had been useful in the scientific investigation of problems connected with hepatic and pancreatic function.

Dr. E. C. DOBBS thought that the majority of workers were too apt to ignore the physiology of the liver when dealing with these problems. The recent researches of Mann had shown that four-fifths of the liver in animals might be removed without any symptoms beyond transitory shock. Apart from disturbances due to operative interference and interference with external secretions, there was little or no ill effect experienced from destruction of the liver until almost the whole had been removed. Unfortunately the majority of reactions for liver efficiency did not seem to give any idea with regard to the prognosis or the seriousness of the lesion. In his own experience one of the most valuable tests was that which depended upon the action of the liver in forming glycuronic acid with compounds such as camphor.

Dr. G. A. HARRISON said that in acute or subacute pancreatic disease the diastase test had been most useful, but generally it was of no assistance in chronic lesions. With regard to the tests of liver efficiency, most of the cases he had been asked to investigate had gross clinical signs, and from the clinician's point of view the test generally gave but little assistance. The point that had struck him most

was the frequency of coincident disease of liver and pancreas—so much so that he had made it a rule to test the efficiency of both organs. Unfortunately it was difficult to test one organ to the exclusion of the other. The new levulose test might be affected by deficiency of the internal secretion of the pancreas, and one could not be absolutely certain as to what it meant. Van den Bergh's test was a laboratory test of real value, but only when its results were taken in association with other findings. All the tests must be weighed carefully in conjunction with clinical evidence; they should be regarded as an extension of the clinical examination, not in any respect as a substitute for it.

Mr. H. E. GRIFFITHS regarded it as unlikely that one infallible test would be found for a disease of one organ. The value of the laboratory test was to confirm the interpretation of some of them, and guiding him in his search for further signs. The value of the duodenal tube had been rather decried that evening, but occasionally it was of definite assistance. It had never been suggested that the injection of magnesium sulphate (25 per cent. solution) directly into the duodenum through the tube was of itself likely to be of great assistance; what it did was to accelerate the bile down into the duodenum. By this method the bile might be brought into the duodenum within ten minutes. The value of the duodenal tube in carcinoma of the head of the pancreas was in showing the absolute absence of bile even after the injection of magnesium sulphate. The value of diastase in acute pancreatitis had been very generally accepted. This reaction might be carried out within half an hour, and therefore it was a test applicable to acute cases.

The discussion concluded with a few remarks in French by Dr. A. MATTHIEU DE FOSSEY of Vichy. Dr. de Fossey emphasized the importance of relying upon the findings of several tests, and not of one only, and especially the importance of blood tests in preference to urinary tests.

## SPASTIC PARALYSIS.

A MEETING of the Orthopaedic Section of the Royal Society of Medicine was held on March 6th, with Mr. T. H. OPENSHAW in the chair. Mr. A. S. BLUNDELL BANKART read a paper on the operative treatment of spastic paralysis.

Mr. BANKART said that spastic paralysis was due to a permanent defect of the upper motor neurone. Such defects were the cerebral palsies of children, resulting in diplegias, hemiplegias, paraplegias, and monoplegias. The condition was essentially incurable. Treatment must be symptomatic, and directed to the relief of contractures. Of these perhaps the most important were plantar flexion of the foot (spastic equinus), flexion of the knee, adduction of the thigh, pronation of the forearm, and flexion of the wrist. It should not be forgotten that spastic paralysis was often accompanied by mental deficiency, motor weakness, or involuntary movements; and these had an important bearing on prognosis and treatment.

The nature of the spastic contracture was a tonic spinal reflex. Fortunately secondary anatomical or structural shortening usually occurred late. The treatment for such muscular shortening was by a direct attack on the shortened muscle. There were several methods of operative treatment for the physiological contractures, which were now under discussion. Non-operative treatment was useless. Forster by posterior root section attacked the afferent side of the reflex arc. Mr. Bankart believed the results by this procedure were generally disappointing, perhaps because the contractures were local, and it was impossible to localize the effects of posterior root section. Again, orthopaedic surgeons could attempt to diminish the effective action of the preponderating muscle group through either muscle or nerve. This was an attack on the efferent side of the reflex arc. The older orthopaedic methods included such operations as division or excision of portions of the adductors, division or excision of portions of the hamstrings, and lengthening of the tendo Achillis. These were all needlessly complicated. There was a tendency for the contracture to recur, and there was the terribly long convalescence during which instruments had to be used.

Much simpler was Stöffel's operation of dividing fibres of the peripheral nerves. This abolished excessive muscular contraction by diminishing the number of muscle fibres taking part in the contraction. Amongst such typical operations might be cited those for adduction contracture, for flexion contracture of the knee, for spastic equinus, and



for pronation-flexion contracture of the forearm and wrist, whilst atypical operations of the same type were those for flexion spasm of the toes, for peroneal spasm, and for internal rotation of the thigh. The result of such nerve destruction was immediate and permanent flaccid paralysis of the muscle fibres involved. There was no tendency for these fibres to shorten; rather they tended to stretch. There was therefore no recurrence of the contracture, and no need for splint, ment, abduction frames or splints, and the instruments so commonly seen were avoided.

In considering the end-results of Stössel's operation, it should be remembered that spasticity was but one of the disabilities of cerebral paralysis. Treatment was necessarily limited, but by this method these terribly handicapped little ones could at any rate be made to walk, although imperfectly. In conclusion, Mr. Bankart said that Stössel's operation was by far the best method yet devised for the treatment of pure spastic contracture. The operation was easy of performance, it was easily adjusted to individual cases, and the results were immediate and permanent.

Mr. LAMING EVANS considered adductor spasm well treated by division of the obturator nerve. He asked: Should one or both branches be divided?

Mr. FAIRBANK thought that it was very necessary to select the operation. If, for instance, in equinus there was real shortening of the calf muscles, Stössel's operation was unsuitable. Elongation of the tendo Achillis was necessary. In flexion contracture of the knee the method was admissible. He agreed that Foerster's operation gave very poor results.

Mr. BRISTOW believed that division of the obturator nerve was admissible for adductor spasm. The question of the whole or partial division of the nerve was not important, since the adductor magnus would still be acting.

Mr. ELMSLIE stressed the necessity for certain diagnosis. Congenital syphilis often simulated spastic paralysis. He always had a Wassermann reaction taken before operating. Afterwards re education was very necessary.

The PRESIDENT remarked that in ordinary hemiplegia there was a limitation of supination of the forearm and of rotation of the arm outwards. He was accustomed to divide the pronator radii teres muscle and the subscapular muscle, with excellent results.

## MENSTRUATION AND PREGNANCY IN HODGKIN'S DISEASE.

A MEETING of the Liverpool Medical Institution was held on March 1st, with the President, Professor J. HILL ADAMS, in the chair, when Dr. ARTHUR GEMMELL read a note on menstruation and pregnancy in Hodgkin's disease.

Dr. Gemmell described a case of Hodgkin's disease commencing in the second month of the second pregnancy of a young married woman, aged 23, who came under notice in 1919.

The diagnosis was established by pathological examination of one of the glands, and treatment with arsenic and extract of lymphatic gland, with the application of x rays to the site of glandular enlargement, was commenced and continued throughout pregnancy. The labour and puerperium were normal. Under further treatment all traces of glandular involvement disappeared. A third pregnancy commenced in 1920 and the glands began to enlarge at the eighth week. The patient then contracted influenza and aborted. Treatment as before caused complete disappearance of the swellings in a few weeks. Her fourth gestation began in the spring of 1922 and the glands enlarged when she was about eighteen weeks pregnant, but treatment as before kept the disease in check, and she had a normal labour and puerperium with a healthy living child.

Little had been written on the relationship of Hodgkin's disease to menstruation and pregnancy. A collection was made of 57 cases in the female from the Liverpool hospitals and the literature. In 17 cases between puberty and the menopause whose menstrual history was obtained, 14 showed varying degrees of oligomenorrhoea of varying degrees even up to complete amenorrhoea, and 3 were unchanged. Of the 10 definitely parous women, 6 dated the onset of their disease from a pregnancy. Twenty-five cases of the series (43.8 per cent.) had their onset in periods of physiological amenorrhoea. Considering the abore with the well known opinion that women were less liable to the disease than men, it was suggested that it was the ovarian hormone which conferred this relative immunity on women and that they only contracted the disease when there was a hypofunction of the ovary as regards its internal secretion. This hypofunction might be true, as before puberty or after the menopause, or relative, as

during pregnancy. The corollary to this suggestion was that ovarian extract should be given in addition to the treatment already mentioned. *Post-mortem* notes on the genitalia were only available in four cases and these supported that view. Notes on the labours and puerperia were available only in six cases. These showed that, on the whole, labours were normal with a tendency to *post-partum* haemorrhage; but three of the patients died within three months of labour. No abortions were definitely attributable to the disease. It appeared that where early Hodgkin's disease and early pregnancy occurred together the uterus should be emptied and the woman warned of the danger of future pregnancies. Dr. Gemmell drew the following conclusions: (1) Possibly Hodgkin's disease occurred, in the female, when there was a hypofunction of the ovary. (2) Diminution in the menstrual flow was a symptom of Hodgkin's disease. (3) Where early Hodgkin's disease and early pregnancy occurred together, the pregnancy should be terminated.

### Osteitis Deformans.

Dr. WALLACE JONES read a note on a case of osteitis deformans, of which Dr. THURSTAN HOLLAND showed radiographs. The case was that of a man who commenced four years ago with pain in legs and muscular weakness, which was thought to follow a slight accident to the hip. There was no family history of similar disease. He had lost two inches in height, and the size of his hat had increased from 6½ to 7¼ inches. He had a hunchback appearance with kyphosis and marked bowing of both tibiae. The movements of both hip-joints were limited. The arteries were thickened. Dr. Thurstan Holland showed a series of lantern slides showing the condition of various bones, including the skull. These showed the typical changes in the x-ray appearances caused by the various degrees of the combined rarefying and proliferation.

### Oxycephaly.

Dr. HENRY COHEN read a note on oxycephaly, illustrating the characteristic features of the condition by photographs and radiograms of three cases which had come under his observation. He emphasized the pressure origin of the so-called "digital markings" by comparing them with the appearances seen in hydrocephalus and brain tumour. In addition to the usual eye signs, congenital cataract was present in a case of scaphocephaly. Dr. NORMAN CAPON believed that the convolutional impressions were due to disordered bone development rather than to pressure. Somewhat similar impressions were found, in craniotabes, and when they occurred in hydrocephalus it was to be expected that the small volume of liquid lying between the external surface of the brain and the internal surface of the cranial bones would nullify direct pressure as the cause.

### Appendicitis.

Mr. ROBERT KENSON read a paper on appendicitis as a possible epidemic disease. In support of this he urged that whereas the yearly mortality in the Liverpool Royal Infirmary for the past five years had averaged 6.2 per cent. for acute cases, a study of the monthly admissions showed more cases admitted from May to October, and while periods of six months might elapse without a death, on four occasions the monthly mortality reached 33 per cent. Cases admitted in 1921 were greater in number, of greater pathological virulence (abscess formation 56 per cent. against 33 per cent. in other years), and had a higher mortality, especially in the month of June. The mortality curves and incidence curves of hospital and general practice bore no relation to influenza, but followed other streptococcal diseases such as rheumatic fever, erysipelas and puerperal fever, less so scarlet fever. Liverpool had a lower death rate from appendicitis than Manchester, Birmingham, and Leeds, when the population was considered.

## GYNAECOLOGICAL CASES AND SPECIMENS.

A MEETING of the North of England Obstetrical and Gynaecological Society was held in the Liverpool Medical Institution on February 16th, with Professor W. BLAIR BELL in the chair, when a number of specimens were shown and interesting cases recorded and discussed.

Drs. LEITH MURRAY and MEREDITH LITTLE presented a final report on their case of "mixed tumour" of the uterus (adenocarcinoma), reported in full in the *Journal of Obstetrics and Gynaecology of the British Empire* in January, 1914. The patient, more than nine years after operation, was alive and well.



Drs. RUTH NICHOLSON and PICKERING JONES showed a 38-weeks female foetus with numerous abnormalities—achondroplasia, general oedema and ascites, transposition of viscera, supernumerary spleniculi and digits, dilatation of ureters, and under-developed ovaries. The histological appearances in the liver, etc., suggested the further condition of leukaemia. Dr. N. B. CAPON pointed out that the changes suggestive of leukaemia were commonly found in foetuses with oedema and ascites, and were probably associated therewith.

Dr. J. H. WILLETT showed a specimen of repeated ectopic gestation with intraperitoneal rupture.

Nine years ago the patient was operated upon for perforated gastric ulcer; pelvic stab drainage was required and she was in hospital for twelve weeks. Five years ago Dr. Willett operated for right-sided ectopic gestation and removed the tube; dense adhesions were found in the pelvis, the left tube was freed, found healthy, and conserved. Menstrual regularity followed until September 29th, 1922; on November 10th there was a slight bleeding, and on the 27th an abdominal crisis, from which the patient rallied. The abdomen was reopened on December 1st, and a ruptured ampullary gestation was found on the left side; the embryo, placenta, and clots were free in the pelvis, and salpingectomy was performed. Dr. Willett considered that the pelvic adhesions were the probable cause of kinking of the tube and arrest of the ovum. He pointed out the rarity of primary intraperitoneal rupture of ampullary gestations and suggested blocking of the abdominal ostium had occurred with resulting increased tension.

Dr. D. DOUGAL showed an adenomyoma of the vermiform appendix, the tip of which was coiled and adherent in the pelvis near to, but not in contact with, the right ovary. Typical endometrium was found in the wall of the appendix; the section of ovary examined was suggestive of adenomyoma.

Professor H. BRIGGS showed a case of fibroid which emphasized the value of Péan's work.

The vaginal route was demanded by a low-lying tumour and a weak pelvic floor, the removal of the one and the restoration of the other being effected within a single field of operation with the maximum of safety. The tumour, the uterus, and the appendages (bilateral hydrosalpinx) weighed 1½ lb.; weight and size indicated a piecemeal removal (Péan) or Professor Briggs's own alternative (published in 1893), of cutting the tumour into a connected, chain-like column, easily brought down. Free cutting into a fibroid drained away blood and serum and reduced the average total weight by one-fifth.

Miss IVENS showed a submucous fibromyoma removed by myomectomy.

A solitary fibroid in the anterior uterine wall in a young woman aged 22 was a condition which appealed strongly for conservative treatment. The patient had a history of six weeks' profuse irregular haemorrhages, with clots and abdominal pain; a tender smooth swelling, the size of an orange, was continuous with the cervix. The tumour with the subjacent mucosa was removed through an anterior vertical incision; careful suture of the musculature brought the mucosa into close apposition not requiring separate suture. A year later the patient was in good health. On section the tumour showed necrobiosis and hyaline changes.

Dr. FLETCHER SHAW read the notes of a case of fibromyoma of the cervix occurring after supravaginal hysterectomy and recurring after myomectomy.

The patient had supravaginal hysterectomy done and both appendages removed in 1917, on account of old inflammatory matting of the appendages, probably due to tuberculous trouble. Four years later she came under observation again because of persistent haemorrhage, and a fibroid was then found completely filling the pelvis and presenting at the cervix, which admitted two fingers. This was removed by abdominal myomectomy and the cervix left behind, as it was so adherent to the side of the pelvis that removal would have been an extremely difficult operation. Five months later she returned with another hard mass in the pelvis and this was treated with x rays; after twelve months it had slightly diminished in size, and there had been no haemorrhage for six months. Microscopical examination showed the tumour removed by myomectomy to be a simple fibromyoma, though the early recurrence was suspicious of sarcoma; this, however, was unlikely in view of the slight reduction in size and the cessation of symptoms after x-ray treatment.

Dr. MILES H. PHILLIPS recorded a case of chronic inversion of the uterus which emphasized the value of Aveling's repositors.

A complete inversion of uterus and cervix was discovered four months after the confinement. After the necessary attention to the local toilet, the repositor was introduced and completed its work within twelve hours. Dr. Phillips had had two small holes bored through the head of the repositor to relieve the difficulty previously experienced in removing a repositor with a solid head, owing to suction between it and the uterus. This had been completely satisfactory. He further emphasized the slight pressure required, which was furnished by two rubber "paper bands."

Dr. LEITH MURRAY presented a case of "tarry cysts" of the ovary associated with subperitoneal adenomyoma.

The patient was 42 years of age, and had one child 8½ years old. She had had severe and increasing congestive dysmenorrhoea for five or six years; menses were usually scanty, occasionally profuse. Inflammatory appendage disease was diagnosed because of the fixation of the uterus with enlarged, tender, and somewhat cystic appendages. Operation revealed dense adhesions about the enlarged uterus, and the appendages were removed. These burst during oophorectomy; the bladder was slightly adherent to the anterior wall of the uterus. The uterus was 1½ inches thick at the fundus and 1 inch elsewhere; in the anterior wall, near the fundus and rather to the left of the middle line, was a rounded, pale nodule, half an inch in diameter; this was obvious as soon as the abdomen was opened, and was certainly not adherent to either appendage. It was slightly raised and, on section, had no capsule. This nodule showed microscopically a definite adenomyomatous stroma, was without a capsule, and without any evidence of tuberculous granuloma or of the inclusion of the interstitial part of a Fallopian tube. Definite adenomatous elements of endometrial type were found in each ovary. The endometrium was oedematous and polypoid. Without question there was no direct extension of an adenomatous process from the ovary to the uterus by way of adhesion. Dr. Murray had never before seen a subperitoneal adenoma so definitely situated in the uterine wall. He was tempted to wonder whether too much had not been made of an obvious similarity between the glands and surrounding stroma of extrauterine adenomata and the endometrium proper. A case such as this seemed to lend some basis for Meyer's view that those growths are more correctly entitled "adenomatoses."

### CAUTERIZATION OF PLEURAL ADHESIONS BY THORACOSCOPY.

A MEETING of the Aberdeen Medico-Chirurgical Society was held on March 8th, with the President, Dr. ALEXANDER OGSTON, in the chair, when Dr. JAMES LAWSON (Tor-na-Deo Sanatorium) demonstrated a case of cauterization of pleural adhesions by thoracoscopy, illustrated by skiagrams. The patient suffered from pulmonary tuberculosis affecting practically the whole of the right lung. An artificial pneumothorax was induced on that side, but complete collapse of the lung was prevented by adhesions in the region of the upper lobe and of the diaphragm. The thoracoscope was inserted into the pneumothorax cavity in the sixth space in the scapular line and the adhesions inspected. The upper adhesion was found to be too extensive for cauterization; the lower adhesion was divided by the cautery passed through another cannula inserted in the sixth space in the anterior axillary line, the action of the cautery being controlled by inspection through the thoracoscope. Local anaesthesia only was employed. Following this operation there was a considerable increase in the amount of collapse of the lung, though not so much as would have followed had it been possible to deal with the upper adhesion also. Dr. Lawson described briefly the difficulties of the operation, showed the patient, and demonstrated the instruments required, with skiagrams of the case. A short discussion followed, in which Professor ASHLEY MACKINTOSH, Mr. F. K. SMITH, and the PRESIDENT took part.

#### Parham's Bands.

Mr. F. K. SMITH then gave a short paper, with lantern illustrations, on the treatment of fractures by Parham's bands. Mr. Smith pointed out that any method which reduced the loss of working time in a fracture case was worthy of trial; he indicated the disadvantages of different methods of fixation by open operation, and stated that he had found the following advantages of Parham's method: the ease of application, the comparatively small wound required, the small amount of manipulation necessary, and the better chance of aseptic healing. The cases in which this method had been found most suitable were those of oblique fractures, and often in comminuted fractures. In transverse fractures, bands alone were unsuitable, and should be combined with Sherman's plates. Mr. Smith demonstrated the special instruments used, and showed a series of lantern slides of skiagrams of eight cases before and after operation. In the subsequent discussion, Professor MARNOC, Mr. DOX, Mr. MITCHELL, Dr. ROSE, and the PRESIDENT took part.

#### Statistics of Appendicitis.

Mr. G. H. COLE read a paper on the results of the treatment of cases of acute appendicitis occurring in Professor Marnoch's wards in the Aberdeen Royal Infirmary from January, 1911, to December, 1921. There were 675 cases, of which 568 (84 per cent.) were operated on within twenty-



four hours of admission and 107 were kept under observation; 92 of the latter were subsequently operated on without mortality, a definite lesion of the appendix being found in all of them. The mortality in the 568 cases operated on immediately was 6.3 per cent., but excluding 7 cases of wrong diagnosis, with two deaths (one being a case of volvulus and one a case of small ovarian cyst from which streptococci were isolated), the mortality was 6.07 per cent. In 94 cases without pus the mortality was 1.06 per cent. of those drained, and in 165 cases without pus, not drained, 1.81 per cent. In 170 gangrenous cases the mortality was 8.82 per cent., in 62 perforated cases 11.3 per cent., and in 99 abscess cases 3.03 per cent. The chief conclusions were as follows: (1) About 84 per cent. of acute cases required urgent operation; (2) about 90 per cent. of all cases requiring urgent operation would suffer primary appendicectomy; and (3) when pus appeared in a gangrenous case the risk rose from about 2.4 per cent. to 8.8 per cent., and in some third-day cases to double this, the risk rising geometrically as the time increased arithmetically. Professor MARNOCH and Mr. SMITH contributed to the discussion, and some interesting remarks from the statistical point of view were made by Dr. J. F. TOCHER.

### PNEUMONIA AND ITS COMPLICATIONS.

At a meeting of the Brighton and Sussex Medico-Chirurgical Society on March 1st, with Dr. D. W. LIVINGSTONE, the Vice-President, in the chair, Dr. WALTER BROADBENT read a paper on pneumonia and its complications.

Dr. Broadbent remarked that physical signs might not be evident for a day or two after the onset. In was in those cases that a right-sided pneumonia might be confused with appendicitis (especially if there was some inaudible diaphragmatic pleurisy giving rise to pain and rigidity of the abdominal wall), but respirations would be rapid and breath sounds weaker than normal, and there would be no tenderness per rectum. A low temperature in a case with extensive physical signs usually meant deficient resistance, as also did a rapid or intermittent pulse. In favourable cases there was a marked leucocytosis. He described haemorrhagic and oedematous types of pneumonia, which occurred in influenza epidemics. He advised that pleuritic fluid should not be drawn off till after the fall of the temperature unless there was embarrassment of the heart. Empyema was the most common complication. In children breath sounds could often be heard through pus, so it might be missed. Interlobar empyema was difficult to diagnose as every case differed. There might be dullness in the second and third spaces in front, or at the level of the spine of the scapula behind. There was generally bronchial breathing in the upper lobe and a varying degree of signs of compression of the lower lobe. The best place for operating was in the upper axilla with the arm raised. He had made the diagnosis in five cases, four being cured by operation. Dr. Broadbent described a case of empyema between the mediastinum and the left lung, which was collapsed and adherent to the chest wall. In operating the surgeon removed a portion of the eighth rib just external to its angle. Another case had an empyema between the base of the right lung and the diaphragm, which was found by a dull area three inches broad over the lower ribs in the posterior axillary region. He described a case of suppuration of bronchial glands after a very severe pneumonia. It was characterized by spasmodic cough lasting for hours, by dullness in the second right space and under the sternum, and by displacement of the heart to the left. Recovery took place after the sudden coughing up of half an ounce or more of pus. Ulcerative endocarditis might be set up by the pneumococcus; one such case with pyrexia, showers of small emboli in the lower legs and forearms, occasional infarcts in the lungs, and intermittent albuminuria had been cured by Dr. Helen Boyle and himself by numerous injections of antipneumococcal serum continued in spite of severe anaphylaxis. Meningitis occurred mostly in young children. It was usually fatal, but he had had two cures by daily lumbar puncture, frequent injections of serum, and large doses of urotropin. In one of them the cerebro-spinal fluid resembled empyema pus.

In regard to treatment he was strongly of opinion that the patient should be moved as little as possible by nurses, since auto-inoculation occurred so readily. For lobar pneumonia with high temperature he thought the ice-bag good. Vaccines, if of the right type of pneumococcus, were useful if given on

the first or second day. In delayed resolution and after empyema autogenous vaccines hastened cure. He had excellent results from the use of the Pasteur Institute anti-pneumococcal serum, and also from Pane's serum. Medicinally he thought aspirin and quinine valuable, also the creosote and potassium iodide mixture, and for extremely poisoned cases Warburg's tincture. If the pulse rate was up to 100 digitalis should be given, and if up to 120 hypodermic injections of strophanthin; camphor hypodermically was valuable.

### Nerve Implantation in Facial Paralysis.

Mr. H. F. SEYMOUR then showed a case of facial-hypoglossal implantation for facial paralysis.

He said that a boy, aged 11, had been treated for chronic otitis media of long standing of the right side for about a month without success. A radical mastoid operation was then performed. Facial paralysis came on three days later (although the facial nerve had not been injured) and did not take place even after five months of electrical treatment. An implantation of the hypoglossal nerve was then undertaken. The operation was difficult, there being some enlarged lymphatic glands just below the tip of the mastoid process. In clearing these out the nerve was found to be bound up in the connective tissue of the periosteum, as it came out of the stylo-mastoid foramen. Consequently the trunk of the nerve had to be found at the entry of the parotid gland, where it was completely divided. Having dissected it out and isolated the hypoglossal, a nick was made into the latter and the facial trunk drawn by fine catgut sutures into the former. Assured of no undue tension, the junction was buried in the posterior belly of the digastric muscle. Five months passed before any recovery was noticed, the patient then beginning to use the risorius muscle, the levator labii superioris and orbicularis oris coming into action once more. The eye was shown to shut quite well, but the frontal portion of the occipito-frontalis was still paralysed, and there was no sense of taste on the right-hand side of the tongue anteriorly from permanent destruction of the chorda tympani branch on this side. The tongue moved normally and the movements were daily improving, and the expression of the face on smiling was practically normal. Mr. Seymour discussed the advantages of using the hypoglossal nerve for this purpose instead of the spinal accessory.

### ELEVATION OF THE DIAPHRAGM DUE TO UNILATERAL PHRENIC PARALYSIS.

At a meeting of the Röntgen Society on March 6th, Sir HUMPHRY ROLLESTON presiding, a paper was read by Dr. J. M. WOODBURN MORISON of Manchester on the elevation of the diaphragm and its connexion with unilateral phrenic paralysis.

Dr. Woodburn Morison said that certain forms of congenital elevation of the diaphragm were probably due to a unilateral phrenic paralysis, and he proceeded to give a radiological study of a number of cases. It was not uncommon, he said, for paralysis of the diaphragm to be caused by a definite lesion involving the phrenic nerve in its passage through the thorax, although little was to be found on the subject in radiological literature. In nine cases he discovered paralysis of either the left or right leaflet of the diaphragm, variously associated with secondary carcinoma, primary growth in the chest, tuberculosis, and aneurysm of the aorta. In all these cases the diaphragmatic movements on the affected side were reversed, and in two cases he was able to obtain post-mortem evidence to confirm the diagnosis of unilateral phrenic paralysis. He was convinced that when the phrenic nerve was paralysed the movements of the affected leaflet must be reversed unless the diaphragmatic movement were impeded altogether by reason of a new growth; and there was some evidence, which he recounted, in support of the theory that these cases were due to an injury of the phrenic nerve at birth which had remained for a long time latent.

Sir HUMPHRY ROLLESTON said that Dr. Morison had correlated three groups of cases. The first group consisted of the cases which were known as Petit's eventration, or which used to be spoken of as congenital or false diaphragmatic hernia. The question in his own mind had been as to whether these cases were not due to a congenital atrophy of the muscular fibre of the diaphragm, which might remain latent throughout life unless some such event as a stricture or twisting of the stomach took place. Dr. Morison had put forward the view that there was a definite cause for the atrophy of the diaphragm occurring very early in life, and it was certainly a remarkable fact that this congenital or false diaphragmatic hernia was so very much more common on the



left than on the right. The other two groups were those in which there was an injury or wound giving rise to the hernia, and those in which there was a definite paralysis of the phrenic nerve on one side.

Sir CHARLTON BRISCOE agreed that paralysis of the phrenic nerve was common. He had seen four cases post-mortem in which the diaphragm was definitely paralysed and the phrenic nerve destroyed. These were cases mostly of new growths in the chest, and almost always on the left side. This condition was frequently missed in examinations during life because of the presence of fluid, and it was generally missed in the post-mortem room because trouble was not taken to dissect out the nerves, and the degenerated muscle showed very little difference from the normal muscle, often only a rather more brownish tinge and a lessened elasticity to the touch. There were no physical signs by which the paralysis of one-half of the diaphragm could be detected. It might be suspected very strongly, but there were no true physical signs, no alteration in the size of the chest, or of necessary muscular movements. Therefore the x-ray picture was of enormous value. There was one little sign in cases of paralysis of the left half of the diaphragm which was worth noting—namely, that at the end of inspiration there was a little tug of the mediastinum to the right. That seemed to be of great value when the general picture was obscured by fluid.

Sir ARCHIBALD REID said that he had one case in which what was almost certainly a congenital hernia was only discovered—by radiological means—when the patient was 40 years of age. The patient, who had had very acute symptoms for a short period, had been completely comfortable ever since the discovery of the anomaly.

Dr. ROBERT KNOX described a case in which a patient had a left-sided pleural effusion to begin with, and then suddenly developed marked dullness on the right side. On screen examination the diaphragm on the right side was observed to be at a high level. Later a tumour was discovered, which cleared up under x ray treatment, and with the clearing up of the tumour and the relief of the pressure the diaphragm recovered its normal movement.

### ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

A MEETING of the Royal Medico-Chirurgical Society of Glasgow was held on March 2nd. Dr. JAMES ADAM showed a case of laryngectomy done under local anaesthesia, and discussed shortly the question of anaesthesia in relation to operative mortality. Dr. Adam pointed out that shock, septic pneumonia, and mediastinitis are the three most important dangers to be guarded against in these operations. Continental surgeons have shown that these dangers are best guarded against by local rather than general anaesthesia; Dr. Adam described the operation performed successfully upon his patient, and demonstrated the result and the specimen.

Dr. W. S. SYME made a communication on surgical diathermy in the treatment of malignant disease of the throat, and showed several patients. One of these demonstrated the type of case treated and others the results obtained. Dr. Syme explained the procedure and detailed his operation in each case. The treatment was employed at first only for inoperable cases, but as experience of its use had enlarged it was being more and more recognized as applicable and preferable to the ordinary procedures for cases of malignant disease of the mouth and especially of the pharynx in all stages. The advantages appeared to be the following: The operation was practically bloodless, and no external operation was required to expose the growth in the majority of cases. Patients, too, recovered rapidly, even after a large removal.

Dr. G. H. STEVENSON made a communication on tendon transplantation for musculo-spiral paralysis, and showed patients. He discussed the relative values of nerve suture and tendon transplantation in a small group of wounded soldiers in the West of Scotland, and concluded that for rapidity of restoration of function the latter operation had points rendering it preferable to the former. He described the operation performed where certain of the flexor tendons were transplanted into extensor tendons sufficient to carry out ordinary movements of extension. Lastly, Dr. Stevenson explained the difficulties of after-treatment, showing simple splints devised to facilitate recovery of function, and showed several patients who had been treated by his method with remarkable results.

## Reviews.

### AN EDWARD NETTLESHIP MEMORIAL VOLUME.

THE one branch of medical science wherein the importance of hereditary studies has been fully appreciated, and wherein splendid work has been done during the last decade, is undoubtedly ophthalmology, and none can hesitate to admit that the main incentive was the inspiration provided by Edward Nettleship. The editor of the *Treasury of Human Inheritance*,<sup>1</sup> Professor Karl Pearson, who made a joint inquiry with Nettleship into albinism, came to the conclusion that Nettleship would himself have preferred as a memorial a record of work done by others as well as by himself. Professor Pearson has accordingly prepared a Nettleship Memorial Volume of the *Treasury* containing Nettleship's own work, that of his immediate students and friends, and that of other ophthalmologists who have contributed to the knowledge of hereditary diseases and anomalies of the eye.

The first part of the volume contains an account of the life of Nettleship written by Mr. J. B. LAWSON, who had the privilege of a long and close association with Nettleship, and who confesses to "an unbounded admiration for the true nobility of his character and a deep appreciation of his warm-hearted and sympathetic nature." Nettleship was born in the country of a father who had been both a rector and a head master, and was a man of considerable intellectual power with a developed taste for poetry and music; and a mother who was noted for her vigour of character. Of his several brothers three besides himself became noted in their spheres of work. Although as a boy Nettleship's love of outdoor life marked him out for a farmer, he became a veterinary surgeon and a professor of veterinary surgery at Cirencester College. But he speedily became a Member and then a Fellow of the Royal College of Surgeons of England. At the London Hospital he worked for Jonathan Hutchinson and received an impress from that diligent investigator that remained with him for life. His bent was early to ophthalmology, and being attached as a student to Moorfields Eye Hospital, he became curator of the museum, and, after a period at the Royal Eye Hospital, a member of the surgical staff at Moorfields; and also the ophthalmic surgeon at St. Thomas's Hospital in succession to Liebreich. His diligence and method made his work successful whether as a hospital surgeon, as Dean of his school, as investigator of the eye conditions of the children at Poor Law schools, or in private practice. But at the height of his professional success he retired to Hindhead and devoted his time and energy to the study of heredity in disease. During the ten years that followed he accomplished a prodigious amount of work of a very high standard, "working in such a way that his researches are models of orderly observation and recording." He was elected F.R.S. in 1912 and the esteem and regard of his pupils was expressed by their collection of a fund which by his desire was devoted to the establishment of a medal "for the encouragement of scientific and ophthalmic work."

He was known to his brothers as "Bird-bearing Ned" on account of his devotion to natural history and particularly to bird life, and his love of Nature found full play in his home at Hindhead, in his garden and in the woods, with the birds, trees, and flowers of that beautiful spot. In the country he was born, in the country he loved to work, and in the country he died.

The main part of the volume is devoted to the consideration of retinitis pigmentosa and allied diseases. It is now well recognized that retinitis pigmentosa itself is a developmental defect, the exact nature of which is obscure. In congenital stationary night-blindness the case is different; both types of this condition are undoubtedly due to some congenital developmental defect, but nothing is known of the nature of the defect, and there is no reason other than convenience for grouping together the diseases which have the common symptom of night-blindness. A search in the works of early writers has failed to reveal anything more suggestive of the existence of this disease than the statement that night-blindness did not always respond to treatment and that it

<sup>1</sup> The *Treasury of Human Inheritance*. Eugenics Laboratory Memoirs, XXI. Francis Galton Laboratory for National Eugenics, London. Volume II: *Anomalies and Disease of the Eye* (Nettleship Memorial Volume). Part I: *Retinitis Pigmentosa and Allied Diseases*; *Congenital Stationary Night-Blindness*; *Albinism*. By Julia Bell, M.A., M.R.C.S., L.R.C.P., with a Memoir of Edward Nettleship by J. B. Lawson, LL.D., F.R.C.S. Cambridge University Press, 1922. (12s. net.)



might progress to the complete loss of sight. But the symptom of night-blindness has been recognized by writers of all ages in all countries, associated with many forms of malnutrition and exhaustion disease, and there was a common tendency to rely on the virtues of liver as a specific; a prescription for it as early as 1500 B.C. has been discovered in the famous "Book of the Eyes" found in the Theban Necropolis. Whether temporary night-blindness has any relation to the severer progressive retinitis pigmentosa, or whether normal members of stocks that suffer from the congenital defects are more liable than others to temporary affections, is a speculation of interest. The first certain record of hereditary disease is due to Orelgün in 1744, but nothing more is found until 1830, when Richter described the affection in three of a sibship. Eight years later Cunier gave the famous Nougaret pedigree of six generations—a pedigree which was brought up to ten generations by Nettleship, who himself examined certain members of the family and showed that the affection was congenital night-blindness, and not retinitis pigmentosa. Pigmentation of the retina had been seen *post mortem* by Langenbeck in 1836, but the appearance was not correlated to night-blindness until seen by the ophthalmoscope. That instrument completely revolutionized the work of the ophthalmologist, though it is sad to have to admit that, so far as this group of disease is concerned, the benefit of the discovery is limited to the ophthalmologist and has contributed nothing to the relief of the patient.

Since cure is not to be expected, prevention becomes all important, and therein lies the value of the knowledge of the conditions of inheritance. The signs and symptoms of the disease are very clearly and accurately set out in the pages of the volume, with citations of the writings of those who have contributed to our knowledge. Statistics are given of the known age of onset and the rate of progress of the limitation of sight. It may be accepted that the onset is at an early age in the great majority of cases, and is a rare occurrence after the age of 20 years; also it may be accepted that sight is very frequently lost before the age of 40 years. Opinion has for some time been almost unanimous that the disease should be regarded as of an atrophic or degenerative nature, but opinion is by no means agreed as to whether the degenerative process originates in the chorio-capillaris, the layer of the choroid which is entirely responsible for the nutrition of the outer layers of the retina; whether it originates in the nervous elements of the retina itself, manifesting first in the layer of rods and cones; or whether some defect of the retinal vessels precedes the degeneration of the nervous elements of the retina. Nettleship held the view that the chorio-capillaris was at fault, but recently some evidence has been given that the primary atrophy is of the retinal elements. No hypothesis seems to satisfy all conditions entirely, and many a "beautiful theory has been killed by a nasty little fact." In most forms of hereditary congenital defect it is common to find many associated defects. These are not common with retinitis pigmentosa; only two are found with any frequency—namely, deafness, often deaf-mutism, and idiocy or some type of mental defect or defect of the central nervous system. The condition occurs more or less uniformly in European countries; it is perhaps less frequent in America, and rare amongst negroes. It is said to be common in China, but not on very reliable evidence, and it is common in India. Consanguinity appears to have some influence, for with an increase in the percentage of consanguinity there appears to be an increase in the defect resulting. The male tends to become affected more readily than the female, but is less liable to transmit the disease to his offspring.

The section dealing with congenital stationary night-blindness illustrates the incompleteness of our knowledge of this rarer condition; indeed, it is by no means certain that the defect is in the eye at all, for so far it has not been found possible to make a microscopic examination of the eye of an affected person.

A most complete bibliography of the disease is provided, together with details of some 300 pedigrees, each illustrated by charts drawn on the a plan uniform with the Galton Laboratory system. It would be invidious to distinguish any part of the work more than another, yet some appreciation may be permitted of the fine collection of pedigrees by Usher of Aberdeen, who was one of Nettleship's most enthusiastic colleagues in the prosecution of this work.

Finally, there is a section dealing with that destructive form of eye disease known as glioma retinae. A new growth of the retina which occurs exclusively in very young children

and is malignant in that it infiltrates surrounding tissues may extend by proliferation of the primary growth by continuity along the optic nerve to the brain or may be widely disseminated by means of the lymph channels or blood stream forming metastases in the glands, bones, or occasionally distant organs of the body. Thirty-six small family histories have been collected, giving records of 128 cases. There is no evidence of correlated defects of other kinds; consanguinity is not evident, and the data are insufficient to indicate any sex liability. But there is sufficient evidence of liability to hereditary continuance of the disease "to raise grave doubts as to whether any member of a sibship in which more than one member is affected ought to marry."

The whole work is prepared with the unsurpassable accuracy which marks all the productions of Professor Karl Pearson's laboratory, and the printing and make-up of the volume is a good example of the work of the University Press of Cambridge.

### SYPHILIS OF THE INNOCENT.

*Syphilis of the Innocent*,<sup>2</sup> by Dr. HARRY C. SOLOMON and MAIDA HERMAN SOLOMON, is mainly concerned with the social side of this complicated and very important subject, though the purely medical aspects are by no means neglected. It is not the first book that has been written under the same or a similar title, for we have Bulkley's *Syphilis in the Innocent*, Fournier's *La Syphilis des Honnêtes Femmes*, and Scherer's *Die Syphilis der Unschuldigen*. But no other title, so accurate and so expressive, could have been chosen. Of the three forms of innocent syphilis—conjugal syphilis acquired by the mate, congenital syphilis in the children, and extragenital syphilis—the first two, constituting genital innocent syphilis, have always been far the most numerous, and as yet there is little evidence that their number is diminishing; while the cases of extragenital syphilis have certainly decreased. The problem of extragenital syphilis as regards control and prevention is simple compared with that of innocent syphilis in the mate and children of a syphilitic marriage. And although all three divisions of innocent syphilis are dealt with in this volume, the authors devote much more space to the extraordinarily complicated subject of syphilis acquired by the spouse (in most cases the wife) and transmitted to the children. On this, nothing more striking, terse, and true has been said than Dechambre's words, that "syphilis is divided among husband and wife like the daily bread." The authors have done well to recover this French epigram, which indeed is so good as to deserve a place on the title-page of their second edition.

The plan of the book is clearly seen from the chapter headings, dealing with syphilis in the individual, the mate, the child, the family, and the community. Statistics from the large clinical material of the authors and from many other clinics in America and Europe are presented and compared, and the very numerous points raised are illustrated by 152 short records of cases. These clinical records bear the name and surname of the patient, but it is explained in a footnote, which might easily escape notice, that these names are fictitious and are given apparently to add colour to the narrative. These records certainly relieve and illuminate the tediousness of figures and percentages. The comparison is chiefly between Fournier's French statistics and those of various American clinics. Of syphilitic women, about 80 per cent. are married, and of these married women 75 per cent. have acquired it from the husband in Fournier's figures, while American statistics show a lower figure of 50 per cent. or less. It appears that the risks to the woman are much greater earlier than later in marriage, 86 per cent. of women acquiring syphilis from their husbands in the first year of marriage (Fournier). The authors present a study of the families of 555 syphilitic individuals, the majority of them in a late stage of the disease; out of these the Wassermann test was done in the mates in 336 cases (these were mostly women), and was positive in 30 per cent. and negative in 68 per cent. A very careful examination has been made of the children of these 555 syphilitic marriages; the percentage of barren marriages (30 per cent.), the percentage of living children giving a positive Wassermann test (8 to 16 per cent.), and the percentage of syphilitic pregnancies, including miscarriages and stillbirths (50 per

<sup>2</sup> *Syphilis of the Innocent: A Study of the Social Effects of Syphilis on the Family and the Community. With 15 Illustrative Cases.* By HARRY C. SOLOMON, B.S., M.D., and MAIDA HERMAN SOLOMON, A.B., B.S. Washington: United States Interdepartmental Social Hygienic Board. 1922. (Med. Soc., pp. iv + 239.)



cent.), are a few of the more important results. An excellent summary of this familial inquiry is given on page 128; and from it one curious and perhaps unexpected conclusion may be quoted: "One-fifth of all children born alive in syphilitic families were dead at the time the families were examined. This does not differ materially from the general average in the community." If this is correct, it means that the effect of syphilis on the child is much more deadly before than after birth; and that syphilitic children born alive have as great a chance of survival as healthy children. With regard to the question of when a syphilitic may safely marry, the authors take the old conservative view of a period of prolonged thorough treatment followed by a period of strict medical supervision without treatment; if these conditions are fulfilled, they would permit marriage although the Wassermann test is positive. As for the children of a syphilitic marriage, they do not recommend specific treatment in the absence of the stigmata and symptoms of congenital syphilis; and in this are not in agreement with some modern authorities. They emphasize the contagiousness of congenital syphilis in the florid stages, but its non-contagious nature in the later stages; and they do not believe in the transmission of congenital syphilis to another generation.

The clinical aspects of innocent syphilis receive less but still adequate attention. We regret perhaps the table of symptoms of congenital syphilis given on page 58,<sup>3</sup> which includes almost every condition that anybody has considered syphilitic, even pyloric stenosis. Such a table gives little help, and may very well be positively misleading. It would, however, be unfair to dwell on the small faults of a really admirable book. It covers a large and very intricate subject in the small compass of two hundred pages, and its style is distinguished by brevity, clearness, and a singular absence of exaggeration of statement.

#### SOME ACUTE INFECTIOUS DISEASES.

Dr. H. BARBIER's little work on mumps, whooping-cough, influenza, and erysipelas<sup>4</sup> is one of the volumes belonging to the *Encyclopédie Scientifique*, published under the editorship of Dr. Toulouse. The relative importance of the four diseases dealt with in this book is shown by 38 pages being allotted to mumps, 85 to whooping-cough, 100 to influenza, and 65 to erysipelas, including a special section on erysipelas in the newborn. An excellent account is given of each of these diseases, due consideration being paid to the history and epidemiology as well as to the pathology, symptomatology, and treatment. In dealing with the frequency of mumps, orchitis, and the subsequent testicular atrophy the writer quotes Laveran's statistics, the accuracy of which Bénard has recently disputed in a paper based on a study of 400 personal cases of mumps, the statistics of various writers, and the statistics of the French Army for the last twenty-one years amounting in all to 200,000 cases. The frequency of mumps orchitis, which Laveran estimated to be 33 per cent., is, according to Bénard, only 17 per cent., and the frequency of testicular atrophy, estimated by Laveran to be about 70 per cent. of the cases of orchitis, is, according to Bénard, not higher than 50 per cent. Dr. Barbier does not share in the enthusiasm of some of his compatriots who regard subcutaneous injection of ether as almost a specific for whooping-cough; he finds its results inconstant, and he briefly dismisses sodium benzoate, recently advocated by American writers, as "not to be recommended." The basis of his treatment consists in administration of oxymel scillae for five days alternately with a preparation containing grindelia, belladonna, and valerian. He condemns the nursing of cases of whooping-cough in the same ward, even if the simple cases are in one ward and the complicated in another, and is strongly in favour of individual isolation of each case in a cubicle, one ward being reserved for cubicles containing simple cases, and another ward for the complicated cases. A counsel of perfection, which he admits is impracticable, is that the staff attending one ward should never come into contact with the staff of the other for meals, distribution of linen, or any purpose whatsoever. In the article on influenza, though a few lines are devoted to the prophylactic use of vaccines, all that is said of vaccine therapy is that it has proved ineffective, nor is any account given of the treatment of influenza by injection of convalescent serum, which has proved valuable in influenzal pneumonia. Dr. Barbier is sceptical about the value of many of the local applications

recommended as well as about the utility of serum treatment in erysipelas. Frequent applications of warm compresses or pads of wool soaked in alcohol and covered with mackintosh he regards as sufficient. A bibliography is appended, in which we can find little more than half a dozen British names among nearly three hundred authorities quoted.

Although this volume, like the majority of French textbooks, unfortunately does not contain an index, the fullness of its table of contents serves to some extent to remedy this defect.

#### ORTHOPAEDICS IN GENERAL PRACTICE.

Dr. PRIVAT's book on orthopaedics in general practice<sup>5</sup> forms one of the Series Comment Guérir (How to Cure), and its avowed aim is to enable the general practitioner to make early diagnosis, give an accurate prognosis to the friends, and carry out the treatment to as successful a conclusion as is possible. Therefore the author has restricted himself to the usual run of orthopaedic cases, and has not attempted to discuss rarities or disputed points in pathology or treatment. Assuming that his readers have no special knowledge, Dr. Privat rightly goes minutely into every small detail of the technique which must be followed in the application of plaster-of-Paris and other supports and corrective apparatus.

Beginning by laying stress on the importance of immobilization in the treatment of surgical tuberculosis and some other conditions, the author defines contractions of joints, and describes ingenious and simple methods by which the patient can carry out passive movements. The next two hundred pages are taken up by directions for the application and the care of plaster-of-Paris appliances. The advice given is practical and based upon good principles. We think, however, that the excellent shears of Stille for the removal of plaster should have been mentioned as a labour-saving instrument of great value.

In another 270 pages the treatment of surgical tuberculosis and some other infections is dealt with on conservative orthopaedic lines, with which open-air hospitals have made us familiar in this country as well as abroad. For injection of abscesses after aspiration Dr. Privat uses a mixture of olive oil, ether, creosote, guaiacol, and iodoform, but he does not attach very great importance to the composition of this fluid. In cases of inspissation of pus in chronic abscess he recommends a liquefying injection. Methods of correcting ankylosis in bad functional position are recommended and described.

The third part of the book treats of congenital affections, such as wry-neck, dislocation of hip, and club-foot. The fourth part, on infantile paralysis, is very short and inadequate and suggests a small experience of this class of deformity on the author's part. The section on apparatus for palsy of various nerve trunks contains some useful hints. A good deal of space is given to the treatment of scoliosis by active and passive exercises, but this chapter and the short ones on rickets, coxa vara and flat-foot, call for no remark.

From the foregoing it will be gathered that Dr. Privat takes a somewhat restricted view of orthopaedic practice. Although very occasionally he recommends cutting operations he does not describe any, and he ignores the orthopaedic treatment of injuries of bones and joints. Like so many Continental surgeons, he appears never to have heard of Thomas's knee and hip splints.

#### DUFF HOUSE PAPERS.

The volume *Duff House Papers*<sup>6</sup> is a series of articles on diagnosis and treatment, written for the most part by members of the staff of Duff House and edited by Dr. F. I. SPRIGGS. They are selections from the papers issued from Duff House from its opening in September, 1913, to the present time. Some of the articles are reprints of contributions to medical journals, as, for instance, the article on "Meat Diet in Sprue" which appeared in the *BRITISH MEDICAL JOURNAL*, August 7th, 1920. The new matter in the book includes a manual for the use of diabetic patients, in which the nature of the disease is explained; every little detail of the measurement of food and examination of the urine is described, and the principles of treatment made clear,

<sup>4</sup> *L'Orthopédie en Clinique*. By J. Privat. Paris: A. Maloine et Fils, 1923. (Cr. 8vo, pp. 817; 595 figures. Fr. 25.)  
<sup>5</sup> *Duff House Papers*. Edited by F. I. Spriggs, M.D., F.R.C.P., Vol. I. Oxford Medical Publications. London: Henry F. owder, and Hodder et al. Stoughton. 1923. (Double cr. 8vo, 19. x + 217; 129 figures, 1 plate. 30s. net.)

<sup>3</sup> *Oreillons, Coqueluche, Grippe, Erysipèle Médical*. By Dr. H. Barbier. Paris: Octave Doin. 1922. (4 1/2 x 7 1/2, p. 308. Fr. 10 net.)



so as to secure the patient's co-operation. This is supplemented by an article on diabetic cookery by the diet sister of Duff House, and an account by the gardener of the best means of securing a good supply of greens, salads, and other vegetables suitable for diabetics.

Other new matter in the present volume includes a detailed account of the x-ray technique employed at Duff House for examination of the alimentary canal. Seventy pages, profusely illustrated, describe the examination of each section of the intestinal passage, and interpret the appearances revealed by x rays in pathological conditions commonly encountered.

The wide field covered by the different papers should make the volume of interest to many members of the medical profession, and the service it is capable of rendering is certainly enhanced by the attractive way in which the book is printed and the excellent illustrations with which it is embellished.

### PROTISTS AND DISEASE.

THE difficulty of deciding whether certain unicellular forms of life belong to the animal or vegetable kingdom led Haeckel to suggest that the name Protista should be given to these primitive creatures, and Mr. J. JACKSON CLARKE has adopted this classification in his book *Protists and Disease*.<sup>8</sup> He has previously published five books, four of which have appeared under the title of "Protozoa and Disease"; in these he has described the organisms he has observed in molluscum contagiosum, small-pox, syphilis, and cancer, and believes to be the cause of these diseases. The present book is a restatement of his case. The title has been altered because he has come to the conclusion that the organisms he describes are not protozoa but protists allied to Synchronaceae; he has set out to establish the biological relationship of these organisms with well recognized species. The subject is introduced by a review of unicellular forms of life and a consideration of many different botanical forms which do not always appear under their more familiar names, and whose connexion with the main thesis of the book is not at first apparent. It is with greater interest that the reader arrives at an account of *Plassomyxa contagiosa*, described as the pathogenic member of the Plassomysineae responsible for the disease molluscum contagiosum. Here the author describes vividly what he has seen and the way in which the parasite may be cultivated. He has found a similar parasite in sarcoma, the cause of which he considers to be a parasite that first invades the nuclei of connective tissue cells, escapes thence into the cytoplasm of the host cell, and thence again into the intercellular spaces. The parasite subdivides, "either with or without the formation of chromatium," into amoebulae which tend to assume a stellate form. Corresponding ideas are advanced with regard to small-pox, syphilis, and hydrophobia.

It is apparent that the author's views as to the causation of these diseases are not in accordance with those held by the majority of pathologists, and it is for this reason that we would commend the book to them rather than to other members of the medical profession. When Emerson said, "Truly speaking I can receive instruction from no man, but provocation," he indicated the benefit that can be derived from contact with ideas the opposite of our own. Still we must warn even this group of readers that the book has certain defects of construction, one of which is that the author has a way of not always sticking to the point.

### NOTES ON BOOKS.

PUBLIC health nursing is a term "devised to describe more fittingly an infinite variety of functions" which are "the extension of an old service variously known as neighbourliness, sick visiting, and visiting nursing." So we are told in the introduction to a readable and useful work<sup>9</sup> containing an historical survey of the development and present position of professional nursing service, not merely in America, whence the book comes, but also in the old world. Public health nursing in the sense indicated does not imply the existence of sickness. It includes domestic education in the prevention of sickness, and so corresponds in the sphere of the nurses to preventive medicine in the sphere of the doctors. Obviously it embraces the work of health visitors in this country and

visiteuses d'enfants in France. The author goes far back into history, discussing nursing in the Roman Empire and in the Middle Ages, tracing the beginnings of sanitary service; giving some account of the work of Florence Nightingale and the founding of district nursing under Rathbone in Liverpool, and the later specializations of nursing in war and peace. Emphasis is laid on the teachings of experience that nursing should not be combined with the distribution of doles, and that for material relief the needy should be referred to agencies established for the purpose. That principle was established in the early days in Liverpool, and was also learnt in America, as in Buffalo, where "no relief is now handled by the [Nursing] Association, but every nurse is taught to refer to the proper agency cases within her section requiring material aid." The services of the nurse are not confined to the needy, nor are they limited to the sick; "her work is pre-eminently constructive, and if her training as a nurse is essential her ability as a teacher is equally so." Miss BRAINARD's book can be heartily recommended as well arranged and well written, and distinguished alike by knowledge and wisdom.

There has of recent years in this and other countries been a large development of organized physical exercises. Games will always have first place in the affections of youth, but there are occasions and places where games are insufficient for all those who need the physical stimulation and exercise which organized instruction can and should give. Where there are large bodies of children or young people some organization of physical exercises in which all should take a share is necessary, otherwise some (and often those who need this training the most) by reason of shyness, diffidence, or a feeling that theirs is not to strive and win at games, may be left without the very discipline they need. Major F. W. STEVENS, late of the Essex Regiment, has written a very useful and compact little handbook of such physical exercises.<sup>6</sup> He has striven to make as complete a series of exercises as can be carried out in a moderate-sized gymnasium, with a minimum of equipment, and of such general interest to the performers as will attract them to engage in this training of their own free will. The exercises are composed in such fashion that they can be performed to musical accompaniment, which adds much to the interest and enjoyment of the pupil, and naturally induces grace of movement. Besides the set forms of organized movements suggestions are included for a number of brisk games which may be played in the gymnasium during intervals, and in these full play can be given to the exuberant vitality of youth and the natural desire for freedom of movement. The book is well illustrated and conveniently arranged, so that it should form a handy guide to instructors and teachers generally.

The second edition of the second volume of Professor W. BIRK's book on diseases of children,<sup>7</sup> dealing with conditions past the age of infancy, is, with the exception of a few minor alterations, substantially the same as the first, published some eighteen months ago. It has apparently proved itself a popular textbook for students and practitioners in Germany. Covering a wide field, it gives a very condensed account of symptomatology and treatment. Out of a total of about 340 pages some 120 are allotted to the acute infectious fevers, tuberculosis, and syphilis. The remaining subjects are crowded into a space that scarcely allows of adequate presentation. Those who prefer such a severe abridgement may find it a serviceable book.

The first volume of the *Minutes of the Dental Board of the United Kingdom and of its Various Committees*<sup>10</sup> has been issued. It covers the period from December 7th, 1921, when the first meeting of the Board was held, to December 31st, 1922. The Board consists of a chairman, the Right Hon. Francis Dyke Acland, M.P.; three persons, not registered medical practitioners or dentists, appointed by the Minister of Health, the Scottish Board of Health, and the Lord Lieutenant of Ireland, respectively; three persons appointed by the General Medical Council—namely, Mr. H. J. Waring, F.R.C.S., Sir James Hodsdon, K.B.E., F.R.C.S. Edin., a member of the Branch Council for Scotland, and Sir Arthur Chance, F.R.C.S.I., a member of the Branch Council for Ireland; and six persons engaged in the practice of dentistry—two appointed by the Privy Council, two by the Minister of Health, one by the Scottish Board of Health, and one by the

<sup>8</sup> *Protists and Disease*. By J. Jackson Clarke, M.B. Lond., F.R.C.S. London: Baillière, Tindall, and Cox. 1922. (Fcap. 4to, pp. xii+223; 1 plate, 61 figures. 15s. net.)  
<sup>9</sup> *The Evolution of Public Health Nursing*. By Annie Brainard. Philadelphia and London: W. B. Saunders Co. 1.22. (Cr. 8vo, pp. 451; illustrated. 15s. net.)

<sup>6</sup> *The New Era Handbook of Physical Exercises*. By Major F. W. Stevens. London: Stevens's Exercise Equipment Service. 1923. (Roy. 16mo, pp. 43; 102 figures. 2s. 6d. net.)  
<sup>7</sup> *Leitfaden der Kinderheilkunde*. Von Dr. Walter Birk, o. ö. Prof. d. Pädiatrie. Zweiter Teil: Kinderchirurgie. Bonn: A. Marcus und E. Weber. 1922. (Roy. 8vo, pp. 451; 102 figures.)  
<sup>10</sup> Board by Constable and Co., Ltd.



Lord-Lieutenant of Ireland. The volume also contains six appendices, including the standing orders of the Board, reports of the Examination Committee, and the warning notice as approved by the General Medical Council on November 30th, 1922.

## THE PREPARATION OF PATIENTS FOR OPERATION.

We have received from Dr. T. M. Allison of Newcastle-on-Tyne a letter in which he condemns the administration to patients before operation of purgatives and enemata, a method which he implies is followed in some hospitals and nursing homes as a matter of routine. He writes:

The surgery of the present day, which I greatly admire, has two great and glorious achievements to its credit—anaesthesia and asepsis. But it has still certain reproaches, one of which is the "preparation" of patients for operation.

How many of the patients who die on the operating table die, not from the operation, nor from the anaesthetic, but from the "preparation"? A nervous patient, afraid of the unknown (and most of us are afraid), is given a barbaric dose of unnecessary aperient the night before the operation, is kept awake the most of the night, and rendered unfit for the morrow by sleeplessness, griping pain, and getting out of bed. Instead, therefore, of refreshing sleep, the patient is worried physically and mentally most of the night, and the last chance of repose is banished by an enema in the early morning. Anything less scientific can hardly be imagined, as the patient goes on to the table "prepared" rather for collapse than for operation. If this surgical fetish is in any way desirable, might I suggest that it be done two or three days before the operation? Before the operation, in my opinion, it would be wiser and kinder to give 2½ grains (each) of veronal and phenacetin, with half a grain of caffeine at 7 o'clock the previous evening, and/or a grain of opium at 9 p.m.; personally I would rather have both than the castor oil and the enema.

Happy, indeed, is the emergency case, even with a ruptured gastric or duodenal ulcer (in whom no "preparation" is possible) in comparison with the "prepared patient," and it would be both interesting and instructive if some of our hospital surgeons would give their impressions and statistics on these two classes of cases.

The matter is one of considerable importance, and it has seemed worth while to gather together the opinions some surgeons have expressed upon it.

The suggestion that purging before an operation is harmful rather than beneficial to the patient is not, indeed, new. So long ago as 1861 Oliver Wendell Holmes said: "If it were known that a prize-fighter were to have a drastic purgative administered two or three days before a contest . . . no one will question that it would affect the betting on his side unfavourably." The custom of purging has, however, a long history to support it, dating back beyond humoral pathology to the dawn of civilization. Purgatives were given to healthy persons about to undergo any ordeal—those starting on a journey were purged; those about to be bled; those about to be tortured for the extortion of confessions.<sup>1</sup> As early as 1776 Cullen<sup>2</sup> questioned the value of "these pretended preparatory courses of medicine. . . . Other mischievous effects have sometimes appeared."

It would appear that some teachers of surgery continue to recommend the employment of the purge and the enema before operation, and that the practice is a routine in many hospitals and nursing homes. J. P. Warbasse,<sup>3</sup> for example, in 1918, says: "The day before operation a laxative should be given. . . . On the morning of the operation it is well to give an enema." A. Carless,<sup>4</sup> in 1920, says: "During the previous day an effective purgative is given, and an enema may be desirable in the morning." G. E. Gask,<sup>5</sup> in 1920, says: "The bowel should be well cleared out by a dose of castor oil followed by an enema early in the morning of the day of operation." On the other hand, a review of recent literature shows that there is a decided tendency among many surgeons to discontinue pre-operative purgation or to diminish its severity.

E. Walker<sup>6</sup> reported that he had not used purgation as a preparation for operation for more than two years, and that he was convinced that his patients suffered less with tympany and recovered more quickly. J. E. Moore<sup>7</sup> reported favourable results from the disuse of pre-operative catharsis. Yelverton Pearson<sup>8</sup> said that he did not give purges later than the morning of the day previous to operation, and that no enema was permitted as a preliminary to operation. Kocher's opinion<sup>9</sup> was that no patient should come to operation with a full bladder or rectum. On the morning of the operation a warm soap-and-water enema should be administered. The intestinal canal must be emptied, but

the action of the purge should have ceased by the day of the operation; two days before the operation the patient was given one to two tablespoonfuls of castor oil or a dessertspoonful of natural Karlsbad salts. G. W. Crile<sup>11</sup> warns against starving a patient too long and purging too severely before operation, because it interfered with the normal tone of the intestine. W. J. Mayo<sup>12</sup> has pointed out that the difficulties and dangers of using clamps in gastro-intestinal operations are increased by purgation. W. C. Alvarez<sup>13</sup> who gives a good summary of the literature on the subject, is of the opinion that the purgation of patients before operation is not justifiable. He says that experienced nurses have told him that they preferred looking after an emergency to a prepared abdominal case, and that most surgeons whom he consulted on the subject stated that they gave up the routine purge at the suggestion of their nurses. They all agreed that the stormiest after-courses and the worst "gas pains" were met with in the elaborately prepared cases. His experimental work on the intestine confirmed him in his opinion.<sup>14</sup> Purgation caused hyperaemia of the entire intestinal mucosa; the majority of purged animals showed increased intestinal gas and often congestion of the mesenteric circulation; purgation made the bowel react very poorly to drugs, the doses sometimes requiring to be increased one hundred times to produce any effect. L. A. Enge<sup>15</sup> reviews the work of others on this subject, and concludes from his own clinical observations on a series of cases that the strongly purged bowel is more difficult to handle than the unpurged bowel on account of coagulation and distension, and that patients who have not been purged are comparatively free from "gas pains." He believes that an enema will clear the lower bowel sufficiently for any operation. It is interesting to compare two successive editions of *Pye's Surgical Handicraft*, edited by W. H. Clayton-Greene. In the seventh edition (1916) the following words are found: "It is better in most cases to purge the patient two days before the operation and to administer the enema the evening before." In the eighth edition (1919), however, we find the following: "It is not necessary to starve or purge our patients in the drastic manner customary some years ago. An aperient such as a patient has been used to, or a small dose of castor oil, should be given forty-eight hours before. Except in rectal cases the enema may be omitted." E. Wyllies Andrews<sup>16</sup> is strongly of opinion that a simple enema the night before is ample preparation for most surgical procedures.

Sir Berkeley Moynihan<sup>17</sup> says: "Flatulence is a troublesome complication, not only of abdominal, but of other operations also. Its cause is uncertain. My own view is that it chiefly results from the starvation and purgation which are almost universally considered a necessary part of the ritual of deliberate operations. Both are certainly undesirable and are possibly harmful. . . . An enema generally clears the colon quite as much as is necessary." Sir William de Courcy Wheeler said recently,<sup>18</sup> regarding his own practice, that no laxatives to cause purging were ever given to patients before operation, and no enema was given on the morning of operation.

The literature of surgery is not so full as it might be upon this particular point. The pre-operative treatment of patients—and particularly the giving or withholding of purgatives—is frequently skimmed over in textbooks on surgery and operative surgery, and when it is mentioned at all the subject is usually buried in articles pertaining to other subjects. J. F. Binnie,<sup>19</sup> for example, states that, following Wetherill, he has discarded post-operation catharsis; but he does not say (so far as could be ascertained) whether or not he advises purgatives before operation. For a long time it has been recognized as an axiom in surgery, following the teaching of Moynihan, that an aperient should never be administered to a patient with a suspicious acute abdominal lesion. The consensus of surgical opinion to-day is apparently towards extending this by discontinuing the giving of purgatives before operative procedures of whatever nature.

### REFERENCES.

- 1 *Currents and Counter Currents in Medicine*, p. 37. 2 *Garrison's History of Medicine*, 1914, p. 235. 3 *First Lines of the Practice of Physics*, 1781, vol. ii, p. 157. 4 *Surgical Treatment*, 1918. 5 *Rose and Carless's Manual of Surgery*, tenth edition, 1920. 6 *Gask and Wilson's Surgery*, 1920. 7 *Am. Journ. Obstet.*, 1905, 54, p. 722. 8 *Surg., Gyn. and Obstet.*, 1903, No. 6, p. 241. 9 *Modern Surgical Technique*, 1911. 10 *Operative Surgery*, third English edition, translated by Sir Harold Stiles and Balfour Paul, 1911. 11 *Journ. Amer. Med. Assoc.*, January 10th, 1914, p. 123. 12 *Journ. Amer. Med. Assoc.*, 1916, vol. lxvii, p. 1282. 13 *Surg., Gyn. and Obstet.*, 1918, vol. xxvi, p. 611. 14 W. C. Alvarez and F. B. T. . . . *Ann. of Pharmacol. and Exper. Therap.*, 1917, No. 10, p. 365. 15 *Jour. . . .* 16 *Medical Annual*, p. 873. 17 *British Med. . . .* 18 *Manual of Operative Surgery*, eighth edition, 1921.



## British Medical Journal.

SATURDAY, MARCH 17TH, 1923.

### THE RIGHTS OF A REGISTERED MEDICAL PRACTITIONER.

WE desire to draw the attention of the medical profession of this country to an insidious attack now being made by a Government department upon its legal rights. The whole subject is receiving the close attention of the British Medical Association and of the medical members of Parliament acting in concert, and (as will be seen from the Current Note published in this week's SUPPLEMENT) steps are being taken to defend the threatened liberties. Our purpose here is to dwell upon certain matters of principle in order that the profession may understand the larger issues that are at stake.

Section 31 of the Medical Act, 1858, on "privileges of registered persons," laid down that every person registered under the Act should be entitled, according to his qualification or qualifications, to practise medicine or surgery, or medicine and surgery, as the case might be, in any part of Her Majesty's dominions. The Medical Act, 1886, declared, by Section 6, that a registered medical practitioner was entitled to practise medicine, surgery, and midwifery in the United Kingdom, and (subject to any local law) in any part of Her Majesty's dominions. The effect of these Acts was to set up one class of legally qualified practitioner of medicine and to give him one name—"registered medical practitioner." From that time to this every registered medical practitioner has had in the eyes of the law an equal standing with every other registered medical practitioner.

Registration, while it imposes certain legal obligations, confers also certain privileges which are common to every person registered under the Medical Acts. A legally qualified medical practitioner may choose to practise his profession, or may not so choose; he may be one day in practice and another day not in practice; that is his own concern. So long as his name appears on the *Medical Register* he is a registered medical practitioner, with all the rights and responsibilities that that term connotes. The law does not ask whether a doctor is in practice; it asks if he is registered. Acts of Parliament have not hitherto distinguished between practitioners in active practice and retired practitioners; nor have they attempted to define the term "medical practice." In this the Legislature has shown wisdom and common sense. One doctor may practise all the year round, and another (who has taken, say, to rose growing) may practise once in six months by prescribing a dose of calomel or opium for his head gardener. The point is that every registered practitioner is potentially in practice. A grocer cannot carry on his trade without a shop, but a doctor can exercise his profession without a brass plate; he takes his professional knowledge with him into retirement, and no one can say when he may find occasion to employ it. In national or local emergencies there is no such person as a "retired" doctor.

But the Home Office, it appears, has other views. Not content with making different rules for insurance practitioners and for practitioners-not-on-the-panel in regard to the signing of prescriptions for a particular group of "dangerous drugs," the Home Office now proposes to discriminate, by words included in an Act of Parliament, between registered medical practitioners in actual practice and registered medical practitioners not in actual practice. For proof that this is so we refer our readers to Section 3

of the Dangerous Drugs and Poisons (Amendment) Bill, introduced recently into the House of Commons by the Home Secretary. (See SUPPLEMENT, February 24th, 1923.) With the motive for this innovation we are not at the moment concerned; nor with its obvious futility. What we wish to point out is that the Home Office is endeavouring for its own purposes to bisect the body of registered medical practitioners of this country.

This, however, is not the only infringement of the rights and liberties of the registered medical practitioner. Last summer the Home Office informed the British Medical Association that it was proposing to amend the regulations under the Dangerous Drugs Act, 1920, so as to forbid the dispensing of a prescription for "the drugs" written by a medical practitioner for his own use. The Medico-Political Committee recognized at once that this proposal was both futile and vexatious, and so reported to the Council of the Association. The Council informed the Home Office that the proposed new regulation was an undesirable limitation of the privileges of a registered medical practitioner without any compensating advantage to the public. But the Home Office, unmoved by argument, proceeded upon its course, and tacked on to Regulation 5 the words, "The prescription shall not be given for the use of the prescriber himself." In the debate on the amending bill in the House of Commons on February 28th the inconvenience and the absurdity of this prohibition was pointed out in cogent terms by two medical members—Dr. L. G. S. Molloy and Sir Sydney Russell-Wells. To our mind it is of importance because it raises a matter of principle. We perceive in this, as in the use of the words "in actual practice," the thin end of a wedge.

### THE SCHOOL OF HYGIENE.

It was recently stated in a London newspaper that, owing to a further act of generosity on the part of the Rockefeller trustees, the appointment of a director of the projected School of Hygiene would be able to be made before the school has a bodily existence. This means, we presume, that the director will have ample opportunities of conferring with his future colleagues, the professors designate—the designation of the professors should speedily follow the appointment of a director—on the spiritual future of the institution.

It is perfectly consonant with the psychology of the English race that the actual level of knowledge of preventive medicine and hygiene should be higher than its academic status, that the practical value of the instruction given should be greater than the apparatus of teaching would imply. In only a minority of English universities can the doctorate be attained by proficiency in the subject; in some, ignorance of the principles of preventive medicine does not form a barrier to graduation. Just as in the sister profession of Law the merely formal requirements of the Inns of Court, sixty years ago, led to no great scandal because those who intended to practise took pains to learn their work in the chambers of adepts, so the aspiring specialist in public health has had to take pains to learn his business without academic stimulation.

But one evil of the old system in the Inns of Court was, as that shrewd observer Walter Bagehot noticed, the discouragement of the philosophical jurist and the encouragement of the acute but mentally limited caselawyer. Something of the same kind has happened in our profession. In the training of the younger men all the emphasis has been on technical acquirement. It would not be going too far to say that most young candidates for posts in the public health

\* The connotations of the words are not identical: both might be covered by conservative medicine, an expression Farr wished to introduce fifty years ago.



service are far better acquainted with the inside of a bacteriological laboratory and with the provisions of the Public Health Acts than with the principles of epidemiology. We doubt whether ten per cent. of the successful candidates in any D.P.H. examination could accurately describe the steps leading up to any of the classical inductions of Simon, Ballard, Farr, or Thorne Thorne, though they are no doubt acquainted with the results, which are summarized in every textbook.

A broadening of outlook is the function of a university education. Without it a diffusion of interests easily degenerates into slovenly omniscience. We had far rather see our public health services officered by the narrowest of technicians than by bookish philosophers, but there is no need to run from one extreme to the other. It will be the duty of the new School of Hygiene to raise the general level of culture: directly, by offering a well balanced course of instruction to its post-graduate students; indirectly, by setting before the profession a higher intellectual ideal than the existing system of public health training can in itself afford.

These ends can only be compassed by close and loyal co-operation between the members of the staff of the new institution. We mean by this much more than the ordinary good feeling which informs the relations within any group of gentlemen. It is so easy for any man to beguile himself into thinking that he must be right in demanding more and more time for his branch of knowledge, and that to acquiesce in a time table which allots fewer hours to his subject than to someone else's subject is disloyal to the interests committed to his charge. Because of this tendency, we think the appointment of a director and staff well in advance of the opening of the school is a statesmanlike act. A new professor in an old university, however enthusiastic, has few temptations to attack at once the existing order. In a new institution the case is different. It is unthinkable that any men of science would accept a programme imposed upon them by an external authority, equally incredible that they should arrive at a concordat without much discussion. This discussion, aided, we should hope, by a ventilation of the subject throughout the whole profession, ought to begin in the very near future.

#### THE OCTOCENTENARY OF ST. BARTHOLOMEW'S.

Eight hundred years ago this spring two buildings were being erected on a playground just outside the walls of the City of London, which was then called *Norman's Land*, though it has long been known as *Smithfield*. Both buildings, in accordance with the faith of the times, were intended to be religious foundations—the one for the good of the soul, the other of the body; the one a Convent of Augustinian Canons, the other a Hospital where the sick poor could be tended until they recovered, and women with child until they had been delivered. The zeal and piety of Rahere raised them simultaneously. In early life a member of the Court of Henry Beauclerc, but saddened perhaps by some loss in the wreck of the *White Ship*, he had turned his thoughts to religion. Becoming himself the first Prior of the new Convent, he arranged that the two foundations should be independent yet associated, and so long as he lived they worked in harmony. The canons recommended patients to the hospital and gave a tithe of their bread with the leavings of their meat, fish, and drink to feed them; the hospital, when supplies abounded, gave to the canons anything of which they lacked. The Prior of the Convent and the Master of the Hospital were independent of each other, though both were chosen by the convent. When a new sister was admitted at the hospital she was chosen by the prior upon the recommendation of the master and brethren of the hospital. She swore fidelity to the prior and the convent, but obedience to the master of the hospital. Twice in a year, on Palm Sunday and Ascension Day, the master and brethren of the hospital went in solemn procession

to the convent church and there made their offerings and oblations. Finally, they and their patients had the right of being buried in the priory cemetery. Such an interrelation did not last long. Canons who preached charity sermons for the hospital sometimes applied the proceeds to the uses of the convent; whilst the hospital chaplains when they begged in the name of the priory occasionally distributed the contents of their bowls amongst the patients in the hospital. Hence arose dissensions, made more acute by permission from Pope Calixtus for the hospital to have a cemetery of its own. Such permission nowadays would hardly seem a reasonable *casus belli*, but at that time many wealthy citizens, in token of humility, chose to be buried amongst the poor, and a private burial ground was a source of considerable income. The squabbles continued for many years, and repeated appeals were made to Rome, until, in 1373, the convent and the hospital were virtually separated from each other by the arbitration of Simon of Sudbury, Bishop of London. The separation preserved the hospital. More than a hundred and fifty years later, when the priory was suppressed and its revenues were confiscated, the endowments of the hospital, after passing into the hands of King Henry VIII, were partly returned at the urgent solicitation of the Mayor and Corporation of the City of London. The independence of the two foundations remained even after the Reformation. The convent and its precincts became the parish of St. Bartholomew-the-Great, with a portion of the old priory church as the parish church; the hospital became the parish of St. Bartholomew-the-Less, with its principal chapel, dedicated to the Exaltation of the Holy Cross, as the parish church. All trace of the conventual buildings gradually became lost, and the church was allowed to fall into decay, whilst the hospital continued its beneficent work as a secular institution. It is somewhat remarkable, so persistent is custom in this country, that the hospital still celebrates the anniversary of its foundation, though in a debased form, by the annual "View Day," while the church has no such memorial. After the Reformation the governors of the hospital were summoned to meet at seven o'clock on a March morning for the purpose of attending divine service in the church, and afterwards to view the hospital. In these more degenerate days the viewing of the hospital is done at half-past two in the afternoon of the first Wednesday in May. The earlier hour in the earlier month was doubtless a survival of the pre-Reformation service, like that which is still held on May Day morning at Magdalen College, Oxford. At any rate, it is quite in accordance with what little is known of Rahere's humour that he should choose for the dedication a day when the Mass begins with the Introit, "*Laetare, Jerusalem, et facite Conventum.*" The Rector and Churchwardens commenced the Octocentenary celebrations at St. Bartholomew's-the-Great on mid-Lent Sunday (March 11th) with an appropriate service, which was largely attended, both in the morning and in the evening. Similar services will be held next Sunday. For many years the separation between the two bodies was complete, but for a short time when Sir William Savory was Surgeon to the Hospital his only son, Boradale, was Rector of St. Bartholomew's-the-Great. From this time onwards there has always been a friendly interchange, and when the church lacked anything in the matter of funds the hospital by its medical and surgical staff have assisted in supplying the want. The hospital proposes to celebrate its own octocentenary at the beginning of June, and without any cost to itself, for the City in its corporate capacity and the Governors have always been proud of their great charity.

#### THE CONTROL OF BLOOD SUGAR.

A SERIES of communications of considerable interest regarding the mode of action of insulin are appearing by L. B. Winter and W. Smith, who are working in the Biochemical Laboratories at Cambridge. In a paper published in our columns on January 6th (p. 12) they related the results of experiments which showed that the sugar present in normal blood was



not the stable  $\alpha$ ,  $\beta$  form of glucose but was an unstable form of glucose, and probably  $\gamma$  glucose. They found, however, that the sugar in the blood of diabetics was probably the  $\alpha$ ,  $\beta$  form of glucose. They suggested that the tissues could only utilize  $\gamma$  glucose, and that an enzyme exists normally which changes the  $\alpha$ ,  $\beta$  form of glucose to  $\gamma$  glucose, and that diabetes was due to the absence of this enzyme. In a second communication<sup>1</sup> they showed that extracts of pancreas and liver could change the rotatory powers of glucose *in vitro*, and that this change was accelerated by the addition of phosphates. Work by Embden and Laquer has shown that a sugar-phosphoric complex is probably an intermediate stage in the utilization of glycogen by muscle. These conclusions suggest, of course, that the action of the pancreatic hormone, insulin, is to enable the change from  $\alpha$ ,  $\beta$  glucose to  $\gamma$  glucose to occur, and that one stage in this change is the formation of a sugar-phosphoric complex. In their last communication<sup>2</sup> Winter and Smith have published a very surprising conclusion, which may prove to be still more important. An essential stage in the metabolism of sugar by yeast is believed to be the formation of a sugar-phosphoric complex, and this suggested the idea that an extract of yeast might take the place of pancreatic extract. They obtained a solid extract of yeast which on injection lowered the blood sugar of rabbits and caused convulsions in rats. The suggestion is, of course, that yeast extract may be found to have an action similar to that of insulin. Though this may prove to be of profound importance, it must be clearly understood that at the present stage it must be regarded as an interesting suggestion rather than an established conclusion. Yeast extracts contain a number of substances with powerful pharmacological actions, and numerous substances—for example, peptones—can lower blood sugar, and many substances also can cause convulsions in rats. Until we have information as to the action of the yeast extract in diabetes it is impossible to form any conclusions as to the significance of the results here mentioned.

#### RHYTHM IN LIVING ORGANISMS.

SIR ARTHUR SHIPLEY, F.R.S., Master of Christ's College Cambridge, lectured to the Royal Institution on March 6th on rhythm in living organisms, especially that kind of rhythm which appeared to be inherent in the organisms and not dependent altogether on diurnal or seasonal change. He instanced the organisms which make the sea appear to be phosphorescent at night. It is not the case, as might be supposed, that these organisms merely need the darkness in order to exhibit their phosphorescence. If they are taken to a photographer's dark room they will still show phosphorescence, not in the day-time, but only after nightfall. The small worms of the genus *Convoluta* bury themselves in the sand when the tide rises and reappear on the surface with the ebb, but they still show this same action at the time of the tides when taken far from the seashore and placed in an aquarium. Another example is the seasonal growth of trees, evidenced by the annual rings; but if a deciduous tree be transplanted to the tropics, with virtual uniformity of temperature all the year round, the rhythm of seasonal growth will persist, at all events for a time. There is a rhythm in the bloom of flowers in the densest tropical forest, and a rhythm in the reproductive cycles of deep-sea organisms, although in the depth of the sea the influences of climate, temperature, season, light, and sound are withdrawn, and, with complete uniformity of external conditions, the secret of the rhythm must be within the organisms themselves. Rhythm in some living organisms appears to depend on the moon. A sea urchin in the Red Sea shows a definitely rhythmic growth and declension with the moon's phases, though similar sea urchins in the Mediterranean show no such rhythm. Some flowering plants are said to direct their stems towards the moon and follow its course at night. Sir Arthur Shipley pointed to the other instances of rhythm

seen in spiral movements of the growing tendrils of plants, the action of muscles and organs, including the excretory organs, and the life of communities, alike of insects and of the civilizations of mankind.

#### CHANGES IN LIVING CELLS DURING GROWTH AND DIVISION.

DR. T. S. P. STRANGEWAYS, who has given prolonged study to the remarkable changes which take place in living cells during growth and division *in vitro*, has recently published in the *Proceedings of the Royal Society*<sup>1</sup> an account of what he has observed in cultures from the choroidal cells of chick embryos and the cartilage cells from knee-joints of adult fowls. By cultivating fragments of tissue in a drop of chick plasma, to which embryo chick extract has been added, and keeping the microscope and cultures at a temperature of 39° C., he was able to make a series of continuous observations, and the seventy-eight drawings he has produced illustrate the changes seen in a living cell from one division to another. The outline of a growing cell is constantly changing; larger or smaller processes of cytoplasm are thrown out and withdrawn as in amoeboid movement; the cells tend to assume an elongated shape, and by these activities may slowly change their position. Rod-like structures, described as mitochondria, may be seen in the cytoplasm moving from one place to another, and minute refractile granules move past and round the nucleus, but never enter this structure. The clearly defined nucleus may be round or oval and it wanders about the cell freely, being sometimes at the centre, at other times at one or other pole, its position depending largely on the movements of the cytoplasm. When large cytoplasmic processes are thrown out the nucleus may pass out with these processes and be drawn back if they retire. When first formed the nucleus is relatively small, but it soon increases in size and usually contains one or more irregularly shaped structures which stain intensely with iron haematoxylin; they are referred to provisionally as nucleoli. Brown pigment rods may also be seen moving about rapidly and irresponsibly in the cytoplasm. When about to divide the processes of cytoplasm retract and the cell assumes an oval or rounded shape; the nucleoli become fainter and appear as hazy granules. A number of fine threads may be seen in active writhing movement within the nucleus; the outline of the nucleus disappears and the chromosomes rapidly arrange themselves at right angles to the spindle, which with the centrosomes is visible at this stage. A few minutes later the chromosomes begin to draw apart from the centrosomes and show clearly as finger-like processes, being drawn towards either pole of the cell, which has by this time taken an oval shape. At this stage Dr. Strangeways describes a most interesting development in the outline of the cell. "Small balloons of cytoplasm project from the surface of the cell, remain for a few seconds and then collapse. The granules in the cytoplasm can be seen flowing in when the balloons are formed and streaming out when they collapse. This movement continues for about six minutes, new balloons being formed as the others collapse. This balloon formation is unlike amoeboid movement, and appears due to local changes of surface tension." The cells divide during this stage, and the two masses of cytoplasm pull apart, being joined only by fine filaments of cytoplasm and a few mitotic threads. The granules in the cytoplasm do not appear to take any active part in mitosis, but are in a state of active movement, flowing from one side or other of the two cytoplasmic masses, and they are ultimately distributed in fairly even numbers between the two newly formed cells. The time from the beginning of one division to the beginning of the next is between eleven and twelve hours, and the actual period occupied for complete division of a cell is on the average about thirty-four minutes. The constant activity of the living cell is clearly shown by these observations, for the cell and the structures within it are never at rest during growth and division.

<sup>1</sup> Winter and Smith: *Proc. Physiol. Soc.*, December 15th, 1922.

<sup>2</sup> Winter and Smith: *Nature*, vol. 111, p. 327, March 10th, 1923.

<sup>1</sup> *Proc. Roy. Soc., B*, vol. 94, 1922.



## TREATMENT OF MENTAL DISORDERS.

BRIEF reference has already been made to Professor G. M. Robertson's annual report on the work at the Royal Hospital at Morningside; but as is his custom, he does not confine himself to a mere record of administrative and statistical details, and we may now mention some of the comments and observations he makes, which are of general public interest in connexion with the work of his hospital, which is a centre of active psychiatric work and is extending its sphere of usefulness in various directions. It is proposed to increase the accommodation and standard of treatment for private patients paying the lower rates of board. Not only will the patients and their relatives benefit by these proposals, but so will the community at large, as any measure which tends to prevent a patient from becoming a burden on the rates is of direct advantage to the public. Four homes for nervous cases have been established by the managers where the family physician can treat his patients under the supervision of an experienced staff till they recover, without the necessity of certification or asylum treatment. Scotland is fortunately situated, as Professor Robertson observes, in having a law which enables this form of early treatment to be conducted in such homes. In view of the great advances made in psychotherapy and the importance of this form of treatment, a psychological assistant physician has been appointed whose duties are almost entirely restricted to psychological investigation and treatment. Professor Robertson believes that psychotherapy, including psycho-analysis, is now settling down at last into its right place in medicine, and that, even if comparatively few psychoses are amenable to treatment by these means, they give us an understanding of the patient's symptoms and mentality useful in general treatment and management. Moreover, such insight is of the greatest value in preventing the development of definite mental disorder, provided persons come for advice and treatment at an early stage of their mental troubles. Amongst matters of general interest considered is that of the Church and healing—a subject which has been somewhat prominent lately. Professor Robertson's vigorous comments are written from an eminently common-sense standpoint. "At no time," he writes, "are the ministrations of the clergy of more influence and value than during prolonged sickness and even during periods of crisis. This is gratefully acknowledged by every physician. There exists a temptation, however, at such times, which a few clergymen appear unable to resist, of absorbing the professional sphere and the functions of the physician. These persons, though uneducated in medical science, which involves the most laborious training connected with any of the learned professions, pose as healers. . . . These practitioners, whose art is indistinguishable from a lukewarm Christian Science . . . cure by the possession of a mysterious 'gift of healing,' or by something not essentially different from the performance of a miracle, the initiation of which is their peculiar prerogative. No one limits the possibilities of spiritual or divine power, and the cure of all diseases, by whatever means, is through divine agency. But the laws of space and gravitation are no more an obstacle to this power than are those of anatomy and physiology, for mountains may be removed, yet we do not hear of the clergy initiating miracles in this sphere or performing feats of an engineering kind. When the foundations of the pillars supporting the dome of a great church subside . . . they open subscription lists and call in the services of an architect, yet they rush in to restore a temple not made with hands. We hope that Scotland, with its strong and pervading religious sense and with its famous medical schools, will be the last country in the world to regress to that primitive phase of civilization in which the functions of the priest and of the medicine man were in the person of one individual, whose pharmacopoeia consisted mainly of incantations and of magic for the treatment of every ill." The report contains some interesting observations on the notable diminution of deaths from general paralysis in England and Wales during the years 1919, 1920, and 1921. Professor Robertson suggests that the lessened consumption of alcohol

and the early methods of treatment may be factors concerned in the remarkable decrease which has occurred. It may be observed that apart from the diminished number of deaths from general paralysis many psychiatrists have noted alterations in the clinical symptoms and course of the disorder. Many cases are atypical; remissions are increasingly common; and the total duration of the illness is often much longer than was formerly the case. A large number of these cases first showed signs of neuro-syphilis while in the army, and thus received treatment in the very early stage of the disorder. This may perhaps account for the protracted course of the disease. In discussing the treatment of service patients, Professor Robertson suggests that, in spite of the advantages of allowing the surplus of the pension to accumulate, a greater part of the pension should be utilized for treatment on a more liberal scale than at present, while the patient is in the mental hospital.

## THE FATE OF THE CIVILIAN IN FUTURE WARS.

AN imaginative and idealistic sketch of future warfare was presented to the War Section of the Royal Society of Medicine, at its meeting on March 12th, by Colonel J. F. C. Fuller, D.S.O., General Staff Officer, Staff College, Camberley, in introducing a discussion on some of the medical problems of future warfare. Colonel Fuller (who is not a medical officer) declared that war, always more a psychological than a physical problem, had been wrongly regarded in the past as a competition in slaughter. With the development of psychological science it would be more truly envisaged as a struggle of mind against mind, or of genius against mental mediocrity, in which bloodshed and destruction would be reduced to a minimum. The element of destruction in warfare was not only non-essential, but even disadvantageous to the victors; the obsession to kill would be gradually eradicated from the military mind. During the last war it was not muscle but brains that decided the victory. The decisive weapons of the future would be ethical, economic, and only in a restricted sense military. Ethical warfare would rely upon highly organized propaganda directed to demolish the national will of the enemy and discredit his cause. Economic warfare would attack the national will by way of the national stomach. Military warfare would take the form chiefly of gas attacks from the air upon city populations; they would have the effect of temporarily paralysing but not destroying the community. The man who first thought of mustard gas dominated to rank with the discoverer of gunpowder. Chlorine gas was in a different category, but mustard gas would make it possible to wage war without causing widespread death or mutilation. Aircraft would be used on a large scale, not for explosive bombing, but to envelop the people below with some vesicant chemical which would render them incapable of resistance. Indeed, it might be that future war would take the form of anaesthetizing the enemy. He pictured 500 enemy aeroplanes over London putting London to sleep for forty-eight hours, and then landing enemy police, who, with the support of tanks, would control the situation until the surrender and indemnity were forthcoming. Such a manoeuvre would be far more profitable to the enemy than wholesale destruction, and the defeated would not, save in dignity and possessions, be permanently damaged. Future warfare would be astonishingly rapid. The target would be the civil population. Upon that population war would break with the terror of a mental earthquake. Success would depend upon the delivery of the psychological "knock-out blow." Such warfare would mean an enormous increase in mental illness. What was known in the past war as shell shock would be widely prevalent among civilians. Part of the work of the medical profession in peace should be to prepare the public nerve for the shock of psychological attack. Each individual must have a first-aid outfit, not in his knapsack, but in his mind. If the public mind could be prepared for the character of future hostilities the attack when it came might fail because it would not produce the anticipated terror. It was only the unknown and unexpected



which caused the paralysis of fear. Civil practitioners must also be prepared to cope with tens of thousands of gas casualties, chemists must work at the discovery not only of new gases but of new antidotes, and every individual must have some instruction in the principles of self-protection against gas attack. So startling a vista rather took away the breath of members of the Section, but there was a brief discussion in which Colonel Fuller's views found some support. Lieut. Colonel P. A. Anderson agreed that in future wars, whatever physical implements might be evolved, they would be a means to a psychological end. This would necessitate a psychological test on enlistment to eliminate the neurotic and unstable. The selected material should be carefully looked after, comforts provided as far as possible, the limits of physical capacity studied, and personal cleanliness ensured. Group Commander Martin Flack thought that Colonel Fuller had reckoned without the Royal Air Force, but at the same time he admitted the truth of some of his contentions, and urged the very real need of providing on a large scale for public protection against aerial gas attacks, especially that a large and cheap supply of oxygen should be available and supervised by a competent authority. Major-General Sir William Macpherson was doubtful as to the truth of Colonel Fuller's forecast, and wondered what place in such warfare there could be for the fighting army, what weapons it would carry, and what would be the functions of its medical service. His own hope was in the limiting and regulating effect of international conventions. Colonel Fuller, in his reply, described such conventions as scraps of paper, and regarded it as quite a delusion to suppose that anything done at the Washington Conference could prevent the use of gas. Lieut. General Sir John Goodwin, who presided, said that he could not agree with Colonel Fuller in some respects, but it was a relief to him to think that he would no longer be Director-General of the Army Medical Service in the extraordinary situation which Colonel Fuller had developed.

#### AN ANTIVACCINATION MYTH.

AN old antivaccination myth is being amusingly revived by the method of parliamentary question. One of the new Labour members asked a question as to a statement by the Ministry of Health in its vaccination pamphlet, attributing the existence of compulsory revaccination laws in Germany to the year 1874, which laws, according to the questioner, had existed in Prussia since 1834. Sir William Joynton-Hicks replied that the pamphlet was correct, the Prussian law of 1835 referring only to soldiers in the army. As related to day by our Parliamentary correspondent (p. 483), the questioner subsequently returned to the charge, but apparently in a somewhat modified form, the question now being whether strict Prussian regulations dating from 1835 had not resulted in vaccination and revaccination of the overwhelming majority of the victims of the epidemic of the early seventies. To this the answer was that the regulations in question related only to houses in which small-pox existed, and that there were no penalties unless small-pox occurred. The story now revived seems to have had its origin in an effort by a prominent antivaccinationist nearly forty years ago to find some kind of rejoinder to the remarkable demonstration of the value of revaccination contained in the Report of the German Vaccination Commission of 1884. The diagrams relating to it were published in the *BRITISH MEDICAL JOURNAL* of 1885, vol. ii, p. 408 et seq., and the report formed the subject of a valuable paper read to the Epidemiological Society in December, 1885, by the late Dr. E. J. Edwardes. Perhaps the most interesting thing about the antivaccinationist's contention was its sheer audacity. It involved a flat denial of a statement by Dr. Boeing, a member of the German Commission who was opposed to compulsory vaccination; he said in the Report of the German Commission (p. 39), "Before 1874 we had no vaccination law in Prussia." Dr. Boeing also spoke of "the influence of revaccination which we have first from 1875."

The antivaccinationist's contention of nearly forty years ago involved also an assumption which would have been astounding had it not been preposterous. Holding as he did that the law dated from 1835, he cannot but have accepted the position that the German Government was doing practically an insane thing in appointing a Commission to investigate a law dating as from 1874, when the antivaccinationist supposed that the real date was 1835; that the Commissioners were equally insane in accepting such a reference and in publishing a great report on the basis of it; and that Germany and the whole civilized world have been none the less insane in accepting the report as a document having any relation to the facts. In short, the hypothesis that the revaccination law of Prussia dated from 1835, and not from 1874, was utterly wrong and ceased to require even contradiction; but after having been buried for decades it was exhumed in the parliamentary question which was asked on February 22nd. Notwithstanding that some effort has been made to cover the antivaccination retreat by speaking, in the later question, not of law but of regulations (of which the meagre scope and value was indicated in the parliamentary reply), we sympathize with the new M.P. whom the antivaccinationists have made the victim of the practical joke of putting into his mouth that question of February 22nd.

#### ALCOHOL IN ADOLESCENCE.

THE bill introduced by Lady Astor and read a second time in the House of Commons on March 9th is to a large extent the outcome of the efforts of primary school teachers, and the National Union of Teachers has passed a resolution in favour of the measure at its last two annual conferences. It has also had the support of the head masters and mistresses of several public and large secondary schools. It is practically the same bill as was introduced in the House of Lords, first by the late Lord Bryce, and afterwards by the Bishop of Oxford. It would make illegal the sale of intoxicating liquors to anyone apparently under 18 for consumption on licensed premises. As will be seen in the brief report in our Parliamentary columns the bill was passed in the House of Commons by a majority of 265 in a house of 405. It will, we believe, have the general approval of the medical profession, although, so far as we are aware, no overt action has been taken with the exception of a short manifesto issued on March 12th by Sir Thomas Barlow (formerly President of the Royal College of Physicians of London), Sir G. H. Makins (formerly President of the Royal College of Surgeons of England), Lord Dawson of Penn, and Sir Thomas Horder. They think that no valid objection can be raised against the bill, which can be considered quite apart from the principle of general prohibition. "There can be no doubt," they continue, "as to the desirability of employing all possible safeguards to prevent the danger of starting alcoholic habits in those who have just entered on the period of stress which puberty involves, and are on the threshold of adult life. Rapidly developing organs, new functions, and increased activities require all the protection that can be secured for them during that period, when readjustments of vital importance have to be made."

#### THE CENTENARY OF PASTEUR.

THE chief celebration in France of the centenary of Pasteur is yet to come. The culminating event will be the unveiling of a monument to him in the University of Strasbourg, where he was professor of chemistry from 1849 to 1854. The delegates attending the celebrations will assemble in Paris, and on May 25th will visit the tomb of Pasteur in the institute in Paris which bears his name. Later there will be a reception at the Sorbonne, and on the evening of the next day a reception at the Institut de France. On May 28th there will be a reception at the Hôtel de Ville, and on May 29th and 30th the delegates will visit Rheims and Verdun. The President of the Republic will visit Dôle on May 25th, Arbois



on May 27th, Besançon on May 28th, Mulhouse on May 29th, Colmar on May 30th, and will arrive at Strasbourg on May 31st. On June 1st he will unveil the monument, which is the work of the sculptor Larrivé. It is an obelisk 10 feet high, flanked by appropriate allegorical figures and bearing a medallion of Pasteur. In addition there is being erected at Strasbourg a permanent museum tracing the development of his scientific work through its various stages. A temporary collection will also be formed of apparatus and documents lent by Pasteur Institutes in Paris and elsewhere. An agricultural and industrial exhibition, illustrating the improvements which have resulted from Pasteur's work, will be open during the spring and summer, and there will be a series of congresses on tuberculosis, on child welfare, on maternity, and on cold storage. We have already reported the celebrations in Paris on the anniversary of his birth, and last week we published an illustrated account of the celebration at the Royal Society of Medicine in London on February 28th. There have been celebrations also in the United States and in many other countries. After that which took place in Brazil the Prefect of Rio de Janeiro directed that one of the main avenues of the city should bear Pasteur's name.

#### INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY.

THE first annual meeting of the International Society of Medical Hydrology was held at the house of the Royal Society of Medicine on March 8th, with Dr. Fortescue Fox, president for the year, in the chair. Members were present from Bath, Buxton, and Harrogate, as well as from France, Switzerland, and Czecho-Slovakia. A representative for Hungary was elected, making a total of eighteen countries represented; fifteen new members were also elected. A new rule was passed, widening the basis of membership in the society, to include all members of the medical profession interested in the subject. A letter from Professor Barduzzi of Siena was presented, advocating a more systematic teaching of hydrology. It was agreed to publish the *Archives of Medical Hydrology* (which are circulated in fifty-eight countries) three times in the current year. Dr. Ladislav Schmidt of Pistany, Czecho-Slovakia, read a paper by himself and Dr. Ed. Weisz on the use of hyperthermal radio-active mud as a method of home treatment.

THE officers of the Section of Medical Sociology have chosen "Mental Deficiency in its Social Aspects" as the subject for discussion in that Section during the Annual Meeting of the British Medical Association at Portsmouth next July.

### Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

#### Army Estimates.

##### THE ARMY MEDICAL SERVICE IN 1922.

IN the memorandum issued with the Army Estimates the Secretary of State for War makes the following reference to the Army Medical Service and the health of the army:

During the past year the number of patients in military hospitals in Great Britain has fallen from 2,348 to 1,770, and in Ireland from 1,055 to 139.

Hospital accommodation has been reduced to the extent of 1,700 beds in Great Britain and 1,770 beds in Ireland, the latter on the evacuation of troops from Southern Ireland. The military hospital at Chatham was closed in June last, and all sick of the military garrison there are now treated in the naval hospital, while at Gibraltar the naval hospital has been closed, and all naval sick there are treated in the military hospital, where the accommodation has had to be increased from 120 to 220 beds to enable this to be done.

The work of the Directorate of Pathology has made steady progress and the officers holding the appointments of assistant directors and deputy assistant directors of pathology in commands at home and abroad, who are in personal charge of the command laboratories, have made a number of valuable contributions to science. The precision of diagnosis so essential to successful treatment, and to all administrative measures directed to the

prevention and control of infectious disease, is largely dependent on the work of these officers, and has reached a very high standard of accuracy.

The health of the troops has been excellent. Infectious diseases have decreased considerably, and the state of vaccination, in spite of all difficulties, has been satisfactory. Although there has been considerable incidence of small-pox among the civil population, no cases occurred among the troops.

The medical aspect of recruiting has received constant attention throughout the year, ensuring a higher degree of efficiency in the preliminary examination of the recruit, and fewer discharges on medical grounds, with resulting economy.

#### The New Minister of Health.

Mr. Neville Chamberlain, the new Minister of Health, is generally considered to come to his office with special qualifications for dealing with the problems of public health and housing reform. Indeed, it is only in these circumstances that he could have been expected to give up the comparatively pleasant position of Postmaster-General for the charge of a department which, through the crisis of housing decontrol, has become perhaps the most perilous in the Government. Mr. Neville Chamberlain is a younger brother of Mr. Austen Chamberlain, and did not enter Parliament until a few years ago. Previously, however, he had, like his father before him, devoted much attention to the administration of social affairs in the city of Birmingham. To it was largely through his efforts, some ten years ago, that Parliamentary powers were obtained by the local authorities for dealing with the congestion of the population. Thus it was possible for the municipality to acquire land without stating its purpose, and to develop. Loans can be on a gradual scheme of mortgage, and a municipal bank can be established. As Lord Macaulay said, "Mr. Chamberlain proved himself a great man when he entered Parliament he was unfortunate in being called upon without notice and without resources to undertake the Ministry of National Service, an experimental Department which a very short experience showed to be unworkable for the purposes for which it was intended. Since then he has been quite content—until he was appointed, very recently, Postmaster-General—to be a private member, doing valuable quiet service on Grand Committees and in assisting the progress of several private bills. He is a clear speaker, but without any conspicuous rhetorical gifts. Indeed, it is rather as a business man with a keen interest in the betterment of mankind, disposed to move slowly and surely after obtaining thorough knowledge of facts, that he has distinguished himself.

#### Unemployment and Health.

Mr. Neville Chamberlain made his first speech as Minister of Health on March 8th, in replying to a debate on unemployment. He recognized that the prevalence of unemployment not only meant the infliction of great burdens and liabilities upon Boards of Guardians and the raising of rates of the local authorities with which his Department had to deal, but it affected also another function of the Ministry, that of improving the health of the people. He could not help thinking that the vital statistics of the last two or three years were a wonderful tribute to the work of the Ministry of Health and to the medical officers of health throughout the country. It might have been supposed that the results of unemployment would have been reflected in a great increase in the mortality rates, and especially in the infant mortality rates. Instead of that, all records had been broken in the opposite direction. It would, however, be a mistake to suppose that unemployment did not affect the health of the people. In particular it must affect the physique of the children. No one who had watched the children during the days of the war, when the working classes were earning high wages, could have failed to perceive the enormous improvements in their appearance and physique which were the results of the higher earnings of the period—improvements likely to be reflected in the future in a greater ability to resist disease. The Ministry of Health was vitally interested in the question of unemployment, and would with the Ministry of Labour do all it could to help forward schemes for its relief.

#### Sale of Intoxicating Liquor to Young Persons.

Lady Astor, on March 9th, moved the second reading of the bill introduced by her to make it illegal to sell intoxicating liquor to anyone apparently under 18 for consumption in a public-house. She mentioned that the bill was introduced previously in the other House by the Bishop of Oxford, and earlier by Lord Bryce at the instance of the teaching profession, which had the support of all organized women, including the National Council of Women, the National Women Citizens' Association, the heads of some of the great



public schools for boys and girls and of hundreds of elementary and secondary schools. They had also behind them some of the highest medical authorities. Lady Astor added that she had received 700 letters in support of it from women medical practitioners alone. As the law stood, a publican could sell beer to children over 14 for consumption inside a public-house as well as to be taken away. Spirits could be sold for consumption on licensed premises to young persons over 16. This bill, in limiting the age for sale for consumption, did not prevent young persons from fetching beer, neither did the bill touch clubs. The bill did not deal with treating. The whole of the colonies had this legislation, some making the restricted age higher. It was already adopted in Sweden, Norway, and Poland, and Lady Astor thought they had it in France. After debate for a full sitting, Lady Astor obtained the closure, and the second reading was carried by 335 votes to 70. The bill has been referred to Standing Committee C.

**Vaccination in Germany.**—Mr. Sullivan followed up the question he asked on February 22nd (BRITISH MEDICAL JOURNAL, March 3rd, p. 393) by another designed to indicate that the pamphlet on vaccination issued by the Ministry of Health was inaccurate. His question suggested that a decline in small-pox attributed in the pamphlet to a German Act of 1874 had then already taken place, and put forward the contention that, owing to strict Prussian regulations dating from 1835, the overwhelming majority of the sufferers in the great epidemic of 1871 had been vaccinated and revaccinated. Sir W. Joynton-Hicks, in reply, vindicated the accuracy of the pamphlet, stating that he was aware of the Prussian regulations referred to; that, according to a memorial prepared in the German Imperial Office of Health, and published in Berlin in 1896, those regulations provided for compulsory vaccination only in the event of an actual outbreak of small-pox in a house; that no penalties were provided for omission of vaccination when small-pox had not occurred; and that the total deaths from small-pox in the German Empire in 1871 and 1872 were officially stated to be 162,111. He had no information as to the total mortality in Prussia at that time, or as to the vaccinal condition of the cases, and referred Mr. Sullivan for further information to the evidence as to the Prussian regulations given by Dr. Arthur Hopkirk of Jena before the Royal Commission on Vaccination in 1889.

**Vaccination Debate.**—Dr. Watts, on March 6th, gave notice to call attention that day fortnight "to the serious danger which may arise owing to the lax manner in which the Vaccination Acts are at present administered, and to move a resolution." As, however, Dr. Watts has only fourth place on the Order Paper for that evening, it is unlikely that the subject will be reached.

**Insurance Committees.**—Sir W. Joynton-Hicks informed Dr. Watts, on March 7th, that there were 128 Insurance Committees in England, with an aggregate membership of 3,130. In 1922 the total expenditure on travelling was £2,065, and the payment for subsistence and loss of remunerative time was £1,658. The Insurance Act, 1921, reduced the minimum membership from 40 to 20 and the maximum from 80 to 40; the revised limits had not been in operation sufficiently long to indicate whether any further reduction in the size of the committees was practicable.

**Registrar-General's Report.**—Dr. F. E. Fremantle asked, on March 7th, if the Registrar-General's annual report for 1921, containing matter of first importance affecting the welfare of the people, would be presented to Parliament. Sir W. Joynton-Hicks with others, was now issued as instead of a command paper, but representation to Parliament, which was being arranged forthwith.

**Death Certificates.**—Dr. Chapple asked the Home Secretary, on March 8th, whether the City Coroner had said that doctors should not sign death certificates if they had seen the patient only for the first time two hours before death; whether instructions to this effect had been issued by the Department; and whether, in view of the fact that such a policy would greatly increase the number of inquests involving *post-mortem* examinations without adequate justification, he could state the average cost of such inquests. The Minister of Health (Mr. Neville Chamberlain) in a written reply said that no such instructions had been issued. He had no information as to cost of inquests involving *post-mortem* examinations, but would make inquiries.

**Pharmacy Bill.**—Mr. O'Grady, on March 8th, introduced a Pharmacy Bill "to regularize the position of all persons trading as chemists and druggists or pharmacy store proprietors in the sale of drugs, the dispensing of doctors' prescriptions and the sale of patent medicines." The measure was backed by Lieut.-Colonel Watts-Morgan, Mr. Tillet, and Mr. John Jones on behalf of the Labour party. The bill has since been printed. We propose to give some particulars in our next issue. As a private member's bill it seems to have little chance.

**Pensions Regional Headquarters at Nottingham.**—Replying to several members of Parliament, Captain Craig stated, on March 13th, that the Minister of Pensions, in view of the actual and prospective reductions in work, was considering economical modifications in administration. The minutes contemplated the transfer of the East Midlands Regional headquarters to Birmingham. This transfer would not cause inconvenience to pensioners, since it would not disturb the existing arrangements in that region for local area officers, medical boards, or treatment. Captain Craig added, as to the staff at the East Nottingham Regional head-

quarters, that the services of such members as were no longer required would be dispensed with gradually, reasonably long notice being given to individuals concerned.

**War Losses and Burdens.**—The Chancellor of the Exchequer has given particulars of British losses in men and money during the war. The particulars with regard to losses in men are as follows:

*British Empire Casualties.*

	Men enrolled.	Killed.	Wounded.
United Kingdom ...	6,211,427	743,702	1,673,262
Dominions and Colonies ...	1,655,527	140,523	357,785
India ...	1,679,416	61,338	70,833
Total ...	9,496,370	946,023	2,121,905

The expenditure from April 1st, 1914, to March 31st, 1919, was £9,590,000,000. Of this amount £1,820,000,000 was raised by direct and £910,000,000 by indirect taxation, and from other sources of revenue: £6,860,000,000 was raised by borrowing—£5,500,000,000 at home, and £1,360,000,000 abroad. War loans to allies amounted to £1,494,000,000, and to the dominions to £150,000,000. During the year 1922 the Dominions and Colonies have repaid £1,189,935.

**Small-pox in the British Army.**—On inquiry by Mr. Hancock, on March 8th, Lieut.-Colonel Guinness regretted that, owing to the volume of work involved, small-pox statistics of the British Army for the period from the outbreak of war were not yet available, but the figures for the preceding period were given, commissioned ranks not being included. The period dealt with is five and a half years from the beginning of 1909 until the middle of 1914. In the United Kingdom there were in that time neither deaths nor admissions from small-pox in a force of the average strength of 124,172. In India, with an average strength of 72,664, the admissions in the five and a half years were 66 and the deaths 5. In Egypt the average strength was 5,755, and the total small-pox admissions were 2, of which 1 was fatal. In the Colonies the corresponding figures were—strength 35,072, small-pox admissions 2, and deaths none.

**Medical Officers of the Ministry of Health.**—Mr. Neville Chamberlain stated, on March 12th, in answer to Mr. Short, that the number of medical officers now employed by the Ministry of Health is 56, and the salaries, including bonus, amount to £62,504. In addition, there are 35 regional medical officers employed whose salaries amount to £46,125, which sum is now recovered from the approved societies. In March, 1921, the medical staff of the Ministry, including the regional medical staff, was 101, whose salaries, including bonus, amounted to £130,630, the whole payable from Exchequer funds.

**Medical Officership for Hindley.**—Dr. Watts asked, on March 7th, whether the Minister of Health intended to sanction the appointment of a medical officer of health which was made by the urban district council of Hindley on January 15th last; if he was aware that although there were at least eleven applicants holding the diploma of public health the council selected an applicant who held no diploma nor had the minimum of experience which was laid down in the Sanitary Officers' Order of 1922 to meet the case of a medical officer of health who, although not having a diploma, had had practical experience of the duties of a medical officer of health. Sir W. Joynton-Hicks said the Minister was aware of the fact stated in the question, and had intimated to the Hindley urban district council that he was not prepared to approve their selection of a candidate not possessing the required qualifications. The council had been requested to consider the matter with a view to making a suitable appointment in accordance with the Sanitary Officers' Order, 1922.

**Death Rates in Mental Hospitals.**—Asked by Mr. Lansbury, on March 12th, as to the high death rate prevailing in the Powick Mental Asylum in certain years, Mr. Neville Chamberlain replied that the death rates for the years in question at Powick Mental Hospital were as follows (the rates for all county and borough mental hospitals in corresponding years are given in brackets): 1916, 11.2 per cent. (12.5); 1917, 22.7 per cent. (17.3); 1918, 32.6 per cent. (20.2); 1919, 12.7 per cent. (12.7); 1922, 6.7 per cent. (9.0). It would be seen, he said, that in only two years—that is, 1917 and 1918—were the rates higher than the mean for all asylums. The increase for those years caused much anxiety at the time; it was due to an outbreak of tuberculosis; the death rates from this cause in 1917 and 1918 were 74 and 162 per 1,000 of the population of the asylum. Two commissioners of the Board of Control made a special inquiry into the matter. They found that the outbreak was due mainly to two factors: (1) subnormal (war) feeding and (2) defective segregation, the result of overcrowding due to war conditions. It was satisfactory to note that by 1919 the death rate from all causes at Powick had drawn level with the mean for all asylums, and that in 1922 it was much below it.

*Answers in Brief.*

Mr. Neville Chamberlain has announced that the order as to special designations of milk will be reconsidered in consultation with the parties interested and reissued with the necessary amendments.

The number of persons, excluding casuals, who were being relieved in institutions provided by Poor Law authorities, was 214,000; and the number of beds in those institutions approximately 282,000.



The Ministry of Labour cost of living index number showed an increase of 80 per cent. over the pre-war level at November 1st, 1922, and of 77 per cent. at February 1st, 1923.

Sir W. Joynson-Hicks has stated that the residential accommodation for the treatment of tuberculosis under the schemes of local health authorities in England (which at present comprised upwards of 19,000 beds) had increased during the past two years by approximately 2,350 beds, while some thousand additional beds were in course of provision.

Of some six thousand medical men employed in the Pensions Department on boarding duties, only 299, or 5 per cent., had had no war service, and of these the large majority were specialists for whom no efficient ex-service substitute could be obtained.

## Canada.

### McGILL UNIVERSITY.

A CHANGE has been made in the length of session for medical students. The session of 1923-24 will start the beginning of the fourth week of September instead of in the first week of October. The entire medical course has been lengthened: the first two years will be spent in the Faculty of Arts, where a revised course, with special attention to languages, will be given; the following four years will be completely occupied with lectures and clinics in the Medical Faculty; and the seventh and last will be spent wholly in hospital. With reference to the two-year pre-medical course, the following extract from the minutes of the Faculty of Arts under the date of January 5th, 1923, will be interesting:

The Faculty considered the report of the conference between the B.A. Advisory and B.Sc. Advisory Committees of the Faculty of Arts and the Education Committee of the Faculty of Medicine. The following points were agreed upon:

1. That there would be no difficulty about the Faculty of Arts undertaking the proposed curriculum of the first year, though it was understood that this would probably involve additional instruction in mathematics, French, and Latin.

2. That the curriculum of the first of the two pre-medical years should be revised by the striking out of the words "including mechanics" after mathematics.

3. That in physics the first-year course should be the same as that given to the Arts students (three-hour course).

4. That additional instruction would be needed in chemistry, but that no additional instruction would be necessary in the department of physics and biology.

5. That the second year as well as the first should be under the control of the Faculty of Arts, but that there should be an advisory committee consisting of the professors giving the courses in biology, chemistry, and physics in the second year, the function of the committee being to keep the Faculty of Arts in touch with the views of the Faculty of Medicine in regard to the content of these courses.

### TORONTO UNIVERSITY.

Dr. Oskar Klotz, who graduated in medicine at McGill in 1906, and has recently been engaged in reorganizing the pathological department of the University of Buenos Aires under the direction of the Rockefeller Foundation, has been appointed to the chair of pathology in the University of Toronto, left vacant by the death of Dr. J. J. MacKenzie. Dr. Klotz, who was formerly a member of the teaching staff of the Medical Faculty of McGill University, became professor of pathology in the Rockefeller Institute in 1910, and was at one time director of the Magee Pathological Laboratory, Pittsburg.

### DEATH OF SIR THOMAS RODDICK.

Sir Thomas George Roddick died at his residence in Montreal on February 20th. By his death Canada loses one of its foremost surgeons. He graduated from the Medical Faculty of McGill University in 1868, and continued his connexion with the university in various capacities, as lecturer in hygiene, demonstrator in anatomy, professor of clinical surgery, Dean of the Faculty, and lastly as one of the governors of the university. Sir Thomas was the first colonial President of the British Medical Association, and presided over the Annual Meeting in Montreal in 1897. In 1896 he was elected to the House of Commons for St. Antoine division in Montreal, and held the seat until 1904. It was chiefly owing to him that the Canada Medical Act was finally passed in 1911; by this Act the Medical Council of Canada was formed, containing a representative from each province, with Sir Thomas as president. An obituary notice appears at page 489.

### MEDICAL COUNCIL OF CANADA.

Written examinations will be held in Toronto, Winnipeg, and Vancouver, beginning on June 12th, 1923. Applications for permission to write these examinations must be sent in to the registrar, Dr. Robert W. Powell, 180, Cooper Street, Ottawa, Ontario, not later than May 26th, 1923.

## Scotland.

INVESTIGATION ON THE RESULTS OF GASTRO-ENTEROSTOMY. The Scottish Committee of the British Medical Association recently appointed a special committee to inquire into the results following the operations of gastrectomy and gastro-enterostomy. Local committees are also in process of formation at the four university centres in Scotland with the view of collecting statistics of these operations. A schedule has been drawn up containing two pages of the headings under which information is desired, and this should greatly facilitate the setting down briefly of details from the records of cases. Copies of the schedule will be issued shortly to hospital surgeons and others willing to co-operate in the inquiry, and at a later stage, in cases where complete histories are not on record, efforts will be made to complete them by communicating with the medical attendant. It is hoped that the inquiry may be conducted on a wide basis, and it ought to be feasible to get from Scottish statistics the records in at least 5,000 cases of these operations. The results of such an investigation should be of very great value to medical opinion and practice.

### NEW EDINBURGH HOSPITAL BUILDINGS.

The plans have now been passed for a new maternity hospital to be erected by the trustees of the hospice facing the King's Park. This hospital will form the Dr. Elsie Inglis War Memorial, and will cost approximately £30,000. A laboratory and x-ray block for the branch of the Royal Victoria Hospital for Tuberculosis at Liberton has also been approved. It is intended that research work on tuberculosis shall be carried out here; the cost of the building, irrespective of apparatus and fittings, will be about £6,000.

### GLASGOW ROYAL INFIRMARY CLUB.

The annual business meeting and dinner of this club was held on the evening of March 9th, in Ferguson and Forrester's, Buchanan Street. Mr. Henry Rutherford presided over a very representative gathering of about sixty members. The toast of the evening, "The Royal Infirmary," was given from the chair, and was responded to by Mr. J. Hogarth Pringle. "Past and Present Residents" was proposed by Dr. John Henderson, and the respective replies were made by Drs. John F. Fergus and Paton Neilson. The toast of "The Chairman" was given by Mr. Thomas Kay, and Mr. Rutherford suitably replied. The enjoyment of the evening was greatly enhanced by songs from Drs. William Scott, W. A. Sewell, O. H. Mavor, and George Dalziel, and humorous recitations by Drs. Adam Patrick, John F. Fergus, and W. A. Sewell. Mr. R. H. Parry was appointed chairman for next year, and Drs. W. A. Sewell and J. K. Rennie were appointed joint secretaries and treasurers. During the evening, as in former years, a collection was made for the Royal Medical Benevolent Fund, and a sum of over £5 was forwarded to the British Medical Association for transmission to the Fund.

## England and Wales.

### LEICESTER NEW HEALTH OFFICES.

THE new public health offices of Leicester were opened on March 9th by Sir George Newman, Principal Medical Officer to the Ministry of Health. In acknowledging the great amount of useful and enduring work that Dr. Millard and Dr. Warner had done for Leicester, Sir George Newman said that in the last forty years the death rate of Leicester had been reduced from 21 to 12 and infant mortality from 201 to about 86. Every child born in Leicester to-day had twelve years more expectation of life than its grandparents. The invalidity which was endured by suffering humanity had been reduced, and the total capacity and happiness of the citizens had been increased. Compared with forty years ago, there was now a totally new conception and a larger and more splendid vision of what the health of the nation really meant. Dr. Millard's report had spoken of the new and hopeful spirit of preventive medicine, and Sir George Newman pointed out that that was not the monopoly of the public health services, but the opportunity of all medical and voluntary services. In the new health



offices the sanitary inspector's office and the tuberculosis consulting and waiting rooms are on the ground floor; on the first floor are the offices of the medical officer of health, the tuberculosis officer, and others; on the second floor are the office of the infant welfare medical officer and the offices of the health visitors; the third floor has not yet been fitted up, but it is suggested that it should be used for chemical and bacteriological laboratories. Hitherto the tuberculosis department has been carried on in separate premises.

#### MANCHESTER MEDICAL OFFICER OF HEALTH.

To meet the new medical officer of health of Manchester, Dr. R. Veitch Clark, over two hundred medical practitioners of Manchester assembled in the Lord Mayor's parlour at the Town Hall on February 28th. Invitations had been sent out to all the practitioners of Manchester, but professional duties kept a number away. The Lord Mayor, in introducing Dr. Clark, described the occasion as a unique gathering of the medical profession in Manchester, designed to provide a link between the new medical officer of health and the medical profession generally. Dr. Clark said that there was nothing more fundamental to the success of modern preventive medicine than whole-hearted friendship and co-operation between the administrative branch of the medical profession in the city and those who practised among the citizens. His ideas as medical officer of health would not be revolutionary. He felt very strongly that the primary function of the department for which he was responsible was one of prevention. In working together whole-heartedly the medical profession was following on the lines which would in the end produce the greatest benefit to the public, and was also acting in its own best interests.

#### A SPA TREATMENT ESTABLISHMENT AT LLANDRINDOD.

The Priory for Wales of the Order of St. John of Jerusalem has opened a Spa Treatment Establishment at Llandrindod Wells for disabled ex-service men under the Ministry of Pensions, and also for the civil community. The object is to place the waters and balneological equipment of this famous Welsh spa at the disposal of those who are unable to bear the expenses such treatment ordinarily entails. Llandrindod is frequented particularly by patients suffering from rheumatic and gouty conditions, neuritis, colitis, obesity, skin disorders, diseases of the gastro-intestinal system (especially following residence in tropical climates), dyspepsia, and debility. Cases of infection or of an incurable nature will not be accepted at the establishment. The patient will pay an inclusive fee, which will cover board, residence, and all other necessary expenses for the complete course of treatment. Full particulars may be obtained from the secretary of the establishment. It is stated also that the Priory for Wales is negotiating with the Admiralty for the taking over of the Royal Naval Hospital, Pembroke Dock, for ex-service men in the counties of Pembroke, Cardigan, and Carnarvon.

## Ireland.

#### CITY OF LIMERICK MEDICAL ASSOCIATION.

At a recent meeting of the City of Limerick Medical Association, which consists of members of the British and Irish Medical Associations as well as members of other medical bodies, the annual report of the activities of the association was read. For many years it has been known that the medical profession in Limerick is the best organized in Ireland. The secretary, Dr. W. J. O'Sullivan, sets out in the report the chief achievements of the Limerick Association; they show clearly what organization can do. The most notable is perhaps the fact that ten of the principal life assurance companies operating in Ireland pay two guineas for medical examination in life policies. In Dublin and Belfast the fee paid to medical practitioners for the same work is one guinea. Another instance is that medical referees under the National Insurance Act are paid at the rate of two guineas for each case examined. In this respect it may be mentioned that there are no whole-time medical referees under the Insurance Act as it applies to Ireland. There is, however, a fund, under the control of the Irish Insurance Commission, out of which fees are paid to medical practitioners who are called in to give second

opinions. The report gives also a list of the correspondence which took place during the year, and includes letters addressed to Dr. Philip Leo (Cork), Dr. Honnessy (Irish Medical Secretary, British Medical Association), the Secretary of the Child Welfare Scheme, and others.

#### POOR LAW OFFICERS' SALARIES.

The Lurgan Guardians recently considered a communication from the Ministry of Home Affairs, Northern Ireland, relative to the salaries of the medical officers of the union. This was in reply to a copy of a petition forwarded by Dr. J. S. Darling, medical officer of the workhouse (on behalf of the medical union staff). The Ministry told the Guardians that careful consideration should be given to the salaries of the medical officers of the union, that these could not be regarded as other than inadequate, and not in proportion to what had been considered in the great majority of the unions in Northern Ireland fair and reasonable for medical officers, and that the Guardians should take steps to grant an improved scale of salaries. The matter was referred to the Finance Committee to deal with and report to the Board.

## Correspondence.

#### THE DANGEROUS DRUGS REGULATIONS.

SIR,—A point in the Dangerous Drugs Regulations, which seems to have escaped notice in the recent correspondence in the JOURNAL, appears to me to require careful consideration.

In the Memorandum of the Home Office published on page 69 of the JOURNAL of January 13th, paragraph 6 authorizes a practitioner to be in possession of the drugs, "so far as is necessary for the practice of his profession," and the letter of Sir Malcolm Delevingne on page 73 of the SUPPLEMENT of March 3rd at the end of the penultimate paragraph states: "A duly qualified medical practitioner is a person authorized . . . to be in possession of the drugs so far as is necessary for the practice of his profession, and he can therefore—if in practice—buy the drugs. . . ."

The words "if in practice" are being interpreted by the chemists in such a manner that whole-time administrative medical officers in the public health service cannot obtain any of the drugs even in emergency, since their work, being largely administrative, is not considered by the pharmacists as practice.

Surely a retired or a full-time medical officer, if called to a patient in emergency, is in practice just as much as the medical man who, having put up a name-plate, is called to his first patient. Is the last to be prevented from having a supply to use in emergency, since he is obviously not in practice until he is called to a patient?

I am of opinion that the Home Office having drafted the Regulations to deal with a very small class of practitioner—namely, the "dope fiend"—has forgotten the elements of logic, a first principle of which is "a particular ad universale non valet consequentia."—I am, etc.,

Wolverhampton, March 15th.

H. CARTER MACTIER, M.B.E.

SIR,—I have to thank Mr. E. B. Turner, Chairman of the Medico-Political Committee, British Medical Association, for his courteous, full, free, and frank statement in your issue of February 17th. I fully recognize the work done by the Committee. Mr. Turner states "while this meeting was in progress a message was brought in from the Home Secretary announcing that he had decided to appoint a Select Committee as requested. As a result of the deliberations of this body the regulations were reintroduced in a very much more satisfactory form, to which no objection was taken by the Council of the Association." The italics are mine. It is clear from this that the Council of the Association did not object to the regulations as they are while they still considered them objectionable. It is clear that they compromised with the political dialecticians on a matter of principle. Most of us have no objection to compromise on matters of detail; but we should never compromise on matters of principle. We should say to the Home Secretary, "No, you pass the regulations, in spite of our refusal, to agree, and accept the responsibility. We are responsible to ourselves and to the profession, and we decline to accept a shadow of responsibility for regulations which we do not fully approve."



About these regulations the politicians can and of course do tell us that they were passed after the profession had endorsed them, and what can we say but admit the fact? It is time for the profession to wake up and see to their interests and to their independence in these days when communistic legislation is invading every sphere of human action.—I am, etc.,

HENRY SMITH, C.I.E., Lieut.-Col. I.M.S.(ret.).

Sidecup, Feb. 27th.

SIR,—The reply of the Assistant Under Secretary of State, Home Office, regarding the "Dangerous Drugs Regulations," noted in the SUPPLEMENT of March 3rd, suggests that the new regulation was actually framed against all medical men who have retired from practice, so that no retired medical man can keep in his house a small quantity of laudanum, or a pocket case of hypodermic drugs for a sudden emergency. Yet the retirement of a doctor does not preclude him from being called up by any case of sudden illness or accident occurring in his immediate neighbourhood; for we all know that in a case of life and death time is of the utmost importance, and the nearest medical aid will be sought.

It is also a disgrace and a slur on the retired medical men that they are considered utterly unfit to keep a few anodynes in their house; after practising their profession for thirty or forty years they are, when retired, to be looked upon as victims of the drug habit.

I think the Medico-Political Committee might try and get an amendment in the regulations, or a special permission obtained from the Home Office that a retired medical man may be in possession of a small quantity of anodynes for emergencies.—I am, etc.,

H. D. J.

March 12th.

This matter is referred to in an article at page 477, and in a Current Note in the SUPPLEMENT.

#### DR. HALDANE'S CONCEPTIONS OF BIOLOGY.

SIR,—In your issue of March 10th (p. 441) "C. A." asks whether I might not with advantage have substituted the words "machine" or "machinery" and "mechanical" for "mechanism" and "mechanistic." I think, however, that there is justification for the latter words. When we speak of the "mechanism" of a steam engine or a kidney we mean not only the machinery but also the manner in which it works; and a "mechanistic" theory of renal secretion is a theory that renal secretion is the outcome of mechanism.

I must admit that the word "environment" used by me is clumsy. The French "milieu," as used by Claude Bernard, is much superior; but I have had to accept what ordinary English usage has given me. The only alternative word seemed to be "medium." I feel sure that this would not satisfy "C. A." any more than it does me.

To the deeper questions raised in the letter of "C. A." I shall not attempt to reply here; but it may be of interest to those who wish to know my opinions that I have attempted to discuss some of these questions in an article on "Natural Science and Religion" in the forthcoming number of the *Hibbert Journal*.—I am, etc.,

J. S. HALDANE.

Oxford, March 11th.

#### PSYCHOLOGY AND MEDICINE.

SIR,—The address on Psychology and Medicine by Sir Frederick Mott published in the last number of your JOURNAL is not only admirable for its wisdom, clarity, and diction, but is most stimulating and suggestive in many directions.

His allusion to Lucretius—and he might have added Stegnois of Megara, Plato, and Aristotle—seems to point the moral that the brotherhood of medicine and psychology should, in these days, also include sociology.

The laws of heredity in their bearing upon the causation of the various psychoses and degrees of feeble-mindedness, apart from certifiable insanity, surely demonstrate that they have an intimate and practical connexion with the well-being of society and the maintenance of the quality of our race. It is remarkable that medicine has hitherto shown no apparent recognition of this connexion, has given no lead to the legislature and to the public by demonstrating it, no warning as to the possible or even probable danger of ignoring it.

It would be most interesting if Sir Frederick Mott could tell us whether he is apprehensive, for instance, about the differential birth rate in this country between the intelligent

and capable normals and the unintelligent lower grade morons; whether our statistics show any resemblance to the American Army figures of Yerkes; whether he thinks that as modern civilization has with the help of scientific medicine inhibited the effect of natural selection, we should try to build up some form of rational selection as a substitute; whether in fact our system of segregation should include others, in addition to certified cases, so as to preserve the quality of our race and anticipate a tendency towards fatal deterioration.—I am, etc.,

Brighton, March 11th.

ROBERT SANDERSON.

#### HOSPITAL POLICY.

SIR,—The chairman of the Hospitals Committee has devoted a long letter to a claim of wonderful foresight on the part of the British Medical Association in that the Hospitals Commission has adopted its definition of a voluntary hospital. Surely it was obvious to the man in the street that the so-called voluntary hospitals had, by force of circumstances, changed their character: that while originally instituted and supported by voluntary contributions (hence the title), they were no longer able to pay their way as charities, and were compelled to accept payment from patients who, either directly or indirectly, were able to pay for treatment.

The new meaning attached to the word "voluntary" is merely camouflage, which does not hide the fact that the hospitals have become an increasing factor in competition with private practice, both general and specialist. If the British Medical Association has not deliberately shut its eyes to this fact, it is its duty to discuss it openly, instead of wasting its time finding a definition which will save the faces of those who are willing to exploit the profession. The hospitals are now using the old weapon of contract practice, which in the past has proved so deadly to medical prestige, and it will require more than "voluntary management" to protect the profession from its insidious effect. For instance, it is stated that approved societies are ready with £200,000 a year for the hospitals. No one can help being pleased to hear this, but has anyone asked how much of that sum will go to the doctors who do the work?

The only rational policy for the British Medical Association is to draw a sharp distinction between work done for charity and work which can be paid for, and apply to the latter the cardinal principles which were the watchword of the Association at the institution of the Insurance Act. If it fails to do this the result may well be disastrous. I hope I shall not be able to write, "I told you so."—I am, etc.,

J. C. TURNBULL.

Bury, Lancs, March 11th.

SIR,—I wonder if Mr. Bishop Harman or anyone else would enlighten your readers about the supposed wonderful virtues of the "independent and voluntary management" of our hospitals. What do they mean by it?

Take an ordinary provincial hospital. Its board of management is elected by the subscribers at the annual meeting, and is responsible to them, just as members of a town council are elected by and are responsible to the ratepayers. Of course, the one has life vice-presidents, who have perhaps subscribed a hundred guineas, and the other has aldermen. The hospital has its paid secretary. The town council has its paid town clerk. Both have their staffs of paid employees, only the council pays its employees better and their hours of work are more humane. It is a hundred to one that most of the members of the board of management are in other capacities elected representatives of the people—for example, town councillors, or county councillors, etc. The medical profession will be represented by certain representatives of the medical board, small in number but great in influence.

Now I want someone to explain to me what would be the difference if the hospitals were financed more or less by the State or municipality, and the hospital board of management consisted of such a body as that which has been elected to distribute the Government subsidy. Personally, I do not care a straw how the hospitals are financed, as long as it is done economically and efficiently, which no one can say is the case at present. As a member of the medical profession, I am keenly interested in preserving the status of the profession, in seeing that it is adequately remunerated, and that every member of the profession should have a fair and equal chance of becoming a member of a hospital staff; and, further, that those members of the profession who are not



on hospital staffs shall have every facility offered to them to preserve their familiarity with hospital work and with every advance in professional knowledge.—I am, etc.,

Helston, March 12th.

FERDINAND REES.

Sir,—May I encroach on your space in order to congratulate Dr. John Fletcher upon his excellent letter appearing in your issue of March 3rd? After a protracted series of controversial letters and addresses written and delivered upon a bewildering number of side issues, a statesmanlike view of the problem in its entirety and a sincere attempt to point a broad path to its solution are more than welcome, and are in themselves a reproach to querulous bickerings on such matters as "staff funds" and "maintenance costs."

The main point of a "hospital policy" surely must be to keep the hospitals open. Only second to that comes the duty of improving them. We find, as a matter of fact, many hospitals struggling under a crushing debt, and a few which have actually had to curtail the number of beds, and that even this position is only achieved after special appeals, lotteries, and competitions. The most discouraging consideration of all is that even by keeping open a fixed number of beds a hospital is in reality fighting a losing battle since an ever-increasing population demands a corresponding increase of hospital accommodation. As for the secondary duty of improving hospitals, he would be a bold man who talked to the average committee these days about improvements.

The question is purely one of finance. If voluntary subscribers cannot, or will not, shoulder the financial burden involved by the normal steady growth of hospitals, then what remains? Who else can shoulder it if not the State? Surely it is our duty to press before the public the fact that there is at least a very grave possibility of a generally enfeebled hospital service if the present financial system is carried on unaided, and also to endeavour to formulate an alternative scheme.

It is certain that sooner or later we shall have a Government with views and aims differing from those of the present administration, and probably with ideas of its own on the subject of hospitals. Those views on general principles will probably take the line of "so many people, so many beds, so many doctors." Surely it would be only the most common prudence to formulate a scheme, in advance of such a day, for the common help and guidance of Government and profession.

Many doctors propound a baffling proposition that State aid for a hospital would immediately cause a peculiar form of cerebral atrophy in the staff, resulting in the loss of all desire for doing good and original work, both clinical and pathological. Especially do they fear a complete loss of "initiative." All the evidence is happily against such a state of affairs. During the war magnificent work, both individual and co-ordinated, was performed by a profession working directly for the State. Within the last few years tropical medicine has been converted from a sort of chaotic mythology into a science, mainly by the labours of gentlemen in public employ. Our public health service is respected throughout the world, and, again, is staffed by public servants. The recently opened Maudsley Hospital is to be supported mainly by public money, but nevertheless was widely welcomed as an institution certain to be of great value. The list could be extended indefinitely.—I am, etc.,

March 7th.

JUNIOR.

#### BRITISH SPAS: THE NEED OF SCIENTIFIC CO-ORDINATION.

Sir,—Six years ago, in a lecture before the Royal Society of Arts, one of us ventured to point out what he conceived to be the promising possibilities of British hydrology, if the resources of our country were organized in a scientific spirit, and if this department of medical knowledge were given academic recognition.

At present both those who provide and those who carry out the various methods of treatment at the British spas have an exceptionally difficult task to perform, because they are to a large extent isolated. We do not perhaps realize what a wealth of material, how much time and thought and money, what persevering energy and devotion go to the making of a modern spa; and, on the scientific side, what careful study of methods of treatment is required in the most difficult class of cases and, above all, what alertness to new impressions and new knowledge. Recent years have increased all these demands.

There is now happily in some quarters a unifying leaven at work. It is recognized that rivalries and jealousies are a gratuitous aggravation of difficulty and block the way of progress. It is becoming evident that there can be no real rivalry between the British spas because each of them is endowed with waters and climate of a different type. For this reason the proper development of each spa must follow individual lines. When this natural differentiation has been agreed and worked out a great step will have been taken in the history of British waters.

The British Spa Federation has made a fine beginning in the work of co-ordination on the business side. Representatives of the principal spas are now brought together in periodical meetings, with authority to deal with many problems of a technical and business character, and of course a united propaganda. Those who know something of the hard work that has been devoted to this patriotic effort must wish it complete success. Undoubtedly without an enlightened policy of this kind the actual treatment, which is, of course, more interesting to medical men, would now be difficult to carry on.

On the scientific side there is as yet no unifying or co-ordinating influence at work. We stand exactly where we did six, or for that matter sixty, years ago. One sees praiseworthy but isolated endeavours by spa practitioners to perfect themselves in the branch of medicine in which they are engaged. One even sees here and there unassisted efforts at research into the action of waters and baths, but nowhere an organization for study or instruction. And yet if an art is to be practised, surely it should be taught. What can be the future of the spas if the young scientifically minded medical man is not attracted to them? The scientist at the spa cannot be dispensed with. How little do our senior students and junior graduates know of the wealth of opportunity awaiting them in the study and use of physical methods of treatment—for example, of the astonishing effect of external treatment in chronic disease, of the fascinating study of the manifold reactions aroused in the body by physical agencies? And again, in the present absence of teaching, what can the physician or the general practitioner know of the principles of medical hydrology and of their practical application in England, that he should prescribe a course of waters to his patients? Here, as elsewhere, he must understand the value of treatment before he can recommend it.

It may be said that such matters belong to the post-graduate period. But it may fairly be claimed that those who wish to make a study of medicinal waters and baths should have the means of doing so both before and after graduation. In France, Italy, and Germany every year, with official and academic authority, study tours—often following a systematic course of lectures—are planned to the chief spas, where interesting discourses and demonstrations are arranged. To the medical youth in these countries is thus given an opportunity of a personal study of the accepted methods of treatment by waters and baths. The new generation begins where the old leaves off, and both science and practice are assured of an orderly progress. Many older practitioners also avail themselves of these study tours.

In England none of the proposals that have been put forward during the last twenty-six years to initiate a similar teaching of medical hydrology have as yet borne fruit, the latest and most serious proposal in 1914 being held up on account of the war. Now that men's minds are again seriously considering the problems of peace, perhaps this matter also may be dealt with. Will the Ministry of Health and the medical schools, in the public interest and in the interest of science, accept any responsibility for the medical use of waters and climates? Upon the answer to this question will depend, *inter alia*, the scientific development and the efficiency of the British spas.—We are, etc.,

R. FORTESCUE FOX,

President of the International Society of Medical Hydrology;

J. CAMPBELL McCLELLAN,

President of the Section of Balneology and Climatology of the Royal Society of Medicine.

London, W., March 7th.

#### IONIC MEDICATION.

Sir,—In your issue of March 10th. (p. 409) there is a paper by Dr. David Campbell, giving his opinions as a result of a serious attempt to estimate the value of ionization treatment. Since he makes several quotations from my small book may I be allowed to allude to a few points. He thinks there is no evidence for "lytic action." The experiment I saw in



Professor Leduc's laboratory and described and illustrated in my book proves that a continuous current causes a transfer of water from the positive to the negative electrode. Increase of water means increased solution, and this is the explanation of "lytic action" under the negative electrode. To assess the value of this in treatment one would select cases in which lytic action would be beneficial and in which the result could be easily confirmed, and avoid choosing cases in which the pathological conditions were problematical, and in which physical conditions, such as depth, militated against ionic exchanges or hydration taking place at the spot desired. Under the former heading we can place the thickening which follows sprains or injury to a superficial joint, such as the ankle, knee, or wrist, as well as cicatrices causing limitation of movement. In these cases there is ample clinical evidence to confirm the benefit claimed for ionization treatment. Instead of selecting cases in which the nature of the lesion is evident and in which the result is decisive Dr. Campbell has elected to draw his conclusions from cases in which the premisses, so to speak, are not clear.

With a good deal of what he says about the penetration of ions I agree, but I do not think he is justified in saying that ions introduced electrically present no differences in effect from a solution of a salt given by hypodermic injection. He describes the physiological effect on distant organs, such as the brain, as following both methods, but it must be remembered that ionization is usually practised for its local effect. When a hypodermic injection is given there is no reason to believe that in all cases the local cells of the tissues, as distinct from the lymph around them, are penetrated by the salt, whereas when ions are introduced electrically it is believed that both cells and intercellular fluid are penetrated. There is also an exchange of ions between the cells and the fluids of the tissues at a greater depth than that to which the great majority of introduced ions have penetrated. This exchange of normal ions between cells and fluids in apposition is a paraphrase for the word "nutrition." The skin is the great sense organ, abundantly supplied with nerves. Even without penetrating beneath the skin there is a wide field for the introduction of soothing ions, such as the salicyl ion, into the terminations of the nerves in neuralgias, and also in those superficial pains in which the seat of the disease can only be acted upon reflexly.

Dr. Campbell says he has no practical experience of ionization for surgical cases, but he makes some theoretical statements about the mode of action of zinc ionization with which I cannot agree. One striking result of zinc ionization for sepsis is the rapid subsidence of inflammation.—I am, etc.,

A. R. FRIEL.

London, W.1, March 13th.

## BLIND MASSEURS.

SIR,—I am very interested in the work of the Association of Certificated Blind Masseurs, of which I have the pleasure to be President. It has recently published leaflets giving the addresses of its members in London and all parts of the British Isles. May I venture to suggest that all registered medical practitioners should obtain copies from the secretary of the Association, 224 6-8, Great Portland Street, London, W.1?

These leaflets show that members of the Association, both masseurs and masseuses, are established in practically all the large towns, as well as in all parts of London and the suburbs. As massage is work which, it is generally recognized, can be most efficiently carried out by blind people properly trained, those doctors who can see their way to the employment of the members of the Association of Certificated Blind Masseurs will be aiding in a work of national importance.—I am, etc.,

ROBERT JONES.

Liverpool, March 8th.

## MEDICAL AXIOMS AND APHORISMS.

SIR,—Permit me an observation on your friendly review of my *Medical Axioms, Aphorisms, and Clinical Memoranda*. It did not occur to me that unsung axioms and aphorisms would necessarily be regarded as my own composition. Some of them are part of the common heritage and tradition of medicine. Their authorship would be difficult, or perhaps impossible, to determine.

In every case where the author is known to me his name was appended.—I am, etc.,

J. A. LINDSAY.

Belfast, March 12th.

## Universities and Colleges.

## UNIVERSITY OF CAMBRIDGE.

MR. M. B. R. SWANN, M.A., M.B., who since 1920 has been University Demonstrator in Pathology, has been elected to a corporate Fellowship at Gonville and Caius College, and appointed a lecturer.

## UNIVERSITY OF LONDON.

THE regulations in the Faculty of Medicine for internal students have been amended by the addition of the following after the word "physiology" in line 2, paragraph 4, section IV, on page 240 of the Red Book, 1922-23: "or the B.Sc. Honours Examination in Physiology."

Sir William Collins has been reappointed the representative of the London County Council on the Senate for the period 1923-27.

The ceremony of Pre-entation Day will take place in the Albert Hall on Thursday, May 3rd, and not Wednesday, May 2nd, as stated in the University Calendar (White Book).

Applications for grants from the Dixon Fund for assisting scientific investigations must be sent in between April 1st and May 15th, and for the Thomas Smythe Hughes Medical Research Fund for assisting original medical research between May 1st and June 15th. Further particulars may be obtained from the Academic Registrar.

## UNIVERSITY OF SHEFFIELD.

THE Council at its meeting on March 9th made the following appointments: Mr. G. Grant Allan, M.B., Ch.B., D.P.H. (Edin.), to the post of Assistant Bacteriologist; Miss Clara D. Tingle, M.B., Ch.B. (Shef.), to a Demonstratorship in Pathology.

## UNIVERSITY OF DUBLIN.

## TRINITY COLLEGE.

THE University of Dublin, on March 12th, conferred the honorary degree of M.D. upon Dr. William James Mayo, the well known surgeon of Rochester, U.S.A., and Professor E. H. Tweedy, gynaecologist to the Royal City of Dublin Hospital.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND.

## Council Election.

THE Secretary of the College of Surgeons has sent out the usual announcement, which on this occasion informs the Fellows of the College that a meeting will be held at the College on Thursday, July 5th, at 2 p.m., for the election of four Fellows into the Council in the vacancies occasioned by the death of Sir Charles Ryall, by the retirement in rotation of Sir Charters J. Symonds, K.B.E., C.B., and Sir Herbert F. Waterhouse, and by the resignation of Mr. F. F. Burghard, C.B. Blank forms of the requisite notice from a candidate and of his nomination may be obtained on application to the Secretary, and the same must be received by him, not later than on Monday, March 19th. A voting paper will be sent by post to each Fellow whose address is registered at the College, on Tuesday, April 3rd. Had Sir Charles Ryall lived he would have had to retire in rotation, having been elected on the Council, like Sir Charters J. Symonds and Sir Herbert Waterhouse, in 1915. Mr. Burghard having been elected in 1921, the candidate who comes out fourth on the poll will be substitute member until 1929.

## The Services.

## DEATHS IN THE SERVICES.

Deputy Inspector-General Alfred Gideon Delmege, M.V.O., K.H.S., R.N. (retired), died at Blackheath on February 2nd, aged 76. He was the son of the late Julius Delmege of Rathkena, co. Limerick. He graduated M.D. in the Queen's University, Ireland, in 1868, and took the L.R.C.S.I. in the same year. He entered the navy as assistant surgeon in 1859, became fleet surgeon in 1889, and retired ten years later, with an honorary step of rank, as D.I.G. He served in the Ashanti war of 1873-74, going out with the first detachment of Royal Marines sent to Cape Coast Castle, and received the medal, also the thanks of the Admiralty for his services. In 1879-82 he served on H.M.S. *Bacchante* during the voyage round the world made by Princes Albert Victor and George during these years. From 1887 to 1899 he served on the Royal yacht *Osborne*. He was awarded the M.V.O. for his services as medical attendant to the Prince of Wales, the present King, during his illness in 1893, and was appointed Honorary Surgeon to the Prince of Wales in 1899, and subsequently Honorary Surgeon to King Edward VII. In 1884 he married Mary Elizabeth, daughter of the late Right Hon. James Anthony Lawson, by whom he had two sons.

Lieutenant-Colonel Herbert Stockley Taylor, R.A.M.C., died at Kampti, in the Central Provinces of India, on November 17th, 1922, aged 53. He was born on July 21st, 1863, and educated at University College, London, taking the M.R.C.S. and L.R.C.P. (Lond.) in 1895. After filling the post of senior house-surgeon of the Clayton Hospital, Wakefield, he entered the R.A.M.C. as lieutenant on January 29th, 1899, becoming major after twelve years' service, and became lieutenant-colonel in 1915. He served in West Africa in 1901, in the expedition up the Gambia river, receiving the African general service medal with a clasp, and also in the recent great war.



## Obituary.

SIR THOMAS RODDICK, M.D., F.R.C.S.,

Formerly Professor of Surgery, McGill University; Ex-President of the British Medical Association.

SIR THOMAS RODDICK, who, as briefly announced last week, died on February 20th, was President of the British Medical Association on the first occasion on which it held its Annual Meeting outside the British Isles; this was in 1897, and it was largely through Roddick's influence that the invitation was given and accepted. He held a position of great prominence in the profession in Canada at the time, being professor of surgery in McGill University, Montreal, and a member of the Canadian Parliament. He came over here in the winter of 1896, and his genial presence, force of character, and ready speech at once made him many friends in the Association and paved the way for the success of the Montreal meeting.

Sir Thomas Roddick, who received the honour of knighthood in 1914, had been in failing health for several years; he had been in the habit of spending each winter in the more genial climate of Florida, but this year did not make the journey, and died in his house in Montreal.

Thomas George Roddick was the son of the principal of the Government Grammar School at Harbour Grace, Newfoundland, and was born there on July 31st, 1846. He entered McGill University, Montreal, in 1864, and was the first student of his year, taking the Holmes gold medal. On the completion of his curriculum he entered the General Hospital, and acted as resident surgeon for six years. In 1874 he became demonstrator of anatomy in McGill University, and attending surgeon at the General Hospital; in 1875 he was appointed to the chair of clinical surgery. At the outbreak of the North-West rebellion in 1885 he was appointed deputy surgeon-general to the militia of Canada, and went to the front to organize the medical service and to make all necessary arrangements with regard to hospitals. In 1890 he succeeded Dr. Fenwick in the chair of surgery at McGill University, and upon the erection of the Royal Victoria Hospital, through the munificence of two Montreal citizens—Lord Mount Stephen and Sir Donald Smith (afterwards Lord Strathcona)—he was entrusted with the organization and equipment of the surgical department, and visited all the great European centres in that capacity. In 1893 he became full surgeon and in 1896 consulting surgeon to this hospital. For many years he was chairman of the medical board of the hospital, was Dean of the McGill Faculty of Medicine from 1901 to 1908, and was subsequently appointed a governor of the University.

His distinction as a surgeon was widely recognized, not only in Canada, but also in this country; he was elected an Honorary Fellow of the Royal College of Surgeons in 1900.

Early in his career Roddick came under the influence of Lister, and was one of the first surgeons in Canada to appreciate the true significance of the antiseptic system; to his precept and example the rapid adoption of the method by Canadian surgeons was largely due. Roddick entered the Canadian Parliament in 1896 as member for Montreal West, mainly with the idea of serving the profession and removing some of the legislative anomalies which then existed. When the British provinces became federated in 1867 under the

British North American Act the governance of educational matters was taken from the federal authorities and handed over to the provinces; accordingly, each established its own medical board or council, with power to grant a licence to practise, either after examination or simply on presenting the diploma of certain recognized universities. One result was that the holders of diplomas or degrees obtained in the British Isles could not legally practise in Canada without obtaining a licence from the provincial authority; correspondingly, Canadian graduates could not be registered here. The Medical Act passed by the British Parliament in 1896 to some extent removed the disability of Canadians in this country, for it permitted the registration of a person holding a recognized colonial medical diploma, but only if he was by law entitled to practise medicine, surgery, and midwifery in the Dominion of Canada. The Act, however, did not remove the Canadian disability for two reasons:

first, because there was no registering authority for the whole of Canada, and secondly because the Act required that before a Dominion practitioner could be registered here it must be shown that the Dominion afforded to registered medical practitioners of the United Kingdom such privileges of practising in the Dominion as established complete reciprocity. It was this situation that Roddick resolved to do his best to change. He travelled into every province of Canada in the course of his propaganda, and eventually (though after he had left the Canadian Parliament) the Canadian Medical Act was passed in 1912; he was elected first President of the Medical Council of Canada, established in accordance with its provisions. In this way he rendered immense service to the profession, and did something towards the consolidation of the British Empire—a cause always dear to his heart—by making the Canadian doctor at home in this country and the British doctor at home in Canada.



SIR THOMAS RODDICK.

Sir Thomas Roddick was twice married—first, in 1880, to Miss M. McKinnon, who died in 1890, and secondly, in 1906, to Miss Redpath, who survives him. He leaves no children, but two sisters, who helped him in dispensing the friendly hospitality he showed to members of the Association in 1897.

For the following tribute to Sir Thomas Roddick we are indebted to Dr. J. G. Adams, Vice-Chancellor of the University of Liverpool, who, as professor of pathology, was his colleague at McGill University:

For his personality and through what he accomplished for the profession Sir Thomas Roddick was deservedly looked up to as the leading figure in Canadian medicine of his generation. As is well shown in the obituary notice, he was the outstanding figure in the long-continued fight to obtain federal registration. The eventual victory owed everything to his persuasive pleading and personal popularity. Roddick, indeed, enjoyed his popularity. He loved to please people, and suffered at times from the very defect of his virtue in that he too easily promised to do those things which he could not perform; yet even those whom he disappointed in this way could not but fall victims to his geniality and inherent kindness. He was an admirable lecturer and a most popular Dean of the Medical Faculty at McGill. Of late years he had been keenly anxious about his own health and had gradually passed into retirement, so that it is difficult for the present generation to recognize the influence



he exerted during his full maturity from 1890 to 1910. That of which he was most proud was his early association with Lister and the part that he played in introducing the Listerian methods into Canadian surgery. Nor has his influence been confined to Canada. The national registration system which he established and its success has encouraged the leaders in the profession south of the line to move in a like direction. There has been the same problem in the various States as has existed between the Canadian provinces, so that a Massachusetts physician, for example, could not practise in the State of New York if he did not possess a New York licence. Only within the last few years there has been a successful movement to introduce legislation and the establishment of a recognized federal medical body whose examinations and diploma shall be accepted by all the States.

NORMAN DALTON, M.D.LOND., F.R.C.P.,

Consulting Physician to King's College Hospital; Fellow of King's College, London.

For some two years past the manifest signs of physical decline had told those who knew Dalton that the sands of life were running out for him apace, and the end came, in his 66th year, on Friday, March 9th, at his house in Hampstead. Born in Demerara in 1857, the youngest of a family of nine children, his father was chief postmaster of British Guiana. After some preliminary education at Queen's College, Demerara, he came to England at the age of 16 and joined Christ's College, Finchley. Two years later he passed on to the Medical School of King's College, where and at London University he won many honours. First qualified in 1879, he became M.B. in 1880, M.D. in 1882, and was elected a Fellow of the Royal College of Physicians in 1894. In 1886 he was appointed assistant physician at King's College Hospital, being already pathological registrar. In 1893 he was made professor of pathological anatomy, and at the time of his retirement from the staff only a few months ago he was senior physician and joint lecturer on medicine. He had been examiner in medicine both at London University and the Conjoint Board, and physician to two important life assurance companies—the National Provident Institution and the Scottish Union and National. During the war he gave assiduous service to the 4th London General Hospital and rose to the rank of lieutenant-colonel.

Only the would-be biographer knows how difficult it is to breathe again the breath of life into a dead man's self and give a fleeting resurrection to his personality. One is so apt to slip aside from the strait way of truth into the turgid eulogy of an apotheosis, or into a sterile catalogue of the material circumstances of his life, without regard to the spiritualities that make a study of the life profitable. Generations of King's men will think of Dalton first, in association with the post-mortem room; where he presided as pathological registrar for some twenty-five years; they will picture him clad in a long white mackintosh reaching from his chin to the soles of his feet, and advancing to his work with a very large knife in hand, which he carried much as a life-guardsmen carries his drawn sabre; he was a quick and neat worker, and his demonstration of the morbid conditions was precise, clear, and picturesque. His lectures on morbid anatomy gave students all they needed for examinations in simple direct language, that stuck in the memory, and he took pains to illustrate them by copious drawings and microscopic slides, all by his own hand. His long service in the post-mortem room led him to look at clinical questions too exclusively from the standpoint of morbid anatomy, and he took only a half-hearted interest in the great advances in the pathology of the living, in the departments of bacteriology, clinical pathology, and biochemistry that have been the outstanding feature of the three last decades. As a clinician he was a good teacher of the physical examination of patients, always correlating the signs to the structural changes they seemed to imply. Many signs to the structural changes they seemed to imply. Many King's men will remember with gratitude his teaching at a time, now happily long past, when in the aftermath of a galaxy of great clinicians the visiting staff did not lavish instruction on their students. For years he held a popular coaching class, the material of which formed the basis of a little book, *Aids to Medicine*, subsequently published by him. With Dalton conservatism was bred in the bone; the methods that had sufficed for the great clinicians he had served, notably Sir George Johnson, seemed to him to be sufficient for all time. Thus it came about that with the passing of morbid anatomy as the pivot of clinical medicine

Dalton came to be a man ploughing a lonely furrow; no visions of a promised land tempted him to explore the large *terra incognita* that lies beyond the confines of the dead-house.

Dalton was a very small man, and regarded this as a serious handicap to professional success: to think it so was to make it so, and to lay up unhappiness for a sensitive nature. Though a man of true courage, physical and moral, he would quail beneath the buffetings of fortune. It was not given to him to gather in profusion the rare and refreshing fruit of successful consulting practice. The courting of this coy and fickle goddess has left many another heart sick and sad. Perhaps he would have found a fairer field for his warmth of heart and faculty for unselfish service in the less exotic atmosphere of general practice.

Nowhere was Dalton so happy as among his patients at Drury Lane Dispensary, with which he had been connected for many years: there heart spoke to heart without restraint or artifice. They would confide in him their domestic concerns as well as their ailments, and to come away with a bunch of flowers or a bag of fruit given as a thank-offering by some poor woman was a real happiness to him.

There was a strong touch of Bohemianism in Dalton's make-up: no kipper was ever so tasty as those he used to toast before the fire in his early years in chambers at Clement's Inn. He was in his element at a men's card party shrouded in an impenetrable atmosphere of smoke, or seated in the ring at Lord's or the Oval, with no companions but his pipe and a newspaper, which served successively as seat, water-proof, plate, and mental pabulum according to the weather and progress of the play. He had read widely in both English and French literature; his taste directed him mainly to the earlier English fiction, but he had read much poetry as well. He read thoughtfully and formulated precise judgments on what he read; his attitude was rather critical than appreciative, for he was more apt to see the blemishes than the beauties, and to dwell on them.

Though a titular bachelor, Dalton was in full measure a family man; his home in the tropics had been broken up by the death of his father in Demerara while he was a boy of 17 only. Under his hospitable roof-tree in Mansfield Street the remnants of a scattered family found haven for many years; there also he became the devoted guardian of six children of a dead brother: the loss of one of these nephews in the late war hit him very hard. Dalton had many friends at his hospital, as two presentations on his recent retirement—the one from past and present nurses, the other from staff and students, commemorating his long and devoted service to the medical school—testified abundantly.

Circumstances, not natural temperament, for there was gaiety very close beneath the surface, made Dalton in later years a convinced pessimist. His friends grieved to see a cloud of despondency settle on him, as with advancing years he retired more and more into himself. It was hard to tempt him away from the solitude of his little garden in Hampstead: there at least he need not expose a warm heart to the chill of an uncongenial world. There he would watch the swelling of each bud and the unfolding of each flower with all the fondness of an expectant mother: the friendship of inanimate things became his all in all; he still had affection to lavish and he lavished it on them. Among his flowers his thoughts would often turn back to his boyhood in the tropics, to its simple freedom, to the sunlight, the warmth, and the lush vegetation, to the sensuous charm of all that he had exchanged for the pomp and gloom of the great heartless city to which destiny had chained him. May his Spirit bask in eternal sunshine in a garden of the flowers that he loved so well! The burial was in Hampstead Cemetery on Tuesday, March 13th, and a memorial service was held at St. Clement Dane's Church.

Dr. WILLIAM MACDERMOTT, who died on January 31st, was a son of a very highly esteemed minister in Belfast. He studied in the Queen's University of Belfast, took the degrees of M.B. and B.Ch. in 1914, acted as house-surgeon and as house-physician in the Royal Victoria Hospital, Belfast; he then joined the R.A.M.C. and served as temporary captain for the rest of the war. After demobilization he settled in England, but a low form of pneumonia set in and he had to return to his home, Wakefield, heed the unavailing care and attention of his friends. He died on February 29th, 1923, at the age of 59. His family is felt with his family in the great war.



Dr. HUGH KNYVETT, who died at Sidmouth on January 27th, in his 79th year, was the son of a Yorkshire vicar, and early in life emigrated to New Zealand. He remained there for twenty-four years, rising from a shepherd to manager of a sheep station. At the age of 40 he returned to England and entered Guy's Hospital medical school as a student; he took the Scottish triple qualification in 1889. Subsequently he practised at Butleigh for many years, and was well known also in Taunton, where he served on the National Service Medical Board. Five years ago he went to live at Sidmouth, last spring taking a trip to New Zealand and back as a ship surgeon. Dr. Knyvett had a charming personality and was an excellent all-round sportsman.

Dr. DAVID CARNEGIE ALEXANDER, M.C., late Captain R.A.M.C. (T.C.), died in Florida on February 17th. He was the eldest son of the late Charles Alexander, of Upland, Selkirk, and was educated at Edinburgh, where he graduated M.B. and Ch.B. in 1905. He took a temporary commission as lieutenant in the R.A.M.C. on February 15th, and was promoted to captain after a year's service. He was gazetted to the Military Cross on November 4th, 1915, being one of the earliest to gain that distinction.

## Medical News.

Dr. LEONARD HILL, F.R.S., director of the department of applied physiology and hygiene at the Medical Research Institute, Hampstead, has been presented by the Council of the Royal Institution of Mining and Metallurgy with the "Consolidated Gold Fields of South Africa, Ltd." Gold Medal in recognition of his valuable researches on ventilation and his paper on ventilation and human efficiency, contributed to the *Transactions*.

SIR HUMPHRY ROLLESTON, K.C.B., M.D., has been appointed chairman of the Central Joint Voluntary Aid Detachment Council, which is composed of representatives of the War Office, the Territorial Army Associations, the Order of St. John of Jerusalem, and the British Red Cross Society.

Mr. H. W. CARSON, F.R.C.S., will give the Hunterian Oration to the society of that name on Monday next at 8.30 p.m., at the Mansion House, London. The subject is the evolution of the modern view on septic peritonitis and its applications.

Dr. A. A. MATHESON of Edinburgh was recently presented with a silver tea service at a reception given in his honour by a section of the Jewish community in Edinburgh. Rabbi Dr. Salis Daiches, who made the presentation, thanked Dr. Matheson for the services he had rendered to his Jewish patients, and at the same time presented Mrs. Matheson with a fitted dressing case.

The forty-fifth festival banquet of the Irish Medical Schools' and Graduates' Association will take place this day (Saturday, March 17th—St. Patrick's Day) at Paganini's Restaurant, after the annual meeting, when Dr. J. A. Macdonald will resign the presidential chair to Sir William Taylor, K.B.E., C.B. Tickets for the dinner, 9s. each, may be obtained by any Irish graduate from the honorary secretary, Dr. Meyrick, 48, Ennismore Gardens, S.W.7.

A MEETING of the Fellows of the Royal Society of Medicine was held on Tuesday evening, when a paper was read by Mr. J. E. Adams on the urgent need for education in the control of cancer. Mr. C. P. Childe, Lord Dawson of Penn, Mr. W. G. Spencer, the Hon. Sir Arthur Stanley, Sir Napier Burnett, and others, addressed the meeting, and resolutions were unanimously carried urging that the public should be given more information as to the early signs of cancer, and requesting the British Red Cross Society to conduct a publicity campaign by means of lectures and pamphlets, and the Council of the Royal Society of Medicine to nominate a standing committee to supply information to the Red Cross Society suitable for public dissemination. A report of the proceedings will appear in our next issue.

Mr. T. H. KELLOCK, surgeon to the Middlesex Hospital and consulting surgeon to the Children's Hospital, Great Ormond Street, who died last December, disposed in his will of net personality amounting to £52,760. He bequeathed £500 to the Hospital for Sick Children, to be expended on some specific object which shall not increase the annual expenditure of the hospital; £100 as a permanent endowment of the medal for the nurses' prize instituted by him; and £100 each to the Santa Claus Convalescent Home for Children at Highgate, the Invalid Children's Aid Association, and the

National Society for the Prevention of Cruelty to Children. He bequeathed also personal legacies to certain nurses and others who had worked at the two hospitals with which he was connected.

NEW rules, framed in accordance with the recommendations of the Committee of Inquiry on Artificial Limbs, have been issued with the approval of the Minister of Health, for the guidance of medical superintendents of limb-fitting centres responsible for the ordering of artificial limbs for pensioners. The artificial limb ordinarily supplied will be one of the Ministry's standard pattern legs of wood and leather, but where it is considered that a peg leg will be more suitable for the avocation of a pensioner such a leg may be ordered as one of his two artificial legs. Metal limbs may be supplied for cases of amputation above the knee at the discretion of the surgeon. Metal limbs for amputations below the knee will be supplied only when in the surgeon's opinion special surgical or medical conditions render a wooden limb unsuitable.

THE annual debate of the Chelsea Clinical Society will be held in the Club Room of St. George's Hospital Medical School, S.W., on Tuesday, March 20th, at 8.15 p.m. The subject selected for the debate is Visceroptosis; it will be opened by Sir Charlton Briscoe, followed by Dr. Robert Hutchison, Mr. Ivor Back, and Mr. Mortimer Woolf.

A PETITION for the granting of a charter of incorporation has been presented to His Majesty in Council on behalf of the Wolverhampton and Staffordshire General Hospital.

WE are asked to state that hospitals in the County of London or within nine miles of Charing Cross desiring to participate in the grants made by King Edward's Hospital Fund for London for the year 1923 must make application before March 31st to the Honorary Secretaries of the Fund, 7, Walbrook, E.C.4. Applications will also be considered from convalescent homes, which are situated within the above boundaries, or which, being situated outside, take a large proportion of patients from London.

AT a social meeting of the Royal Society of Medicine on the evening of March 21st Dr. H. C. Cameron will deliver a short address at 9 p.m. on the mystery of Lord Byron's lameness.

MESSRS. JOHN BANTHOLMEW and SON of Edinburgh have issued a railway map of the British Isles, showing the new groups by means of different colours. The L.M.S. (London, Midland and Scottish) seems to be nearly ubiquitous, extending from London to Thurso and from Yarmouth to Swansea. The colours chosen are distinctive and the map, it is hardly necessary to say, is very well produced.

THE thirty-fifth German medical congress will be held next month in Vienna under the presidency of Professor K. F. Wenckebach. On the first day (April 9th) a discussion on encephalitis lethargica will be opened by von Economo of Vienna and Nonne of Hamburg. In the afternoon of the following day there will be a demonstration of patients suffering from disorders of internal secretions. On April 11th a discussion on arterial high pressure will be opened by Durig of Vienna and Volhard. Papers will be read on each of these days, and also on April 12th. On Saturday, April 14th, there will be demonstrations in the morning and excursions in the afternoon.

THE National Association for the Prevention of Tuberculosis will hold its ninth annual conference in Birmingham on the invitation of the Lord Mayor of that city. The conference will open on Thursday, July 12th, and close on the afternoon of the following day. The chief subjects for discussion are: The care of advanced cases of tuberculosis, especially as regards prevention of infection; the extent and nature of damage done by tuberculosis derived from infected milk; the relative prevalence of tuberculosis among workers in different trades; and the amendments which should be made in the procedure for the notification of tuberculosis. Opportunities will be afforded for persons attending the conference to visit various institutions concerned with the prevention and treatment of tuberculosis.

A MEETING of the Association of Economic Biologists will be held at the Imperial College of Science on Friday next, March 23rd, at 2.30 p.m., when Professor J. H. Priestley of Leeds will read a paper on the causal anatomy of potato tuber, and Mr. E. R. Richards will discuss the control of cellulose decomposition and its applications.

MESSRS. A. E. DEAN and Co. (Leigh Place, Brooke Street, Holborn, London, E.C.1) have issued a list of their diathermic apparatus, with explanatory notes.

PERU is free from yellow fever for the first time in its history. According to Dr. Hanson, Director of Public Health of the Republic, this is a result of the yellow fever campaign carried out by the Rockefeller Foundation and the Peru Government; no cases have been reported since August, 1921.



## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Attology, Westrand, London*; telephone, 2630, Gerrard.

2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.

3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

### QUERIES AND ANSWERS.

#### WHITE ANTS.

A CORRESPONDENT in West Africa asks for advice as to the destruction of white ants. His woodwork, books, and clothes are, he says, destroyed by them, and he has found tar, kerosene, cyllin, mercury perchloride, and solution of chlorine of no avail. Even if expelled for a time they return within twenty-four hours.

\*\* We have made some inquiries, and learn from Sir Arthur Shipley that it would be desirable to ascertain the species of termites. Dr. Guy Marshall, C.M.G., F.R.S., of the Natural History Museum, has been good enough to send the following general observations:

I fear the matter is not so simple as it might seem, for it is hardly possible to make useful suggestions without knowing how the house is constructed. If, as is often the case in the tropics, the house is built on piles or piers of brick, something might be done; if, however, it has been built flush on the ground, without foundations, the chances of finding a satisfactory remedy are very remote. Further, it is necessary to know the materials of which the walls are made and the nature of the flooring. In houses built of unprotected timber or sun-dried bricks, the case is practically hopeless once the walls are infested by the termites. The only real protection lies in proper construction. On the second course of bricks above the foundations sheet zinc should be laid throughout so as to project two or three inches clear on both sides; then at least two courses of bricks should be built on top of this before the floor joists are laid. Where houses are built on piers there should be a sheet of zinc right through the middle of each pier and projecting at least two inches clear all round. Otherwise the only thing to be done is to search for the nests under the floor and immediately round the house and treat them with a heavy poisonous gas, such as carbon bisulphide. But this is a tiresome and costly business, and will probably have to be repeated at intervals. When the floor and walls are infested the only course is to keep one's belongings on wooden stands away from the walls, the legs of the stands being placed in saucers or tins. If the latter are filled with paraffin or occasionally dusted with Keating's powder they also serve to keep away house ants, which are often a serious nuisance in the tropics.

#### BUTYN.

DR. M. D. THAKORE (Doncaster) writes to point out that the cost of butyn recommended recently by Mr. Beaumont as a local anaesthetic (January 13th, p. 57) militates against its general use. He recently had to pay 12s. 6d. for 1 oz. of 2 per cent. solution.

\*\* We are informed by Dr. Harrison Martindale that the cost of butyn, which is made in America, is exceedingly high, but that the price seems at present justified. The price to medical men is 7s. 6d. a gram, so that an ounce of 2 per cent. solution should cost 7s. or 8s.

#### INCOME TAX.

"R. I. I." noted in 1920-21 as a non-resident house-surgeon, and deducted £3 3s. a week from the amount received as representing the cost of rooms and attendance.

\*\* Apparently the deduction cannot legally be made. Our correspondent is assessable on the gross amount less expenses incurred wholly and exclusively and necessarily in the performance of the duties of his office; personal expenses of the kind mentioned do not fall within that category. The point underlying the inquiry is that a resident house-surgeon receiving

board and lodging in kind is in the unusually favourable position of not being liable to tax on the value thereof—but that is not the case here.

"NEBO" has a daughter over 18 years of age whom he maintains at a cost of £140 per annum in an asylum.

\*\* The only allowance that can be claimed is the statutory allowance of £25. The Guide to which "Nebo" refers was written by Mr. P. Sulley and is published by Thos. Nelson and Sons, Ltd., Edinburgh. That address is sufficient, though doubtless any local bookseller could obtain the book.

### LETTERS, NOTES, ETC.

#### THE PREVENTION OF SEPSIS AFTER BLADDER AND PROSTATE OPERATIONS.

DR. A. LAPHORN SMITH (London, W.), who expresses the interest and pleasure with which he read Sir John Thomson-Walker's address on problems of prostatectomy (BRITISH MEDICAL JOURNAL, January 27th, p. 133), writes in praise of hexamine. From his experience of transplantation of the ureter and the repair of many vesico-vaginal fistulae, he feels confident that primary union would not have been obtained without the hexamine and drainage. "I have always given hexamine," he continues, "both before and for several weeks after my plastic operation on the bladder and ureters. As all my patients were women I had no difficulty in leaving a self-retaining glass catheter in the bladder for one or two weeks, with a thin, light rubber tube attached leading to a receptacle under the bed. This gives the bladder absolute rest. The perforated glass bulb of the catheter is only half an inch from the entrance of the two ureters, so that the urine never touches the bladder wall at all."

#### PSYCHOLOGY AND MEDICINE.

DR. RICHARD GILLBARD (Willesden Green), writing with reference to Sir Frederick Mott's lecture (March 10th, p. 403) on psychology and medicine, recalls a passage in a lecture in which the late Sir George Savage combined two famous sayings: "When I see a precocious child I say to myself, there, perhaps, goes a Shelley; there, perhaps, goes insanity. The line of demarcation between insanity and genius is a faint one."

#### CRAVING FOR TOBACCO.

LIEUT.-COLONEL G. HARRISON YOUNGE, F.R.C.S.I., R.A.M.C. (ret.), writes: Cases are occasionally seen where it is desirable, or even urgently necessary, to discontinue smoking and it is more than probable that instances of this kind will become much more common in future owing to the great increase of smoking amongst women, whose nervous and circulatory systems are so susceptible to the injurious effects of tobacco. Many years ago I found it necessary to stop smoking owing to chronic pharyngitis and I shall never forget the long weeks of intense misery which were endured until the craving for tobacco eventually subsided. Quite recently I have discovered a way in which smoking may be stopped without difficulty and without suffering of any kind. More than a year ago, owing to a return of chronic pharyngitis, I decided to try a herbal smoking mixture. Smoked from an ordinary briarwood pipe in the usual way, it completely satisfied the desire for tobacco and its use was quickly followed by a decided improvement in the symptoms of catarrh and irritation of the throat. After some months of its use I found that the desire for tobacco had completely disappeared and that it was possible to stop suddenly the herbal smoking mixture without difficulty or inconvenience of any kind. If occasionally the thought occurred, "A pipe would be a pleasure," it was only necessary to suck a peppermint lozenge to remove completely this scarcely desirable prompting.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 33, 36, 37, and 38 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 34 and 35.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 67.

### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive post restante letters addressed either in initials or numbers.



## An Address ON TUBERCULIN IN THE DIAGNOSIS AND TREATMENT OF TUBERCULOSIS.\*

BY  
SIR ROBERT PHILIP, M.D., LL.D., F.R.S.E.,  
PROFESSOR OF TUBERCULOSIS AND EXAMINER IN MEDICINE,  
UNIVERSITY OF EDINBURGH.

IN current statement as to the significance of tuberculin in relation to tuberculosis—and still more as to its practical application—one is frequently up against a looseness of conception regarding essential facts. These facts form the basis of any sound practical application of tuberculin in diagnosis or treatment. While the facts are in chief part definitely determined, there has been little attempt to correlate them as the basis of practical procedure.

My aim is to recall fundamental positions and try to show how these afford points of departure for practical observations regarding tuberculosis, with a view to the final goal of *detubercularization*. This will include considerations bearing on both diagnosis and treatment. In particular I shall take the opportunity of urging once more the therapeutic value of the *percutaneous* exhibition of tuberculin as recommended by me for many years.

While the percutaneous method is serviceable in the treatment of tuberculosis generally, it has a special range of application in the earlier manifestations. It exerts a remarkable inhibitory influence on the first buddings of tuberculosis in childhood. Continued observation as to its effects throughout long periods in many types of tuberculosis has led me to conclude that the method, consistently applied, is capable of effecting the nearest approach to *detubercularization* yet realized.

### *Experimental Tuberculosis.*

The first postulate is a clear conception of tuberculosis, or, stated otherwise, of the process and effects of tubercularization. When an animal, say a guinea-pig, is inoculated with a sufficient dose of tubercle bacilli, whether by injection into the tissues or by inhalation, the animal becomes tubercularized. In illustration, take the effects following the subcutaneous introduction of bacilli—for example, into the groin. Within ten days or thereabout, a local sore is produced at the point of puncture, which tends to continue in indolent fashion throughout the life of the animal. Following the appearance of the sore, more distant effects are speedily registered—first in lymphatic glands nearest to the sore, and then successively in glands and groups of glands at increasing distance from the initial lesion. Ultimately the lymphatic system tends to be involved universally. At varying dates the several viscera—spleen, liver, lungs, kidney—become implicated. The order of events is subject to variation, according as the position of primary inoculation is varied. The histological changes are essentially similar throughout the process. These manifestations in glands and viscera, however variable in degree, constitute collectively the *local effects* of tubercularization.

In addition to these, and dependent on the gradual extension throughout glands and viscera, may be registered more general changes—conveniently termed *systemic effects*. While at first the inoculated animal may present little evidence of disturbance, maintaining and perhaps even increasing in weight, physiological disturbance may be observed sooner or later. The animal tends to assume a shabby aspect, natural firmness is replaced by hypotonus, weight is dropped, the quality of the coat deteriorates, and spontaneous motility slackens. An advancing marasmus leads towards death. Such disturbance forms collectively the *systemic effects* of tubercularization.

### *Complete Diagnosis.*

What occurs in the inoculated animal—guinea-pig, rabbit, or other—may be traced in the tubercularized human subject, with variations, according to the point of primary inoculation, the dose of infection, and the resistance offered, influenced as the last may be by initial qualities in the individual and by varying conditions of environment. In concluding a diagnosis in the human subject it is of the first importance that observation should be directed explicitly and fully to both groups of phenomena.

\* Delivered at the Tuberculosis Society of Scotland.

*Local (focal)* effects in viscera and other structures must be carefully searched for throughout the body. We must get away from undue concentration on one or other focal manifestation, wherever that may happen to be. It goes without saying that a local effect may be such as to call for immediate local treatment, whether in gland, lung, kidney, or elsewhere. But the adoption of such local measures must not be allowed to obscure the presence of tuberculosis in other organs and tissues. The diagnosis of local disorder must be as complete as possible. Beyond the local disturbance, a careful estimate must be made of the degree of general physiological disturbance—in other words, of the *systemic* effects of tubercularization, as these may be registered by evidence of neuro-muscular intoxication (langnor, feeling of tiredness, muscular dystrophy, vasomotor phenomena, etc.), by temperature variation, circulatory failure, etc.

The diagnosis, then, of tuberculosis in a given case should be much more complete and definite than it generally is. The determination that the tubercle bacillus is the cause of symptoms occurring in relation to lung, kidney, or other organ—whether that determination be based on actual discovery of the tubercle bacillus in discharge or excretion or on other grounds—is merely the first step to the completer diagnosis which is essential in every instance. The complete diagnosis must be based on the fullest examination possible and be given in terms both of local and of systemic effects.

### *Tuberculin in Diagnosis.*

Tuberculin—using that term in wide sense to include the considerable variety of extracts obtainable by various processes from a culture of the tubercle bacillus—may be said to possess, by reason of its origin and its effect on tubercularized individuals, specific relationship to tuberculosis.

The animal inoculated with tubercle bacilli and the tuberculous patient respond in remarkable fashion to tuberculin. While the individual who remains free of tuberculous infection can tolerate large doses without production of symptoms, the individual who is tubercularized, even in slight degree, yields a response both local (focal) and systemic. The nicety of diagnosis by means of tuberculin depends on the exactness with which the response, focal and systemic, is appraised.

The *focal* effects consequent on a test injection of tuberculin are most directly illustrated by the changes observable in a superficial patch of lupus. These include congestion with increased redness and swelling of the patch itself and the neighbouring tissue, with subsequent exudation and, it may be, crust formation, the effects lasting for several days. The focal effects which are so evident on the surface in the case of lupus are reproduced in similar fashion—it may be in aggravated degree—in relation to tuberculous foci wherever situated in the body. They are to be carefully sought for by all the available methods of physical examination.

In addition to the focal results, *systemic* effects from tuberculin may be traced in the occurrence of malaise and probably disturbance of temperature and circulation. The systemic effects, which may be slight in a case of limited lupus, are correspondingly greater according as the area involved is larger. They become pronounced, and may even be serious, where the foci of tuberculosis are extensive or numerous, more especially in the case of visceral involvement.

### *Rationale of Tuberculin as a Therapeutic Agent.*

In the employment of tuberculin for therapeutic purposes the twofold aspect of tuberculosis must be kept steadily in view. For effective cure both focal and systemic effects of tuberculin are serviceable. If tuberculosis is to be cured locally, wherever the focus be situated, there must be a hastening of the natural tendency towards cicatrization. Such cicatrization is the basis of permanent arrest of the tuberculous process, whatever be the tissue immediately involved. The local stimulation by tuberculin at each tuberculous focus is an important step towards that end. The remarkable effects in this direction are conveniently studied from week to week in connexion with a superficially placed tuberculous lesion under treatment by tuberculin. In the current discussion of tuberculin therapy too little attention seems to have been directed towards this aspect of the subject.

The systemic intoxication occurring in tuberculosis is countered, through the antigenic properties of tuberculin, by the elaboration within the affected system of antibodies or the enrichment of these, if they are to be conceived as already existing.



*Choice of Tuberculin.*

The group of fluids collectively termed tuberculins is not very well defined. Remarkable differences of opinion have emerged as to the relative value of different tuberculins. Amidst such diversity it is difficult either to arbitrate or reconcile.

Broadly stated, the conclusion I have formed, after prolonged observation in different directions, is that a tuberculin is likely to be serviceable in proportion to the closeness of its relationship to the tubercle bacillus and the directness of its mode of production. It has seemed to me that the simpler the constitution of the culture medium on which the tubercle bacillus is grown, the more likely will the first of these conditions be fulfilled. On that account the tuberculin of Béraneck has been advocated by me for therapeutic purposes—obtained as it is by a simple process of extraction from a growth of tubercle in a medium free from the addition of artificial peptones.

Whatever be the tuberculin employed, the rationale of its activity in both diagnosis and treatment seems to be that when introduced into the body it acts as an antigen. Tuberculin reactions are based on the interreaction of antigen and antibody in presence of complement.

Since the first introduction of tuberculin in 1890 I have used a considerable variety of products. The net result of those observations has been to reinforce the conclusion based on more theoretic considerations. The tuberculins I use most commonly—both for diagnosis and for treatment (the latter especially in ways to be detailed presently)—are Koch's original tuberculin and Béraneck's tuberculin, in varying excipient and dilution, according to the nature of the case and the purpose in view.

*METHOD OF EMPLOYMENT IN DIAGNOSIS.*

The familiar division into *subcutaneous*, *cutaneous*, and *percutaneous* methods recalls sufficiently the chief points.

*(a) Subcutaneous.*

As was natural, Koch's early proposals were on the line of subcutaneous injection, and attention was drawn to effects following such introduction into the tuberculized subject. These results were suitably grouped as (1) *general*—for example, temperature and pulse disturbance; (2) *focal*—that is, changes occurring in the tuberculized area such as I have already described in relation to lupus; and (3) *local*—that is, changes occurring more or less definitely about the point of puncture.

*(b) Cutaneous and Percutaneous.*

The last-named results—that is, local results—are conspicuous in proportion as the tuberculin in course of introduction comes into contact with the skin structures. Such evident local phenomena naturally became the object of closer observation on the part of numerous workers. Thus emerged the surface reaction associated with the name of von Pirquet, and that associated with the name of Moro.

It is needless to go into details of procedure in respect of these surface tests or the interpretation of results thereby obtained. It is sufficient to recall the fact that the wide application of such methods, which speedily followed von Pirquet's pronouncement, resulted in a fresh orientation of the tuberculous problem—in respect more especially of the frequency of infection and its incidence in childhood.

The observations based on the von Pirquet and allied procedure have proved of epidemiological rather than immediate clinical value. They have revealed that tuberculosis is almost universally distributed throughout civilized communities and that the occurrence of infection takes place for the most part during childhood. A positive reaction to the von Pirquet or to the Moro test indicates that the patient is tuberculized. So long as the reaction remains positive the patient cannot be said to be detuberculized in the strict sense, whatever course of treatment may have been followed.

This negative fact has its reassuring aspect in light of the "phenomenon of Koch." The tuberculized animal is not infected afresh by the introduction of living tubercle bacilli. The results following attempts to reinoculate an already tuberculized animal differ widely from those following the primary inoculation and are comparable with the results following a considerable dose of tuberculin when administered to the tuberculous subject.

The further life history of the tuberculized individual is dependent on the degree of his resistance. This varies from time to time by reason of varying physiological conditions

of the individual himself and variations in the conditions of his environment.

*Interpretation of Response.*

While the local manifestations following the diagnostic test may reveal little beyond the fact that the subject of the test is tuberculized, the systemic, and, in still greater degree, the focal effects are much more definite and detailed. When carefully scrutinized and analysed they are capable of affording exact information—both qualitative and quantitative—as to the presence and distribution of the disease.

A correct interpretation of the evidence thus attainable is dependent on the experience of the observer and the delicacy of the methods employed. When properly carried out, the procedure affords a demonstration regarding the extent and character of the existing tuberculous involvement which is remarkably precise. Few diagnostic procedures in clinical medicine possess greater nicety in respect of the information thereby obtained. Of attendant risks frequently cited by critics of tuberculin I have seen none, when the tests have been competently carried out. The postulate of competence in this case is no less necessary than in the case of many other exact clinical methods.

*METHODS OF EMPLOYMENT IN TREATMENT.**(a) Subcutaneous.*

The therapeutic application of tuberculin has for the most part been carried out by means of subcutaneous injection. The value of the procedure has been assessed variously by different writers. From the statements made in current literature one fact seems to emerge clearly—namely, that the judgements expressed are frequently second-hand, not based on serious observations of the writer himself. Sometimes, even if based on the writer's experience, negative statements are less convincing than they might be by reason of apparent haste and insufficiency in the procedure that has been followed.

The competing claims of different schools of thought as to the rationale of the action of tuberculin have led to confusion and embarrassment. Exaggerated claims for one or other scheme of dosage have been the fruitful cause of not unnatural scepticism on the part of the practical man who, in rule of thumb fashion, may have tried one or other system and found it wanting.

The continuous use—since its introduction—of tuberculin in suitable cases has convinced me that the procedure has specific curative value. The case must be properly selected—in other words, the remedy must be exhibited at the appropriate stage—and the dose must be suitably graduated according to the result obtained from time to time in the given case. These are details which demand judgement based on experience. The interval between successive doses must be similarly gauged, as also the duration of treatment and the desirability, after appropriate resting period, of a further series of injections. Some cases lend themselves to less intense, others to more intense, lines of treatment. A satisfactory result cannot be looked for unless efficient treatment be maintained for a sufficient length of time. Throughout the whole period of treatment watchful care will be taken to detect the slightest expression of super- (hyper-) susceptibility. If this supervene, dosage should commonly be reduced or the exhibition of tuberculin suspended for the time being.

*Technique.*—The selected tuberculin is suitably diluted with normal saline, with the addition of 1/2 per cent. phenol in the case of weaker solutions for purposes of conservation. With simple aseptic precautions, the injection is conveniently made into the areolar tissue beneath the skin of the back. Care should be taken that the point of the needle pierces the skin completely. In this way the occurrence of local irritation and swelling (phlegmon) about the point of puncture is avoided.

*(b) Cutaneous and Percutaneous.*

Observation of the effects produced locally in relation to the skin have led to the exhibition of tuberculin cutaneously and percutaneously.

*Cutaneous (Sahli's Method).*—Thus Sahli was led to substitute for subcutaneous injections a process of multiple cutaneous vaccinations by means of a special needle. More recently he has introduced the practice of intradermic injection, the tuberculin being deliberately introduced into the skin tissue. He has shown that a considerable part of the tuberculin thus injected is absorbed and produces general effects. He believes that the intensity of the intradermic



reaction affords a gauge of the degree of immunity of the patient—that is to say, of his susceptibility to tuberculin—and is at the same time a guide to the determination of the appropriate dose, and so to the avoidance of troublesome reactions, systemic or focal. Treatment is thus directed from time to time by effects open to the eye of the physician. The evidence submitted by that distinguished observer in favour of the therapeutic value of tuberculin and of the efficacy of this method of introduction is convincing.

*Percutaneous (Author's Method).*—For some twelve years I have been making extensive observations on the effects of the exhibition of tuberculin by percutaneous as opposed to subcutaneous method. These observations have led to very interesting results in a number of directions. For the present I limit myself to a brief statement regarding a therapeutic method which the experience of these years has remarkably justified.

One of the first points to emerge in the course of these studies was that, when tuberculin in varying combinations was rubbed firmly into the skin of a tuberculous patient, it was freely absorbed. More observed that a local skin eruption followed the inunction of tuberculin mixed with lanolin, and recommended the procedure for diagnostic purposes. Petruschky has testified to the absorption through the unbroken skin of tuberculin exhibited in the form of a liniment which he used in treatment.

Observations on a great variety of subjects satisfied me that the obvious local eruption was in many cases associated with signs of focal reaction, and in much slighter degree with evidence of general reaction. The focal changes may be readily followed in cases of lupus and other superficial manifestations of tuberculosis, as also in glandular tuberculosis. It is likewise traceable in pulmonary and other visceral tuberculosis.

#### Results and Advantages of Percutaneous Method.

My therapeutic procedure is based on these facts. Tuberculin administered percutaneously by inunction is absorbed and exerts a specific influence on tuberculous processes wherever situated, analogous to those resulting from subcutaneous injection. The curative influence becomes speedily obvious. I have records of its successful use in a great variety of tuberculous manifestations.

Assuming its therapeutic value, the method has numerous advantages over the other methods of exhibition. Something may be said for the absence of pain or discomfort. The procedure is not an operation in the mind of the patient. This has significance in all cases, but especially in children—the dread of the recurring puncture is excluded. The local (skin) reaction, while generally definite enough, causes little if any discomfort. The cutaneous response seems to afford in some degree a gauge of the susceptibility of the patient. In this way dosage may be regulated in respect of amount and frequency.

In simpler cases, with a few definite instructions from the physician, the method may be carried out to some extent by an intelligent nurse or parent, or, it may be, by the patient himself. In pulmonary and other visceral tuberculosis, greater caution is, of course, necessary, and procedure, dosage, etc., will be guided by observation of focal and systemic effects, in addition to those occurring on the skin surface. This necessitates careful surveillance on the part of the medical attendant.

The curative influence on superficial tuberculous foci (cutaneous, glandular, etc.) is commonly apparent within a few weeks and is as a rule continuous. Thus, for example, a crude agglomeration of enlarged glands becomes progressively reduced in size, the indefinite mass is resolved into individual discrete glands, each of which tends to get smaller and smaller until finally reduced to a mere fibrous remnant. These slowly remains may be felt for a long time. The process of recovery by cicatrization may similarly be followed in scrofuloderma and lupus. In the latter the advance of the curative process is, as might be expected, relatively slow. A similar retrogressive influence may commonly be traced in visceral tuberculosis.

#### Anticipative Detuberculization.

I have alluded to the advantage which the percutaneous method has in the case of children in respect of ease of administration. Its continued use in children leads to much more significant results. When the treatment (instituted, it may be, for an enlarged gland) is maintained for months—that is, long after the gland for which it was begun seems to

have recovered—there may be frequently traced evidence of a more general influence on enlarged lymphatic glands throughout the body, associated with a general improvement of health and condition, which is justly interpreted as an expression of progressive detuberculization. Our records include many children in whom such detuberculization has been effectually achieved. The remarkable progress from week to week compels attention.

I strongly advise the adoption of this line of treatment on the earliest indication of chronic glandular enlargement in children. In this way the process of tuberculization—so frequent in children—may be successfully countered at a time when the advancing infection is limited to the lymphatic system. By an arrest at that stage the graver incidents due to involvement of viscera are anticipated and prevented. Such a curative and preventive course of treatment may be suitably maintained for months without any disturbance of the child's ordinary life. The exhibition of tuberculin by inunction has the advantage that in most cases it interferes little with the life and occupation of the patient.

#### Formulae for Percutaneous Administration.

In developing the percutaneous method I have made very prolonged observations with various tuberculins in varying excipients. On the whole I am inclined to recommend the use of either Koch's original tuberculin or Béraneck's tuberculin. Both commonly effect a satisfactory surface response. Either tuberculin is used in varying strength from 10 per cent. up to 50 per cent. As excipient I prefer "eucerin"—that is, a mixture of 5 parts of oxycholesterine from wool fat and 95 parts of paraffin ointment. Eucalyptol in small quantities may be added for conservation of the ointment as in the following formula:

R. Tuberculin (Orig. K.) ...	...	...	10-50 per cent.
Eucalyptol ...	...	...	5 per cent.
Eucerin ...	...	...	ad 100.

Misce bene.

Sig.: Tuberculin ointment, with caution.

For simple cases treatment may conveniently be begun with 25 per cent. tuberculin. In young subjects, or where there is doubt as to the number and extent of foci involved, it is well to commence with 10 per cent. When the response to the lower dosage is slight, the proportion of the tuberculin is increased. In all cases attention must be paid not only to the local response but also to the focal and systemic effects.

The actual amount of tuberculin applied to the skin in a straightforward case (using, say, 25 per cent. dilution) may be estimated as approximately 0.1 c.cm. The ointment containing this is rubbed (worked) into the cleansed skin over an area of 1 to 2 square inches by means of a small sterilized glass rod. As already indicated, the inunction may be suitably repeated—in the absence of contraindication—once weekly. Where the response is slight the applications may be made at shorter intervals.

#### CONCLUSION.

It is an essential postulate for effective approach to the treatment of tuberculosis that we have in view the significance and potential of tuberculous infection in the life history of the infected individual. The possible resultants from infection are extremely various both in kind and in degree. Granted that a child has become infected, the variety of expression of such tuberculization is illimitable; from slighter manifestations hardly registrable, to one or other of the graver forms which may lead to crippling or death—and this at any point throughout life, short or long as that may be.

In order to meet the width and gravity of the issue, the aim of therapeutic procedure must be radical—that is, directed, not, as unfortunately much of the interference presently countenanced is, towards a mere incident of the disease, but towards the ultimate, essential cause of the spreading infection.

If the validity of any method of detuberculization be established it is clear that the earlier in the life history of the infected individual it is adopted, the speedier and completer will be the effect achieved. It is because extensive observations on a great variety of clinical conditions and at different ages have convinced me that the method proposed has effective value, not only in limitation of local effects but in the direction of general detuberculization, that I solicit for it your consideration and a patient trial. "Lightning" results are precluded by the nature of the process. It behoves us to remember that if it takes long to come, tuberculosis, at the best, takes long to go.



## An Address

ON

## CARDIAC PROBLEMS IN ADOLESCENT LIFE.

DELIVERED TO THE BUCKINGHAMSHIRE DIVISION OF THE  
BRITISH MEDICAL ASSOCIATION

BY

G. A. SUTHERLAND, M.D., F.R.C.P.,

PHYSICIAN TO THE PADDINGTON GREEN CHILDREN'S HOSPITAL;  
CONSULTING PHYSICIAN, HAMPSHIRE GENERAL HOSPITAL.

The problems in connexion with disease and disturbance of the heart vary to some extent with the period of life. During childhood and youth we find the foundation laid of organic heart disease, which in many cases causes no inconvenience to the patient until later on in life. On the other hand, the disease may have been so severe in childhood, especially in cases untreated, that the whole adolescent life is seriously crippled. Advancing years bring their degenerative changes, cardiac and vascular, of which not a trace is present in early life. Acute illnesses in the young are not accompanied by those serious cardiac complications which so often lead to cardiac failure in later life. The problems which I bring before you to-day are largely the ones which have confronted me in my ordinary work and which I had to try first to understand and then to solve. You will find that the ordinary textbooks rather leave you in the air as regards these problems because it is not their function to deal with the actual experiences of medical life and work. I propose, then, to give some hints as to how to approach these problems of cardiac disturbance and cardiac disease, so as to enable you to deal with the prognosis and treatment of the individual cases you are called on to deal with in practice.

## 1. CONGENITAL HEART DISEASE.

I do not refer here to cases which have been recognized early and watched through infancy and childhood, but to the unexpected discovery of a cardiac lesion, usually through the presence of a cardiac murmur. The boy or girl may be quite well and happy, the parents may have had no cause to suspect hidden trouble, but the doctor is often pained and puzzled and anxious as to what he ought to do. The murmur is often loud—in fact some of the loudest murmurs are found in connexion with congenital lesions. It is usually systolic in time, loudest at the base of the heart or at the left side of the sternum, and often quite audible in the back. On a systolic murmur alone it is not wise to make a diagnosis of the exact lesion—nor is it necessary. If a double murmur is heard at the base, running through systole and diastole—the so-called mill-wheel murmur—one can with confidence diagnose a patent ductus arteriosus. This is sometimes taken to be the double murmur of aortic disease—obstruction and regurgitation—but to anyone who is familiar with the characteristic sound of an aortic regurgitant murmur the difference ought to be manifest. The changes in the heart and in the circulation which follow from a double aortic lesion are quite different from those in a patent ductus arteriosus case.

We return to our patient with the evidence of a congenital heart lesion and his puzzled doctor. The first comforting fact is that if the boy has reached the age of 12 or 15 years, the congenital lesion cannot have been very severe, for if it had the boy would have died in early life. The mortality associated with congenital heart disease is very high during the first five years of life, either from cardiac failure or defective circulation. So that the fact that the patient has passed through childhood successfully is a hopeful sign.

The doctor will next make a general survey of his patient from the point of view of his physique and development. If he finds that the boy has grown normally and has the development suitable to his years, he may also be reassured as to the degree of congenital defect. It may be laid down as a general law that if any vital organ has had its functional capacity impaired from the time of birth there will follow a corresponding defect in the normal general development of the body. This condition, known as infantilism or dwarfism, is seen as the result of congenital disease (with impaired function) of the liver, the intestines, the pancreas, the kidneys, the lungs, and the heart. Hence if we find our young patient normally developed, we have an indication not to form a gloomy prognosis.

Another question to be settled is, What sort of life has the patient been able to lead? Has he led the ordinary life of childhood, or has he been unable to engage in the games and exercises of his companions? If the parents are unaware of any disability, or if the boy has been leading an ordinary life, then we have most important evidence as to the small significance of the congenital lesion. You may count as of no importance the presence of a murmur, however loud it may be, if the boy holds his own at cricket and football. If there has been no disability of the heart from the functional point of view, you will probably find no evidence of dilatation or hypertrophy in the ventricles, or any physical change in the heart other than the murmur.

On the other hand, there may have been noticed a certain limitation in the patient's ability to undergo any active or prolonged exertion within the normal powers of his years. In such a case you will probably find some change in the size of the heart, usually in the shape of hypertrophy of the right ventricle, sometimes of both ventricles. When there is a difficulty in supplying oxygen in sufficient amount to the tissues as the result of a congenital lesion there will be some compensatory change in the heart, manifested as hypertrophy, or in the blood, manifested as polycythaemia. When the compensation is complete, as sometimes happens, there will probably be no symptoms of functional disability. When the compensation is not quite complete, as more commonly happens, there will be a corresponding limitation of the patient's powers owing to functional inefficiency of the heart.

If these views be accepted the indications as to the lines of treatment will be clear. The boy who has no symptoms and who has been leading an ordinary life will be allowed and encouraged to continue doing so. The boy who has found certain limitations to the amount of exercise he can take and strain he can undergo will be advised to keep well within those limits. More especially are competitive struggles with healthy boys to be discouraged. His life race must be run at a slower pace and with a certain time allowance. Record breaking is not for him. If we are guided by the symptomatology in these cases our treatment will probably be much more beneficial to the patient than if we concentrate on the problems presented by the cardiac murmurs.

## 2. THE ASTHENIC HEART.

I have applied the term "asthenic heart" to a very common condition in adolescence. It is not a disease, but a developmental form of general asthenia which may manifest itself by symptoms ascribed to a weak heart.

My typical example of this condition is that of a boy or girl for whom medical advice is sought because of fainting, or palpitation, or temporary loss of consciousness, or sudden changes in colour—turning white or flushing suddenly—or pain about the precordial region. Alarm has been caused by the presence of one or more of these symptoms, and the home diagnosis has been some form of heart trouble.

Now we have here a serious problem—to say whether a heart is sound or not. All of us can detect well marked disease of the heart with great ease, but when it comes to the decision as to the absence of any disease the problem is much more difficult. One fact may be kept in mind here—that while in advanced life we often find symptoms of organic disease without marked physical changes in the heart, during adolescence we are not likely to meet with serious heart disease which is not evidenced by clearly defined physical changes in the heart. Before dealing with the examination of our patient's heart let us consider the symptoms which have excited alarm.

In adolescent life organic heart disease may or may not be accompanied by symptoms. The symptoms when present are usually definite and traceable to the heart. In patients who are going about they are—shortness of breath on exertion, a disinclination to make the exertions which are a pleasure to healthy companions of their own age, and a feeling of tiredness after moderate exertion. These symptoms are quite compatible with heart disease, and to the medical mind they suggest it. You will note, however, that our type patient here has not been brought because of these symptoms. Faintness and fainting, loss of consciousness, sudden changes of colour, and chest pains—these are not suggestive of organic disease in young people who have been leading an ordinary life. I go farther and say that so far as my own experience goes a history of one or more of these symptoms is *prima facie* evidence that the boy has not heart disease. You are all familiar with the type of boy or girl who faints at school when standing up. The vasomotor tone is low and the cardiac



tonus is not fully developed. This is the type of case we are dealing with, and the other symptoms are to be similarly explained. So that in dealing with symptoms which have caused alarm in the family circle and led to a diagnosis of heart disease do not be misled, but consider carefully whether the symptoms are really cardiac and whether they cannot be explained as having another origin.

The patient's heart must be examined, and here it must be admitted difficulties often arise and differences of opinion appear. There are certain changes in the heart which some will pronounce to be pathological and which others—including myself—will declare to be within physiological limits. The common changes noted are: (1) an increase of the heart rate; (2) an irregular action of the heart; (3) the presence of dilatation, usually of the left ventricle; (4) the presence of a systolic murmur at the apex.

(1) *Increased Frequency of the Heart Rate.*—While no one will be alarmed by an increase of rate up to 100 beats a minute, when one finds a rate of 120, or 140, or even 160, as I have found it, there is apt to be suspicion as to serious disease. The rapid heart in those cases is, however, the result of nervous disturbance and instability. The owner of the heart which runs off at the rate of 140 will show other evidences of nervous instability, more especially on the sympathetic and emotional side. Endocrinologists would no doubt supply information as to the exact hormone which is wanting or is in excess. You will find that the heart rate varies much from time to time, but when the patient is asleep it is always normal. This does not happen in hearts which are toxic or suffering from active organic disease.

(2) *Irregular Action of the Heart.*—A sinus irregularity of the heart, if the action is slow, is very common and is dependent on respiration. Extra-systoles may occur at times. When there is a combination of these two irregularities—a compound irregularity, as I have called it—the result is rather puzzling to one unaccustomed to the irregularity. It should always be kept in mind that the serious irregularities of the heart beat, such as those associated with auricular fibrillation, auricular flutter, heart-block, etc., are extremely rare during adolescence. On the other hand, the above forms are quite common and can usually be recognized by making the patient hold his breath. During the period of breath-holding the sinus irregularity will disappear entirely, and the extra-systoles will present their characteristic features, which are easily recognized. It may be stated definitely that neither of these irregularities is of any significance or importance, as they occur quite commonly in the absence of any organic disease of the heart.

(3) *Dilatation.*—If a medical man believes that the youthful heart must lie in a certain position and within the prescribed geographical limitations of the textbooks, he will find pathological dilatation common in these patients. Having found it on one occasion he will probably order some months' rest in bed—irrespective of the fact that a little exercise would probably have brought it within his normal standards. If, on the other hand, he recognizes—as is the case—that the youthful heart lies in many different positions, and that the apex is a very variable point, he will not be much concerned at finding the apex beat in the fourth intercostal space and half an inch outside the nipple line. He will examine the patient standing up and lying down; after rest and after exercise; and he will note many changes in the shape of the heart. In the type of case we are dealing with there is no doubt that these physiological variations are strongly marked. The displacement of the apex outwards and to the left is often very striking. Equally striking is the way it may come in again as the result of any strain thrown on the heart, such as a smart run or drawing deep breaths. I cannot help thinking that in such patients full inflation of the lungs has a striking effect in bringing the heart back to "normal" limits. If, on the other hand, one is dealing with dilatation due to organic heart disease, it will be found that the position of the apex does not change in the same way as the result of exercise or full respirations.

(4) *The Presence of a Systolic Murmur.*—A soft systolic murmur is often audible at the apex and may give rise to unwarranted suspicions of heart disease. In this connexion it is well to bear in mind that a slight degree of mitral regurgitation is never the cause of cardiac symptoms in a young person. The murmur, like the dilatation, is subject to great variation from time to time, and under changing conditions of rest and exercise. Both are probably dependent on the atonic condition of the heart. The ventricles are not contracting and the valves are not closing with their usual

smartness and efficiency. Hence at times a slight reflux takes place through the mitral valve, and a systolic murmur becomes audible. The important point is that we have no clear evidence here of valvular disease, and systolic murmurs at the apex, apart from definite valvular disease, may be safely ignored in the case of young people.

We have thus failed to find any convincing evidence of the presence of serious heart lesion. At most we have made out signs of cardiac flabbiness and instability—a very different condition from organic disease. If we extend our examination to the rest of the circulatory system we shall probably discover evidences of a lowered vasomotor tone. The extremities are often cold and dusky, and chilblains are commonly present in the winter months. The pulse is soft and weak and of low tension. If we feel it at the wrist with the arm pendent it may appear to be fairly good, but if the hand be raised above the head the pulse falls away or disappears entirely. This is in marked contrast to the pulse in a healthy youth, which maintains its good tone in any position and irrespective of gravity. Functional or postural albuminuria is often present as the result of vasomotor instability.

If we extend our examination of these patients still farther we shall find that it is not only the heart and blood vessels which are asthenic, but that other muscles in the body are lacking in tone. The stomach and intestines are atonic. Splashing is often elicited in the stomach many hours after a meal, due to atonic dilatation. The muscles of the abdominal wall are flabby and atonic. So general are these evidences of muscular weakness that we are led to assume a nervous cause rather than a purely muscular condition. There is as the basis of the varied symptomatology an underlying state of nervous instability and immaturity. Whether time will show that this is also traceable to some endocrine defect or not I cannot say definitely—it is quite possible. But there is no doubt, from the period of life at which the symptoms show themselves, that the condition is largely a developmental one, tending to come on at the age of puberty and to pass off when the patient has reached adult development. In some cases it does not pass off, and if the subject has joined up and been accepted for the army, after a period of strain he will be discharged as suffering from "soldier's heart."

As regards treatment, if the symptoms complained of are not cardiac in origin, and if signs of organic disease of the heart are absent, do not acquire the reputation of being a careful doctor at the expense of the patient's future—by treating him as suffering from a weak heart. If you accept the views given above you will agree that the very worst policy to pursue is to make invalids of these subjects by guarding and treating their hearts. Such a policy has in the past cut short many a promising career. Patients of this type are to be encouraged to lead an active open-air life, and their ordinary routine is only to be regulated so far as to protect the underdeveloped powers from undue stress and strain.

### 3. THE ATHLETIC HEART.

A somewhat allied condition is described and known as an "athletic heart." After some more than usually severe game or other exertion a boy has fainted or complained of severe precordial pain. He is said to be suffering from a strained heart. Now I do not wish to deny the possibility of the heart of a healthy boy being strained as the result of exercise, but I do say that I have never met with a case. I have met with many cases in which the heart was said to have been strained, but in all cases some other explanation presented itself. In some cases a damaged heart was present, the result of organic disease, which had been latent as regards symptoms until a breakdown occurred. I recall the case of a young miner who was said to have injured his heart as the result of lifting a heavy piece of coal. He became breathless and suffered from palpitation, and the doctor who examined him found that he had strained his heart. He drew full compensation for this for twelve months, at the end of which time I saw him. There was well marked mitral stenosis with hypertrophy of the right ventricle. By no stretch of imagination can mitral stenosis be induced by physical strain. This young fellow had certainly had rheumatic valvulitis some ten years previously, with the gradual development of stenosis in the mitral valve, but with compensation fully maintained until a severe muscular effort broke it down. This is one type of the so-called strained heart to be met with. In other cases so described I have failed to find any evidence of injury or strain. The diagnosis has been made either on the symptoms described in the last section—



palpitation, faintness, etc.—or in some slight deviation from normal on examination of the heart; such as dilatation; rapid action, etc. Perhaps it is dilatation of the heart that crops up most frequently as the result of this so-called heart strain. Now dilatation of the heart is an evidence not of strength but of weakness. It is never found to occur without some definite cause, such as organic heart disease or severe general illness. But heart strain is said to occur when neither of these conditions is present—in a presumably healthy lad undergoing the ordinary exercises suitable to his age. If you can imagine the Oxford and Cambridge boat crews being set to compete against each other twice a day for weeks on end, you might find that cases of dilatation from cardiac debility appeared. But no one would think of suggesting such a strain—one race a year suffices. In the case of schoolboys, a competition may lead to one entrant falling out exhausted before the race is finished, but he does not strain his heart. Why? Because the heart is very well able to protect itself, makes its own adjustments under conditions of physical stress, and when it has had enough produces in its owner sensations of breathlessness, precordial pain, or exhaustion, which make him pull up. I do not deny the possibility of a healthy youth producing a condition of injurious strain in his own heart, but I think all the chances are very much against it, and I have not so far met with a case. Consequently I do not find that the problems of a strained heart in youth are very difficult of solution.

#### 4. ORGANIC HEART DISEASE.

It was suggested to me that I might give you an address to-day on cardiac murmurs. Heaven forbid! I hope that none of you has to mourn over years misspent in the unprofitable study of cardiac murmurs, as I have. Who was it who gave the death blow to this futile pursuit? It was James Mackenzie, a general practitioner in Burnley, who evolved the real methods of cardiac examination, discovered many hidden secrets of the cardiac mechanism, and pointed out the lines of further and progressive investigation. Mackenzie has always held that murmurs have to be considered in any examination of the heart, but he has also shown that they do not hold that position of importance which had been accorded them.

For practical purposes we may divide murmurs into two classes: first, those that count, and secondly, those that do not count. This applies very well to the adolescent period of life.

By the term "murmurs which count" I mean those that are indicative of serious valvular disease, and most commonly of lesions which lead to progressive cardiac change and cardiac disability. The murmur in itself is nothing. The questions it raises—Has the underlying lesion produced any changes in the heart? and Are those changes serious and likely to be progressive?—are everything. A murmur is a clue which has to be followed up, if it bears evidence on the face of it that there is something behind. The two chief murmurs falling into this category are the presystolic murmur of mitral stenosis and the diastolic murmur of aortic regurgitation. They claim notice because of their frequency and their importance. During adolescence a presystolic murmur tends to alter and become louder because the initial lesion of childhood, mitral valvulitis, has induced a progressive narrowing of the mitral valve. As the youth grows, the heart should also increase in size, and the mitral valve should become larger. But the process of stenosis which has begun prevents this enlargement of the mitral opening, and thus the work of the right heart is increased. The diastolic murmur of aortic regurgitation is quite common, much commoner than is usually stated and believed. This is because it is easily overlooked unless one is always on the watch for it. Either of these murmurs may be present at this age without any symptoms—that is to say, the patient may be leading an ordinary life and unconscious of any cardiac disability. This is all to the good, but a careful examination of the heart for secondary changes is none the less necessary. It is on the symptoms present and on the secondary changes in the heart that our immediate prognosis and treatment are based, and not on the mere presence of the murmur. These, then, are the two chief murmurs which count. Expressed in other words, it may be said that it is the murmurs which are diastolic in time that count. Compared with these two in frequency, the other murmurs which are of importance, such as an aortic systolic murmur, are so rare as not to call for consideration here.

By the term "murmurs that do not count" I mean the systolic murmurs common at the apex and the base, often

suggestive of mitral incompetence or of a lesion of the pulmonary valve; often soft and indeterminate as to whether they are produced inside or outside the heart; and often puzzling as to whether they signify anything or nothing. That is why I call them murmurs that do not count. They are not worth worrying about. However exact the diagnosis, one learns nothing from the murmur as to prognosis, which will be decided by the presence or absence of other changes about the heart, indicative of a valvular lesion.

In the solution of our cardiac problems I think one simple method of examination is too much neglected—namely, palpation. At the age we are considering it is much more applicable than in later years when fat breasts and thick chests make precordial palpation of little use. In adolescents we can make out the cardiac boundaries by palpation and percussion with great accuracy and we can determine definitely the presence of two most important conditions—namely, dilatation and hypertrophy. Personally I learn much more about the condition of the heart from palpation than I do from auscultation. By auscultation one learns what noise a valvular lesion is producing; by palpation one learns what effect the lesion is producing on the heart. Some doctors, beginning with auscultation, receive such a shock on hearing a murmur that they make no further examination. Let me illustrate my point.

A young patient was found to have a heaving apex beat, outside the nipple line, and indicative of hypertrophied action. There was no murmur audible and no evidence of heart disease apart from the hypertrophy of the left ventricle. The radial artery was hard and thickened, and the blood pressure was 160 mm. The urine was of low specific gravity and polyuria was present. Further examination showed the presence of bilateral cystic kidneys, which explained the vascular changes, and the ventricular hypertrophy noted on palpation.

A child suffered from a succession of attacks of precordial pain, cyanosis, rapid heart action, and collapse. These attacks were looked on as cardiac in origin, but on routine examination nothing abnormal was detected. There was a soft systolic murmur audible at the apex and the base but no evidence of valvular disease. Careful palpation showed an area of pulsation at the base of the heart, strong and suggestive of aneurysm, and on percussion the basal dullness was found to extend up to the clavicle. A diagnosis of aneurysm was made—there seemed no other possible diagnosis—and at the autopsy a large aneurysm of the pulmonary artery was found.

Palpation does not always settle cardiac problems, but it may do good in raising them. For instance, suppose that on palpation a definitely hypertrophied action of the left ventricle, with extension outwards of the apex, is felt. It is clearly our duty to search for some cause in the heart or in the circulation for this hypertrophy. If on auscultation a murmur, systolic in time, is heard at the apex, some are content to accept this as a sufficient explanation and to label the case one of mitral incompetence. This may be correct in some cases, but in my experience it is not common in the case of these young people to find mitral regurgitation leading to great hypertrophy of the left ventricle. Before accepting this as a complete explanation I would ask you to examine carefully for two other cardiac lesions. They will not probably both be present, but one or other will serve as a sufficient explanation. The one is aortic regurgitation, manifested by a diastolic murmur, heard either at the apex or along the left side of the sternum. The other is pericardial adhesions, usually between the pericardium and the chest wall, and tying down the ventricle to such an extent that it can only carry on the circulation by hypertrophy and dilatation. Either of those conditions will produce an amount of hypertrophy which is seldom met with in pure mitral regurgitation at this age, and one or other of them is usually present in such cases, although very easily overlooked. In the same way when we find enlargement and pulsation well to the right of the sternum, we must try to find some lesion which will explain this abnormality. It may be the result of mitral regurgitation but it usually is not. The commonest causes here are mitral stenosis or pulmonary stenosis, which should be carefully looked for. You will find that auscultation and palpation are mutually helpful—auscultation in that it leads one to seek for changes in the heart which result from the lesions which produce murmurs; and palpation in that it shows changes in the heart which lead one to seek out the lesions causing them.

#### TREATMENT.

The treatment of heart disease during adolescence has certain problems of its own. Perhaps the chief is the prevention of further rheumatic infection. Acquired and chronic



heart disease in early life is the result of acute rheumatic infection—for all practical purposes other causes may be left out. The danger of fresh infection or the recrudescence of latent infection persists as a real one all through adolescence. Sometimes this will take the form of an acute flare-up—acute rheumatic fever; in other cases it will be manifested by slight pains in joints or tendons or muscles, symptoms which do not incapacitate the patient but are unfortunately often accompanied by fresh endocardial and myocardial inflammation. Consequently my own practice is to treat those patients all through adolescent life with sodium salicylate. This need not be given continuously, but for a week or ten days in every month the patient should take from 40 to 60 grains of sodium salicylate daily. This is the best preventive treatment of further infection which I know.

Those patients who have a cardiac lesion but who present no symptoms under the ordinary routine of life had better be left alone so far as any heart treatment is concerned. In giving advice about their future life and work one will naturally select some occupation which does not involve great physical strain.

Those patients who have a cardiac lesion and who find that any extra exertion induces symptoms such as breathlessness had better be advised to observe their own limitations. Games and exercises should be regulated so as not to tire out the patient or produce cyanosis and breathlessness. In selecting a suitable occupation for their adult life it will probably be best for them to take up work of a sedentary nature so that the exercise they take may be independent of their work and not part and parcel of it.

Those patients who have a cardiac lesion accompanied by breathlessness and distress on any exertion do not require to be specially restricted. Nature will teach them to go slow and not to do themselves harm. They have permanently damaged and disabled hearts.

During adolescent life there is less call for direct treatment of the heart than either before or after. This is fortunate, for it spares me the trouble of going into the nature of efficient and direct cardiac treatment. I am afraid I should only have exposed my own want of knowledge of the whole subject of cardiac tonics and my utter scepticism as regards most of them. No one has yet discovered a tonic which will improve the action of a heart which has hypertrophied in order to overcome some permanent difficulty. No one has yet discovered a tonic which will restore that heart when once the muscular power has given out. The more one studies the action of the heart in health and in disease the more one is struck by its wonderful power in accommodating itself to meet the ever-varying calls of the circulation, and in overcoming the difficulties and new problems introduced as the result of disease. Of all the self-regulating mechanisms in the human economy there is none which surpasses the heart in the power of meeting difficulties in health and developing compensatory changes in disease. These inherent powers of producing compensatory changes in the heart, largely through hypertrophy of the cardiac muscle, are specially manifested during adolescence and are not to be relied on to the same extent in adult life.

We can ease the work of a diseased and labouring heart by giving it partial rest. We can remove all physical strain by keeping the patient in bed. We can cut off the sources of nervous disturbance in the brain by sedatives and narcotics. We can deal to some extent with difficulties in the circulation owing to the engorgement of other organs or the presence of oedema and effusion. These things are possible, but when it comes to be a question of direct action on the heart, treatment directed to improve the action of a failing heart, we are apt to discover our therapeutic helplessness.

Yet there is one condition in which the heart is disturbed and its action is impaired, not through the valvular lesion and not through myocardial exhaustion primarily, but as the result of an abnormally rapid rate. The cardiac force, as regards its pumping function, may be sufficient and the compensatory changes may be in working order, but the heart muscle shows signs of failure owing to the rapid rate present. If the heart rate is much increased the resting time of diastole is curtailed, and in the course of time exhaustion of the heart muscle follows. Many rheumatic hearts become disturbed at times during adolescence by the development of this rapid rate, which may be a regular action with a normal rhythm or an irregular action with an abnormal rhythm. In both of these cases it is the rapidity of the heart which is causing the trouble and which is calling for treatment. Under these

conditions we can employ digitalis with great confidence, giving full doses for a few days, and we shall often find that when the heart is slowed the patient is much relieved as regards all the signs and symptoms of cardiac failure. I do not say that digitalis will act in all cases. Unfortunately it will not, and we cannot at present tell why it slows the heart in some cases while in others it fails to do so. But it remains as our great sheet-anchor in cases of cardiac failure associated with a rapid action of the ventricles.

## Hunterian Lectures

ON

## MAN'S POSTURE: ITS EVOLUTION AND DISORDERS.

GIVEN AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

BY

PROFESSOR SIR ARTHUR KEITH, F.R.C.S., F.R.S.,  
CONSERVATOR OF THE MUSEUM.

[Abstracts.]

### LECTURE II.—THE EVOLUTION OF THE ORTHOGRADE SPINE.

THE human spine is a mechanism of the utmost complexity; between the sacrum and the skull are incorporated twenty-four vertebrae, each provided with three short levers—the spinous and transverse processes; each lever is furnished with, not a single muscle, but a group of them. As we pass from sacrum to skull we find the levers change in length, strength, shape, and direction. The muscles, too, which move and balance the levers alter in disposition and strength as we pass from vertebrae to vertebrae. The twelve dorsal vertebrae, besides their three short processes, are provided with very long and powerful levers—the ribs. The student is so apt to concentrate his attention on the respiratory action of the ribs that he forgets that they are the most powerful of the spinal levers. All the muscles attached to ribs—the intercostals, the rectus abdominis, and oblique muscles of the belly wall—are prime movers and balancers of the spine. Here, then, is a very complex team for Nature to drive along a straight evolutionary course. By what process or processes did she succeed in transforming the multitude of spinal levers and muscles, which serve the needs of a pronograde monkey, into the forms which answer to the needs of man? Such a transformation seems highly probable if we suppose that, in the course of its evolution, the human stock has passed through two intermediate stages: (1) a *hylobatian* stage, represented by the small orthograde apes—the gibbons; (2) a *troglodytian* stage, now represented by great anthropoids such as the gorilla or chimpanzee.

### THE SACRALIZATION OF BODY SEGMENTS.

With the evolution of the upright or orthograde spine there took place a shortening of the lumbar part of the spinal column, and my first effort will be to show you the means which Nature used to attain this end. In most pronograde monkeys, both of the old world and of the new, the three vertebrae\* which become modified in the course of development to form the sacrum are the twenty-seventh, twenty-eighth, and twenty-ninth of the spinal series; Professor Wingate Todd<sup>1</sup> has given reasons for believing that the twenty-seventh vertebra formed the first of the sacral series in the earliest mammals. If one examines a number of monkeys of the same species it will be found that in some the twenty-seventh vertebra, in place of being purely sacral in its characters, shows some admixture of lumbar traits; in others, the twenty-sixth vertebra shows signs of forsaking some of its lumbar traits and adopting the characters of the first sacral. There is a tendency in some for the process of sacralization to spread in a tailward direction; in others in a headward direction. In small orthograde apes, represented by the gibbons, sacralization has spread headwards, so that the twenty-sixth now forms the first of the sacral series. In this manner a lumbar vertebra has been added to the sacrum of gibbons, giving them four sacral vertebrae in place of the pronograde three, but reducing their lumbar

\* See a paper I contributed to the *Journal of Anatomy and Physiology*, 1902, vol. 37, p. 18.



vertebrae to six in place of seven—the primitive number. The incidence of sacralization amongst gibbons is much less stable than among pronograde monkeys. In fully 15 per cent. of animals the process has spread headwards, so that the twenty-fifth vertebra shows some or all of the characters of a first sacral; over 5 per cent. of animals show a tendency in an opposite or tailward direction. Amongst the great anthropoids the process of sacralization has spread still farther in a headward direction. In the majority of chimpanzees the twenty-fifth has become the first sacral, but amongst orangs—an anthropoid type in which the lower limbs have undergone retrograde changes—the twenty-fourth vertebra (fifth lumbar) forms the first of the sacral series. In man, as in the chimpanzee and gorilla, the twenty-fifth forms the first of the sacral series; but in man the formula<sup>2</sup> is more stable than among the large anthropoids. In a series of one hundred human skeletons it will be found that some three or four will show a headward sacralization, while six or eight will show a tailward movement. The evolution of the plantigrade posture has necessitated a lengthening of the loins in man—the tendency of sacralization in him seems to be in a tailward direction.

#### SHIFTING OF LIMB BUDS.

Now the developmental process which transforms a last lumbar into a first sacral vertebra is not one which works only on bones; all the elements which lie in the same segment of the embryonic body—nerve, muscle, and vessel—undergo a transmutation corresponding to that of the vertebra. With a headward sacralization there is also a forward movement of the sacral and lumbar plexuses, although the forward shift of the nerves lags slightly behind that of the vertebrae. In point of segmental origin the buds which form the lower limbs also move forwards; so also must the centres in the spinal cord which regulate the nerve mechanisms of the lower part of the body. We cannot conceive that the process of segmental differentiation which fashions the hinder body segments of ape and of man can be influenced by any intrinsic or extrinsic agent acting on the completely developed body. The evolutionary machinery which shapes new forms has to be sought for, not in the acquired habits of the living animal, as Lamarck supposed, but in the factors which control the development of embryonic tissues, and that evolutionary machinery works in such a way as to produce new functional possibilities.

#### TRANSMUTATION OF DORSAL AND OF CERVICAL SEGMENTS.

In fashioning the lumbar region of man and of the higher primates the process of transmutation has also been at work, but to a less extent, in the body segments at the upper or dorsal end of the lumbar series. In the majority of pronograde monkeys there are thirteen pairs of ribs; the last rib-bearing vertebra is the twentieth. With the evolution of the orthograde posture in the small anthropoids the twentieth vertebra was still the last rib-bearer. In the most generalized surviving member of the great anthropoid group—the chimpanzee—the twentieth vertebra is usually the last rib-bearer; in the gorilla it is often the twenty-first; while in the orang, although it is usual to find the last rib attached to the nineteenth vertebra, yet it is not uncommon to find the process of costalization ending at the eighteenth. If we take a hundred human skeletons we shall find about two in which the eighteenth vertebra is the bearer of the last rib, ninety in which it is the nineteenth, and eight in which it is the twentieth. There can be little doubt that man's immediate ancestry had thirteen pairs of ribs; in every human embryo a vestige of the thirteenth pair appears, which subsequently becomes fused with the adjoining transverse process. The diaphragm is attached to the transverse processes of the first lumbar vertebra, representing the origin from the thirteenth pair of ribs, which is to be seen in nearly all apes. A tendency to the transmutation of the last cervical into a first dorsal or a first dorsal into a last cervical is to be recognized both in man and apes. But in apes, as in men, it is much commoner to see the last cervical vertebra assuming dorsal characters than the first dorsal assuming cervical characters. The tendency of the dorso-cervical movement, which is slight, is in a headward direction. There is no reason to suppose that in the evolution of the higher primates there has been an intercalation of new segments at any point of the vertebral series; segments have been shed, but always it is the hindmost segments of the body which disappear.

#### WHY THE LOINS WERE SHORTENED.

What, then, is the functional significance of the shortening of the lumbar region which has taken place with the evolution of the orthograde posture? Why should this region be again elongated and strengthened when the human body became adapted to the plantigrade posture? In pronograde monkeys of the old world the lumbar part forms from 40 to 45 per cent. of the presacral spine; in small orthograde apes the lumbar region varies from 30 to 34 per cent. of the spine. I have already drawn attention to the fact that pronograde apes gain their forward impetus in leaping from their hind limbs; in the act of springing the thoracic part of their bodies is raised by extension of the loins; the lumbar part of their spine serves as a flexible lever for moving the upper part of their body on the fixed pelvic base. In the orthograde gibbon the lumbar region serves quite a different purpose. As the arms are the main organs of progression the lumbar part of the spine serves chiefly as a flexible lever for attaching the pelvis and lower limbs to the body; in its forward flight branches are seized by the feet for support and thus the weight of the body does come to rest temporarily on the lower limbs of the moving gibbon. Its lumbar spine serves alternately as a suspending and a supporting lever. The change from the pronograde to the orthograde posture was attended by a shortening of the lumbar region, brought about by the sacralization of the twenty-sixth body segment. There was at the same time an enormous saving in muscular expenditure. This will be evident when I lay the following observation, made on healthy jungle animals, before you. In a pronograde monkey I found that the muscles employed in extending the spine—the erector spinae group—weighed 93.5 grams, while in the orthograde gibbon, although the weight of its body was rather more than that of the monkey, the erector spinae group weighed only 44.2 grams—less than half the weight of the pronograde musculature.

#### THE LUMBAR CURVE.

With the evolution of the great anthropoid type the lumbar region of the spine became still shorter and stronger. In the chimpanzee the lumbar part, on an average, forms 27 per cent. of the presacral spine; in the orang only 24 per cent.; in the gorilla rather more—namely, 29 per cent. In none of the great anthropoids is the whole weight of the upper parts of their bodies transmitted through the lumbar region of the spine except momentarily. In its climbing movements the chimpanzee makes an equal use of its upper and lower limbs in supporting its weight; in the orangs the upper extremities are the predominant supporting—or rather suspending—organs for its natural arboreal progression; in gorillas the lower extremities are more specialized than the upper for purposes of support and movement. With the evolution of the human or plantigrade posture the lumbar region of the spine became further modified and strengthened to form a flexible lever on which the whole weight of the upper part of the body is poised. An easy and graceful carriage of the human body requires long loins. At birth the lumbar region measures 27 per cent. of the presacral spine—the same proportion as in the chimpanzee. Elongation takes place rapidly as a child learns to walk; in the average adult the lumbar region comes to form about 32 per cent. of the total length of the spine. Indeed, it is not too much to say that the spine of the human baby, as regards the proportions of its parts and its curvatures, is in an anthropoid or troglodytic phase of evolution. We have only to watch an infant trying to support its body erect when learning to walk to see reproduced the orthograde posture of a great anthropoid ape. The lower limbs are seen to be imperfectly extended, the body plainly inclines forwards, and the arms stretch out to clutch at neighbouring objects for support. In the second year of life, growth changes in the lumbar vertebrae make further extension of the body a permanent possibility; it is then that the loins elongate and the lumbar curve, seen only in the human species, makes its appearance.

#### ALTERATIONS IN THE MUSCULATURE.

When we compare the spinal musculature of a pronograde monkey with that of the various orthograde forms, including man, we are struck by the simple nature of the structural modifications which have served to adapt the pronograde system of muscles to orthograde purposes. Not a single new muscle has been introduced; everywhere we meet with the same series of vertebral levers and the same groups of muscles acting on them. The brunt of the evolutionary or



adaptational changes has fallen on the spinal musculature of the lumbar region. True it is that certain changes take place in the muscles which extend the dorsal part of the spine, but the moulding of the dorsal region has more to do with respiratory purposes than for the mere support of the body in an upright posture. The musculature of the cervical region also undergoes certain changes with the evolution of the orthograde forms, but the chief transformations seen in this region of the spine do not depend on postural adaptations, but on jaw and tooth development. The neck is the movable lever of the head; if there are massive jaws and great teeth then must the skull be widely hatted to a strong and thick neck. There is a growth mechanism which correlates the development of neck and jaws.

#### ESTABLISHMENT OF A PELVIC BASE.

We turn, then, to note the chief changes which have taken place in the spinal musculature of the loins of higher primates; they provide a series which lead from the condition seen in pronograde monkeys to that seen in orthograde, plantigrade man. As we pass along the series we note that the spinal musculature obtains an ever-increasing attachment to the sacrum and to the pelvis; the pelvis becomes more and more a fixed base from which the erector spinae may act. The steps which led up to the great pelvic base of man were the following: (1) With, or before, the assumption of the orthograde posture, the tail as a free external organ completely disappeared; in every member of the orthograde the tail vertebrae have become submerged and coccygealized. The disappearance of the extensors of the tail leaves the dorsal surface of the sacrum free for the use of the erectors of the spine. (2) The sacralization of the seventh and then of the sixth lumbar vertebra extends and strengthens the area for spinal fixation. (3) An enormous extension of the iliac crests, particularly in a dorsal direction, gives an increased base for fixation of spinal muscles. The dorsal extension of the iliac crests reaches its climax in the human pelvis. In the gibbon the ilium and its crest are shaped much as in monkeys; the transformation has become marked in the great anthropoids, the gorilla showing the nearest approach to man in the development of its iliac crests. (4) In man the area for muscular origin is also increased by the backward tilting of the sacrum, so that its dorsal surface in the erect position looks upwards as well as backwards.

#### SPONDYLOLISTHESIS.

This oblique, in many individuals almost horizontal, position of the human sacrum deserves our particular attention. Everyone must have observed how variable is the depth of the curvature of the loins; in some individuals the sacral aspect of the pelvis forms almost a horizontal shelf. In certain races, particularly negro and negroid, the loins are straight; the sacrum seems to almost continue the line of the lumbar spine; in other races, particularly in Europeans and more in women than in men, the sacrum forms almost a right angle to the lumbar spine. The spine, transmitting the weight of the suprapelvic part of the body, is poised on the anterior or basal end of the sacrum. The weight tends to tilt up the hinder or coccygeal end of the sacrum, and would do so were it not for (1) the form and strength of the sacro-iliac joints, (2) because the hinder end of the sacrum is bound to the ischial tuberosities by those particularly strong stays, the sacro-sciatic ligaments. There is also a tendency, when the sacrum is set obliquely, for the basal end of the spine to be dislocated forwards into the pelvis, giving rise to the condition known as *spondylolisthesis*. Such a dislocation is prevented by the articular processes of the last lumbar vertebrae being locked within those of the sacrum. A sudden jump, or severe effort to lift or carry a heavy weight, may cause the laminar arch of the last lumbar vertebra to snap and thus permit a forward displacement of the spine. I know of no evidence which leads me to suppose that the separation of the arch of the last lumbar vertebra is the result of maldevelopment.

#### ADAPTATIONS FOR LATERAL BALANCE.

We have been discussing the evolutionary changes seen in the sacrum and pelvis of apes and men—changes which were required to give a more extensive and firmer base from which the erector muscles could act. We note that the pelvic base becomes wider. The reason for this is quite clear. The spine of a pronograde monkey, if converted to serve the needs of the orthograde posture, will require special adaptations, not only for extension and flexion, but also for lateral movements

and balance. As the ribs are by far the most powerful lateral levers, it was by a modification of them, and of the muscles acting on them, that lateral balance in the orthograde posture was secured. The thorax was transformed in shape, not for respiratory but for postural purposes. Every costal arc is made up of three segments—a dorsal, to which the spinal muscles are attached; a lateral, which is acted on by the intercostals and oblique muscles of the belly wall; a ventral or anterior segment, to which the rectus abdominis is inserted. Every muscle attached to a rib is also a spinal balancer. With the evolution of the orthograde posture one notes that the dorsal segments of the ribs became increased in length, thus giving the spinal muscles a greater lateral purchase on the spine. Further, they became set farther back—more on the plane of the tips of the spinous processes—thus giving the muscles attached to the dorsal segments of the ribs a greater power in extending the spine and keeping it erect. Thus, in the orthograde types the bodies of the dorsal vertebrae have the appearance of being pushed farther within the cavity of the thorax than in pronograde types.

#### THE ORTHOGRADE ADAPTATIONS SEEN IN SPINAL MUSCLES.

In the course of a single lecture it is impossible to give a detailed account of all the changes which are seen to take place in the spinal musculature with the evolution of the orthograde posture. But I may cite one or two instances to illustrate the manner in which evolutionary changes are effected. The quadratus lumborum of man is a lateral balancer of the spine. It rises from the iliac crest and is attached to the transverse processes of the lumbar vertebrae and to the last rib; some of the fibres to the last rib rise from the transverse processes. The quadratus of the great anthropoid apes is similar in form and action to that of man. In pronograde apes this muscle forms a series of fasciculi acting on the transverse processes of the loins; the hindermost of these springs from the iliac crest; the most anterior end on the last one or two ribs. The fasciculi adjust the lumbar vertebrae by acting on their transverse levers. The quadratus of the gibbon is, as regards form and action, intermediate to the stages seen in monkeys and great anthropoids. Evolution has proceeded by combining a series of independent fasciculi, acting individually, to form a single muscle which acts on a region of the spine rather than on individual vertebrae.

The changes which came over the deepest layer of the spinal musculature—particularly in the muscle known in human anatomy as the multifidus spinae—were of a similar nature. In the great anthropoids we find the spinalis dorsi assuming the form seen in man. With the evolution of the orthograde posture not a single new muscle was introduced in the spinal series; yet all became modified, some to a slight extent and some to a great extent. But in all cases the machinery of evolution is the same; it consists of partial or complete migration of muscular attachments; a fusion or separation of fasciculi; under- or over-development of the various constituent parts of a muscle.

#### THE COMPLEXITY OF THE PHYSIOLOGICAL PROBLEM.

It is when we concentrate our attention, not on the anatomy but on the physiology of the spinal musculature that we realize the complexity of the problem implied by the evolution of the orthograde posture. In pronograde mammals, be they four-footed or four-handed, each vertebra has to be adjusted by muscular action so long as the animal sits, walks, or stands. In orthograde primates each vertebra has to be balanced on another, so long as the erect or semi-erect position is maintained. Their thick intervertebral discs make balance more delicate. A little sum in arithmetic will help us to understand what a living vertebral balance means. In the spine of the commoner kinds of monkeys there are twenty-six vertebrae; each is provided with three short levers; thirteen of them have in addition the long and powerful costal levers—104 levers all told. On an average four muscles act on each lever—416 muscles in all. From each of these muscles constant streams of impulses are passing into the nerve centres of the cord and equally constant streams are emerging to maintain the postural tone and actions of the muscles. Besides these streams of afferent and efferent impulses there are the equally extensive higher streams flowing to and from the postural centres of the mid-brain and the timing mechanisms in the cerebellum and bulb. The nerve centres of the spinal cord, mid-brain, and hind brain of a monkey are organized to carry out the reflexes necessary for a pronograde posture. It is habitual for monkeys of all kinds to assume a sitting or semi-erect posture when



resting; to maintain this attitude the nerve mechanisms must have in them a nucleus which may have been expanded into that elaborate mechanism which serves the needs of orthograde apes.

#### SCOLIOSIS.

In none of the orthograde forms is such a continuous and urgent demand made on the postural spinal mechanism as is the case in man. In man only is the whole weight of the suprasacral part of the body supported erect on the spine over long intervals. The demand on this neuro-muscular postural mechanism is, I think, even greater in the sitting than in the standing posture, particularly if we sit leaning forwards in writing and reading. Sitting bolt upright is particularly exhausting, more especially for young people in whom growth of vertebrae and of spinal muscles is proceeding apace. The muscles which act on the short levers of the spine yield first, while the muscles which act on the long costal levers can still keep on. We rest these exhausted short spinal muscles by allowing the vertebrae to rotate until the articular processes begin to lock and the transverse processes rest upon the necks of the long costal levers. Herein lies the beginning of lateral curvature or scoliosis. If the habit becomes fixed, then come the deformities of chest, vertebrae, and spine with which orthopaedic surgeons are only too familiar. It is not true, however, to say that our spines are not perfectly adapted to the upright posture; it would be more accurate to say that human spines were not evolved to withstand the monotonous and trying postures entailed by modern education and by many modern industries.

#### REFERENCES.

<sup>1</sup> T. Wingate Todd: *Anat. Record*, 1913, vol. 24, p. 251. <sup>2</sup> See Wingate Todd, loc. cit.; A. Keith: *Journ. of Anat.*, 1902, vol. 37, p. 18.

### The Goulstonian Lectures

ON

## THE NATURE OF ARTERIO-SCLEROSIS.

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS  
OF LONDON

BY

GEOFFREY EVANS, M.D. CANTAB., F.R.C.P. LOND.,  
ASSISTANT DIRECTOR, MEDICAL UNIT, AND ASSISTANT PHYSICIAN,  
ST. BARTHOLOMEW'S HOSPITAL.

### LECTURE II.—THE INTRINSIC PROCESS IN ARTERIO-SCLEROSIS.\*

THE histology and distribution of diffuse hyperplastic sclerosis formed the subject of the last lecture. The nature of the process concerned in the development of the lesion is the next aspect of its pathology to be considered. From a theoretical standpoint one or more of four cardinal processes are involved—namely, Involution, Growth, Inflammation, and Degeneration. The subject is a difficult one to present concisely, and if it is dealt with from an abstract point of view its presentation is liable to be either too dogmatic or ambiguous; hence I have chosen a chief advocate for each theory, and will discuss the theory on the basis of the argument and facts brought forward to support it.

#### PHYSIOLOGICAL PROCESSES.

##### (a) *The Process of Involution.*

Thoma's<sup>1</sup> view of arterio-sclerosis was based on the observation of the changes that take place in the aorta at birth on the interruption of the placental circulation. He observed an intimal thickening of the aorta between the origin of the ductus arteriosus and the origin of the umbilical arteries, due to cellular proliferation and new formation of connective tissue in the subendothelial layer, and, as Jores showed later, due also to the formation of elastic tissue in this layer. Thoma compared this change to the intimal thickening found in ligatured arteries and in the obliterated hypogastric arteries of infants, and he attributed it to a slowing of the blood stream. He applied this theory to the development of arterio-sclerosis. Thus, in the case of nodular sclerosis, he held that the intimal thickening was secondary to weakening of the media,

as a result of which bulging of the vessel wall occurred, with consequent slowing of the blood stream at the site of bulging. In the case of diffuse arterio-sclerosis not due to initial weakening of the media he presumed a destruction of capillary fields by disease, and argued that as a result of reduction in the size of the vascular bed a slowing of the blood stream occurred in the vessels supplying the affected area. The theory involves the assumption that an artery may fail to adapt its lumen to the amount of blood flowing through it by contraction of the media, and that the necessary narrowing of the lumen is completed by thickening of the intima.

It is generally agreed that as a basic explanation of the development of arterio-sclerosis Thoma's theory does not hold good. Thus, as Fuchs pointed out, there is no evidence of a failure on the part of the aorta to equalize by muscular contraction the size of its lumen to the decreased quantity of blood flowing through it after cessation of the placental circulation. Further, it is inconceivable that in a system such as the cardio-vascular, which adapts itself so rapidly to changes in the distribution and quantity of blood content, a single alteration in these conditions could be responsible for intimal thickening which gradually increases over a period of years. Thoma's premisses were also shown to be incorrect by the fact that the intimal changes in the aorta are not limited to the length of the vessel between the ductus arteriosus and the origin of the umbilical arteries. Jores raised objection to the theory on histological grounds; he emphasized the fact that the intimal thickening in involution is of the connective tissue or regenerative type, whereas in arterio-sclerosis it is of the hyperplastic type—a distinction based on the different form of elastic fibres in the two conditions. Marchand also attacked the theory on histological grounds, and pointed out the absence of fatty degeneration in arterial involution in contrast to its constant presence in arterio-sclerosis. The same fact has come to my notice in studying the changes that take place in involution of the ductus arteriosus and hypogastric arteries of infants. There seemed to be an exception to the rule that fatty degeneration does not occur in arterial involution in the reported presence of fatty degeneration in uterine arteries undergoing normal involution, but, as I have shown elsewhere,<sup>2</sup> the work which led to this opinion was based on the examination of pathological material, and the fatty change observed in the specimens examined was due to disease elsewhere and was not a part of the process of normal uterine involution.

Though Thoma's theory fails in providing a basic explanation of arterio-sclerosis, it probably holds good in so far as it includes the idea of replacement fibrosis. For instance, in the case of nodular sclerosis, if the primary lesion is in the intima Thoma's theory has no application, but if the initial lesion is in the media it may well be that the intimal proliferation occurring as a secondary event is compensatory. Thoma attempted to prove that the initial change was a weakening of the media by injecting arteries affected by nodular sclerosis with melted wax equivalent to the blood pressure during life, then allowing the wax to set and cutting sections of the artery. He claimed that the nodules disappeared and the lumen of the artery so distended had a normal cylindrical form. These experiments have been repeated by Klotz,<sup>3</sup> who used water instead of wax, and cut the vessel frozen; he failed to confirm Thoma's results. Thoma also attempted to demonstrate the primary weakening of the media by injection of the vasa vasorum of the larger vessels, and he showed that a greater penetration of the media by vasa vasorum occurred at certain points where there was no intimal thickening, and since this increase in vessels in the media was found in patches of nodular sclerosis he argued that the new formation of vessels showed a damage to the media as a primary event preceding the intimal proliferation. My own view of the matter is that Thoma's view of arterio-sclerosis holds good to the limited extent that it involves the idea of a replacement fibrosis. To this extent it is in keeping with the inflammatory theory of arterio-sclerosis, and it is of this further value—that it brings out the fact that degenerative changes are a primary event in one form at least of arterio-sclerosis. Yet even when the degenerative changes are primary it cannot be assumed that the intimal proliferation is necessarily of the nature of a replacement fibrosis, since the proliferation may be a direct response to the insult that is simultaneously responsible for the medial degeneration. Thus Thoma's theory is merely an adjunct to any basic explanation of the production of the lesion in arterio-sclerosis.

\* Abstract of lecture delivered on March 8th.



*(b) The Process of Growth.*

Jores's views on the production of arterio-sclerosis may be discussed in terms of the physiological process "growth." He finds the basic explanation of the lesion in arterio-sclerosis in the intimal changes that normally occur in the aorta in the process of growth, and he expresses the opinion that "an increased functional demand on the vessel wall is a necessary factor for the development of arterio-sclerosis." He also says: "The hypertrophy of certain layers of the vessel wall and their subsequent degeneration is the essential feature of arterio-sclerosis." A distinction is drawn between this process and the process of inflammation in these words:

"In direct contrast to the thesis already advanced I regard the connective tissue thickenings of the intima as secondary events, reactions and compensatory endeavours on the part of the vessel wall, which are on a par with the phenomena of repair after injury and defect, regeneration, and scar formation processes of inflammatory reaction."

He sums up with the words:

"The development of arterio-sclerosis does not depend on these; they arise from quite other causes and do not lead to true arterio-sclerosis."

Jores bases the distinction between the hyperplastic and fibrotic layers of the intima on a study of the changes in structure of the intima of the aorta during the natural process of its growth. In the aorta in the first year of life he describes a layer on the inner side of the media consisting of two lamellae of elastic tissue lying close together; cells of variable form, in the main elongated, lie between these two lamellae. Comparing this with the aorta at the age of 13 years the same layer is seen, and now wider; the two lamellae are stronger and between them lies a fine network of elastic fibrils, while the nuclei previously seen between the two elastic lamellae have, in the majority, an obvious morphological identity with muscle cells. This is the musculo-elastic layer. It increases in thickness with growth, and though there are variations in its development the variation is within narrower limits than is the variation in thickness of the rest of the intima. At the age of 20 years the musculo-elastic layer is increased both in the thickness of its lamellae and by the splitting off of two further layers of elastic tissue from the original inner lamella. The splitting off of elastic tissue layers from the original lamellae in the process of growth of the aorta is directly compared with the same process which Jores describes as occurring in the small arteries in arterio-sclerosis. It is in this comparison of the development of the musculo-elastic layer of the aorta with the development of new lamellae of elastic tissue in small arterio-sclerotic vessels and the parallel development of the changes in the two conditions, the one of growth and the other of disease, that Jores discovers the underlying process in arterio-sclerosis.

There is, however, a difficulty in maintaining the distinction between hyperplastic intimal thickening of arterio-sclerosis and the connective tissue or regenerative thickening in the intima that is found in inflammation of arteries—a difficulty which Jores himself appreciated. The two types of intimal thickening always occur together, except in normal growth of the aorta, and as a matter of fact Jores's hyperplastic layer is often found in pure inflammatory states. [Specimens of syphilitic and tuberculous endarteritis with well formed hyperplastic intimal thickening were shown.]

A more serious criticism of Jores's views is directed against his theory of the formation of elastic tissue. He suggests that the laminae of elastic tissue in the hyperplastic layer of arterio-sclerotic vessels develop by a process of swelling and splitting of the internal elastic lamina, as distinct from the process by which elastic fibres are formed in the connective tissue or regenerative layer of the intima. Since, however, elastic fibres have no nuclei, and presumably no independent activity, the idea that an elastic lamina can grow in thickness, split and throw out thread-like branches into neighbouring tissues, is contrary to the accepted canons of biology. The present view of the formation of elastic tissue is that it is laid down by connective tissue cells or by endothelium, and, like other intercellular material, it is living but inert. Little, however, is known of the conditions that govern its formation and form, and it is an interesting speculation to draw an analogy between the formation of concentric laminae of elastic tissue in the thickened intima of sclerotic vessels and the Liesegang phenomenon,<sup>5</sup> in which banded precipitates are formed in gelatin solutions. Bradford<sup>6</sup> has shown the fundamental rôle of adsorption in the formation of these stratified layers,

and though the physico-chemical factors concerned in their formation are not yet accurately known, the influence of the surface area of the precipitated salt, the concentration of the solute and solid, the reaction of the gel and other factors have been closely studied, and may ultimately throw light on the formation of elastic tissue in arterio-sclerosis. It is evident, therefore, that Jores's theory is based on a wrong principle, and I do not think that his observations provide evidence on the proposition that arterio-sclerosis is a result of an increased functional demand made on the vessel wall.

## INTRINSIC PATHOLOGICAL PROCESSES.

The two theories of arterio-sclerosis that are more directly based on the pathological processes of inflammation and degeneration remain for consideration. The latter will be taken first, since of the four theories of arterio-sclerosis it is the most generally accepted.

*(c) The Process of Degeneration.*

Marchand<sup>7</sup> is chosen to represent this theory, as he has so far made it his own as to suggest the word "athero-sclerosis" in place of "arterio-sclerosis." Thus he states that there can be no doubt that degeneration is the main feature of arterio-sclerosis. He finds that the degeneration begins (*simultaneously with proliferation of the intimal cells*) in the deeper layers of the intima; and that the occurrence of "primary" fatty or atheromatous degeneration is so closely associated with sclerotic processes that the term "arterio-sclerosis" is not sufficiently comprehensive for the whole disease. Thoma's theory of arterio-sclerosis postulated a weakening of the vessel wall with resulting loss in its elasticity and widening of its lumen as the initial fact that determined a slowing of the blood stream. He did not, however, accept the necessity of demonstrable pathological changes in the weakened media, and inclined to the view that the more obvious degenerative changes were secondary to those anatomical changes to which he attached most importance—namely, the involuntary changes previously discussed. Marchand controverts him on this matter, and says that Thoma attached too little importance to the essential degenerative character of the processes involved. The difficulty in fatty degeneration, which the difference in the opinions of Thoma and Marchand illustrates, is as to whether it is primary or secondary; whether in fact, as Virchow pointed out, its appearance is the first sign of disturbance of tissue structure, or whether it only comes after other evidence of disturbance is visible. Marchand's views are endorsed by Andrievs, who has written, under the title of "Arterial Degeneration," "there can be no doubt that the primary histological change is a degenerative one affecting the muscular and elastic tissues."

In the case of diffuse hyperplastic sclerosis the specimens I have shown demonstrate equally beyond doubt that the primary histological change in the arterioles is proliferative and not degenerative. The interpretation of the changes seen in the parent vessels of the arterioles will depend on the significance attached to hyaline substance in their walls. I have adopted the presence of fat as my criterion of degenerative change and do not regard the presence of hyaline substance in the inner layer of the intima in these vessels as critical evidence of degeneration (Lecture I), and in this interpretation I am, I think, supported by Jores. In addition to the reasons already given for this view, it is a striking fact that the anatomical changes progress to marked extent without the appearance of fatty degeneration—in fact, fat is characteristically absent in the intima of these vessels. Hence I maintain that the lesions of diffuse hyperplastic sclerosis are primarily proliferative, and at the same time they share with other forms of arterio-sclerosis the stigma of fatty degeneration in some part of the lesion. This degenerative change is, however, secondary.

These contradictory views as to the nature of the initial lesion of arterio-sclerosis depend on the type of artery and the form of arterio-sclerosis studied, and the stage in the disease process at which the observation is made. Thus, in the case of diffuse hyperplastic sclerosis, it is only by the demonstration of the endothelial proliferation in the earliest phase of the lesion that the priority of proliferation over degeneration has been established. Klotz, on the other hand, has identified a form of arterial lesion occurring in older subjects in which fatty degeneration of the media is the primary event. This type of arterial disease will be referred to later, and in the present connexion it illustrates the fact that all forms of chronic arterial disease do not start in the same way.



(d) *The Process of Inflammation.*

Virchow's opinion<sup>8</sup> is best stated in his own words:

"In this matter I have no hesitation in completely accepting the old view and in attributing the origin of the so-called atheromatous degeneration to an inflammation of the vessel wall, and I have taken pains to show that this kind of inflammatory disease of the vessel wall is in fact exactly the same as the condition of the heart wall commonly called endocarditis. There is no other difference between these two processes than that endocarditis more often runs an acute course, and endo-arteritis more often runs a chronic course."

This is the view of arterio-sclerosis to which my own observations have led me, with this reservation—that there is at any rate one form of chronic arterial disease that begins as a primary degeneration of the media.<sup>9</sup> I have no doubt that Virchow's theory holds good for diffuse hyperplastic sclerosis, and before resuming the evidence in support of this theory it is necessary to refer to two objections that have been urged against it.

In the first place it has been urged, particularly by Jores, that the histology of diffuse hyperplastic sclerosis is different from that of lesions which are without doubt inflammatory. The difficulty of this distinction has already been alluded to, and sections of arterial lesions that are without doubt inflammatory and in which the so-called hyperplastic layer is present have been shown. Neither is it possible to make a hard and fast distinction between arterial inflammation and arterio-sclerosis on the absence of fatty degeneration in the former and its presence in the latter, since fatty degeneration may occur at a later stage in these lesions. Warthin<sup>10</sup> has pointed out the difficulty of distinguishing between syphilis and arterio-sclerosis of the aorta, and says that in the later stages these lesions can only be differentiated by the specific lesion of syphilis that he describes. In short, the comparison of the lesion of diffuse hyperplastic sclerosis with tuberculous and syphilitic endarteritis both controverts Jores's distinction between the two forms of elastic tissue formation and at the same time provides additional evidence for the inflammatory nature of arterio-sclerosis.

In the second place, it has been urged against the inflammatory theory of arterio-sclerosis that the ordinary signs of inflammation are absent; in the early stages of the lesion there is no small cell infiltration and no dilatation of the vasa vasorum. The absence of these changes in the early phases of the lesion is the important matter: their appearance later is characteristic, and due to tissue reaction to products of degeneration and necrosis. Thus Bergel<sup>11</sup> has shown that lymphocytic infiltration results from the presence of fatty degeneration in any tissue, and among other illustrations of this fact he quotes the well known small cell infiltration in arterio-sclerosis. Sir Bernard Spilsbury has drawn my attention to polymorphonuclear infiltration provoked by tissue necrosis. In addition to infiltration with lymphocytes, polymorphonuclear cells, and fibroblasts, there is a permeation of the media and even of the thickened intima with capillaries and occasionally very small arteries in well marked arterio-sclerotic lesions. These inflammatory lesions are secondary, and throw no light on the nature of the initial process.

Many authors, including Virchow and Andrewes, have called attention to the fact that arteries are relatively avascular structures, and this fact is in part responsible for the absence of the usual signs of inflammation. Thus, according to Koelliker,<sup>12</sup> all the larger vessels from 1 mm. diameter and over possess nutrient vessels which are distributed predominantly in the adventitia, in which they form a rich round-meshed capillary network, and the general consensus of opinion agrees that the tunica media of only the larger arteries and veins possesses nutrient vessels, and that these are supplied only to its outer layers; in fact, the middle and inner layers of the media and the whole of the intima are avascular structures. Inflammation of the intima may, therefore, be compared with inflammation of the cornea. Seufftleben<sup>13</sup> showed that a minimal injury to the cornea causes local destruction of the corneal cells and the appearance of a surrounding zone in which the corneal cells appear enlarged, distinct, and tumefied. The process may continue and advance insensibly to repair without the intervention of leucocytes, the hypertrophying cells of the granular zone eventually undergoing karyokinesis, and thus by multiplication replacing the cells destroyed. A more severe injury provokes the accumulation of wandering tissue cells in its neighbourhood, still without evidence of dilatation of neighbouring vessels, or diapedesis through their walls. The

absence of a primary proliferation of fixed tissue cells in keratitis and the proliferation of endothelial cells in arterio-sclerosis has no other significance than the emphasis it lays on the inflammatory process in diffuse hyperplastic sclerosis. The difference in the lesion in the two conditions may be due to the irritant acting once and for a short time in experimental keratitis, in comparison with its possibly prolonged action in arterio-sclerosis, or it may be due to the fact that whereas the corneal cells lie in an avascular medium, the endothelium, as distinct from the rest of the intima, is in a vascular medium with an abundant oxygen supply.

This distinction between the endothelium and the intima is highly important, and is supported by Grünstein,<sup>14</sup> who has published one of the best accounts of the normal structure of the larger arteries and their variation with age, and who expresses the opinion that "the endothelium does not belong to the intima, but forms an independent constituent of the arterial wall."

If this is true in fact it becomes obvious that we are dealing with inflammation in a quite peculiar structure when we consider inflammation in an arterial wall. It is a structure which is vascular in its outer layer, avascular in part of its middle and all its inner layer, and it is lined by a layer of cells which belong rather to the blood than to the vessel whose structure it is their function to form, and perhaps in pathological conditions to keep in repair.

The importance of the blood supply in determining the type of tissue changes, whether they are of an inflammatory or degenerative type, has recently been brought out in the study by Mr. A. G. Timbrell Fisher of the pathology of osteoarthritis.<sup>15</sup> He finds that the lesions are degenerative or proliferative according to the proximity of an adequate blood supply: thus in the articular surface of the knee-joint the initial lesion is a degeneration of the intercellular matrix in the central area of the cartilage—an area which is completely avascular—whereas the peripheral lesion is proliferative, due (he thinks) to the presence of an adequate blood supply from the *circulus articuli vasculosus* of William Hunter. These changes are to be compared with degenerative lesions in the depth of the intima in the larger arteries often appearing first in the internal elastic lamina, and with the proliferation of the endothelium already demonstrated in diffuse hyperplastic sclerosis, and perhaps also occurring in nodular sclerosis, as will be shown later when reference is made to the work of Klotz.<sup>16</sup>

All that is known about the function of endothelium supports the view that its proliferation in diffuse hyperplastic sclerosis is evidence of the inflammatory nature of the lesion. Thus endothelial cells have been shown to take up bacilli within ten minutes of their inoculation into the circulation.<sup>17</sup> Behring and Mutch<sup>18</sup> have called attention to the great phagocytic powers of the endocardial endothelium. In typhoid fever the endothelial cells of the spleen swell, proliferate, and become separated. There is general agreement that the large mononuclear cells of the blood have their origin from endothelial cells of capillary walls, and Baumgarten has shown that vascular endothelium under mild grades of irritation gives rise to fibroblasts and connective tissue. Adami<sup>19</sup> sums up by saying:

"We have, indeed, to recognize the very active part played by vascular endothelium in inflammation, its pronounced proliferative and phagocytic powers . . . microscopically these cells can be seen to alter during the inflammatory process; they become enlarged and project into the lumen of the smaller vessels, and in my experience this enlargement affects not only the cell bodies but also the nuclei, which at the same time would seem to contain more chromatin and to stain more intensely. In cases of chronic inflammation the enlargement is seen followed by proliferation, notably in the arterioles and capillaries, a process which may lead to the ultimate occlusion of these small vessels."

The actual form of the lesion in diffuse hyperplastic sclerosis is, therefore, strong evidence that the process of inflammation is responsible for its production.

In addition to the four main theories of arterio-sclerosis, which depend on the activity of the unit processes Involution, Growth, Inflammation, and Degeneration, it is suggested vaguely from time to time that the lesion is due to an altered nutrition of the vessel wall. This idea is crystallized by Adami in a few suggestive paragraphs dealing with the subject of productive fibroses, in which he makes the tentative suggestion that intimal proliferation in arterio-sclerosis may depend on stimulation rather than irritation, and that the nature of the stimulant may be an increased strain thrown on the intima by weakening of the underlying media, and in other cases the stimulant is an increased nutrition brought



about by heightened arterial tension. This theory turns rather on causes than processes; in its distinction between stimulation and irritation it has been considered in the review of Jores's theory, and in its reference to primary weakening of the media it comes under Thoma's theory of arterio-sclerosis. Lastly, the lesion in arterio-sclerosis has been compared to keloid, and though he does not make this comparison Ophüls<sup>17</sup> approaches this hypothesis in his reference to the autochthonous development of arterio-sclerosis. If simpler pathological conceptions fail it may be necessary to have recourse to the complicated explanations offered by the terms "productive fibroses," "fibrous diathesis," and "autochthonous development," but in the meantime I am of the opinion that the simple process of inflammation is sufficient explanation of the production of the lesion in diffuse hyperplastic sclerosis, and in the next and last lecture its activity in other forms of arterio-sclerosis will be considered.

## REFERENCES.

- <sup>1</sup> Thoma, R.: *Textbook of General Pathology*, translated by Bruce, 1895: *Virchow's Arch.*, 1886, 104, 209; *Ziegler's Beitr.*, 1891, 10, 433. <sup>2</sup> Evans, Geoffrey: *Proc. Roy. Soc. Med.*, 1921, 14, 315. <sup>3</sup> Klotz, Oskar: *Journ. Exper. Med.*, 1906, 8, 322. <sup>4</sup> Jores, L.: *Wien. klin. Wochenschr.*, 1903, 15, 129. <sup>5</sup> Hasek, E.: *Arch. f. Mikr. Anat.*, 1920, 124, 6. <sup>6</sup> Bradford, S. C.: *Biochem. J.*, 1920, 14, 124. <sup>7</sup> Virchow, R.: *Cellul. Pathol.*, 1858, 1, 1. <sup>8</sup> Warthin, Aldred Scott: *Harvey Lecture*, 1917. <sup>9</sup> Bergel, S.: *Die Lymphocytose*, Berlin, 1921. <sup>10</sup> von Ebner: v. Koelliker's *Handb. d. Gewebelehre*, 1902. <sup>11</sup> Senfleben: *Virchow's Arch.*, 1878, 72, 542. <sup>12</sup> Grünstein, N.: *Arch. f. Mikr. Anat.*, 1896, 47, 583. <sup>13</sup> Virchow, R.: *Cellul. Pathol.*, 1858, 1, 1. <sup>14</sup> Virchow, R.: *Cellul. Pathol.*, 1858, 1, 1. <sup>15</sup> Adam, J.: *Am. J. Med.*, 12, 707. <sup>16</sup> Adam, J.: *Am. J. Med.*, 12, 707. <sup>17</sup> Ophüls, J.: *Am. J. Med.*, 12, 707.

## TREATMENT OF PUERPERAL INFECTIONS.\*

BY

B. P. WATSON, M.D., F.R.C.S. EDIN.,

PROFESSOR OF MIDWIFERY AND DISEASES OF WOMEN,  
UNIVERSITY OF EDINBURGH.

In obstetrics probably more than in any other branch of medicine old methods of treatment persist long after their efficacy has been disproved by more recent scientific knowledge and experience. In recent years our conception of puerperal infections has undergone a great change, and yet the general body of the profession has not realized it, for we daily see and hear of procedures being carried out which we can only regard as harmful.

The great danger of specialization is that the specialist is apt to lose his perspective and to be so immersed in the details of his own subject as to lose sight of advances being made in other directions, many of which may be of the utmost importance to him. What we have to realize is that the general principles of pathology have a universal application, and that the details of treatment founded upon them should require only slight modification to meet the different anatomical and physiological conditions present in any region of the body.

I do not intend to go fully into the treatment of all the different varieties of puerperal infections. All I wish to do is to ask if that treatment is always in conformity with what we know of pathology and of infections in general, for on this must depend its likelihood of yielding the best results.

Much has been learned in recent years regarding the mode of invasion of infective organisms, and nothing is of more importance from the obstetrical point of view than a realization of the frequency with which infective organisms spread throughout the blood stream from what was at first a purely local focus. The organisms concerned principally in puerperal infections—the streptococci, staphylococci, colon bacilli, pneumococci, and gonococci—very readily gain the blood stream, so that probably a few escape into it from every local focus. In the majority of instances their numbers are so small and the reaction of the blood tissues so great that they do not long survive. Furthermore, a great many organisms hitherto regarded as purely saprophytic have been proved to be capable of living in the tissues and spreading by the circulating blood. In view of these facts we must discard altogether the old classification of puerperal infections into suppurations and septicaemias. We must regard every case of bacterial invasion of the genital tract as a potential bacteraemia and must direct our treatment accordingly.

When organisms invade a raw surface the lesion is at first quite localized. There is inflammatory reaction with a certain amount of destruction of tissue. Whether the condition remains localized depends on the degree of the reaction, on the number and virulence of the organisms, and on the amount of rest that can be ensured. If spread occurs it may take place by continuity of tissue, sometimes along the surface, often along the lymph channels, or the larger lymph vessels may be invaded and the organisms disseminated in the tissues through which they run, there producing other lesions. Thrombosis of blood vessels may occur and the organisms invade the thrombus, so that it becomes more and more extensive, spreading up the veins towards the heart and to a lesser extent along the arteries. From such a thrombus the organisms may spread into the general blood stream, although this is not necessarily the case. Pieces of thrombi may become detached, and such emboli, laden as they are with the infecting organism, may set up lesions in distant parts without there being any general blood infection. Finally, without any degree of thrombosis and often with a very minute local lesion there may be a massive general dissemination throughout the blood stream—a true bacteraemia.

## CAUSE AND SYMPTOMS.

Apply this general knowledge to the particular subject. We know that the majority of infections of the mucous surface of the puerperal uterus remain localized. Reaction is such that the organisms are destroyed. If any escape into the blood stream they are so few in number as not to survive. The patient has an elevation of temperature for a few days, the lochia may be profuse and purulent for a time, but soon everything settles down to normal.

Extension by continuity of tissue results in a spreading inflammation of the mucosa, in an infiltration of the muscular wall of the uterus, or an extension to the tubes, with or without pus formation. If the lymph stream is invaded, a general peritonitis may occur, but more usually there results an inflammatory reaction in the cellular tissue of the broad ligaments with, in my experience, nearly always an involvement of the tubes—the so-called pelvic cellulitis. This may or may not go on to abscess formation, but nearly always remains localized to the pelvis.

Thrombus formation is always present at the placental site, and any organismal invasion of this area is peculiarly liable to cause an extension of it; hence the frequency of septic thrombo-phlebitis of the ovarian and other pelvic veins as a manifestation of puerperal sepsis. Bacterial invasion of the general blood stream I have already referred to.

These are the lesions our general knowledge of infections would lead us to expect, and these are the lesions which we find clinically and in the *post-mortem* room in cases of puerperal sepsis:

1. A localized surface infection of the mucosa.
2. Spreading infective lesion of the general surface of the mucosa, often with extension to the tubes.
3. Inflammatory infiltration of the uterine wall, sometimes with abscess formation.
4. Inflammatory effusion in the cellular tissue of the broad ligaments with or without pus, and usually accompanied by tubal inflammation with or without pus.
5. General peritonitis.
6. Septic thrombo-phlebitis of the pelvic veins with or without emboli, and with or without bacteraemia.
7. A general bacteraemia.

In any one case there may, of course, be a combination of these conditions. Knowing these to be the possibilities, how ought we to approach the investigation and treatment of the case of a woman confined two or three days previously and presenting febrile symptoms? The first thing to do obviously is to exclude the possibility of the fever being due to any other cause than puerperal sepsis. This involves a careful examination of the heart, lungs, kidneys, breasts, and other organs. Some time ago Dr. W. A. Scott and I made an analysis of all our cases of fever in the puerperium; in 2,096 cases confined in the Burnside Maternity Hospital, Toronto, 476 showed definite puerperal morbidity according to the standard laid down by the British Medical Association. In only 50 of these could we find any definite septic lesion in the pelvis. In 20 the cause of the temperature was extragenital from such conditions as pyelitis, cystitis, pneumonia,iliary tubercle, suppurating ear, etc. In the remaining 406 no definite lesion to account for the temperature could be detected by any of the ordinary methods of examination, including blood cultures. All of these patients made a

\* Read at meeting of Edinburgh Obstetrical Society, February, 1923.



perfect recovery without any treatment. What the cause of the temperature was we could not definitely say, but doubtless in a good many of the cases there was some infective lesion of a mild character somewhere in the genital tract.

#### TREATMENT.

The first thing to do in any case is, therefore, to make a general examination of the patient and to abstain from any local treatment until the indications for it are quite definite. Finding nothing extragenitally we should investigate the pelvic organs. The perineum is inspected. If there is a wound and it looks inflamed, any stitches ought to be removed and free drainage allowed. The same applies to stitches in the cervix. A careful and very gentle bimanual examination may now be made. At this early stage probably nothing will be discovered, or at most a large tender uterus with profuse and perhaps fetid lochia, but in the absence of physical signs in the other systems, or in the perineum or cervix, we conclude that the uterus is the source of the infection. Now at this stage I most emphatically hold that exploration should cease. There is a great temptation to try to find out what the condition of the interior of the uterus is by introducing the finger into it. As a matter of fact we are seldom much the wiser even if we do get the finger in, and the possibilities of doing harm are great. We presume that there is a localized patch of inflammation on the uterine mucosa. What good is it going to do to feel it? None whatever; and it may be productive of much harm by creating fresh raw surfaces and disturbing thrombi. For some days after delivery the placental site is raised and irregular owing to the normal thrombus formation in the vessels. Any rough manipulation of this area may readily convert a local into a general blood infection. And if this is possible as a result of a digital exploration it is still more likely to occur if a curette is used. When we find the source of infection in the perineum we do not use a curette to scarify the infected tissue. We do not use a sharp spoon for a recent infective ulcer anywhere else in the body. Why, then, should we do it in the uterus? There is no good reason for it and several very good ones against it. In the first place we cannot hope to curette the infected patch only and leave the rest of the mucosa untouched. We are bound to create a large number of fresh raw surfaces and inoculate into them the infecting germ, thus favouring local spread. We are bound to disturb thrombi and open up blood vessels, leaving the door open for a general infection. We remove the reaction zone of tissue, open up the lymphatic channels, and produce such a disturbance in the relation of parts by our manipulations that extension to the blood stream, to the broad ligaments and peritoneum, is favoured. We know that all these things are liable to occur. Does curetting the uterus favour them or not? I say most emphatically that it does. And yet we know that it is frequently carried out.

But I hear it asked, Suppose there is a piece of placenta or membrane left inside the uterus—may this not be the cause of the rise of temperature, and, if so, should we not get it out? There is no reason for thinking that a piece of membrane or of placenta retained in the uterus predisposes to bacterial invasion. A recent investigation of 149 cases of retained placenta showed that in 44 per cent. the puerperium was absolutely afebrile, in 50 per cent. there was very slight fever, and in only 6 per cent. was there severe fever, with one death, and in four of these severe cases there had been intra-uterine manipulation of various kinds. It has been my teaching for some time, in conformity with that of the great majority of obstetricians, that even at the time of confinement it is wrong to put the hand, finger, or instrument into the uterus to remove pieces of membrane or placenta which may have been left behind unless there is excessive haemorrhage. The risk of introducing septic organisms is far greater than that run by leaving things as they are. Such retained portions separate and come away of themselves in a few days. germ free uterine wall, how much more so is it when we know organisms to be present. The infective process is more likely to be in the part of the uterine wall from which the placenta has been detached rather than on that to which a small piece of membrane or placenta still adheres. In forcibly detaching such a piece we are not simply opening up fresh surfaces for infection. Therefore I hold that even when we know that there is a portion of placenta or membrane in the uterus it is wrong to curette or to introduce the finger or other instrument.

Even the intrauterine douche I believe to be more productive of harm than of good. The intrauterine douche was introduced as a means of treatment in the early days of antiseptics, when it was thought that they did much more in the way of destroying organisms in the tissues than we now know to be the case. Any antiseptic we may use as an intra-uterine douche has nothing more than a surface cleansing effect, and very little of that. It gets rid of possible accumulation of decomposing matter and pus from the uterine cavity, but the uterus is a muscular organ, and we have drugs at our disposal—ergot, pituitrin, and quinine—which, when administered, prevent any such accumulation. I can well remember when I was a house-surgeon in the Edinburgh Royal Maternity Hospital twenty years ago, when it was practically a routine to give an intrauterine douche to every patient with a rise of temperature lasting for more than two days, that in a very large proportion the douche was followed by a rigor or chill and a further elevation of temperature. That was supposed to be a nervous phenomenon. But was it? Is it not far more likely that it was due to a flooding of the blood stream with organisms—a temporary bacteraemia?

Sampson has shown, by injecting the venous channels of the uterus with a substance which gives a shadow with the x rays, what a very complicated system the veins form, and how free their communication is with the surface vessels of the mucosa. The thinness of their walls and the power of contraction in the uterine muscle makes it exceedingly easy for any minute substance in the uterine cavity or on the surface of the mucosa to be sucked into them, provided a surface vessel is laid open. Frank has shown, by blood cultures taken before and after intrauterine douching and simple manipulation of the uterus, that bacteraemia is very frequent after such proceedings. It is usually only a temporary condition, the blood again being sterile after a few hours, but if the initial dose of organisms is massive enough they may continue to grow and the case develop into one of true septicaemia.

Recent experience in the treatment of septic wounds has shown that the essential thing is free drainage, and the fewer antiseptics and the less interference the better. Now in the infected uterus the cervical canal always remains patulous and drainage is assured. It may be helped by placing the patient in the Fowler position and by administering the drugs I have mentioned. An ice-bag may be applied to the abdomen. It relieves any pain that may be present and reduces fever. A free liquid diet is given, the bowels are kept open but not severely purged, and if possible the patient is kept in the open air. Meantime a blood culture ought to be taken and repeated at intervals. We have ceased to take swabs from the interior of the uterus in the initial stages of infection because the results obtained were not commensurate with the difficulty of the proceeding and the risk to the patient. If there is accumulation of fetid discharges in the vagina a gentle vaginal douche may be given.

To this line of treatment the great majority of puerperal infections will yield and the patient make a perfect recovery. If extension takes place, this will declare itself in the course of a day or two and a definite diagnosis can be made. Cellulitis should be evident to bimanual palpation in three or four days; a pus tube a little later. When these have declared themselves the patient must make up her mind to a long period of inaction. In the majority of cases cellulitis will resolve in the course of a few weeks. A few undergo suppuration, and pus must be evacuated through the vagina or extraperitoneally through the abdominal wall. In the case of a pus tube we wait, if possible, until the temperature has reached and remained normal for some time before attempting removal. If the temperature remains high and the patient's general condition is deteriorating, pus may be evacuated through an incision in the posterior fornix and, if necessary, the tube removed at a later date. If there is evidence of peritonitis an incision may be made in the posterior fornix and drainage established.

Thrombo-phlebitis is evidenced by wide excursions of temperature, by repeated chills, and by the palpation of some thickening on one or on both sides of the uterus. Such cases may be dealt with by ligation of the ovarian or common iliac veins. This somewhat heroic treatment has been carried out by many operators, often with surprisingly good results. If there is evidence of local abscess formation in the uterine wall, hysterectomy can be performed. If the temperature remains high and there are not present in the pelvis physical signs to account for it the probability



is that there is a blood infection. This can only be shown by blood culture, frequently repeated if necessary. Dr. W. S. Cosbie, a member of my staff in Toronto General Hospital, took cultures from all puerperal patients running a temperature. His investigations are not completed, but we were surprised to find that so many of them had positive cultures at one time or other. Most of these made a complete recovery without special treatment.

In the treatment of true cases of bacteraemia we have used various kinds of intravenous medication such as magnesium sulphate, ensol, and salvarsan. We have also used serums. With all of them we have had recoveries, and at first attributed these to the drug used, until we found that, with no intravenous medication and with no serum, just as many patients got well. The great difficulty in assessing the value of these forms of treatment is that spontaneous recovery so often does take place.

What I have said regarding the treatment of puerperal infections occurring after a full-time delivery applies equally to those arising after abortion, either complete or incomplete. I make it a rule never to curette the uterus or carry out any intrauterine manipulation in a case of abortion if the patient has a rise of temperature, unless there is severe haemorrhage. If the abortion is incomplete and a mass is felt projecting through and blocking the cervical canal, this may be very gently removed, but more interference than that I think unwise. After the temperature has been normal for some days, if there is still evidence that the abortion is incomplete by the persistence of bleeding and the patulous condition of the cervix, gentle curetting may be carried out. Even after waiting this time it is almost invariably found that the patient's temperature rises after the operation, and she not infrequently has a rigor, showing almost certainly that there has been a blood invasion. Fortunately, in most cases, this is only temporary.

I have only touched very briefly on the whole subject of puerperal sepsis, but my purpose is served if I initiate some discussion on the inadvisability or otherwise of active interference with the interior of the uterus in the presence of fever. From all the evidence of the literature and from my own experience I hold that it is inadvisable.

## THE USE OF QUINIDINE IN AURICULAR FIBRILLATION.\*

BY

FRANCIS R. FRASER, M.D., F.R.C.P.Ed.,

DIRECTOR, MEDICAL PROFESSIONAL CLINIC, ST. BARTHOLOMEW'S HOSPITAL, LONDON.

THERE have now been recorded several hundreds of cases of auricular fibrillation in which normal rhythm has been restored, and it can be accepted as demonstrated that quinidine can bring about this change of mechanism in a large proportion of all cases.

Like all powerful drugs, quinidine can produce effects that are unpleasant, or even dangerous, and so it is necessary to learn in what cases the conversion can be effected without producing such results. The advantages to be gained might conceivably be so great that the risk of unpleasant symptoms would not be a serious deterrent to giving the drug, but in digitalis we have a method of treating the effects of auricular fibrillation that is so successful that it must be seriously considered in what cases a successful quinidine result surpasses in therapeutic value the effect of digitalis treatment.

Answers to the two following questions must be obtained before quinidine is to find a place in practical therapeutics:

(a) In what cases can the conversion be brought about without risk of producing dangerous symptoms?

(b) In what cases does the therapeutic effect of this conversion surpass the effect of digitalis treatment?

Discussion may well help to answer two further questions:

(c) What is the best method of administration in regard to dosage?

(d) For how long after the conversion should the quinidine treatment be continued?

Many other questions must arise, but preliminary answers to these four are desirable before the necessary amount of

evidence will be collected on which sound therapeutics can be based.

Among the earlier cases in which I tried quinidine was a woman, aged 54, with a greatly enlarged heart, severe mitral regurgitation, and stenosis of rheumatic origin, and auricular fibrillation. Quinidine sulphate (5 grains night and morning) caused auricular flutter to develop, and after eight days, during which the auricular rate was about 200 and the ventricular rate 80 to 90, the pulse rate rose suddenly to 200, probably as the result of a 1:1 response. On stopping the quinidine and commencing digitalis fibrillation returned.

A woman, aged 31, with mitral stenosis of rheumatic origin and severe heart failure, at rest in bed had a ventricular rate of only 50 to 65. After five days of quinidine sulphate (5 grains three times a day) auricular flutter resulted, and after six days more on  $7\frac{1}{2}$  grains three times a day she had a Stokes-Adams attack with ventricular standstill.

A woman, aged 54, with a greatly enlarged heart, mitral regurgitation, and auricular fibrillation, evidence of arterial and renal disease, and a ventricular rate of 180, responded moderately to digitalis. At a ventricular rate of 90 numerous ventricular extra-systoles occurred. With quinidine sulphate (15 grains at intervals of six hours) normal rhythm resulted after four doses, but was accompanied by precordial distress and nausea. On stopping the quinidine auricular fibrillation returned a day later with relief from the subjective distress.

Another limitation to the administration was seen in a woman, aged 48, with mitral stenosis of unknown origin and auricular fibrillation of probably only a few weeks' duration. The response to digitalis was good, but after nine days of quinidine sulphate, during which she received 175 grains in all, a severe toxic erythema developed with headache, nausea, and fever.

After the experience with these cases careful selection was made, avoiding all cases with evidence of much damage to the cardiac structures such as great enlargement, heart-block, or severe valvular disease.

A man, aged 39, with syphilitic aortitis and severe heart failure but no evidence of valvular disease, responded well to digitalis and received antisyphilitic treatment. Three months later normal rhythm was restored after ten days, during which 180 grains of quinidine sulphate was given. The treatment was continued for three months on diminishing doses, and nearly two years later the rhythm is still normal except for ventricular extra-systoles, and he feels fit to return to his work as a stevedore.

In the case of a man, aged 26, with no clear evidence of cardiac enlargement or of valvular disease and no evidence of infection other than malaria, a successful quinidine effect has continued for twenty months, and he is now working as a labourer. The auricular fibrillation had been present for six weeks before admission, and the digitalis response was good.

A similar successful result was seen in a man aged 40 with exophthalmic goitre, without evidence of valvular disease, in whom auricular fibrillation had been present probably for five years, and was still present three weeks after partial thyroidectomy by Mr. Dunhill. Normal rhythm resulted after four doses of quinidine sulphate (5 grains three times a day), and has persisted with gradually increasing efficiency for five months.

A woman, aged 45, with exophthalmic goitre of a mild degree had probably had auricular fibrillation for some years. Severe heart failure responded well to digitalis, and normal rhythm resulted after six doses of quinidine sulphate ( $7\frac{1}{2}$  grains three times a day). The dosage was gradually reduced and treatment discontinued four weeks later. An increase in the thyrotoxic symptoms was accompanied by a return of fibrillation. Partial thyroidectomy was performed by Mr. Dunhill, and as fibrillation was still present a week later quinidine was given, and normal rhythm returned after four doses of 5 grains three times a day.

Another case of this nature shows similar features.

A girl, aged 26, with mitral stenosis of rheumatic origin, responded well to digitalis objectively but continued to have severe dyspnoea and palpitations. Quinidine sulphate (5 grains three times a day) restored normal rhythm after seven doses, with relief from the palpitations. This dosage has been continued for nearly a year now, and a severe relapse occurred during a return of the rheumatic infection. Relapses of a few days' duration have occurred on three other occasions; on one she had a bad cold, on another much worry in connexion with the death of her mother, and on the third she tried to do some heavier work than usual.

There are cases of thyrotoxic auricular fibrillation in which normal rhythm was restored a few days after partial thyroidectomy without other interference, and cases in which auricular fibrillation occurred only for a few hours after operation during the stage of increased excitement. They suggest that the auricular fibrillation is due to an active toxic action, and that normal rhythm may result simply from the cessation of this action. The difficulty in obtaining a stable normal rhythm with quinidine in active toxic cases, and the stability obtained after thyroidectomy, indicate that in this type of case to obtain a stable normal rhythm the thyrotoxic factor must be treated.

In the other types of cases the indications of a similar active agent are not so complete, but the accumulation of more evidence may decide in favour of a similar state of

\* Abstract of remarks made in opening a discussion at a meeting of the Therapeutic Section of the Royal Society of Medicine, March 13th, 1923.



affairs in them also. The stability of the syphilitic case in which antisyphilitic treatment was given supports this view. The stability in the case in which no definite cardiac lesion could be found and in which the only known infection was malaria may well be due to the cessation of the causal factor, whatever it was, before the patient came under observation. The instability of the rheumatic case, even when quinidine treatment has been continued for nine months, is suggestive of a constantly or intermittently active factor tending to produce fibrillation. This idea is fully in keeping with the theory derived from the clinical study of such cases—that the rheumatic infection may continue for years, causing gradually increasing stenosis of the mitral valve, often without well defined attacks of acute rheumatic infection. In such a case it is of interest to note the additional factors present during the relapses into auricular fibrillation. Unfortunately there is no successful method of treating the rheumatic infection of the heart.

In addition to active agents it is probable that auricular fibrillation can result from permanent structural changes in the heart, in which case a stable normal rhythm after cessation of the quinidine administration would be unlikely.

#### CONCLUSIONS.

1. Quinidine treatment will result in a stable normal rhythm if the cause of the auricular fibrillation can be successfully treated or has ceased to be active.

2. Cases in which there are extensive structural changes in the heart are not suitable for quinidine treatment, especially if the response to digitalis is not good, as dangerous symptoms may result.

3. In some cases at least the comfort and efficiency of the patient is greater when a normal rhythm results from quinidine treatment than when digitalis treatment alone is used.

4. In the cases in which the results are satisfactory larger doses than 10 grains of quinidine sulphate at intervals of six hours were not necessary, nor smaller initial doses than 5 grains three times a day.

5. If necessary to maintain normal rhythm, quinidine may be continued to be administered indefinitely in doses of at least 5 grains three times a day, and it is probably advisable in all cases to continue it for some weeks after normal rhythm has resulted, though in gradually decreasing doses.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### FIXATION OF CAECUM IN CHRONIC INTUSSUSCEPTION.

The following case of chronic intussusception which took an acute form came under my care in November of last year, and seems of sufficient interest to warrant publication.

N. C., a boy aged 4 years, was admitted to hospital on November 16th, 1922. The mother gave the following history:

On November 4th the child complained of severe pain in the region of the stomach. The pain was attributed to worms, and no significance was attached to it. The pain, however, recurred at varying intervals for the next few days. On November 7th the child vomited. The bowels had been quite regular, though once the mother noticed some "slime" in the stools. On November 11th the child was given two "yellow worm powders" and a large dose of castor oil. Two days later two round worms were passed. He still complained of pains, and cried almost incessantly until November 16th, when he was brought to hospital.

On admission his general condition was good. An indefinite tumour could be felt below the right costal margin, and there was loss of resistance in the right iliac fossa. He did not complain of pain. On November 17th and 18th the child had normal motions, but slight abdominal pain. On the 19th his stools were blood-streaked, the pain was worse, and a good deal of mucus was present in the motion. A typical sausage-shaped tumour could be felt in the region of the descending colon.

#### Operation.

The apex of the intussusception was in the left iliac fossa, about the beginning of the sigmoid, and was reduced with some difficulty. There was some extravasation of blood in the mesenteries of the small intestine and ascending colon, and the vessels were very much engorged.

An area about the size of half a crown at the apex of the caecum was grey and sodden. The appendix was healthy. The caecum and ascending colon were very mobile and the mesentery of the small intestine long. Owing to the congested state of the mesentery and ascending mesocolon I did not like to put stitches

in them, for fixation purposes, so I decided to use the appendix—(1) for fixation of the caecum, (2) by traction on it to turn the doubtful apex of the caecum up against the anterior abdominal wall, in case it should prove non-viable. I ligatured and divided the meso-appendix, and brought the appendix out through a stab wound just below McBurney's point, fixed it with a couple of sutures, and put a gauze wick down to the apex of the caecum, which was directly under the stab wound.

In forty-eight hours I removed the appendix level with the skin and withdrew the gauze drain; I also destroyed the mucous membrane with a probe dipped in pure carbolic.

The boy made a good recovery. The appendix required a second application of carbolic, as the mucous membrane was rather redundant, and secreted a little moisture.

A seven-hour picture after an umbroso meal showed the caecum in the position in which it was placed just below McBurney's point. It would be interesting to know—

1. In what percentage of cases there is recurrence of intussusception after operation.
2. If the risk of recurrence is enough to make an attempt at fixation worth while.
3. If fixation of the caecum by the appendix is suitable for prolapsed or mobile caecum, etc.

Londonderry.

J. B. ALEXANDER, M.B., B.Ch.

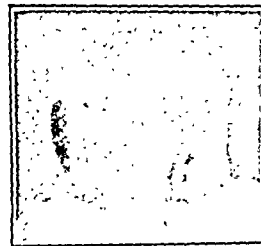
#### SUBOCCIPITAL MENINGOCELE SUCCESSFULLY REMOVED.

The following case, in which a large meningocele which was present at birth was successfully removed by operation, is, we think, of sufficient interest to warrant publication.

Marie P. was born on May 19th, 1921, with a large meningocele, the birth being uneventful and taking place before the arrival of a doctor. The baby was otherwise healthy. It was found that the growth steadily increased after birth, and the covering becoming thinner, it was obvious that rupture was imminent. It was decided to operate, and the baby was removed to North Londonderry Hospital. Before operation the dimensions were: horizontal 6½ in., vertical 5 in., circumference at junction with skull 7 in.

#### Operation.

On August 1st, 1921, assisted by Dr. T. E. Roberts, I dissected back the skin and exposed the underlying membrane. This was very difficult near the neck of the sac, as there was practically nothing between skin and membrane. With a large opening



Photographs showing the child before and after removal of the meningocele.

between sac and the skull there was danger of collapse from sudden loss of cerebro-spinal fluid; to obviate this an intestinal clamp was loosely applied to the neck of the sac. The sac was then opened at a distance to verify the absence of nerve tissue. The clamp was quickly closed, thus preventing leakage of fluid. The sac was cut away and a continuous suture applied round stump and clamp, as in Barling's operation for piles. The clamp was withdrawn and suture quickly tightened. A few interrupted sutures were applied where fluid was oozing. The deeper structures were drawn over the stump and the wound closed. An anchor dressing was applied.

For a few days the temperature oscillated between normal and 102°, with muscular twitchings suggestive of impending convulsions. Bromides were given, and the temperature came down to normal and all twitchings ceased. Owing to fear of yielding of scar the anchor dressing was kept on for two weeks and cut its way out, leaving a granulating surface which did not involve deeper structures. Secondary suturing closed this, and complete healing quickly followed. The baby was sent home well five weeks later, and has remained well and normal since. She has just recovered from whooping-cough and is beginning to walk.

I am indebted to Dr. Kathleen Rutherford for the photographs, which show the baby before and after operation, also for her very helpful interest in the case. The ultimate recovery of the baby was largely due to the skilful nursing of Sister Levison.

JOHN LIVINGSTON, M.D. Dublin,  
F.R.C.S. (Edin.),  
Honorary Surgeon, North Londonderry  
Hospital.

Barrow.



## Reports of Societies.

### THE NEED FOR PUBLIC EDUCATION IN THE CONTROL OF CANCER.

A MEETING of the Fellows of the Royal Society of Medicine was held on March 13th to discuss the urgent need for education in the control of cancer. The President of the Society (Sir W. HALE-WHITE) was in the chair.

Mr. J. E. ADAMS, who introduced the subject in a brief address, said that his own desire had been to see the formation of a society for the control of cancer, similar to the societies already in existence for combating tuberculosis and venereal disease. But before anything of this kind could be done the support of the profession had to be enlisted, and as he thought that the Royal Society of Medicine—without any disrespect to other bodies—was the headquarters of scientific intelligence in the medical profession, it was proper that the first meeting on the subject should be a meeting of the Fellows. It was well known that cancer was on the increase. Little more was known as to its causation than was the case twenty years ago. The majority of cancer patients came for medical assistance too late for any reasonable chance of cure. Medical men were all aware of a number of conditions which predisposed to cancer, such as syphilis, chronic degenerative mastitis, and unhealed ulcerations of the uterine cervix. Were these conditions treated as energetically as their association with cancer demanded? In any woman over 40 a lump in the breast was ten times more likely to be malignant than to be simple. Middle-aged men were apt to think that indigestion and haemorrhoids were the inevitable result of a sedentary life, and that a bottle of medicine or a few pills would put them right; but the real trouble might be a growth in the bowel. It ought to be recognized by the public that treatment without examination was not worth paying for, and by the profession that it was not worth doing. The public required enlightenment on this matter. He proceeded to give details of the intensive campaigns carried out by the American Society for the Control of Cancer, which was founded in 1913 in New York to disseminate knowledge concerning the symptoms, diagnosis, treatment, and prevention of the disease; to investigate conditions under which cancer was found; and to compile statistics in relation thereto. Pamphlets which the man in the street could understand were issued by this body, and publicity was further assured by posters, films, and public meetings. He was informed that there had been no serious trouble from cancerophobia as a result of this agitation. In this country little had been done, though the medical officers of health for two or three local authorities—notably Portsmouth, and Holborn in London—had spread leaflets broadcast urging people who had certain symptoms to consult a doctor without delay. He gathered that the British Red Cross Society was prepared to help in the distribution of authoritative intelligence, compiled by medical men, on this subject, and he suggested that a committee might be formed by the Council of the Royal Society of Medicine to collect and transmit the facts to the Red Cross Society. To avoid the danger of oblique advertising, nothing should be published except under the imprimatur of the committee, and all names save that of the Royal Society of Medicine should be withheld. He proposed the following resolutions:

That it is desirable that the public should be given more information as to the early signs of cancer and the prospects of cure by immediate treatment.

That the British Red Cross Society be asked to conduct this publicity campaign by means of lectures and pamphlets.

That the Council of the Royal Society of Medicine be requested to nominate a standing committee to supply information to the British Red Cross Society suitable for wide dissemination and the education of the public.

Dr. LAPHORN SMITH seconded the resolutions. He believed that the propaganda should start with the medical profession, and be extended to nurses, midwives, clergymen, district and health visitors, and all who came in touch with the homes of the people.

Mr. C. P. CHURCH (President-elect of the British Medical Association) said that seventeen years ago he contributed a volume to the New Library of Medicine advocating the course which it was now proposed to adopt. He believed that that book, *The Control of a Scourge*, which was also published in America, might have had something to do with the growth of the idea which resulted in the American Society for the Control of Cancer. He was told by the

publishers that lately there had been an increased demand for the book in this country, and he was asked to prepare a second edition or to rewrite the book. The most important step was to secure the support of the medical profession. The cause of cancer was not yet known, but things which were known were its age incidence, its frequent association with chronic irritation, and that it was in the first instance a local disease and later disseminated itself widely from its point of origin. The clinical descriptions of cancer in the textbooks were not those of early cancer at all. The fact to be grasped was that cancer was a curable disease, and yet very few cases were cured. The disease being curable, it was the duty of the medical profession to put the public in a position to profit from the possibility of cure. The only possible objection was cancerophobia, but he attached very little weight to that. The public knew already what a deadly disease it was, and he did not think that cancerophobia would be more frequent than now if people were told simply that by applying earlier for treatment they might possibly be cured. All women should be told, for instance, that if bleeding persisted after the menopause they should consult their doctor at once. The same course should be taken in the case of men advancing in life who had any sore on the lower lip. He pointed out the need for the instruction of nurses and midwives as a part of their curriculum in the importance of noticing early signs of cancer and bringing such cases to medical attention.

The Hon. Sir ARTHUR STANLEY (Chairman of the British Red Cross Society) said that his society would be glad to do anything it could to help in this work. The society was not merely a war society. Its workers were anxious to carry on the Red Cross tradition into peace. But in all that it could do in the way of publicity it understood thoroughly the need for close medical supervision.

Lord DAWSON of PENN said that the fact must not be lost sight of that research into the causes of cancer must always stand in the forefront of the programme. But while they were waiting for the much desired results of that research it was necessary to get existing cases under treatment as early as possible. The first thing to do was to bring home to the profession the need for a closer appreciation of the early symptoms of the disease. He believed that attention was paid to this matter in the medical schools at the present time. But when the qualified man went out to take up his practice he found himself deprived alike of the atmosphere and the equipment to which he had been accustomed in hospital. He was deprived in many instances of those ancillary means of diagnosis which were of such great value, and the effect of that was not only to limit his powers but slowly to discourage his zeal. Until hospital and clinical equipment was made readily accessible all over the country the movement in this respect would be handicapped. If medical men were given proper opportunities and were encouraged to take the utmost care in this matter it would have a repercussion upon the public, for good doctors always meant sensible patients. He was doubtful of the value of a direct and specialized propaganda against cancer. The more useful plan was to educate the public in health by means of lectures which dealt with health and variations from health, and incidentally the signs of such variations, not of cancer only but of every disorder, and to avoid the special application of a symptom to a particular disease. This last was the function of the doctor. The significance of the variation should be left to the doctor, whom the patients should be encouraged to consult. He thought cancerophobia a real danger, but that by these means it could be averted. In propaganda it was not enough to be intensive and energetic; one must also be wise. Lectures were the most appropriate means for educating the public. To employ broadcasting and cinemas would mean the concentration of attention on morbid and lurid aspects, which would do more harm than good. The antiveneal campaign began under very special circumstances, and no doubt its methods of propaganda at the time were rightly chosen. But even there the time had now come to transfer the propaganda from the streets to the lecture hall, where, in the case of cancer, it ought to begin.

Dr. HERNERT SPENCER said that sixteen years ago he read a paper at the Annual Meeting of the British Medical Association at Exeter dealing with measures to be recommended to secure the earlier recognition of uterine cancer. The views expressed in that paper were received with a unanimity rare in professional discussions, especially gynaecological ones.



One line of action which he advocated was to bring forward for demonstration to the students in the medical schools patients who had remained for twenty or twenty-five years free from recurrence. This would effectively counteract the pessimism which existed in the public mind, and to some extent in the professional mind, with regard to the possibility of cancer cure. Even the smallest town ought also to have its cottage hospital where visiting consultants would be available to examine patients referred for suspected cancer.

Sir NAPIER BURNETT urged that the out-patient departments of hospitals, instead of being in charge of the junior members of the staff, should be visited by the senior members, for here they would be able to do much in the early detection of cancer, whereas in the wards they saw chiefly the advanced stages of the disease.

Mr. CECIL ROWNTREE pleaded for more intensive and highly organized research work into the cause of cancer and a better distribution of clinical and pathological material among the different laboratories so as to prevent duplication of researches. A central body to guide the work done in the different laboratories so that it might have more cohesion and sequence seemed desirable, as well as some method of pooling and periodically publishing the progress of experiments.

Dr. MEARNS FRASER (M.O.H. Portsmouth) said that cancer was rapidly obtaining the most prominent position in the death returns. Twenty years ago in Portsmouth it accounted for one death in twenty, now it accounted for one in ten. Thousands of people were losing their lives yearly who might have been cured had they consulted their doctors at an early stage. He urged that the proper people to bring the matter forward were the local health authorities.

Dr. S. MONCKTON COPEMAN (Ministry of Health) said that the Ministry had recently founded a departmental committee on cancer, to which it was proposed to co-opt representatives of various bodies who were interested in the subject from the clinical and pathological sides. He suggested that the Royal Society of Medicine might perhaps think it desirable to co-operate with the Government committee before taking any special line of its own. The Public Health Services of the State, including the nurses and health visitors, could all be made use of for this purpose.

Dr. JOHN SHAW urged that the statistical returns proved the uselessness of operations for cancer. The evolution of the modern operation for cancer of the female breast, its greater frequency, its earlier date, its wider extent, had resulted in a progressive increase in the death rate and the curtailment of the span of life of its victims, notwithstanding diminished immediate risks from operation. Fresh surgical "triumphs" had been attended by rapid rises in the death rates from cancer of the organs concerned.

The resolutions were then put and carried.

## RADIUM TREATMENT OF UTERINE HAEMORRHAGE.

At a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine, held on March 1st, with the President, Dr. T. WATTS EDEN, in the chair, Mr. SIDNEY FORSDIKE read a paper on the treatment of severe and persistent uterine haemorrhage by radium, with a report upon 45 cases.

Mr. Forsdike dealt with the type of case which was sometimes described as the bleeding uterus, where no pelvic lesion could be found to account for the haemorrhage, and the cases cited were those which had proven refractory to palliative and to operative treatment. Of the 45 cases under consideration no fewer than 26 had undergone some form of operation or combination of operations, including dilatation and curettage, removal of polypi, amputation of cervix, oophorectomy, or salpingo-oophorectomy, and some of the cases had been curetted more than once. Four of the cases were associated with fibroids. All the uteri were enlarged, but were broadly divisible into two groups: (a) the systolic uterus, which admitted a sound for 3 to 3½ inches, and which yielded little or no tissue to the curette; (b) the diastolic uterus, which admitted a sound for 3½ to 5 inches and which yielded an amount of thickened endometrium. In all cases an exploratory dilatation and curettage was done and any tissue removed was submitted to microscopic examination. The cervix, if unhealthy, was submitted to a preliminary

cleansing treatment. The radium was placed *in utero* and only the gamma ray used. The vagina was plugged, with the twofold object of maintaining the radium in place and of keeping the bladder and rectum away from the source of energy. The additional precaution was taken of introducing a self-retaining catheter into the bladder for twenty-four hours. There were two main groups of cases: (a) those in whom it was desired to modify the catamenia by exposure to small doses of radium, of which there were 3 cases; (b) those in whom it was desired to suppress entirely that function by exposure to a heavy dose of radium, of which there were 42 cases. In group (a) two of the three cases were successful, and the third had an ovary removed at another hospital after an initial treatment. In group (b) all the cases responded to treatment, five of them requiring a second exposure. Generally speaking, no anaesthetic was required in giving a second exposure. In a certain number of cases some pain and discomfort were noted while the radium was *in situ*, which disappeared promptly on the removal of the radium. In a few cases post-anaesthetic vomiting was aggravated, but quickly subsided upon withdrawal of the tube. As regards the results of treatment, in 10 cases there was no further haemorrhage, in 17 cases there was one period, in 11 cases there were two periods, and in 4 cases there were three periods, the actual quantity of blood lost being small; but in cases where the exposure was given immediately before a period was due the loss was apt to be severe. The radium menopause was due entirely, he believed, to action upon the uterus, in favour of which the evidence rested not only upon clinical but on experimental grounds. Radium was implanted in the uterus of a cat, and the opposite ovary was fixed at a distance of 8 cm. from it; the results were noted at the end of twelve, twenty-one, and sixty days. In none of the experiments did the ovary show any macroscopic or microscopic change, whereas the irradiated endometrium showed a gradual transformation into connective tissue, with an entire loss of glands, suppression of blood vessels, and a notable diminution in the number of stroma cells. There was one absolute contraindication to the use of radium in these cases, and that was the presence of a pelvic inflammation, recent or remote, as it was likely to set up abscess formation.

Dr. BLACKER said he had been treating haemorrhage from the uterus at the menopause, in small fibroids, and in cases of so-called functional menorrhagia, since 1916. He had had altogether 77 cases, and his results had been uniformly good. Radium was a specific for climacteric haemorrhage. It should only be employed in small cases, and in the absence of any pelvic complication, such as disease of the appendages, was a complete bar to the use of radium. The chief action of radium was, he believed, on the ovaries.

Mr. PROVIS thought that x-rays were just as successful as radium, if not more so, in cases of menopausal haemorrhage.

Professor HENRY BRIGGS showed a specimen of angioma of the vaginal wall, found in a primigravida at the thirty-sixth week of pregnancy; there was no history of local injury and no unusual varicosity of vulval or other veins. Mr. A. C. PALMER showed a mass of secondary leiomyosarcoma which originated in the stump of the cervix after subtotal hysterectomy. Mr. EARDLEY HOLLAND showed a leiomyosarcoma of a fibromyoma removed by subtotal hysterectomy; examination revealed cystic degeneration of a fibromyoma which had undergone sarcomatous changes. Dr. J. D. BARNES showed two specimens of sarcoma of the uterus. The first was obtained *post mortem* from a multipara aged 57. The second was obtained by panhysterectomy from a multipara aged 67, who had had profuse vaginal haemorrhage for three weeks. Recurrence took place two months after the operation, and she died in three months from haemorrhage from secondary vaginal masses. The uterus was filled with a large friable growth. Dr. RUSSELL ANDREWS said that in his own experience of sarcoma of the uterus the growth usually recurred within a short time of operation. Dr. BLACKER thought that in any case in which subtotal hysterectomy was practised the tumour should be opened before the operation was completed, and that if the tumour showed signs of breaking down, other than simple cystic degeneration, the cervix should be removed. Mr. LUKER showed a specimen of chorion-epithelioma of the uterus; the chief symptom was abdominal pain, with anaemia, rhoea for the last three months; the uterus was enlarged, forming a tumour reaching almost up to the umbilicus, and death occurred from haemorrhage from perforation of the right vaginal fornix by the growth.



## THE TREATMENT OF PUERPERAL INFECTIONS.

At a meeting of the Edinburgh Obstetrical Society on February 14th, when the President, Dr. J. LAMOND LACKIE, was in the chair, Professor B. P. WATSON read a paper on the treatment of puerperal infections, which is published in full at page 505.

Dr. HAIG FERGUSON thought Professor Watson had expressed views very generally held, and had brought out very clearly the points which now influenced local treatment of a septic uterus. There could be no question as regards the inadvisability of using the curette, but he thought Professor Watson had been rather severe upon the intrauterine douche. To get the best results from the intrauterine douche it should, of course, be used early, before the poison was absorbed into the system. He did not think that its early use was in any way contraindicated, provided care was taken not to introduce any fresh organisms into the uterus from the vagina, or to use too strong an antiseptic, and that the temperature of the douche was from 115° to 120° F. The stimulation of the hot water undoubtedly helped to intensify the use of drugs like pituitrin, ergotin, and quinine. He used an emulsion of turpentine, the value of which was first brought to his notice by Fabre de Lyons. The emulsion could easily be made by mixing a teaspoonful of turpentine and a teaspoonful of lysol in each pint of water. The turpentine loosened any shreds of dead tissue which might be adherent in the uterus, and was a very safe antiseptic.

Dr. KEEPLE PATERSON mentioned two cases which occurred when much less was known about antiseptics and when instruments were not boiled but soaked in an antiseptic lotion. The forceps were the evident source of the sepsis in both; in one the temperature rose about the seventh day to 103.4°; it fell within a day to normal and remained so after one intrauterine douche of 1 in 2,000 sublimate lotion, which was the antiseptic then mainly used. In about a week another case showed a temperature of 106.6°, which became normal within twenty-four hours after one intrauterine douche, and though there was a slight rise subsequently the temperature very soon fell permanently to normal. In surgery the first principle in treating sepsis was to remove the focus if possible. It was not safe to trust to the patient's blood, it might not be in a healthy condition. He had never seen rigors nor any bad results after intrauterine douching, and believed that they were due to faulty technique by grazing the uterus in the insertion of the catheter and so creating a fresh surface for septic absorption. So the parturient canal after labour was often in a more or less lacerated condition and liable to contamination both from within and without. He practised thorough irrigation with sublimate lotion (1 in 4,000) once immediately after labour in practically every case with excellent results.

Dr. FORDYCE was in cordial agreement with almost all that Professor Watson had said. He was surprised that Professor Watson had found it necessary to emphasize the importance of not curetting the uterus in septic cases. He had long ceased to explore the uterus for a piece of membrane. He had also given up the intrauterine douche, except in cases where the infection seemed to start very early—at about the third day—when an intrauterine douche might be indicated. In fact, when a patient had puerperal fever, her recovery depended upon her own powers of resistance and her own strength. In cases of abortion, if the patient had high fever, and not very much haemorrhage, he thought it advisable to dilate the cervix, explore with the finger, and remove the putrid placental tissue. It seemed that the poison must be of local manufacture, and to leave it would be very dangerous. It was true that after the removal of the placenta a rise of temperature might occur, but in the great majority of cases it was only temporary and the patient made a complete recovery afterwards, while if it were left the patient would go on absorbing more and more poison and would probably die. Dr. Fordyce thought it would be exceedingly dangerous to stand by and do nothing.

Miss BENZEL expressed herself as entirely in agreement with what Professor Watson had said, especially with reference to the treatment of septic abortion. She quoted one case in which curettage was followed by development of pelvic cellulitis. Dr. YOUNG wondered whether Professor Watson's routine was quite in conformity with general surgical principles, because he seemed to base his whole routine on the analogy with the procedure carried out in ordinary surgical sepsis. If the uterus contained a piece of dead tissue was it the proper course to leave it there and

rely upon the uterine contractions to expel it? Dr. JOAN ROSE suggested that the same kind of treatment should be given to retained portions of membrane and placenta as to cases of adherent placenta—namely, manual removal at labour. She cited a case where non-removal of retained products of conception had been followed by chorion-epithelioma as well as sepsis. Dr. H. S. DAVIDSON said that the strongest point for Professor Watson's method was that the death rate for puerperal fever had not come down within the last few years. It took a pretty strong mind, however, to adopt an entirely watching attitude, and Dr. Davidson had stuck to the use of pure carbolic, followed by a mild douche. Dr. FRASER LEE suggested that where something was left in the uterus after either an abortion or a confinement it ought to be removed. He never curetted in these cases, but, if there was any suspicion of pieces of placenta being left behind, he always put a hand into the uterus after the confinement. He agreed with Dr. Fordyce as to abortions, and never trusted either the patient or the relatives, who so often insisted that everything had come away. He explored the uterus under an anaesthetic and quite often found pieces of tissue left behind. He used a blunt curette and gave an intrauterine douche and had seen no rise of temperature or sepsis in these cases.

The President remarked that one of the difficulties in treating puerperal sepsis was that of early diagnosis. Intrauterine douching, if used at the commencement of the illness, was of great value, and the application of pure carbolic acid a useful adjunct. Douching used a week or ten days after confinement was of no avail. He entirely agreed with what had been said about curetting in puerperal sepsis. If at the time of confinement it was recognized that a large piece of placenta had been left behind it was justifiable to remove it at once, but if there were only a small piece or some shreds of membrane it was far better to leave them alone. The rigor which occurred after intrauterine douching no doubt indicated bacteraemia, but it did not seem to do much harm, as the temperature as a rule fell rapidly to normal and continued there. In septic abortion he thought that as much as possible should be removed, without, of course, the use of any sharp instrument. At present he was inclined to continue local treatment in these septic cases, but no doubt the day might come when they would be more satisfactorily treated by vaccines or serums.

Professor WATSON, in reply, said that the ideas he had put forward as to the intrauterine douche were based on actual experience in the hospital with which he had been connected in Toronto, where all forms of sepsis had to be taken in. Almost invariably he had found that when a patient was admitted with puerperal sepsis there was a history of interference with the uterus—possibly it had been curetted during the febrile period. With the intrauterine douche there was a risk of carrying more into the uterus than could ever be got out of it. He considered that as used in private practice the douche was a great source of danger. In a case of abortion, if it were incomplete and the patient had no rise of temperature, the material should be immediately cleared out, but if the temperature rose it was necessary to wait until it fell before clearing out the remains. If in the meantime death occurred it was due to bacteraemia, which would have been aggravated by interference.

## PLASTIC REPAIR OF THE FACE AND LIMBS.

At a meeting of the Edinburgh Medico-Chirurgical Society held on March 7th, with the President, Sir R. W. PHILIP, in the chair, Mr. J. J. M. SHAW read a communication upon the plastic repair of the face and limbs, and exhibited a series of lantern slides which illustrated the practice and results of two methods employed—the Thiersch graft upon a mould and the tube pedicle.

After paying a tribute to the influence of Mr. H. D. Gillies in the recent developments in plastic surgery, and to the value of an association with him at Queen's Hospital, Sidcup, Mr. Shaw described the method of applying the Thiersch graft wrapped around the dental composition known as "stent," and showed photographs of illustrative cases indicating its usefulness in ectropion of the eyelids, in adhesions of the labio gingival sulcus which prevent the fitting of dentures, and as an intra-nasal lining in deformities caused by lupus, syphilis, and old-standing trauma. Reference was made to the necessity of supplying, in these types of nasal deformity, a new cartilaginous framework, angled at the tip of the nose and supported both at the glabellar region and at the spine of the



maxilla, in addition to the restoration of the lining. In all cases a temporary improvement could be effected by the insertion of a simple straight slip of cartilage, but it was only in a condition of comparatively recent trauma, in which no intranasal lesion of an ulcerative type had existed, that a permanently satisfactory result could be attained by a cartilage which was supported by bone at the upper end only.

The two varieties of tube pedicle grafts, to which were applied the distinguishing names of anastomotic and arterial, were next demonstrated. In the former, most commonly fashioned upon the neck or abdomen, three operative stages were required. The skin tube was first prepared, both ends being left untouched. By daily constriction of the end which was first to be freed, the anastomotic channels of the other end were developed. Three weeks later the pedicle was divided at the end prepared for separation, partially opened out and implanted at a suitable margin of the new bed. After the lapse of another three weeks the remaining original attachment was set free and the pedicle opened throughout its whole length to fill the defect completely. The length and flexibility of the pedicle obviated the need for firm fixation of the parts in the intermediate stage. In the arterial type the operation was carried out in two stages. The most common example was the forehead flap, in which the pedicle contained the anterior branch of the superficial temporal artery. Owing to its dependable viability, the implantation of the freed end on to the face could be effected at once, and a fortnight later the second stage was carried out by the return to the forehead of the proximal part of the pedicle which had served as a conduit. The gap on the forehead, corresponding to the portion of skin which was now implanted on the face, was covered by a whole-thickness skin graft from the abdomen or by local advancements of the scalp. Examples were shown of the treatment by the forehead flap of facial disfigurement due to burns, port-wine stains unsuccessfully dealt with by other means, lupus excision, and gunshot wounds. In chronic ulceration and cicatricial contractures of the arms and hands, the employment of the abdominal anastomotic pedicle was illustrated. In these situations the tube pedicle was considered to be the most effective method of plastic repair. For the lower limbs, the pedicle graft, whether obtained from the sound limb or from the abdomen by successful "caterpillar" stages, was not advocated until it became evident that healing could not be effected by splintage and rest nor by free grafting.

The communication was discussed by Sir HAROLD STILES, Mr. GUTHRIE, Mr. WADE, Mr. STEWART, and Mr. PIRIE WATSON; and Mr. SHAW replied.

#### Clinical Cases.

Sir DAVID WALLACE showed (1) a case of exophthalmic goitre operated on thirteen months previously. The case had been treated medically for over a year prior to operation without benefit. The operation had been completely successful in relieving symptoms. (2) A case of epithelioma of the tongue in which no recurrence had followed resection of one-half of the tongue two and a half years previously. Dr. DAVIES reported a case of tetany following removal of the right lobe of the thyroid gland; the left lobe had been removed two years previously. The condition was benefited from large doses of calcium lactate and subcutaneous injection of parathyroid in 1/10-grain doses. Dr. PATERSON showed a case of pulsating exophthalmos from a non-traumatic arterio-venous aneurysm of the cavernous sinus and internal carotid artery. Dr. GOODALL showed a case of severe arthritis deformans, in which benefit had followed weekly intramuscular injections of peptone in 0.2-gram doses.

### MENTALLY DEFECTIVE CHILDREN.

A MEETING of the Ulster Medical Society was held in the Medical Institute, Belfast, on March 8th, with Professor JOHN W. President, in the chair.

Dr. DAWSON, chief medical officer of the Government of Northern Ireland, read a paper on the care and education of mentally defective children. He dealt fully at first with the classification and general pathology. An idiot was unable to guard himself against danger and had a mental equipment not exceeding that of a child of 2 years of age. An imbecile could guard himself against danger but could not earn a livelihood; his mental age lay between 2 and 7. The feeble-minded were permanently incapable of benefiting by education, and there were various subdivisions of this latter

division. Dr. Dawson then gave a description of the Darent Training Colony with its list of occupations, training, classes, and system of education generally. He remarked that it was generally asserted that these children would require life-long control, and so such expenditure was a waste of money; but some did remarkably well, many were greatly improved and were able to help in home work; all these would inevitably drift into public institutions, prisons, workhouses, penitentiaries, asylums, and so would have ultimately to be supported by public money. These homes and training schools minimized the evil; those cases that merely develop late were rescued, vicious tendencies and faulty habits were suppressed, and a certain amount of education, especially manual, was imparted; the children were taught to play, learn some one trade well, and solitariness was avoided. In Scotland the boarding-out system was common under strict supervision; it gave the child a home life and was economical.

Dr. LEE read a paper on the treatment of congenital syphilis, which was based on the results of 20 cases treated in the Children's Hospital. He referred to a large number of the moot points in congenital syphilis, and explained the method of administering the later preparations of salvarsan to infants.

The PRESIDENT raised the question whether sterilization by x-rays had been practised. Dr. CALWELL referred to the cause of feeble-mindedness; it was not altogether due to alcohol, nor to syphilis, nor yet to heredity, although the latter was the strongest factor. He thought it a pity that the Binet-Simon tests and their modifications were not more commonly and systematically used. The evil was clear; and, as shown by the paper, the remedy was also clear, but the difficulty was finance. He thought an institution was an absolute necessity, but general hospitals should open a mental out-patient department, where all such cases could be seen.

Dr. HOUSTON did not accept all the conclusions of Dr. LEE as regards the syphilitic problems; he asked how far hereditary syphilis was a cause of congenital mental defect. Mr. FULLERTON raised the question of the surgical cure of hydrocephalus by opening the Sylvian duct and otherwise restoring the free circulation of the cerebro-spinal fluid. Professor MACLEWINE said the evening had shown the necessity and advantage of linking up experimental and practical therapeutics. Dr. TRIMBLE said that an intelligent basis of education was necessary, not only in dealing with these children, but in all schools. Dr. DAWSON and Dr. LEE replied.

### CAUSE OF DEATH IN INTESTINAL OBSTRUCTION.

A MEETING of the Surgical Section of the Royal Academy of Medicine in Ireland was held on March 9th, with the President, Sir WILLIAM I. DE COURCY WHEELER, in the chair, when Mr. SETON PRINGLE read a communication on the cause of death in intestinal obstruction.

Mr. Seton Pringle, having briefly reviewed the three theories that had been advanced on this question—namely, (1) infection, (2) absorption of toxins from the obstructed intestine, and (3) depletion of the system in circulation and cerebral anaemia—went very fully into the experimental work that had been done by workers in the British Isles, America, and the Continent. From this work two facts confirming clinical experience stood out pre-eminently—peritonitis was not the chief factor in causing death, and the higher up the obstruction the more rapidly was it fatal. In addition he drew the following conclusions: (1) The principal factor in causing death in intestinal obstruction was a toxin which was developed chiefly in the duodenum, and, although not absorbed from normal intestine, was absorbed under the conditions which prevailed in obstruction. (2) The exact chemical composition of the toxin was still under dispute, but it was almost certainly of the nature of one or other of the toxic bodies derived from protein disintegration. (3) The exact mode of production of the toxin was also undecided, but probably the presence of pancreatic secretion, and, in a lesser degree, the activities of bacteria were necessary for its production. (4) While the duodenum was the site of maximum toxicity in obstruction, yet the poisonous substances were developed lower down in the intestine, and it was probable that in the production of these toxins bacterial action played an important part—a part which increased in importance the lower down the obstruction occurred. Mr. Pringle believed that those conclusions for the most



part held true when examined under the searchlight of clinical experience, although at the same time he considered that toxæmia was rarely the only factor in causing death, and that shock was one which played a more important part than the literature would lead them to believe. He suggested that intestinal toxæmia had a large share in causing death in acute septic peritonitis, together with the factors of shock and septic absorption from the peritoneum. Arguing that if the shock were combated there was a possibility of prolonging the patient's life sufficiently to enable the fighting powers of the peritoneum to deal with the infection, he urged not only the use of morphine and saline-glucose infusions to cope with the shock and toxæmia, but also strongly advocated a direct attack on the sources of the toxin by means of an enterostomy high up in the small intestine, after the manner of a Witzel's gastrostomy. The technique of the operation was described in detail, and Mr. Pringle said that most encouraging results had been obtained by adopting this line of treatment in such cases.

Mr. W. DOOLIN thought that the toxæmic factor was the main one. He had never seen a case in which the patient died of shock within twenty-four or forty-eight hours; in fact, in the cases he had seen it had seemed extraordinary the length of time the patient lived in spite of the intestinal obstruction. Mr. HENRY STOKES was of opinion that primary shock was rarely responsible for death in intestinal obstruction. He thought that shock was brought on more or less gradually, by toxins and loss of blood, and in such a case there would be no dilatation of the vessels. Mr. ADAMS MCCONNELL also spoke. The PRESIDENT expressed the opinion that in cases of intestinal obstruction a patient's power of getting rid of toxins was increased, and the stomach became an excretory organ. In these cases lavage of the stomach should be carried out every two hours. Frequently such cases were treated by giving pituitary extract and enemas, but he thought that there came a stage when that treatment was wrong, and when enemas should be stopped, morphine given, and the stomach frequently washed out. If morphine was given for two days or so the patient's bowels began to act, diarrhoea often set in, and thus toxins were got rid of. That bore out how much shock had to do with these cases. He was of opinion that stimulants were contraindicated, and that sometimes in acute cases, unless morphine was given, the patient would die.

Mr. W. C. STEVENSON then read a report on 132 patients treated with radium emanations during 1922, and showed two male patients who had been treated with radium emanations during 1922. The PRESIDENT showed a specimen of a renal squamous-celled epithelioma from a patient who had four stones in the kidney. In the published cases of primary cancer in the kidney a considerable percentage had stones in the kidney, which looked as if stone was an important factor in the production of cancer in the kidney.

### HEART-BLOCK.

At a meeting of the Manchester Medical Society held on March 7th, with Sir WILLIAM MILLIGAN in the chair, Dr. J. C. BRAMWELL read a paper on some aspects of heart-block. He said the introduction of the electro-cardiographic method had thrown much light on the mechanism of the heart beat and the disorders to which that mechanism was subject in disease. Some of the more recent work in particular had an important practical application to the clinical problem of prognosis. In its mildest form heart-block was characterized by a prolongation of the interval which elapsed between the contraction of the auricle and ventricle. It differed therefore only in degree from the normal mechanism, which served to prevent simultaneous contraction of these two chambers, such as occurred in some cases of "nodal rhythm." In addition to the more familiar forms of partial and complete block, lesions of one or other of the main branches of the a-v bundle gave rise to characteristic alterations in the ventricular complex of the electro-cardiogram. This was because the excitation wave was forced to pursue an abnormal course and was delayed in its passage to the affected ventricle. In certain cases of grave myocardial disease a form of electro-cardiogram was met with which resembled that of branch bundle lesions in the increased duration of the initial ventricular deflections, but differed from the latter in its smaller amplitude and in a peculiar notching of the O.R.S. group. Rothschild and Oppenheimer considered this type of electro-cardiogram characteristic of a lesion affecting the terminal arborizations of the Purkinje system. Whether this hypothesis would ultimately prove to be correct was un-

certain, but the records of this type were undoubtedly of grave prognostic significance. Complete heart-block was frequently compatible with a comparatively active life, and it was usually during the transition stages before complete heart-block had been finally established that syncopal attacks were most liable to occur. During periods of severe and repeated Stokes-Adams seizures the prognosis might appear to be wellnigh hopeless, but in many of these patients the attacks subsequently disappeared completely, or became less frequent, and a surprising degree of recovery was attained. In certain cases of cardiac irregularity the normal heart rhythm was interrupted by long pauses. On account of its resemblance to a-v block this condition had been termed "sino-auricular block," on the hypothesis that the excitation wave arises in the s-a node but fails to reach the auricle. This hypothesis was likely to require modification in the light of further knowledge, but served for the present to bring the condition into line with the more familiar forms of cardiac arrhythmia.

Dr. Bramwell's paper was illustrated by electro-cardiographic records from patients treated in the Manchester Royal Infirmary during the past three years, whose after-histories had been followed up to the present time.

### THE DERMATOLOGIST AS DETECTIVE.

A MEETING of the Sheffield Medico-Chirurgical Society was held on February 27th, with Dr. R. HALLAM in the chair, when Sir NORMAN WALKER read a paper entitled "The detective spirit in the diagnosis of skin diseases." As a suitable text for his subject he selected the words from Job: "The cause that I knew not I searched out." In his student days dermatology, he said, had reached the stage of observation and collection of facts. Bacteriology was then in its infancy. Many diseases then attributed to "gouty" or "nervous" conditions were now attributed to definite organisms. The method of inquiry was important. The patient should be encouraged to tell his own story. Questions should be put in such a way that it was equally easy for him to answer yes or no. The skin more than any other organ of the body, except perhaps the stomach, was subject to idiosyncrasy. Just as surgeons had personal idiosyncrasies in the way their skins reacted to antiseptic lotions, so people generally showed marked personal peculiarities of irritability to special varieties of soap. Other cases of dermatitis had been traced to feather boas cleaned with a soap powder, or furs cleaned with formalin. In regard to occupation, it is important to find out exactly what a man did. A patient, for example, who said he was a "telegraphist" was found to be a cleaner of instruments, for which he used turpentine. Certain woods, notably teak and satinwood, were liable to cause irritation in some persons; various plants, such as the *Primula obconica* and *Rhus toxicodendron*; in others cosmetics, hair dyes, and quack ointments were also frequent offenders. The lecturer concluded with the advice, "Seek till ye find. Seek and ye shall find." A vote of thanks was proposed by Professor ARTHUR HALL, and seconded by Dr. E. F. SKINNER.

### NAVAL, MILITARY, AND AIR FORCE HYGIENE.

By permission of the Medical Research Council and the Officer Commanding R.A.F. Medical Units, Hampstead, a meeting of the Naval, Military, and Air Force Hygiene Group of the Society of Medical Officers of Health was held at the National Institute for Medical Research, Mount Vernon, Hampstead, on March 19th, with the President, Major-General Sir WILLIAM MACPHERSON, in the chair. Descriptions and demonstrations were given of (1) the katathermometer and recent modifications, (2) silicosis, (3) a new dark-ground illuminator, (4) methods of selection of flying personnel.

Dr. LEONARD HILL briefly described the katathermometer and emphasized its great value in dealing with problems of ventilation. He showed that the mortality rate in factories, laundries, etc., with bad katathermometer readings was invariably high. In South African mines with bad readings a great loss of labour efficiency was found which could be remedied by improving the harmful conditions. In temperate climates the dry katathermometer was important; but in the tropics the wet katathermometer, which indicated the condition of the sweating body, was of greater value. The practical bearing of this work upon heat-stroke, labour conditions, healthy exercise, and sedentary occupations had been amply demonstrated in recent experience. Dr. SCHUSTER then



demonstrated a recent modification of the katathermometer enabling a record of the readings to be kept.

Dr. Purdy gave a demonstration of slides illustrative of silicosis. He called attention to the recent work on this subject, more especially with regard to its relationship to pulmonary tuberculosis. He showed that colloidal silica had a destructive action on endothelial cells from which the phagocytes were derived.

Mr. J. E. BARNARD demonstrated a new dark-ground illuminator of sufficiently high angle to permit the use of an objective of 1 to 2 N.A. The improvement in the image and increased resolution were demonstrated by means of specimens of *Leptospira ictero-haemorrhagiae*.

Group Captain H. M. FLACK described the methods of selection of flying personnel. The system was devised to answer the three fundamental questions: (1) Can the candidate learn to fly? (2) Will he be able to stand (a) the nerve strain, (b) the diminished oxygen tension? (3) Has he a suitable disposition for this class of combatant work? No. 3 was supplementary, and not an integral part of the medical examination. The various physiological tests employed were described in some detail, and their application in determining the answers to the above questions was explained.

### ENDOCRINES AND PSYCHONEUROSES.

At a meeting of the West Kent Medical Society held on March 9th at the Miller General Hospital with Dr. J. P. PURVIS in the chair, Dr. W. LANGDON BROWN gave a lecture on the influence of the endocrines in the psychoneuroses. He said that response to chemical stimuli was the most primitive form of defence in animals, and this was shown in the queen bee; at a certain stage of development she was strongly heliotropic, but the immediate effect of fertilization was to destroy this heliotropism and she sought the shelter of the hive. Internal secretions regulated instinctive behaviour. So it was with human beings—the instinctive behaviour of a young man in the presence of the opposite sex depended mainly on the state of his endocrine system. The activities of the endocrine glands were correlated to a large extent through the nervous system. The sympathetic system co-operated with the adrenals, thyroid, and pituitary; the parasympathetic mainly with the glands of the digestive organs and their annexes. The influences leading to hyperthyroidism might be classified under the headings of nutritional, toxic, and psychic: lack of vitamins led to diminished thyroid secretions; tonsillar sepsis and intestinal sepsis were apt to produce thyroid enlargement; and in Graves's disease the psychic factor played a large part. In the war, officers with more responsibility developed neuroses, while privates more commonly developed hysterical paralyses and mutism. Excitement and emotion caused glycosuria, especially in Jews. Fear was a perversion of the defensive mechanism of the body. The adrenals were fighting glands and made aggressive persons. In pituitary disturbance walking and talking developed late; the fat boy in *Pickwick*, in his sleepiness and his desire to make people's flesh creep, was an example of pituitary disturbance. The thyroid gland was the creator—child-bearers and artists never had myxoedema. Graves's disease increased after the air raids in London and after the San Francisco earthquake. Hypothyroidism tended to produce a resigned melancholy. In a case of acute mania which developed in a man suffering from myxoedema the mania disappeared when thyroid treatment was resumed. If the mania had been earlier there was an example of a precocious child.

### ANTE-NATAL DIAGNOSIS.

THE monthly meeting of the London Association of the Medical Women's Federation was held at the Elizabeth Garrett Anderson Hospital on March 13th, with the President, Dr. LOUISA MARTINDALE, in the chair. After preliminary business Dr. FRANCES HUXLEY read a paper entitled "Ante-natal diagnosis," in which she detailed the clinical signs of pregnancy and the dates at which they could usually be detected. She then described the various "grips" which she is in the habit of using for estimating the size of the pelvis, the lie of the child, and the relation between the size of the head and the pelvis. She discussed the date of engagement of the head in primigravidae and multigravidae respectively, and emphasized the importance of estimating the size of the foetus as the best guide to its maturity. In discussing the lie of the foetus she pointed out some of the dangers and difficulties in doing version in breech presentations, and remarked that the site of maximum intensity of the foetal heart was generally to be found below the umbilicus in such cases, rather than above, as was usually taught. A discussion followed, in which Lady BARRETT, Professor MCILROY, Dr. RORKE, Dr. RUSSELL, and others took part.

## Reviews.

### PHARMACOLOGY AND CLINICAL MEDICINE.

PHARMACOLOGY has sometimes been defined as the action of drugs on normal tissues and organisms. In reality it embodies much more than this, for it embraces the synthesis of new chemical compounds with a view to their use in medicine—branch hardly existing in this country—and our knowledge of the scientific employment of drugs in the sick-room. Pharmacology, however, is never conceived or taught as pure science, but always, directly or indirectly in relation to the patient, as the science of treatment. Professor CLARK in a bright and interesting little book, adopts as his title *Applied Pharmacology*.<sup>1</sup> In writing it his object was to bridge the gap between pharmacology and therapeutics which he thinks is too great for the student in this country to pass unaided. As matters stand at present it may be that such a gap exists, but there can be no gap if the subject is taught in the laboratory and ward at the same period of the student's curriculum, whether by the same or different professors. This is the policy universally advocated by a teachers in the subject.

Therapeutics embraces all treatment of diseased person, whether it be based on experimental pharmacology or be no more than a remnant of folklore and mere empiricism; applied pharmacology, then, should refer to that portion of therapeutics which is based on pharmacology.

Professor Clark's book is an admirable account of certain of the salient features of the action of drugs in health and disease, but the word "applied" is really unnecessary since pharmacology is an applied science. How can description of the action of morphine and strychnine, of purgatives and other drugs, be applied unless precise directions are given for their employment and for their administration under definite conditions? On the other hand, therapeutics, like politics, is not governed by a set of principles for general observance; it is still an art.

Professor Clark's book contains twenty-seven chapters. Classification in pharmacology always presents difficulties. One of two methods is adopted: either Schmiedeberg's classification into groups of substances exerting certain actions in common, or a classification according to the organs on which the drugs act. Professor Clark adopts the latter method, and his chapters deal with the action of drugs on the heart, kidney, respiration, and so on. Nevertheless, no simple classification will suffice, and separate chapters are given to alcohol, anaesthetics, disinfectants, and local anaesthetics: it is a little difficult to understand why emetine and the salicylates are included in one group, since they are in no way related to one to the other.

The book is written in an interesting fashion and is entirely free from dogmas, a feature which in our opinion makes only for good, though the modern student has a passion for his memorizing to be precise and his knowledge to be tabulated. Particularly admirable are the chapters on vitamins, radiations, immunity, and the pharmacological standardization of drugs. This book is not, I believe, intended to present a full account of treatment. It does not deal with counter-irritation, the homely poultice or camphorated oil, nor with colchicum and the essential oils; phenacetin is dealt with only in so far as it lowers temperature, a purpose for which it is not used in clinical medicine.

Professor Clark's book contains the groundwork of the rationale of treatment; it makes delightful reading and should prove of great interest to all those who treat the sick. It is the kind of book which may be picked up at odd moments and a chapter perused with interest and profit. For unless the physician has a firm grasp of the great biological truths underlying physiology and pharmacology, notwithstanding all progress in scientific medicine, he must remain an empiric. Huxley writing nearly thirty years ago said: "There is no more hopeful indication of the progress of medicine towards the ideal of Descartes than is to be derived from a comparison of the state of pharmacology at the present day with that which existed forty years ago." Clark's book is the story of the advance since that time, and the story is well told.

W. E. DIXON.

<sup>1</sup> *Applied Pharmacology*. By A. J. Clark (M.C.), B.A., M.D., F.R.C.S. London: J. and A. Churchill, 1923. (Demy 8vo. pp. viii + 252; 47 illustrations. 15s. net.)



## CHARLES WHITE AND PUERPERAL FEVER.

DR. LLOYD ROBERTS will be remembered for his professional skill and for his ability not only to adapt himself to scientific progress made by others but definitely to advance such progress himself. In support of this statement it is only necessary to mention that he performed his first Caesarean section in 1867, when the mortality was 93 per cent., and his last four sections, all successful, in 1907-8. He was a great lover of old medical books, and the collection he bequeathed to the Royal College of Physicians of London was the most important its library had received since the magnificent gift of the Marquess of Dorchester's library in the seventeenth century. The memory of Lloyd Roberts will be kept alive by this gift, and also by the bequest of £500 to the Manchester Royal Infirmary to provide an annual honorarium for a Lloyd Roberts lecturer. He had worked at the Infirmary for twenty-five years and bequeathed to it a sum of £3,000. To deliver the first Lloyd Roberts lecture the trustees chose Dr. J. G. Adami, F.R.S., Vice-Chancellor of the University of Liverpool, who, remembering that Dr. Lloyd Roberts had given an address on the Manchester School of Obstetrics in 1903, chose that subject, but limited his lecture to the efforts of Charles White to prevent puerperal fever. The lecture has now, with certain additions, been published in a volume.<sup>2</sup>

Charles White (1728-1813) was a student under William Hunter in 1748 and was a friend of his brother John Hunter. He was founder and chief surgeon of the new Manchester Infirmary, where he practised surgery and obstetrics for thirty-eight years. Dr. Adami draws special attention to Dr. White's book on *The Management of Pregnant and Lying-in Women, and the means of curing, and especially of preventing the principal disorders to which they are liable*, and more especially to his remarks on self-infection in puerperal fever. This treatise, which was first published in 1773, went through five editions, was translated into French and German, and was reprinted in U.S.A. in 1793. Dr. Adami finds serious fault with the late Sir William Sinclair, who was professor of obstetrics in Manchester, because, when writing his *Life and Doctrine of Semmelweis* in 1909, he should have so minimized Dr. White's book that all the credit is given to Semmelweis. Sinclair, Dr. Adami says,

did not recognize "that practically all that Semmelweis accomplished was to demonstrate absolutely that the earlier English methods had been on sound lines (and had been introduced into the Vienna Lying-in Hospital in 1789 by Professor Boër, who had studied in England), and that reversion to those methods brought about a rapid reduction of mortality; and that the main cause of the appalling incidence of puerperal fever in the Vienna lying-in hospitals was want of cleanliness, and especially the practice of allowing students after they had come straight from the post-mortem room to examine patients without first adequately cleansing their hands. He admitted other modes of infection such as neglect to employ clean bed linen, the presence of open suppurating wounds in neighbouring beds, and self-infection—that is to say, the lochia, remnants of decidua, and blood coagula which are retained may undergo decomposition and when absorption occurs produce puerperal fever."

It may, however, be pointed out that Semmelweis was dealing mainly with the modes of infection of lying-in women from without by septic hands and instruments, whilst Charles White had dealt chiefly with auto-infection or with environmental infection arising "from foul air, filthy bedding, associated with the retention of lochia and the excreta, which in his opinion were the primary causes of puerperal fever, and he realized that when this was once developed it could be conveyed to other women."

It looks as if Charles White (1773) and Semmelweis (1843) were emphasizing two different ways of preventing puerperal fever, the former teaching that most cases were due to auto-genetic putridity and to passive unclean environment, whilst the latter, seventy years afterwards, discovered that it was mainly the direct conveyance of septic products from without into the areas where lochia and blood and placental debris accumulated which encouraged the spread of putridity. If the existence of streptococci had been known to these two observers, the importance of auto-infection would have been largely limited, and the danger of direct infection by unclean agents would have been more readily understood and accepted in this country, where the views of Semmelweis were first

made known by the late Dr. C. H. F. Routh in a paper read at the Royal Medico-Chirurgical Society in 1848 (*Transactions*, 1849).

Charles White never lost a patient under his own care in natural labour from puerperal fever, and strictly limits his statement by excluding "cases requiring the use of instruments and cases of floodings or convulsions, or cases to which he had been called into consultation." If he had realized and described more fully the risks of infection from unclean instruments and hands he would have saved many lives in the seventy years between his time and that of Semmelweis, though it is probable, that White's prophylactic views carried much more weight than Sinclair thought possible, for, as Dr. Adami says, Boër, professor of midwifery in Vienna between 1789 and 1819, had reduced puerperal mortality to 0.8 per cent. in his last year by methods which he had learnt in England. Boër's successor, Klein, was less successful, and his mortality rose to 7.8 per cent. in his first year, and to 10 per cent. between 1841 and 1846; it was not till Semmelweis discovered the great danger of direct infection by examining women during and after labour with septic hands that the value of White's teaching and his own practice of clean contact could be usefully combined.

Dr. Adami has done well to lead us back to Charles White's steps in the direction of aseptic midwifery and to reprint in the appendix much that Charles White wrote in his book. This has increased the value of his address, which should be read by all interested in obstetrics, and especially by those who deplore the persistence of puerperal mortality from sepsis. In 1919 the puerperal death rate was greater in England and Wales than in any other year since 1905; this the Registrar-General stated was "preponderantly due to septic disease," for of the 3,204 deaths assigned to "pregnancy and childbirth," 1,208, or 37 per cent., were due to puerperal infection.

## OPOTHERAPY IN EXCELSIS.

DR. L. LEMATTE, in *L'Opothérapie du Praticien*,<sup>3</sup> gives an account of the method of preparation, dose, mode of administration, and therapeutic use of a very wide variety of extracts of organs. The method of preparation consists in making a glycerin extract of the macerated organ, filtering, and then sterilizing with ultra-violet light. Directions are given for the administration of the product by mouth, by rectum, or by hypodermic injection. Accounts are given of the therapeutic use of extracts made from the brain, the thyroids, the parathyroids, the thymus, the pituitary, the kidneys, the suprarenals, the prostate, the testicles, the ovaries, the p'acenta, the mammary glands, the liver, the bile, the heart, the lungs, the spleen, the lymph glands, the marrow of bones, the stomach, and the gut.

A therapeutic index of five pages is supplied. A study of this index shows that opotherapy has the great advantage of simplicity, for adenitis is treated by extract of lymph glands, albuminuria by extract of kidneys, amenorrhoea by extract of ovaries, bronchitis by extract of lungs, cardiopathies by extract of heart, and constipation by extract of the gut. It seems only logical to suggest a further simplification, already partly achieved by polyglandular therapy: why not mince up and extract the entire animal, and the product should surely be the long-sought-for elixir of life?

The author in his preface states that since the book is written for practitioners no attempt is made to give an account of the theories which attempt to explain the action of the organs dealt with. This is rather a doubtful compliment to medical practitioners, and we think that the book would have been improved if rather more substantial evidence had been adduced to show that nine-tenths of the extracts considered have any therapeutic action whatsoever.

## THE PIRQUET SYSTEM OF INFANT FEEDING.

It is a pamphlet of seventy-four pages entitled "The feeding of healthy and sick children" Dr. EDMUND NOBEL of the University Children's Clinic in Vienna has made a painstaking attempt to explain the principles of the Pirquet system of feeding.<sup>4</sup>

As an exponent and teacher of this system since its introduction by Dr. Clemens Pirquet during the war as an educational and economic measure Dr. Nobel ought to be in

<sup>2</sup> Charles White, of Manchester (1728-1813), and the Arrest of Puerperal Fever. Being the Lloyd Roberts Lecture, Manchester Royal Infirmary, 1921. By J. George Adami, C.B.E., M.D., F.R.S. With which are reprinted Charles White's published writings upon Puerperal Fever. Liverpool: The University Press of Liverpool, Ltd.; London: Hodder and Stoughton, Ltd. 1922. (Demy 8vo, pp. 142; 4 plates. 5s. net.)

<sup>3</sup> *L'Opothérapie du Praticien*. By Dr. L. Lematte. Paris: A. Maloine et Fils. 1922. (Cr. 8vo, pp. 233; illustrated. Fr. 5.)

<sup>4</sup> *Die Ernährung Gesunder und Kranker Kinder*. By Privatdozent Dr. Edmund Nobel. Vienna, Leipzig, Munich: Rikola. 1923. 200y. 8vo, pp. 74; 11 figures.)



a position, if anybody is, to explain its principles and advantages. Dr. Pirquet was not satisfied that the old method of estimating and expressing food values in terms of calories was sufficiently simple to be comprehended by the lay public, and since it was a matter of vital importance to the nation that the Austrian people should realize the meaning of food values and a subsistence diet he invented his system and the unit of energy value which he called the "nem," in place of the old familiar calorie.

The word "nem" is compounded of the initials of the three words *Nahrung*, *Einheit*, *Milch*, and expresses the food value of 1 gram of average breast milk, which according to our reckoning is about 0.7 of a calorie. He has also coined the words *decanem*, *hektonem*, *kilonem*, *decinem*, *centinem*, etc., to express the value of 10, 100, 1,000 grams and 1/10 and 1/100 of a gram of milk respectively.

For our part we cannot understand why it should be considered easier to grasp the food values of different articles of diet in terms of "nems" than in terms of calories, but we are informed that it has been rendered possible by their means to enable quite young children to take an intelligent interest in the adjustment of their food intake to their physiological requirement. This may be so, but it would be equally possible to make them understand the same thing if the food values were expressed in calories and the system were sufficiently explained.

Pirquet's system has the further eccentricity that it does not recognize the weight of the child as a criterion of its food requirements, as we are accustomed to do in accordance with Rubner's original teaching; the Viennese innovation regards the sitting height (*Sitzhöhe*) as a more practical index. Pirquet estimates that the square of the sitting height expressed in centimetres gives the number of "nems" required in the twenty-four hours. To give an example: A child with a sitting height of 40 cm. requires 1,600 "nems" ( $40 \times 40$ ) in the twenty-four hours. Pirquet evidently recognizes that neither "sitting height" nor weight can give a correct measure of a child's food requirements, for he explains and defines very carefully the maximum, minimum, optimum, and balanced (aequum) requirements under individual and particular circumstances. The minimum requirement is what we understand by the requirements of basal metabolism; the maximum he defines as the most a child can take without becoming actually ill—a very poor definition, in our opinion, as it leaves out of consideration the factor of time. The optimum is about two-thirds of the maximum.

It is perhaps unnecessary to follow Dr. Nobel's interpretations farther than this so far as concerns the feeding of healthy children. The system is not likely to become popular in this country, and the fact that "balance" is taken very little into account beyond recognizing that the protein percentage of breast milk should be the standard throughout childhood—that is, about one-tenth of the total food value—will at once prejudice the system in the eyes of the medical profession on this side of the Channel. Moreover, it is hardly in conformity with the views of the majority of dietists to hold that fat and carbohydrates are interchangeable equivalents. Fats appear to have some nutritional value quite apart from their value as combustible material—perhaps as base carriers or vehicles for the fat-soluble A factor—and cannot be indefinitely replaced by carbohydrates.

In this latter connexion we are glad to note that Dr. Pirquet's system makes acknowledgement of the value of the accessory factors, a fact which bears testimony to the usefulness of the work of the Lister Institute's mission to Vienna, which was very largely for the purpose of instructing the distressful country, of which Vienna is the capital, in the newer knowledge of nutrition and the part taken by the accessory factors in scientific dietetics.

#### PSYCHO-ANALYSIS.

THE volume entitled *Introductory Lectures on Psycho-analysis* consists of a translation, carefully made by Mrs. Joan Riviere, of a series of addresses delivered by Professor SIGMUND FREUD at the University of Vienna, which, as we recently had occasion to state, have reached a fourth edition in German. They provide the most comprehensive account of the subject which has yet appeared, and the book is the best with which to commence the study of psycho-analysis.

*Introductory Lectures on Psycho-analysis.* By Professor Sigm. Freud, M.D., LL.D., Vienna. Authorized English translation by Joan Riviere. With a preface by Ernest Jones, M.D. London: George Allen and Unwin, Ltd. 1922. (Demy 8vo, pp. 395; 1 illustration. 18s. net.)

The reader cannot fail to be impressed by the ability and honesty of its writer, and by his untiring energy in seeking to unravel the motives which determine human behaviour. The style of the book is conversational, and as he proceeds the author anticipates and meets objections which may be made to his views.

The latter portion of the book, in which Professor Freud outlines his general theory of the neuroses, will be read with particular interest. There is no suggestion of finality in his treatment of the subject, for every fresh fact creates a fresh problem. Though Freud's investigations have led him to ascribe the symptoms of the neuroses to disturbances in the sexual impulse, he recognizes that the factors responsible for this state of affairs are extremely complex and variable. Some, he admits, are not preventable, and he lays stress on the influence of the inherent sexual constitution in the production of nervous symptoms. The possibilities of prevention of the neuroses by early intervention in the matter of the child's sexual development are discussed with reserve. Professor Freud holds that the value of strict supervision in childhood is small because it is helpless against the constitutional factor; that it is less easy to carry out than specialists in education imagine; that it favours an exaggerated degree of sexual repression which is harmful in its effects; and that it sends the child into life without power to resist the urgent demands of his sexuality that must be expected at puberty. Professor Freud exhibits no disposition to assume the part of a social reformer by applying the knowledge he has gained of the individual to the reconstruction of society; he is always the observer, rather than the critic or mentor. As an observer he is too acute to assume that the neuroses are the product of unfavourable external conditions of life, though these of course have their influence. He holds that though sexual deprivation ("absence of love in life"), which modern social conditions tend to impose on many people, is responsible for much unhappiness, abstinence in itself is an infrequent causal factor in the neuroses. Professor Freud has not simplified the problem of the neuroses; he makes evident his opinion that the conditions responsible are extremely intricate, and that neither their prevention nor cure is a simple matter. He certainly dissipates the myth that either marriage or "free living" will have the effect of curing a neurosis.

In these lectures Professor Freud has raised a number of problems which it will take many years to solve. His own views have been largely modified as a result of his further investigations, and it is difficult to foretell the ultimate fate of his complex theories. There can be no doubt, however, that he has made contributions of permanent value to psychology, and has enriched our knowledge of ourselves and other people.

#### THEORIES ABOUT CANCER.

DR. DUNCAN BULKLEY states that the scope of his volume, *Cancer and its Non-surgical Treatment*,<sup>6</sup> has been widened beyond his original intention, so that in addition to therapeutic considerations it deals with such divergent matters as the geographical distribution of cancer, civilization and cancer, and the biochemistry of cancer; it is in these, which may be called extraneous chapters, that the main interest of the volume lies.

The author begins with an attempt to describe the nature of cancer, but beyond the reiteration of a number of well accepted platitudes there is nothing of any value in this section. Under what is termed the positive results of laboratory investigation a statement is made which seems to be misleading. "The blood in advancing cancer," he says, "has repeatedly been shown to exhibit many manifest changes which indicate vital alterations in the action of the organs which form blood and so control the nutrition of the body and its cells." The fact, however, is that though the condition of the blood in cancer has received the most searching investigation nothing beyond the variation of a secondary anaemia has been discovered. Possibly a secondary anaemia is all that Dr. Bulkley intends to express, but if so the passage suggests the employment of a method, acceptable perhaps in the art of diplomacy, but never permissible in the science of medicine—the method of disguising a very simple statement of fact by a confusing complexity of words. Throughout the volume a tendency to this fault appears.

<sup>6</sup> *Cancer and its Non-surgical Treatment.* By L. Duncan Bulkley, A.M., M.D. New York: W. Wood and Co. 1921. (Met. 8vo, pp. vii + 472; illustrated. 6 dollars.)



Dr. Bulkley makes the dogmatic statement that laboratory experiments have negated the view that cancer is in its beginnings local; to us it seems that recent experimental work has tended to lay stress upon the influence of local irritants in certain forms of epithelial cancer, and it is actually upon this very point that the hypothesis Dr. Bulkley has set up may be shown to be untenable.

The chapters which deal with the frequency and the geographical distribution of cancer are interesting from the statistical point of view. The subject-matter is sound; much of it has been derived from F. L. Hoffmann's monumental work on the mortality of cancer throughout the world.

Dr. Bulkley draws attention to the apparently increased incidence of cancer in relation to civilization. There would seem to be little doubt about the accuracy of this observation, but to draw from it the conclusion that cancer is a disease of hypernutrition is not logically sound; it is only one possibility in a very complex problem. The section which deals with the histopathology of the disease is disappointing; much of what is stated has been derived from various authorities, but the abstracts are not given in sufficient detail to retain their original value. The account of the biochemistry is even more unsatisfactory; the discussion is introduced by the following statement: "But there is no mystery in the disease, and the real cancer problem is cleared up when we study the biochemistry of the disease." The reader begins to feel that he is on the brink of the solution of a problem which has hitherto defied investigators, and follows page after page with the closest attention, to find the subject left obscure, unless he is prepared to accept the view that cancer is a disease of deranged nutrition.

The plan followed by the author in the medical treatment of malignant disease is a combination of dietetic, hygienic, and medical measures. The dietetic part of the plan resolves itself into a vegetable diet, and menus are given for six days. The hygienic instructions are accurate and sensible, and insistence is very properly laid on the importance of a sufficiency of sleep. The medical treatment includes the use of such remedies as will incite the various organs to form and to eliminate effete elements. Where individual drugs are concerned potassium acetate appears to be that to which Dr. Bulkley attaches most importance. Various local applications are mentioned.

The volume expresses the views of a man who most implicitly believes and as faithfully practises the theories he sets out. Such a production is always interesting, but in this instance we must regretfully say that it has thrown no light upon the dark problem of malignant disease. We trust that it may not do actual harm by raising false hopes and so delaying the only treatment which so far has proved efficient—at least in the early stages of the disease.

#### FUCHS'S "OPHTHALMOLOGY."

Those of us who began the study of ophthalmology on one of the earlier editions of Fuchs's textbook will hardly recognize the new edition.<sup>7</sup> The translator has had the advantage of consultation with Professor Fuchs, and he has incorporated much matter from the thirteenth German edition, which has been prepared by Salzmann but has not yet appeared in print.

Among other changes, the section on hemianopia has been placed under disorders of the visual field, instead of, as heretofore, in the section on the optic nerve; while motor affections of the iris and ptosis have been transferred to the section on motor anomalies from their places in previous editions in the iris and lid sections respectively.

The chapters on refraction have been much enlarged and recent work on such subjects as perimetry and colour sense has been inserted; heredity is more fully discussed. Gullstrand's work on astigmatism, the cardinal points of lenses and the eye all find mention, and there is a revised table of accommodation.

The sections dealing with special diseases have been brought up to date by the incorporation of much new matter, particularly in trachoma, inclusion blepharorrhoea, necus serpens, iritis, and glaucoma—in fact, every page in this part has been revised and added to. The section on operations is improved by the addition of much recent work. In spite of these rather radical changes, the translator hopes that he

has preserved the spirit and where possible the words of Professor Fuchs and thereby maintained the standard set by the author. How far he has succeeded, it is difficult for one to say who made acquaintance with the book in a much earlier and less cumbersome edition, especially as the reviewer has not seen a recent German edition. We can honestly say that little seems to have been omitted; the work as it now stands forms a very complete textbook of ophthalmology, and as such will be very useful to the higher student of the subject. The book is so bulky that the publishers would have done well to issue it in two volumes.

#### TREATMENT OF GONORRHOEA.

The third edition of the English translation of Luys's *Text-book of Gonorrhoea*<sup>8</sup> remains unchanged in its general character. Its author is an enthusiastic advocate of urethroscopic treatment in gonorrhoea, not only in lesions of the anterior but also in those of the posterior urethra. In Luys's opinion, in every case of chronic inflammation of the urethra, whether symptoms point to lesions of the posterior portion or not, posterior urethroscopy should be carried out. The inspection should be very thorough, beginning at the neck of the bladder—paying special attention to the prostatic fossa—and ending at the meatus. By those accustomed to use other forms of posterior urethroscopes than Luys's such a piece of advice will not be well received, for the passage of a posterior urethroscope is an ordeal to which the average patient will not readily submit. However, Luys's posterior urethroscope has the advantage of passing very readily, and the discomfort experienced by the patient is comparatively trifling. As a set-off to its advantage it must be admitted that the view it furnishes, at any rate in the hands of the average observer, is inferior to that provided by other instruments.

In the chapter dealing with gonococcal epididymitis the use of injections of electrargol is strongly advocated. Luys claims that the drug has a powerful curative effect and immediately hastens resolution. He admits, however, as a drawback to the injection, that there is a temporary increase of tension and of pain, especially when infiltration is present. This drawback to electrargol injections would appear to be a very real one, since it is the rule for gonococcal epididymitis to clear up without any accidents.

An addition to the chapter on inflammation of the urethra due to other causes than the gonococcus is a section on urethritis due to *B. coli*. The author claims to have discovered a relation between a hypertrophic lengthening of the prostatic fossa and the liability to this type of urethritis. Owing to this lengthening of the fossa complete evacuation by micturition no longer takes place and infection of the stagnating urine is liable to occur. Vaccine therapy would appear to have given good results in his hands.

Additional plates and illustrations have been added in the third edition.

#### NOTES ON BOOKS.

IF in England in Elizabethan and Restoration days, cuckoldom was the standing subject of jokes, in France it was quite eclipsed by the enema syringe and the clyster. The *Joyeux Propos d'Esculape*,<sup>9</sup> by Drs. CABANÈS and WITKOWSKI, consists in great part of a study of French history and literature dealing with the use of what at first was known as a clyster, later as a lavement, and latest as a remède. Though this faecal kind of humour makes no strong appeal to the English mind, nevertheless many of the facts recorded, which show the extraordinary vogue of the enema among the French, are of interest in the history of medicine. The plays of Molière contain many allusions to this subject, and in the *Malade Imaginaire* the opening scene discloses Argan seated upon a close-stool. This indeed is hardly surprising when we remember that the King of France received members of his court under similar conditions, and that the Duchess of Burgundy had an enema administered in the very sitting-room of Louis XIV when only partly hidden by a screen. Of Henry IV of France and Navarre it is recorded that in one year he received 212 lavements, 215 purges, and was bled 47 times. It may be doubtful whether the excessive use of lavage of the lower bowel was as common among the lower orders as it was among the nobility,

<sup>7</sup> *Textbook of Ophthalmology*. By H. E. Fuchs. Authorized translation from the twelfth German edition, revised and enlarged by Alexander Duane, M.D. Seventh edition. Philadelphia and London: J. B. Lippincott Company. 1923. (Med. 8vo, pp. xv + 937; 455 figures, 42s. net.)

<sup>8</sup> *A Textbook of Gonorrhoea and its Complications*. By Dr. G. Luys. Translated and edited by A. Foerster, M.R.C.S., L.R.C.P. London. Third revised edition. London: Baillière, Tindall, and Cox. 1922. (Roy. 8vo, pp. xvi + 40; 5 plates, 212 figures, 25s. net.)

<sup>9</sup> *Joyeux Propos d'Esculape*. By Drs. Cabanès and Witkowski. Paris: Librairie E. Le François. 1922. (Imp. 16mo, pp. 348; 47 figures. Fr. 9.)



but it appears that a record exists of a suit brought in the seventeenth century by a nurse against a Canon of Troyes for payment of her fees for the administration during two years of 2,190 clysters, and it is certain that up to a very recent period the appearance in a French farce of an apothecary with a pantomimic syringe was sure to provoke roars of laughter. The subject is illustrated by a number of bad reproductions of old plates and of some modern ones, in which the basest part of the human body is much in evidence. The article entitled "Clysteriana" occupies a large part of the volume, which also contains a number of anecdotes more or less medical and less rather than more humorous to the English reader.

In his book on *Diseases of the Heart*<sup>10</sup> Dr. HARRIS attempts to give to students and practitioners "a complete account of cardiology, old and new, in as concise a form as possible." This laudable object is difficult of attainment in a small book of about 200 pages, and we fear that to make it profitable for students much of the precision of detail, which apparently has been sacrificed to brevity, would require to be incorporated. For instance, in the section dealing with the analysis of jugular tracings it is twice stated that "once the c wave is recognized the other waves are easily made out," and again, "before c, a is expected, and after c, v." Analysis of these tracings is not always easy for the experienced, and for the student more guidance is required. Electro-cardiograms are freely used for purposes of illustration, but better examples might have been obtained for most of the conditions, while some are misleading. Figs. 25 and 26, illustrating paroxysmal tachycardia, are quite useless for any purpose. A lack of essential detail is also observed in the chapter on treatment. Under the heading of "doses," digitalis is recommended in certain doses, but the preparation of the drug is not indicated, while nine other substances are mentioned without stating the doses of any. The general aim of this book is commendable, but one gets the impression that it has been sent too hurriedly to the press. If a subsequent edition is called for it could be made much more useful by careful revision.

A volume of more than 300 pages, comprising the full report of the Fifth International Neo-Malthusian and Birth Control Conference held in London last July has just been issued.<sup>11</sup> The Conference was called and organized by a body now known as the New Generation League, and a report of the proceedings appeared in our issue of July 22nd, 1922 (p. 132). Besides the medical section there was a section on contraceptives, which held a private afternoon session open to members of the medical profession only; it was attended by 164 medical practitioners. Notwithstanding the privacy of this session, a verbatim report appears in the volume now published. The speakers were the President of the Section, Dr. Norman Haire, who opened the proceedings with a paper, Sir Arbuthnot Lane, Dr. L. Myer, Dr. M. I. Finucane, Dr. W. H. B. Stoddart, Dr. Killick Millard, Dr. Abraham Wallace, Dr. Frances Huxley, Lord Dawson, Dr. F. Goldstein (of Berlin), and Dr. Nyström from Sweden. At the conclusion of the session a resolution was passed expressing the view that "birth control by hygienic contraceptive devices is absolutely distinct from abortion in its physiological, legal, and moral aspects"; and that "there is no evidence that the best contraceptive methods are injurious to health or conducive to sterility." This was passed with three dissentients. The other sections appear to be reported with equal fullness.

## CRIMINAL RESPONSIBILITY.

Two documents for submission to the Committee appointed by the Lord Chancellor, under the chairmanship of Lord Justice Atkin, have been issued during the last few days. The one is a memorandum of evidence on legal responsibility for crime, prepared under the authority of the Council of the British Medical Association for submission to the Committee; the other is a report, also for submission to the Committee, made by the Medico-Psychological Association.

Lord Justice Atkin's Committee is instructed to report upon what changes, if any, are desirable in existing law, practice, and procedure relating to criminal trials in which the plea of insanity as a defence is raised, and as to the nature of the changes which should be made.

The subject has engaged the attention of the British Medical Association for a good many years, and in 1913 a special sub-committee of the Medico-Political Committee was appointed to consider the present state of the law with regard to legal responsibility for crime. In due course it presented a report, which was approved by the Annual Representative Meeting in 1915, and the memorandum now issued has been based on that report. It was finally approved by the Council at its meeting on February 14th last. The Association has also arranged to give evidence to Lord Justice Atkin's Committee, and has nominated witnesses as mentioned in the concluding paragraph of the memorandum.

The following is the Memorandum of Evidence prepared by the Council of the British Medical Association for submission to Lord Justice Atkin's Committee.

### MEMORANDUM OF EVIDENCE ON LEGAL RESPONSIBILITY FOR CRIME,

*Submitted by the British Medical Association.*

#### (A) HISTORICAL.

The Council of the British Medical Association on learning that the Lord Chancellor had appointed a Committee to consider and report upon what changes, if any, are desirable in the existing law, practice, and procedure relating to criminal trials in which the plea of insanity as a defence is raised, and whether any, and if so what, changes should be made to the existing law and practice in respect of cases falling within the provisions of Section 2, Sub-Section 4, of the Criminal Lunatics Act 1881, instructed the Medical Secretary of the Association to approach the Secretary of that Committee stating that the Association would be glad of an opportunity of giving evidence before that Committee. A favourable reply having been received, a Special Sub-Committee of the Association was set up, consisting of Sir Jenner Verrall, LL.D. (Chairman), Dr. J. W. Bone, Dr. H. B. Brackenbury, Dr. H. C. Bristowe, Mr. Roland Burrows, LL.D., Mr. E. J. Denville, O.B.E., Dr. R. Langdon-Down, Dr. James Scott, Lt.-Col. T. Knowles Stansfield, C.B.E., Dr. W. B. Crawford Treasure, and Mr. E. B. Turner.

As a result of the Central Association for Mental Welfare having approached the Association with a view to co-operation, 3 members of that Association, viz., Dr. E. Prideaux, Dr. F. C. Shrubbsall, and Dr. A. F. Tredgold, were added to the Sub-Committee.

It is understood that evidence dealing with the position of prisoners committed for trial but not yet tried, will be permissible, and such evidence is submitted in para. VIII. hereof.

#### (B) MEMORANDUM OF EVIDENCE.

The Memorandum of Evidence which the Sub-Committee, on behalf of the Council of the Association, desires to lay before the Committee appointed by the Lord Chancellor is as follows:—

*Sub-Section 4 of Section 2 of Criminal Lunatics Act, 1881.*

I. The Council, realising its very great importance, has given careful consideration to this matter, and has come to the conclusion that it cannot suggest any improvement in the method laid down in Sub-Section 4 of Section 2 of the Criminal Lunatics Act 1881 which reads as follows:—

(4) In the case of a prisoner under sentence of death, if it appears to a Secretary of State, either by means of a certificate signed by two members of the visiting committee of the prison in which such prisoner is confined, or by any other means, that there is reason to believe such prisoner to be insane, the Secretary of State shall appoint two or more legally qualified medical practitioners, and the said medical practitioners shall forthwith examine such prisoner and inquire as to his insanity, and after such examination and inquiry such practitioners shall make a report in writing to the Secretary of State as to the sanity of the prisoner, and they, or the majority of them, may certify in writing that he is insane.



*Legal Responsibility for Crime.*

II. The Council of the Association is of opinion that the following might be accepted by the Medical Profession as a fair definition of responsibility for crime:—

An act may be a crime although the mind of the person who does it is affected by disease or defective power if such disease or defect does not in fact prevent him:—

(a) from knowing and appreciating the nature and quality of his act or the circumstances in which it is done; or

(b) from knowing and appreciating that this act is wrong; or

(c) from controlling his own conduct unless the absence of the power of control is the direct and immediate consequence of his own default;

but no act is a crime if the person who does it is at the time it is done prevented either by defective mental power or by any disease affecting the mind:—

(a) From either knowing or appreciating the nature and quality of his act or the circumstances in which it is done; or

(b) From either knowing or appreciating that the act is wrong; or

(c) From controlling his own conduct, unless the absence of the power of control is the direct and immediate consequence of his own default.

N.B.—“Wrong” may mean (a) morally wrong; (b) illegal.

*Evidence as to Mental Condition of Accused Persons.*

III. The Council of the Association is of opinion that the following Standing Order issued by the Prison Commissioners, which is understood to apply to prisoners who have been committed for trial but not yet tried, should be embodied in the official Prison Rules:—

302. (1) In the case of an untried prisoner, especially if charged with an offence of a grave nature, the Secretary of State desires that the prisoner's insanity shall, if possible, be publicly decided by the verdict of a jury, and that the prisoner shall, for this purpose, be left to stand his trial, unless there be strong reasons to the contrary.

(2) When immediate removal to an asylum is unnecessary, the Governor will merely forward the report of the Medical Officer to the Prison Commissioners, saying that it is not proposed to obtain the usual certificate of insanity, and will state the probable date of trial.

(3) When removal to an asylum appears to the Medical Officer to be, for special reasons, necessary, the usual certificate will be obtained and forwarded, as directed in Order 301. In filling up the certificate the probable date of the trial will be added to the particulars of commitment, and the report of the Medical Officer, setting out the nature of the insanity and the necessity for immediate removal, will be enclosed, together with a newspaper report of the Police Court proceedings. If this latter is not procurable, a short report of the particulars of the prisoner's crime will be furnished.

(4) When a prisoner awaiting trial has been certified to be insane, or is believed by the Medical Officer to have been insane on reception, or when there is any doubt as to his mental condition, the Medical Officer will furnish a report in writing to that effect to the Governor, who will forward it to the Clerk of Assize or Clerk of the Peace, as the case may be. In all cases when there is any reason to suppose that questions are likely to arise in Court as to the mental state of the prisoner, the Medical Officer will attend to give evidence if required, whether he gets a subpoena or not.

IV. The Council of the Association suggests that, wherever a report from the prison Medical Officer as to the mental state of the prisoner is communicated to the Clerk of the Court, it should be the duty of the Clerk to furnish a copy of the Report to Counsel or the solicitor acting for the prosecution and defence respectively.

*Position of Persons found “Guilty but Insane.”*

V. The Council of the Association is of opinion that every person found “Guilty but Insane” should have the same right of appeal as is conferred by the Criminal Appeal Act on persons convicted on indictment; provided that if in any appeal brought by such person the Court should be of opinion that the verdict should be set aside so far as the finding of insanity is concerned, the Court should have the power to order a new trial.

*Persons found “Unfit to Plead.”*

VI. The Council of the Association is of opinion that persons found “Unfit to Plead” by the verdict of a jury and ordered to be detained, should be entitled, whilst so detained, at any time on proper conditions to apply to a Judge of the High Court to order the re-trial of the issue as to fitness to plead.

(It is understood that the rules by which such applications would be governed would need to be framed by the appropriate authority.)

*Medical Officers of Prisons.*

VII. The Council of the Association has given very careful consideration to the question of the status of Medical Officers of Prisons and wishes particularly to emphasise that it is desirable that such Medical Officers should have had experience in the diagnosis and treatment of disorders and defects of the mind.

*EVIDENCE BY SPECIAL SUB-COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION.*

VIII. The foregoing is in substantial agreement with the policy adopted by the British Medical Association in 1915.

The Special Sub-Committee of the Association is of opinion:—

(1) That in the interest both of the community and of persons charged with or convicted of offences, it is desirable that, where there is reason to believe that the accused person suffers from mental defect or disease, machinery should be provided for the independent and impartial mental examination of the accused person.

(2) That the present method, by which medical evidence is presented by the Prosecution and the Defence in cases in which the accused is a person of means, is bewildering rather than helpful to Judge and Jury and liable to lead to miscarriage of justice; that a similar miscarriage of justice may result in the case of persons without means owing to the absence of facilities for expert psychological examination.

(3) That some such scheme as follows might be adopted:—

(a) That a Panel should be formed consisting of medical practitioners with expert knowledge and experience of psychological medicine and of recognised standing, and that any accused or convicted person in whose case there is reason to consider that mental defect or disease is present should be referred to such panel for examination.

(b) That in the case of any such person charged with an offence which is punishable upon summary conviction such examination should be made by one or more members of the panel. That in the case of any such person charged with an offence which is punishable by death or a long period of penal servitude such examination should be made by not less than three members of the panel.

(c) That the report of such examination should be furnished to Prosecution and Defence before the trial and that at the trial evidence should be tendered in person by the expert or experts who examined the accused and should be considered by the Court in deciding the responsibility or otherwise of the accused.

*(C) NAMES OF WITNESSES OF THE ASSOCIATION.*

The following Witnesses have been appointed to give evidence on behalf of the Council of the Association before the Committee appointed by the Lord Chancellor:—

SIR JENNER VERRALL, LL.D., L.R.C.P., M.R.C.S., Consulting Surgeon, Sussex County Hospital—Chairman of the Insanity and Crime Sub-Committee, British Medical Association.

ROLAND BURROWS, LL.D.—Barrister-at-Law.

R. LANGDON-DOWN, M.B., B.Ch., Physician to the National Association for the Welfare of Feeble Minded.

E. PRIDEAUX, L.R.C.P., M.R.C.S., Mental and Neurological Inspector, Ministry of Pensions; late Assistant Medical Officer, Banstead Asylum.

JAMES SCOTT, M.B., C.M., Ed., late Governor and Medical Officer, H.M. Prison, Holloway; and late Medical Officer, H.M. Prisons, Brixton, Holloway, Newgate, etc.

T. KNOWLES STANFIELD, C.B.E., M.B., C.M. Ed., Honorary Lt. Col. R.A.M.C.; Consultant in Nervous and Mental Diseases to the Eastern Command; late Medical Superintendent, London County Mental Hospital, Bexley.

A. F. TREGOLD, M.D., Consulting Physician, National Association for Welfare of the Feeble Minded; Medical Expert to Royal Commission on Feeble Minded; Physician and Neurologist to Royal Surrey County Hospital; Neurological Specialist to the Ministry of Pensions; Consulting Mental Specialist to the Willesden Education Authority.



REPORT OF THE MEDICO-PSYCHOLOGICAL  
ASSOCIATION.

The Medico-Psychological Association of Great Britain and Ireland at its meeting on February 22nd adopted the report of its committee on criminal responsibility. The committee included medical superintendents of asylums, several persons now or formerly commissioners in England and Scotland, or Lord Chancellor's visitors, several persons concerned with the feeble-minded and with prison administration, and two barristers. The report is in form a memorandum to Lord Justice Atkin's Committee.

At the outset the opinion is expressed that the law as at present interpreted is unsatisfactory, and does not always permit the best and fullest evidence of a prisoner's mental condition to be laid before a court and jury.

*The Judges' Rules, 1813.*

Reference is made to the rules in M'Naghten's case (1843), which, it is stated, have for many years been the subject of cogent criticism both by medical men and by juries. Their survival is attributed to three causes: (1) the failure to propound an acceptable alternative; (2) the fact that on numerous occasions individual judges have disregarded and declined to act on them; and (3) the knowledge, shared by judges and juries alike, that although a person may be found guilty and sentenced, his case will be carefully reconsidered by experts appointed by the Secretary of State in accordance with the Criminal Lunatics Act, 1884, and that action will be taken accordingly notwithstanding the findings of the court.

The rules in M'Naghten's case are contained in the answers made by the judges to certain questions put to them by the House of Lords. The most important of the rules in the present connexion is the reply made to questions 2 and 3, which asked:

"(2) What are the proper questions to be submitted to the jury when a person afflicted with insane delusions respecting one or more particular subjects or persons is charged with the commission of a crime (murder, for instance) and insanity is set up as a defence; and (3) in what terms ought the question to be left to the jury as to the prisoner's state of mind at the time the act was committed?"

The answer to these two questions, which the judges took together, contains the following passage:

"The jurors ought to be told, in all cases, that every man is presumed to be sane, and to possess a sufficient degree of reason to be responsible for his crimes, until the contrary be proved to their satisfaction; and that, to establish a defence on the ground of insanity, it must be clearly proved that at the time of the committing of the act the accused party was labouring under such a defect of reason, from disease of the mind, as not to know the nature and quality of the act he was doing; or, if he did know it [sic], that he did not know he was doing what was wrong."

*The Growth of Knowledge.*

The committee observes that insanity is admitted to be incapable of precise definition, but accepts as a rough and ready criterion the definition of a lunatic in the Lunatics Act, 1890, as "an idiot or person of unsound mind." On this part of the subject the committee makes the following pronouncement:

"These rules are not wrong in holding that irresponsibility is only an inference that may or may not be drawn from insanity; where they err is in attempting to define precisely the conditions under which the inference is legitimate. They identify responsibility with knowing and reasoning, whereas any medical man with experience of the insane must know of many persons as to whose insanity (and irresponsibility) there can be no possible doubt, who have realized the nature and quality of their act, have known that it was contrary to the law, human and divine, and have shown remarkable cleverness in carrying out their object."

The committee assumes that the judges framed rules in accordance with what they were advised was the generally accepted medical view as to the nature of insanity. The crux of the situation seems to be that the conception of unsoundness of mind implied in the questions and answers is now obsolete. The committee says:

"Unsoundness of mind is no longer regarded as in essence a disorder of the intellectual or cognitive faculties. The modern view is that it is something much more profoundly related to the whole organism—a morbid change in the emotional and instinctive activities, with or without intellectual derangement. Long before a patient manifests delusions or other signs of obvious insanity he may suffer from purely subjective symptoms, which are now recognized to be no less valid and of no less importance in the

clinical picture of what constitutes unsoundness of mind than the more palpable and manifest signs of the fully developed disorder, dementia."

The Scots law is similar to that of England, and the position seems to have been well summed up in 1907 by the then Lord Justice General, Lord Dunedin:

"In one sense no one can say what insanity is. I do not think if we had all the doctors here who are learned on the subject that any two of them would agree on a definition. It is quite certain that what may be called the scientific view on insanity has greatly altered in recent years, and courts of law, which are bound to follow, so far as they can, the discoveries of science and results of experience, have altered their definition and rules along with the experts. . . . Acts of Parliament cannot deal with scientific opinions, and therefore it is left to juries to come to a common-sense determination on the matter, assisted by the evidence led and any direction which the judge can give."

The change of opinion, the committee states, explains how at the present day a medical witness may find a real difficulty in satisfying the court when pressed to give a categorical Yes or No, and secondly the impracticability of attempting to frame any other formula. It considers it reasonable to propose that the facts as to insanity should be put before the court unhampered by any formula, and states:

"Elucidation of all the relevant facts, including such conditions of defective control as occasion epilepsy, impulses, obsessions, hysterical states, drug addiction and alcoholism in their bearing upon an alleged crime, would, in many cases, be necessary, and medical witnesses experienced in the care and treatment of the insane could give assistance to the court in that direction. A jury, upon the facts so presented, with such guidance as the judge might feel it necessary to give, should have no insuperable difficulty in reaching a correct conclusion."

"In our view the law should be framed so as to allow the medical witness alleging insanity to make it clear that the facts observed by himself, supplemented by other evidence before the court, form in his mind a coherent clinical picture of mental disorder; and he should be in a position to state that the prisoner's criminal act is symptomatic of, or at least consistent with, such a condition. His evidence should enable a jury to find that, even if there should be no apparent logical connexion between the prisoner's mental derangement and his criminal act, it is reasonable to conclude that both form part of his mental unsoundness, and it is important that that evidence should be placed before them as fully as possible. According to the present practice, experts on this question are subject to restrictions which are not imposed on experts on other matters. There does not appear to be any sufficient reason why a medical man should not be allowed to state his grounds for arriving at an opinion in his own way, subject always to the fullest cross-examination by the other side and by the court."

*Recommendations.*

The conclusions of the committee are as follows:

(i) The legal criteria of responsibility expressed in the rules in M'Naghten's case should be abrogated, and the responsibility of a prisoner should be left as a question of fact to be determined by the jury on the merits of the particular case.

(ii) In every trial in which the prisoner's mental condition is in issue the judge should direct the jury to answer the following questions:

- (a) Did the prisoner commit the act alleged?
- (b) If he did, was he at the time insane?
- (c) If he was insane, has it nevertheless been proved to the satisfaction of the jury that his crime was unrelated to his mental disorder?

(iii) We would further suggest that the present practice of dealing with persons who are found insane upon arraignment is unsatisfactory and might be reconsidered. As the law stands a finding of insanity upon arraignment may result in a man—conceivably unconnected with and innocent of the offence with which he is charged—being sent to a criminal lunatic asylum. Experience shows that it is always best, if possible, to let the prisoner stand his trial and plead. This course does away with his after grievance that he was never convicted of the offence with which he was charged, and that, in fact, he never was tried for it. In the vast majority of cases there is no reason to doubt that the man did commit the act, but the fact that the crime was never brought home to him, and that, being found insane, he has been ordered to be detained during His Majesty's pleasure, does give him a grievance of which he makes the utmost use, and to which it is difficult to give a satisfactory answer.

When a person is found unfit to plead we would suggest that a plea of "Not Guilty" should be recorded by the court, and the trial on the facts allowed to proceed—in his absence if he cannot properly be present in court, arrangements being made for him to be represented by counsel and solicitor.



We presume that to enable this course to be adopted some amendment of the Criminal Lunatics Act, 1800 (39 and 40 Geo. III, c. 94), sec. 2, would be necessary.

(iv) We would also suggest that the law be amended to enable the verdict now expressed as *Guilty but insane* to rank as a conviction for the purposes of appeal to the Court of Criminal Appeal.

(v) We are of opinion that it would not be practicable to have medical assessors to the court in cases where insanity is raised as a defence to a criminal charge. We think, however, it might be possible to have a panel of accredited experts appointed, any of whom could be called on by the court to give evidence, subject to cross-examination by either side, and without any derogation from the right of either side to call its own expert witnesses.

Finally, the committee expresses itself against any amendment of the Criminal Lunatics Act, 1884, the provisions of which it looks upon as both humane and necessary. The report is signed by Dr. Nathan Raw (chairman of the committee), Professor G. M. Robertson (president), and Dr. R. Worth (honorary general secretary) of the Medico-Psychological Association.

### THE IRRITATIVE TYPE OF LETHARGIC ENCEPHALITIS.

We are indebted to Dr. A. K. Chalmers, M.O.H. Glasgow, for a copy of a memorandum by himself and Dr. A. S. M. Macgregor, senior assistant in the Public Health Department, Glasgow, on an outbreak of lethargic encephalitis which began there in February and included a number of cases of a severe type showing uncommon irritative features.

#### *Incidence of the Disease in Glasgow.*

It is, they state, difficult to give an idea of the incidence of the disease in Glasgow during the past few years because the cases notified in 1921 and 1922 mainly showed the sequelae of missed infections in 1920. The following table gives the admissions to certain fever hospitals during the five years 1918-22; many other cases were treated in the general hospitals, especially during 1920, when the affection was last prevalent in Glasgow. It appears from the table that there was a small peak of incidence during the fourth quarter of 1919, and another during the second quarter of 1920.

*Admissions of Cases of Encephalitis Lethargica to Belvidere and Ruchill Fever Hospitals, Glasgow, between 1918 and 1922.*

	1918.	1919.	1920.	1921.	1922.
First quarter ...	—	6	6	2	1
Second quarter ...	4	3	22	5	4
Third quarter ...	3	1	3	1	—
Fourth quarter ...	—	11	3	4	—

Encephalitis lethargica was made notifiable in Glasgow in 1918; evidence of its incidence based on notification is very unreliable, because undoubtedly the number (63) notified in 1920 did not reveal the extent of the epidemic, as many cases sickening during the year were only recognized and reported one, two, and even three years later, on account of typical sequelae. It is thought probable that the notifications for 1923 will form a more accurate index of the prevalence of the disease, because of the experience gained in 1920. In the cases which began to be observed towards the end of February last the irritative stage has tended to be more pronounced and more prolonged and the febrile disturbance greater than in such sporadic cases as have been met with prior to and since 1920, the last period of undoubted prevalence in the city. In 1920 many of the cases sickening in the spring and early summer were of somewhat severe type with fever, sudden onset and spasmodic or "choreiform" muscular agitation during the illness, tending to be followed by paresis or paralysis of groups of muscles. There is now a recurrence of this type, apparently in greater number and, in some instances, in even more severe form.

The sudden appearance of cases of this variety was observed and reported simultaneously by Dr. Leonard Findlay, Dr. Iry McKenzie, and others at the same time as one or two such patients were admitted to Belvidere and Ruchill Fever Hospitals. The account of the salient clinical features is based on reports furnished by Drs. Findlay and

McKenzie, Drs. Archibald and Elliott of Ruchill and Belvidere Hospitals, and on investigations by the public health staff.

Since the beginning of February 38 cases of lethargic encephalitis have been notified or reported in Glasgow, one sickening in December, 1922, 5 in January, 1923, and the remainder in February. The ages of the patients varied from 1½ to 56 years, 22 being over 15 years of age; 8 have died after illness lasting from six to seventeen days. The cases have occurred sporadically, being distributed throughout the city and quite unassociated with one another; in no instance has more than one member of a family been affected.

#### *Symptoms in Present Outbreak.*

Clinical data are available in respect of 33 patients; in a number of them the symptoms approximated to the classical description of the affection, irritative symptoms being slight or absent, neuro-muscular disturbance confined to the ocular muscles, and drowsiness (or lethargy) a prominent feature. The majority, however, have presented a pronounced irritative stage, with excitement, delirium, and restlessness, especially at night, sometimes requiring forcible control, while spasmodic twitching or choreiform movements of the limbs or of the whole body have been a marked feature of most of the cases, and have been very violent in some. The onset has commonly been that of an acute infection, and the temperature has varied from 100° to 102° F., but was occasionally higher. Hyperpyrexia has occurred in fatal cases. Restlessness and twitching movements, when prominent, have appeared early, but in some cases there has been a preliminary period of a few days to a few weeks marked by headache, sleeplessness, neuralgic pains in the limbs, trunk, or face, giddiness, and occasional vomiting. Ophthalmoplegic symptoms, of which the chief is diplopia, are typical of the disease, but may be transient and therefore absent at the time of examination.

While this brief description may be regarded as fitting loosely the prevailing sharper type of case, others have occurred in which the acute toxic symptoms have been of excessive severity, as in the following case under Dr. Iry McKenzie's care in the Eastern District Hospital, Glasgow.

R. R., female, aged 19 years; onset of illness on February 13th, with sleeplessness and restlessness; double vision developed on February 15th, when she became delirious. Next night she was delirious and highly fevered. On admission to hospital the temperature was 103° F., and the patient appeared very ill; she was very restless, constantly coming out of bed and inclined to be resistive. She took her nourishment well but did not sleep. Her attention could always be sustained, but she did not speak. She did not sleep even with sedatives till the night before she died, except for one hour. There was slight squint, no abnormality of pupils, reflexes normal, no paralysis. The patient had twitching of legs, arm, and body. There was no lethargy and no great psychomotor excitement. She died on February 23rd.

It will be noted that the patient died in the acute restless stage. The following example of a prolonged irritative restless period is also from notes furnished by Dr. Iry McKenzie.

Mrs. B., aged 33 years; onset of illness on night of February 16th, with symptoms of chill with pain in right shoulder, restlessness, sleeplessness, and general twitching movements. Very ill on admission, with temperature 101° to 103° F. She had jerky tremulous movements not at all resembling chorea, more like clonus in the arms. There was also twitching of the face. She complained of headache, but had no squint or diplopia. Was very sleepless and restless, constantly trying to get out of bed; very delirious, but could always be recalled from delirium with ease. The movements have gradually become less; she has slept under paraldehyde and is no longer delirious. No evidence of lethargy.

Acute cases of this nature where lethargic symptoms are absent have been exceptional, but the cases are given to show the severity and duration to which the irritative stage may reach.

The signs and symptoms referable to the involvement of the central nervous system are extremely varied, and it has been found difficult to give a concise description of its onset and progress. The former may be acute or gradual and the latter brief or prolonged, with resulting exhaustion and mental impairment. The following case, reported by Dr. Archibald, Belvidere Fever Hospital, and Dr. R. S. Fullarton, is given as being probably as typical as any in the present outbreak.

M. M., female, aged 8 years. On February 4th she complained of noises in her ears; on the 7th the eyes were congested and looked as if "she were taking measles." On the 8th the patient's mother noticed that her legs were twitching, and could feel the "jerks" of the thigh muscles. At night she had hallucinations and was very restless and "delirious," also complaining of pains



in the calves of the legs. Admitted to Belvidere Hospital on the same day; on observation there the patient's illness fell into stages, the first marked by a period of delirium, restlessness (child getting out of bed), with lethargy, mental confusion, and choreiform movements, first of the left side of the body, then of both sides; during this time the temperature was rising to 101-102° F. This period lasted for about six days from its onset. The next stage was one of constant drowsiness, lessening of choreiform movements, absence of excitement, and dazed facies, lasting about a week, during which the temperature, at first sustained, began to remit. This was followed by a period during which the child showed morning brightness and evening drowsiness, and absence of choreiform movements; the temperature was intermittent, with evening rises to 100-101° F. This lasted for about ten days, after which the temperature became normal and the child apparently well.

#### General Summary.

The cases do not readily fall into definite clinical types; particular signs or symptoms may be absent or variously combined in different patients with great variation in their duration and intensity. Among these the following are selected for mention, though they are by no means always present in individual cases of the severer types of illness:

1. *Symptoms on Onset.*—The initial complaint may be of rheumatism or neuralgic pains in a limb, the shoulder, neck, face, or abdomen, trifling or severe. Headache is common, and vomiting occasional. Sleeplessness is a very prominent and early symptom. One or two have commenced with "influenza" or sore throat.

2. *Fever.*—In the acuter cases there may be fever from the beginning, continuous at first and later intermittent. In a few cases, usually fatal, there may be hyperpyrexia. Many patients, however, although showing much motor disturbance and delirium, have little fever.

3. *Delirium and restlessness* may be extreme, requiring forcible control. A feature of the delirium is that the patient can be roused and can answer questions sensibly enough, though there may be some mental confusion. Restlessness may be a continuous feature or may alternate with drowsiness. When present it occurs, or is worse, during the night.

4. *Involuntary muscular movements* are variously described as twitching, spasmodic, choreiform, involving the feet, the limbs, or the whole body. In a severe case the body may be jerked from flexion to extension and vice versa, and the patient may have to be held in bed. Twitching has been definitely present in 18 cases in the present series. It may, however, be so slight as to be overlooked unless watched for. In milder cases it is not unlike the spasmodic contractions of tic. Spasticity is associated with its presence.

5. *Insomnia* is an almost constant feature, sleeplessness being an early and noticeable symptom in most cases. It may precede onset of twitching by a few days.

6. *Lethargy* may be present early or may succeed the irritative stage. In a few of the patients it was not a prominent feature, but the great majority had this symptom in greater or less degree. The face may assume a dull mask-like expression.

7. *Ocular Phenomena.*—Diplopia is the most frequent of these and may be persistent or transient; ptosis may be present on one or both sides, and in one or two instances nystagmus has been observed. The appearance and reaction of the pupils vary considerably.

## OXFORD CONTRIBUTORY HOSPITAL SCHEME.

STATEMENT BY DR. WILLIAM COLLIER.

We have received from Dr. William Collier an account of how the Oxford hospital scheme\* has fared during the past two years. He writes:

The scheme was started in September, 1920. A contributor is asked to subscribe 2d. a week, children of wage-earning age 1d. until they are earning an adult's wage. In the case of married couples, when the husband and wife each subscribe 2d. a week, their children are entitled to treatment up to wage-earning age. Every care is taken to prevent those who are in a position to pay for adequate medical advice from joining. No contract is made with the contributors.

In 1921 the scheme brought the hospital a little over £17,000, but we had yet to enrol a number of villages and firms. In 1922 the scheme brought the hospital a little over £23,000. When one learns that in 1913 the total income of the hospital from all sources amounted to £9,559 one realizes how much those who use our hospitals can do towards keeping them on a voluntary basis.

We were told at the outset it would be impossible to get agricultural labourers voluntarily to subscribe as much as 2d. a week; they have done so, and in spite of the enormous reduction in their wages they still continue to do so.

We have organized Hospital Aid Committees in 295 villages; and in the towns, including Oxford itself, we have Aid Committees in every parish. In this way over two thousand people are working for, and are interested in, the maintenance of our hospital on a voluntary basis, who a few years ago scarcely gave the hospital a thought. A very large number of meetings have been organized in the villages. At these meetings the speakers explain why both surgical and medical work has become so much more expensive, why it is important to keep our hospitals on a voluntary basis, why those who are present should join the scheme, and so on.

Perhaps one of the most striking examples of the way in which those can help who have a mind to is the fact that last year the employees of two shops in Oxford, from which the hospital obtained nothing in 1919, contributed between them £230 5s.

The total cost of working the scheme comes to a little less than 4½ per cent. of the amount collected.

Dr. Collier includes the following financial statement:

#### RADCLIFFE INFIRMARY AND COUNTY HOSPITAL, OXFORD.

##### WEEKLY CONTRIBUTION SCHEME.

##### Financial Statement, 1921, 1922.

1921.	£	s.	d.	1922.	£	s.	d.
Received during the year and to Jan. 10, 1922	...	...	...	Received during the year and to Jan. 10, 1923	...	...	...
...	16,281	11	1	...	21,533	5	7
Received during 1922 in respect of 1921	...	...	...	Amount received for 4th quarter after Jan. 10, 1923	...	...	...
...	1,150	4	3	...	1,521	4	1
...	£17,431	15	4	...	£23,059	9	8

Increase on year, £5,627 14s. 4d.

##### Expenditure.

1921.	£	s.	d.	1922.	£	s.	d.
Appeals	...	...	...	Appeals	...	...	...
...	926	12	6	...	463	19	1
Salaries and wages	...	...	...	Salaries and wages	...	...	...
...	538	1	9	...	£82	10	0
...	£1,464	14	3	...	£1,038	8	1

Decrease of expenditure, £396 6s. 2d. Proportion of expenditure to total receipts, 4½ per cent.

Dr. Collier sends a list of some typical examples of increased incomes from various places, from which we make the following selection (the first two places are market towns, the rest villages):

#### Typical Examples of Increased Income from Market Towns and Villages.

Place.	Income from all Sources.		
	1913.	1920.	1921.
	£ s. d.	£ s. d.	£ s. d.
Abingdon	69 11 7	191 17 2	1,001 4 9
Witney	102 2 0	236 14 9	1,433 12 7
Kidlington	15 6 0	59 14 1	291 16 8
Easton	25 10 0	23 10 0	214 13 5
Bampton	21 3 6	38 12 1	223 17 9
Leafeld	12 17 5	47 1 9	130 15 8
Long and Little Wittenham	14 14 6	42 11 2	156 13 11
Garsington	10 12 8	16 0 5	136 15 2
Kirtlington	8 10 5	22 8 7	183 9 1

Dr. Collier also sends some examples of the increased income from employees. Thus the contributions received from men employed by the Great Western Railway Company at Oxford rose from £35 in 1914 to £116 in 1920 and £178 in 1921; from those engaged by the University Press from £39 in 1914 to £129 in 1921; and from the employees of a motor manufacturing company from £64 in 1920 to £106 in 1921.

THE staff of the Buffalo General Hospital has started the publication of a Bulletin, to contain records of cases occurring in the hospital. The first number, which is before us, bears the date January, 1923; it is very well got up, the illustrations are excellently reproduced, and all the cases are well worthy of record.



# British Medical Journal.

SATURDAY, MARCH 24TH, 1923.

## THE MECHANISM OF ASTHMA.

WITH the recent advances of knowledge in biochemistry, serology, and anaphylaxis, the vegetative nervous system, and the endocrine balance, much discussion has arisen as to the causation and mechanism of asthma and allied conditions. It is important to bear in mind the existence of these allied conditions and to regard asthma as a symptom or mode of reaction to various irritants which in this instance give rise to manifestations in the bronchial tree. The comparison of pyloric spasm, enterospasm, and mucous colitis (or mucous colic) with asthma illustrates the widespread distribution of this reaction.

Forty years ago asthma was grouped with the paroxysmal neuroses, such as migraine and epilepsy, and the conception of asthma as a reflex neurosis long held the field, though for a time at any rate it has been rather driven into the background by the explanation that it is an allergic phenomenon, resembling but not identical with anaphylaxis. That many cases of asthma are of this nature has been convincingly proved by the ingenious observations of Drs. I. C. Walker and Rachemann of Boston, John Freeman, and others; but all cases cannot be brought under this heading. Accordingly, Dr. A. F. Hurst has constructed an exceedingly inclusive definition of asthma. He would have us regard it as the reaction of the over-excitable bronchomotor portion of the vagus nucleus to blood-borne irritants and to peripheral and psychical stimuli, thus including the classical example of the precipitation of an asthmatic paroxysm when a person hypersensitive to roses was made to smell an artificial rose.

In his able address on the problems of asthma<sup>1</sup> Dr. Langdon Brown agreed with Eppinger and Hess that the asthmatic patient is a vagotonic, or the subject of excessive irritability of the vagus and parasympathetic. The normal balance between the sympathetic and the parasympathetic in health may be disturbed, and it has been stated that practically all diseases tend to produce such a disturbance, resulting in either vagotonia or sympatheticonia, and that certain persons have as part of their make-up a preponderance of activity of the parasympathetic (vagotonia) or of the sympathetic. That excessive activity of the parasympathetic is concerned in the production of asthma has been strongly suggested by the remarkable curative action of hypodermic injections of adrenaline, whereby the effect of sympathetic stimulation is produced; but it must be remembered that an asthmatic paroxysm may be relieved by other means, such as morphine injections and amyl nitrite inhalations. Moreover, the argument that a disease is due to absence of the remedy that brings symptomatic relief must not be pressed, though in the case of endocrine extracts it is, of course, specially attractive. As the activity of the sympathetic is bound up with the output of adrenaline, insufficiency of the adrenals, by diminishing the tone of the antagonizing sympathetic, might lead to a relative vagotonia. If this sequence held good the subjects of Addison's disease and of other conditions, such as acute fevers and infections in which the adrenaline content is deficient (T. R. Elliott), should be specially prone to asthma and other manifestations of vagotonia; as this cannot be said to be the case, relative vagotonia

does not appear to be important in the causation of asthma, and the tempting conclusion that asthma is primarily due to adrenal inadequacy cannot be regarded as established.

An absolute vagotonia, whether inborn or acquired, may, however, explain why certain persons only are hypersensitive to foreign proteins or other stimuli known to excite asthmatic attacks. In favour of this underlying irritability of the parasympathetic (vagotonia) appeal might perhaps be made to the well known hereditary character of asthma and to the frequency with which the hypersensitiveness is shown (at first at any rate) to a group of foreign proteins and not to a single one or to the same one as in the parent. This is a difficult subject, and it may be safer at present to rest content with Dr. A. F. Hurst's view that in some cases an irritable vagal centre, in others a toxic idiopathy, and in some again both these factors, must be regarded as responsible. It is certainly attractive to consider that in asthmatic and allied conditions there are two etiological factors: the disposing condition of the soil, such as vagotonia or a hypersensitive state to foreign proteins, on the one hand, and the exciting cause, such as the foreign protein, or a mechanical or psychical stimulus, on the other hand, which would not produce the asthmatic reaction in the absence of the disposing factor. But here again the conditions may be complicated, for the same factor may appear to set up both vagotonia and the paroxysm. Thus, in recording cases of asthma due to appendicitis, Gutmann<sup>2</sup> argues that the irritation of the terminal fibres of the vagus in the fibrotic appendix, on which Masson has described neuromas, sets up vagotonia, and that for the most part the familiar symptoms of appendix dyspepsia are those of vagotonia. In one of his patients, an asthmatic woman aged 38, pressure over the appendix immediately brought on a paroxysm of asthma. This striking event may of course be explained in other ways—for example, by psychical stimulus—but it raises the question whether in bronchitic asthma the local irritation produces vagotonia and the bacterial toxins act as the exciting agents of the paroxysm.

The conception of vagotonia, though it has met with much critical opposition, appears to be gaining ground, and the question arises whether in asthma and allied conditions there is this underlying factor which disposes the victims of the diseases to become hypersensitive to foreign proteins and other stimuli, or whether, in some instances at least, hypersensitiveness is the only factor.

## SUGAR VERSUS ALCOHOL.

It is said that the Chancellor of the Exchequer may have to make a choice between a reduction of the tax on sugar and a remission of the duty on beer. If a decision between these two alternatives should become the subject of a debate in Parliament, medical opinion may be sought or quoted in favour of one or other of these two proposals. For this reason a few words from the physiological standpoint would not be out of place.

We must begin by frankly admitting that the question cannot be settled satisfactorily or adequately on physiological or dietetic grounds alone. There are considerations of expediency, political as well as psychological, which cannot be excluded from the argument. And the habits and tastes of a people are very insistent facts. From the physiological point of view neither alcohol nor sugar can be regarded as essential elements of the human dietary, while from the economic point of view they must be looked upon as luxuries.

In the case of alcohol, whether in the form of wine, spirits, or beer, there is an unrecoverable loss of about 60 per cent. in the energy value of the grain or sugar

<sup>1</sup> BRITISH MEDICAL JOURNAL, 1922, i, 758.

<sup>2</sup> Gutmann: *Presse méd.*, Paris, 1923, xxxi, 72.



from which they are severally derived. Further than this, alcohol has a very restricted field of usefulness as a source of energy in the body economy. The average man is reputed to be capable of making physiological use of no more than a very few ounces of absolute alcohol in the twenty-four hours. Although this is probably not true of the habitual toper who has learnt the art or the vice of metabolizing alcohol in his system, it may reasonably be regarded as representing the capacity of the average temperate person. On the other hand, the aesthetic and anaesthetic qualities of alcoholic beverages, greatly prized by many, cannot be expressed in terms of calories.

If it is difficult to defend on dietetic and economic grounds alone the virtues of beer and other stimulants, it is equally illogical to claim exemption or remission of tax on sugar on the ground that it is an essential or valuable food for children. Infants in arms alone are dependent on sugar as the source of their carbohydrate supply, and they are only dependent on it because their capacity for malting starch or converting it into sugar is at this period of life incompletely developed. Since all forms of carbohydrate must ultimately be converted into sugar before they can be physiologically made use of in the animal system, it is clear that on the grounds of their energy values, starches and other insoluble carbohydrates if they can be digested are quite as valuable as the more expensive sugars, which, as a rule, cost nearly four times as much. It is only quite recently that sugar has become a staple article of diet in temperate climes, and humanity seemed to get on very well without it. Even a hundred years ago its use was extremely restricted, while in mediaeval and ancient days honey was the only form in which it was used.

As compared with starch, sugar has the grave disadvantage of being so readily digested and absorbed that, when taken in excess, it may flood the blood at a rate greater than physiological conditions require, and as such become an embarrassment to the body as a whole. Farinaceous and other forms of insoluble carbohydrate, on the other hand, by reason of their slower rate of hydrolysis and inversion into soluble and mono-saccharide sugars in the alimentary canal, afford a more sustained reinforcement of the blood with the required carbohydrate supplies. Sugar, in fact, is a pleasant condiment but an expensive food, and it may, by reason of its agreeable gustatory qualities, commend itself so greatly to the taste of children as to lead to the serious pathological results due to excessive consumption. On the other hand, sugar has economic, commercial, and gustatory merits in the preservation and flavouring of cooked fruits, as, for instance, in the making of jam. From the dietetic point of view jams and preserves have much to recommend them as foods for children as well as for adults, and this side of the argument must not be overlooked.

If the sorely tried taxpayer is to have some relief from his burdens by reason of some relaxation of sumptuary restrictions, both beer and sugar may have definite claims on the clemency of the Chancellor, but purely from the physiological and dietetic point of view the claims for such exemption can only be maintained with difficulty, and those of one hardly more so than those of the other.

#### PATHOLOGICAL MUSEUM AT THE ANNUAL MEETING.

THE Committee appointed to organize the Pathological Museum in connexion with the Annual Meeting of the British Medical Association at Portsmouth next July proposes to arrange the material under the following heads: (i) Exhibits bearing on discussions and papers to the various Sections; (ii) specimens and illustrations relating to any recent research work; (iii) instruments relating to clinical diagnosis and pathological investigation; (iv) individual specimens of special

interest, or a series illustrating some special subject. It is also proposed to make an effort to gather together a series of exhibits relating to diseases and injuries of blood vessels; illustrations referring to heredity, and to mental and physical deterioration; series of x-ray and other photographs and sketches. The Museum will occupy a central position in the same building as that in which the sectional work is carried on, and will be easy of access. The Committee desires to enlist the co-operation of members intending to take part in the work of the Sections, and will be glad to hear from those who are able to make exhibits. Every care will be taken of specimens, and the contents of the Museum will be insured. It is hoped to make arrangements whereby exhibitors may have an opportunity of demonstrating their specimens. The chairman of the Committee is Dr. J. A. D. Radcliffe, and the honorary secretaries are Drs. M. Aston Key and A. V. Maybury, jun. Communications may be addressed to Dr. Aston Key, 14, Clarendon Road, Southsea, Portsmouth.

#### RECENT ADVANCES IN THE TREATMENT OF LEPROSY.

SIR LEONARD ROGERS read a paper before the Dominions and Colonies and Indian Sections of the Royal Society of Arts on March 16th on recent advances towards the solution of the leprosy problem. After an interesting survey of the history of this disease, he said that the work of the last few years in improving the treatment of leprosy opened up a vast field for research. As early as 1854 the attention of English physicians was drawn to chaulmoogra oil, an old Indian remedy for leprosy and tuberculosis, which Sir David Prain showed to be derived from the seeds of the tree *Taraxiogenos kurzii*. Philippine observers showed that the seeds of various species of *Hydnocarpus* contained the same active principles. The crude oil given by the mouth had a good effect in leprosy, but it could not be taken for long on account of its nauseating properties. A case was reported from Egypt in 1893, of apparent recovery after a five years' course of injections of the oil, and in 1914 Dr. Heiser reported apparent cures of 11 per cent. of a small series of cases in the Philippines treated by this method, which, however, was painful. In 1915 Sir Leonard Rogers showed Dr. Heiser, in Calcutta, a patient who had nearly recovered under large doses of gynecardic acid, the lower melting point fatty acids of chaulmoogra oil. It was subsequently learned that a soluble sodium salt of gynecardic acid, suitable for hypodermic injection, had been made, and that a case in South America had been successfully treated by it. With the help of Dr. Rosa sodium gynecardate was made; administered subcutaneously this proved to be of value in leprosy, although painful. Its suitability for intravenous injection was next ascertained by means of experiments on animals, and Sir Leonard Rogers soon obtained important results in the treatment of leprosy by that method, and after he left India the research was continued by Dr. Muir. During the next three years Sir Leonard Rogers ascertained that soluble preparations from other oils, including those of cod-liver oil and soya bean, were also effective in leprosy, and two others had recently been added by Dr. Muir. The important principle was thus established that the beneficial effects were not limited to chaulmoogra and *hydnocarpus* oils with their peculiar types of unsaturated fatty acids, as had been previously thought, and a wide field of research was thus opened out, which had been extended to the treatment of tuberculosis. Professor Dean and his colleagues in Honolulu confirmed the work and introduced another soluble product, ethyl ester chaulmoograte, which had previously been put on the market as a patent remedy by German chemists, and which could be more simply and rapidly administered intramuscularly than the sodium salts intravenously, although the latter were also sometimes required in resistant cases. By these methods the leprosy bacilli were gradually destroyed within the tissues, and might in time completely disappear so far as microscopic examination showed, together with all outward



signs of the disease. In a few cases steady progress and complete clearing up had been observed after a reaction produced by a few intravenous injections although all treatment was stopped after the reaction appeared; this indicated the production in the system of effective resisting powers. Sir Leonard Rogers expressed his anxiety that exaggerated hopes should not be raised; it was not wise to speak of "curing" leprosy, as great caution was still necessary. Nevertheless, in the largest leper asylum in India, at Purulia, within eighteen months of Dr. Muir's introducing the treatment on a large scale the mortality had been reduced to one-fifth of the former rate, and a very similar result had been obtained in China. The improved treatment had an important influence in simplifying segregation measures, for the greatest obstacle to effective segregation was the difficulty of isolating early cases of leprosy, who continued to form foci for the spread of the disease as long as they had everything to lose and nothing to gain by declaring their disease. Early cases had already come forward in the more curable stages to ask for the new treatment. Sir Leonard Rogers had strongly advocated in India in 1920 the provision of large leper colonies, with ample ground for cultivation, in open areas away from towns, in place of the Government leper asylums, which were prison-like buildings on very limited town areas. The advantages of such colonies were especially great in view of the fact that the injections had to be continued for many months and in some cases for a year or two. On the most conservative estimate the number of lepers in the world must be well over 1,700,000.

#### THE SUPPLY OF ARTIFICIAL LEGS.

THE thorough and sympathetic manner in which the Ministry of Pensions has dealt with the needs of pensioners who lost a leg in the war must surely be a source of pride to the people of this country. We believe that not one of the late belligerents has taken such pains or lavished relatively so much money as has Great Britain in its efforts to make up for the mutilations of its sailors and soldiers. The note published last week (p. 491) gave a brief summary of the rules for the supply of artificial legs, and some indication of the care which has been taken in this matter. Although the wooden legs which were supplied in the earlier years of the war were the very best then obtainable and gave great satisfaction to thousands of men, it soon became evident that in an alloy of aluminium a material existed which was in some respects, and especially in its lightness, superior to wood. At first the high price charged for such limbs, and still more the very small output of which the maker of the only light metal limb then on the market was capable, prohibited their adoption on any large scale; but modifications introduced during the last two years and the increase in the number of firms able to supply approved patterns have enabled the Ministry to issue light metal limbs to all suitable cases, although their cost is still very much greater than that of the best wooden limbs. The issue of these limbs is generally restricted to amputations above the knee, because it has been found that there is not much difference in weight and no difference in principles of control between the best wooden and the metal limbs for amputation below the knee. It is only in special circumstances, therefore, that the Ministry sanctions the issue of the latter. It is somewhat surprising that so few pensioners have availed themselves of the option of having a peg leg as one of the two prostheses to which they are entitled. The simplicity, strength, and lightness of a good peg leg are such obvious advantages in many circumstances that it might have been expected that the peg would have been popular for certain work and for use in the house. But the desire to hide disability is very strong among ex-service men, and the peg is therefore seldom issued. Should these rules come under the notice of civilians of the poorer classes who have lost a leg they must, we fear, excite envy of the ex-service man, for the cost of aluminium limbs is beyond the purses of most hospital Samaritan funds and

similar charities. The civilian may, however, console himself with the reflection that after all a proper wooden leg is a very good second best.

#### ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Two years ago, primarily with the object of economizing, the Ministry of Health, assisted by the Society of Medical Officers of Health, came to a decision as to the form which the annual report of a medical officer of health should take and also as to the information which should be required by the Ministry. Local authorities were subsequently informed by circular of the conclusions arrived at by the Ministry, and appended to the circular were certain skeleton tables which medical officers of health were required to utilize. Their use in the annual reports for 1921 was very general and was testimony to the care with which they had been compiled. In a few instances slight modifications were made. Dr. E. Lloyd Owen, medical officer of health for the southern division of the Carnarvonshire combined sanitary districts, has modified and amplified the tables of the Ministry and has brought out, through Messrs. Knight and Co., 227, Tooley Street, London, S.E.1, a set of twelve forms under the name of "The Lloyd Owen Skeleton, Tabular, or Questionnaire Scheme of Annual Health Reports." The first table follows very closely that of the Ministry of Health, but includes information as to zymotic mortality and as to tuberculous mortality, but without distinguishing pulmonary from other forms of tuberculosis. The Ministry asks that the number of cases of diseases notified during the year should be arranged under certain age groups, but this is not provided for in Dr. Owen's table. His tabular arrangement of cases of ophthalmia neonatorum is, however, an improvement on that of the Ministry. The information supplied by the Registrar-General with respect to the causes of death distinguishes between males and females, but in Dr. Owen's table no such distinction is made. The remaining forms in Dr. Owen's series serve a useful purpose in reminding medical officers of health of the information they are required to supply, and the table of "Regulated Establishments" is drawn up with great care and exactness. There are many medical officers of health who will find Dr. Owen's skeleton forms extremely useful.

#### DEATH OF WILLIAM PEARSON.

THERE has just died at his home at Waddon, Surrey, in the 83rd year of his age, William Pearson, who served the Royal College of Surgeons, England, as its prosector for almost fifty-eight years. He was a craftsman of the highest skill, and the excellence of the anatomical preparations with which he enriched the museum of the College not only gives his name a permanent place in the records of the museum, but gives him also a prominent place amongst those who have developed anatomical technique in this country. At Michaelmas term in the year 1856, being then a lad of 15, he was engaged to work as an attendant in the museum. Soon after his arrival Sir Richard Owen went from the College of Surgeons to the British Museum, and was succeeded by Quekett, who in 1861 was succeeded by the late Sir William Flower. In 1862 the late Professor J. Pettigrew came from Edinburgh University to assist Flower, and brought with him a very finished and successful method of unravelling and displaying the arrangement of fibres in muscular organs. In young William Pearson he found a most apt pupil who developed the method, and year after year under a succession of conservators and presidents enriched the museum with series upon series of preparations. His success depended as much upon his knowledge of anatomy and comparative anatomy as upon skill of hand. Even in 1914, when he was in his 73rd year, and when failing health led to his retirement on a liberal pension, his cunning showed no sign of decay. Great as was Pearson's craftsmanship, it was his manhood which attracted and held the esteem of the numerous generations of medical men who were brought intimately in contact with him in the



workrooms of the museum and in the examination hall. His native honesty of bearing and of purpose, his broad healthy humanity, won him the esteem of all the thirty-three presidents under whom he served, the members of the successive courts of examiners to whom he ministered, and the thousands of young candidates whom he guided through the ordeals of the examination room. He was the third of a line of Pearsons—grandfather, father, and son—who served in the museum since it was set up in Lincoln's Inn Fields 130 years ago. Thomas the grandfather, Edward the father, and William who has just died, had a united term of service of 153 years. The late Mr. Clinton T. Dent did William Pearson's wide circle of friends a real service when he commissioned Mr. W. Onslow Ford to paint a portrait of the great prosector. That portrait now hangs in the conservator's office.

#### THE MENTAL AFTER-CARE ASSOCIATION.

THE annual meeting of this useful society, which for more than forty years has rendered much needed assistance to poor persons on their convalescence after an attack of insanity, was held on March 16th at Merchant Taylors' Hall, under the presidency of Alderman Sir C. C. Wakefield, Bt., who was supported by the Lord Chancellor, Sir Frederick Willis (chairman of the Board of Control), Sir James Crichton-Browne, M.D., Sir Maurice Craig, M.D., Dr. Percy Smith, and Mr. D. Cawdron (chairman of the L.C.C. Asylums Committee). There was a large audience, but unfortunately the energetic secretary, Miss Vickers, was absent on account of illness. The report for 1922 was presented by Dr. Rayner (chairman of Council), and its adoption moved by the Lord Chancellor, who, after expressing his high appreciation of the work of the association in supplying those who had successfully passed through asylum treatment with sorely needed aid and advice in starting afresh in the world, referred to the measures now under the consideration of the Government to provide greater facilities for the early treatment, uncertificated, of cases of mental disorder considered curable. After-care, which came specially within the scope of this association, was also receiving the Government's attention, and his Lordship hoped that the visiting committees of mental hospitals would be given further and greater powers in that direction. The good work carried on for so many years by the association indeed afforded encouragement for such a course, though officially provided services did not always successfully compete with those of private individuals rendered out of a spirit of charity and kindness. Sir Charles Wakefield stated that the number of cases applying for assistance had been 944 during 1922, against 874 in 1921 and 379 in 1920. Unfortunately contributions had not increased *pari passu*, and it was extremely desirable to relieve the society of the heavy burden which a deficit of £740 in last year's income had entailed. Patients were discharged "recovered" from our mental hospitals at the rate of some 7,000 annually; a considerable number of them would benefit by the kind offices of the association did its funds permit. The adoption of the report, having been seconded by Sir Frederick Willis, who bore testimony to the good work accomplished, was unanimously carried. The approval of the balance sheet was then moved by Sir Maurice Craig, M.D. (honorary treasurer of the association), seconded by Dr. Percy Smith, and agreed to. Sir James Crichton-Browne, M.D., in an eloquent speech, proposed the re-election of officers, and testified to the excellent arrangements made for the rehabilitation into ordinary industrial life of ex-mental patients—many without homes or friends—who, did they not receive such kindly care and assistance as the association's officers gave, would be apt to relapse in the struggle for existence; and special reference was made to the devotion to the ex-patients' interests of the small salaried staff, whose duties were rendered in the most sympathetic spirit. This was seconded by Mr. David Cawdron, and cordially carried. Mr. Ernest Sanger, L.C.C., and Dr. Henry Rayner proposed

a vote of thanks to the President and the various speakers, which was carried by acclamation, and briefly acknowledged by the Lord Chancellor. The offices of the association are at Church House, Dean's Yard, Westminster, S.W.; the secretary is Miss E. D. Vickers, who will gladly supply any desired information as to its work.

#### THE "PROHIBITION" OF EVOLUTION.

MR. RUDYARD KIPLING's story of the village that voted the world was flat, though at first sight pure farce, is, when philosophically considered, a contribution of historical value, illustrating the fact, not peculiar to this age, that there can always be found a certain number of persons to accept any proposition, however absurd, and to defend it the more enthusiastically the more absurd it is. This curious tendency of the human mind troubled the democracies of Greece and the Fathers of the early church, who found that persecution did not arrest the spread of such opinions, but by producing martyrs tended rather to their extension. Nowadays the tables are being turned, and holders of unusual opinions seek to force them on the community by legislation. It appears that in the United States there is a movement to prohibit the teaching of evolution as applied to man. Legislation to this effect has been proposed in certain States, and the Council of the American Association for the Advancement of Science, at its meeting last December at Cambridge, Massachusetts, thought it necessary to adopt formal resolutions on the subject.<sup>1</sup> The first affirmed that no scientific generalization is more strongly supported by thoroughly tested evidences than that of organic evolution; the second that the evidences in favour of the evolution of man are sufficient to convince every scientist of note in the world, and that these evidences are increasing in number and importance every year. The third resolution affirmed that "the theory of evolution is one of the most potent of the great influences for good that have thus far entered into human experience; it has promoted the progress of knowledge; it has fostered unprejudiced inquiry, and it has served as an invaluable aid in humanity's search for truth in many fields." Finally the Council expressed its conviction that "any legislation attempting to limit the teaching of any scientific doctrine so well established and so widely accepted by specialists as is the doctrine of evolution would be a profound mistake, which could not fail to injure and retard the advancement of knowledge and of human welfare by denying the freedom of teaching and inquiry which is essential to all progress." It was no doubt the existence of this movement to prohibit the teaching of evolution that induced Dr. W. W. Keen of Philadelphia to take "Science and the Scriptures" as the subject of an address he gave at Crozer Theological Seminary last June. He has now expanded the address into a little book with the title, *I Believe in God and in Evolution*.<sup>2</sup> It is dedicated to "all sincere seekers after truth; who revere the Bible as the Word of God; who revere Nature as the work of God; and who believe that, rightly interpreted, they must surely agree." It is a very clear and spirited account of the evidence for evolution from the embryology and anatomy of man and from the history of mankind.

#### SIR FREDERICK MOTT.

SIR FREDERICK MOTT recently accepted the appointment of honorary director of the pathological laboratories of the Birmingham City Hospitals and lecturer in the University of that city on morbid psychology. He has undertaken to pay frequent visits to Birmingham, where he will have a whole-time assistant director. It is hoped eventually to associate various other mental hospitals in the Midlands with the scheme. The laboratories will be established at first at one of the city hospitals, but the intention is that they shall as soon as possible be transferred to the university buildings, as it is considered very desirable that the staff

<sup>1</sup> The full text of the resolutions was published in *Nature*, March 3rd, 1923, p. 293.

<sup>2</sup> *I Believe in God and in Evolution*. By William W. Keen, M.D. Philadelphia and London: J. B. Lippincott Co. (Cr. 8vo, pp. 102, 1 dol.)



of the psychiatric laboratory shall have the advantage of working side by side with other pathologists. Sir Frederick Mott retires from the office of pathologist to the London county mental hospitals and director of the pathological laboratory on March 31st, and will then cease to be a member of the service of the London County Council. He will, however, continue to act in an advisory capacity at the Maudsley Hospital for a further period of six months. He joined the service of the London County Council in September, 1895. He reached the usual age for retirement four years ago, but for various reasons, chiefly in connexion with the establishment of the Maudsley Hospital, and more recently the setting up of a course of lectures and practical instruction for the Diploma in Psychological Medicine—a proposal in which Sir Frederick Mott took a very active interest, and urged on more than one occasion upon the London County Council—his services have been retained beyond the age limit, greatly to the advantage of the Council's work. He had already won high distinction as a neurologist and pathologist when he was selected for appointment by the Council, as he entered the service at a later age than usual. The Council is proposing, subject to the consent of the Minister of Health, to add six years to his actual term of service for the purpose of computing the superannuation allowance to which he will be entitled on ceasing to be an established officer. The Mental Hospitals Committee has suggested to the Council that the circumstances attending his comparatively late entry into the Council's service constitute a "peculiar professional qualification" which is provided for in assessing pensions under the Asylum Officers' Superannuation Act, 1909. It is also proposed that an honorarium of 250 guineas should be paid him for the services which he will render at the Maudsley Hospital in an advisory capacity from April until October next.

#### THE REGISTRAR-GENERAL'S STATISTICAL REVIEW.

We print this week a letter from Dr. Reginald Dudfield containing a detailed criticism of the new form of the Annual Report of the Registrar-General. Dr. Dudfield's eminence as a medical statistician will ensure close consideration of the technical objections he urges against certain changes that have been made. We have ourselves commented upon some of these, and, without endorsing all Dr. Dudfield's arguments, are disposed to concur with his general conclusions. Dr. Dudfield, however, raises issues of importance to others than the members of the unfortunately small class of expert medical statisticians. He appears to hold that the new plan of publication will diminish the utility of the national records for the purposes of the medical officer of health, and in particular refers to the delay which has occurred in publication of the notification statistics. It is possible that Dr. Dudfield is too optimistic in his tacit assumption that other medical officers of health make as good use of the Registrar-General's publications as he does himself. If he is not, we anticipate that his colleagues will also express their opinions upon the expediency of the changes to which he directs attention.

#### THE SCHOOL OF HYGIENE.

We referred last week to the preliminary steps that were being taken to provide that the Imperial School of Hygiene, to be erected in London, shall be organized in a manner worthy of the munificent gift of the Rockefeller Foundation. We then mentioned the further act of generosity on the part of the Rockefeller Trustees which will make it possible to appoint a director of the school at an early date, so that he may be able to superintend its building and equipment, and, as we venture to hope, be afforded opportunities of conferring with his future colleagues. The Ministry of Health now announces that the amount the Foundation has undertaken to provide towards the expenses the director must incur and

towards his salary is £4,000 a year. The steps that should at once be taken have been discussed between representatives of the Ministry of Health, the University of London, and the Rockefeller Foundation, and it has been decided to set up a transitional executive committee to arrange for co-ordination with other bodies already at work in the same or similar spheres. The names of the members of this committee have not yet been announced. A site for the new college has been acquired in Bloomsbury adjoining the area allotted to the University of London, and it is expected that the building for the college may be ready in about two years. Meanwhile the director will act in an advisory capacity to the transitional executive committee. We propose in an early issue to recur to this matter, which must have a very important direct bearing on the teaching of public health and the investigation of the sciences upon which it depends, and indirectly, we may hope, will react upon the unfortunate position in which post-graduate medical education in London appears to be at the present time.

#### IRISH MEDICAL SCHOOLS' AND GRADUATES' ASSOCIATION.

THE forty-fifth annual general meeting of this society was held on March 17th (St. Patrick's Day) at Pagan's Restaurant, when Dr. J. A. Macdonald resigned the Presidential Chair to Sir William Taylor, Regius Professor of Surgery, Dublin University. The report for the past year states that the usual three gatherings had been exceptionally well attended, the numbers at the luncheon during the Glasgow meeting of the British Medical Association being a "record." The winter gathering in London last November took place, in accordance with the new rule, during the week of the General Medical Council meeting in London and afforded thus an opportunity for Irish representatives on that Council to meet old friends and pupils practising in England. The Council expressed the great regret caused by the deaths of Sir Charles Ryall, Colonel Talbot Beamish, and its late honorary secretary, Dr. Walter J. Ronan. Death had also deprived them of one of the few remaining foundation members, Dr. J. Shaw Lytle, formerly of Pontypridd. The Arnott Memorial Gold Medal for this year has been awarded to Dr. Gordon M. Holmes. The festival dinner took place after the meeting, the President occupying the chair, and was attended by 169 members and their friends. After the loyal toasts had been honoured the toast of "Our Defenders" was proposed by the President-elect, Dr. W. J. Corbett, and responded to by Colonel George A. Moore. The toast of "Our Guests" was given by the Chairman of the Council (Dr. Gubbins Fitzgerald), and that of "The President" by Dr. William Hill. Sir William Taylor, in his reply, said the society was showing, by the harmony that existed between those Irishmen and Irishwomen who held such different views both as regards politics and creeds, that the *mens medica* smoothed away obstacles to camaraderie even in Ireland.

#### THE CENTENARY OF THE "LANCET."

THE *Lancet* concludes the hundredth year of its existence in October next, and it is proposed to hold a dinner in celebration of the event. The movement has received the support of Sir Charles Sherrington (President of the Royal Society), Sir Donald MacAlister (President of the General Medical Council), Sir Humphry Rolleston (President of the Royal College of Physicians of London), Sir Anthony Bowlby (President of the Royal College of Surgeons of England), Sir George Newman (Chief Medical Officer, Ministry of Health), Sir William Hale-White (President of the Royal Society of Medicine), and Lord Dawson of Penn (President of the Medical Society of London). The dinner will be held in London in the late autumn. Dr. J. H. W. Laing and Mr. H. D. Gillies, 7, Portland Place, London, W.1, are acting as honorary secretaries.



## MEDICAL SOCIETY OF LONDON.

THE one hundred and fiftieth anniversary of the Medical Society of London, founded by Lettsom in 1773, will be celebrated on May 15th by a dinner to be held at the Hyde Park Hotel. His Royal Highness the Prince of Wales has graciously signified his intention of being present. A gathering widely representative of the medical profession is expected, and there will be distinguished guests. Lord Dawson of Penn, President of the Society, will preside. The Medical Society of London is the oldest medical society in England. Scotland can boast of an older—the Royal Medical Society, Edinburgh, founded in 1737.

Dr. JOHN S. ANDERSON has been appointed to the Chair of Medicine at the University of Hong Kong. Dr. Anderson had a distinguished career at Glasgow University, and during the war served in Gallipoli, Egypt, and Palestine. Later he joined the staff of the Helminthological Department of the London School of Tropical Medicine and became a member of the Commission which visited British Guiana and the West Indies in 1921.

## Medical Notes in Parliament.

(FROM OUR PARLIAMENTARY CORRESPONDENT.)

## Dangerous Drugs Act, 1920.

DR. CHAPPLE, at the end of ordinary questions on March 19th, raised a point of order which appeared to him to be of considerable importance, involving, as it did, an encroachment upon the rights and privileges of the House. The late Home Secretary issued a draft regulation amending the Dangerous Drugs Act of 1920. He issued it on August 3rd last, and the forty days under the Rules Publication Act expired on September 12th. That regulation had had practically the force of law ever since, so that nearly six months had elapsed, during which time a regulation issued by the Home Secretary on August 3rd had practically had the force of law. Section 5 of the Rules issued under the Dangerous Drugs Act, 1920, was to the effect that no practitioner could prescribe for himself any drugs mentioned in the Schedule, such as cocaine and morphine. Section 11 of the Dangerous Drugs Act required that any regulations under that Act should be laid forthwith, but this regulation was not laid until March 1st. Therefore a law had been practically made by the Department and had not been ratified by the House. It ought to have been laid on September 12th last, but it was not laid until March 1st. He asked whether that was not an irregularity, and whether the regulations ought not to be withdrawn. At present it appeared that the Home Department could issue regulations and allow any time whatever to elapse during which time the regulations had the validity of law. Was that an irregularity with which Mr. Speaker could deal?

Dr. Molson associated himself with what Dr. Chapple said. The British Medical Association protested last July against this regulation. The regulation had been carried into force without the consent, authority, or knowledge of the House. It limited the power of duly qualified medical practitioners to prescribe for themselves. He considered that that had been done in an irregular way.

The Speaker replied that it was not for him to say whether the action of the Department had been legal or not. This did not appear to him to be a point of order, but a point of law. If any irregular action had been taken by the Ministry, then he imagined that any honourable member, or anyone who had been harmed by such action, had the courts of law open to him. If the regulations were laid on a certain date—he thought it was February 2nd—

Dr. Chapple remarked that the regulations were promulgated on October 2nd last.

The Speaker said they were laid during the present session of Parliament, and the number of days, so far as he was concerned, dated from that time. What happened in the interval might be a legal question, but it was not a point of order upon which he could express an opinion.

## Army Medical Services.

We published last week (p. 482) the passages in the Memorandum of the Secretary for War which dealt with the Army Medical Services. In the course of the debate on the Estimates, on March 15th, Dr. F. E. Fremantle expressed his

gratification that there was an increase, though only slight, in the provision for the Army Dental Corps. Medical officers who had served during the war knew how vital dental work was and how fruitful a source of invaliding and inefficiency was the absence of proper dentistry. Very frequently insufficient provision for the dental condition of the troops, and the recruit in the first instance, resulted in the loss of enormous sums of money, due to the fact that they had to be invalided through troubles of digestion and nutrition which arose through defective teeth. It had been difficult to get a sufficient number of dental surgeons during the war, because qualified dental surgeons were not numerous. When it was decided, as a new departure in the permanent army, to have a certain establishment of dental surgeons, those who had served so well were encouraged to join permanently; eighty-three did join, but the gratuity promised to them when they left the service was withheld if they entered the permanent service. The British Dental Association had appealed to the War Office, but the Army Council had repudiated the agreement made under Instruction 131. Turning then to the problem of the Army Medical Corps of the Territorial Army, Dr. Fremantle said that the original idea was that in all the reductions the cadre of all the different units should be kept up, so that in the event of war—as in the case of the late war, thanks to the scheme initiated by Lord Haldane—there could be complete expansion. One of the chief requirements for expansion was the availability of big general hospitals. As regards the ordinary technical medical and surgical work, the general hospital could in war obtain the necessary staff from civil practitioners. The real requirement was the military organization of the hospital to make the organization work smoothly. The establishments should be kept up in peace time in such a way that they might be able to get to work at once. The nucleus of the Territorial Army medical units was the general hospital. These units had been cut down. Instead of fourteen Territorial general hospitals, there were now only three—one in London, one in Edinburgh, and one in Manchester. It would be infinitely better to have the cadres of ten big general hospitals in the big centres in order that a fresh set of medical officers might have training in the organization and running of a hospital. There was something wrong in regard to the Royal Army Medical Corps. Since the South African war it had held a very high position; in fact, among the medical services of the Crown it had attained to the premier position. But when the last examination was held for fifteen vacancies in the corps, there were only four applicants, and only three passed the test. All four were, however, given commissions, and the remaining eleven commissions were left vacant. He could not understand the falling off in the popularity of the corps; but he imagined that some of the conditions did not correspond sufficiently well with the prospects in civil life, and that that was one of the results of economy. He favoured economy, but the Army Medical Corps must be saved. The man who was responsible for the whole of medical service and that connected with the health side of the army work should have a seat on the Army Council. The Escher Committee declined to recommend this, its objection being that the Army Council was already large enough. But, as a result of the war, Lord Escher had reversed his opinion. In conclusion, Dr. Fremantle touched on the question how far the co-ordination of the services (the Army, the Navy, and the Air Force) would affect their Medical Services. The Cabinet Committee, under, he believed, the chairmanship of Sir Alfred Mond, did report, as he understood, last summer, on this subject. But when he asked if the report would be published he received no reply. He pressed this question again, because the publication would be of great value. He allowed that possibly the fusion of the Medical Services could not be affected very much in advance of the general fusion of all the fighting forces, but it was bound to come, and the sooner the better.

Lieut.-Colonel Guinness (Under Secretary of State for War), replying to the discussion, said his answer to the appeal that the Director-General Army Medical Service should be a member of the Army Council was that members of the Army Council had never sat as representatives of particular groups or kinds of soldiers. They sat as representing groups of functions. It was true that there were instances in the War Office organization which seemed to support the opposite principle, such as the Director of Supplies and Transport, the Director of Engineering, the Master-General of the Ordnance, who were each of them virtually commandants of certain corps and administered the personnel. If representation was to be given on the Council to the Territorial Army, as one M.P. had suggested, and to the Royal Army Medical Corps, as Dr. Fremantle had urged, the same claim would soon be made for the Royal Engineers.

Dr. Fremantle (interposing) said that was just the mistake which was constantly being made and against which he contended. He desired that the Director-General



of the Royal Army Medical Corps should be on the Council to represent the health services which functioned throughout the army. The Director-General was responsible for the whole of the health services in all parts of the army administration.

Lieut.-Colonel Guinness said he quite realized that a good many people held the view just expressed, but he suggested that all these matters could best be considered by such a committee as that under the chairmanship of Lord Weir, which was going into the whole of the establishment and the organization which controlled it.

#### Nurses' Registration Act.

Major Barnett, on March 14th, moved for an address to His Majesty for the modification of the Schedule to the Nurses' Registration Act, 1919, for the election of the General Nursing Council for England and Wales. He submitted proposals for some forty amendments to the scheme, but said that there were only three of substance. The first dealt with the qualification of the people who should represent the registered nurses on the Council. In the debates in the House on nurses' registration two points received great stress. One was that nurses should be raised to the status of a profession, and the second that they should be independent in the choice of their representatives. The matrons were a very distinguished body of women, and he did not wish to deprive them of the privilege of being elected members of the General Nursing Council. But under the scheme it was laid down that six of the eleven representatives of the registered nurses should be past or present matrons. The amendment he put forward was that the registered nurses should elect eleven nurses to represent them, and that they might be matrons or not. This followed a precedent set in Scotland. The second point was to make the time between the date of the dispatch of the voting papers and polling day twenty-one days instead of seven. The other amendment dealt with the powers of the returning officer, who, under the rules, was able to sit in judgement on his own mistakes.

Mr. Neville Chamberlain, in reply, said that during the short time he had been in office it had been impossible for him to make adequate investigation into this matter. But if the motion were withdrawn he would undertake to request the General Nursing Council to consider the amendments put forward, and to draw up and submit to him such alterations as the Council might be prepared to make within the next twelve months. These alterations, if approved by him, would be laid on the table and open to discussion. Major Barnett expressed his willingness, in the circumstances, to withdraw the motion.

**Small-pox in London.**—Mr. Rhys Davies asked, on March 14th, whether during the recent small-pox "scare" in London any intimation was sent to medical officers of health on the subject of closing of business premises in the event of small-pox occurring thereon. Mr. Chamberlain replied that the only communication traceable was a statement in answer to an inquiry by a firm of solicitors that the Department was not aware of any statute or regulation empowering the Minister of Health to order the closing of a factory wherein cases of small-pox had occurred. The question whether it was or was not desirable to advise the closing of a factory on account of the occurrence of cases of small-pox rested with the medical officer of health of the district. In reply to Mr. Frank Lee Mr. Chamberlain said that the medical officers of the Ministry who advised in regard to the diagnosis of suspected cases of small-pox were those who had considerable experience of that disease, and in forming an opinion as to the nature of the illness they took into account all known factors, including the vaccinal condition of the patient. Mr. Frank Lee desired information as to the report of the Departmental official who made an investigation in Derbyshire. Mr. Chamberlain said that such reports were intended to be confidential, and he did not propose to publish the reports made by medical officers of the Department as to this outbreak. He was advised that the isolation of contacts was not generally necessary either in the interest of the contact or for the protection of the public unless or until the contact developed the disease. Mr. Spencer asked whether the reports were available to the council or councils interested. Mr. Chamberlain said that they were not; the reports were confidential to the Department.

**Maximum Size of Panels.**—Mr. Chamberlain informed Mr. Burgess, on March 14th, that while the maximum number of patients for whom an insurance practitioner working single-handed might accept responsibility was 3,000, the Insurance and Panel Committees had power to fix a lower number as the limit for that particular area or for any portion of it. The extent to which the number might be increased in a case of a practitioner employing a permanent assistant was a matter within the discretion of the local committee. The information available indicated that in general the employment of an assistant was held to justify the increase of the number by about 50 per cent. Mr. Pringle observed that the numbers given were not of patients but only of potential patients; there was only a small number of actual patients in the total.

**Medicines for Panel Patients.**—Sir W. Sugden asked, on March 14th, what steps were being taken to ensure fit and proper medicines being supplied to panel patients where the price of such medicines was higher than the sums allowed in the contract. Mr. Chamberlain replied that the cost of medicines for insured persons was not subject to any such limit as was suggested. Insurance practitioners were required to order for their patients such medicines

as were necessary for their proper treatment without limit of price, though it had been found necessary to take certain precautions against extravagance in prescribing. Mr. R. Richardson asked, on the same day, if the Medical Subcommittee of the Durham County Insurance Committee had recently fined medical practitioners on the panel for alleged excess in the cost of drugs given to panel patients, asserting that drugs of a less expensive character should have been given and that medicine should have been ordered to have been given at greater intervals; and whether the Minister of Health would have inquiries made into this with a view to the proper treatment of persons suffering from ill health. Mr. Chamberlain replied that the withholding of remuneration on the ground of excessive prescribing was settled by the Insurance Committee, which received independent advice from the Panel Committee. He had not yet received the reports of the particular cases to which Mr. Richardson referred, but he had no jurisdiction to review the Insurance Committee's decisions unless the doctors concerned exercised their right of appeal to him. There must be some safeguard against extravagance in prescribing, but the present arrangements were not working well and were under revision.

**Pensions Administration Cost.**—In a written answer to Sir John Collier, on March 9th, Major Tryon stated that the estimated total cost of administration of the Pensions Department (including committees) for the financial year ending March 31st was £4,180,000, of which £1,110,000 was for medical services. The cost of sessional fees for boarding during the current financial year was estimated at £450,000. Salaries of medical officers could not be readily apportioned as between boarding and treatment duties. The number of whole-time medical officers employed on August 1st, 1921, and on February 1st, 1922, were 623 and 605 respectively. Of these, 315 and 289 were employed in institutions. The number of medical boards of any kind varied from day to day, according to requirements, but the average number of three-men boards was about 170 a day. All cases coming up for resurvey were now examined by two-men boards.

**Death Certification.**—At the instance of Mr. Snell, on March 14th, Mr. Chamberlain gave the following particulars of the registration of deaths during the last five years:

#### Deaths Registered.

	On Medical Certificate.	On Coroner's Certificate.	Uncertified.	Total.
1918	570,735	33,012	8,214	611,961
1919	466,068	31,483	6,698	504,249
1920	429,456	31,611	5,653	466,720
1921	424,166	29,301	5,240	458,707
1922	450,996	30,346	5,487	486,829

**Houses Unfit for Habitation.**—Mr. Neville Chamberlain stated, on March 14th, that reports received from medical officers of health for 1,050 boroughs and urban districts for the year 1921 showed that 994,005 houses were inspected under the Public Health Acts and Housing (Inspection of Districts) Regulations. Of these, 13,279 were reported unfit for habitation and 226,713 not in all respects reasonably fit. Notices were served under the Housing Act of 1919 in respect of 30,815 houses, and of these 23,453 were remedied by the owners and 912 by the local authorities. Notices were served under the Public Health Acts in respect of 266,549 houses; in 240,310 of the houses concerned the defects were remedied by the owners and in 2,757 by the local authorities. Closing orders were made in respect of 1,416 houses, while in the case of 287 houses closing orders were ended after the houses had been made fit. There was no information as to the population inhabiting these houses.

#### Answers in Brief.

Major Tryon has stated that there are approximately 830 service patients in the mental hospitals of the London County Council. Payment for the cost of their maintenance and treatment was made by the Pensions Ministry direct to the medical superintendents of the hospitals. During treatment pension was suspended and the allowances authorized by Article 6 of the Royal Warrant were granted.

The difference between the number of State-assisted houses completed up to February 1st and the gross estimate of shortage due to overcrowding according to the survey was 312,595. Information is not available as to the number of unsubsidized houses built since 1919, and the figures given are not to be taken as giving the present effective demand for houses.

The Home Secretary has stated that the alleged increase of drunkenness from the consumption of methylated spirits has been under the consideration of the Home Office for some years, but it was not a matter in which he had any powers. He understood that it had not been found practicable to make the spirit more unpalatable.

Mr. Chamberlain has informed Mr. Hayday that the work of public vaccinators was periodically inspected by medical officers of the Ministry of Health. The Royal Commission on Vaccination had said, as regards the protection afforded, that though in all cases it was not the same, if a period was to be fixed, they thought it might fairly be said to cover in general nine or ten years.

Regulations to prescribe standards and labelling for imported condensed milk have been prepared by the Ministry of Health, and notice of intention to make them, subject to the consideration of representation by any public body interested, has been given in the *London Gazette*.



## Nova et Vetera.

### A TIBETAN ANATOMICAL CHART.

Among the trophies of the second Mount Everest expedition is an anatomical chart brought back by Captain J. B. L. Noel from a Tibetan monastery at Gyantse, in the mountainous regions between Darjeeling and Lhasa. Captain Noel was the official photographer to the party, and his wonderful cinematograph films have been shown in London and more recently in the large cities of Scotland and the North of England. We are indebted to him and the Mount Everest Committee for the opportunity to reproduce a photograph of this chart in our columns.

Picture-scrolls, or *tankas*, are common features of the monasteries of Tibet; they are either hung on the walls or kept rolled up in pigeon-holes. This one is painted in water colours on some kind of prepared canvas, and has evidently been rolled up for a long time, for its outermost surface is much discoloured; it measures some 24 inches by 16 inches. The drawings are enclosed in a gay red and yellow border; the anatomical figures are coloured diagrammatically, red and pink predominating; the background is lightly washed in with blue above and green below. Dr. A. F. R. Wollaston, who was medical officer and naturalist to the first Mount Everest expedition in 1921, informs us that he saw several anatomical charts like this in Tibet, but none so complete. It has been examined by Dr. Frederick W. Thomas, Librarian to the India Office, whose knowledge of Tibet and its language has helped us greatly in compiling this note.

The writing on the picture is in a neat cursive form of the Tibetan script adopted from the Hindus in the seventh century A.D. The letters are thus akin to the Indian Sanscrit characters of that period, and therefore read from left to right. The letters of the running script differ from those of the formal, or sacred, script in being "unheaded" and less ornamental.

In general Tibetan medicine, like Tibetan writing, is based on the Hindu, with perhaps some admixture of Chinese. The legend at the foot of this picture informs the reader that the chart illustrates a chapter from the well known medical treatise called *Vaidurya-si-on-pohi-phreng-ba* (The blue beryl necklace, or String of blue jewels). The *Vaidurya* appears to be a commentary on the four medical authoritative texts, or *tantras*, ascribed to Buddha in his capacity as the great physician. The particulars filed by Dr. Thomas in the library of the India Office show the *Vaidurya* to be a large and exhaustive work of 1,000 leaves, each printed on both sides, the whole forming a complete system of the science and art of medicine.

There is no clue to the age of the picture; it may be anything from 50 to 300 years old. The anatomical details are crude and fanciful; they are indeed rendered with a spirited

disdain for accuracy; they bear out Garrison's observation that Hindu medicine was particularly weak in its anatomy. Like the pre-Vesalian anatomical drawings of Europe, this Tibetan chart bears little evidence of original observation or dissection. It has rather the appearance of being the work of a skilled copyist working to a traditional pattern and adding such artistic flourishes as his fancy directs. "These strange didactic pictures have all been interpreted by Sudhoff as side-lights on the almost stationary character of the mediaeval mind."\*

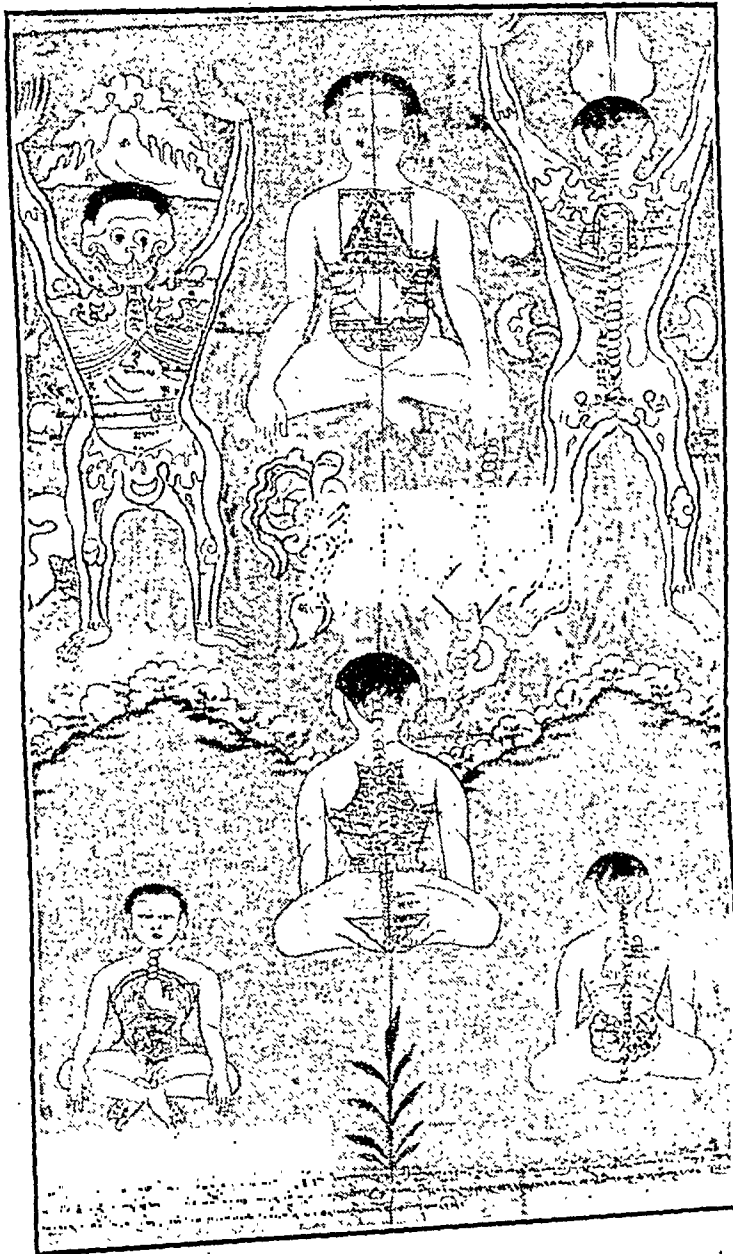
According to the key lettering the mountainous object in the top left-hand corner represents the lungs and heart; and this conventional rendering is repeated in the thorax of the

squatting figure below. The upright skull-faced figure is flanked by a small liver with a large gall bladder (this is painted yellow) showing beneath its lower border, and another larger gall bladder detached from its surroundings. In the upper squatting figure the intestines are shown in two zones labelled upper and lower, and the crura of the diaphragm are indicated. In the posterior view of the upright figure the kidneys are turned outwards and shown in section, their sites being indicated in the flanks; above the left kidney appears an isolated spleen, which is coloured mauve in the original. It will be noted that the patella appears in both the front view and the back view, and the spinal column is represented as consisting of twenty-seven pebble-shaped vertebrae. The coiled object in the centre of the picture to the left of the middle line is intended to represent the stomach and intestines. In each of the central squatting figures the thorax is decorated with a great deal of information.

We learn from Mr. C. J. S. Thompson, Curator of the Wellcome Historical Medical Museum, that that collection possesses several coloured drawings, reproduced from a Tibetan manuscript, depicting anatomical subjects. The original scroll, ascribed to the fifteenth century, is preserved at the Bibliothèque Nationale in Paris.

Some account of the anatomical knowledge and medical practice of Tibet has been given by Dr. Heinrich Laufer in his *Beiträge zur Kenntniss der tibetischen Medizin* (Leipzig, 1900), and in another pamphlet published in the same year at Berlin. Lieutenant-Colonel L. Austine Waddell, I.M.S.(ret.), formerly professor of Tibetan at University College, London, in his work *The Buddhism of Tibet*, speaks of the very popular form of Buddha representing the god as "the supreme physician" or Buddhist Aesculapius; this, he says, was probably founded upon the legend of the metaphysical Bodhisat, "the medicine king." Aesculapic pictures or medical Buddhas are much worshipped in Tibet, and are supposed to cure by sympathetic magic. This circumstance may account for the squatting Buddha-like attitude of four out of the six figures in the anatomical chart.

\* Fielding H. Garrison, M.D., *Introduction to the History of Medicine*. Third edition. 1921.





## England and Wales.

### LIVERPOOL MEDICAL INSTITUTION.

A SPECIAL general meeting was held on March 13th to receive the report of the Revision of Laws Committee which had been accepted and approved by the Council. The President, Dr. J. Hill Abram, occupied the chair, and there was a moderate attendance of members. An interesting discussion centred around the use of the word "institution" representing the corporate assembly of members and the building in which they met. This twofold signification gave rise to excursions into the history of the medical profession in Liverpool, the etymology of the word "institution," and the various meanings attached to the word by the *New Oxford Dictionary*. It has been ascertained that the first association of medical men in Liverpool had for its object the formation of a medical library. In 1779 out of this Medical Library Society arose a society called the Liverpool Medical Society, and, as far as the records go, this society was the most important at that period. In 1837, through the untiring efforts of Dr. John Rutter, the Liverpool Medical Institution was erected with the express object of housing the library, the pathological museum, and providing a place for medical men to meet and discuss matters of medical interest. Up to 1840 the word "institution" was used solely to designate the building, and chosen in preference to the word "hall." Owing to friction between the trustees of the building and the associations that used it, an arrangement was made whereby the building was taken over by the united associations, of which the Liverpool Medical Library Society was the most important. It was then the word "institution" received its second meaning, and, incidentally, the term "Liverpool Medical Society" passed into oblivion. It was felt by those who knew and had studied the past medical history that the phrase "Medical Society of Liverpool" might be with advantage substituted and thus preserve the continuity from 1779 down to the present. In so doing, the word "institution" would be confined to its original designation, and the corporate body of members meeting within its precincts be styled the Medical Society of Liverpool. The majority of the members present were averse from change and determined to continue the use of the word "institution" in its twofold signification, leaving the context of the laws to reveal which meaning was the correct one. A new law referring to life members was unanimously adopted. Its object is to free from subscription any associate or member who has completed fifty years of membership of the institution. The clause referring to the ineligibility of persons practising homoeopathy or of those who assume any designation implying special principles or methods in the practice of their profession was unanimously deleted. It was felt that the method of electing members was in itself sufficient to safeguard the objects of the institution.

### BIRMINGHAM GENERAL HOSPITAL.

The board of the General Hospital, Birmingham, in consonance with other large hospitals throughout the country, has instituted an Extern Midwifery Department. For those who know the location of the hospital the wisdom of this step will be obvious; for those who do not, it may be said that the hospital is situated on the edge of a very impoverished district, where confinements are necessarily fraught with great risks to mother and child. The limits of the "district" to be served by the new department have been fixed to extend to a radius of a mile and a half from the institution. This will include the worst slum area in the Midlands, and it is felt by the board of the hospital that much good work can be done amongst the overcrowded population it harbours without in any way prejudicing the interests of other bodies or individuals. The department is under the direct control of the honorary obstetric staff of the hospital, under whom are the obstetric house-surgeon, a specially trained sister, and certain nurses—specially selected by the *matron*—who have completed their full course of general training. To secure the services of the department the patient applies to the registration office of the hospital and pays a nominal registration fee of 15s. This figure is much lower than the fee it would be necessary to pay, in the ordinary way, to engage competent attendance at the confinement, and should be within the scope of many who have hitherto had to rely on unskilled assistance. Not only this: the fee is comprehensive, entitling the patient to

treatment for all complications arising out of pregnancy from the day of registration. Thus a case of too great difficulty to be managed at home would be taken into the hospital, where the confinement could be conducted under safe conditions. Registration early in pregnancy will be encouraged so that ante-natal treatment may be given whenever necessary; it is the aim of the hospital to develop this aspect of the scheme to its fullest extent. In spite of the modesty of the registration fee it is calculated that it should cover the working expenses of the department. During the past decade great advances have been made in private obstetric work, and the certificated midwife of to-day is, as a rule, very competent. Pregnant women also are becoming more aware of the risks associated with their condition, and the grave menace of incompetent help during labour. Thus a favourable reaction is set up which makes for better service. But improvements of this kind do not lessen the cost to the patient, and to the class of people inhabiting the slum covered by this scheme the new Extern Midwifery Department should prove to be of incalculable benefit.

### POST-GRADUATE LECTURES AT BIRMINGHAM ON CRIME AND MENTAL DEFECT.

The Faculty of Medicine of the University of Birmingham has arranged another course of post-graduate lectures and demonstrations on crime and punishment. The course will begin on May 7th and end on May 19th. The lecturers will be Dr. W. A. Potts, who will treat of the subject with special reference to mental defect; Dr. Percy Hughes, who will consider it in relation to insanity; and Dr. Hamblin Smith, who will deal with the subject generally. There will be demonstrations at the Barnsley Hall Asylum by Dr. Percy Hughes, at the Mental Deficiency Office and Barr Hall Colony by Dr. Potts, and at H.M. Prison by Dr. Hamblin Smith. The fee for the course is five guineas. Full particulars can be obtained from the Dean of the Medical Faculty, Mr. W. F. Haslam, F.R.C.S., the University, Edmund Street, Birmingham. As will be seen from the advertisement on another page, the course will not be held unless sufficient entries are received.

### POOR LAW OFFICERS' REMUNERATION.

The Minister of Health has issued a Circular (382 of March 15th, 1923) to Poor Law authorities dealing with the procedure to be adopted for obtaining the Minister's approval of the remuneration of Poor Law officers. In Circular 223 of 1921 it was laid down that, in the absence of any proposal for an increase in salary, no statement of expenditure need be submitted to the Minister. The present circular emphasizes the fact that the approval of the Minister is no longer required for the appointment of Poor Law officers, unless the proposed remuneration exceeds that already sanctioned for the previous holder of the office, or the person proposed to be appointed lacks one of the qualifications prescribed by the regulations or (in the case of a whole-time office) has had no previous experience in the Poor Law service.

The circular contains no new provision. Its chief interest lies in the following explicit statement of the existing position as regards the security of tenure of Poor Law officers, necessitated, presumably, by the attitude adopted recently by certain authorities with regard to retrenchment:

"... Nothing in this procedure will affect an officer's security of tenure or other conditions of service prescribed either by the Regulations or by the terms of his appointment. It will not, for example, be competent for the authority to dismiss without the consent of the Minister an officer entitled under the Regulations to permanency of tenure. When a salary within the approved limits has been assigned to an officer by a resolution of the authority, it will not be competent for them to reduce such salary without his consent during his legal continuance in office."

### THE WILLIAM SHEPHERD HOSPITAL BEQUESTS.

The late Mr. William Shepherd, a builder and large property owner in the City of London, left the residue of his estate to be distributed to London hospitals by his executors; having realized a portion of the estate they have now distributed £96,500 as follows:

£35,000 to Guy's Hospital to finance the erection and completion of the new to be name use." the erection and completion of a w ator.  
£20,000 to St. Thomas's Hospital for the erection of dining and recreation rooms for nurses in the hospital, the new building having a flat roof to provide a playground for children patients in the wards.



£6,000 to the Belgrave Hospital for Children, for the purpose of continuing the erection and completion of the south wing, which will provide two large additional wards, together with extra accommodation for nurses on the upper floors.

Sums of £1,000 have been apportioned to the following London hospitals for the endowment of beds to perpetuate the memory of the testator: The City of London Hospital for Diseases of the Chest, the Middlesex Hospital, the Hampstead Hospital, Charing Cross Hospital, St. Mary's Hospital, St. George's Hospital, the Evelina Hospital for Children, the Miller General Hospital, the Royal Free Hospital, the Westminster Hospital.

In addition, the sum of £500 has been given to the St. Monica's Hospital.

Mr. H. P. Shepherd, C.C., the testator's son, and one of the executors, has in many cases been appointed a governor of the hospitals to which help has been granted.

## Scotland.

### A "MAINTENANCE SYSTEM" FOR SCOTTISH HOSPITALS.

SIR GEORGE BEATSON'S pamphlet, *The Scottish Voluntary Hospitals*,<sup>1</sup> is an interesting exposition of a financial proposal for relieving the difficulties of voluntary hospitals, called the "maintenance system" of finance. Sir George regards the abbreviated expression "voluntary hospital" as indicating a hospital that is supported by voluntary contributions, and considers that the definition embodies the elements of gratuitous support and service. These hospitals, he says, are indirectly an outcome of the Poor Laws. The Act of 1601 directed that provision should be made for the sick poor. The management of the infirmaries established and the care bestowed on the sick poor were so lacking in humanity that great public resentment was created; and the growth of human compassion in the eighteenth century led to the establishment of many voluntary hospitals for the necessitous sick poor.

Times, however, have changed. A humanitarian spirit has permeated the official world; Poor Law hospitals have now all that can be desired in the way of equipment, comfort, and skilled treatment, and the voluntary hospitals are now providing for the needs of sections of the community other than the necessitous sick poor. But the managers of voluntary hospitals are trying to meet the increased expenditure due to modern methods of treatment by collecting money for the deserving poor while utilizing the money so collected in giving what is practically indiscriminate charity to members of the community, many of whom are able to pay for treatment. Through these changes an embarrassed position has been brought about in voluntary hospital finance; and this position must be met by a change in the financial arrangements, since voluntary hospitals must be continued for two reasons—first, because they perform a widespread social service, and secondly, because they carry on a great educational work which benefits all classes of society.

Sir George Beatson is of opinion that the following requirements should be met by any new financial system:

1. It should allow for contributions being made by all classes of the community, as all are benefited by the voluntary hospitals.
2. It should continue the present excellent system of voluntary service by the medical staff, unpaid.
3. It should bring in an assured income without the hospital having to depend on recurrent appeals.
4. It should carry with it an element of permanency.
5. It should not open the door for interference with the control of the hospitals, as by any special body of contributors.

He considers that these requirements would be met under an arrangement by which the maintenance of the hospital itself (management, buildings, rent, taxes, salaries, wages, etc.) would be borne by the general public, through charitable gifts, legacies, and so on, while the maintenance of the patients (provisions, drugs, and dressings) would be borne by the patients themselves, either personally or through benefit societies. To this plan he applies the name "Maintenance System."

An analysis is given of the accounts of the Glasgow Royal Infirmary to show that about two-thirds of the annual expenditure is incurred for the maintenance of the hospital itself, and one-third for the maintenance of patients. Sir George Beatson quotes figures to show that in Scotland treatment in hospital for an average of twenty-one days would cost the patient £3 18s. 9d. in surgical cases with operation,

£2 17s. 9d. without operation, and £2 6s. 9d. in medical cases. The hospitals would maintain a certain number of endowed beds for deserving necessitous patients. It is proposed that the maintenance system of finance should be carried out by some scheme of insurance, it being understood that any such insurance must be arranged by the applicants themselves and not by the hospitals, as no hospital should take upon its shoulders the risks of an insurance company. It is suggested that the various "contributory schemes" and the "Hospital Savings Association" should take up this work of insurance, forming themselves into hospital treatment insurance societies, prepared to meet the maintenance charge for their members when in hospital, and abandoning their present propaganda, which seems likely to undermine the voluntary principle in hospitals in various ways. It is recognized that an "income limit" would be necessary for admission, and the hospital authorities would, of course, be the sole judges as to the suitability of a case for treatment in hospital. Sir George Beatson claims the following advantages for the maintenance system of hospital finance:

1. It gives an opportunity for combining public help from charitable subscribers with self-help by the patients themselves, so that all classes will contribute to the support of hospitals, from the existence of which all are benefited.
2. It would do away with the "open-door" principle of admission, and establish relations on a fixed business-like basis between the voluntary hospitals and the working and lower middle classes.
3. It would help to foster thrift, which is distinctly discouraged by the present voluntary hospital system.
4. Under the system there will be no grounds for medical men claiming remuneration for the services they render, because the hospitals will be receiving no payment for treatment. This is qualified in respect of any work carried out for the State or municipality, in which case remuneration for the medical men doing the work would be included in the charges.
5. An assured annual income would be received by the hospital, coming in weekly, monthly, or quarterly as arranged, thus freeing the hospital from embarrassment in meeting its running expenses.
6. The system furnishes no loophole for invasion of, or interference with, the control of the hospital.

Such advantages cannot, Sir George Beatson considers, be claimed for the contributory schemes for employees now being developed, schemes which open the door to "class interference" in the management of hospital affairs, and are not unlikely to lead in the end to State control. Sir George desires that the voluntary hospitals should recognize that their function now is to help a deserving class of the community whose means debar them from obtaining in serious illness modern expensive methods of treatment and nursing, and that the benefits they bestow should be obtainable, except in absolutely necessitous cases, only by those who are prepared to contribute on the principle of self-help.

In his preface Sir George Beatson, who has worked in hospitals for over fifty years, and been on the surgical staff of a hospital with a large medical school for thirty-two years, states, with a touch of dry humour, that he offered to place his views before Lord Cave's Committee, but that the offer was not accepted because only witnesses with experience in hospital matters were desired.

### CHARITY IN MEDICINE AN ANACHRONISM.

At the annual meeting of the Odonto-Chirurgical Society of Scotland, held in Edinburgh, a discussion on "The necessity for co-operation between the different branches of the medical profession" was opened in an address by Dr. J. S. Fraser, F.R.C.S.E. The lecturer held that the hope of progress lay in the co-operation of specialists in the different branches. He held that charity in medicine was an anachronism and that patients should be treated because they were human beings and citizens, not because they were poor. Discussing hospital treatment, he pointed out that the middle classes, especially the lower middle classes, were worse off than anybody else. The wealthy classes could afford to go to numerous West End specialists and obtain the opinion of each one upon their cases, though even this was not ideal, because the patient laid most stress upon the symptoms which he thought would be of most interest to the particular specialist he was visiting. On the other hand, the poorest classes had the general hospital to go to. The lower middle classes fell between two stools, because they could not afford numerous private consultations and did not care to go to charitable hospitals. Probably the best solution of all would be to have only one hospital, a general hospital, with paying wards attached to each department, as in America. In Edinburgh there were far too many little nursing homes which were not economic.

<sup>1</sup> *The Scottish Voluntary Hospitals: A Financial Reconstruction Scheme.* By Sir George Thomas Beatson, M.D., K.C.B., K.B.E., D.L., Consulting Surgeon, Glasgow Western Infirmary. Glasgow: John Smith and Son. (Med. Rev., pp. vi+18. 6d.)



units, but were run under the system of private enterprise. A possible solution of the problem might be the establishment of a local health rate after the analogy of the education rate. For Edinburgh it had been calculated that this might amount to fourpence in the pound of rental, but the lecturer held that this would be only a beginning and that it would rise.

#### LETHARGIC ENCEPHALITIS IN EDINBURGH.

Seven deaths from encephalitis lethargica have occurred in the Edinburgh Royal Infirmary in the past month, and there have been several cases in other hospitals. Of the deaths in Edinburgh, 5 were in men over 40 years of age and 2 in women of 29 and 24 years respectively. Children have been affected, generally speaking, in a milder degree. In most of the cases mental disorder has been the most prominent early symptom, followed later by third and seventh nerve paresis, the lethargy being of later development. The most effective treatment appears to have been some form of vigorous counter-irritation such as turpentine hypodermic injection for the production of an abscess in some indifferent region like the outside of the thigh. This usually produces striking amelioration of the symptoms. It not only causes a marked local reaction with leucocytosis, but presumably relieves the cerebral congestion which is the outstanding morbid anatomical feature of the disease.

#### END OF WINTER SESSION.

The winter session of Anderson College of Medicine, Glasgow, closed formally on March 15th, when an address was delivered by Sir John Bland-Sutton, F.R.C.S., LL.D. The subject of the address was "The choroid plexuses and ventricles of the brain as a secreting organ," and it was listened to with great pleasure by a large audience of students and teachers. The Chairman of Governors of St. Mungo's Medical College, Glasgow, Mr. James Macfarlane, LL.D., presided at the closing meeting of the winter session on March 15th. He referred to the large numbers of students attending the College and to its continued prosperity as a teaching centre. After the various prizes, medals, and certificates had been presented to the successful students, Sir John Reid, K.B.E., gave a short address.

#### REQUESTS FOR CANCER RESEARCH.

Mrs. Constance Armstrong, widow of the late Captain Armstrong of the Royal Mail Steam Packet Company, left the greater part of her fortune to be distributed to hospitals and institutions directly or indirectly assisting sufferers from cancer. The trustees of her estate have allocated £1,600 to the Caird Cancer Wards, Dundee Royal Infirmary, and £1,600 to the Imperial Cancer Research Fund, London.

#### AFTER-CARE OF BLINDED SCOTTISH SOLDIERS.

The annual meeting of blinded Scottish sailors and soldiers, who were trained and are being looked after by St. Dunstan's, took place last week in Edinburgh. Over a hundred of these men are settled in and around Edinburgh engaged in poultry farming, boot repairing, making of mats, baskets, and nets, or as joiners, masseurs, etc. St. Dunstan's provides them with the necessary raw materials for their occupations and assists them in the disposal of the finished articles. Captain Ian Fraser, C.B.E., the blinded officer chairman of St. Dunstan's, in the course of an address to the men, said that the decline since 1919 of the income of St. Dunstan's in common with that of other philanthropic institutions connected with the war was causing considerable anxiety. Nevertheless St. Dunstan's was still going strong, and although it had been severely handicapped in the raising of funds by the loss of Sir Arthur Pearson, he counted on the generosity of the people of the empire to enable them to keep their pledge to the blinded men.

#### EDINBURGH EYE, EAR AND THROAT INFIRMARY.

This institution, with which the Eye Dispensary has been incorporated during the past year, treated 3,395 eye patients and 1,351 ear, nose and throat patients in 1922—a substantial increase over the figures for 1921. The financial statement showed a balance of £27 on the year's working; the amalgamation of the two institutions has been justified both in the interests of economy and of efficiency.

## Ireland.

#### REFORM OF POOR LAW SERVICES.

THE Local Government (Temporary Provisions), 1923, Bill was debated in the second reading stage at recent meetings of the Senate of the Free State. One speaker pointed out, with regard to the hospital arrangements provided under the schemes for the amalgamation of workhouses; that in some of the Limerick districts patients had to travel twenty-seven miles to the County Hospital, and, to make matters worse, had, in some instances, to wait two days before an ambulance was available to remove them to hospital.

Mr. E. Blythe (Minister for Local Government) said that the bill, although it did not bear it on its face, was an act of indemnity during the period of the struggle which went on in the country when great changes were effected in Poor Law administration without any definite legal sanction, and the bill was necessary for the purpose of regularizing what had been done and to prevent endless confusion and litigation. If it were not for that, it might be possible to carry on as at present, until permanent legislation for dealing with local government could be introduced. The preparation of permanent legislation had been begun, and he hoped within three or four months it would be possible to bring it before the Dail. He would not claim that all the schemes were perfect, but they had been steps in the right direction, and the economies effected had been very considerable. There had been counties in which the economies amounted to £40,000 a year. The restrictions mentioned in regard to the granting of outdoor relief had been removed of necessity after the closing of the workhouses, and no destitute person could be allowed to starve. It was desirable to rid county homes of the horrible character attached to the workhouse, and to make them places where honest people could go in their last days. They desired to set up in each county a good county hospital very much above the standard of the general run of the workhouse hospitals. A certain number of such hospitals would come a spurious demand for the opening of such institutions, and it would not be right to yield to such clamour.

#### FOOD INSPECTION.

At a combined general meeting of the Ulster Branch of the British Medical Association and the Ulster Medical Society, held on March 2nd in the Medical Institute, Belfast, Professor Johnstone, F.R.C.S., M.P., in the chair, the following resolution was passed and ordered to be sent to the Ministers of those departments of the Parliament of Northern Ireland which take cognizance of such matters:

That any Public Health Authority should have the right to examine and inspect the source of supply of any article of food offered for sale or consumed within its area.

## Correspondence.

#### REGISTRAR-GENERAL'S STATISTICAL REVIEW, 1921.

SIR,—The Registrar-General cannot be congratulated on the latest issue of his "Annual Report" under the guise of a "Statistical Review." The first criticism which has to be made is the change in size of the publication, which is now royal octavo instead of folio foolscap. There is, in consequence, in some of the tables, some crowding of small type which renders the reading of the figures an effort for those who are not blessed with normal vision, especially if artificial light be used.

In the next place the "Review" is to be completed in three parts, and as Part I is priced at 10s. it is reasonable to suppose that the cost of the three parts will be round about 30s. In 1913 the one-volume Report cost 5s. 9d. A letter from H.M. Treasury justifying the increased charges for official publications appeared in the January issue of the *Journal of the Royal Statistical Society*. The examples cited in support of the contention that the sale of those publications has not been affected by the increase in price are not very convincing, being limited to the Registrar-General's Weekly Summary—a publication which the public can scarcely be expected to buy, as it is regularly summarized in the press—and the Annual Statement of Trade. The public generally ought to be encouraged to purchase and study a publication such as the Annual Report of the Vital Statistics of the Country, but this is not likely to happen when prohibitive prices are charged. Such documents should not be sold on an ordinary commercial basis.

It is a serious defect that the "text" of the Review has not



been issued simultaneously with Part I—a fact which has not prevented a reference to the "text" being included in the head note to Table 14 (p. 62). Since the Report for 1919 there has been no "letter" from the Medical Superintendent of Statistics to the Registrar-General. As those "letters" dealt with statistics for the proper analysis of which medical knowledge is essential, it is desirable that the inclusion of such "letters" should be resumed. Such "letter" should certainly have been included in this part of the Review.

In his preface to the volume under consideration the Registrar-General observes, "an endeavour has been made to regroup the statistical matter according to the distinctive character of its interest. The tables have thus been divided into (1) medical statistics and (2) civil statistics." He goes on to say, "It seemed probable, particularly in view of the increased scale of prices for Government publications now prevailing, that sections of the public would find it of advantage to be able to obtain a part in which they are specially interested instead of being obliged to purchase the whole publication." It may, therefore, be concluded that the Registrar-General considers that statistics of natality are not medical or—to use a wider description—that they form no part of vital statistics. Medical statisticians are not likely to endorse such a conclusion. To them, especially if engaged in public health work, the study of "income" (natality) is of as much importance and interest as that of "expenditure" (morbidity and mortality), critical examination of the latter being of little profit without taking into account the former.

When the Local Government Board published the Return of Notifications the data for any year were issued within something like six months after the expiration of that year. Part I of the Review, published last month, contains the Notification Statistics for 1921, so that publication of those figures has been delayed some nine or ten months.

On comparing the tables now issued with those contained in the Report for 1920 some important omissions will be noted. It is perhaps desirable to defer comment on those omissions until the issue of Part II, as the missing tables may appear as "civil statistics," which they certainly are not. The table of "Causes of Death at Different Age Periods, 1921" (Table 17, pp. 124–208) is most inconveniently arranged with the causes of death at the top and the ages at the side. Moreover, the numerical sequence imposed by adherence to the International Schedule of Causes of Death is frequently interrupted, and causes with very small numbers are relegated to footnotes. The use of the table promises to be laborious, and the risk of mistakes in taking out figures considerable. Comparison of the tables on pp. 124–208 of the Review with the corresponding tabulation on pp. 140–241 of the Report for 1920 is greatly in favour of the latter.

When the foolscap series of Reports was initiated in 1912 the advantages attaching to the substitution of sanitary (administrative) for registration areas was emphasized. (See p. viii of the Report for 1911.) For the years 1911–20 (See p. viii of the Report for 1911.) For the years 1911–20 short tabulations of deaths by cause, sex, and age were given for every sanitary area in England and Wales. The Registrar-General has now excluded from the tabulation to be found on pp. 365–414 of the Review all urban and rural districts having populations of less than 10,000.

To determine the effect of the change the figures for Oxfordshire have been examined. Table 14 (p. 86) shows that that county includes eight urban and eleven rural sanitary districts, of which one urban and six rural districts appear in the table on p. 393. Of the 453 deaths occurring in the aggregated urban districts, 278 (61.3 per cent.) are excluded from Table 21, and of 1,124 deaths in rural districts, 413 (36.7 per cent.). Those who have tabulated the deaths for the smaller areas will be unable to continue the work and have to be content with a group "Rest of . . . Districts" to be obtained by subtracting the figures given in Table 21 from the totals for "Aggregate . . . Districts" to be found in Table 20 (p. 332). While the data for the smaller districts for individual years may be of slight significance, the study of those data over a series of years cannot fail to be instructive. If considerations of space have been the reason for the exclusion, it may be pointed out that there are possibilities of saving much space by eliminating the repetition which has been allowed in Tables 26 and 27 (Notification Statistics), where data for every sanitary area are to be found. Such saving of space can be effected, it is believed, without sacrificing a single district.

It is to be regretted that no tabulation of institutional deaths has been given. With the existing changed housing conditions the practice of removing the sick to nursing homes

or institutions has enormously increased. It appears to be very desirable that data for the examination of the extension of the practice year by year should be available not only as regards deaths, but also as to births, and, if possible, notified diseases.—I am, etc.,

London, W., March 10th.

REGINALD DEDFIELD.

#### DERMATITIS FROM DYED FUR.

SIR,—As a certain amount of public interest has been manifested lately in the subject of dermatitis due to dyed furs it may be appropriate to give a preliminary account of some observations I have been making on this matter in the skin department of St. Bartholomew's Hospital during the last three months.

In the first place it should be pointed out that many thousands of women are wearing "beaver coney" collars without any ill result, and that even the large number of patients with dermatitis due to this fur which have lately been seen in every dermatological clinic must form but a very small percentage of the total wearers. In the second place it may be emphasized that this is no new phenomenon, although it is more widespread just now than usual. Cases, for example, have been reported in 1913 by Blaschko (*Deut. med. Woch.*, 1913, No. 49), in 1916 in America by Olson (*Journ. Amer. Med. Assoc.*, March 18th, 1916), and in 1922 by Rasch (*Ugeskrift for Læger*, April 13th, 1922).

Since January 1st, 1922, we have seen in the skin department at St. Bartholomew's Hospital thirty-three cases of women and girls suffering from dermatitis due to wearing "beaver coney" collars. This fur is rabbit, dyed brown. The patients' ages have ranged from 15 to 50 years.

The eruption is so characteristic that in several cases I have been able to tell a patient before she has said a word that she has been wearing a beaver coney collar. This eruption was well described by Dr. Semon in his memorandum on the subject in the *BRITISH MEDICAL JOURNAL* of March 17th. It consists in the early stages of a blotchy erythema, going on in some cases to superficial vesication with weeping and crusting. The eruption affects the back and sides of the neck in nearly all cases, the chin and the lower part of the face in the majority, but in my experience in only about one-third of the cases does it affect the upper part of the face and cause the oedema of the eyelids. The long axis of the patches on the sides of the neck is, as a rule, roughly horizontal or parallel with the lower border of the jaw. There is much itching and burning.

An interesting point is the length of time for which the different patients have worn their furs before the appearance of the rash. This has varied in my cases from two to twenty weeks, the average for ten patients who wore their fur collars at week ends only being eight and a half weeks, while for six patients who wore the collars every day it was just under six weeks.

Two explanations have been advanced to account for this latent period. Olson (*loc. cit.*) considered that it was only when the fur got damp from rain or perspiration that the dye was absorbed by the skin and the patient developed the rash for the first time. A more likely explanation seems to me to be that the delay is due to the patient gradually developing a sensitiveness to the irritant in question. In this connexion the experiments of Cash (*BRITISH MEDICAL JOURNAL*, October 7th, 1911) on the irritant properties of East Indian satinwood are of interest. Cash's experiments on himself and others showed that some people gradually develop an extreme sensitiveness to the irritant principles of this wood as a result of repeated local applications, and that this sensitization involves the skin of the whole body and not only the area treated.

In this connexion again the experience of one of my patients is of interest. She had taken eleven weeks to develop the rash on her neck, but after, at my advice, removing the fur collar from her coat, she carried it over her arm for a few minutes, and within twenty-four hours developed on her wrist, where the fur had rested, the typical erythema. On the other hand, I have seen at least two patients with collars and cuffs apparently of the same fur who had the rash on their necks but not on their wrists.

The rash in the majority of cases begins to get better as soon as the fur is left off and suitable local treatment commenced, but in some patients who have had the eruption a long time the whole skin has seemed to develop a general hypersensitiveness, and such patients may take a long time to get well.

Many materials used in dyeing furs are amino-derivatives



of benzene, naphthalene, etc.; others are benzene derivatives containing amino- and oxy-groups. In most or all previously reported cases the dye incriminated has been paraphenylenediamine, often known in the trade as "ursol," which is also the active principle of a popular hair dye well known to produce severe dermatitis in sensitive persons. In the oxidation of paraphenylenediamine an exceedingly irritating substance, chinodichloridimine, is formed, and it is possible that in the cases under consideration this substance has been left in the furs owing to insufficient oxidation and to incomplete removal of surplus dye in the finishing process.

Through the kindness of Dr. T. M. Legge of the Home Office I got into communication with two prominent firms in the London fur trade. They both tell me that they have never had any complaints about furs dyed by themselves, and also informed me that much cheaper beaver comes from the Continent, especially from France and Belgium, and also from the U.S.A. I showed to these experts independently six specimens of furs worn by my patients. One said that all the six came from France and probably from the same dyer, or at all events were dyed with the same dye. The other would not commit himself further than that they had all been dyed on the Continent. The latter gentleman now has the six samples of fur in question for investigation, and he and I with Dr. Mackenzie Wallis hope to publish an account of our findings at some future date.

In the meantime I may add that the London Fur Trade Association and the Ministry of Health have had the matter under investigation for some weeks. I am much indebted to Dr. Adamson for giving me charge of these cases, and to Dr. T. M. Legge of the Home Office and Dr. Allan C. Parsons of the Ministry of Health for their assistance and information.—I am, etc.,

A. C. ROXBURGH, M.D. Cantab., M.R.C.P. Lond.,

March 17th.

Chief Assistant, Skin Department,  
St. Bartholomew's Hospital.

SIR,—I have read with interest Dr. Semon's note on the subject of dermatitis from dyed fur, as undoubtedly this trouble is very frequently met with in the out-patient departments at present. The diagnosis usually presents very little difficulty, as the erythema tends to appear in rectangular patches on either side of the neck, and on both wrists if fur cuffs are worn. The cause is undoubtedly the wearing of cheap furs—that is to say, rabbit skins which have been dyed in imitation of the more expensive skins. The furs seem to be innocuous unless the wearer has a greasy skin, when the colouring agent appears to dissolve in the fatty acids. The type of fur which seems to be chiefly to blame is that which is known in the trade as "beaver dyed coney." The chief dyes used are as follows:

Light brown	Pyrogallic acid.
Medium brown	Metatolylene diamine base.
Dark brown	Metatolylene diamine base.
Red-brown	Metatolylene diamine base.
Deep black	Metatolylene diamine base.
Blue-black	Nigrosine and nigrosine with paraphenylenediamine.

The cheap furs are apparently not finished—that is to say, the mordants used are not neutralized.

From the following description of the preliminary treatment of the furs it will be seen that some very powerful chemicals are employed, and it appears to be doubtful whether it is an unneutralized mordant or the dye itself which causes the dermatitis.

#### Dyeing Methods.

Before dyeing the hairs must be degreased. This process is carried out according to the hardness of the hair, with a solution of 1 to 2 per cent. of soda, or with soap lye containing 1 to 2 grams of ammonia per litre, or most thoroughly by the application of milk of lime (about 20 grams quicklime per litre) or by immersion in lime water. This process may be omitted, however, in the case of very soft, clean skins, or skins bleached with hydrogen peroxide.

Artificial dyes, or chiefly intermediate products (amines), are used in dyeing, either alone or together with natural dyestuffs.

In order to increase the affinity of the hair, it may be subjected to a preliminary treatment with bleaching powder, about 5 grams per litre for light and 10 to 15 grams per litre for dark shades. In the clear solution the skins are soaked for two or three hours, soured with hydrochloric acid (20 to 35 c.cm. per litre of water), and well rinsed. Particular care must be taken to see that the chlorine is completely removed, and if there is any doubt the rinsing should be followed by a treatment with a lukewarm solution of bisulphite (about 50 c.cm. per litre).

As mentioned, fur dyeing is done chiefly with amines, such as paraphenylenediamine and para-amido-phenol, aniline, etc. The organic amines, which are marketed as "ursols," "furols,"

"fantols," etc., are usually dyed on unmordanted skins for light shades and on mordanted skins for medium and dark shades. The most usual mordants are potassium bichromate and the sulphates of iron and copper, which are used in baths of weak acids, such as tartaric or acetic. With bichromate alone, red or brown shades are obtained; copper sulphate (or mixtures of that salt with bichromate) gives greener shades, which are still greener with ferrous sulphate. For black, mixtures of iron and copper salts are used. For dyeing with aniline black, the bath is prepared according to one or two methods. Sometimes it consists of a solution containing hydrochloride, or instead, aniline nitrate, sodium chlorate, ammonium chloride, copper sulphate, ammonium vanadate, and sodium bichromate, and sometimes aniline oil, nitric acid, sodium chlorate, copper sulphate, and ammonium vanadate, according to the method employed.

When using the amines on unmordanted furs, a larger quantity of the base is required, so that the solution must be much stronger. When the colour base has been dissolved in warm water, and diluted to the proper strength with cold water, after about an hour 12 volumes of hydrogen peroxide are added in quantities of 10 to 15 c.cm. per gram of the colour base for mordanted and of 30 to 35 c.cm. for unmordanted goods.—I am, etc.,

London, W., March 17th.

WALTER F. CASTLE, M.B. Cantab.

#### IONIC MEDICATION.

SIR,—Dr. David Campbell's article expressing the views of a pharmacologist on ionic medication will be welcomed by all electrotherapists, especially by those who for the past four years have been exposing the fallacy of the theory of ionic medication on identical grounds and by similar experiments to those upon which Dr. Campbell bases his reasoning.

It must not be assumed, however, as Dr. Campbell almost seems to imply, that because the theory of ionic medication is erroneous, therefore the actual benefits from prolonged, intensive, and repeated applications of the constant current are thereby in any degree lessened. The value of such treatment, when properly administered, is now far too well established to admit of any doubts as to its great curative power. When failure results, such failure will be found to be due to the method of application, or to its adoption in unsuitable cases. When we consider that the constant current, the so-called "ionic medication" or "ionization," is commonly ordered by medical men who have no knowledge of electricity or its mode of action, and that the treatment is generally carried out by those who have no knowledge of medicine or of the nature of the diseases they are treating, it is remarkable that benefit is so often obtained.

The necessity for the administration of electrical treatment either by or under the direct supervision of a qualified medical man possessing some knowledge of the therapeutic action of electricity is well shown in the treatment of such conditions as primary sciatica and brachial neuritis, conditions which yield far more readily to electrical treatment than to any other remedy. Where such treatment is applied without suitable supervision by attendants with no medical knowledge the common radical origin of this trouble is frequently overlooked, and the pads are placed on opposite sides of the limb at the points to which most of the pain is referred, with the result that the seat of the lesion is untreated, and, at the best, mere temporary relief of the pain, due to counter-irritation, can be hoped for. Or, again, cases of secondary sciatica, due it may be to sacro-iliac strain, sacralization of the lumbar vertebrae, to an untreated infective focus, or to pressure from a new growth, are submitted to a prolonged course of electrical treatment with no prospect of lasting improvement.

Dr. Campbell in his interesting paper appears to me to underestimate the beneficial effects obtained from the heat generated during prolonged, intensive, and repeated treatments by the constant current. The main arguments in favour of the heat so generated being the most important factor may be briefly summarized as follows:

1. The improvement obtained by this form of treatment is such as might be expected to result from a prolonged supply of heat energy to the part treated—namely, relaxation of spasm and consequently temporary relief of pain, an increased blood supply with consequent improved nutrition of the part, increased resisting power, and, if the treatment is continued for some weeks, some absorption of fibrous tissue and increased mobility of the joints in rheumatic and other cases.

2. According to Joule's law, it is calculated that as much as 2,000 calories can be generated by the treatment of a sciatic limb by the intensive constant current of 40 to 50 minutes' treatment:



3. The skin temperature, recorded by a surface thermometer, of a sciatic limb 2° F. below that of the normal limb before treatment can be raised by the constant current to 2° F. above that of the normal limb at the end of the treatment. The thermometer employed in the series of treatments upon which this statement is based was placed on the skin far removed from the pads conveying the current, and hence the rise of temperature could not have been directly affected by dilatation of the skin vessels arising from either the polar action or the electrolytic action of the salts with which the pads were moistened. Neither could the rise of temperature recorded have resulted from the direct heating of the skin at the point tested, for according to the law of branched circuits a very small amount of current would be carried by the high resisting skin at this point.

4. Therapeutic results, practically identical, are obtained from the diathermic (which admittedly produces its results by its heating action) and the constant current, provided that approximately a similar strength of current is employed in each case.

If not convincing, these facts are certainly very suggestive. —I am, etc.,

Oxford, March 14th.

W. J. TURRELL.

### LUNACY LAW AND THE TREATMENT OF THE INSANE.

SIR,—From the interesting article with this heading in your issue of March 10th I gather that there are those who promulgate the view that if and when more enlightened notions prevail among the community it will not matter where a "mental" case is treated, or what the institution is called, "so long as the most effective treatment is secured." This expression of opinion, taken with the concluding lines of the article, entitles us to assume that it is considered by some that provision for treatment of incipient insanity can be made as well in connexion with mental hospitals as elsewhere. As long as "the most effective treatment" is secured it will make, that is to say, no difference to me, being in the state of incipient insanity, whether I am sent to the erstwhile Munich Psychiatric Clinic (now Deutsche Forschungsanstalt für Psychiatrie in München), or to some "Irrenanstalt" in Bavaria; to the Maudsley Hospital, or to a county asylum in Surrey or Kent.

Now, I have, in a memorandum drawn up for the guidance of my family for use in the event of my being seized with incipient insanity, expressly warned my relations against the sophistry and the fallacy which are wrapped up in the above teaching. In any given district the "most effective treatment" is to be secured from that galaxy ("assemblage of splendid persons") which is constituted by the staff of the general hospital; if, haply, the latter is in connexion with a medical school, the constellation is still more splendid. The hospital connotes the medical complex. What do these high priests of medicine, with their attendant acolytes ("teams") and abetting alchemists, know or care about the "asylum," its "inmates," and the Peculiar People who minister to these? As well discourse to them of Ur of the Chaldees; of ushabtis, ju-jus, and gargoyles; of far-away sorcerers. Yet we require the whole of this galaxy—and no mere counterfeit of it—to get busy amongst the incipient mental cases, and to regard them as their cases. The "most effective treatment" is not to be "secured" by occasional visits of members of the hospital staff to mental hospitals. The leper must go to the sanctuary, and abide therein. The place where the early mental patient is to be treated must, I believe, be entirely divorced from the mental hospital, and be part of the general hospital system; supported and administered, very probably, by the local authority, but, nevertheless, definitely in the hospital orb. The staff of this place will, in return, give, for what it is worth, such special experience as they may possess; unfold such beliefs as they, by uncertain tenure, may hold.

Such a place would have a status in the eyes of the hospital staff; at such a place, but not in connexion with a mental hospital, will the "most effective treatment" be "secured."

Therefore, in the event of the contingency arising, my said memorandum requests that I be taken to this place (if such can be found); not to the mental hospital, nor even to its purlieus; for hope doth not flourish in the miasm of chronicity, nor recovery take its beginnings from soil encumbered with end-products. And my memorandum further declares that my mind is not set against the Psychiatrist, should the high priests of medicine desire to take counsel with him.

etc.,  
Cardiff City Mental Hospital,  
March 15th.

EDWIN GOODALL.

### TREATMENT OF EARLY MENTAL CASES.

SIR,—In your issue of February 24th I notice that in the course of an article on early mental treatment you mention that the head of Staffordshire County Mental Hospital calls attention to statistics which are stated by him to prove how very small is the number of slight mental cases who presented themselves for medical treatment while still in the "uncertifiable" stage. A great deal depends naturally upon the doctor's estimate of the degree of loss of balance which constitutes certifiability. A mental specialist, when called in, is inclined (possibly from his familiarity with certain modes of interrogation) to certify many a case about whose committal the family doctor, who knows the patient well, would hesitate. In fact, his hesitation is the usual cause of delay.

We must bear in mind the patient's extreme dread of an asylum and the disinclination on the part of the relatives to use force to effect a transfer to such an atmosphere. Since force or subterfuge is pretty sure to be resorted to in the end, the evil day is naturally postponed as long as possible, the patient being meanwhile subjected to accumulated discomfort, distrust, and acute apprehension—conditions which do not tend to reassurance and recovery.

It is impossible to arrive at a true estimate of the number of slight mental cases amenable to early treatment until some reasonable provision is made for such an environment as will not tend to accentuate the dread and depression of the troubled soul. This can only be done by providing homes or hostels run on a hospital footing—that is, free from detention and unconnected with lunacy—for the benefit of those not bad enough to be certified. This common-sense expedient for dealing with the beginnings of insanity by the supply of attractive sanatoriums would soon revolutionize all our theory and practice in regard to those transiently unbalanced. The Board of Control possesses no jurisdiction over the uncertifiable, and no legislation is needed to permit people to enter hostels where they run no risk of being detained. There is a strong body in Parliament, drawn from all parties, who have on several occasions presented a memorial to Health Ministers drawing attention to this most practical method for the cure of uncertifiable cases. Such homes could be started without any delay under the health committees of borough councils already empowered by the Public Health Act to run hospitals for any class of illness.

Instead of allowing common sense to be his guide each successive Health Minister is led by the lunacy authorities to frame a bill which, under the specious title of "Reform in Lunacy," is intended to diminish or annul the safeguards provided by the Lunacy Act, and to set up institutions under the Board of Control which shall serve as feeders to asylums. No wonder that early cases are averse to entering them. The Maudsley itself labours under the disadvantage of being numbered among the L.C.C. asylums, and consequently subject to lunacy administration and control.

Ministers will discover sooner or later that it is desirable to lend an ear to what public opinion has to say upon the urgent necessity of providing suitable sanatoriums for early cases as an alternative to asylums. Detention without certification—that is, without proper judicial inquiry—is both illegal and unjust. All patients who are dangerous and unfit to be at large ought to be certified, and no others. In a very large number of cases at present relegated to asylums there is no disease at all, only an exacerbation of the results wrought upon us all by the vicissitudes, the strains and shocks and stresses which we meet with in our journeying through life. The temporary loss of balance has been, in such cases, the result of adequate natural causes, and natural means must be resorted to for recovery. To place these patients under distressing conditions is the surest way to bring about the evil which we are endeavouring to avoid. They need fresh air and sunshine, occupation, interest, and cheerful surroundings.—I am, etc.,

S. E. WHITE, M.B., B.Sc.

London, E., March 12th.

P.S.—Lord Cave has just informed us that a "bill is about to be introduced to supply machinery for dealing with mental cases of doubtful character, before passing them on to the machinery allowed by the present law." Since no bill is needed to permit anyone to enter a hospital, and since the Lord Cave specifies that he refers to voluntary patients, the mention of some device for allowing them to be so dealt with, accompanied by another device to enable the patient, "if



mentally able to do so, to withdraw consent, and resume full liberty," indicates in a suspicious manner that there is more herein hidden than meets the eye.—S. E. W.

### HOSPITAL POLICY.

SIR,—Mr. Bishop Harman's vision of those who differ from him as myopic "sleek men who sleep o' nights" in "pleasant places" is amusing and no doubt good propaganda, but it does not help much. It may indeed be that his Committee has got the Council floundering about in unpleasant places, from which it is difficult to see the wood on account of the trees.

The Council has acted in the matter in an unscientific way. We have asked for facts and been given opinions. My own opinion is that no hospital staff has asked for a "medical staff fund," nor is the failure of the voluntary system apparent. Probably the vast majority of hospitals are in the position of my own hospital—namely, it is ruled by a voluntary board, served by a voluntary medical staff, supported by voluntary contributions, and has no contract with anyone to take in any patient unless the medical staff recommends admission. The hospitals which I know have no intention of departing from this position at the present time, because it is a clear understandable position which has much to be said for it.

If the Hospitals Committee is so anxious to adopt a progressive policy it should be in the direction, first, of getting as many medical men as possible interested in hospital work. Instead of this, the new proposal tends directly to create a material vested interest. A medical staff will become a close corporation which will have a direct interest in not welcoming an increase to its members, and it beats me altogether to see the British Medical Association, which represents all medical men, lending itself to such a policy.

If the whole of this cumbersome policy has been built up in order to help young men who wish to be consultants, and who now do a great deal of work for very little return, then surely that is a matter which concerns the teaching hospitals more especially, and should be dealt with in another way; but meanwhile we want more definite knowledge of facts, and until that is given us we should drop the whole matter.—I am, etc.,

Letchworth, March 14th.

NORMAN MACFADYEN.

SIR,—In most of the letters and discussions about the hospital policy of the Association it is sought, by the analysis and division of hospital patients into various classes, to find some arrangement by which the British Medical Association can unite the conflicting opinions into one harmonious policy. Transferring for a moment our attention from the patients to the doctors, it appears that they are divided into classes even more difficult to combine under one policy than the patients. Among the doctors forming the hospital staffs throughout the kingdom there will be found:

1. Some who, whatever the policy of the Association, will refuse to take any payment for their services to any hospital patient.
2. Some who will accept, and probably demand, payment from one or more classes of hospital patient—for example, State-aided patients or members of a contributory scheme.
3. Some who think that the staff should have a share of every payment made by any patient to the hospital.

Although it is probable that these three classes include the great majority of medical men, yet no one can say with any certainty how the numbers are distributed, and there is a great danger that at the next Annual Representative Meeting, by the persuasive eloquence of a few members who really have clear-cut opinions on this subject and the debating power to press them, the majority, whose opinions, so far from being clear-cut, are distinctly nebulous, may be induced to pass a resolution which at the best will be tacitly ignored by many hospital staffs, and at the worst might lead to a split in the Association.

The payment of hospital staffs is a complete departure from long-established custom; after two years of discussion we have not yet got a policy which meets with anything like general approval even among ourselves. Beyond this we have to consider, if and when we apply for a staff fund, what the probable attitude of the lay committees will be. Further than this, if we can convert the lay committees (which I very much doubt) we still have to consider the effect on the general public.

We also have to remember that this is a question which, although it affects the profession as a whole, yet is primarily

the concern of the staffs of the hospitals; it would seem an essential preliminary to any decision by the British Medical Association that there should be elicited from all over the country the opinion of these staffs. I would strongly urge that, either through the Divisions or by a direct inquiry from headquarters, the staff of every hospital in the kingdom should be invited to reply to the six questions set out in Dr. Fothergill's letter (BRITISH MEDICAL JOURNAL, December 30th, 1922, p. 1282, see also below). These questions put the matter in a much simpler form than any resolution I have yet seen. If we could have the answers to these questions we should at least know the opinions of the men most intimately concerned, and might be saved from the mistake of putting on record a policy which the staffs might reject. A further source of information which would be helpful is the number of hospitals which have already established staff funds. A resolution was passed at the last Annual Representative Meeting that this information should be obtained and given to the Divisions for their guidance. Has the Council yet got this information?

Possibly all this has been said before, but in a question of such cardinal importance it would be a disaster if the Association committed itself without being very sure of its ground. Unless there is clear evidence that the great majority of the profession are agreed, it would be far better to postpone any decision until such agreement is achieved.

The six questions of Dr. Fothergill's letter referred to above are:

Do you consider that contributions to a staff fund should be made from—

1. Gratuitous contributions, existing hospital assets, endowment funds, and the like.
2. Payments made to the hospital by private patients, provided that the staff is allowed to charge fee.
3. Small payments made by individual patients, which are not recoverable by the patient from a third party, and which are not more than the cost of accommodation and maintenance.
4. Similar payments (as 3 above) which are more than the cost of maintenance and accommodation.
5. Payments made to the hospital by the State, municipal authorities, employers of labour, approved societies, insurance companies, or any other body which has entered into a financial arrangement with the hospital.
6. A contributory scheme under which there is a stated or implied return required from the hospital on behalf of the members of the scheme.

—I am, etc.,

Brighton, March 18th.

A. C. GEMMELL.

SIR,—The Chairman of the Hospitals Committee plumes himself mightily on the alleged success of his policy. I predict that his complacency will receive a rude shock at Portsmouth. He quotes a sentence from Lord Onslow's report in support of his novel definition of a voluntary hospital. Surely it would have been franker to quote the actual definition of this Committee, which is as follows:

"An institution (other than an out-patient dispensary) managed by a responsible committee and wholly or mainly supported from voluntary sources," etc.

Now Mr. Harman has plainly confessed that if his scheme proceeds, which it certainly will not, lay boards must be paid.<sup>1</sup> Whether "voluntary management" in the eyes of Lord Onslow's Committee embraces this contingency I know not, but I am aware that a single chairman of a large hospital values his unrequited services to his institution at £1,000 a year. Will Mr. Harman at long last now state, without further wriggling or evasion, who will provide all this money under any system where hospitals are "wholly or mainly supported from voluntary sources," and what shred of "voluntary control" will survive in these institutions under his scheme? I would yet again inquire how many staffs have so far approached their lay boards with his policy, and with what success, and when he proposes to approach his own? Why, if "close co-operation between lay boards and staffs" is essential, this policy was sprung upon us at such short notice that it was physically impossible for any consultation to take place between them before decision was actually taken, and advertised for a great deal more than it was worth? Why a matter of such importance was so artfully buried in nine lines of the fifty-four pages of the report of the Council, and why its rejection by Scottish staffs was deliberately suppressed in that report and ignored at Newcastle? As for the rest of his long letter, there is not a word in it that in any way reflects upon the policy which

<sup>1</sup> BRITISH MEDICAL JOURNAL, April 8th, 1922, p. 532.



I advocate, and which is set forth in a resolution recently passed by the Brighton Division to be circulated to all the others. That your readers may, however, attach due weight to the arguments of an authority so eminent I reproduce for their benefit his former words:

"He thought he spoke for most of those present when he said that they believed in the voluntary system so completely that they would like, if they could, to have the old voluntary hospital, of the old days . . . they wanted the nearest approximation to it that could be secured . . . this fine spirit of independence was of the greatest advantage to their professional life."

After this panegyric it is somewhat disconcerting to those unfamiliar with the versatility of his genius to find him, that same afternoon, promoting vigorously a policy concerning the financing of which under any sort of voluntary system he deigns not the smallest intimation, and which has been condemned, by no less authority than the Cave Committee, as a direct menace to the whole voluntary principle.

Presently we find him, at Newcastle, scoffing at the efforts of the Brighton Division to salve some remnant of that honourable tradition so lately the object of his affectionate regard, and thereafter, in the *Times*,<sup>2</sup> parading his opinion of the "greater fairness" of the Continental system, while advertising to all the world that the hospital policy of the Association should assist a consultant in Harley Street to be "enshrined in suitable and substantial elegance," and to be conveyed in a "handsome chariot" upon his rounds. The engaging candour of this confession acquires much added charm when we recall the long list of purely altruistic purposes circulated to us, towards which it was suggested the staff fund might with advantage be dedicated by less exalted honorary officers. I must not dwell on the urbanity<sup>3</sup> of his first remarks about myself when I had the hardihood to differ from him, and to express what proved to be the opinion of the majority of the profession and practically all lay boards, but would pass on to that dramatic moment, when, finding any reasoned reply inconvenient,<sup>4</sup> he waved me aside with fine disdain and threw himself upon the good offices of those "reasonable men," the lay committees of the West London Hospital, whom to this day he dare not thus approach, well knowing he would not be supported even by his own colleagues if he did. I would not, however, withhold due meed of praise to the originality he exhibited when, having scanned the whole horizon and dredged the very depths of his intellect for an outstanding example of the voluntary spirit free, unfettered, and uncontrolled, he selected<sup>5</sup> with amazing diagnostic precision—the British soldier under strict military discipline in time of war! Mr. Harman would explain the patent defeat of his policy at Glasgow by the alleged intervention of "comfortable places." Seeing that 150 amendments had appeared on the agenda sheet in 1922 where there were none in 1921, it is surely transparently clear that the sole reason for its temporary former success was that, owing entirely to the methods employed in its introduction, scarcely anyone had taken it seriously, or indeed considered it at all. Will he now explain exactly in what way Belfast, Bristol, Cardiff, Liverpool, Southwark, and Smithfield are more "comfortable" than Leicester?—I am, etc.,

Chichester, March 10th.

G. C. GARRATT.

Sir,—In communications appearing in your *JOURNAL* on pages 353 and 398 I suggested that the greatest confusion was rapidly arising with regard to the relative positions of hospitals, contributory schemes, and the medical profession, and certain principles were submitted for general approval, the adoption of which it was hoped would clear the issue.

Dr. Garratt in your last issue quotes one of these principles<sup>1</sup> but disregards others on which it depends<sup>2</sup>; he says that he is amazed, asks where the money is to come from, and adds that if such a "notion" were "propagated" it would militate

greatly against successful appeals for funds made by hospitals.

In order to determine the correctness of a principle it is not necessary to delay its adoption until some procedure has been elaborated under which that principle can be put into operation. The question is, Is the principle sound?

"Where is the money to come from?" The charitable public will find the funds required for the rapidly decreasing group, the indigent poor (15 per cent. of patients). The State, private patients, and all bodies contracting for additional medical services should be required to pay in full. Then there are left those suitable for insurance under a contributory scheme (2d., 3d., or up to 6d. per family per week) who should be able to pay for accommodation, maintenance, and medical services, whatever may be their individual financial position. These last two groups make up the 85 per cent. of patients. Until the general economic conditions are easier the charitable public probably will be willing to assist the last group and the doctors will do so by accepting only a percentage as recognition of the principle that this is a business undertaking and not a charity. (It is interesting to read that this last group, although paying nothing for accommodation nor for medical services, but only paying the maintenance, is loudly proclaiming that they pay for everything which they receive; that they have a right to it, and that there is no charity attached thereto. Some hospitals openly support this contention.) Does Dr. Garratt contend that this weekly payment is beyond the means of those who should be insured? If it is found to be so in some cases no doubt the charitable would assist to pay those premiums.

"If such a notion were 'propagated' it would militate greatly against successful appeals for funds." Does Dr. Garratt contend that appeals are a necessary part of a voluntary hospital? Cannot we visualize and work toward the day when whist drives, banquets, dances, concerts, bazaars, students' buffoonery, and all similar appeals will have been replaced by contracts drawn up on business lines with the State, private bodies, and groups of individuals to pay not only in full for additional medical services, but also a small amount over; which margin, together with regular charitable subscriptions, will put at the disposal of boards of management ample funds with which to provide for the rapidly dwindling group of indigent poor the best of treatment; that day when, in fact, the recently imposed garb of self-advertisement and self-pleasing will have been removed finally from Charity? What a relief such a state of affairs would be to all!

In the meanwhile if hospital boards adopted the suggested principles and when appealing for funds stated specifically for which of the three groups the money is required, promising to use the money only for that group, the public would be in a better position to appreciate the situation. Whereas appeals now made are thought to be for the indigent poor the money received is really used to wipe out so far as it will go the debt caused through having entered into contracts to provide additional medical services at less than cost price for those well able to pay in full. The failure of an appeal which seemingly so distresses Dr. Garratt would really act as a wholesome tonic, because it would compel hospital boards to put their houses in order.—I am, etc.,

Hove, March 10th.

E. ROWLAND FOTHERGILL.

#### TREATMENT OF OPHTHALMIA NEONATORUM IN LONDON.

Sir,—In the *BRITISH MEDICAL JOURNAL* of March 3rd, p. 390, I see some criticisms of the existing arrangement for the treatment of ophthalmia neonatorum at St. Margaret's Hospital, also contrasting it with Liverpool. I would like to point out that in Liverpool the ophthalmia neonatorum department is attached not to the general hospitals but to St. Paul's Eye Hospital.

One, quite admits that a hospital devoted entirely to ophthalmia neonatorum is liable to be associated with venereal disease, although at St. Margaret's every precaution is taken against it and we have not had much trouble therefore, but I think this might still further be overcome by attaching an infants' welfare centre to it.

In your article you say that the Departmental Committee on Blindness think it would be advantageous that hospital accommodation should be provided by securing beds in teaching hospitals in centres convenient to the great masses of the population. It does not matter materially to the patients where the hospital is situated since the Metropolitan Asylum

<sup>2</sup> *BRITISH MEDICAL JOURNAL*, SUPPLEMENT, January 1st, 1921, p. 1.

<sup>3</sup> April 30th, 1922.

<sup>4</sup> *BRITISH MEDICAL JOURNAL*, December 24th, 1921, p. 1095.

<sup>5</sup> *BRITISH MEDICAL JOURNAL*, April 2nd, 1922, p. 552.

<sup>6</sup> *BRITISH MEDICAL JOURNAL*, April 8th, 1922, loc. cit.

<sup>7</sup> The tariff of payments fixed for this 85 per cent. should be such as to pay in full the whole cost to the hospital, including remuneration of the staff.

<sup>8</sup> Owing to the economic conditions at present existing the staff should be willing, temporarily, without prejudice and as a concession, to receive a nominal recognition of the services rendered, by means of a percentage payment. By this concession the Board of Management will be able to fix a lower tariff of fees than it otherwise could for the reception of this 85 per cent. Members of a contributory scheme, whatever their individual financial position may be, are no longer objects for hospital charity.



Board send ambulances to bring both the mother and baby to the hospital.

It is of the utmost importance for the sake of the children's health and also for the successful treatment of the disease in infants who are not accompanied by the mothers that they should be placed in open-air wards specially built for the purpose, which could not well be provided at any general hospital without building; also isolation wards have to be provided, both for the sake of the child and the mother.

With regard to the teaching of students, it seems to me that there ought to be no more difficulty in their attending St. Margaret's Hospital, which they do not do at present, than any of the fever hospitals as they do during the course of their training.—I am, etc.,

London, W., March 7th.

M. S. MAYOU.

#### GENERAL OEDEMA OF THE FOETUS.

SIR,—May I be permitted to call attention to the report (BRITISH MEDICAL JOURNAL, March 17th, p. 470) of some remarks made by me at a meeting of the North of England Obstetrical and Gynaecological Society, and to point out that they give expression to an opinion with which I do not agree? The histological appearance of the liver in general oedema of the foetus is certainly suggestive of leukaemia, and some of the earlier writers believed the condition to be of this nature. More recent observers, however, have shown that the small round cells seen in great numbers in the liver and elsewhere are not white blood cells, but are nucleated erythrocytes. The condition is not, therefore, a leukaemia, though at first glance this mistake might easily be made.—I am, etc.,

Liverpool, March 18th.

NORMAN B. CAPON.

#### THE RIGHTS OF A REGISTERED MEDICAL PRACTITIONER.

SIR,—The retired practitioner has been discriminated against before. In a lunacy certificate there is this clause: "I am a person registered under the Medical Act, 1858, and I am in the actual practice of the medical profession." I have always regarded this as an infringement of the privileges of the profession.—I am, etc.,

Rotherham, March 18th.

GILBERT E. MOULD.

SIR,—Is the distinction between a practitioner in actual practice and one not in actual practice quite an innovation? It is found in the "Certificate of Medical Practitioner," Lunacy Act, 1890, Second Schedule, Form 8. I am not sure that anyone knows what it really means. It should certainly not be put into any more Acts or Regulations.—I am, etc.,

Birmingham, March 20th.

WALTER R. JORDAN.

### Universities and Colleges.

#### UNIVERSITY OF LONDON.

NOTICE is given that among members of the Senate vacating office next May is Dr. T. D. Lister, elected by the graduates of medicine. Nominations should be sent to the Clerk of Convocation, at the University, not later than April 4th. Dr. Lister is eligible for re-election.

#### NATIONAL UNIVERSITY OF IRELAND.

OWING to the death of the Registrar, Sir Joseph McGrath, LL.D., the meeting of the Senate on March 16th was adjourned to March 27th, and a resolution of regret and sympathy was passed unanimously and ordered to be transmitted to the family.

#### ROYAL COLLEGE OF SURGEONS OF ENGLAND.

##### Council Election.

THE following Fellows are candidates for election to the Council: Sir Herbert Furnivall Waterhouse (F. 1890); James Berry (F. 1885); John Herbert Fisher (F. 1893); Herbert John Paterson, C.B.E. (F. 1897); William Sampson Handley (F. 1897); Thomas Percy Legg, C.M.G. (F. 1897); Victor Bonner (F. 1899); Donald Armour, C.M.G. (F. 1900); Percy Sargent, C.M.G., D.S.O. (F. 1900); George Ernest Gask, C.M.G., D.S.O. (F. 1901); George Grey Turner (F. 1903).

The death of Sir William Thorburn increases the vacancies from four to five.

Voting papers will be issued on April 3rd.

#### ROYAL COLLEGE OF SURGEONS IN IRELAND.

THE following have been appointed to professorships in the schools of surgery: Medicine, P. C. Purser, M.D., F.R.C.P.I.; Midwifery, E. Hastings Tweedy, F.R.C.P.I.; Preventive Medicine and Medical Jurisprudence, V. M. Synge, M.D., F.R.C.P.I.

### Obituary.

#### SIR WILLIAM THORBURN, K.B.E., F.R.C.S.,

Consulting Surgeon, Manchester Royal Infirmary.

THE announcement of the death of Sir William Thorburn on Sunday last, March 18th, will cause great regret among a wide circle of friends and old pupils. He had removed from Manchester to London only a few months ago, shortly after the death of his wife, and then appeared to be in his usual health. Although he felt severely the loss of his two sons in the war, he returned from his service with the British Mediterranean Force in apparently good health and with renewed energy. He had been ill for about two months, and his death was not unexpected by those who were closely associated with him.

William Thorburn, who was born on April 7th, 1851, was the son of Dr. John Thorburn, professor of obstetric medicine at Owens College, where William Thorburn received his medical education. He was a brilliant student. He graduated in the University of London B.Sc. in 1880, M.B., B.S. in 1884, with gold medals in medicine and obstetrical medicine and surgery, and M.D. in 1885 and the F.R.C.S. in 1886. He became house-surgeon at the Manchester Royal Infirmary in 1883, and after filling other offices was elected honorary assistant surgeon in 1889, and succeeded the late Walter Whitehead as honorary surgeon in 1900. He retired in 1921, becoming honorary consulting surgeon before his full period of service had expired, so as to be free to attend to his other duties and to allow promotion of his junior colleagues. At an early stage of his career in Manchester he came under the influence of James Ross, then working out his neurological researches at the Manchester Royal Infirmary. Thorburn directed his mind to nerve surgery and was awarded in 1890 the Jacksonian prize of the Royal College of Surgeons for his essay on the Nature and Treatment of Injuries to the Spinal Column and the consequences arising therefrom. As Hunterian professor at the College he delivered a course of lectures on the surgery of the spinal cord, which was expanded into a book published in 1889. He wrote many other papers on spinal cord and brain surgery, and he also contributed to the knowledge of the pathological results cervical rib may produce.

In the Bradshaw lecture delivered last December on the surgery of the nervous system he reviewed his experience of many years. His tone of disappointment on his results was not surprising to those who heard his conclusions on the subject of the operative treatment of traumatic epilepsy delivered at the Manchester Medical Society several years ago. Nerve and brain surgery was by no means his only interest, and he had a large practice in general operative work in Manchester. His great knowledge, fine memory, wide experience, and his powers of lucid, concise expression and ordered arrangement of material made him a great teacher; and his ward classes and clinical lectures were eagerly attended by students. His lectures and addresses were all very carefully prepared beforehand and more or less memorized.

Thorburn had, indeed, a clear thinking type of brain. At one time he took a great interest in the war game, or Kriegspiel, which was played in Volunteer circles, and he became skilful at it. He also had a good whist and bridge mind. His knowledge was pigeon-holed and card-indexed. As a speaker he was precise and had his argument arranged in logical and connected order and with no padding. In this way he conveyed the impression that he was a thorough master of the subject he was speaking on, and suggested to some the thought that he would have risen to as high an eminence at the Bar as he did in surgery had he chosen the former profession, and that his judgements would have been models of lucidity and commendable brevity. He possessed a great faculty of summing up the points of a difficult subject, and could crystallize the ideas expressed in a debate in a few well chosen and clear words. He was one of the Pellhams of life, preferring to stop before his audience had had enough of his discourse rather than to outstay his welcome. He would have made an ideal representative of the medical profession in Parliament. He was eminently fitted to command the applause of listening senates.

For many years before the war Thorburn was a much trusted adviser in the Council, the Senate, and the Faculty of Medicine of the University of Manchester, and his opinion on educational matters was highly appreciated by



his colleagues there and by those on the honorary staff of the infirmary. He took a broad-minded, sagacious, and long view of problems, picking out essentials and leaving the smaller matters to take care of themselves. His business and administrative capacities and his knowledge of detail were of much service on the subcommittee of the Board of the Manchester Royal Infirmary in planning the building of the present large and fine hospital on the pavilion plan. In later years his many calls to London interfered with his regular attention to university matters, to the great regret, not only of his fellow-workers, but also of himself, for he was always proud of his school and anxious that its students should succeed in examinations and in after-life.

During his year of office as President of the Manchester Medical Society he used his administrative and persuasive mind in helping to work out a closer agreement than already existed between the University medical library and the library of the Manchester Medical Society. This arrangement enabled the Medical Society to offer to its members a wealth of medical books and periodicals approached by no other society in the kingdom with a subscription of one guinea. The gain to the research workers of the university was also immense.

Sir William Thorburn was a member of the British Medical Association, and vice-president of the Section of Surgery at the Annual Meeting in Manchester in 1902. At the Annual Meeting in Cambridge in 1920 he opened the discussion on the end-results of injuries to the peripheral nerves treated by operation.

In recent years he took great interest in the work of the Royal College of Surgeons, both from the administrative and examining points of view, and he spent a great deal of time in London. He was on the Council for many years, and an examiner for the final examinations of the Conjoint Board and for the Fellowship of the College. He was a good and fair examiner for the average man, but did not suffer fools gladly. In recent years he examined in surgery for Oxford University. His work on spinal and nervous surgery and his great experience made him much sought after by railway companies or litigants in compensation cases, and he made an ideal scientific witness.

When the war broke out he was on the staff of the Second Western General Hospital in charge of the surgical section. Before long he went abroad as consulting surgeon to the British armies in the Mediterranean and saw service in Malta, Gallipoli, and Salonica, and he served also in France. He was a great source of strength to the officers of the R.A.M.C. in the districts where he worked. He received the C.B. (1916) and the C.M.G. and the Military K.B.E. (1919) for these services, and the honorary degree of M.D. from the University of Malta. Going away to the war in rather poor health, he came back, as he said, a new man and threw himself with renewed vigour into his professional work, especially that connected with the Royal College of Surgeons. He led a very active and busy life, and though his later years were saddened by domestic griefs he must have felt that he had fought a good fight and accomplished much. He was president of the St. Andrews Society of Manchester at the time of his death, and was deputy lieutenant for the county of Lancaster. He married Miss Melland, who, as has been said, died last year. He is survived by three daughters.

We are indebted to Mr. JOHN HOWSON RAY, assistant surgeon to the Royal Infirmary, Manchester, for the following:

In the death of Sir William Thorburn Manchester loses one of its most distinguished surgeons, and a man who had played a most important part in the development of its medical school, to which he was so devoted. As one of the pioneers in neurological surgery he will perhaps be chiefly regarded in the future, and there is no doubt that his painstaking investigations into the distribution of the peripheral spinal nerves (to which effort he was inspired largely by the late Dr. James Ross) at an early stage in his career led him to follow with undiminished interest the surgery of the central nervous system; and his last public address, the Bradshaw lecture, was on the surgery of the spinal cord. In neurological surgery Thorburn was thoroughly at home, and he displayed decided operative dexterity and resource in his laminectomies, in which he had a large measure of success. It was an inspiring sight to be present at one of Thorburn's operations on the spinal cord, where he carried out the various stages with precision, sureness, and artistic finish. In the Manchester Royal Infirmary he held many appointments in his time, and from the period when he was in charge of out-patients to that

in which he had control of wards his teaching was invariably of the best, and proved of the utmost value to many generations of students. As a lecturer he was unusually clear, concise, logical, and convincing. Of good address, dignified, and courtly to a degree, and with an excellent delivery, he could hold his audience with ease, and he never failed to be interesting whatever subject came under his review. He was animated by high ideals and did much to promote the cause of education in the Medical School of Manchester, taking his full share in drawing up the modifications in the curriculum necessitated by the development of medicine.

He was an excellent organizer, an ideal chairman of committee, and he rendered an enormous service in planning the details of the new Manchester Royal Infirmary in co-operation with the late Mr. Charles Hopkinson. As chief of a surgical unit he inspired house-surgeons, surgical dressers, and nursing staff to aim at the highest standard of efficiency and encouraged originality and research. Of a rather shy and reserved nature, he did not appear to make friends readily, but once his friendship was given it was lasting and loyal, and he was a highly valued colleague in the Royal Infirmary.

In the University he had been lecturer in operative surgery and in surgical pathology, and finally occupied the chair in clinical surgery, and in each position he was entirely successful. He had very wide interests, and his advice was sought in many fields in addition to that of surgery. For many years he had been a member of the Council of the Royal College of Surgeons of England, and an examiner in surgery at the College and in various universities. As an examiner he was fair-minded and reasonable, and displayed a quiet patience towards the candidate. At the outbreak of the war Thorburn was officer in charge of the Surgical Division at the 2nd Western General Hospital, but in 1915 he was appointed consulting surgeon to the Expeditionary Forces in the Mediterranean; at a later date he proceeded as a consulting surgeon to the Rouen area, and he has placed on record some of his experiences of overseas war work. On his retirement from the active staff of the Manchester Royal Infirmary in 1920 his colleagues on the Medical Board invited him to give annually a series of lectures on the surgery of the nervous system, thus marking their sense of his great service to the school, and their wish to retain the association with a colleague who had given so many years of a very active life to the work of the hospital.

JOHN IRVING, M.B., C.M. GLASG.,  
Consulting Surgeon, Huddersfield Royal Infirmary.

We regret to record the death, in the early morning of March 9th, after a week's illness, of Dr. John Irving of Huddersfield, who practised for nearly half a century in that town.

John Irving was born in 1850 at Sanguhar, Dumfriesshire, and studied medicine at the University of Glasgow. He graduated M.B., C.M. in 1873, and in the same year began his association with Huddersfield by becoming house-surgeon to the Royal Infirmary. In 1884 he was appointed honorary surgeon, and in 1905 consulting surgeon. His professional standing in the district is shown by the honours conferred upon him by his colleagues. He was twice president of the Huddersfield Medical Society and once president of the Leeds Medical Society. He had been chairman of the Huddersfield Division of the British Medical Association and a member of the local Insurance Committee from the time of its formation. Dr. Irving also took a large share in the public life of the district. He was made a justice of the peace for the borough in 1906, and carried out his duties as a magistrate to the admiration of all. On March 10th warm tributes to this work were paid by the chairman of the Bench and by the president of the Huddersfield Law Society on behalf of the solicitors practising at the borough police court. As surgeon to the local hospital, as magistrate, church officer, and member of the local St. Andrew's Society, Dr. Irving was a notable figure, respected and liked by all.

We are indebted to Sir JAMES BARR for the following appreciation:

By the death of Dr. John Irving I feel that there has been severed an unbroken friendship of half a century, which it is difficult to heal or replace, and this, I think, will be the feeling of all his old and young friends. Our friendship as students became more and more enhanced as we grew older in the battle of life. Irving, no doubt, grew in knowledge and



experience as time rolled on, but in wisdom he had very little to learn, as even when a student he was looked upon as a man of mature judgement who did not indulge in any of the frivolities of youth. Soon after graduation he gravitated to England as house-surgeon to the Huddersfield Infirmary, and from that town he rarely strayed except to indulge in his favourite pastime of curling. For many years there have been no opportunities for this game in England, hence he had to take those holidays in Edinburgh and Switzerland.

Dr. Irving became honorary surgeon to the Huddersfield Infirmary, where he rendered faithful and valuable services for many years, eventually becoming consulting surgeon. He was an enthusiastic admirer of the Leeds school of surgery, and had always unstinted praise for the brilliant achievements of Sir Berkeley Moynihan. He kept well abreast of modern developments in that ever-advancing branch of medicine. Although he laid no claims to brilliancy as an operator, and knew his own limitations better than anyone else, he was always considered a safe surgeon in whose hands a patient could repose with confidence; I know that his opinion was readily sought by his colleagues, and consultants were always ready to accept and act on his judgement. He did excellent work during the war, both to soldiers and civilians. His brethren who were at the front well knew that so far as Irving was concerned their interests were not neglected. He wisely eschewed medical politics as not suited to his placid temperament, but he took a warm interest in the work of the British Medical Association, and at one time was Vice-President of the Yorkshire Branch.

He was of the Puritan type, a man of great fervour and strong religious feelings, but he never tried to thrust his views down the throats of others. He was ever ready to try to raise the fallen and succour those in distress, a good Samaritan rather than a Pharisee: a Nathanael indeed in whom there was no guile. Although a strict teetotaler, no one could complain of his hospitality. I have sat by his side at a St. Andrew's dinner from 6.30 till nearly 2 o'clock the next morning, when John Barleycorn was, perhaps, more plentiful than the water, but he enjoyed the fun as well as the most hilarious of us. He always enjoyed a good Scottish joke, although he rarely perpetrated one.

For some years he had been liable to attacks of bronchitis in the winter, but with the last attack he was, I understand, only ailing ten days, and the end came rather suddenly and unexpectedly. He passed away peacefully in his sleep, dying as he lived, at peace with God and man. He has left a son and two daughters to mourn their loss. At the funeral there were a great number of his professional brethren, and it seemed as if the town of Huddersfield had turned out to do honour and reverence to the memory of a worthy citizen.

Dr. HERBERT NISBET ECCLES died on March 11th, aged 39. He was the son of Dr. G. H. Eccles of Plymouth, and received his medical education at Guy's Hospital. After taking the diploma of L.M.S.S.A. in 1916 he joined the R.A.M.C. on August 3rd of the same year as temporary lieutenant, and was promoted to captain after a year's service. He went to India, where he became x-ray specialist to the Bombay Brigade. He was invalided out of the service after three years, when he started practice at Plymouth, following his father and grandfather. His health, however, could not stand the strain, and he passed away at the house of his brother, Dr. G. T. Eccles of Hove. He was a member of the Plymouth Division of the British Medical Association.

Dr. ROBERT YOUNGER of Willington Quay, Newcastle-upon-Tyne, died after a short illness on March 11th. He was the youngest son of the late Mr. James Younger of Alloa and took the degrees of M.B., B.S. Durh. in 1902, and served as senior anaesthetist to the Royal Victoria Infirmary, Newcastle-upon-Tyne. He succeeded to the practice of his brother-in-law, the late Dr. Woodhouse, thirteen years ago. He was medical officer to the Post Office and surgeon to the Wallsend Slipway and Engineering Company. During the war Dr. Younger served with the R.A.M.C. and was wounded. He was a member of the Tyne-side Division of the British Medical Association.

The death occurred on February 26th of Lieutenant E. W. McQUAID, surgeon probationer in the Irish National Army, who was mortally wounded four days previously by Republican irregulars at Newport, co. Mayo. He was shot while attending a wounded National soldier, and, although seriously

wounded, gallantly carried his patient to a place of safety. Lieutenant McQuaid, who was 22 years of age, was the son of Dr. E. W. McQuaid, of Cooteshill, co. Cavan. He was a medical student of the Royal College of Surgeons in Ireland, and had recently been appointed demonstrator of anatomy and pathology.

## Medical News.

At a final meeting of the Oxford Osler Memorial Fund last week the honorary secretary, Professor J. A. Gunn, reported that the amount so far received was nearly £2,000. It was decided to place a bronze plaque in the University Museum; to found a memorial medal, to be awarded every five years to a graduate of the University of Oxford who has made some distinguished contribution to medical science; and to form an Osler travelling fund to assist teachers of the medical faculty to travel in the interests of medical knowledge and research. For this purpose alone a capital sum of £1,700 is required, and further subscriptions, which should be sent to Mr. A. P. Dodds-Parker, 2, Holywell, Oxford, are invited.

PROFESSOR A. V. HILL, Sc.D., F.R.S., of Manchester, has been appointed Jodrell Professor of Physiology at University College, London, in succession to Dr. E. H. Starling, F.R.S., who has become Foulerton Professor of the Royal Society foundation.

The house and library of the Royal Society of Medicine will be closed from Thursday, March 29th, to Tuesday, April 3rd, both days inclusive. The Wellcome Historical Medical Museum will be closed for cleaning and decoration from April 1st to 30th, inclusive.

A NEUROLOGICAL section is being established in the outpatient department of the Royal Northern Hospital, Hollo-way. It will be open every Friday at 1 p.m., on and after April 20th.

THE newly formed section of the Royal Microscopical Society which deals with industrial applications of the microscope will hold a meeting on Wednesday next, March 28th, at 7 p.m., when a number of instruments will be demonstrated and papers read.

THE annual meeting of the Society for the Study of Inebriety will be held in the rooms of the Medical Society of London, 11, Chandos Street, Cavendish Square, W., on Tuesday, April 10th, at 4 p.m. Dr. W. M. Feldman will open a discussion on racial aspects of alcoholism.

IN memory of the late Dr. W. H. Hender Bennett, for many years a member of the honorary medical staff of the Batley and District Hospital, it is proposed to endow a cot in the hospital and to erect a memorial stone over his grave.

M. SOVREL, senior surgeon of the Berck Maritime Hospital, will give a series of six lectures on the treatment of osteo-articular and glandular tuberculosis from March 26th to 31st. Each lecture will be followed by operations, fitting of plaster apparatus, etc. Further information can be obtained from M. Paris, Hôpital Maritime de Berck-Plage, Pas-de-Calais.

IN the Fifth International Congress of Historical Studies to be held at Brussels from April 8th to 13th, the history of medicine will be represented in the ninth section, which is devoted to the history of civilization. The subscription of 50 Belgian francs is payable to the treasurer, Professor C. Terlinder, 61, Avenue Legrand, Brussels. Further information can be obtained from the General Secretary, Ve Congrès des Sciences Historiques, Palais des Académies, Rue Ducale 1, Brussels.

THE Confédération des Travailleurs Intellectuels Français, which is merciful enough to use the contraction C.T.I., is summoning an international congress of C.T.I. to meet in Paris on April 5th. It will assemble under the presidency of M. Léon Bourgeois, senior French delegate to the Society of Nations. Other representatives of that Society, of the International Labour Office, and of several nations, will be present. It is hoped at this congress to form a Confédération Internationale des Travailleurs Intellectuels (C.I.T.I.). Further information may be obtained from the Secretary-General of the French C.T.I., 12, Rue Jenner, Paris.

AN International Tuberculosis Congress will be held in Madrid next month under the patronage of King Alfonso.

Dr. GIUSEPPE CARONIA has been nominated professor of clinical pediatrics in the University of Rome in succession to the late Professor Luigi Concetti.

AN appeal has been entered by the plaintiff against the judgement given against her by the Lord Chief Justice, on the findings of a special jury, in the libel action: *Types v. Sutherland* and another, reported in the BRITISH MEDICAL JOURNAL of March 10th (pp. 445-445).



## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Atiology*, Westrand, London; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand, London; telephone, 1630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra*, Westrand, London; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Iractis*, Dublin; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate*, Edinburgh; telephone, 4361, Central).

### QUERIES AND ANSWERS.

"S." asks for information as to untoward immediate and remote general or nervous symptoms that have been observed, directly or indirectly attributable to the administration of vaccines in large doses or over a lengthy period. He would also like references to the subject.

#### LUNG DISEASE AND WIND INSTRUMENTS.

"EMPHYSEMA" writes: I should be very grateful to have some advice in the following matter. A man aged 39 developed catarrhal tuberculosis (without consolidation) in 1912-13. He had a mild attack of haemoptysis, passed one winter season in Switzerland, and has been free from active symptoms since 1914. The lesions were localized to the apex of the right lung and the middle lobe, and appear now to be in a fibrous condition. The patient would like to know whether any bad—or possibly good—effects would come to him from an habitual performance on one of the wooden reed instruments—the clarinet, the oboe, or the bassoon. The first instrument appears to me the most appropriate one; the oboe necessitates frequent holding of the breath, and the bassoon requires more power. Is it possible for any of the above mentioned instruments to produce emphysema, and would this be harmful to my patient?

#### INCOME TAX.

"SURGEON LIEUTENANT R.N.," who purchased a car in December, 1922, to use partly for pleasure and partly for attending classes some distance from his station, asks whether anything is allowable for this expense or for the fee charged at the classes.

\* If it is a specific condition of our correspondent's appointment that he shall attend these classes we consider that he is entitled to the minimum necessary expense—that is, in this case the train fares and the class fee; otherwise he is not entitled to any allowance for the expense incurred in improving his professional knowledge. Any allowance due should be claimed from the Assessor for the Admiralty, who is responsible for the correct assessment of his naval pay.

#### Car Transactions.

"C. F." bought (1) a 9-h.p. in 1908 for £215 and sold it in 1911 for £15; he then bought (2) a 15-h.p. for £315 and sold it in March, 1923, for £50, buying a 10/23 h.p. (R.A.C. rating=9 h.p.) car for £375. The expense of replacing (1) may have been dealt with in 1911, but is in any case now out of date. The expense of replacing (2) is £375-£50=£325, and that sum is an allowable professional expense as at March, 1923—that is, of the year 1923 if "C. F." bases his return on the three calendar years ending December 31st, or of the year 1922-23 if he takes the three years to March 31st; in the former case his income-tax liability is not affected until the financial year 1924-25.

"W. F. B. S." bought a four-seater in 1921 and sold it for £190 in 1922, buying a two-seater for £235. The expense of replacement is £235-£190=£45, and no more can be claimed. But our correspondent should note the facts for future use, as a further allowance will be due if he replaces his present car by a superior one at a later date.

"SCODEN" sends two sets of car transactions. In the first the allowance to be claimed is £495-£203=£292—that is, the actual cost of replacement, seeing that the cost of this new car is no greater than that of the original car when purchased. In the second case, as an improvement has been effected through the replacement, the amount to be claimed is £250-£30—that is, £170, and not £395-£30=£365.

"W. G. S." sold a 10-h.p. Swift (cost when new £210) for £70 and bought another make for £470. The profit on the sale was £140.

### LETTERS, NOTES, ETC.

#### RAT-BITE FEVER.

CAPTAIN S. K. CHAUDHURI, M.B.E., late I.M.S., Chief Medical Officer, Lovett Hospital, Ramnagar, Benares State, sends a report of the following case of rat-bite fever, and inquires as to the occurrence of an eruption.

A. H., Mohammedan, a surgical dresser, aged 30, while sleeping in his room on September 7th, 1922, was bitten a little above the left knee externally by a large rat which fell from the ceiling. Blood oozed out for a few minutes, but stopped after a surgical dressing soaked in cold water had been applied. For a week there was neither pain nor fever, and he attended his work as usual. On September 15th the spot bitten suddenly became inflamed and he had a temperature of 99° F. Boric fomentation and ichthyol application brought about temporary relief. On September 24th the swelling, which had become hard, brawny, and carbuncular in appearance, was freely incised, but there was no pus. Fever remained less till September 27th, when the temperature rose again to 103° F., and a shotty and painful eruption made its appearance; it was distributed all over the body, but was most marked on the forehead. A simple diaphoretic was prescribed. Four days later, when the temperature came down to 99° F., neo-salvarsan (0.3 gram) was given intravenously. An hour later he had a shiver which lasted for an hour. After that he not only felt relieved but slept well for the first time since the beginning of the inflammation and fever. The eruption rapidly faded, there being no trace left three days later. He remained free from fever till October 12th; then there was again a rise of temperature which lasted till October 13th. On this date neo-salvarsan (0.6 gram) was given intravenously. The temperature fell rapidly and he made a complete and uninterrupted recovery. It is possible that the eruption was caused by potassium bromide which had been given to induce sleep, but it was not like typical bromide rash.

\* In *The Manual of Tropical Medicine* by Castellani and Chalmers the eruption in rat-bite fever is described as consisting of purple spots often resembling erythema polymorphum. Otherwise the symptoms described above appear to be fairly typical of a mild attack.

#### HICCUP.

DR. R. W. S. CHRISTMAS (South Benfleet, Essex) writes: The correspondence on this subject is very interesting to me. Many years ago (1899) you published a letter of mine on this subject. My case was a most severe one; the patient hiccuped continuously for nine days, and almost died. Most kinds of treatment were tried, but with no good result; even under morphine-atropine, although he slept, the hiccup never ceased. He was seen in consultation and the injections were pushed to full extent. I had used liquor trinitrinæ in many cases of spasmodic conditions with good results, and so thought I would try it in this one: it was really the therapeutics of despair. He commenced first thing in the morning with 1/2-minim doses every hour for three hours; then 1-minim, then 2-minims; to my delight by 9 p.m. the hiccup ceased. There was no return, and the patient pulled through. The week after the publication of my letter Dr. Bezly-Thorne wrote to say that he had tried the same drug in a severe case of hiccup with perfectly good results.

#### CORRECTION.

In the list of books recommended by a correspondent who proposes to sit for the examination in *BRITISH MEDICAL JOURNAL*, March 10th, p. 450, that by Dr. J. W. Mitchell is entitled *The Psychology of Medicine*—not *Medical Psychology*.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 34, 35, 38, 39, and 40 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 36 and 37. A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 55.

### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so accompanied by a reference.

Orders should be delivered, addressed to the Manager, at least 10 days before the first post on Tuesday, and, if not paid for at the time, should be accompanied by a reference. Note.—It is against the rules of the Post Office to receive or forward letters addressed either in initials or numbers.



## A British Medical Association Lecture

ON

## THE DRUG HABIT.\*

BY

W. E. DIXON, M.D., B.Sc., F.R.S.,

READER IN PHARMACOLOGY AND ASSISTANT TO THE REGIUS PROFESSOR  
OF PHYSIC, UNIVERSITY OF CAMBRIDGE.

OUR conscious life may be regarded as a collection and perception of sensory impulses. The ever-changing conscious personality is controlled in adult life by centres which develop only after the age of 10. These later developed centres, such as those of control, judgement, attention, and choice, govern the lower centres, such as those of emotion, so that natural emotions are rarely expressed in adult civilized and cultured life. The repression of sexual emotion is an example, and it is an everyday experience that with age our memory for proper names fails, not because of any loss of function of nerve tissue, but by a repression caused by the exaggerated activity of the higher centres. The subject is bound up with what we have come to term psychotherapy.

But repression, like other higher faculties of mind, is very different in different individuals. Some are so highly reflex, so easily responsive to external impressions, that the associations set loose by any ordinary stimulus cause such a complexity of cerebration that the ordinary affairs of life become a burden. Such people are not phlegmatic and uninteresting, but are rather those possessed of quick perception, acute sensibility, and other higher attributes of mind which go to make up high breeding and culture.

But such a complexity of cerebration cannot continue long; soon it gives place to fatigue, depression, and mental distress. Such people we term neurotics, and they form a class peculiarly prone to succumb to narcotics.

Increased nervous sensibility appears to be a product of civilization and wealth, of indoor life, luxury, and perhaps excessive indulgence in the "satisfaction" of desires. It is difficult to form an estimate of this factor, but attempts have been made to gauge relative sensibility in different nations by estimating the number of women who employed anodynes during normal parturition. The figures obtained were—for the United States 70 per cent., Great Britain 50 per cent., and for Spain and Russia 5 per cent. The figures are interesting in view of the prevalence of drug addiction in the States.

A tendency has shown itself in recent years to classify patients into two groups—those exhibiting an excess of vagotonia, like dogs, and those exhibiting an excess of sympathicotonia, like cats. These two types of people, if they receive the same stimulus, respond differently. The members of the one group may grow pale and their pulse slow, while members of the other may flush and their pulse race. Dogs die in the early stage of chloroform narcosis by vagal inhibition and cats by ventricular fibrillation, probably induced by sympathetic stimulation.

These neurotics always belong to the sympathetic group; they easily weary of the strain and anxiety involved in the fight for existence, and anything that gives them relief from their cares and anxieties is seized with avidity. Now it is these higher faculties of mind which are most responsive to narcotic poisons; they are influenced long before those concerned with movement and ordinary sensation. So that such abnormal people, under the influence of narcotics, lose the exaggerated effect of their normal sensations, and become more like normal people; the everyday trifles and inconveniences of life are no longer exaggerated out of all proportion to their significance, and life, instead of being oppressive and anxious, becomes pleasant and free from worry. Sometimes the very acuity of their intellect is their undoing. Perhaps in a few special instances persons possessed of such vivid sensations may benefit by a narcotic which limits these conflicting impulses by allowing a freer play of the higher mental faculties; certainly the records of De Quincey and Coleridge suggest such a possibility.

I have no doubt that the drug addict is a psychopath before over he becomes addicted, that the ordinary normal man or woman is as unlikely, even with every facility at hand, to become an addict of morphine or cocaine as he is to become a

drunkard. A lady who for a short period worked in my laboratory injected herself daily with morphine until 2 grains were reached for each injection. She gave it up without difficulty, and with no inconvenience after the first day. It is, I suppose, a recognized fact that the drunkard takes to excess of alcohol just as he does everything else that is foolish and wrong—in other words, that drunkenness is one symptom of an abnormal mind.

No one had a more extensive experience as an inspector under the Inebriates Act than Dr. Braithwaite; he is doubtful whether habitual inebriety is ever acquired, and thinks that these people start life handicapped by an abnormal brain. Sir Frederick Mott, at the Glasgow meeting of the Association, expressed similar views. The drug addict is a product of modern civilization, and addiction is a symptom of a diseased mind. For many hundreds of years Christian nations regarded the insane as people possessed of the devil; they were tortured, burned, and subjected to every indignity, and yet insanity continued. Almost the same condition is coming about now with drug addicts. I read that in July, 1921, the New York City Board of Health permitted the incarceration of drug addicts. The police imprisoned several, and the sudden withdrawal of the drug caused the death of one and collapse of several others.

I propose now to mention the substances more commonly used for addiction. Opium or one of its derivatives is the commonest addiction drug; it may be eaten, smoked, or injected. Eating opium or drinking laudanum is rare amongst Europeans, possibly on account of the constipation, the delayed absorption, and the difficulty in obtaining the large supplies necessary. It is, however, not uncommon in India, and its general use led to the Commission of 1895, which reported that moderate indulgence led to no injurious effect and did not shorten life, but that, on the contrary, it tended to ward off sickness and lessened the discomfort consequent on poor food and on malaria and other diseases. Opium is still taken in the fen district of England as a remedy to ward off the ague, a disease which has long ceased to be endemic. In India the opium habit appears to be comparable rather with our smoking than with the morphinist; it is a habit of middle life and advancing years, whilst modern statistics show that 70 per cent. of the European and American morphinists are under 30.

Opium smoking is also mainly an Eastern habit, although it obtained a distinct vogue in the United States of America until it was superseded by the infinitely more objectionable method of injection. The amount of alkaloid absorbed in the smoke is very small, both because the amount of opium used in the pipe is small, and because most of the alkaloid in the opium is destroyed. Absorption is rapid and an immediate effect is produced. Whether this is really due to the morphine I am not prepared to say, since even by smoking all day it would be difficult, if not impossible, to absorb half a grain. The morphine in ten pipes only contains about half a grain, and 99 per cent. of this is destroyed in combustion. After the first few whiffs there is a feeling of elation, followed in the habitué by delightfully languid ease, an exalted sense of superiority, and later by dreamy sleep. The smoker becomes a slave to the habit, and the evil is enhanced—at all events in the West—because the devotee must indulge in his vice in the worst possible surroundings. Opium smoking is the least objectionable form of the vice, because the amount of alkaloid taken is so small, because a strong craving is not formed, and because "cure" is relatively easy, since here we are dealing with a group indulgence, not a secret vice like that practised by the true morphinist. Withdrawal symptoms are never observed.

In Europe and America the alkaloid is usually injected: this is the most pernicious form of taking the drug, and to obtain the requisite relief the devotee must be continually increasing the dose. The amount of morphine injected daily varies greatly; 15 grains is an ordinary quantity for a morphinist to use in the twenty-four hours, though he will double this in the case of any trifling trouble.

Heroin has been used as a substitute for morphine and as an addiction drug since about 1913. This proprietary remedy was easily obtained and was even exported to the East as a cure for opium smoking. The addict often prefers heroin to morphine, since it is less constipating. The average morphine addict has perhaps one or two stools weekly, whereas the bowels of the heroin addict act almost normally. Heroin has no advantages over codeine or morphine, and its use might be forbidden without harming a single genuine patient.

\* Delivered before the East York Division of the British Medical Association, at Hull, on February 9th, 1923.



## EXTENT OF DRUG HABIT.

Reliable statistics are almost impossible to obtain, and such information as we have comes principally from America. Thus the report of the Special Commission of Investigation appointed by the Secretary of the Treasury in the United States in 1918 gives the following consumption per head per annum in 1910:

Austria	...	...	...	about	1
Germany	...	...	...	...	2
France	...	...	...	...	3
United States of America	...	...	...	...	36

Ninety per cent. of this American traffic is probably used for other than medical purposes. The Commission of the Treasury, U.S.A., in 1921 estimated that the country contained at least one million addicts. From all parts of America we find the same tale. In December, 1914, the Harrison Narcotic Law came into existence; it had the support both of the public and the medical profession. In effect this law dictates the manner of practising medicine, and involves many irksome details and much clerical work for the doctor. It includes an army of officials—Federal, State, county, and city—and every grain of narcotic must be accounted for. It has now been actively enforced for seven years, and it is the universal opinion of those best able to judge that it has signally failed in its purpose. The number of addicts and the amount of narcotic consumed is as great or greater than in 1915. I believe the main reason for this is to be found in the fact that the law takes no account of the causes of addiction: the druggist is regarded as a criminal just as were the insane in mediaeval times. Everything can be obtained if the price offered is appropriate to the risk, with the result that smuggling is rampant on the Pacific and Atlantic coasts, from Canada and from Mexico. Distribution is organized by underground channels by means of the so-called dope pedlars. In other words, the law has not altered the supply, but only the distribution of the supply.

Our own less stringent law came into force in September, 1921, and it is too early yet to appreciate its effects. But such drastic laws should make us extremely anxious; they may easily increase the very vice they aim at arresting, for they put a high premium on smuggling, and once the illicit drug dealer obtains a hold on the community an evil is produced infinitely greater than before, when the drugs could be obtained at a fair price through recognized channels.

Much of the increase in drug addiction has without doubt been started in ignorance; opium smoking was regarded as a harmless pastime to be relinquished as desired; the employment of the "white snuff" cocaine served as a stimulant and pick-me-up; and heroin was used as a substitute for morphine with the idea that it was not an opium derivative. There is much evidence that the difficulty in getting alcohol leads people to try any substance which may have a "stimulant effect." But such people are neurotics, their mentality compelling them to search for any remedy to relieve their mental distress. To the normal man opium smoking or cocaine sniffing started in ignorance or in the spirit of adventure or bravado produces little or no pleasurable effect; and although from time to time the process may be repeated I do not believe true addiction ever occurs. The addict always finds it to his advantage to co-operate with the distributor of his drug, and almost never will he give information leading to disclosure of the source of supply.

The chief characteristics of the drug addict are pliancy and disorderliness; they are essentially creatures of impulse. They have little regard for time; appointments are not kept; rules of ethics are scarcely regarded and the conventions are allowed to lapse. When under the influence of their drug the attention can be concentrated for a time and they can write and work, though in a slovenly fashion. The fresh injection gives them a feeling of energy and well-being.

## WITHDRAWAL.

Addicts are held in addiction largely through fear. Prolonged indulgence often fails to give them pleasurable sensations; still they must go on in order to avert the crisis of withdrawal. Their horror of pain, both mental and physical, is an obsession, and contact with the responsibilities of the world they feel is not to be borne.

The symptoms of withdrawal correspond almost exactly with stimulation of those tissues which morphine in medicinal doses depresses. The yawning, sneezing, nausea, vomiting, and mucous secretion result from stimulation of the medulla; the abdominal pains and diarrhoea from stimulation of Auer-

bach's plexus; the twitchings, cramps, circulatory troubles (rapid pulse, arrhythmia), and sometimes even convulsions, and collapse bar... from surgical shock, are due to excessive... cortical cells. Perhaps one of the first and most characteristic effects of withdrawal is a rise in blood pressure from excessive activity of the medulla; this is followed later, at all events in severe cases, by a marked fall in the pressure associated with the collapse. A patient seen with these symptoms, even when in a state of collapse, on receiving an injection of his drug exhibits a transformation almost miraculous; he becomes in a few minutes a relatively normal person. Nitrites in cases of early withdrawal produce much the same effect as morphine on the blood pressure, but do not relieve the mental condition.

Sudden cessation of alcoholic beverages in those who have imbibed too freely for a long period may also lead to withdrawal symptoms, which we term delirium tremens.

The explanation I suggest to account for these withdrawal symptoms is that nerve cells, after prolonged narcosis, on reawakening become hyperexcitable. The contrary effect is an everyday axiom, that stimulation is followed by depression. Another explanation has been suggested by the fact that morphine and cocaine maniacs must be continually increasing the dose to get the necessary effect. This acquired tolerance is at least partly explained by the enhanced power of the tissues to destroy the alkaloid. On this we have decisive evidence. But it is also suggested that this acquired tolerance, this inability of cocaine, morphine, and other drugs to produce their normal action on the brain, is due to some substance which neutralizes the effects of the poison.

Valenti rendered dogs tolerant to morphine, and found that on suddenly stopping the drug the animal showed typical withdrawal symptoms. He alleges that injection of the serum from these dogs into normal dogs caused similar symptoms. This view is now completely disproved. No antibody formation ever occurs in animal or man from the injection of such relatively simple substances as the alkaloids.

## COCAINE.

It has long been known that the Indians in the west of South America, especially in Bolivia and Peru, used coca leaves to chew as a stimulant and narcotic. The Indian uses coca as we use tea and coffee as a stimulant in mental and physical fatigue. Travellers assert that by chewing this leaf they are able to perform long and rapid journeys with less fatigue and without feeling the pangs of hunger and thirst. Experiments in the laboratory, using the ergograph, suggest that these effects are due to cocaine, but experiments by Europeans in the Alps have not been very successful.

Cocaine as an addiction drug is taken either as snuff by the mouth or by injection, and absorption by the nose is as rapid as by injection. Cocaine powerfully excites the central nervous system, inducing a feeling of energy and restlessness. The flagging nerve cells are whipped into activity, and lassitude and fatigue pass; but this is accompanied by clouding of associations and some depression of the central nervous system always succeeds the stage of excitement. Cocaine fascinates by the rapidity with which it relieves exhaustion and dispels gloom and by a delightful sense of mental and physical vigour. Morphine acts not by stimulating, but by depressing sensory nerve cells in the brain, so that fatigue and mental and physical pains are assuaged.

The pure cocaine habit is not very common. The many cases reported in the newspapers were rather cases of users of the drug for specific purposes than cases of addiction. Our men on short furlough during the war were necessarily in an emotional state; anything which helped forgetfulness was seized, and cocaine, used by snuffing, fulfilled the condition. The debauch ended, on the following day there was no desire to repeat the experiment and no craving. Cocaine was used as a rapid and exhilarating intoxicant. Used regularly it might in some instances have led to addiction, but for the most part it did not.

Tolerance can be acquired to cocaine like morphine, but it is less definite and slower in formation; still there are several cases on record in which 100 grains were taken daily. The prognosis in such addicts is better than with morphine, the abstinence symptoms are less severe, and the cocaine can be cut off at once. Cocaine compared with morphine is relatively unimportant in Europe, and there are few cases of cocaine addiction compared with opium. The discomforts caused by cocaine are readily controlled by morphine, and when the



patient learns this the addiction becomes confirmed and of the most serious character.

The other cocaine-like substances which might lead to habit are stovaine, tropacocaine, and perhaps holocaine, though cases of addiction to these are unknown to me.

To some extent fashion or opportunity determines the type of drug used. In New York heroin is used almost entirely, in Chicago morphine is the common narcotic, and in cities with a large coloured population cocaine is in vogue.

#### TREATMENT.

The first and principal fact to remember in treatment is that the addict is not a mentally normal man, and the problem is not so much whether we can temporarily stop the addiction as whether we can educate his mind so that temptation can be withstood—in other words, to alter his character. Simply to control conduct so that choice cannot be exerted is to court disaster.

The following examples will show the effect of custodial care alone.

The Department of Health of the City of New York publishes statistics and details by medical exports of nearly 8,000 cases of drug addicts during ten months; 1,580 received at the clinic were willing to accept treatment and withdrawal of the drug. Those treated were kept six weeks and discharged in good physical condition "cured." In three months a large proportion had already relapsed, in spite of all efforts made to assist them.

Dr. Doane, speaking in November, 1920, stated that there had been treated in the Philadelphia Hospital 3,500 cases of drug addiction, four-fifths of which were heroin and cocaine. These patients were mostly from the lower strata of society. Dr. Doane thought that 3,400 or 3,500 had relapsed. In Los Angeles the Board of Health, with the assistance of the municipal authorities, started a narcotic clinic where addicts got their supply at a nominal price without criminal risk. This system had several advantages: the victims were able to work again; illicit peddling was reduced to a minimum; the addicts became known; but the system was much abused and cures were not effected.

It is generally recognized that of all addicts those that contract the habit as a result of disease are easiest to cure. All addicts desire to be cured but fear the withdrawal symptoms. An addict may beg to give up the habit of his own free will and submit to restraint, but as soon as his wishes are acceded to he will endeavour to render restraint unavailing, and he is so well versed in the literature of the subject that he finds a ready reason for anything he does. He is quite unable to resist an opportunity to cheat if the occasion offers. To ensure even a temporary cure restraint and custodial care are therefore essential.

The chief reason against restraint is that our object is not so much the temporary suppression of the morphine as the cure of the desire for it, and the best way of effecting this is by the re-education of the dormant will.

Under restraint the drug can be gradually reduced, and generally ten days will suffice to bring it down to nil. Some authorities substitute rectal administration for the injections, and some codeine for morphine. Many of these neurotics would do anything rather than diminish their injections; they take a morbid pleasure in injecting something under the skin. During the cure intensive purgation should be carried out. Morphine is the only alkaloid excreted by the alimentary canal, and it is well to get rid of it and prevent reabsorption.

The drug which is perhaps most useful in the treatment of addictions of all kinds is atropine, or, better, hyoscine. Hunger and to a smaller degree thirst are caused by conditions of the stomach, and atropine and hyoscine control the motor nerves to the stomach and intestine. It is more than likely that morphine craving has some association with the stomach. Many other drugs are, however, employed: nitrites and sparteine to lower blood pressure during the withdrawal symptoms, alkalis to combat the dyspepsia, and such drugs as valerian or asafoetida to produce a profound psychical impression. Dr. Quincey found much benefit from valerian. To effect a cure the patient must be made to live a methodical life, to partake of temperate meals, and to observe orderliness in everything, all of which are loathed by the neurotic and morphinist.

In conclusion I desire most strongly to protest against the modern tendency to regard these people as criminals; they are and should be regarded and treated as mental cases,

addiction being the prevalent symptom at the time. The Harrison Narcotic Law has proved a failure in America, yet our own authorities have legislated on parallel lines, and time only will show whether the cure is not worse than the disease.

Since this lecture was delivered an amending bill to the Dangerous Drugs Act of 1920 has been read a second time in the House of Commons and referred to a Standing Committee. It proposes that these narcotic drugs shall be purchased only by registered medical practitioners in actual practice, whatever that may mean. I suppose all registered medical men are in actual practice, though many of us are not in practice for profit. Very large quantities of morphine and cocaine are used by the various chemical and pharmacological laboratories throughout the kingdom. Medical students may be required to detect morphine in solution and to investigate its properties on isolated mammalian tissues. Alkaloidal chemistry without morphine and cocaine is indeed unthinkable.

The second objectionable provision is that the practitioner may not prescribe for himself; horrible penalties are attached to infringement of both these provisions. Almost one is tempted to ask, Can legislators be so foolish as to attempt to pass laws directly concerning medical men which are against the whole feeling of the profession and which are calculated to cause intense resentment? If the drug traffic is to be exterminated then all our hope should be centred on the registered practitioners in this country, and to make bad law by legislating for a hard case or two will do infinitely more harm by alienating the majority of the profession than the mite of good.

### Hunterian Lectures

ON

### MAN'S POSTURE: ITS EVOLUTION AND DISORDERS.

GIVEN AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

BY

PROFESSOR SIR ARTHUR KEITH, F.R.C.S., F.R.S.,  
CONSERVATOR OF THE MUSEUM.

[Abstracts.]

#### LECTURE III.—THE POSTURAL ADAPTATIONS OF THE SHOULDERS AND THORAX.

At the end of a long day's tramp most of us have become aware of a vague aching pain in the region of the shoulders. Nor need we feel surprise when we remember the heavy burden we have had suspended from our neck throughout the day—the load represented by the upper extremities. In a man of average weight the shoulders and arms represent a burden of about 20 lb. They are suspended from the cervical and upper dorsal regions of the spine—chiefly by the trapezius muscles and particularly by the fibres inserted in the neighbourhood of the tip of the shoulder. Then there is another composite sheet of muscle, made up of rhomboid and serrate parts, which is also concerned in maintaining the shoulders in position. By the rhomboid muscles the vertebral base of the scapula is supported from the lower cervical and upper dorsal spines; by the serratus magnus the base of the scapula is steadied on the side of the thorax because that muscle springs from the eight upper ribs. We may look on the rhomboids and serratus magnus as forming a continuous muscular sheet passing from spines to ribs; within it the base of the scapula is embedded and steadied. The levator of the angle of the scapula, originally part of the serratus sheet, is also concerned in balancing and supporting the shoulder from the neck. Now and again, once in a hundred subjects, we see another muscle helping in the support—the levator claviculae. It is strange that man is the only one of the higher primates in which this muscle has become vestigial; it is also noteworthy that in the chimpanzee this muscle is small and tends to disappear. The sterno-mastoid and pectoral muscles also play a subsidiary part in supporting and balancing the shoulder.

#### SUSPENSORY MECHANISM OF THE SHOULDERS.

When we stand or sit a postural reflex mechanism is brought into action which keeps the shoulder muscles constantly at work until we lie down again. How complex this



mechanism must be inferred from the observation of Dr. Gordon Holmes; he noted that when the cerebellum was injured on one side, the shoulder of the same side had dropped downwards and forwards, because the postural tone of the supporting muscles was partly lost. Professor Wingate Todd<sup>1</sup> has stated that, in passing from infancy to adult life, a progressive dropping of the shoulders takes place; both outer and inner ends of the clavicle descend, but the descent is greatest at the outer ends.

#### DROPPING OF THE STERNUM AND RIBS.

The falling of the shoulders is not an isolated occurrence, but part of a process in which the whole thoracic region participates. This dropping or ptosis, which may be recognizable by the end of childhood, becomes clearly evident by the end of the third decade. The sternal ends of the ribs and the sternum itself come to take up a respiratory position at a level of one or more vertebrae lower down than in childhood. The level of the domes of the diaphragm descends, the oesophagus becomes elongated; the lateral segments of the ribs more oblique in position, the angles formed by the ribs with their cartilages more oblique. With the descent of the ribs the back-to-front diameter of the thorax is necessarily diminished; Wintrich found that in people who had passed middle life the front-to-back diameter of the thorax had become reduced by 33 mm. in men and 26 mm. in women. The diminution in side-to-side diameter is much less.<sup>2</sup> An exaggerated degree of this normal dropping of the shoulders, with a diminished or inspiratory poise of the thoracic walls, must be regarded as a result of an exhaustion, or partial exhaustion, of the postural muscles which support the shoulders and ribs when the human body occupies the upright position.

#### PRESSURE ON THE BRACHIAL PLEXUS.

If the tonus action of the supporting muscles of the shoulder should fail, then a strain must fall on the brachial plexus, particularly on the lower cord as it crosses the first rib. This is especially likely to be the case if the lower cord has to cross a rib attached to the seventh cervical vertebra. Bramwell and Dykes state that not more than 5 or 10 per cent. of cervical rib cases develop symptoms of nerve pressure. Carriers of cervical ribs are certainly more liable to pressure symptoms than those of normal development; the essential circumstance which gives rise to symptoms of plexus pressure is not the presence of a cervical rib, but a failure or partial failure of the mechanism evolved for the support of the shoulders in the erect posture.

#### A LATE PRODUCT OF EVOLUTION.

The postural mechanism for the maintenance of man's shoulders is a human character of late evolution; it must have come with the adaptation of his lower limbs as the sole organs of support and progression. Man is a flat-backed and broad-shouldered animal; his shoulder blades are placed on the back rather than on the sides of his chest. In these features, however, man does not differ from other members of the orthograde group of primates—the gorilla, chimpanzee, orang, and gibbon. He differs from them in this circumstance—that in the climbing, moving arboreal anthropoid the arms and shoulders have to sustain or help to sustain the weight of the trunk, whereas in man the trunk has to sustain the weight of the shoulders and arms. In the anthropoid shoulder all the essential structural features of the human shoulder are already present; we have only to suppose the perfecting of a supporting reflex postural mechanism for the shoulders and a reduction in the length of the arms to realize how the anthropoid condition might become human. Suspension of the upper extremities is a late product of evolution and must be regarded as a human characteristic.

#### SUPPORTS OF THE PRONOGRAD THORAX.

In tracing the evolutionary stages which led on to the human spinal column we found that the great break in the series came not between the human phase and the great anthropoid phase, but between the lowest of the orthograde apes—the gibbons—and the highest of the pronograde monkeys. When we seek for the stages which lead on to the human position of shoulders and shape of thorax, we find the real break in the series again occurs at the passage from the pronograde to the orthograde form. If we would understand the changes involved in the evolution of the human shape of thorax and the human mechanism of respiration, we

have to go back a long way in our geological history and formulate a theory which will account for the origin of the orthograde gibbon. One has to note particularly the manner in which the thoracic part of the body is supported on the arms or forelimbs of pronograde monkeys. The back is narrow and the shoulders are set by the side of the thorax, coming close together on the back almost as in a dog. The ventral or sternal aspect of the thorax is also narrow; the body of the sternum itself is a jointed rod. The lateral walls of the anterior part of the thorax are flattened and the scapulae are placed against them. By a series of muscular slings or hammocks the weight of the body is transferred to the upper limbs and shoulder girdles. Chief of these muscular slings or supports are the right and left great serrate muscles, which, rising from the lateral aspect of eight anterior ribs, ascend to be inserted to the vertebral borders of the shoulder blades. The two levator muscles to the angles of the scapulae continue the serrate hammock into the neck; they arise from all the transverse processes of the neck. The rhomboid sheet binds the vertebral border of the scapula to the spinous processes of the neck and upper dorsal region; the trapezius muscles also assist. A secondary muscular hammock is formed by the right and left pectoral sheets (pectoralis major, pectoralis minor, pectoralis externus). They pass from the sides of the sternum and adjacent ends of the costal cartilages to find insertions to the upper ends of the humeri. The flattening of the chest from side to side and the approximation of the shoulders are adaptations to the pronograde manner of progression and of thoracic support.

#### SHAPING OF THE ORTHOGRAD THORAX.

Many occasions in the arboreal life of a monkey arise when branches have to be clutched by the hands and the whole weight of the body supported from the arms. The muscular slings which attach the shoulder girdle to the body in these circumstances take on a new action; the thorax of the animal now becomes compressed between the ventral and dorsal muscular slings and so tends to be flattened in a back-to-front direction. Now this method of arm suspension, which is only occasional in pronograde primates, has become habitual in gibbons—the arms are the main means of support and progression. The thorax has become flattened before and behind, its sides are rounded, the ribs are drawn up as if they were in a position of extreme inspiration. The pectoralis major—a main part of the muscular sling—has no longer a mere sternal origin as in pronograde apes, but has extended its base of attachment upwards to the clavicle and outwards on the fifth and sixth costal cartilages, almost to the bony ribs. The origin of the pectoralis minor has become shifted from the side of the sternum outwards almost to the costo-cartilaginous junctions. The trapezius, rhomboids, and latissimus dorsi form the dorsal part of the muscular sling for supporting the weight of the body from the arms. In pronograde monkeys the latissimus arises merely from the spinous processes of the back, but in gibbons its origin has been extended forwards, so that it has a fascial origin from the iliac crest and direct muscular origins from the three or four lower ribs. The serratus magnus, now strong and highly specialized, plays an important rôle as a muscular sling. It exerts a traction on the side of the thorax tending to increase the lateral convexity of the ribs and the side-to-side diameter of the thorax. The shoulder, instead of being placed laterally as in pronograde forms, becomes drawn outwards and backwards and thus comes into being the broad-shouldered figure which characterizes all orthograde forms, including man.

#### ARE THE EFFECTS OF USE INHERITED?

Some thirty years ago I was of opinion that there was no other way of explaining the peculiar features of the gibbon's thorax except by supposing that some pronograde primate had adopted a brachiating habit of progression and that the chest, by inheritance of the effects of use, under the suspensory action of the shoulder muscle slings, had become transformed from a pronograde into an orthograde type. This idea I have abandoned for the following reasons: No alteration in use can cause a migration in the origin or insertion of a muscle—such as we see in the attachments of the muscles directly concerned in slinging the thorax from the shoulder in orthograde apes. During the period of development we see the process of muscular migration actually taking place; it is a developmental process carried out by a force the nature of which we do not yet comprehend, but we cannot conceive a way by which it could be influenced by inheritance of effect. Further, we note, particularly in certain kinds of pronograde monkeys,



tendencies for certain muscles to migrate in a certain direction—tendencies which have become exaggerated and take place regularly in orthograde apes. We see a process, which is tentative and incipient in more primitive apes, become fully effective in the later and more specialized orthograde forms. In such manifestation we have clearly to do with a developmental or growth mechanism; it is one which affects not only the attachments of the upper limbs to the body and the shape of the thoracic walls, but involves a simultaneous alteration of all the structures concerned in respiration—lungs, bronchi, trachea, pleura, diaphragm, the great blood vessels in the heart itself. It is these latter structures which now demand our attention.

#### EVOLUTION OF THE FLAT BROAD STERNUM.

Amongst the most remarkable changes which took place during the evolution of the orthograde posture was the transformation of the sternum. In the higher pronograde monkeys the breast bone, all save its first part or manubrium, is made up of rod-like segments, usually five in number. In all orthograde primates—the gibbon, orang, chimpanzee, gorilla, and man—the sternal segments ultimately become fused and form a stout, plate-like structure—the short sword sternum. The widening and stiffening of the sternum has greatly strengthened the anterior wall of the orthograde thorax. It is easy to see why the sternum should become strong and plate-like. When the upper limbs become used for the purposes of suspension and prehension greater stresses must fall on the thorax—particularly the parts to which the pectoral muscles are attached. Although the primary reason for the transformation of the sternum is connected with posture and locomotion, such a complete change in the structure of the sternum must have reacted on the mechanism of respiration. It led to the development of upper thoracic or chest breathing.

#### THE IMPORTANCE OF THE INTERCHONDRAL FACETS.

Often the consideration of minor points of structure will guide the anatomist towards important conclusions. Medical men must often have noted the articulations between the fifth and sixth and sixth and seventh costal cartilages; the upper cartilage throws down an elbow, which comes into contact with the cartilage below; at the point of contact there is a synovial facet. In only three animals do we find these elbows of cartilaginous contact—man, the gorilla, and chimpanzee. They are not present in either gibbon or orang; in them the suspensory use of the upper limbs has become predominant in locomotion, and in consequence they have become "pigeon-chested"; nor are they present in pronograde apes or monkeys. We obtain a clue to the functional meaning of the intercartilaginous facets if we consider the mode in which the diaphragm acts in pure thoracic breathing. The diaphragm then exerts its power, not in depressing the abdominal viscera but in raising the anterior or ventral ends of the ribs to which it is attached—namely, the lower six. Through the cartilaginous heels on the fifth and sixth cartilages its power is extended to the solid plate-like sternum, which it also raises. As the sternum is elevated it will be found that a bending or flexion takes place at the joint between the body of the sternum and the manubrium or presternum. Further, we note in the highest of the orthograde primates, particularly in the human thorax, that the first pair of ribs and manubrium become more and more welded together to form a single functional structure, for which I have proposed the name of "thoracic operculum." The thoracic operculum is set obliquely; it is hinged behind to the first dorsal vertebra; it rests in front on the body of the sternum; it is almost stationary if the respiratory movements are purely of the abdominal type, as in pronograde apes; it becomes a freely moving structure when respiration is of the thoracic type.

#### RISE IN IMPORTANCE OF THE APICAL REGION OF THORAX.

That the evolution of the orthograde posture gave an enhanced respiratory importance to the upper thorax is seen from another line of evidence. The straight muscles of the abdomen are the flexor muscles of the spine. In the thoracic region they are attached to the ventral ends of ribs; behind, to the ventral or pubic end of the pelvic girdle. These structures serve as powerful spinal levers; through these levers the straight muscles are more than a match for the extensors of the spinal column. Now, in the human body, as in that of all orthograde primates, the straight muscles take hold of the fifth, sixth, and seventh costal cartilages. In the older pronograde

forms the straight muscles extend their origin forwards to the whole length of the sternum and to the first pair of ribs—as is the case in all the more primitive vertebrate mammals. With the evolution of the orthograde posture the origin of the straight muscles was withdrawn from the four upper ribs, thus setting them free for a new kind of movement. This retreat of the straight muscles was accompanied by that of the external obliques and *scalenus medius*. Thus all the structural transformations which occurred during the evolution of the orthograde posture led to the freedom and increased respiratory importance of the apical region of the thorax. We shall see that these changes in the walls of the thorax were accompanied by corresponding modification of the apical region of the lung.

#### POSTURAL CHANGES WITHIN THE THORAX.

Up to this point our attention has been concentrated on the modifications of the thoracic wall involved by the change from a pronograde to an orthograde posture. We are now to enumerate, as briefly as possible, the structural alterations which took place within the thorax. The dissection which best suits our purpose is one often practised by human anatomists; extensive windows are cut in the lateral walls of the chest and through these the root of each lung is exposed, then cut through and the lungs removed. The mediastinal wall is thus exposed, and we can note the exact form of each pulmonary cavity. When such a dissection is made of one of the commoner pronograde monkeys, we are at once struck by the oblique position in which the diaphragm is set; its domes slope from the lower end of the sternum towards the eleventh pair of ribs. If we make a similar dissection of a gibbon we find the diaphragm arranged much as in man; the central tendon has become cordiform in shape and the domes of the diaphragm nearly horizontal in position. The flattening of the dorsal and ventral wall of the orthograde thorax has altered the contour of the diaphragm, giving it a wide cordiform shape. The chief structural changes concern the muscular fibres of the crura of the diaphragm. In pronograde monkeys the crural or spinal fibres are widely separated from the costal fibres by an interval filled by a fibrous membrane. In the gibbon, as in all orthograde forms, the fibrous interval is obliterated by the outward migration of crural fibres; the origin of the outer fibres has become shifted from the bodies of the upper lumbar vertebrae, over the sheaths of the *psaos* and *quadratus lumborum* muscles. We have here another example of muscular migration playing a part in an evolutionary movement.

#### Fixation of the Heart.

When we compare the thoracic dissections of the monkey and gibbon we see that the orthograde posture has entailed an alteration in the position and also in the fixation of the heart within the thorax. The point which particularly catches our attention in the monkey's thorax is that the inferior vena cava, instead of at once entering the pericardium on appearing above the diaphragm, as it does in man and in all orthograde apes, has a course of some two inches before it enters the base of the heart. Only the apex of the pronograde heart comes in contact with the diaphragm. Between the heart and diaphragm passes a sinus or diverticulum of the right pleura; the mouth of this subcardiac sinus lies internal, or medial, to the inferior vena cava; it is occupied by the azygos lobe of the right lung. When the diaphragm contracts the azygos lobe is distended, this inspiratory descent being accompanied by a stretching of the highly elastic inferior vena cava. In the gibbon the heart is bound more closely to the diaphragm, but an azygos lobe and a reduced subcardiac sinus are clearly recognizable. In the great anthropoids and man the base of the heart has become firmly bound to the diaphragm; in all of them a vestige of the azygos lobe of the right lung and of the subcardiac sinus are unmistakably present. There is no better proof of man's pronograde ancestry than the evidence he carries in his right lung.

#### Development of the Apical Region of the Lung.

As the orthograde heart settled on the upper surface of the diaphragm it lost the tapering form seen in pronograde animals, and assumed the blunt conical form we are familiar with in man's body. But why does the base of the heart become so closely attached to the diaphragm in orthograde forms? It is because of the increased development of the apical region of their lungs; the suprardicular parts of the lungs can be thoroughly aerated only if the roots of the lungs



participate in the respiratory movements of the diaphragm. The heart and pericardium are fixed to the roots of the lungs; in orthograde forms the pericardium becomes bound to the diaphragm.<sup>3</sup> Thus with the evolution of the great anthropoids there came about a new relationship between the diaphragm and roots of the lungs; the central tendon of that muscle became yoked to the roots of the lungs through the pericardium. In the chest of man this relationship is even more intimate than in anthropoids. For the proper aeration of the apical part of man's lungs diaphragmatic movements are essential.

#### Other Respiratory Changes.

It would take us too far afield were we to analyse all the intrathoracic changes which mark the evolution of the orthograde posture. The arch of the aorta and the manner in which it gives off its great branches became altered; the human arrangement is linked on to the pronograde type by a series of intermediate stages seen in the great anthropoids. The lung assumed a conical shape, with the wide and hollow diaphragmatic base with which we are familiar in human anatomy. The fissures of the lung become less deep; they have almost disappeared from the lungs of the orang. The apical lobes become larger, the inferior lobes, particularly the parts which fill the hinder and lower recesses of the pleural cavities, smaller. The distribution of the bronchial tree was changed, the apical supply becoming increased.

#### SUMMARY.

It will thus be seen that the evolution of the orthograde posture was attended by a structural revolution in all those parts which are concerned in setting up a tidal flow of air to the lungs. Ribs, vertebrae, sternum, body wall and spinal muscles, diaphragm, pleurae, lungs, and heart underwent a simultaneous and harmonious adaptational transformation. To account for such a structural revolution we must postulate a much more elaborate mechanism controlling developmental processes than any we have knowledge of as yet. Further, it is evident that the square shoulders, the flat back, the wide chest, the cordiform diaphragm, we are familiar with in man's body, are of ancient origin, having been evolved with the appearance of the earliest of orthograde primates.

#### REFERENCES.

<sup>1</sup> T. Wingate Todd: *Anat. Anz.*, 1912, vol. 41, p. 337. <sup>2</sup> For data relating to these age changes in shoulders and thorax see Wingate Todd, loc. cit.; C. B. Rhodes, *Zeit. f. Morph. u. Anthropol.*, 1905, vol. 9, p. 103 (Wittrich's observations are here included); E. Mehnert, *Über topographische Alterveränderungen des Atmungsapparates*, Jena, 1901. <sup>3</sup> For fuller details see Keith, *Lancet*, 1903, i, p. 632; 1904, i, p. 559.

## The Goulstonian Lectures

ON

## THE NATURE OF ARTERIO-SCLEROSIS.

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS  
OF LONDON

BY

GEOFFREY EVANS, M.D. CANTAB., F.R.C.P. LOND.,  
ASSISTANT DIRECTOR, MEDICAL UNIT, AND ASSISTANT PHYSICIAN,  
ST. BARTHOLOMEW'S HOSPITAL.

### LECTURE III.—CAUSATION OF DIFFUSE HYPERPLASTIC SCLEROSIS.\*

THE description of diffuse hyperplastic sclerosis formed the subject of the first lecture; the process concerned in its production and the opinion that it was one of inflammation was presented in the second; the matter of its causation remains for consideration.

Since diffuse hyperplastic sclerosis has not been produced experimentally only clinical evidence on causation is available, and before this is discussed the clinical signs of diffuse hyperplastic sclerosis need to be established. The clinical diagnosis is nearly always a matter of inference, since there is rarely the opportunity for microscopical examination of a piece of tissue; though the study of retinal vascular disease holds out the prospect of the accurate diagnosis of diffuse hyperplastic sclerosis during life the correlation of ophthalmoscopic findings with histological lesions is not as yet complete. The clinical picture can be established, however, on the basis of the naked-eye *post mortem* indications of the presence of the lesion.

### NAKED-EYE POST-MORTEM EVIDENCE OF DIFFUSE HYPERPLASTIC SCLEROSIS.

The identity of diffuse hyperplastic sclerosis as an affection of the larger vessels has not been established, hence it can only be recognized by microscopical examination of tissues cut fresh or suitably embedded to retain their fat. Its presence is inferred from the appearance of thickening of the smaller arteries, particularly of the kidneys and spleen, and the vessels are seen to protrude like little quills (in the words of Hilton Fagge) on the cut surface of these organs. When there has been a raised blood pressure during life the walls of the larger arteries such as the splenic and iliac arteries are obviously thickened, and the hypertrophied media shows as small transverse ridges on the inner surface of the vessel wall.

Cardiac hypertrophy, especially affecting the left ventricle, when not due to disease of the heart and lungs, is termed "idiopathic hypertrophy" for the sake of present convenience, and it is the most important evidence, though not proof, of diffuse hyperplastic sclerosis. Its significance in this respect has been tested by two lines by inquiry. In the first place, an analysis of twenty consecutive years of medical *post-mortem* records of St. Bartholomew's Hospital<sup>1</sup> showed that idiopathic cardiac hypertrophy of more than 15 oz. weight was significant of cardio-vasculo-renal disease. Thus the records of the great majority of cases with idiopathic hypertrophy showed death due to cerebral haemorrhage, heart failure, or uraemia; or when death was due to other cause the records made reference to arterio-sclerosis or some form of renal sclerosis. The few exceptions included a small group of cases of pernicious anaemia (Cabot has also called attention to cardiac hypertrophy in this disease), a few cases of alcoholism,<sup>2</sup> and obese heart. In the second place, I have found diffuse hyperplastic sclerosis in all cases of idiopathic hypertrophy that I have examined microscopically. The hypertrophy of the heart and media of the arteries is to be regarded as a compensatory phenomenon, physiological expressions of increased activity during life. The only essentially pathological sign of diffuse hyperplastic sclerosis is renal sclerosis in one of its several forms—a matter that will be referred to later. In short, the essential *post-mortem* picture of diffuse hyperplastic sclerosis is limited to the cardio-vasculo-renal system; it consists of left ventricle hypertrophy, the appearance of medial thickening, and renal sclerosis. This picture is often dominated by one of the complications or sequelae of vascular disease, such as cerebral haemorrhage, thrombosis, heart failure, or septicæmia; it may also be one aspect of a coincident condition, such as nephritis when death is due to uraemia, and it is often overlooked when death is due to an intercurrent disease such as pneumonia or cancer.

### CLINICAL PICTURE OF DIFFUSE HYPERPLASTIC SCLEROSIS.

*Post-mortem* evidence establishes the clinical diagnosis of diffuse hyperplastic sclerosis on idiopathic cardiac hypertrophy and renal sclerosis. The clinical diagnosis of the former is not without difficulty, since heart disease, particularly myocardial disease, is often difficult to exclude. From a comparison of blood pressures taken during life and heart weight determined after death a close relation has been established between raised systolic pressure and idiopathic hypertrophy. The direct relation shown in my first paper on arterio-sclerosis<sup>1</sup> has not been borne out by a series of 32 cases collected since. The two series are not, however, directly comparable, since the second series was merely compiled from clinical notes and *post-mortem* records. Other factors than mere increase in blood pressure are concerned in determining the degree of cardiac hypertrophy. Of the 32 cases of idiopathic hypertrophy that form my second series (heart weight more than 15 oz.) the systolic blood pressure during life was 180 mm. Hg or over in 84 per cent., and was 170 mm. Hg or over in 94 per cent. These cases furnish further evidence of the association of raised blood pressure and idiopathic hypertrophy, which is already generally accepted. In choosing an arbitrary figure of systolic pressure as having a pathological significance it is very necessary to take a conservative line, since the blood pressure is liable to a considerable variation in health,<sup>3</sup> and in conditions of fatigue, excitement, pain, dyspnoea, and the like, but my experience has been that the systolic pressure does not reach 180 mm. Hg under such conditions; and having regard to the relation of diffuse hyperplastic sclerosis on the one hand, and of a systolic blood pressure of 180 mm. Hg to idiopathic

\* Abstract of lecture delivered on March 15th.



cardiac hypertrophy on the other hand, I believe that a systolic pressure of this level is definite clinical evidence of diffuse hyperplastic sclerosis, provided always that the reading is taken under good conditions. In outline my view is that the clinical signs of diffuse hyperplastic sclerosis are idiopathic cardiac hypertrophy (standard being 15 oz. weight *post mortem*) and a raised systolic pressure (180 mm. Hg). There is no need to complete the clinical picture, and I will pass on to consider the various diseases in which these two signs are present.

### 1. Hyperpiesia.

Sir Clifford Allbutt<sup>1</sup> introduced this term to define a group of cases of which the outstanding features are a persistently raised blood pressure with cardiac hypertrophy but without kidney disease; thus far the description applies to a clinical condition, but Sir Clifford Allbutt uses the term to define not merely a condition but a disease—one that may respond to treatment and recover, or alternatively pursue its own course and terminate in death. In this latter event it preserves its identity as a morbid series that does not pass through or into Bright's disease; it is marked by the absence of such classical signs as an earthy complexion, a pronounced secondary anaemia, and also by the condition of the urine, which, though it may contain a few hyaline or granular casts or a small quantity of albumin, does not in hyperpiesia become pale in colour or low in its specific gravity; neither does it contain red blood cells or epithelial casts, unless it is complicated by marked venous congestion as a result of heart failure. In view of the relation of cardiac hypertrophy and raised blood pressure to diffuse hyperplastic sclerosis, and since these are the cardinal signs of hyperpiesia, I maintain that the clinical expression of diffuse hyperplastic sclerosis is hyperpiesia.

The connexion between hyperpiesia and its vascular lesion is so close that it is commonly regarded as one of cause and effect. The older view that the vascular lesion is responsible for the hypertension is no longer tenable.<sup>4</sup> The present opinion is that hypertension is the cause of arterio-sclerosis, an opinion that is expressed by Sir Clifford Allbutt in his distinction of a hyperpietic form of arterio-sclerosis. This opinion has received support from the work of Jores, reinforced by his interpretation of his histological findings (Lecture II). It is also supported by the record of cases of hypertension without demonstrable vascular lesions after death<sup>5,6,7</sup>; again, the clinical fact that hyperpiesia is a recoverable disease, balanced against the opinion that arterio-sclerosis is a permanent pathological change, a final event from which recovery cannot occur, is urged in the same sense; and lastly, there is the circumstance that blood pressure measurements are taken during life and vascular lesions are studied later after death. Such evidence as this does not bear critical examination. It is not certain that diffuse hyperplastic sclerosis is a permanent pathological change, or if it is the body may be able to so adjust itself that the patient recovers from hyperpiesia though his arterio-sclerosis persists. Further, to establish a sequence in time between the development of hypertension and diffuse hyperplastic sclerosis does not establish the relation of cause and effect since both may result from the action of a common cause, and the difference in time of their development may depend on the longer time required for the development of a structural lesion as compared with a functional lesion.

Hyperpiesia may be dependent upon a disturbance of vascular function due to the activity of a pressor substance in the sense postulated by Dr. Batty Shaw,<sup>8</sup> and Krogh's work<sup>9,10</sup> on capillomotor activity throws a new light on the mechanism set in motion at this stage of the disease. A similar problem is present in Raynaud's disease when vasoconstriction is so persistent and severe that gangrene of a distal part results without the occurrence (according to Leo Buerger) of a demonstrable vascular lesion; but in the only case of Raynaud's disease that I have examined there was an extreme degree of arterio-sclerosis in the digital arteries of a finger that had to be amputated for gangrene.

While there is no adequate clinical evidence for the opinion that mechanical strain is a cause of diffuse hyperplastic sclerosis, pathological evidence is contrary to such a view. Jores's views on the subject fall to the ground with the failure of his distinction between regenerative and hyperplastic layers in the thickened intima of diffuse hyperplastic sclerosis. The actual lesion in the arterioles, the endothelial cell proliferation and subsequent fatty degeneration, is not open to explanation in terms of increased blood pressure. Fatty degeneration is

an expression of deficient oxidation, and a mechanical strain that shows itself in this weakening of the vessel wall can hardly be responsible at the same time for the increased tissue activity shown by proliferation of the endothelial cells of the perfect form and staining seen in these vessels. Mechanical strain fails equally as a working hypothesis in regard to the distribution of the lesion, for it does not explain the relative incidence of the lesion on the several organs of the body; it is no explanation of its major incidence on the kidneys and spleen, its common presence in the brain, pancreas, liver, and suprarenals, its relative rarity in other organs, and its absence from skeletal muscles and heart. The theory of increased blood pressure fails to account for the development of diffuse hyperplastic sclerosis, and it is concluded from the evidence at present available that the cause of diffuse hyperplastic sclerosis is the same as that of hyperpiesia.

### 2. Renal Sclerosis.

There is some degree of renal sclerosis in all cases of diffuse hyperplastic sclerosis, and there is some vascular lesion in all cases of renal sclerosis. Apart from polycystic kidneys, tuberculous and obviously syphilitic kidneys, calculous and other forms of pyelonephritis, renal sclerosis is divisible into two main groups according to the distribution of the lesion in the organ.

*Group 1: Chronic Nephritis.*—The lesion is diffuse; though not uniform it is widely distributed throughout the organ. The essential lesion is a glomerulitis, shown by proliferation of the cells of Bowman's capsule, or at a later stage by adhesion of the parietal and visceral layers of the capsule. The constant lesion, as in all forms of renal sclerosis, is an increase of fibrous connective tissue. Taken as a whole, and in their more chronic forms, these kidneys tend to be associated with diffuse hyperplastic sclerosis and cardiac hypertrophy. The association of diffuse hyperplastic sclerosis with chronic nephritis is best illustrated by its occurrence in children, of which I have recently published four cases in detail<sup>11</sup>; from another point of view it is illustrated by statistical evidence of cardiac hypertrophy in its relation to kidney disease (see Ref. 1, p. 248). The lesion in chronic nephritis is without doubt inflammatory, and its association with diffuse hyperplastic sclerosis has been brought forward as further evidence in favour of the inflammatory nature of the vascular lesion. The vascular lesion may develop to an extreme degree, so that the parent arteries are almost completely obliterated; in other cases of extreme renal disease the vascular lesion may be relatively slight and limited to the kidneys. Clinically there may be a history of acute nephritis or of oedema of the renal type. The symptoms of which the patient complains are those commonly regarded as uraemic, of which the more important are headache, gastro-intestinal disturbance, and disturbance of vision due to albuminuric retinitis. In well marked cases there is pallor of the face; in severe cases a muddy complexion and secondary anaemia; the urine contains red and white blood corpuscles and cell casts, and at a later stage it is pale in colour and of low specific gravity. Sometimes there are no cells or casts in the urine. Puffiness of the face is common; cardiac oedema is more frequent than renal oedema. Hypertension and cardiac hypertrophy are characteristic but not essential features of the clinical picture.

My interpretation of the association of diffuse hyperplastic sclerosis and chronic nephritis is that both lesions are provoked by the same cause or causes, and the solution of the etiology of chronic nephritis will solve the etiology of diffuse hyperplastic sclerosis (see also Ophüls, loc. cit., p. 95). This view has lately received support from the study of the histology of war nephritis in the early stages of the disease. Herxheimer<sup>12</sup> has recorded that the earliest lesion is of the endothelial cells of the glomerular tufts; initially it is limited to occasional loops of occasional glomeruli; soon the whole or the greater part of the tuft is affected and the great majority of all glomeruli are involved. Inflammatory reaction in the cells of Bowman's capsule, the typical lesion in nephritis, is a subsequent event.

*Group 2* includes all kidneys in which the lesion is partial, being limited to wedge-shaped areas with their base on the surface and their apex pointing to the cortico-medullary zone. These areas correspond to depressions on the surface of the organ: when they are small the surface is almost smooth (as in the hyperpietic kidney); when they are large and deep the surface is coarsely granular (as in true chronic interstitial nephritis). The areas consist of fibrous tissue, damaged renal parenchyma, and more or less small cell infiltration. The



intervening tissue is relatively normal and the parenchyma may be hypertrophied. On account of the presence of normal tissue these kidneys retain their colour (which depends largely on their capillary blood content), in contrast to the kidneys of chronic nephritis in which the lesion is diffuse and the colour pale.

*Subgroup (a): True Chronic Interstitial Nephritis.*—Histologically there is evidence of active inflammation in the presence of glomerulitis, similar to that seen in chronic nephritis, and small cell infiltration out of proportion to the degree of glomerular tuft damage. The differential diagnosis of these cases clinically from chronic nephritis may be impossible. As a general rule they occur after the age of 35, whereas chronic nephritis is commoner before 35. The most obvious aspect of the clinical picture is cardio-vascular disease, the symptoms being those of heart failure, or simulating hyperpiesia, or sometimes they are purely vascular, as in gangrene of the toes. The renal aspect of the case, in its symptoms, facies, or urinary findings, is a less prominent feature than the cardio-vascular aspect, but to the extent that it is present it is of the same kind as in chronic nephritis. The changes in the fundus oculi are those of arterio-sclerotic retinitis,<sup>13</sup> in contrast to albuminuric retinitis in chronic nephritis. The most marked cases of diffuse hyperplastic sclerosis are found in this subgroup, and they are associated with the highest systolic blood pressures. These cases with their definitely inflammatory renal lesion are further evidence of the inflammatory nature of diffuse hyperplastic sclerosis and point to a common etiology of it and chronic interstitial nephritis.

*Subgroup (b): True Arterio-sclerotic Kidneys.*—This subgroup is further subdivided into two types, according to whether the accompanying vascular lesion is of the type of diffuse hyperplastic sclerosis or senile arterio-sclerosis.<sup>14</sup> This classification, which I suggested in 1921, seems to hold good in the light of material examined since, and has been recently followed by Professor Shaw Dunn.<sup>15</sup> Chronic nephritis and chronic interstitial nephritis can be similarly subdivided according to the type of the vascular lesion present, but it is not necessary for the present purpose. The essential histological feature of the kidneys in Subgroup (b) is the absence of definite signs of inflammation, apart from the vascular lesion, in these kidneys; the glomeruli undergo hyaline degeneration and fibrosis; there is no proliferation of Bowman's capsule; there is little small cell infiltration, and the degree of glomerular tuft damage. Clinically these cases have no renal aspect, and do not suggest the picture of Bright's disease in any of its well recognized forms. The renal lesion is only evident in a trace of albumin in the urine; the urine is of good colour and normal specific gravity. Of the two types included in this subgroup the one in which there is diffuse hyperplastic sclerosis is the more important, for it is associated with raised blood pressure and cardiac hypertrophy, and is hyperpiesia. Microscopically the kidneys are relatively normal in appearance, their surface is smooth, or very finely granular, or they may be marked by scars like old infarcts. On section they are a little firmer than normal, and the vessels are unduly prominent. I suggest the name "hyperpietic kidney" for this type of renal sclerosis, and its significance in respect to the etiology of diffuse hyperplastic sclerosis has been already discussed under hyperpiesia.

This slight review of the relation of nephritis and renal sclerosis to diffuse hyperplastic sclerosis is sufficient to establish the intimate relation of the two conditions. It emphasizes the paramount importance of vascular lesions in renal disease, and it is this association that will, I think, ultimately lead to the solution of the causation of arterio-sclerosis. It is possible to assume, as have Aschoff, Gaskell, and others, that the vascular lesion is the cause of the renal lesion in my second group of renal sclerosis—the arterio-sclerotic group—a point of view that involves Gull and Sutton's conception of diffuse hyperplastic sclerosis as an independent disease of the vascular system. I hesitate to accept this view, because it cannot hold good for the relation of diffuse hyperplastic sclerosis to chronic nephritis and chronic interstitial nephritis. It is possible that the inflammatory changes in the latter are due to secondary infection, as has been suggested by Vollhard and Fahr,<sup>16</sup> a suggestion which is as difficult to prove as it is to refute. There is less objection to the view that the vascular disease is primary and the renal lesion a secondary atrophy in the hyperpietic and senile forms of arterio-sclerotic kidneys—Subgroup (b). At the same time this gives the

vasculature an identity of its own, whereas it is better regarded as merely part of the cardio-vasculo-renal system.

The basic proposition that I have attempted to present in this outline of the relation of hyperpiesia and renal sclerosis to diffuse hyperplastic sclerosis is that the causation of the vascular lesion is the same as the causation of hyperpiesia and renal sclerosis. The etiology of this condition, so far as it is known at present, is due to the action of bacterial toxins, and both the character of the vascular lesion in diffuse hyperplastic sclerosis and the distribution of the lesion in the vascular tree is compatible with the view that it is caused by a circulating toxin. Thus, with regard to the former, the character of the lesion is inflammatory; and with regard to the latter, it is known clinically from the distribution of amyloid disease and experimentally from the work of Welch and Flexner<sup>16</sup> and others, that a circulating bacterial toxin can readily cause both an unequal and a focal lesion of arterial walls.

#### THE RELATION OF OTHER FORMS OF ARTERIO-SCLEROSIS TO DIFFUSE HYPERPLASTIC SCLEROSIS.

##### 1. Nodular Sclerosis.

This lesion is like diffuse hyperplastic sclerosis in that the initial change is in the intima and in that the early stages show an intimal thickening due to proliferation of superficial cells, which Klotz<sup>17</sup> regards as either of endothelial or connective tissue origin. The intimal thickening is permeated by elastic fibrils at a later stage, and fatty degeneration occurs subsequently, perhaps as a result of deprivation of oxygen. Klotz and Manning<sup>18</sup> have made a minute study of the fatty streaks and spots that are chiefly found in the aorta and in the main vessels arising from it. They are of the opinion that these lesions may develop into nodular sclerosis and atheroma, an opinion shared by Jores and others; they say of these lesions that

"there is every indication that the production of tissue in the intima is the result of a direct irritation of that tissue by the presence of infection or toxins or of the stimulation by the products of a primary degeneration in that layer."

There is considerable evidence in favour of the view that these lesions, as well as those which are doubtless nodular sclerosis, are due to the effect of bacterial toxins. Klotz suggests that they are of an inflammatory nature, and he controverts Thoma's theory that the intimal thickening is compensatory to medial degeneration. From the information at present available it would seem that nodular sclerosis, in the nature of its lesion and in the site of its earliest appearance in the vessel wall, resembles diffuse hyperplastic sclerosis, while in other circumstances Thoma's theory may hold good—that it is a compensatory thickening secondary to an initial weakening of the media.

##### 2. Senile Arterio-sclerosis.

This form of arterio-sclerosis is primarily a medial degeneration, beginning with fatty degeneration and atrophy of the muscle fibres, and affecting the larger and smaller vessels.<sup>19</sup> Secondary to these changes occur replacement fibrosis and deposit of lime salts in the media. It is commonly accompanied by thickening of the intima, and nodular arterio-sclerosis is generally present in some degree. It differs from diffuse hyperplastic sclerosis in its clinical expression; age is more definitely a factor in its causation, and it is not accompanied by the cardiac hypertrophy and raised blood pressure of diffuse hyperplastic sclerosis.

Senile arterio-sclerosis is as diffuse in its distribution as diffuse hyperplastic sclerosis, but it differs from it both in respect of the site of the earliest lesion and in the character of this lesion. It is possible, therefore, that its causation is different; vascular lesions that have been produced experimentally, such as those caused by repeated adrenalin injections,<sup>20</sup> also by experiments (Klotz) in which arterio-sclerosis of the aorta was produced in rabbits by suspending them by their hind legs for two or three minutes daily for many days in succession, are of the nature of medial degeneration with calcification. Again, clinical conditions, such as mitral stenosis, that lead to an increased pressure in the pulmonary circulation sometimes (though not always) lead to arterio-sclerosis of the pulmonary artery in which degenerative changes are the prominent feature.

There is both clinical and experimental evidence, therefore, that mechanical and toxic causes may be responsible for that mechanical and toxic opinion on the mechanical causation of arterio-sclerosis expresses as well as any other



the generally accepted view. After reviewing the conditions in which an increased blood pressure is generally regarded as responsible for the vascular lesion, he remarks that "the factor of increased content of metabolites in the blood is also involved," and he expresses the opinion that an increased blood pressure cannot be excluded from the etiology of arterio-sclerosis, and that "it is without doubt an accessory factor in the production of arterio-sclerosis provoked by other causes." For a full discussion of this subject reference should be made to Allbutt, Andrewes, Thorel, MacCallum, and Moschcowitz.

Whether, however, a degenerative or proliferative lesion results from the action of a toxin on the vessel wall, may depend on the one hand on the nature of the pathogenic agent. On the other hand, the power of resistance of vascular tissues to the pathogenic agent must be an important determining factor, and it is possible that whether diffuse hyperplastic sclerosis or senile arterio-sclerosis result depends rather on the vitality of the tissues affected than on the nature of the pathogenic agent. There is some evidence in favour of this view, and factors such as age and inheritance find their due place in the tangle of causation in the extent to which they undermine and modify the reaction of vascular tissues to insult. Thus there is no reason to believe that age in itself is the cause of arterio-sclerosis, and Ophüls<sup>22</sup> has shown that the curve of incidence of arterio-sclerosis does not correspond with what would be expected if the lesion were the direct result of it and of the senile deterioration associated with it.

### 3. Mönckeberg's Sclerosis.

Mönckeberg's sclerosis illustrates this aspect of the problem from another point of view. The form of sclerosis that he describes is often included in the senile form of arterio-sclerosis; it does indeed often occur in old age, and it is like senile arterio-sclerosis in the fact that it is apparently a primary affection of the media and is characterized by calcification. In a sense it is more senile than senile arterio-sclerosis, for the intima often fails to proliferate, and when it occurs it is often late in the evolution of the lesion as a tardy process of repair. But it is not age that has weakened the vessel walls and prevented their reaction to insult—it is disease, not local but general; thus of the 12 pure cases described in Mönckeberg's original paper,<sup>23</sup> 4 died of cancer, 4 died of phthisis, 1 of advanced morbus cordis, and 3 of cachexia due to chronic infection. I think it is here that diabetes mellitus sometimes finds its place in the etiology of arterio-sclerosis.

### SUMMARY.

The study of the pathology of arterio-sclerosis has impressed me with the vivid picture of reaction in tissues to insult, response to injury, and repair of damage done. Great students of pathology such as Virchow interpreted the lesion in terms of inflammation, Thoma in terms of involution, and Jores in terms of growth. These men, at least, have failed to grasp the cloven hoof of decadence and decay. It is asking too much to expect a *restitutio ad integrum* in arterio-sclerosis, and, as in tuberculosis of the lung, we may well be content with a lesion that heals by calcification and fibrosis. The prospect of recovery in vascular tissue is indeed better than it is in the parenchyma of the lung; new vessels are formed more easily than new parenchyma. Louis Gross<sup>24</sup> has demonstrated the formation of new vessels in the kidney of renal sclerosis, and the rapidity of their formation is strikingly illustrated in thrombo-angitis obliterans, where new vessels may be formed in the lumen of the affected artery before the original process of disease has subsided, so that the new vessels may themselves be affected by the original process of disease. Again, it is remarkable evidence of the healing power of vessels that aneurysm of the aorta is rarely due to arterio-sclerosis even when present in a severe degree. There is a big field for inquiry in clinical medicine where evidence of the healing of arterio-sclerosis may be collected, and yet before the gate into this field is opened the clinical diagnosis of arterio-sclerosis needs a closer approach.

As the problem of arterio-sclerosis is contained in its definition, I will end by stating the problem as I have tried to outline it:

Arterio-sclerosis is a lesion characterized by a pathological thickening of arterial coats, particularly of the intima; inflammatory reaction is of first importance; degenerative changes are an essential part of the picture; hyperplastic

and involutionary processes play a part; no unit factor is responsible for its causation. Its development in its extent and form depends on a balance between the action of toxic agents and the power of resistance of the vessel wall to their attack.

In conclusion, it is a real pleasure to acknowledge the help and advice that I have received from Sir Frederick Andrewes, and the constant assistance kindly given by Sir Bernard Spilsbury.

### REFERENCES.

- <sup>1</sup> Evans, Geoffrey: *Quart. Journ. Med.*, Oxford, 1921, 14, 215.
- <sup>2</sup> Fisher, Theodore: *Guy's Hosp. Reports*, 1894, 51, 37.
- <sup>3</sup> Oliver, George: *Studies in Blood Pressure*, third edition, 1916, 116.
- <sup>4</sup> Allbutt, Sir Clifford: *Diseases of the Arteries and Angina Pectoris*, 1915.
- <sup>5</sup> MacCallum, W. G.: *Physiol. Reviews*, 1922, 2, 70.
- <sup>6</sup> Strouse and Kelmman: *Arch. Int. Med.*, 1923, 31, 151.
- <sup>7</sup> *Assoc.*, 1922, 73, 1195; 1925, 59, 319.
- <sup>8</sup> *Hyperpneisis*, Oxford Med. Pub., 1922.
- <sup>9</sup> *Quart. Journ. Med.*, Oxford, 1912, 4, *Arzt. Erfahr. im Weltkrieg*, *Journ. Med.*, Oxford, 1916, 10, 30.
- <sup>10</sup> Krogg, Harrop, and Rehberg: *Quart. Journ. Med.*, Oxford, 1912, 4, *Arzt. Erfahr. im Weltkrieg*, *Journ. Med.*, Oxford, 1916, 10, 30.
- <sup>11</sup> Dunn, John S.: *BRITISH MEDICAL JOURNAL*, 1922, 11, 1166.
- <sup>12</sup> Volhard and Fahr: *Die Brightsche Krankheit*, J. Springer, 1914.
- <sup>13</sup> Welch and Flexner: *Johns Hopkins Hosp. Bull.*, 1892, 3, 17.
- <sup>14</sup> Klotz, Oskar: *Journ. Exp. Med.*, 1910, 12, 707.
- <sup>15</sup> Klotz and Manning: *Journ. Path. and Bact.*, 1911, 16, 211.
- <sup>16</sup> Klotz, O.: *Journ. Exp. Med.*, 1905, 8, 322.
- <sup>17</sup> Josue: *Presse Méd.*, 1903, 11, 798.
- <sup>18</sup> C. R. Soc. de Biologie, 1903, 59, 319.
- <sup>19</sup> Thorel, C.: *Lubarsch-Osterlag*, 1915, 1, 182.
- <sup>20</sup> Ophüls, William: *Stanford Univ. Pub. Med. Sci.*, 1921, 1, 5.
- <sup>21</sup> Mönckeberg, J. G.: *Virchow's Archiv.*, 1903, 171, 141.
- <sup>22</sup> Gross, Louis: *Journ. Med. Research*, 1918, 38, 379.

## ON ANKYLOSTOME INFESTATION:

### THE CHANGING PROBLEM.

BY

CLAYTON LANE, M.D., LIEUT.-COL. I.M.S.(RET.).

THE present time seems particularly opportune to call attention to certain aspects of the hookworm problem which threaten to cause a division of opinion and procedure among those whose common desire is its solution.

It is probably undisputed that the aggregate of ankylostome infestation is enormous, hundreds of millions of persons being infested, that the effects of comparatively light infestations are harmful, and that an active hookworm campaign is essential. Beyond this point opinion is imperfectly crystallized. There is, for example, a weighty body which holds that the problem of ankylostomiasis is so great that it must be attacked along lines admittedly unscientific and deliberately rule of thumb. Their case is a reasoned one and can be put, I think quite fairly, thus:

1. The microscope fails to detect with certainty light hookworm infestations; so that, relying upon it, the sanitarian, intent upon producing complete disinfection, will find nothing but disappointment.<sup>1</sup>
2. The light infestations, those with less than ten worms, missed by the microscope, do not, however, damage their host; so that the fact that the microscope misses such infestations is actually an advantage.<sup>2</sup>
3. Accordingly the right way to attack the hookworm problem in any locality where infestation is shown to be considerable is to treat all persons indiscriminately, without attempt at individual diagnosis, with two treatments of oil of chenopodium.<sup>3</sup>
4. In this way 93 to 97 per cent. of the worms will be removed and all infestation material to the host will be eliminated.<sup>1,3</sup>
5. At the same time the soil will cease to be seriously infected, and reinfection of man will remain at the point where the resulting human infection will be immaterial.<sup>3</sup>
6. So that, in view of the inadequacy of microscopic diagnosis, and the practical adequacy of treatment, it is the duty of the sanitarian, faced with this huge problem, to concentrate upon the heavy cases which matter and disregard the light ones which do not.

### Microscopic Detection of Ova.

Whether infestation be light or heavy, the microscopic detection of ova in the stool is manifestly impossible if the worms be not ovipositing—that is to say, if only males be present, or if the females be too young, too old, or too ill to lay. If ova be present in the stool can they infallibly be detected there by the microscope, or is it the case, as stated in the fifth annual report of the Rockefeller Foundation, International Health Board, that microscopic technique fails to detect 50 per cent. of light infestations? The answer to this lies in some sixteen months' work of mine, financed first by the International Health Board and later by the Royal Society.<sup>4</sup> This work starts from the admitted position that hookworm eggs may be so sparse in a stool that the West Indian technique is fully justified. This requires that before a negative diagnosis is made nine faecal smears on 3 × 2 in.



slides, three simple and six from the deposit after centrifuging, should be examined. To save the enormous expenditure of time involved, a number of concentrative methods have been produced, designed to separate ova from faeces proper and to concentrate the former on a small area for microscopic examination. Since this work has involved the counting of over a quarter of a million hookworm eggs it rests on a foundation more solid than hitherto attempted. Since it has involved the eviction of the writer's own levitation technique from the premier position which he believed it to hold, the conclusions may reasonably be accepted as unbiased. Briefly the procedure has been as follows:

#### The Standardizing Count.

A measured quantity of stool is, by prolonged shaking with a comminutor, disintegrated into its constituent parts; it is clear that so long as faeces remain adherent to ova the ova cannot be collected apart from faeces proper. With a pipette this even faecal suspension is allocated into as many centrifuge tubes as there were cubic centimetres of original faeces. These tubes are now centrifuged for such time and at such rates as will, for the centrifuge in use, throw down all the suspended ova. In a centrifuge in which the bottom of the tube is 6½ inches from the centre this will be accomplished in sixty seconds at 1,000 revolutions a minute. The supernatant fluid is decanted. The deposit in each tube, all containing on the average the same number of eggs, is treated by a different concentrative technique and the ova recovered are counted. One tube is retained as a control, in order that a count may be made of the number of eggs with which each technique started. But since to make this count in smears in the centrifugal deposit from 1 c.cm. of stool spread sufficiently thinly would occupy several hours, the eggs in a measured fraction only of the control are counted, with due precautions for the maintenance of an even suspension, and for its accurate subdivision. This number, multiplied by the fraction, gives the average ovum content per cubic centimetre.

This controlling count I have named the "standardizing count." Subjected for the first time to this rigid mathematical control, it is evident that each technique has what may be termed its "limit of effective concentration," which is to say that it will, without appreciable loss, concentrate upon a certain examination area the ova from a certain quantity of a given stool, but that if, other things being unchanged, the quantity of stool be increased or the examination area be diminished, there occurs a loss of ova, at first relative and then absolute. Methods giving on occasions brilliant results have in the past been summarily rejected because on others they have miserably failed. That failure has been due almost solely, as I believe the internal evidence demonstrates, to their having been put to do that which was quite beyond their capacity, there having been no realization—as indeed there could not be without standardization—that the limit of effective concentration was the rigidly controlling factor which these counts show it to be.

The limit of effective concentration for levitation is, at the utmost, 0.5 c.cm. of stool upon 2 sq. in. of slide, and takes from twenty to thirty minutes for complete examination. In the Kofoid and Barber and in the Willis gravity flotation methods, modified in accordance with the ascertained limit of effective concentration, it is 1 c.cm. of stool upon 1 to 2 sq. in. of slide, taking ten to twenty minutes for complete examination. In the new centrifugal flotation method it is 1 c.cm. of stool upon a sixth of a square inch of slide, taking about two minutes for complete examination, while the control counts show that the number of ova lost during concentration by this technique is negligible. Moreover, the process of concentration is so simple that the ordinary unlettered coolie would have no difficulty in carrying out the whole of it. It seems, then, to fulfil the essentials for mass diagnosis and to combine rapidity, certainty, foolproofness, and cheapness to a degree not hitherto approached by any other technique.

This being so, does the 1 c.cm. of stool, which this technique uses, suffice for the detection of light infections? Baermann's work<sup>2</sup> indicates that each ankylostome female lays daily at least 1,000 eggs, or 10 ova per c.cm. in a stool of 100 grams. Darling's corresponding figures<sup>3</sup> for each female are an average of 2,237 ova daily, with maximum and minimum figures of 7,454 and 427.

The evidence, then, is that the properly conducted examination of 1 c.cm. of stool by direct centrifugal flotation will certainly, rapidly, and cheaply detect infestations by a single, normally ovipositing, female ankylostome. In other words, the microscope, properly used, can be relied upon to detect the lightest infections, and the statement that it misses 50 per cent. of light infections is incorrect.

There remains, under the second heading, the question whether infections with less than ten worms do not damage

their host. Evidence on this point is apparently lacking. It seems to be felt as inconceivable that a single pair of ankylostomes should harm their host, and this feeling is expressed, quite unjustifiably, as a direct negation. The position assumed is unsatisfying. It is that the microscope cannot detect less than ten hookworms, and that by an extraordinary coincidence it is just that number which matters. As has been pointed out,<sup>4</sup> a similar attitude has been adopted, quite incorrectly, regarding the centrifuge, and those who now make this statement must surely feel under an obligation to substantiate or reject it.

It is at least certain that there is a growing mass of evidence that the so-called carrier is improved in health and working power by disinfestation, and I know of no published evidence suggesting that there is any limit below which infestation is immaterial. Statements of personal belief on this matter appear misplaced. The fact seems to be that there is no satisfactory evidence either for or against the belief that the lightest infestations are immaterial to their host. With the definiteness in diagnosis which these new methods imply a few months' accurate examination in the field should suffice to settle this point and bring certainty where divergence of opinion is now expressed.

Are we justified in treating cases indiscriminately without diagnosis? In treatment we aim at employing poisons of such a nature and in such a manner that we poison all hookworms without poisoning the host. We are only exceptionally successful in accomplishing the former, and do not always succeed in avoiding the latter. Every established line of treatment has deaths to its discredit, so that every medical administrator who authorizes the administration of a potentially poisonous drug to individuals without any knowledge as to whether individually they are or are not infested must satisfy his own conscience on the matter. But if he satisfy himself that it is ethically permissible there remains the question, Is it politic for the campaign in question? Should a death occur after anthelmintic treatment as, with ankylostome treatment going on upon the scale necessary, must happen whether the drug had or had not any hand in its causation, unquestionably certain persons will say, "You have poisoned this man, and you did not even know that he was infected."

There are yet other moral questions involved. Just as every hookworm campaign uses and benefits from advances in scientific knowledge gained by previous ones, so is there surely an obligation, for the benefit of others, to add to that common stock of knowledge. It seems almost impossible to do so if diagnosis is to be dispensed with and treatment is to be merely by rule of thumb.

Regarding oil of chenopodium, it is true that in certain instances certain specimens have in two treatments removed 93 to 97 per cent. of the number of worms which three treatments evacuated. There is no evidence, and indeed with the methods of diagnosis hitherto employed there could be no evidence, that 93 to 97 per cent. of all the ankylostomes originally harboured were thus removed. With knowledge of the futility of these methods it is, indeed, gravely illogical to make this assumption. Moreover, oil of chenopodium is no fixed chemical compound and has no pharmaceutical standard. The work of Caius and Mhaskar<sup>5</sup> shows that its chemical composition varies, while as regards its anthelmintic value it must not be overlooked that in the Rockefeller Foundation's Panama campaign the drug was rejected as useless. It is, then, as premature to state that two treatments with oil of chenopodium will evacuate 93 to 97 per cent. of all worms as that these treatments will remove all infestation which matters to the host.

#### Ankylostomiasis a Privy Infection.

The present conception of ankylostome infestation is that the larvae are widely disseminated in the soil; and that those who work barefooted on the soil, especially agriculturists, are particularly liable to it. Ankylostomiasis has, indeed, been definitely and unhesitatingly designated as an occupational disease. But let us consider the latest evidence. According to the experiments of Augustine<sup>6</sup> there is practically no lateral migration of larvae in the soil. A circle four inches in radius round an infected spot marks, it is said, the extreme limits of larval excursion. Unless these experiments be disproved ankylostomiasis must be accepted as a stringently localized ground infection, something which I would designate as a *privy infection*, using the term "privy" to include (1) as a *privy infection*, using the term "privy" term a "natural man-made latrine; (2) what Cort and Payne<sup>7</sup> term a "natural



latrine," a selected and probably sequestered spot to which an individual will constantly return; (3) what may be designated a "casual privy," any spot whose use the call of the moment necessitates. Accepting these experiments it is impossible to admit that hookworm infection is a general infection of the soil, one which tends to evenness of diffusion; nor can one admit that it is of such a nature that the agriculturist must necessarily meet wandering larvae in the course of his work. Were this so, however, we could agree with those who clearly look upon the soil as one uniform whole more or less uniformly infected, and maintain that the amount of soil infection generally, and the consequent risk to those who work on it, must be proportionate to the number of ova which fall upon it—that is, to the number of ankylostomes harboured by the inhabitants. On such grounds, too, one would have to agree with Darling<sup>3</sup> that, could one reduce the number of ankylostomes to a certain level, one would reduce the larvae they breed to a point where human infection would be slight, and, if one be willing to concede this without proof, negligible; and that no increase in the infection rate of a community could occur without importation of a heavier infection from outside.

But, on the contrary, the evidence of Augustine's experiments is that infection must be constantly, presumably preponderantly, a "privy" infection, and that in the case of man-made latrines and "natural latrines" it is what I have termed a defectional infection<sup>10</sup>—obtained, that is, at the time of defaecation. Only in case of his skin coming into contact with ground which has been used as a casual privy will an individual acquire what I have termed a casual infection<sup>10</sup>; and that will generally be but seldom.

If, then, one conclude—and it is difficult to escape doing so—that recent evidence points to hookworm infection as being under ordinary conditions practically always a privy infection, and preponderantly a defectional infection, one is confronted with this question: Does the man-made latrine, as recommended by the sanitarian, prevent infection; or does it actively disseminate it? There will scarcely be opposition to the statement that ankylostome infestation cannot occur from a clean sewered water-closet, whence the infected stool is at once removed. But in those widely used, because widely recommended, latrines where the stools are dealt with *in situ* with a view to larval destruction, the position is unsatisfactory and disquieting. McVail<sup>11</sup> has found that ova and larvae, identified as those of hookworms, are constantly present in the effluent of those fine septic tanks which stand on the banks of the Hugli; Minett<sup>12</sup> and Khalil<sup>13</sup> have found them similarly in the West Indies; Khalil<sup>14</sup> quotes experiments to show that these larvae can swim; Payne<sup>15</sup> has shown that even if larvae do not migrate laterally on the surface of the ground, they can mount vertically through at least 36 inches of soil. Accordingly any latrine which permits of direct or indirect pollution of the soil or subsoil is, under present conditions, unsafe.

Since, apart from sewered latrines, there are such grave reasons for suspecting all man-made latrines as disseminators of hookworm infection, it is pertinent to inquire the extent to which a man, conscientiously using his privy and harbouring but a single pair of ankylostomes, will infect that privy. The answer lies in the work of Baermann and of Darling, to which reference has been made above. Assuming for the sake of even numbers that this particular pair of worms produced 2,740 fertile eggs daily, the number deposited in the latrine will be a million a year. We are assured that nine ankylostomes, or four to five million eggs a year, are hygienically negligible. It is not unreasonable to ask of those who are maintaining that this prodigious figure is hygienically negligible that they should either prove it or cease to urge it as a working hypothesis. There is an unfortunate disposition to take sides on this matter, and as one who is credited with leading the opinion that all infection matters<sup>2</sup> I would suggest that it is immaterial what anyone's opinion is, except in so far as it acts as a spur to the collection of facts. What is required is fact, and pending the collection of further facts there seems ample justification for the refusal to accept as personally or hygienically negligible any infection however slight.

#### *The Needs of Hookworm Campaigns.*

Seeing, then, that, by the evidence, accurate microscopic diagnosis is a reality; that treatment does not produce effective disinfection; and that ankylostomiasis must, on our present evidence, be looked upon as, in the main, a privy

disease, and not a general soil disease; the case which has been stated, and as I believe fairly stated, above collapses.

The problem is really a somewhat pathetic one. In the face of an urgent situation hookworm campaigns have been pushed forward. Certainly something had to be done; but the results are in certain respects deplorable. Promises have been rashly made which have not been, and could not be, substantiated, because the premisses on which the argument for their validity rested were unsound.

The present position would seem to be fairly stated thus: Diagnosis, thanks largely to the recognition of the principle of the limit of effective concentration, has now been placed in such a position that it will cheaply, certainly, and rapidly detect hookworm infection, provided normal oviposition proceed. Treatment and prevention lag far behind. We need a drug which will disinfect certainly, preferably in one treatment. Why should we rest content to say, as is said, that certain and complete disinfection is impossible of attainment? The acceptance of defeat in the situation is unthinkable. We need a latrine, simple, cheap, profitable, foolproof, suitable for the poor hut dweller. We have no approach to it, nor are we likely to have so long as there is no active dissatisfaction with, no strenuous striving to better, what we have. We need properly financed research to solve these and like urgent and vital problems in ankylostomiasis. We need research in order to avoid the heavy waste of money which has occurred so strikingly in the past in hookworm campaigns; for most of the work which has been done will have to be done again. Money spent in adequate research will come back multiplied many fold, not only in the capacity for work and earning, but in that measure of health, happiness, and length of life which our national commitments make it incumbent that we should at least offer to those backward races for whom we have made ourselves responsible.

#### REFERENCES.

- <sup>1</sup> Darling, S. T., and Smillie, W. G.: Studies on Hookworm Infection in Brazil, first paper, *Mon. Rockefeller Inst. Med. Res.*, No. 14, 1921.
- <sup>2</sup> Smillie, W. G.: Studies in Hookworm Infection in Brazil, second paper, *Mon. Rockefeller Inst. Med. Res.*, 17, 1922.
- <sup>3</sup> Darling, S. T.: The Hookworm Index and Mass Treatment, *Amer. Journ. Trop. Med.*, vol. 2, p. 397, 1922.
- <sup>4</sup> Lane, Clayton: Mars Diagnosis in Ankylostome Infestation, Part I, *Trans. Roy. Soc. Trop. Med. and Hyg.*, vol. 16, p. 274 (1922), 1923.
- <sup>5</sup> Baermann, G.: Ueber Ankylostomiasis deren Ausbreitungsbedingungen durch die Bodeninfektion und deren Bekämpfung, *Geneesk. Tijdschr. v. Nederl. Indie*, vol. 57, p. 573, 1917.
- <sup>6</sup> Lane, Clayton: Final Darjeeling District of Ind.
- <sup>7</sup> Caius, J. F., and Ml: Chemical Composition of Connection with the Hook
- <sup>8</sup> *Journ. Med. Res.*, vol. 7, p. 570, 1920
- <sup>9</sup> Augustine, D. J.: Investigation on the Control of Hookworm Disease, *VIII, Amer. Journ. of Hyg.*, vol. 2, p. 162, 1922.
- <sup>10</sup> Cort, William W., and Payne, George C.: *Ibid.*, VII, *Amer. Journ. of Hyg.*, vol. 2, p. 149, 1922.
- <sup>11</sup> Lane, Clayton: Studies in Ankylostomiasis; A Criticism, *Indian Journ. Med. Res.*, vol. 7, p. 223.
- <sup>12</sup> McVail, J. Borland: Preliminary Note on Septic Tank Latrines in Relation to Hookworm Disease, *Indian Journ. Med. Res.*, vol. 9, p. 806, 1922.
- <sup>13</sup> Minett, E. P.: A Cheap Type of School Latrine for Country Districts in the Tropics, in Relation to Ankylostomiasis and other Diseases, *Trans. Roy. Soc. Trop. Med. and Hyg.*, vol. 16, p. 119, 1922.
- <sup>14</sup> Khalil, M.: On the Septic Tank in the Tropics: from a Helminthological Standpoint. Report of the West Indian Medical Conference, 1921.
- <sup>15</sup> Khalil, M.: Thermotaxis in Ankylostome Larvae, *Proc. Roy. Soc. Med. (Sec. Trop. Dis. and Parasit.)*, vol. 15, No. 4, p. 16, 1922.
- <sup>16</sup> Payne, Florence K.: Investigations on the Control of Hookworm Disease, *xiv, Amer. Journ. of Hyg.*, vol. 3, p. 46.

## THE INFLUENCE OF INTESTINAL BACTERIA UPON THE THYROID GLAND.

BY

D. J. HARRIES, M.D., D.Sc., B.S., F.R.C.S.,  
SURGEON, CITY LODGE HOSPITAL, CARDIFF; ASSISTANT SURGEON,  
KING EDWARD VII HOSPITAL, CARDIFF.

SEVERAL years ago Sir Arbuthnot Lane suggested that exophthalmic goitre was produced by the toxins absorbed from the alimentary canal in intestinal stasis, and advocated colectomy as one of the methods of treatment. As a result of several years of study of the diseases of the thyroid gland I have arrived at the conclusion that his suggestion regarding the etiology of the disease was nearer the truth than most people thought at the time. His suggested method of treating the disease has not been widely adopted.

To appreciate the conclusions I have arrived at it is necessary to consider some factors arising out of the metabolism of certain proteins; these factors bear an intimate relation to the causation of diseases of the thyroid gland.



### *The Normal Digestion of Proteins in the Alimentary Canal.*

All proteins are broken down into amino-acids, and, with the exception of gelatin and some protamines, produce aromatic as well as other amino-acids. In this article I am concerned only with the amino-acid tryptophane. Normally a certain percentage of this substance is absorbed into the blood and utilized in the metabolism of the body; the remainder is decomposed in the alimentary canal, with the production of indole and skatole. These bodies are absorbed and then converted into indoxyl and skatoxyl potassium sulphates and excreted as such by the kidneys into the urine, where they can be identified and estimated.

### *The Importance of Tryptophane in Diseases of the Thyroid Gland.*

It has recently been shown by Professor Kendall that thyroxin, the active principle of the thyroid gland, is a tri-iodo tri-hydro derivative of tryptophane; the exact chemical formula is a matter of very little importance, as far as this article is concerned. For the time being I am taking for granted the generally accepted idea that exophthalmic goitre is due to the excessive production of thyroxin; that diffuse parenchymatous goitre is an attempt at producing a sufficient amount of thyroxin for the needs of the body by compensatory hypertrophy of the gland; and that in myxoedema there is a failure of the gland to produce the necessary amount of thyroxin. Acting on the assumption that these ideas were somewhere near the truth, I investigated the factors controlling the supply of tryptophane to the thyroid gland, and the variations in the supply in the diseases mentioned above. Theoretically we should find that in exophthalmic goitre the gland is well supplied with tryptophane, that in parenchymatous goitre the supply is inadequate, and that in myxoedema either the supply is very inadequate or else the gland is unable to utilize the supply available. Before proceeding farther it is necessary to have a rough idea of the normal flora of the intestine.

### *The Normal Flora of the Intestine.*

The flora can be divided into two main groups: the fermentative or acid producers, and the putrefactive or indole producers. Normally both groups are represented in the human intestine, but in disease, and experimentally in health, one group assumes undue, and sometimes absolute, predominance over the other. It has been proved that in the lower animals it is possible to change the predominant group in two to three days by making certain alterations in the food taken. In the human being, unfortunately, this is not easily done. Some time ago Dr. Distaso and I carried out a number of experiments on guinea-pigs, and found that the predominance of the indole producers runs parallel with the amount of indoxyl sulphate in the urine. We also found that by the addition of lactose to the diet we could destroy all the putrefactive indole producers in two to three days, and that the disappearance of the indoxyl sulphate from the urine occurred on the same day as the disappearance of the indole producers from the faeces. Within two days of discontinuing the lactose putrefactive organisms reappeared in the faeces and indoxyl sulphate in the urine.

### *The Application of these Observations to Diseases of the Thyroid Gland.*

During the last two years I have been fortunate in having a number of thyroid cases under my care at the City Lodge and King Edward VII Hospitals. The general practitioners of the district have also allowed me to examine several of their private cases.

Normally, in the human subject, the urine contains roughly 0.2 to 0.3 gram of organic sulphates and about 2 grams of inorganic sulphates per litre. The indoxyl sulphate was estimated by converting it into indigo and comparing the depth of the colour with a series of solutions of known strength. The total sulphates and inorganic sulphates were estimated separately by the benzidine method. I examined the urine of all the cases that I saw during the last two years, and I found that, as a rule, the total amount of organic sulphates runs parallel with the amount of indican in the urine. I also found that in all cases of well established exophthalmic goitre there was no indican in the urine. I now consider that the examination of the urine for indican provides a sound guide to the prognosis, as its early disappearance means that the case is certain to get worse. In

some very early cases I have been able to give such a prognosis.

If, in spite of medical treatment for two or three months, a particular case is not showing signs of improvement, and the symptoms are sufficiently pronounced to interfere seriously with the patient's health, I remove about half the gland—but only if there is no indican in the urine. The operation has no effect on the intestinal flora, or on the amount of indican in the urine, but the symptoms will be reduced for a few months, and during that period there may be a change in the flora. If there is no reappearance of the indole producers, then the symptoms recur, their severity depending on the activity and the amount of thyroid left. From these observations I concluded that the putrefactive indole producers had been exterminated in all cases of exophthalmic goitre, and that all the tryptophane was absorbed as such, and was therefore available for the production of thyroxin. The change in the flora takes place before the onset of definite exophthalmic symptoms and is responsible for the diminution, and later the disappearance, of the indican from the urine.

In cases of parenchymatous goitre there was no diminution in the amount of indican—in fact, most cases showed a slight increase with 0.4 to 0.5 gram of total organic sulphates per litre, indicating a predominance of the putrefactive indole producers. In these cases a fall in the amount of indican to below the normal is a sign of grave significance; it means that exophthalmic symptoms are likely to supervene—in other words, the indole producers are being replaced by the fermenters.

In one case of myxoedema investigated there was no indican in the urine—a condition suitable for the development of exophthalmic goitre—and the absence of symptoms can be explained by the atrophic condition of the gland found in all cases of myxoedema.

### *The Intestinal Flora in Exophthalmic and Parenchymatous Goitre.*

Dr. W. Parry Morgan has kindly examined the faeces of some of my cases, and his results have been exactly what I expected from my analysis of the urine and the results obtained experimentally in lower animals by Dr. Distaso and myself. In other words, the indole producers are absent in exophthalmic and present in parenchymatous goitre.

It is well known that women often develop parenchymatous goitre in the hill stations of India, and McCarrison has shown that this is due to the contamination of the drinking water by a coliform type of bacillus, an indole producer, which is what one would expect. It is possible that the altitude has something to do with the rapidity with which the indole producers obtain predominance, as it has a definite influence on the rate of growth of various bacteria.

### *Methods of Altering the Character of the Intestinal Flora.*

Distaso showed that, in rats and guinea-pigs, the addition of lactose to the diet for two or three days suppresses the growth of the putrefactive group. Torrey showed that dogs behaved in much the same way, and that dextrin acts more powerfully than lactose; also that unboiled milk and animal proteins stimulate the growth of putrefactive organisms, while boiled milk and vegetable proteins tend to suppress them. Distaso found that, in the healthy human being, lactose, given by the mouth, produces very little effect on the indole producers, and this explains the absence of any change in the amount of indican found in the urine.

### *TREATMENT OF EXOPHTHALMIC AND PARENCHYMATOUS GOITRE.*

It is unnecessary to discuss the treatment of myxoedema as this is now familiar. The fact that the administration of thyroid extract has to be continued as long as the patient lives shows that the thyroid gland never recovers once myxoedema is established, and the absence of indole producers from the intestine shows that the disease is not caused by an undue destruction of tryptophane, but by the inability of the thyroid to utilize the material at its disposal. In parenchymatous goitre it is necessary to encourage the growth of the fermentative group by cutting down animal proteins and giving fats, vegetable proteins, boiled milk, rice, bread, and dextrin or lactose. The amount of lactose required to produce any appreciable effect is considerable—1/4 to 1/2 lb. a day—and therefore not within the realm of practical treatment.



In exophthalmic goitre unboiled milk, eggs, and fish should be given freely. The supply of meat protein should be controlled by the symptoms and the examination of the urine. In the complete absence of indican, and therefore of putrefactive organisms, the administration of meat aggravates the symptoms, but in the presence of indican meat will encourage the growth of the putrefactive bacteria already present. I have found that in the complete absence of indican the patient is more comfortable if all animal protein is withheld, and jelly given instead. The reason is obvious, as jelly contains no aromatic radical. In serious cases, with pulse rates of 150 or over, I have found this fact of great value. It is rare for the pulse rate not to fall below 120 if animal protein is withheld for a fortnight; in addition, the patient feels better, and the dangers of an anaesthetic will be reduced if the goitre has to be treated surgically.

#### Operative Treatment of Goitre.

Obviously, a case of parenchymatous goitre with no exophthalmic symptoms superadded is not benefited by removing a part of the gland unless the trachea is pressed on and the breathing interfered with. Ladies, however, are prepared to sacrifice a lot in the interests of their personal appearance. Needless to say, I am not referring to adenomatous or cystic goitres, which are obviously surgical conditions.

In exophthalmic goitre I am guided by the intensity of the symptoms, by the result of dietetic and medical treatment, and especially by the absence or presence of indican in the urine. The complete disappearance of indican, as I have already insisted, means that the chances of early improvement are remote, and if the symptoms are at all severe I advise operation. Partial thyroidectomy improves the patient for several months, as it diminishes the amount of thyroxin manufactured. The operation does not attack the cause of the disease, but the improvement in the symptoms may be enough to justify the operative risk. Both parenchymatous and exophthalmic goitre are diseases which run a definite course; the patients get progressively worse up to a certain point, and then, for no apparent reason, they improve, and ultimately get perfectly well—provided, of course, that the symptoms have not proved fatal before improvement sets in. The patients commence to improve when the intestinal flora becomes normal, and, in all probability, an acquired immunity to the suppressed organisms explains the difficulty found in re-establishing the normal flora in these cases. When the subject has been more fully investigated it may be possible, if such is really the case, to diminish or destroy this immunity. Possibly equally good results might be obtained by increasing the immunity of the body to the predominant group, as this would encourage the growth of the opposite group. It is possible that the improvement following removal of a part of the gland in exophthalmic goitre has a definite effect on the degree of immunity to the putrefactive group.

Unfortunately, bacteriology is still in a very primitive stage of development; comparatively unimportant matters have been fully investigated, such as the exact type of growth obtained on rare and complicated media, but very little interest seems to be taken in the exact chemical composition of the bodies formed by pathogenic bacteria when growing in animal tissues. When this subject is worked out, then we can hope to make a decided advance in our methods of treating the diseases caused by them.

The treatment of goitre by means of  $x$  rays is a non-operative method of destroying a part of the gland tissue, and its use should be regulated by the same considerations that govern operative treatment.

#### Medicinal Treatment of Goitre.

In parenchymatous goitre I doubt if any preparation does as much good as the local application of dilute mercuric iodide ointment; its beneficial results may be due to the excretion of some of the mercury into the alimentary canal. In exophthalmic goitre treatment is mainly symptomatic, and is useful in that it improves the patient's general condition and comfort; it does not cure the disease, and no one pretends that it does.

#### GENERAL CONCLUSIONS.

1. Exophthalmic goitre is due to the excessive absorption of tryptophane from the intestine; this in turn is traceable to the absence of the indole producers from the intestine.
2. The absence of indican from the urine indicates the absence of indole producers from the intestine.

3. In exophthalmic goitre the early disappearance of indican from the urine is of serious prognostic importance.

4. Operative surgery has a definite place in the treatment of exophthalmic goitre. Medically, much can be done by suitable dietetic measures.

5. Diffuse parenchymatous goitre is characterized by an excess of indican in the urine, suggesting an excessive destruction of tryptophane. If this excess gives place to a diminution or complete disappearance of indican, that suggests that the case is assuming the exophthalmic form.

6. Myxoedema is due to atrophic changes in the thyroid gland, which loses its capacity for dealing with the circulating tryptophane, whether that substance be excessive, deficient, or normal in amount. The disease is thus compatible with the presence or absence of urinary indican.

## THE TREATMENT OF INCIPIENT PHTHISIS.

BY

WILLIAM GORDON, M.D., F.R.C.P.,

SENIOR PHYSICIAN, ROYAL DEVON AND EXETER HOSPITAL.

More than a quarter of a century has now elapsed since the open-air treatment of phthisis was brought home again to this country by Dr. Burton-Fanning of Norwich and Dr. Jane Walker, and the time is ripe for a general stocktaking of sanatorium experience.

#### ENGLISH SANATORIUMS.

There is a general impression that this experience is on the whole disappointing, and recently Dr. Ernest Ward has shown that in his district working-class cases of phthisis have done better in their own homes than those sent to a sanatorium.

No one who remembers working-class consumption thirty years ago will regard open-air treatment as anything but a great advance; and since it was in sanatoriums that open-air methods were developed, no one can hold that sanatorium treatment in a general sense has failed. If there is failure in England, it must be due either to our climate or to defects in individual sanatoriums. That England is less capable than other countries of furnishing the best results is unproved, though the point needs investigation. But that individual sanatoriums are unsatisfactory is suggested by the variations which are becoming evident in the results of treatment in different localities.

#### THEIR HISTORY.

*Bodington.*—The open-air treatment of phthisis was an English discovery, first announced, in 1840, by Dr. George Bodington of Sutton Coldfield, but the English medical profession turned it down.

*Görbersdorf.*—Happily for the tuberculous, the German realized its value. In 1859 Brehmer opened the first open-air phthisis sanatorium at Görbersdorf in Silesia, and I would draw attention to two points about this sanatorium which have been curiously overlooked. In the first place Brehmer chose a locality almost free from indigenous phthisis. In the second place he chose a site which was exceptionally wind-sheltered.

*Davos.*—In 1862 Spengler of Davos pointed out that indigenous phthisis was rare amongst the inhabitants of his valley, and that such of them as had contracted it elsewhere frequently recovered on returning to their homes. In 1855 patients from Germany began to be sent to Davos and the results were eminently satisfactory. In Davos also there is remarkable wind-shelter, and this "wind-stille" has been insisted on by all competent writers as an important factor in the curative influence of the place.

*Nordrach and Falkenstein.*—The success of Görbersdorf led to the establishment of daughter sanatoriums in different parts of Germany. Two of these have been specially noteworthy—namely, Dettweiler's at Falkenstein and Wallther's at Nordrach. Nothing could be more striking than the contrast between their sites and their fortunes. For the first time in the history of sanatoriums we come upon a disappointment. Nordrach was a success; Falkenstein has been demolished.\* Falkenstein, the failure, stood high on the southern slopes of the Taunus, "well protected from north

\* The reason of the closure of Falkenstein has of course to be inferred. Medically successful phthisis sanatoriums do not close down. It is noteworthy that a new sanatorium has arisen at Falkenstein and that the sanatorium for the poor, opened at Falkenstein by Dettweiler on a small scale in 1892, was afterwards moved to a very different site, in marked shelter from westerly winds, at Rupperts-lahn, where it remains.



and east" (in the phrase so dear to some medical writers), but imperfectly protected from the western gales. The phthisis death rate of the neighbourhood was 4 per 1,000. Nordrach, the success, is situated in the heart of the Black Forest, at the end of a very sheltered valley, enclosed on all sides by forest-covered heights, facing south-east and with abundant sunlight, under a heavy rainfall, but on a porous, quickly drying sandstone soil, too high to be reached by the far-travelling Rhine fogs, remote from the dust of traffic and from the possible infections of neighbouring communities, and provided with numerous sheltered walks in the surrounding forest. So striking was its success that it became the Mecca of English chest specialists.

Walther.—This brings us to a very interesting personality—very fateful, as I believe, in the history of English sanatoriums—Dr. Otto Walther, "devoted to the English." We English owe mainly to him, I have little doubt, the highly interesting field of climatological inquiry afforded by the surprisingly variegated choice of sanatorium sites made in this country. For to me he gave precisely the advice that I was tired of hearing at home, having by that time discovered how incorrect it was. I visited his valley soon after 1900, and was at once impressed by the skill displayed in his own choice of locality. Walther had by no means followed the almost happy-go-lucky advice he gave to me; and Sir James Fowler has just told us that "it is clear that Otto Walther did not consider the site of his own sanatorium as of little or no importance. He visited more than 200 sites before finding one suitable!" Why, then, did he give his English visitors views so different from those indicated by his own most careful choice, without one word about shelter? One does not know. But his pilgrims went home, full of Teutonic inspiration, and sowed their sanatoriums broadcast, at immense expense, in the manner he had indicated, and have been wondering ever since why the success they looked for has hitherto eluded them!

#### THEIR DIFFERING RESULTS.

Only a few sanatoriums seem, so far, to have stated after-results. Dr. Ward's results in South Devon are so strikingly the best that, although his figures are smaller, it is necessary to include them. Seeing that the critical years, in which most deaths occur, include the first four years, we had better confine our attention to his results at the end of four years. For comparison we must deal with other statistics similarly, and this limits us to Frimley Sanatorium (1914 report), Midhurst Sanatorium (fourteenth annual report, 1920), and "Tuberculosis in London" (Dr. Bardswell, *Tubercle*, 1921). I shall only consider the mortalities. Also I shall only deal with "early cases."

Dr. Ward recognizes three stages of the disease—"slight, medium, and extensive." No distinction was drawn between cases showing tubercle bacilli and cases not showing them. For comparison, therefore, we must take together, in the other statistics, the tubercle-positive and tubercle-negative cases on admission. In the Frimley report I have considered the "full-time" cases. As equivalent to Dr. Ward's "slight cases" I have taken those described as "having physical signs indefinite or in one lobe." In Dr. Bardswell's paper the "early cases" are those of the Turban-Gerhardt classification. "Almost without exception, the patients underwent treatment in a sanatorium." The patients in these three categories are almost wholly "working-class."

The Midhurst report gives tables which make it possible for one to calculate the results of all the early cases at four years after their discharge; the Turban-Gerhardt classification is used. At Midhurst a much higher class of patient is dealt with.

Comparison of Results at Different Sanatoriums.

	No. of Cases.	Percentage Dead after Four Years.
South Devon (Dr. Ward)—		
Not been in sanatorium ... ..	114	2.6
Been in sanatorium ... ..	55	11.0
Frimley ... ..	197	15.0*
Midhurst ... ..	552	20.0†
"London cases" (Dr. Bardswell) ... ..	903	31.0

\* Not including 39 per cent. lost sight of.  
† Three per cent. lost sight of.

Here are surely differences which call for explanation. The reports are by able men; the sanatoriums, so far as they can be identified, are well built and arranged; the patients have been under most skilled care. Then why these differences? Have the sites anything to do with them? That site may exercise an influence the history just given suggests. My own work, published in 1900 and since, strongly suggests it.

The importance of site is gradually becoming recognized. A friend, interested in the matter, has told me a conversation with one who had worked in two Scottish sanatoriums—one on the rainy west, one on the drier east—who said that the patients in the east had done much better than those in the west. Again, at a meeting of the Tuberculosis Society last year the tuberculosis officer of an important northern district told us that formerly all their phthisis patients were sent to a neighbouring seaside town, which the map shows to be exposed to practically every wind, where, as he tersely put it, "they all died," and that, in view of such results, the new sanatorium was being built inland and in shelter from rain-bearing winds.

#### THE NECESSARY INQUIRY.

I would submit that an inquiry into the results of all sanatoriums in this country is necessary and might be carried out somewhat as follows:

1. Early cases only should at first be considered.
2. Only cases with bacilli in the sputum should be dealt with.
3. The results should be stated for each case at the end of five years, especially the "apparent cures" and the deaths.
4. "Working class" cases and well-to-do cases should be separated.
5. For the well-to-do the results should further be compared with those at foreign sanatoriums similarly treated.

#### INTERIM PROCEDURE.

In the meanwhile what are we to advise when an early case of phthisis comes before us? My own strong opinion is that he should be warned sedulously to avoid the following climatic conditions:

1. The tropics, except at certain great altitudes in wind-shelter, as in some valleys of the Andes.
2. The immediate sea front (a quarter of a mile inland seems to avoid its bad effect).
3. A damp soil.
4. Impure or dusty atmosphere.
5. Deficient air supply.
6. Deficient sunlight.
7. Fog.
8. Exposure to strong, prevalent winds, especially rain-bearing winds.

We obviously would keep at home cases of acute miliary tuberculosis; acute tuberculous bronchopneumonia; acute tuberculous lobar pneumonia in its acute initial stage; pulmonary tuberculosis supervening on any serious condition rendering home treatment desirable.

Those whom we may send away we shall do wisely first to send to a well placed and well managed sanatorium in this country. If the case seems to be doing well in the sanatorium, he would probably be well advised to stay for six months or longer. When he leaves, if he be a "working-class" patient, he will be fortunate if some open-air colony, in which he can work under supervision, is open to him, such as Dr. Burton-Fanning has instituted in connexion with the Kelling Sanatorium in Norfolk. If he is "well-to-do," the question arises whether England is the best place for him.

In England, I would advise some locality where phthisis is known to be uncommon and where climatic advantages, including shelter, seem to account for its rarity.

We must not lose sight of Dr. Theodore Williams's remarkable figures published in 1891. Dealing with "first stage" cases, "affecting one lung only," we may arrange them in tabular form, thus:

#### Percentages of "Arrest."

"High altitudes" (mainly Swiss) ... ..	63
Sea voyages ... ..	17
Riviera and South Europe ... ..	7

Of "high altitudes" he wrote: "The most surprising feature is the large figure of absolute arrests, which not only were far more numerous than in other climatic results, but were more complete."

I think it may fairly be said that early cases—young, vigorous, uncomplicated, with little or no fever, however



beginning (so long as haemoptysis has ceased)—will get their best chance at Davos, or at some other Alpine station with the climatic conditions of Davos—namely, pure, still, dry, cold, diaphanous, and diathermic air.

Unsuitable early cases for the high Alps are: acute cases, nervous, irritable people, elderly people, chilly people, most laryngeal cases, and those with much emphysema, with heart disease, or with albuminuria.

In choosing other foreign climates than Switzerland we must not forget that Australia, New Zealand, the Cape, Canada, and the United States no longer admit cases of active tuberculosis.

This leaves us a rather narrow choice. Sea voyages are by no means a safe prescription, particularly if they cross the tropics. The Riviera does not appear to give better results than can be obtained in England. Egypt at the present moment does not suggest itself as desirable. Las Palmas in Grand Canary has given good results; its climate should not be confused with the quite different climates of Orotava in Teneriffe and of Madeira. South-eastern Spain and the desert behind Algiers are still advised. In sending phthisical patients long distances their travelling powers must be considered, as well as the luxuries of travel and accommodation which they are prepared to allow themselves; also, and very important, the medical skill available in the health resort decided on. In the light of home sanatorium results all these localities will require consideration.

#### CONCLUSION.

To conclude, I would like to leave it clear that, from the foregoing comparison of open-air results, I claim to draw no final inference. They are too few, the definitions of "early" are too various, and the absence of uniform finding of tubercle bacilli renders the diagnoses too uncertain. *What I do claim, and claim strongly, is that they constitute a case for immediate investigation.*

## ACUTE PUERPERAL INVERSION OF THE UTERUS.

BY

C. S. LANE ROBERTS, M.S., F.R.C.S.,

CHIEF ASSISTANT AND TUTOR, WOMEN'S DEPARTMENT, ST. BARTHOLOMEW'S HOSPITAL; PATHOLOGIST AND REGISTRAR, SORO HOSPITAL FOR WOMEN.

The two cases of puerperal inversion here recorded were recently met with in hospital practice, and are published by Dr. Croft's permission.

#### CASE I.

A. L., aged 21, 2-para (the first being a miscarriage), a healthy woman with strong abdominal muscles, had a normal first and second stage, the latter lasting two hours; twenty-five minutes later the uterus was grasped to see if the placenta had separated, and as it was uncertain whether separation was complete control and pressure were maintained on a well contracted fundus, and, the patient of her own accord bearing down, part of the placenta appeared at the vulva. During this time there had been no excess of haemorrhage; the sister in charge then said the hand on the abdomen seemed to lose the uterus, and the emerging placenta was gradually followed by the completely inverted uterus, the whole appearing slightly larger than a foetal head, with part of the placenta separated but quite two-thirds remaining attached to the uterus, which accounted for the uncertainty of separation and the slight haemorrhage only. At once the parts were surrounded with hot sterile towels and the best available antishock treatment instituted.

Thirty minutes later (that is, fifty-five from delivery) I saw the case, finding the degree of shock markedly progressive, the patient looking extremely ill, with deep sighing respiration and almost imperceptible pulse. The inverted structures were not examined, but the abdomen gave no uterine swelling whatever, so that the condition was evidently one of complete uterine inversion. It was decided to leave the uterus *in situ*, with the placenta attached to avoid superimposing any haemorrhage on the prevailing shock. The antishock treatment was continued, though no morphine, no pituitrin, and no intravenous medication were administered, subcutaneous saline, hypodermic camphor, and ether being given.

Fifteen minutes later (that is, seventy from delivery) the patient appeared moribund, the pulse being quite imperceptible; so, as (1) her condition seemed hopeless, (2) she had not reacted to antishock treatment given for forty-five minutes, but had become steadily worse, (3) the husband had been sent for, (4) the apparatus was ready for an instant blood transfusion, it was decided to risk replacing the uterus. Accordingly the placenta was peeled off the uterus, very little haemorrhage occurring; the uterus was quite easily replaced through the relaxed cervix, and a hot intrauterine douche given; no pituitrin was administered as there was no bleeding of any account, and injec-

tion of this drug has been followed by reinversion. It was difficult to decide on the immediate effect of the replacement, as the general condition seemed so bad, but it appeared still further to deepen the shock, so that the case became quite hopeless.

Ten minutes later (that is, eighty from delivery) the husband arrived, so that transfusion was immediately performed of 22 ounces; the patient's colour slowly returned, and her condition improved.

The puerperium was apyrexial, and the lochia normal; on the fourteenth day vaginal examination showed the uterus a little bulky, but otherwise normal in shape, consistence, mobility, and position, so that the patient was discharged the same day.

#### CASE II.

A. H., aged 22, one previous child, had a difficult labour (forceps delivery) and severe post-partum haemorrhage. She got up on the tenth day and seemed quite well till the sixteenth day, when during the act of defaecation she felt her "womb drop"; the doctor sent for made a diagnosis of uterine inversion. The patient was admitted to hospital on the seventeenth day under Dr. Croft. Under an anaesthetic the vagina was found to contain a sloughy-looking mass, corresponding in shape and size to the inverted fundus of the uterus; the body of the uterus was not felt on bimanual examination. Manual replacement was found difficult owing to the rigidity of the cervix—the operation took close on forty minutes; it was followed by an intrauterine douche and iodoform pack; the chief difficulty, Dr. Croft said, was to start a dimpling of the uterine wall.

The puerperium was not eventful, and vaginal examination on the fourteenth day disclosed the body of the uterus normal and the cervix closed.

In the first case the result would certainly have been fatal had it not been possible to do blood transfusion. Owing to the lack of response to the antishock treatment, it seemed that there was nothing to be lost by risking replacement of the uterus, but the effect was apparently to deepen the shock as far as could be discerned with the patient in so precarious a way.

The ideal treatment would appear to be immediate blood transfusion with later replacement of the uterus. If blood is not available it would be worth while to try gum acacia solution, but saline seems useless if not harmful in certain cases.

Reference might be made to a case reported by Dr. Barris<sup>1</sup> of blood transfusion in a case of uterine inversion in which, two hours after delivery, the midwife tried forcibly to express the placenta and made traction on the cord, with the result that the patient felt something come down, and was admitted to hospital eleven hours later with the fundus inverted inside the vagina; the immediate treatment with pituitrin and a vaginal douche was directed to the prevention of shock. Two days later the first blood transfusion of 100 c.cm. was performed, and twenty-three days after that a second of 600 c.cm. Reposition of the uterus was done in the seventh week with an Aveling repositior, as there had been local sepsis and Carrel treatment had been called for.

The second case falls more into line with the series published in 1920 by Dr. Spencer, of which the first three cases were admitted with the inversion on the fifth, ninth, tenth, and twenty-second days, reduction taking place on the sixteenth, fortieth, and twenty-second days respectively, though in each it was uncertain when the actual inversion occurred; the next two cases occurred nine months, and two years and eight months, after labour; the last four being associated with tumours, and appearing seven, twelve, thirteen, and twenty-five years after labour, reduction in each case being effected by Aveling's repositior.

#### REFERENCE.

<sup>1</sup> Transactions of the Royal Society of Medicine, January, 1921.

DR. HUBBARD, director of public health education of the New York Department of Health, has recently published statistics which appear to show that since the last year before the prohibition law took effect there has been a constant increase in New York in the number of arrests for drunkenness, the number of deaths due to wood alcohol poisoning, and the number of persons admitted to hospital suffering from acute alcoholism. During last year 5,624 persons suffering from acute alcoholism were admitted to Bellevue and King's County hospitals, as compared with 3,545 in the preceding year. In 1922 the number of deaths from alcoholism was 295, as against 141 in 1921. The number of deaths, however, is smaller than it was in the years preceding prohibition; in 1916, for example, 690 persons died in New York from alcoholism; the low-water mark was reached in 1920, when there were 127 deaths, but since that time there has been a rapid increase. The number of arrests for drunkenness in New York in 1922 was 7,856, as against 6,233 in 1921.



## Memoranda: MEDICAL, SURGICAL, OBSTETRICAL.

### PSORIASIS.

In the BRITISH MEDICAL JOURNAL of July 8th, 1922, appeared a note recording marked benefit to a case of psoriasis by the administration of collosol manganese.

Having several cases under my care, I gave the method a trial. The first was an obstinate case of six years' duration. After eight doses she appeared on the high road to recovery, and I felt that at last a cure was found for an old enemy. Bearing in mind the danger of drawing conclusions from insufficient data, and the fact that patches of psoriasis often exhibit a tendency to clear up with almost any standard treatment, I placed seven other patients under the treatment.

The drug used was Crookes's collosol manganese, which was given by intramuscular injection. Vaseline was applied locally to the patches. No other medicine, internal or external, was used. The patients were girls of ages 12 to 17 years. Dose: four injections of 0.5 c.cm. at four-day intervals, followed by doses of 1 c.cm. for five to eleven doses.

Brief notes of the cases follow:

Case 1.—D. C., aged 17. Distribution: Head, back, chest, axilla, arms, and legs. The patches varied from the size of a threepenny piece to larger than that of a five-shilling piece. After receiving four injections of 0.5 c.cm. and four of 1 c.cm. the patient was immensely better—had not been so well for six years; there were only scars and staining. Treatment was continued, and seven further doses of 1 c.cm. were given. The improvement was not maintained, and within four months patches recurred as at outset.

Case 2.—A. G., aged 16. Elbows and knees had patches varying from the size of a shilling to that of half a crown. Treated with four injections of 0.5 c.cm. and seven of 1 c.cm. No improvement.

Case 3.—D. S., aged 16. Elbows, knees, and legs chiefly affected, the size of the patches ranging from that of a shilling to a threepenny piece. Had four doses of 0.5 c.cm. and seven of 1 c.cm. No improvement.

Case 4.—L. V. G., aged 14. Small patches on elbows, knees, legs, and back. Had four doses of 0.5 c.cm. and six of 1 c.cm. No improvement.

Case 5.—M. P., aged 11. There were patches from the hip to the knee the size of half a crown; from knee to ankle, and on chest, back, arms, and scalp they varied in size from that of a threepenny piece to a sixpence. The patient was treated with four injections of 0.5 c.cm. and eleven of 1 c.cm. There was no improvement.

Case 6.—M. Mc., aged 15. The arms had patches varying in size from that of a threepenny to a five-shilling piece; smaller patches on thighs, legs, and buttock; the back and scalp were also affected. Received four doses of 0.5 c.cm. and six of 1 c.cm. No improvement.

Case 7.—H. H., aged 11. There were patches on the back the size of a shilling to a five-shilling piece; large patch on thigh, and several patches on chest. Had four injections of 0.5 c.cm. and ten of 1 c.cm. The back showed slight improvement; no improvement of thigh.

Case 8.—N. L., aged 12. A few patches. Had four injections of 0.5 c.cm. and five of 1 c.cm. Slight improvement.

G. GUSHUE-TAYLOR, M.B., B.S., F.R.C.S.

Barkingside.

### PREGNANCY IN A FIBROID UTERUS.

A NATIVE woman, aged 26 years, was admitted to hospital on October 24th, 1921, with symptoms which seemed to point to suppurating ovarian cyst, pyosalpinx, or ectopic gestation. There was a tumour on the left side of the pubes and a painful mass, which could be felt from the vagina, behind the cervix. She had a good deal of pain, which had increased very much since she had been previously discharged from hospital, on October 17th. She had been admitted originally for the same complaint on October 5th, 1921, and after rest in bed and fomentations the pain was relieved, but as I was not sure as to the presence of pregnancy I decided to wait, and discharged her from hospital. However, she was readmitted, and two days later I operated. I found that the uterus was a mass of fibroid tissue, except for the anterior surface; a fibroid tumour, about the size of an orange, projected from the postero-superior surface. The uterus was becoming impacted in the pelvis; it was removed by subtotal hysterectomy, and was found to contain two fetuses of about two months' development. The patient was unmarried and at first denied the possibility of pregnancy, but later admitted having missed one period. She was discharged from hospital quite well on November 28th.

G. M. ROLSTON, F.R.C.S. Edin.

Antigua, B. W. I.

## British Medical Association.

### CLINICAL AND SCIENTIFIC PROCEEDINGS.

#### BIRMINGHAM BRANCH.

THE third ordinary meeting of the Branch was held at the Medical Institute, Birmingham, on February 15th, the chair being taken by Mr. ALBERT LUCAS, President of the Branch. Mr. SEYMOUR BARLING opened a discussion on "The diagnosis and treatment of chronic ulcer of the body of the stomach."

Having referred to the many unsettled problems connected with the etiology of the initial condition and the causes which led to recurrence, Mr. Barling proceeded to a detailed assessment of the relative values of clinical, radiographic, and chemical investigations in arriving at a diagnosis. Two former must, he said, be considered: radiography gave a confidence and accuracy which nothing else did, it was occasionally wrong. With reference to treatment, the scope and limitation for medical treatment were first considered, and then the most suitable surgical procedures discussed. Mr. Barling considered that the ideal operation should consist in removal of the site of the ulcer together with a drainage operation, to alter the physiological and mechanical conditions of the stomach. These criteria were secured by partial gastrectomy, also by excision of the ulcer or its destruction by cautery, followed by gastro-enterostomy. He did a partial gastrectomy in more than half his cases at the present time, but preferred the less mutilating operation of excision and gastro-enterostomy in the less severe cases. In his experience malignant disease following ulcer was of less frequent occurrence than the figures given by many surgeons would have led one to suppose. In a series of fifty five cases, of which 50 per cent. were of ten years' standing or over, only two were found in which clinical or microscopical evidence pointed to this having occurred.

Mr. W. BILLINGTON advocated double gastro-jejunostomy, in order to drain the stomach on each side of the ulcer, together with entero-enterostomy. He pointed out that this operation was applicable to all cases, whereas partial gastrectomy was not. He found that this procedure gave immediate results greatly superior to any other method he had tried, and after four and a half years' experience of it had had no cases returned to him with recurrence of symptoms.

Dr. HAROLD BLACK said that as a rule no help was afforded by radiography in the detection of acute ulcers. In chronic ulcer positive evidence of the presence of ulcer was obtained when the actual ulcer crater was seen. When no crater was seen the presence of ulcer might be surmised when certain changes in the anatomy or function were present. These changes were demonstrated by lantern slides and their reliability as evidence discussed.

Dr. T. L. HARDY stated that fractional studies of the gastric contents in these cases showed that the curves mainly followed the normal type and that help in diagnosis could not be expected from them. As regards treatment, he thought that this should invariably be carried out in three stages—preliminary treatment, treatment proper, after-treatment. The work of Rosenow, and more recently that of Kopeloff, afforded ample experimental evidence of the importance of infection in the mouth, nose, and nasopharynx, and the removal of septic foci as a necessary and preliminary step. He pointed out the principles on which treatment proper should be based, due weight being given to x-ray and chemical findings. He laid special emphasis on the need for prolonged and thorough after-treatment, and thought that results would be greatly improved if more attention was paid to this aspect. The better education of the patient in regard to his disability was much to be desired, and written instructions as to diet and mode of life should always be given.

Dr. G. A. WILKES said that it was the part of the general practitioner to diagnose gastric ulcer in its early stages. He mentioned the three cardinal symptoms of pain, hæmatemesis, and melaena; but at an earlier stage he pinned his faith to the "nerve reflex" of skin and muscle tenderness with rigidity. Recurrent attacks of the nerve reflex meant ulcer. The position of the tender area indicated the position of the ulcer in the stomach.

Sir GILBERT BARLING emphasized the necessity of excising the gastric ulcer and of performing gastro-enterostomy at the



same time. He had adopted this as the operation of choice many years ago after a fatal case of haemorrhage following gastro-enterostomy. The haemorrhage had taken place from the floor of the ulcer, which had not been excised at the time of operation. Additional reasons for the excision of the ulcer were the risks of perforation and cancer. The latter followed simple ulcer sufficiently often to make excision imperative. Finally, the patient whose ulcer was left *in situ* led a very miserable existence.

#### CAPE OF GOOD HOPE (WESTERN) BRANCH.

##### *Infective Tonsillar Disease.*

A MEETING of the Cape of Good Hope (Western) Branch of the British Medical Association was held in Cape Town on February 23rd, when the President, Dr. C. M. MURRAY, occupied the chair. The business of the evening was a debate on "The etiology, symptomatology, and treatment of infective tonsillar disease," organized by Mr. C. E. JONES-PHILLIPSON.

Dr. W. P. MULLIGAN opened the discussion with an account of the bacteriology and etiology from the laboratory viewpoint. He divided infective tonsillar disease into acute and chronic types: the former included pyogenic infections, Vincent's angina, diphtheria, and scarlatina; the latter comprised tubercle, syphilis, and numerous obscure tropical conditions, which produced infective tonsillitis. Predisposing factors, particularly in children, were discussed by Dr. C. H. KRÜGER, who gave a comprehensive and practical review of the tonsillar ailments of early childhood. The problems of diagnosis were dealt with by Mr. R. L. SCOTT. Acute follicular tonsillitis and acute septic sore throat were discussed in detail, while chronic cryptic and chronic suppurative tonsillitis were presented as typical chronic affections requiring skill in elucidation. Tubercle, syphilis, keratosis pharyngis, and Vincent's angina were considered in turn. The clinical picture was presented by Mr. J. LÜCKHOFF. The recurring pharyngitis, the accumulated debris in a tonsil lacuna, the lymphatic hyperplasia of an incomplete enucleation, and the frankly diseased tonsil were indicted seriatim and related with the long train of general symptoms and illnesses for which they might be individually responsible. The question of the possibility of the tonsil being an internal secretory gland was discussed. Mr. C. E. JONES-PHILLIPSON followed with a consideration of prognosis. He argued that in the vast majority of acute cases the prognosis was good, but the outlook was bad in all chronic tonsillar infections, chiefly on account of associated sequelae. Acute attacks represented efforts on the part of the lymphoid tissue of the tonsil to produce a natural immunity. If these efforts failed, the tonsil itself then became a positive source of danger. Children starting adolescent life without a healthy tonsil were very seriously handicapped. The prognosis of general systemic disorders resulting from the entry of organisms by way of an unhealthy tonsil was discussed. The end-results of enucleation were briefly reviewed. Mr. PH. A. SMUTS confined himself to the treatment of acute and chronic tonsillitis of the more usual type. He dwelt on the fact that mere hypertrophy was often not a sufficient cause for tonsillectomy, and that small tonsils often emitted unexpected pus on pressure. He argued that tonsillectomy was the only certain cure for chronic tonsillitis, and in conclusion discussed the employment of suction apparatus in throat surgery. Dr. G. W. BAMPFYLDE DANIEL made a contribution to the question of anaesthesia in tonsillar surgery. He condemned the use of chloroform and of closed ether, and gave as his opinion that the anaesthesia of choice was open ether with or without oxygen. Dr. S. E. KARK wound up the discussion, and made some interesting observations on the etiology and significance of adenoid disease.

Dr. W. F. RHOADS, assistant bacteriologist, Union Health Department, then read a paper on the diagnosis of diphtheria in the laboratory, the significance of the Schick reaction, and the divergence of opinion regarding the dosage of antitoxin and its value in dealing with contacts. Mr. P. M. DANIEL, Dr. R. M. MUIR, Dr. W. A. RAIL, Dr. N. O. WILSON, Dr. A. REITH FRASER, Mr. LÜCKHOFF, Mr. SCOTT, Mr. JONES-PHILLIPSON, and Mr. SMUTS took part in the ensuing discussion.

AN International Congress of Municipal Hygiene will be held at Strasbourg from July 15th to 18th. The subscription is 25 francs. Further information can be obtained from M. Albert Paréty, 10 Rue Lavoisier, Paris.

## Reports of Societies.

### PSYCHONEUROSIS AND MENTAL DEFICIENCY.

At a meeting of the Section of Psychiatry of the Royal Society of Medicine on March 13th, Dr. C. HUBERT BOND presiding, a brief discussion took place on the association of psychoneurosis with mental deficiency.

Dr. C. S. MYERS gave details of two cases in point, both of youths of adolescent age who had the minds of children of six or eight. In both cases the influence of an early emotion was pronounced, in one that of fear, and in the other that of a germinating sexual feeling. The original experience (that of a funeral) of the first was not repressed at all, but the youth was very voluble on the subject, and all his talk was coloured by the circumstances of death and the grave. In the second case the original experience was only recoverable in the hypnoidal state, and the removal of the repression seemed to bring about a noticeable improvement. In this case the demeanour of the lad was one of prurient curiosity. Dr. Myers suggested that not only was the mental deficiency responsible for the gravity of the psychoneurotic condition, but that the latter reacted in turn on the slowly developing mind of the mentally defective child and aggravated the deficiency. It was unlikely that mental deficiency was ever direct'y and solely due to a psychoneurosis, but he was convinced that certain cases of mental deficiency could be enormously improved if attention were paid in early life to any concomitant psychoneurotic disturbance.

Dr. HUBERT BOND said that looking back upon his past clinical experience he could not recall that cases of mental deficiency were at all prone to show anything like a psychoneurosis, but certainly cases of that type often showed the psychoses, which were quite definite. It was exceedingly rare for cases of mental deficiency to show anything like true paranoia. On the other hand, so-called moral imbecility had been likened rather to a paranoid condition than to true mental deficiency, and he thought there was something in that argument.

Dr. MYERS, in answer to questions, said that he was inclined to doubt whether, without any mental deficiency or backwardness to begin with, a psychoneurosis, however strong the disturbance, could produce a mental defect.

#### *Genius and Insanity.*

Dr. H. J. NORMAN opened a discussion on genius and insanity. He admitted that a satisfactory definition of either term was difficult, but some relationship between the two things had been long noted. Even Aristotle observed that literary men—poets in particular—suffered from melancholia. Seneca made a similar remark. The so-called demon of Socrates was a hortatory hallucination. More dogmatic writers had stated that genius was really a neurosis. That, of course, was far too sweeping. One of the most satisfactory definitions of genius was by a man who himself was a good example of it, and who eventually committed suicide—B. R. Haydon, the historical painter of the early nineteenth century. Haydon described genius as nothing more than "our common faculties refined to a greater intensity." Huxley said that genius meant innate capacity of any kind above the average mental level, and that the genius among men was in the same position as the sport among animals and plants. To Dr. Norman it seemed that the brain organization of different individuals must be as varied as the facial expression or the muscular development. Certain types of brain must be more prehensile than the rest, have a greater potential for education, be able more readily to acquire knowledge, and have greater capacity for storage. In such brains there must be marked development of the association fibres and ready facility for canalization. In fact, their structure represented the latest development and the highest acquirement, and therefore, as Hughlings Jackson said, they were the most complex, the least organized, and the likeliest to break down. It was, of course, a fallacy to say that because a genius became insane therefore insanity was the cause of genius. That argument was disproved at once by the production of a single genius who was not insane. But it was obvious that in the genius there was instability of the nervous system, resulting in a brain of exceptional calibre for as long as the system maintained its balance, but with a tendency to topple over into insanity. When the insanity occurred, as a rule the genius came to an end. The two did not run concurrently, though they might



alternate. An example of this was Nietzsche. With confusional insanity it would be quite impossible to have any collective mental effort. On the other hand, mania in a mild degree might cause the mental processes to go forward more rapidly. This was observed quite frequently in the early stage of mania. With paranoia, even when persistent, there could be great mental power. But insanity might and often did terminate a period of mental brilliance. It was all a question of unstable equilibrium. There was one other factor involved which it was too early as yet to discuss. It was possible that these changes from mental brilliance to insanity were due to fluctuations in the discharges of one or other of the ductless glands. The fact that epilepsy might be associated with an extraordinary outburst of mental energy was possibly connected in some way with the ductless gland secretions. Dr. Norman believed that the whole question could be approached best from the biological standpoint. Little progress was to be made so long as it was made a matter of pure psychology.

Dr. W. H. B. STODDART doubted Dr. Norman's premisses. He himself had known two great geniuses whose names would be remembered to the end of time—Huglings Jackson and Professor Freud—and both of them were extremely sane individuals. Darwin, Copernicus, and Galileo were undoubted geniuses, but he had never heard their sanity impugned. Nobody doubted that the mind and the nervous system were intimately related, but the point of view of psychology was that the study of the nervous system was not sufficient to lead to a knowledge of psychology, normal or morbid; it was necessary to take, as it were, a dive off the deep end and approach psychology *per se*. Psychoanalysts had found that they were able to explain the psychoneuroses and, to some extent, the psychoses in a way that was not possible by the mere study of the morbid anatomy of the nervous system. In some of the psychoses there was no morbid anatomy; the nervous system was perfectly normal.

Dr. BERNARD HART said that it was out of the question to maintain that genius was invariably insane; yet genius and insanity did occur together in a sufficient number of cases to lead one to search for some connexion. He himself favoured the conception that human beings were, roughly, divisible into two types, the sensitive and the stable, the former reacting continually to outward impressions, the latter able to shut out events and pursue their own steady way. To the extra-sensitive type would no doubt belong the larger proportion of the insane, and also the larger proportion of geniuses.

Dr. JOHN CARSWELL read some autobiographical notes he had collected from the writings of Robert Burns. These gave evidence of a constitutional neurasthenia in the Scottish poet, and of an almost definite melancholia.

### THE INFLUENZA PANDEMIC, 1918.

At a meeting of the Pathological Section of the Sheffield Medico-Chirurgical Society held at Sheffield University on March 22nd, with the President, Dr. RUPERT HALLAM, in the chair, Professor J. G. ADAMI, F.R.S., gave a masterly survey of the development and pathology of the great influenza outbreak of 1918.

Professor Adami at the outset apologized for having no recent work to put before them, as his work as Vice-Chancellor of Liverpool University left him little time for pathology. It had been his task to draw up a report on influenza affecting the troops. That report, finished two years ago, had unfortunately not yet been published, and he was afraid that by the time it was published it might be out of date. The commencement of the great epidemic was usually considered to have been about April or May, 1918. But there were records of sporadic groups of cases often called "purulent bronchitis," for apparently influenzal, occurring as far back as December, in bed and would therefore regard the epidemic as presenting not sure as to the phases in its development: (1) From and discharged her frolier, to May, 1918, sporadic groups of admitted, and two days later as influenzal. (2) From May to uterus was a mass of fibroid of cases, of short duration, com-surface; a fibroid tumour, aboudays' flu." (3) The autumn of jected from the postero-supericvere cases, with an appalling becoming impacted in the pelvis; 1. hysterectomy, and was found to cont. the epidemic there were two months' development. The pati must keep in mind as at first denied the possibility of pregnan. One and the same having missed one period. She was disch. types of lesions in quite well on November 28th.

C. M. ROLSTON.

Antigua, B. W. I.

different stages of the epidemic, because it had acquired increased virulence as the epidemic progressed. Further, secondary invasions were common. In 1916 and 1917 sporadic groups of cases of "purulent bronchitis" were reported and studied by different observers at Etaples, Boulogne, Aldershot, and in America. Fatal cases usually presented the following common features: acute bronchitis and bronchiolitis with purulent exudation, denudation of the lining membrane, and the presence of a small Gram-negative coccobacillus, the air cells being but little affected. In some of these cases Pfeiffer's bacillus was grown in pure culture from the terminal bronchioles, but in most of the cases before 1918 their influenzal nature was not recognized. The pathological lesions were essentially similar to those found in the influenza cases of 1918.

Dealing with the *post-mortem* appearances of the 1918 cases, it was pointed out that one cardinal feature was the regular presence of tracheitis. The larynx and uppermost rings of the trachea usually escaped, but its lower third and bifurcation were almost constantly acutely inflamed. In this area intense purple congestion was followed later by desquamation of the ciliated epithelium. This acute desquamative inflammation appeared to have begun near the bifurcation, and to have spread both upwards and downwards. It was of great significance. Removal of the ciliated epithelium at this spot meant the disappearance of the last effective barrier to the invasion of the lung by inhaled bacteria. This helped to explain the great frequency of secondary invasions in influenza. Further, it was noteworthy that the secondary infections most commonly met with in this disease were by those organisms least susceptible to the bactericidal action of serum. It should be remembered that it was precisely on this area—the neighbourhood of the bifurcation of the trachea—that those bacteria which had succeeded in passing the defences of the upper air passages would impinge.

The difference in the lesions of the lungs found in the last and more severe stage of the epidemic from those found in the earlier and less severe cases was largely due to the increase in virulence of the bacillus, already alluded to. A classical observation of Metchnikoff's illustrated this point. He injected anthrax virus into the two ears of a rabbit; in one ear he injected a strongly active virus, in the other ear an attenuated virus. The stronger virus produced serous exudation and haemorrhages, the weaker one caused cellular infiltration. Corresponding differences were exemplified in the lung lesions of the more severe and less severe cases of this epidemic. In some of the severer cases the lesions seemed brought about by intense toxic action rather than by direct invasion. As regards secondary invasions the pneumococcus, a haemolytic streptococcus, and *Staphylococcus albus* were those most frequently met with.

Summing up his observations, the lecturer considered that the following postulates were justified:

1. One agent, and one only, was primarily responsible for the cases of the pandemic.
2. This agent was the influenza bacillus.
3. In the majority of cases other organisms invaded the lungs and were responsible for many of the conditions found in fatal cases.

He considered that pathologically the cases studied presented a characteristic series of changes which in their totality, in their succession and association, were specific and peculiar to this one disease. He especially emphasized in this series acute tracheitis characterized by denudation, and acute bilateral bronchitis and bronchiolitis, with purulent exudation in the milder cases, sanguineous in the more virulent, and with relatively slight involvement of the air cells. Nothnagel's account of the pathology of the great epidemic in 1890 and the following years corresponded very closely with our later findings.

On the motion of Professor DOUGLAS, seconded by Dr. PLEASANCE, a hearty vote of thanks was accorded to the lecturer.

### INTRACRANIAL AEROCELE.

A MEETING of the Section of Pathology of the Royal Academy of Medicine in Ireland was held on March 2nd, with Dr. GOULDING in the chair, when Sir WILLIAM WHEELER and Dr. E. C. SMITH read notes of a case of intracranial aérocele, with pneumococcal meningitis.

The diagnosis of fracture of the anterior fossa of the base of the skull could be made with certainty. The patient was mentally confused, but was able to swallow and to answer questions with fair



intelligence. The skull was opened over the right frontal lobe. On incising the dura, air bubbled out in small quantities, followed by blood-stained cerebro-spinal fluid. The general blood pressure was low and the brain correspondingly retracted. The frontal lobe of the brain appeared in no way injured, but on free exposure an unusual phenomenon was observed. The patient was breathing heavily; on inspiration the frontal lobe moved upwards from the base of the skull, and fell back again on expiration. This movement of the brain, synchronous with respiration, was well marked, and rendered obscure the natural pulsation. It was obvious that air under some pressure was passing from the nose through a rent in the dura in the neighbourhood of the cribriform plate of the ethmoid and roof of the orbit. It was difficult, however, to understand, with the dura widely opened by the operation, how the force of air was sufficient to raise the brain on each inspiration; yet the movement was indistinct. After operation the condition of the patient improved considerably. Hexamine was administered freely by the mouth, and small doses of hyoscine assisted in controlling restlessness and irritability, which at times increased to a state of violence. Six days after operation the temperature rose to 102° F., the patient became stertorous and the pupils dilated. The larger than the left; both contracted faint conjunctival reflex. Dr. Milne then withdrew by tumour puncture 30 c.cm. of turbid fluid, containing a pure culture of pneumococci. During the withdrawal of the fluid the blood pressure fell from 130 to about 110, and rose again about fifteen minutes afterwards. The temperature continued to rise until it reached 105°, and the patient died of meningitis on the eighth day after operation.

In a paper by Grant of Philadelphia (*Surgery, Gynecology, and Obstetrics*, February, 1923, p. 251) is recorded a case of intracranial aneurysm following a fracture of the skull; Grant had found ten recorded cases of the condition in recent years. The recorded cases suggested that, owing to the danger of infection, the presence of pneumocranium immediately following injury was an indication for operation, and an attempt should be made to close the dural tear. If five or six days had elapsed, when aneurysm was discovered, the sinus might have spontaneously closed, and the policy of watchful waiting for absorption should be adopted. If the possibility of infection could be excluded, the air was relatively innocuous, and would be ultimately absorbed. In making the diagnosis of fractured base of the skull, it was convenient to consider the signs in three classes—certain signs, probable signs, and uncertain signs. If cerebro-spinal fluid escaped from the nose, ear, or mouth, a fractured base was certain; in rarer cases, brain matter might be extruded, which also rendered the diagnosis certain, and a third certain sign might be added—namely, the demonstration of an aneurysm by a skiagram. The points of interest in the case recorded were: (1) the intradural presence of air; (2) the rise and fall of the frontal lobe with respiration; and (3) early dilatation of the pupil on the side of injury without other ocular signs, in the absence of compression, and before the onset of meningitis. Having regard to the high mortality from infection to the meninges in fractures of the base of the skull communicating with the external air, and notwithstanding the general trend of opinion in favour of operation, it seemed questionable whether treatment along conservative lines would not be followed by better results.

Dr. E. C. SMITH exhibited the specimens, and the case was discussed by Dr. CROFTON and Dr. WIGHAM.

Dr. J. H. POLLOCK read (1) a note on an unusual case of pneumococcus infection, with abscess at the root of the aorta, and (2) a note on pernicious anaemia, illustrated by the records of several cases treated by blood transfusion.

Dr. CROFTON read a paper on the treatment of a case of uric acid calculi by therapeutic immunization; by immunization against the microbes isolated from the skin and from the intestinal tract he was able to reduce the production of urates in the body.

Sir WILLIAM WHEELER drew attention to the flooding of the caecum and lower ileum with micro-organisms after purgation. He was of opinion that the presence of bacilli in the urine was consistent with health, and might be indicative of action of the healthy kidneys, although later, in the presence of added pathological conditions, they might lead to disease.

At a meeting of the Bath Clinical Society, held at the Royal United Hospital, Bath, on March 2nd, with Mr. W. G. MUMFORD, President, in the chair, Dr. H. H. BUTCHER read a paper on tropical abscess of the liver. He laid stress on the number of amoebic carriers among soldiers returned from service in the East, and was practically certain that there would be an increased incidence in the disease during the next few years. The causative protozoon was described and the methods of identification outlined. After tracing the path of the pathological features of the disease, Dr. Butcher passed on to an account of the symptomatology, and finally to the problem of differential diagnosis. Cases and specimens were shown by Dr. S. MARLE, Dr. V. M. COATES, Mr. A. L. FULLER, Dr. R. WATERHOUSE, Dr. F. G. THOMSON, Mr. C. H. TERRY, and Dr. R. G. GORDON.

## Rebels.

### REMEMBERING AND FORGETTING.

In a volume entitled *Remembering and Forgetting*,<sup>1</sup> Professor T. H. PEAR discusses the psychology of some of the most interesting facts concerning memory. In the earlier chapters he explains the processes of impression, retention, and recall; gives an account of after-sensations, primary memory images, and revived images; indicates the differences between sensations and percepts, and percepts and images; and discusses the functions of the image. These data constitute, of course, the usual subject-matter of conventional psychology, but the author deals with them along modern lines. He devotes particular attention to the problem of imageless thought and kinaesthetic sensations; he criticizes the extreme behaviourists who would deny the existence of the image, and aptly compares them to "the countryman whose surprise on seeing a hippopotamus caused him to declare that there was no such animal" (p. 62). The consideration of images leads up to psychology of dreams, a subject to which four chapters are devoted. As the author observes, the structural aspects of the dream provide a valuable way of studying the relation between image and meaning. The dream affords a perfect example of the alteration of values, for in it the images increase, decrease, and modify their values and functions very much as material wealth in war time. The dream theories of Freud and Rivers are outlined, and an endeavour is made to show that the processes of condensation, dramatization, and secondary elaboration are operative in determining the structure of thought in waking as well as dream states. Here, as throughout the book, the author's aim is to link up ordinary psychology with the recent developments of medical psychology.

A chapter is devoted to the important and difficult subject of forgetting, and, after discussing Freud's theory of repression and the views of other psychologists, some new and useful suggestions are made in regard to a provisional classification of forgotten experience. The volume contains an appendix dealing with subjects which serve to illustrate many principles laid down in the main part of the book. Professor Pear has written a book in which the student of psychology will find much of interest and value.

### PROBLEMS OF PRACTICAL SURGERY.

WHEN Mr. BURROW undertook to write a book entitled *The Mistakes and Accidents of Surgery*,<sup>2</sup> he shouldered a great responsibility. Fair and accurate criticism is at all times a delicate task, but where it is applied to problems so many-sided as those the surgeon has to consider when dealing with the diagnosis of conditions amenable to surgical treatment and the best way of carrying out that treatment, it becomes so extremely difficult that anything like dogmatism is out of place. The title is perhaps a little unhappy. It suggests that the volume deals with those unfortunate errors of judgement or manipulation to which all are liable, and it was no doubt on this supposition that the book was seized upon by a certain section of the lay press to furnish material for sensational articles with scare headlines. The author's main intention, however, seems to have been to discuss certain moot questions and only incidentally to refer to errors or accidents. "Mistake" is a strong word, and before accepting the view that it is properly applied to some particular course of action several things are necessary. It is, of course, conceivable that the departure from custom may be an improvement; but apart from this, when a procedure is criticized it must at the very least be shown that what was done was contrary to the general consensus of surgical opinion. With a great deal of what Mr. Burrows has to say most surgeons will agree, but there are statements and inferences with which many of them will not agree.

The book is arranged in sections according to the various parts of the body, and, as each portion comes under review, attention is drawn to various acts of omission or commission which Mr. Burrows regards as errors.

We come first to what the author holds to be errors in connexion with head injuries. He deprecates the application

<sup>1</sup> *Remembering and Forgetting*. By T. H. PEAR, M.A., B.Sc. London: Methuen and Co., Ltd. 1922. (Cr. 8vo, pp. xii + 242; 9 diagrams. 7s. 6d. net.)

<sup>2</sup> *The Mistakes and Accidents of Surgery*. By Harold Burrows, C.B.E., M.B., B.S., F.R.C.S. London: Baillière, Tindall, and Cox. 1923. (Demy 8vo, pp. viii + 472. 10s. 6d. net.)



of hygienic measures to the external auditory meatus in fracture of the middle fossa of the skull communicating with the middle ear; but we question whether the majority of surgeons would agree with him. It would seem, too, unnecessary to sound a warning against opening the dura when it bulges into a trephine opening; this is but a natural event, and as such it is recognized. Perhaps Mr. Burrows would imply some quantitative consideration, but in a critical treatise there is a duty to be exact. In the same connexion the advice that a bulging dura calls for lumbar puncture is of doubtful validity.

There is a chapter dealing with the errors which may arise in connexion with tuberculous glands in the neck, and many surgeons will be surprised to be told that the correct routes of access to the glands are obtained by incisions, "one along the front border of the sterno-mastoid for exposure of the anterior triangle, and the other along the hinder border of the muscle to open up the posterior triangle." We tremble for the intervening skin.

Mr. Burrows no doubt realizes that he is living in a glass house, and, though he has defied the advice of the proverb, we have no wish to throw stones; but we would remind him that the sterno-mastoid artery which accompanies the spinal accessory is not a branch of the superior thyroid, but is derived from the occipital, and that a hæmorrhage which occurs on the day succeeding operation is a reactionary and not a secondary hæmorrhage. When Mr. Burrows is engaged in criticism it is unwise to give the enemy an opportunity of hoisting him with his own petard. Mr. Burrows advises that the best way in which to define the internal jugular vein is "to free the digastric muscle and to retract it upwards." This piece of advice must be regarded as dangerous; it may indeed be fertile in disaster to the inexperienced operator.

A great deal of debatable matter is introduced into that portion of the book which treats of goitre; the section dealing with exophthalmic goitre contains the statement that "to operate for Graves's disease often is malpraxis." This, if we understand it aright, for the sentence is not clearly expressed, cannot be accepted as a good criticism, and the use of the term "malpraxis" is surely a mistake. We find it stated that "Tetany . . . probably is attributable to the removal of an excessive amount of the gland tissue"—there is no mention of the parathyroids; and again, crushing of the isthmus or the lateral lobe is condemned as an unnecessary and perhaps dangerous practice, Mr. Burrows maintaining that "it is better to cut through this structure with a sharp knife"; the conflict of opinion on this point is probably correspondingly acute. We dislike the advice that free drainage is necessary after thyroidectomy in order to remove the "surprisingly large" amount of colloidal material which may escape from the wound.

In speaking of tracheotomy it is said that "it takes a considerable time (from ten to twenty minutes) to kill a healthy man by suffocation"; many surgeons have had painful experience of the incorrectness of this pronouncement. The soundness of Mr. Burrows's advice that division of the isthmus of the thyroid gland is to be recommended as a routine step in the operation of tracheotomy is open to question. We would remind him also that his condemnation of the rigid tracheotomy tube is not generally accepted.

In discussing epithelioma of the tongue no mention is made of the importance of removing the omohyoid glands, and the risk of opening into the mouth during the dissection of the cervical lymphatics seems to be exaggerated. The section dealing with pleural effusions contains a great deal of debatable matter. In the operation for removal of the breast the statement that "attempts to save the subscapular nerves, for example, will not only take up precious time but may impair the thoroughness of the clearance in a vital situation" surely demands revision; many surgeons would regard it as very dangerous advice, especially for the beginner.

It is unnecessary to elaborate any further disputable statements; sufficient has been said to demonstrate that they are by no means sparse. Our considered opinion is that this book has failed in its object—if it is a criticism of the methods and judgement of others, it must be accepted as an individual criticism, and therefore by no means infallible. We do not think that any useful purpose has been served by its publication, because the place which it was intended to take is already occupied by the majority of our reliable textbooks, while many of the individual opinions which it expresses are open to serious criticism.

## PULMONARY TUBERCULOSIS.

To the third edition of the book on *Pulmonary Tuberculosis*, by Dr. FISHBERG of New York, two new chapters have been added—one dealing with the relations between pulmonary tuberculosis and the rest of the body, the other treating of the medico-legal aspects of the disease. The former subject is of especial interest, as it has hitherto been quite inadequately considered. So much attention is apt to be devoted to the intensive study of the lung lesion that its effect on the physiology of the body as a whole, and the converse systemic reaction upon the focal area of disease, has only too frequently been neglected. As an example of such a reciprocal influence the author remarks: "There seems to be a distinct antagonism between tuberculosis of the lungs and that of other organs which is not appreciated to the extent it deserves; its diagnostic and prognostic significance cannot be overestimated." Statistics relating to the percentage incidence of tuberculosis in other parts of the body in phthisical patients are given in illustration of this statement. On the other hand, lymphatism, chronic bronchitis, the arthritic diathesis, hyperthyroidism, and diminished activity of the gonads, amongst others, all tend to exert an inhibitory effect on the development of pulmonary tuberculosis, while other conditions, such as congenital hypoplasia of the heart, pulmonary stenosis, measles, whooping-cough, and puberty seem to favour its evolution. The influence of pregnancy is treated of very fully and in an eminently rational manner. Besides the introduction of additional subject-matter portions of the book have been rewritten so as to bring it thoroughly up to date. We can commend this work very highly; its original observations, its dispassionate method of presentation, and its careful foundation upon ascertained fact, serve to place it amongst the few genuinely authoritative books on pulmonary tuberculosis.

In *A Simple Treatment for Tuberculosis* Dr. OWEN F. PAGET describes his success in the cure of phthisis and of other tuberculous affections, such as those involving glands, bones, joints, and the genito-urinary system, by the nasal insufflation of tuberculin B.E. Severe febrile cases are given 1/6000 mg., subfebrile cases 1/500 mg., and mild afebrile cases 1/40 mg. The bacillary emulsion is made up in the form of a powder, which is introduced by an insufflator into the nostril of one or both sides on alternate days. Care is to be taken to direct the powder upwards so as to reach the region of the ethmoid and superior turbinate bones. The usual length of treatment appears to be about three months, and during the latter part of the period the treatment is accompanied by breathing exercises designed "to open up disused and formerly inflamed bronchioles and alveoli, and to assist the absorption and resolution of consolidated lung, to break down pleuritic adhesions, and to educate the patient in properly expanding his lungs and developing his chest." This treatment appears to be founded upon a belief that it is one of the special functions of the epithelial cells of the nasal mucosa to form antibodies to the tubercle bacillus. The author's original observation was made on a patient suffering from advanced phthisis. Despairing of offering him relief, he advised him to dry his sputum in the sun and sniff the powdered residue up his nose. This case responded in a most remarkable manner—so remarkable as to convince the author of the peculiar immunological properties of the nasal epithelium. To establish this he investigated the skulls of certain animals—the hyena, wild deer, leopard, and sheep—and found that they had very large noses. Now these animals do not suffer from tuberculosis, and the inference drawn was that this insusceptibility was due to the extraordinary size of their noses. The author accepts the estimate that 10 per cent. of human beings are not subject to tuberculosis, and that only 10 per cent. of people breathe through their noses, and seems disposed to conclude that nose-breathing protects against tuberculosis. We have no doubt of the author's sincerity, but is it necessary to point out that, before such inductions can be made, certain premisses must first be substantiated? In the first place no statistics are given to show that tuberculosis is commoner amongst mouth-breathers than amongst nose-breathers. Actually we believe there is a considerable amount of evidence to the contrary. The commonest cause

*Pulmonary Tuberculosis*. By Maurice Fishberg, M.D. London: H. K. Lewis, 1922. pp. xiv + 231; 23 plates, 122 figures. 42s. 6d.  
*A Simple Treatment for Tuberculosis*. By Owen F. Paget, M.D. London, Bombay, and Sydney: Cassell's and Co., Ltd. 1922. 10s. 6d. pp. xxiii + 20; 7 figures. 5s. net.



of mouth-breathing in children is the presence of adenoids, yet, according to Fischberg, it is uncommon for children with adenoids to develop tuberculosis. Again, the animals that he mentions are living in a more or less feral state. It is not to be expected that they should suffer from tuberculosis, any more than barbaric man in his uncivilized condition suffers from it. If Dr. Paget were to take the case of domesticated animals and to demonstrate that there is a very definite correlation between the size of the nose and the resistance to tuberculosis, he would have better grounds for making his inference. With regard to clinical results, he states that of 500 cases of tuberculosis and suspected tuberculosis amongst the Australian Forces not one failed to improve under treatment. In the first fortnight before treatment commenced there were three deaths. In the following ten months with treatment there were only two deaths. No data are given as to the number proved bacteriologically to be suffering from tuberculosis, nor as to the stage of disease, nor the extent of lung affected. How many of these patients, we may ask, were actually tuberculous? We have it on the authority of the French that in about 70 to 80 per cent. of patients admitted to their military hospitals as suffering from tuberculosis the diagnosis was wrong. It is plain that the author has rather a leaning towards the diagnosis of tuberculosis. He says in effect that, lacking positive evidence of other disease, 90 per cent. of the affections of the nose, tonsils, pharynx, and lungs are tuberculous. Later we read: "The mysteries of physiology and pathology are unlimited. But how extraordinary and marvellous is the chain of events whereby a few insufflations of 1/10,000 mg. of tubercle bacillary emulsion on the epithelial cells of the ethmoidal region can bring about the resolution of a pathological exudate in the alveoli of the lungs!" Very extraordinary and very marvellous! We have no desire to disparage this treatment. It may be good, or it may be valueless; we do not know. Incidentally, there is a certain amount of experimental evidence which suggests that the mucosa of the respiratory tract may play a part in antibody production. But, even though this treatment should subsequently prove efficacious in every form of tubercle, we are bound to say that the case for it, as stated in the volume, is not convincing, and that the evidence in its support is not adequate.

#### EAR, NOSE, AND THROAT.

DR. GEORGES PORTMANN, Chef de Clinique in the department of Oto-Rhino-Laryngology of the Faculty of Medicine at Bordeaux, has produced, under the title *Consultations Oto-Rhino-Laryngologiques du Praticien*,<sup>5</sup> a volume which should be valuable not only to the specialist but also to the practitioner in dealing with the medical treatment of maladies which are of daily occurrence both in general and special practice. The medical aspect of this specialty, which in recent years has become more and more surgical, is a little apt to be neglected, and Dr. Portmann is to be congratulated on having presented with all the method and precision of the French school a book of this kind at the present moment. Prescriptions and alternative methods of treatment are given for every condition which occurs at all frequently in practice, and, what is even more important, exact instructions for their application, together with indications and contraindications. There are sections on incompatibility of drugs in ordinary use in otology and laryngology, on vaccine therapy and on the general therapeutics of the ear and throat. There can be no hesitation in recommending this book, for it cannot fail to be of great help in dealing both with those innumerable minor maladies which are distressing to the patient and difficult to treat, and also with conditions where surgical treatment is not indicated. Those details, which so often turn the scale between success and failure, are here given in abundance, and the book is one which will be consulted freely and with satisfaction by those for whom it is intended.

The appearance of six editions of Dr. WENDELL C. PHILLIPS's well known textbook on *Diseases of the Ear, Nose and Throat*<sup>6</sup> in the course of eleven years is evidence of its popularity. Dr. Phillips gives within a volume of moderate size an adequate account of these subjects, and the book can

safely be recommended to anyone desiring to find them all included under one cover. About half the book is devoted to diseases of the ear. Then follows an excellent description of the influence of general diseases upon the ear, nose, and throat, and the remainder is divided about equally between the nose and throat. The author states in his preface that it has been his "continued desire to thoroughly Americanize this volume." In this he has succeeded, though he refers freely to certain British textbooks, especially that of Parker. The result is that some of his teaching differs materially from that accepted in this country. For example, in the treatment of intrinsic laryngeal cancer thyrotomy only receives the barest mention, and laryngectomy is strongly advocated for the majority of cases. The operation is described at great length. The pessimism of the author, too, on the subject of extrinsic cancer of the larynx, grave as that disease may be, scarcely does credit to the achievements of modern surgery. One of the greatest merits of the book is the excellence and profusion of the illustrations. It is also singularly free from misprints and slips of the pen. Herzog, referred to on page 427, is presumably Heryng, and the descriptions of the illustrations of recurrent laryngeal nerve paralysis on page 809 require correction. In spite of the abundance of textbooks on these subjects, the present edition will without doubt hold the place that previous editions won.

#### NOTES ON BOOKS.

IN her small handbook, *The Writing of Medical Papers*,<sup>7</sup> Mrs. MELLISH has epitomized, for the benefit of others, some of her experience as editor of the Mayo Clinic publications. Her purpose is "to help untrained and partly trained writers to prepare for publication articles that will convey information with brevity, accuracy, and clearness, and adhere to the accepted forms of present-day usage." The work consists of twenty short chapters, a very full list of standard abbreviations for the names of medical periodicals, and a comprehensive index. Each chapter closes with a few clear-cut dogmatic sentences, giving the gist of what has gone before. Thus the teaching of Chapter XIV on the choice and arrangement of references is summed up in four sensible rules which we could wish written over the mantelpiece of every one of our contributors:

"Verify all references; be positive that they are complete and accurate.

"Index all articles when reading or abstracting.

"Refer to original articles. Do not give references from previous references.

"If an abstract is referred to, state the fact that it is an abstract."

The author's own advice is reinforced by a great many quotations, and in particular by liberal extracts from the second edition of Sir Clifford Allbutt's *Notes on the Composition of Scientific Papers* (the third edition was reviewed in our issue of March 10th). All the quotations are printed in small type, and the author of each extract is indicated by a very small numeral corresponding with a bibliography at the end of the book. Where the extracts are long—and some of them occupy several pages—it is often difficult to be sure where one quotation ends and another begins; it would be much better, we think, to space out each piece of borrowed advice, and (at the risk of tiresome repetition) to show more plainly the source of each. Again, the first of Mrs. Mellish's five admirable maxims printed on page 114 is: "Be exact in copying quotations"; but has she quite lived up to that advice on page 52? These small criticisms apart, we find something to commend in almost every chapter. Some of the many "Don'ts" are, we should hope, unneeded by British practitioners, and a few of the typographical rules are at variance with English practice; but it is only natural that American usage should be observed in a book printed in Philadelphia.

*The Rescue Man's Manual*<sup>8</sup> is the title of a handy guide, by Mr. ARTHUR B. CLIFFORD, for those engaged in rescue work at collieries, irrespective of the apparatus to which they are accustomed. The author insists that there can be no real substitute for practical training, but he intends his book to fill the gaps in the intervals between the practices, which now take place only four times a year. Although it is not intended directly for them, medical practitioners in colliery districts will find this little book, which is clearly, simply written, of considerable interest.

<sup>5</sup> *The Writing of Medical Papers*. By Maud M. Mellish. Philadelphia and London: W. B. Saunders Company. 1922. (Fcap. 8vo, pp. 157. 7s. 6d. net.)

<sup>6</sup> *The Rescue Man's Manual*. Compiled by A. B. Clifford, M.S.M., with a foreword by the Right Hon. W. C. Bridgeman, Sec. etary for Mines. London: The Colliery Guardian Co., Ltd. 1922. (Demy 8vo, pp. 46; 7 figures. 1s.)

<sup>7</sup> *Consultations Oto-Rhino-Laryngologiques du Praticien*. Par Georges Portmann. Préface du Professeur Moure. Paris: Gaston Doin. 1923. (Pp. 414+259; 33 figures. Fr. 14.)

<sup>8</sup> *Diseases of the Ear, Nose and Throat: Medical and Surgical*. By W. C. Phillips, M.D. Sixth revised edition. Philadelphia: F. A. Davis Company. 1922. (Med. 8vo, pp. xix + 681; 572 figures. 8 dollars net.)



## THE LAMENESS OF LORD BYRON.

At the social meeting of the Royal Society of Medicine last week (March 21st) Dr. H. C. Cameron gave a short address on the mystery of Lord Byron's lameness. After some introductory remarks Dr. Cameron referred to the fact that while Byron was indifferent to charges of immorality and irreligion, it was far otherwise with regard to his physical disability. To his lameness Byron was exquisitely sensitive; he never for a moment forgot it, and it poisoned his whole life. In some autobiographical notes he tells how once, when he was a child, his mother in one of her fits of fury called him a lame brat, and how he quickly retorted "I was born so, mother." Three years before his death he wrote, at Pisa his tragedy *The Deformed Transformed*; the first words of the play were the cry of the mother, "Out, hunchback," and again came the answer, "I was born so, mother."

It was commonly alleged during his lifetime that Byron had a club-foot, but it was, Dr. Cameron said, a curious circumstance that friends and enemies alike were uncertain as to which foot was deformed. Moore, his biographer, who knew him well; Galt, also his biographer, and companion on one of his Eastern tours; Lady Blessington, and the Countess Albrizzi, both great friends of his, never could make up their minds which foot was deformed. His boxing instructor, Gentleman Jackson, the pugilist, thought it was the left. His mother, writing to her sister-in-law about taking the opinion of John Hunter, stated definitely, "It is the right foot." Mrs. Leigh Hunt, who with her husband was for long Byron's guest, thought that the left foot was shrunken, but that it was not a club-foot.

Sheldrake, an instrument maker and bone-setter in the Strand, affirmed that Byron, when in his 20th year, consulted him. In 1827-28 Sheldrake wrote a series of letters to the *Lancet*, and in one of these, published on September 20th, 1828, entitled "Lord Byron's Case," he gave drawings of what he alleged to be the cast of Byron's foot. It represents the left foot. The woodcuts, Dr. Cameron thought, were suspiciously like those which illustrated the article on club-foot in every textbook of the time. He rejected Sheldrake's evidence altogether. Stendhall and Hobhouse both said it was the right foot that was deformed, Countess Guiccioli that it was the left. These contradictory statements appear surprising if Byron really had, as was generally believed, a club-foot.

By the kindness, Dr. Cameron continued, of Mr. John Murray, the present head of the great firm which published all the poet's works, we have here to-night two surgical boots made for and worn by Byron as a boy. They are both for the right foot, but I would have you especially observe that they have been made for a foot which is both long and slender and which in no way resembles a club-foot. It is significant of the great interest which was taken in the question of Byron's lameness at the time that after his death the lasts on which his boots were made were thought suitable objects for exhibition in a public museum. Mrs. Wildman, whose husband had purchased Newstead Abbey from the poet, found them and sent them to the museum at Nottingham. There they were discovered after long search in 1897 by Mr. James Ward of that city, stowed away in a drawer with the original paper still attached to them:

These are the lasts upon which Lord Byron's shoes were made by Mr. W. Swift of Southwell. The last pair made upon them was on May the seventh 1807.

Contributed by W. Jones, Southwell.

Stamped on last: CHAULK, Princes St., Drury Lane.  
Stamped on the block: W. Swift.

And the plot begins to thicken—the lasts show feet which are symmetrical and well formed. By the kindness of the curators of the Nottingham Museum I am able to show them to you and to reproduce the photograph.

In 1858 Edward John Trelawny (then in his 66th year) published his book *Recollections of the Last Days of Shelley and Byron*. He had been the friend and companion of both, but Byron wrote prophetically that Trelawny could not tell the truth to save his life. In his book he described minutely the pains he took to satisfy his own unhealthy curiosity and that of the British public. Immediately after Byron's death Trelawny says he hurried to Missolonghi, where lay the embalmed body of the poet; watching over it he found Fletcher, the poet's valet. To get rid of him Trelawny feigned faintness and asked for a glass of water; when the faithful Fletcher had departed on the errand Trelawny hurried forward, drew back the black pall and the white shroud.

"I uncovered the Pilgrim's feet and was answered—the great mystery was solved. Both his feet were clubbed and his legs withered to the knee—the form and features of an Apollo, with the feet and legs of a sylvan satyr."

That, Dr. Cameron continued, was just what the public expected to hear and wanted to hear. But when Trelawny was an old man (in his 86th year) he republished his book with some additions and one striking alteration. We read again of the trick played upon the servant and of the uncovering of the feet, but this time Trelawny wrote:

"I uncovered the Pilgrim's feet and was answered—It was caused by the contraction of the back sinews which the doctors call tendon Achilles that prevented his heels touching on the ground and compelled him to walk on the fore part of his feet; except this defect his feet were perfect."

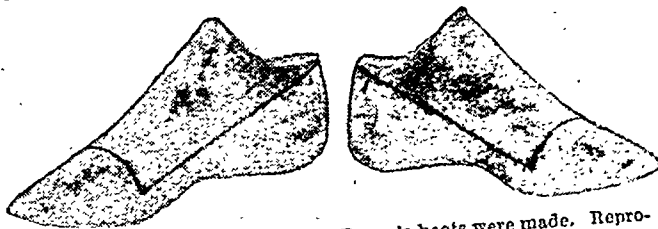
"I think that Trelawny as he drew near death and as he felt more and more the responsibility that was his as the solo survivor of the actors in the scenes he describes, could not go down to the grave with the lie unwitdrawn, and that he rewrote his book that he might ease his conscience."

It was, Dr. Cameron went on to say, difficult to assess the degree of Byron's lameness; while all admitted the existence of a definite impediment, it was nevertheless clearly of slight degree and compatible with feats both of strength and endurance. It did not prevent him from playing cricket for Harrow against Eton on August 12th, 1805, though cricket, even an Eton v. Harrow match, was perhaps hardly the strenuous thing it has since become. It appears from Lillywhite's *Cricket Scores and Biographies of Celebrated Cricketers from 1745 to 1826* that Eton won by an innings and two runs. In the first innings Harrow made 55 and Eton 122. Harrow's second innings produced 65. Byron seems to have gone in seventh in both innings, making 7 in the first and 2 in the second. He was caught in both innings. Of the players in

this match Lloyd, who was head of the school for that year, told Dean Merivale, who has repeated the statement in his *Recollections*, that "Byron played in that match and very badly." He should never have been in the eleven if my counsel had been taken. "Caustic comment," Dr. Cameron observed, "from one who failed to score in either innings." In some manuscript reminiscences left by a schoolfellow (Shakespeare) it is stated that "in a match of cricket played at Lord's ground Lord Byron insisted upon playing and was allowed a person to run for him, his lameness impeding him so much. Lord Stratford de Redcliffe as an old man used to recall how he had seen Byron playing in this match, 'a moody-faced boy dismissed for a small score.' Possibly the recollections of these old gentlemen were tinged with prejudice. A few days



Photograph showing two boots worn by Byron in boyhood; in the possession of Mr. John Murray, C.V.O. Reproduced by permission.



Photograph of the lasts on which Byron's boots were made. Reproduced by permission of the Curator of the Nottingham Museum.

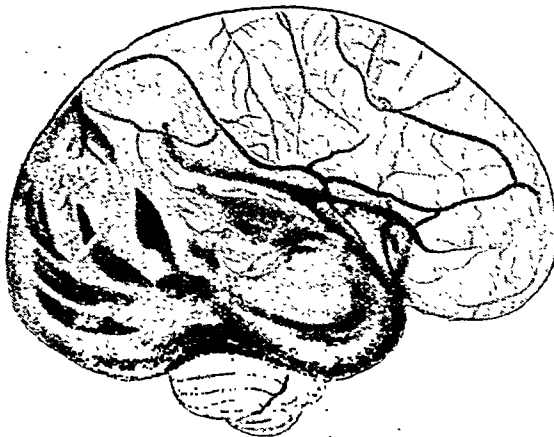


after the match Byron wrote two letters to intimate friends from which it appeared that he had persuaded himself that he had made eighteen runs—he called them “notches”—“more than anyone except Ipswich.” His swim across the Hellespont was, the lecturer said, too famous to make it necessary to say more than that Byron was in the water for one hour and ten minutes.

The concluding passages of Dr. Cameron's address were as follows:

#### THE NATURE OF LORD BYRON'S LAMENESS.

What, then, was the nature of this extraordinary lameness which was so elusive that one-half of mankind located it in the one foot and half in the other, which embittered the poet's whole life, which excited so much public interest, and which permitted such athletic success? Is it permitted a hundred years after the death scene at Missolonghi to attempt a diagnosis? In that long space of time we have learnt a great deal of the nature of injuries acquired by the infant at the moment of birth. Forty years after Byron's death Little, the great orthopaedic surgeon, introduced as a guest at a meeting of the London Obstetrical Society, read a paper, thereafter famous, in which he described a form of injury to the brain, occurring at birth, which results in a stiffness and awkwardness usually confined to the lower limbs. Because of delay in the establishment of respiration and of the consequent asphyxia a haemorrhage takes place over the area of the brain which



A brain showing meningeal haemorrhages from an infant who lived twenty-six hours. Reproduced from Dr. Herbert Spencer's paper on Children in the *Transactions of vol. xxxiii (1891).*

presides over the voluntary movements of the legs. The gait of “Little's disease,” as it has ever since been called, is stiff and awkward. At rest or during sleep nothing amiss is to be noted, but when a voluntary act such as walking is attempted the limbs are gripped in a kind of spasm. The knees tend to be pressed together and the body rises stiffly on the toes. Though progress may be slow the movement in each step is exaggerated, as though the sufferer were running in a curious stiff and jerky fashion. The feet and legs are, of course, well and normally formed, though during action the tendo Achillis may be prominent.

Trelawny alone attempts a detailed description of Byron's gait. It is such that it accords with the hypothesis of Little's disease and with no other. “During his brief and brilliant career in London it was noticed by his friends that

to hide his lameness he always entered a room quickly, running rather than walking, and stopt himself by planting his left (the comparatively sound) foot on the ground and resting upon it. On the rare occasions on which he was seen walking in the streets, it was observed that he moved with a peculiar sliding gait rather than the easy lounge of a fashionable—in fact with the gait of a person walking on the balls and toes of his feet and doing his best to hide the singular mode of progression.”

It is characteristic of Little's disease that the sufferer learns gradually to overcome his defect. The difficulty and awkwardness may remain to some extent throughout life, but by constant practice agility and control steadily improve when

infancy and early childhood are past. In early childhood Byron was carried from doctor to doctor. He was treated in turn by John Hunter, Dr. Livingstone of Aberdeen, the celebrated Dr. Matthew Baillie, Dr. Laurie of St. Bartholomew's Close, as well as by the bone-setters Sheldrake of the Strand and Lavender of Nottingham. The treatment of the last named was so drastic that it came near not to curing but to causing permanent deformity.

The poet himself states frequently that his lameness was caused at his birth. Of the actual circumstances of his birth we know little. It took place, according to Hanson the family solicitor, in the back drawing-room of No. 16, later No. 24, Holles Street, Cavendish Square. He was born with a caul, which was purchased by Hanson and given to his brother, Captain Hanson, R.N. Perhaps because it was Byron's it brought none of its proverbial luck. Captain Hanson's ship went down with all hands off Newhaven two years later.

Finally, it may be noted that sufferers from Little's disease are prone to convulsive seizures like those of epilepsy, and that Byron, at least towards the end of his life, suffered repeatedly from such attacks.

I close by suggesting to you that we have found the solution of this mystery of Lord Byron's lameness which so excited the interest of our grandfathers, and found it in the back drawing-room of a little house which stood within a few yards of this hall, where one hundred and thirty-six years ago the baby Byron first, but too slowly, drew his breath.

## THE PROBLEM OF DRUG ADDICTION.

### DEBATE AT THE MEDICO-LEGAL SOCIETY.

LORD JUSTICE ATKIN presided over a meeting of the Medico-Legal Society on March 20th, when a paper was read by Dr. H.A. BURRIDGE, lecturer on forensic medicine and toxicology at King's College Hospital, on the subject of State effort to rescue drug victims, with special reference to the Dangerous Drugs Act.

#### British and American Practice.

Dr. BURRIDGE contrasted British and American methods of dealing with drug addicts. On this side of the Atlantic the American principle of correlating treatment with penal repression had not been followed, nor had there been sufficient survey of drug addiction before legislative enactment. Not only the medical but the legal mind in the United States regarded the drug addict as a sufferer rather than a criminal. He gave some figures to show the large extent of drug addiction in America.<sup>1</sup> Among other proofs, it was stated that in the Court of Special Session in New York County at least one-tenth of the business was concerned with drug addicts, and if offences which were really the result of drug addiction were included the proportion was much greater. In America any magistrate, on a complaint being made, might commit the drug addict to a State, county, or city hospital. Dr. BurrIDGE cited particulars of some recent prosecutions in this

country to illustrate the inequalities, injustices, and irrelevantances of the English law, and he criticized several points in the Dangerous Drugs Regulations, particularly those relating to prescribing and to record-keeping by medical men. He regretted that those who initiated recent legislation and the proposed amending legislation should have caused confusion and created stumbling-blocks simply by their failure to take the general practitioner into counsel. This Dangerous Drugs Act seemed as if it might become known as the “Dangerous to Doctors Act,” and half the members of the Medico-Legal Society might presently be employed in keeping the other half out of prison. He pleaded for the setting up of a proper advisory committee to thrash out the necessary amendments to the Act of 1920 as suggested by actual medical experience, and thus the sudden eruptions of fresh regulations at the instance of a Government department might be avoided. The American authorities (Dr. BurrIDGE continued) had tackled the subject of treatment in a way to evoke admiration. The result of an official inquiry in the United States might be broadly stated as being (1) that there was no known specific remedy for drug addiction, and (2) that the cocaine habit more readily responded to treatment than the narcotic habit. The best results were obtained when the victim was in some kind of custody, not in prison, but in a controlled sanatorium. The American experts regarded heroin as the most dangerous drug in the category, especially because of its

<sup>1</sup> In an American White Paper lately issued the number of drug addicts in the United States is given as 1,388,600, their ages ranging from 12 to 75.



attractiveness to the young. The heroin habit was said to have grown to extremely large proportions in America, and the average age of its victims in the area covered by one inquiry was 22. Some experts contended that without injury to medicine this drug might be banished altogether. Dr. Burrage thought it of first importance, in approaching the question of treatment, to endeavour to discover the mental and moral condition of the addict. A person struggling alone to loosen the bonds of the drug habit was engaged in a task like that of Sisyphus himself. Until self-respect had been re-established there was no hope of cure. It was an absurdity if not a crime to commit these people to prison, where the last shreds of their self-respect would be lost. His suggestion was that they should be committed by the magistrate to a home, preferably a farm, and that, perhaps six weeks later, they should be brought before the same magistrate, who would sit with a medical assessor, and evidence would be given by a medical officer of the institution to which they had been committed. Upon the decision of the magistrate they could be released on their own recognizances or committed for a further period. He deprecated heavy fines and prison discipline, unrelieved by remedial treatment.

#### Classification of Addicts.

Sir WILLIAM WILCOX said that drug addicts fell into two classes. The first were the unfortunate people who had become victims possibly owing, in the first instance, to a medical prescription or to their own curiosity. These people were intensely concerned at their state, and wandered about from one doctor to another, thereby giving rise to the impression that they were more numerous than was actually the case; many of them were originally mentally unstable. Any treatment of this type of case, unless under strict supervision and control, was quite futile, but with such safeguards the prognosis was not so unfavourable as was popularly supposed. Sir William Wilcox suggested that there might be some kind of State certification of such persons, somewhat similar to that employed in the case of persons of unsound mind. Another class of drug addicts were degenerates who haunted disreputable resorts and lived on a succession of debased so-called pleasures. These cases were numerous, and were not often seen by medical men, but a lurid light was occasionally thrown upon their existence by some revelation in the police or coroners' courts. It was well to remember that the drug habit became really dangerous when the drug was taken hypodermically; it was less dangerous when taken by the mouth. He agreed that the regulations under the Dangerous Drugs Act were very irritating to the general practitioner, but he thought that they would be gradually revised in the light of experience and made more workable. Of course the underlying evil would never be countered until not merely the sale and distribution of the drugs but their production was under control.

LORD RIDDELL said that the clauses of the Dangerous Drugs and Poisons (Amendment) Bill now before Parliament appeared to be far too complicated and to impose an undue burden on the medical practitioner, but it would be the fault of the medical profession itself if it did not get the bill altered. The medical profession had only to say that these proposals were unworkable and they would not go through.

In some further brief discussion one or two speakers made the point already put forward in the leading article in the BRITISH MEDICAL JOURNAL of March 17th (p. 477), that in the Dangerous Drugs and Poisons (Amendment) Bill a discrimination was made between registered medical practitioners in actual practice and registered medical practitioners not in actual practice. It was argued that among the latter, strictly speaking, must be included medical officers of health and holders of other appointments.

MR. PERRINS, of the Home Office, said that he had looked up the records in his department and had found that only seventeen addicts had been prosecuted since the Act came into force in 1921, and of these he did not think that more than six were sent to prison. Most of them were sent directly to a home, or were remanded for that purpose. The heavy penalties were reserved for the people who deliberately trafficked in drugs. With regard to the requirement that only doctors engaged in actual practice should be allowed to prescribe, this was inserted as a safeguard against those few members of the profession who were "down and out," having lost their practice for some reason, and who might try to make a living by prescribing for addicts. He spoke only as an individual, not as a representative of his department.

#### A Judicial View.

THE PRESIDENT said that he believed the medical profession as a whole was deeply conscious of the evil involved in the drug traffic and sincerely anxious to do everything it could to mitigate that evil. He could not help thinking that the true way of setting to work was to trust medical practitioners, not to create difficulties in their path when they were engaged in the ordinary bona fide practice among their patients, but to provide for the most severe penalties upon doctors who evaded the provisions of the Act for the purpose of supplying drugs improperly to addicts or obtaining them improperly for themselves. If the medical profession agreed to this very proper line the authorities might be induced to modify some of the more irksome provisions with regard to dispensing and record-keeping. Dr. Burrage had chiefly praised in the American procedure the efforts made for the cure of addicts by sending them to institutions; but, whatever might be the case in America, in this country there were not enough institutions for this purpose, and it would be impossible to deal with this matter until the State in the first place had seen to it that there were institutions sufficient in number and large enough in accommodation to which the courts could in cases of necessity commit the persons who were brought before them and were proved to be addicts. This had not been a very popular form of procedure so far in this country, and he rather trembled at Sir William Wilcox's suggestion that some such method might be adopted as was at present in force for certifying lunatics. Another Board of Control would be required, together with an elaborate system, involving dangers which might in the end defeat the object in view. Possibly it would suffice for the Ministry of Health to supervise and encourage the growth of private institutions, which might perhaps be assisted from public funds.

A good deal had been said (Lord Justice Atkin continued) in criticism of the nature of the regulations. He himself was not competent to deal with those criticisms, but it was a remarkable fact, and one which showed the tendency of modern legislation, that in the Dangerous Drugs Act, 1920, there should have been hardly any coercive provisions at all. That Act laid it down that regulations might be made, it was not definitely stated by whom, but there was a subsequent reference to the "Secretary of State," and the implication was that the regulations would be made by the Home Secretary. In the result the Home Office was left to make the whole of the regulations, infringement of which exposed the offender to the penalties prescribed by the Act. One would have thought that provision might have been made whereby the proposed regulations would be published in draft for criticism by the medical profession before they took final and effective shape. He contrasted some points in the regulations with what was proposed in the Dangerous Drugs and Poisons (Amendment) Bill, and urged the need for all such proposals to be placed before the medical profession. In the case of the bill the proposals could, of course, be examined and criticized before they became effective, but if he were a medical practitioner he would feel it a little alarming to be told that the Home Secretary had made certain regulations and that they would be published at a certain time, without knowing in advance what those regulations were, or without his profession as a whole having had the opportunity of seeing them and of submitting whatever was to be urged in respect of them: that might well be a genuine grievance. Those who had taken part in the proceedings in criminal courts would feel that the whole question was one of great importance. There the cases were usually brought forward on the charge of "being in possession." It was not a criminal offence to be an addict, but it was a criminal offence to be in possession of the drug, and this, of course, brought in the addict. In such cases the court would generally deal with the matter by using its powers to bind over the offender on certain terms or to put him under some kind of special probation, but there was a difficulty in committing any person compulsorily to any form of institution. That could only be done on the condition that the person concerned would be able to secure his release upon certain terms. When the case arose of a drug addict committing a crime, possibly owing to the deterioration which had taken place in his character, it could be dealt with more simply, and in some cases the most humane course was to treat it as ordinary crime, so as to secure that the offender was put in confinement in a prison for a reasonable period, during which, of course, he would not have access to the drug, while he would have competent medical treatment.



## British Medical Journal.

SATURDAY, MARCH 31ST, 1923.

### POST-GRADUATE EDUCATION IN LONDON.

THE present position with regard to facilities for post-graduate instruction in London is unsatisfactory; it seems, in fact, to have grown worse during the last eight or nine months. Before the war there had been established, mainly through the exertions of Sir William Osler and Dr. Hurst, a Post-Graduate Medical Association, which was to co-ordinate the scattered elements into an effective whole; later on the Fellowship of Medicine was formed, again with the help of Sir William Osler, to look after the social needs of medical visitors to London. The Fellowship of Medicine and the Post-Graduate Association were eventually combined into a single body, in which the identity of the latter was to a large extent lost.

When, in the winter of 1918-19, many medical officers of the Dominion and American armies, and of the British Territorial Force also, were being granted study leave the Fellowship of Medicine gallantly sprang into the breach and organized courses of which the medical officers mentioned showed their appreciation. The movement reached what the epidemiologists would call its "peak" in the very successful Special Clinical and Scientific Meeting of the British Medical Association held in London early in April, 1919.

Some time afterwards (in July, 1921) the Science Committee of the Association appointed a Post-Graduate Subcommittee. When it came to look into the matter it found that in Edinburgh and Glasgow post-graduate teaching had long been encouraged if not directly organized by the university. In Manchester, Birmingham, and Bristol the university medical faculty had taken the matter up, and Newcastle had a scheme of its own, countenanced by the medical faculty and worked through the North of England Branch. The Subcommittee therefore limited its investigation mainly to London. It saw that there were in London two post-graduate schools actually at work—the West London at Hammersmith and the North-East London at Tottenham—both, however, working independently of each other and of the university medical faculty. It learnt that the undergraduate schools, though in some instances organizing short courses for post-graduates and usually ready to welcome back an old student, were not willing to take graduates except under these special circumstances, and that in particular they did not cater for the foreigner. It knew also that many of the special hospitals were ready to receive a graduate, whether British or foreign, to attend their practice, and that some arranged special lectures and demonstrations. Finally, it had to consider the Fellowship of Medicine, which sought to be the central co-ordinating body, had arranged at various times a number of courses, and generally was anxious to give a helping hand to the medical stranger in London. The Subcommittee presented a report, upon consideration of which the opinion was reached that it was not necessary to establish a single post-graduate school and hospital, the view being, apparently, that the existing elements in London, if properly organized and combined, would provide what was wanted.

Of the Fellowship of Medicine and Post-Graduate

Association it may be said that it had kept the need for a better organization of post-graduate education in London before the University, the Ministry of Health, and the medical profession. It was mainly owing to its efforts that in January, 1921, the then Minister of Health (Dr. Addison) appointed a departmental committee "to investigate the needs of medical practitioners and other graduates for further education in medicine in London." Over this committee the Earl of Athlone, Chairman of the Middlesex Hospital, presided, and it included two other laymen well known for their interest in hospital affairs; for the rest it consisted of members of the staffs of the teaching schools of the University and of representatives of the Ministry of Health. The Committee was instructed to submit proposals for a practical scheme, and in its report issued in May, 1921, it made a series of recommendations which, in fact, contained a scheme. A school attached to a hospital centrally situated in London was to be devoted solely to post-graduate medical education, and was to be a school of the University of London, receiving substantial financial assistance from the Treasury through the University Grants Committee. It was recommended also that, in addition to the courses provided at the central school and at existing post-graduate schools, further facilities for post-graduate study should be made available at non-teaching hospitals and at Poor Law infirmaries. Finally, the Athlone Committee advised that an Institute of State Medicine should be established; this has been realized through the Rockefeller Foundation's gift of £400,000 for the erection and equipment of such an institute, and the promise of the Minister of Health that the Treasury will provide £25,000 a year for upkeep. The Fellowship of Medicine accepted the recommendations of the Committee, and expressed the hope that one of the existing undergraduate teaching hospitals would consent to be the general hospital of the school and cease to take undergraduates.

As after a year or more nothing had been done, and as in the meantime a new Minister of Health had come into office, a deputation was sent to him last July to enlist his sympathy and support. Sir George Makins, who headed the deputation, described the aims and hopes of the Fellowship of Medicine, and recalled the recommendations of the Athlone Committee. The Chairman of the Post-Graduate Subcommittee was able to state that the British Medical Association was taking an interest in the movement, but did not think that a post-graduate general hospital was essential to the establishment of a post-graduate school in London. The Minister (Sir Alfred Mond) was sympathetic, but non-committal; he, however, seemed disposed to hold to the departmental committee's recommendation that a central general hospital was a necessary part of any complete scheme.

The Vice-Chancellor of the University of London (Mr. H. J. Waring) has informed the Fellowship that the University feels strongly the need for a post-graduate medical school, to consist of a central general hospital with approved special hospitals associated with it, and having a Dean who should be provided with the necessary clerical staff and administrative offices, not necessarily at the central hospital, but possibly, as we gather, in the University building when it goes to Bloomsbury. That the University should have taken the matter up is an important step forward, more especially as the University Grants Committee can only make grants to university institutions; but the difficulties in the way are very great, and it is to be feared that a long delay is inevitable. The Fellowship had to frame a policy for the immediate future; it decided to carry on, and called a conference, which was attended by representatives of



twenty-seven non-undergraduate hospitals "doing, or willing to do, post-graduate teaching." They asked, and the Fellowship agreed, that they should be added to its General Council; in reply to the further demand that they should be added to the executive committee, the Fellowship decided to take steps to modify its constitution, which is undoubtedly very cumbrous. Subsequently the twenty-seven constituted themselves a permanent "Post-Graduate Committee," and a conference is to take place shortly after Easter between representatives of this new committee and of the Fellowship. We hope that in some way a scheme to meet the immediate needs will be devised of such a kind that it will eventually work in with the larger university scheme which is designed to place the metropolis of the empire in the leading position it ought to occupy.

### LORD BYRON'S LAMENESS.

It is close upon a hundred years since the sixth Lord Byron ended his tempestuous career at Missolonghi, yet books are still written and papers read in which attempts are made to clear up the "mysteries" of his career, though without, it must be confessed, much success. Dr. Jeaffreson, who attempted to depict the "real Lord Byron," dealt, as others have done, with the moral and intellectual character of the poet. It is a strange fact that the physical "real Lord Byron" is equally a mystery in one respect. It is well known that he was lame, and that he was ashamed of and tried to conceal his lameness; but beyond this we cannot go without plunging into a labyrinth of contradiction. Were both of his feet affected, or only one? If only one, which one? What was the cause and what the nature of the deformity? These are some of the questions to which no satisfactory answers can be given. Lord Byron can have had little real happiness in his life, but we feel sure that his vanity would have been pleasantly excited and his latter days rendered happier could he have felt sure that for ninety-nine years, and probably for much longer, his poetry, his peccadilloes, and his deformity would be discussed again and again by the curious.

Trelawny and others said that he suffered from club-foot, but this term was formerly used to include all forms of talipes, and little stress can be laid on such statements. One more attempt to clear up one of the uncertainties about Byron has been made by Dr. H. C. Cameron, whose address to the Royal Society of Medicine, excellent both in matter and manner of delivery, is reported upon another page. In attributing the lameness to infantile spastic paraplegia, the result of injuries of the cerebrum received at birth, he has brought forward a theory which, as far as we know, is new. Dr. Cameron certainly makes out a good case, ingeniously supported on such evidence as exists, but he cannot be said to have quite proved it.

Apart from the fact that the victims of Little's disease are generally distinctly below the average in intellectual power, and that Lord Byron's intellect was certainly above the average, we have only Trelawny's word for it that both feet were affected and that Byron could only run on the tips of his toes, and Trelawny is certainly a most untrustworthy witness. It might be argued that the case was one of mild cerebral monoplegia, affecting one lower extremity, for the overwhelming balance of evidence goes to show that only one foot was affected. Three witnesses say that it was the right and six that it was the left foot, but anyone who has had much to do with such matters will admit that it is extremely easy to make mistakes in speaking or writing about right and left.

The exhibits presented by Dr. Cameron are most interesting, but, as he said, the bootmaker's lasts show no evidence of deformity. It is to Mr. William White, Sub-librarian of Trinity College, Cambridge, that we owe the discovery of these relics of the poet; in a paper in the *Cambridge Graphic* of February 22nd, 1902, he stated that it was owing to his repeated urging that they were discovered in an outhouse in the Nottingham Museum. In this paper Mr. White puts on record additional evidence about the affected foot, obtained from a resident in Cambridge who claimed to have seen Byron daily when he was at the university, and who noticed nothing peculiar about the feet. Mr. White also referred to an engraving in the library, copied from a silhouette cut by Mrs. Leigh Hunt, which "represents the feet exactly as Swift speaks of them, and underneath the likeness are the following words: 'His lame foot (the left) but slightly altered his general appearance.'"

The two examples of the appliances worn by Byron on his right leg, which Mr. Murray lent to the lecturer, are of the very greatest interest. They are of soft leather, except the soles, which appear to be stiffened with metal plates, and, as will be seen from the photograph reproduced at page 564, each consists of a footpiece and an upper part extending to just below the knee, thickly padded as though to conceal atrophy of the calf. They conclusively prove that the right foot at any rate was affected, whatever may have been the condition of the left, and that the leg, and probably the foot also, was ill developed and much smaller than normal. The soles exactly correspond to the Nottingham last, and it would seem that they were made to be worn inside the boot or shoe, just as Hessian's and similar appliances are worn nowadays. The under surfaces of leather are not worn as they would be by contact with the ground. A striking feature in each of these two appliances is the wedge sole, by which the outer edge of the foot would have been raised a quarter or three-eighths of an inch more than the inner. Such soles are now used in cases of varus with the intention of throwing the foot outwards, but it is more likely that the maker of this appliance intended not to correct but merely to accommodate the over-pronated foot. If that were the case it would show that Byron suffered from valgus, which would be quite consistent with a long narrow foot, while varus is associated with a short broad foot such as could never have been fitted by these appliances or with boots made on the Nottingham last. If, as the lady quoted by Mr. White said, Byron rested his affected heel against the other foot, he must have had an everted and probably an over-pronated foot.

It must, we think, be considered as established that whatever the nature and cause of Byron's lameness, it did not result in any distortion of the foot that could not be concealed by ordinary shoes or boots. But that we have strong evidence that the condition was either congenital, or arose at the time of birth, we should have been disposed to attribute it to a mild attack of anterior poliomyelitis. In the circumstances the diagnosis must apparently be suspended between a congenital form of the rare atrophic variety and a post-natal valgus or calcaneo-valgus. This latter condition, unlike talipes varus, is peculiarly apt to improve spontaneously. May it not be the case, then, that the newborn baby had a deformity sufficiently obvious to lead the mother to consult John Hunter and others, but which afterwards diminished till it constituted only the slight disability known to Byron's friends in adult life?

The question can never be definitely settled, and even an exhumation of the bones now in the grave at Hucknall Torkard would not be likely to clear up the uncertainty. Despite this, Dr. Cameron is to be congratulated on his



ingenuity and research, resulting in a most interesting address which held the rapt attention of his audiences at the Social Evening of the Royal Society of Medicine.

### CRIMINAL RESPONSIBILITY.

A COMPARISON of the Memorandum of the British Medical Association and the Report of the Medico-Psychological Association prepared for submission to Lord Justice Atkin's Committee on the practice and procedure relating to criminal trials in which the plea of insanity is raised\* shows that, agreed as they are on several very important matters, there is an apparent discrepancy between them on what is perhaps the most important, the legal criteria of responsibility for crime. On careful reading of the two documents, however, this difference will be found to be more apparent than real, and to be due to the two committees not having consciously directed their minds to exactly the same point. Neither committee seems to have faced, or stated, quite clearly the conclusion to which its suggestions logically tend, and it is worth while trying, by a comparison of the two documents, to get this more definitely realized even though its practical application remain full of difficulty.

It is agreed that insanity is incapable of precise definition, but the question whether a person is or is not insane is a purely medical question. It may be very difficult to answer, and there may be differing medical opinions in this case as in others, but the whole matter is, we conceive, one of medical diagnosis. The questions as to whether an insane person should ever be punished by law for antisocial offences, and, if so, under what circumstances the penalty should be imposed, are not medical questions at all. They must be left to the legislature or to the courts. There are codes under which insanity, of and by itself, exempts the convicted prisoner from the prescribed penalty of his crime; but when this is not so the question of insanity is clearly not determinant. What the court has to determine in these cases is not the medical question of insanity, but the non-medical question of responsibility, whether the accused be insane or no. As a matter of fact, there are cases in which the court has in effect declared responsibility by inflicting the full penalty, even when there was medically no doubt as to insanity, and others in which the court has in effect declared irresponsibility by not inflicting the ordinary penalty when it would have been impossible for insanity to be medically certified.

This position is recognized in the first recommendation of the committee of the Medico-Psychological Association, which declares that "the responsibility of a prisoner should be left as a question of fact to be determined by the jury on the merits of the particular case." This being so, it might have been expected that the recommendation as to questions to be put to the jury would have been—(a) Did the prisoner commit the act alleged? (b) If he did, was he at the time responsible? leaving them to be answered solely on the evidence as to all the relevant facts "unhampered," as the body of the report says, "by any formula." The second recommendation of the committee, however, states that the second question should still be, "If he did, was he at the time insane?" and poses a third question to the jury in such form as in effect, so it seems to us, to establish a new criterion of responsibility—"that his crime was unrelated to his mental disorder."

Both committees are agreed that the M'Naghten rules should be abrogated, since the conception of unsoundness of mind implied in them is now obsolete. The British Medical Association Memorandum seems

to imply, without saying it in so many words, that the question "Is he insane?" must still be asked of the jury, and puts forward as a substitute for the M'Naghten rules another formula which differs from those rules by adding a further criterion of irresponsibility—namely, that the accused "is prevented either by defective mental power or by disease affecting the mind . . . from controlling his own conduct, unless the absence of the power of control is the direct and immediate consequence of his own default." This is, nevertheless, suggested somewhat hesitatingly, as one which "might be accepted by the medical profession as fair."

It is certainly imperative that the rules as they now stand should be abrogated or ignored; it does not appear to be established that the jury ought to be asked to declare insanity; it may fairly be argued that what they have to determine is responsibility. If the question of insanity is omitted, then the essential thing is to have a proper body of medical evidence regarding all relevant medical and psychological facts upon which the jury may come to a decision in each case. If the question of insanity is still to be put to the jury, and if in that event it is considered legitimate to ask the medical profession to help by advising as to criteria of responsibility, it will probably be found less difficult in most cases to determine that mental disorder prevents the prisoner from controlling his own conduct than that his crime was unrelated to his mental disorder at all.

The matter is very far from being settled, and we put forward these observations as an attempt to make the points at issue plain to readers who have not hitherto had occasion to give much thought to the subject. Lord Justice Atkin's Committee is now engaged in taking medical evidence, and we can only at present express the hope that the Committee's report will give a clear lead to the judicature.

### A HOSPITAL "MAINTENANCE" SYSTEM.

We published last week (p. 532) a notice of a financial reconstruction scheme for Scottish voluntary hospitals which Sir George Beatson, consulting surgeon to the Glasgow Western Infirmary, has recently issued in a pamphlet. He has given the name "maintenance system" to the scheme he enunciates. Briefly, it may be said that he divides the cost of hospitals into two parts—the maintenance of the hospital itself, and the maintenance of the patients. He proposes that the expenditure on the hospitals shall still be met by the contributions of the charitable public, but that the patients should pay, either personally or through benefit societies, for their food, drugs, and dressings. The sum so to be provided by or for the patients he estimates would, in Scotland, average about £1 a week. The interest now felt in the financial position of hospitals is so widespread that any suggestion from a hospital worker of such long and varied experience as Sir George Beatson is sure to command attention. There are some points in his scheme which may be felt to need further explanation. He states that voluntary hospitals no longer confine themselves to the field of work for which they were established—the care of the necessitous sick poor—but are meeting the needs of other sections of the community, such as artisans and members of the lower middle class. Sir George Beatson points out that voluntary hospitals have now to meet a much higher expenditure, especially on the surgical side, than in the past. What, then, it may be asked, is exactly meant by the term "necessitous poor"? The ordinary primary meaning of "necessitous" given in the *New English Dictionary* is "placed or living in a condition of necessity or poverty; having little or nothing to support oneself by; poor, needy; hard up." But this, in the circumstances, does not help us very much. Does ability to pay £1 a week under an insurance scheme requiring the payment of a few pence a week remove

\* See BRITISH MEDICAL JOURNAL, March 24th, 1923, pp. 518 and 523.



the individual from the ranks of the necessitous poor? Or, taking the other extreme, does inability to afford the cost of a surgical operation and a nursing home bring the patient within the class? Again, is a person logically a pauper to be included in the necessitous class? Sir George Beatson agrees that an "income limit" must be enforced by a voluntary hospital, but it is admittedly not easy to fix the measure of this limit. We understand Sir George Beatson to include in the maintenance of the hospital itself, besides buildings and rent and taxes, the expenditure on salaries and the running expenses in drugs, dressings, etc., of the out-door dispensary, as well as the cost of management. We gather that he would assign to the patients' side of the account the cost of wear and tear of equipment for serving food, and the surgical dressings. It will, we suspect, be difficult to make a sharp distinction between the two headings of expenditure for maintenance of hospitals and expenditure on maintenance of patients. Sir George Beatson's scheme must be considered in its relation to the present hospital policy of the British Medical Association. He says that a "definite advantage of the maintenance system is that under it there will be no grounds for medical men claiming remuneration for the services they render, because the hospitals will be receiving no payment for treatment." The Association proposes that in the event of patients paying in part or in whole the hospital maintenance fees, either individually or by some contributory method, or with the addition of rate or State aid, or a combination of any two or more of these methods, a percentage of all such payments should be passed into the staff fund. At the Annual Representative Meeting last year a resolution was adopted affirming that where such payments are in part made by rate aid or State aid, or in other cases are of an amount exceeding the cost of hospital maintenance and accommodation, such charges should be considered to include payment towards maintenance and treatment, and a percentage of all such payments should be passed into a fund to be at the disposal of the honorary medical staff. This resolution, along with certain others, was referred to the Council, which, at its meeting on October 25th, 1922, adopted a memorandum which has been circulated to the Divisions and was published in the SUPPLEMENT on November 18th (p. 186). Sir George Beatson's scheme is not in accord with that contained in the memorandum, but the views he expresses are ingenious and stimulating and therefore worthy of study.

#### A NEW THEORY OF MINERS' NYSTAGMUS.

At a meeting last week of the South Wales Institute of Engineers a paper was read by Dr. Frederick Robson in which he presented some observations upon the prevalence of miners' nystagmus in the South Wales coalfields. He gave a general survey of these coalfields to explain the influence of the metamorphoses of coal, with special reference to the production of volatile bodies and their distribution horizontally and perpendicularly (by pits). There is a considerable difference in the percentages of volatile content of coals in the adjacent areas, and Dr. Robson states that it is in direct relation with the incidence of nystagmus amongst the miners. Monmouthshire, with a volatile content of the coal of 29.50 per cent., gave 4.56 per cent. of nystagmus amongst men employed below ground; Glamorganshire East, with 29.50, showed 2.22 per cent. of nystagmus; Glamorganshire West, with 25.50 per cent., showed 1.90 per cent. of nystagmus; and Carmarthen, with 11.86 per cent., showed 1.15 per cent. of nystagmus. The statistics, he maintains, appear to show "a partial parallel analogy in the incidence of nystagmus to percentage of volatile matter, as disclosed by analysis of the various seams passing from east to west and from south to north." When these seams are examined in these directions it is found that the coal is progressively less bituminized. The coals are, however, not homogeneous, so that difficulties arise in establishing the exact relation of the statistics. It is, however, a striking

observation that in Monmouthshire, where the percentage of volatile content is nearly twice that in Glamorganshire (whole county), the nystagmus is more than double that found in the less volatile coal fields. Dr. Illingworth, who has been associated with Dr. Robson in this work, states that coal of a bituminous kind gives rise to dust at the face by "geological" attrition, which oxidizes readily at pit temperature, with the formation of carbon monoxide gas. The inference that a gas or gases is the generic cause of nystagmus is held to be supported by strong presumptive evidence. So far as is known the blood content of miners working in the most gassy mines has not been investigated, and it is suggested that this should be done. Negative evidence against the usual theory of defective lighting as the cause of nystagmus is contained in a series of observations made in the Rhondda Valley over a series of years (1909 to 1923). There have been two peaks of high incidence of nystagmus, the one in 1914 and the other in 1920. During this period there has been a steady increase in the use of electric lamps; they were introduced in 1913; last year 60,000 lamps were in use, and there has been an equivalent reduction in the use of locked oil lamps. The number of men increased in each of the two years of the peaks of incidence of the nystagmus, but the men's working time has been reduced, and wages have increased, both factors which should reduce the risks of the disease if the actual coal cutting were the primary cause. Against this there has been an increase of compensation, from £1 to 25 shillings a week in 1917, and to 35 shillings in 1920; this may have conduced to the more general reporting of cases. The author concludes that "it is obvious that coal getting *per se* is not the main cause of nystagmus." Further, he states that it takes twenty years underground in the hard coal areas to produce a nystagmic patient, whereas in the soft coal or bituminous pits, as in Monmouthshire, nystagmus may be contracted in two years. Dr. Robson is collaborating with Professor George Knox and Dr. S. Roy Illingworth, of the Treforest School of Mines, in an examination of coal dusts and mine gases in selected pits, as far as they may relate to the origin of nystagmus. It is proposed to correlate their results with Dr. Robson's in order to prove or disprove his hypothesis that coals give rise to different percentages of nystagmus in some ratio to their volatile content, the volatile content being an index of the kind of coal giving rise to the disorder. The results of this combined inquiry will be awaited with interest.

#### THE PROGRESS OF CREMATION.

It was reported at the annual meeting of the Cremation Society of England, held on March 21st, that the number of cremations in Great Britain in 1922 was 2,009, an increase of 87 on the figure for the previous year, although slightly below the highest total for a year, which was reached in 1919. The total number of cremations since the first in 1885 is 27,429, and of these nearly one-half have taken place at Golders Green. It was only to be expected that attention should be drawn in support of cremation propaganda to the recent exploration of the tomb of Tut-ankh-Amen; it served to point the moral that the disturbance of the dead for purposes less scientific and more basely utilitarian than those of the archaeologist is taking place all the time, with the requisitioning of burying grounds for street widenings or railway extensions or other improvements. The urban cemetery is by no means the place of uninvaded sanctity and rest which is pictured in Gray's "Elegy," and such disturbance is inevitable, for, as Sir John Simon remarked sixty years ago, every dead body receives its accommodation at the expense of the living and to their detriment. To the objection to cremation that it would sometimes enable crime to be successfully concealed, the Council in the annual report points out that the several exhumations lately necessary might have been prevented had the same precautions of strict inquiry into the cause of death been taken before burial as are taken in the case of a body which it is proposed to cremate. It is the lax burial system—not the practice of cremation—which offers facilities for



concealment, and the probability is that a larger number of crimes escape detection on account of this laxity than are brought to light by exhuming the body. Sir Malcolm Morris presided over the annual meeting, when the Duke of Bedford was re-elected President, and certain formal business was transacted consequent upon the recent reconstitution and incorporation of the Society. Occasion was taken to mention the progress of cremation in other countries, especially in Sweden, where a propagandist effort is being made by the Swedish Cremation Union during the Jubilee Exhibition at Gothenburg in the coming summer. The head of the committee in charge of the work is Dr. Veener von Heidenstam, Fellow of the Royal Swedish Academy, and the necessary funds for organizing the effort are being supplied by the Swedish Government and the municipalities of Stockholm and other cities, as well as by organizations specially interested in the cause of cremation.

#### INDUSTRIAL PSYCHOLOGY.

THE second anniversary meeting of the National Institute of Industrial Psychology was held last week in the rooms of the Royal Society. The Earl of Balfour, in moving a resolution calling for support for the Institute, said that in spite of the great services rendered by British scientists, the value of the work which science could do for society had been underrated in this country. This was due partly to the rightful zest for pure science which animated the scientific mind; if men of science were not interested in the abstract and non-utilitarian aspects of their work science itself would languish and be near its doom. But science could intervene to more purpose in industry, greatly to the advantage of the State. One means of intervention was through the physical and chemical sciences, whereby discoveries were turned into inventions. Even in this obvious application a great deal of apathy still existed which made him anxious for the future of British industry. Another task of science in industry was to protect the workman from the diseases and accidents incidental to his calling. A third was industrial psychology, and here, whatever might be said of other applications of science to industrial work, there could be no collision between employer and worker. The primary object of industrial psychology was to make the labours of the wage-earner easier, smoother, more pleasurable, and more productive. Intelligent investigation and experiment could do much to elicit the true laws which ought to govern physical effort. What Bacon described as the object of science—"the relief of man's estate"—could not be pursued on safer, sounder, and less controversial lines than those which the Institute had adopted. Sir Charles Sherrington, P.R.S., also spoke on the great variety of problems which had been already undertaken by the Institute, such as the study of miners' movements in coal getting, rest pauses in catering work, and the simplification of packing in the factory. Forty years ago psychology was modestly invading the universities as a laboratory subject, but for some years it had hardly a laboratory to call its own. It occupied itself at first in exact time measurements of repetition processes, and went on to study the factors of attention, memorization, mental fatigue, interest, monotony, anxiety, and other emotional states. Every modern process of industry involved perhaps thousands of operations, each one depending on a mental situation, with favourable or unfavourable elements. In the modifications of these processes, as well as in vocational selection and the study of the predilections and disabilities of individuals, industrial psychology was proving its worth. Other speakers were Sir Lynden Macassey, K.C., Mr. Arthur Pugh, of the Iron and Steel Trades Federation, and Dr. C. S. Myers, the Director of the Institute. Dr. Myers said that the experience of the Institute was that deficient output was due less to intentional restriction than to bodily and mental conflicts with environment. The investigators from the Institute had found labour intensely interested in the possibilities of affording better guidance, based on proper tests, to those deciding on the operations for which they were best fitted. It was the employer, who asked for

immediate results, or for a guarantee of an extra percentage of profit, who needed educating in industrial psychology. The Institute had undertaken some investigations on illumination in a Lancashire coal-mine. The result of substituting diffused for undiffused light at the coal face had been an appreciable increase of output of coal, and the new lamps giving greater brightness of illumination could not be supplied fast enough to the colliers, who stated that the lamps had made the work easier and involved far less strain on the eyesight. Another piece of work had been the study of breakages in a tea-shop. Here improvements in methods of ventilation, devices for screening the workers from excessive heat, and the reduction of danger points of irritation and fatigue had resulted in a diminution of 53 per cent. in the number of breakages.

#### RADIOLOGY IN PRACTICE.

MR. C. THURSTAN HOLLAND, D.L., Ch.M., has been appointed honorary consulting radiologist to the Royal Infirmary, Liverpool. This recognition of his distinction as a radiologist will, we believe, give great pleasure to his brother radiologists and to all members of the profession who know the excellence of his work. He was one of the first to take up the study of the practical application of x rays in diagnosis and treatment. He pursued it in a true scientific spirit, and on this account his influence on the development of medical radiology has been, and we hope will long continue to be, very great. He has steadfastly maintained the thesis that radiology for diagnosis or treatment should be conducted by members of the medical profession themselves, and that it is the duty of the radiologist not only to take good plates but to interpret them, the radiologist having his part to play, and a very important one it is, in the diagnosis of any case in which his co-operation is invited. Mr. Thurstan Holland, by his character no less than by his skill, enjoys to the full the confidence of all members of the profession who are associated with him in clinical work, and that he commands the respect of the members of his own specialty is shown among many other evidences by the fact that he has been selected to give the Silvanus Thompson lecture of the Roentgen Society on May 1st.

THE King and Queen have promised to lay the foundation stone of the new Rockefeller building of University College on some day towards the end of May. On the same occasion they will open the anatomy buildings of University College, which are nearing completion.

### Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

#### Dangerous Drugs and Poisons (Amendment) Bill.

*Amendments in Standing Committee.*

THE Dangerous Drugs and Poisons (Amendment) Bill was taken in Standing Committee B in the Commons on March 26th, Mr. Arthur Ponsonby presiding.

The proceedings were very brief, occupying less than half an hour. All the amendments on the notice paper, with the exception of two (of no importance and not proceeded with), were in the name of the Home Secretary and they were all agreed to. It was understood that this was the result of arrangements between Mr. Bridgeman, on behalf of the Government, and the medical group, university members, and the British Medical Association. The full text of the bill was given in the SUPPLEMENT to the BRITISH MEDICAL JOURNAL of February 24th (p. 59), from which it will be seen how the amendments apply. In Clause 2, at the end of the subsection dealing with fines and their disposal, the following amendment was inserted:

(2a) No proceedings for an indictable offence against this Act shall in England or Wales be instituted except by or with the consent of the Attorney-General or by the Director of Public Prosecutions, and no person shall, on conviction for any offence of contravening or failing to comply with any regulation under this Act relating to the keeping of books or the issuing or dispensing of prescriptions containing drugs to which this Act applies, be sentenced to imprisonment without the option of a fine or to pay a fine exceeding fifty pounds, if the court dealing with the case is satisfied that the offence was







## England and Wales.

### POST-GRADUATE WORK IN BIRMINGHAM.

The Clinical Board of the University of Birmingham has arranged a course of post-graduate demonstrations to be given at the General Hospital, Birmingham, on Tuesdays, from 3.30 to 5 p.m., during April, May, and June. The board believes that such practical demonstrations will prove of great value and will be appreciated by members of the profession residing within reach of Birmingham. The course, which will be given by members of the medical and surgical staffs, will include demonstrations on skin disorders, nervous disorders, surgery, diseases of the heart and of the nose and throat, on chronic arthritis and its treatment, on the methods of investigating diseases of the stomach, on diabetes, on nephritis, and on common deformities of the feet. An advertisement appears in another place, but we may say that the first demonstration will be given on April 17th. The fee for the course is one guinea, and full particulars can be obtained from the clerk to the Clinical Board, the University, Edmund Street, Birmingham.

### "ASYLUM" OR "MENTAL HOSPITAL."

A question of nomenclature is raised by the visiting committee of the City of London Mental Hospital, Stone, near Dartford, in its annual report for 1922. For many years past, it says, to meet the objections raised by the friends of patients to the description of that institution as the "City of London Asylum" the words "City of London Mental Hospital" have been substituted. The committee is, however, advised that for all legal and official purposes it is bound by the description "asylum" laid down in the Lunacy Acts. This inevitably leads to inconvenience and confusion, and the committee recommends that steps should be taken by the City Corporation to get a clause inserted in the next General Powers Bill authorizing the use of the gentler expression in describing the institution for all purposes. For some time there has been a feeling throughout the country that the description "asylum" should be dropped in connexion with institutions for the treatment of the mentally afflicted.

## Scotland.

### POST-GRADUATE TEACHING IN GLASGOW.

Under the auspices of the Glasgow Post Graduate Medical Association arrangements have been made for the provision of post-graduate teaching for medical practitioners from May until October of this year. The teaching facilities are of two forms—clinical courses and clinical assistantships—and are designed to meet the needs of practitioners who wish to refresh their knowledge of one or more subjects, and at the same time to make provision for those who wish to spend a few months in the more intensive study of one particular subject. The courses are held in the different infirmaries and special hospitals of Glasgow, and the subjects include clinical medicine, clinical surgery, clinical obstetrics, clinical gynaecology, diseases of children, ophthalmology, diseases of the ear, throat, and nose, dermatology, urology, orthopaedics, venereal diseases, and several others. Most of the clinical courses extend over one or two months, on one, two, or (in a few cases) three days of each week; in ophthalmology an intensive course will be held daily throughout September. As regards clinical assistantships arrangements have been made whereby a limited number of practitioners can become attached to wards or out-patient departments under the direct supervision of the physician or surgeon in charge, and they will be able to take advantage of the facilities for intimate study of the cases, carrying out detailed investigations as directed. These clinical assistantships are, in most instances, available not only during the coming summer, but throughout the whole year; they provide exceptional opportunities for those who are able to devote the necessary time to the work—either the whole or part of the day—and are intended to appeal especially to young graduates who contemplate practising in some special subject, and to practitioners from overseas who wish to become acquainted with the most modern methods of diagnosis and treatment. Further information may be obtained on application to the secretary, Glasgow Post-Graduate Medical Association, the University, Glasgow.

## Ireland.

### DUBLIN INFANT AID SOCIETY.

The report presented to the annual meeting of the Infant Aid Society, at which Sir William Wheeler, President of the Royal College of Surgeons in Ireland, was in the chair, stated that during 1922 the amount of relief distributed was 12,767 gallons of free milk, at a cost of £1,190 7s. 5d.; 6,758 gallons of milk sold at a reduced price, £616 4s.; 4,629 free dinners, £51 13s. 7d.; 369 lb. free dried milk, £29 3s. 6d.; and 435 lb. dried milk sold at a reduced price, £34 7s. 9d. There were 47 bags of coal and 804 garments also distributed. All this relief was distributed on the advice of voluntary visitors of the society, who undertook to visit and care for a year the destitute mothers and infants recommended by the nurse of the district. The total number of visits paid by these voluntary visitors during the year was 9,996, an increase of 3,553 on the previous year.

The report expressed appreciation of the good work done by the five nurses and health visitors of the society, who with the eight nurses of the Central Babies' Club Committee, visited all the poor families within the city. The total number of visits paid by the five nurses and health visitors was 31,233, an increase of 1,178 on the previous year. The workers of the society paid 41,299 visits, a total increase of 4,731. The visitors had very often to act as counsellors and friends of the mothers and fathers. There was great poverty in the city, and unemployment seemed to be as great as it was last year. The times were abnormal, and the series of shootings and explosions which had occurred in the city for the past eight months or so must have affected the health of the mothers and their babies. The treatment of delicate babies and expectant mothers formed an essential part in the work of the society. During the year 363 infants had received hospital treatment through the society, which was greatly assisted by the help it received from the National Maternity Hospital, Holles Street, St. Ultan's Hospital, the Children's Hospital, Temple Street, the Children's Hospital, Harcourt Street, the Orthopaedic Hospital, Richmond Hospital, Linden and Stillorgan Convalescent Homes, and the Children's Holiday Home, Cheeverstown. The report also expressed indebtedness to the Sick and Indigent Roomkeepers' Society, the Society of St. Vincent de Paul, the Dublin Corporation, the Albert College Farm, Glasnevin, and the Cowkeepers' Association, for supplying milk at a reduced price; the Local Government Board, the Irish White Cross, the Ada Lewis Distress Fund, the Rev. Mother, St. Vincent's Hospital, the Dominican Convents, Eccles Street and Muckross Park, the Provincial, All Hallows College, for free milk, and to many other helpers and subscribers. The adoption of the report was moved by Mr. McArdle, who said that the strength of a nation lay with the children. The chairman, in putting the motion, which was carried unanimously, said that their storm-tossed vessel in Ireland would have to be repaired by the children growing up. In all questions of health, and in all questions of the support of hospitals, Ireland was far behind other countries in Europe and behind the United States. In the areas in Dublin where the Infant Aid Society was working the mortality amongst children had been considerably reduced. Dr. Reginald White, the President of the society, to whose energy a great deal of its success was due, had reminded him that the normal mortality in Dublin amongst infant children was 160 per 1,000—an appalling state of affairs—but that in a district where the Infant Aid Society was active it fell to 110—a very considerable reduction.

### TUBERCULOSIS IN CO. ARMAGH.

In his annual report Dr. Robinson, tuberculosis officer for co. Armagh, states that during the past year twenty-one new cases received dispensary treatment and nine sanatorium treatment. With reference to the inquiry of the Ministry of Labour as to the relative value of the various forms of treatment he states that he had no doubt that if the patient came under observation in the early stage—which, unfortunately, did not often happen—and was willing to submit to medical advice, residence in the sanatorium was the best, for not only would the disease be arrested but he would be taught much that would be of service to him when he returned home. In 1922 the number of deaths was 26, as against 248 in 1913, the first year of the working of the scheme. Though the number of deaths from pulmonary tuberculosis was smaller



he thought there was very little doubt that a large number of deaths from "other forms" was due to milk infection, and showed the necessity for a thorough testing and inspection of the milk supply. The number of deaths from the pulmonary type could also be reduced if a comprehensive building scheme were adopted. Larger and better houses were required. In the long run a healthy A1 population was of more benefit to the State than a B2 population. It was not unusual for him to find a patient suffering from advanced pulmonary tuberculosis occupying the same bed with two or three others. Dr. Robinson remarks, in conclusion, that the treatment of tuberculosis is not so hopeless as some imagine. Several patients who were under his care years ago are at present enjoying good health and at their ordinary work.

## Correspondence.

### THE CONGRESS OF MEDICINE IN VIENNA.

SIR,—The Congress for Internal Medicine to be held in Vienna from April 9th to 12th is not in the true sense of the word an international one, but the authorities have always welcomed the participation of foreigners on an equal basis. Personally I believe that true international congresses are impossible at present, but these local meetings, where outsiders are welcomed, form the best method, in my opinion, for the resumption of international relations. Vienna is peculiarly adapted at the present moment for this purpose, because Professor Wenckebach, who came from Holland to take up this important position in Vienna, is well known to many English physicians and scientists.

The notice has been issued too late for most of us to be able to attend, but it is possible that this may catch the eye of some younger men who would be free to undertake the journey.—I am, etc.,

London, W., March 20th.

HENRY HEAD.

\*\*\* The fact that the congress was to be held was mentioned in our columns of March 17th (p. 491). The Austrian Legation (18, Belgrave Square, S.W.1) now states that visitors from the United Kingdom will be particularly welcome and everything will be done to facilitate their journey to and stay in Austria, that the cost of the journey has been specially reduced, and that full information can be obtained on application to the Legation.

### SKIN RASHES FROM DYED FUR.

SIR,—Apropos of Dr. Semon's note in the JOURNAL of March 17th (p. 467) I had, some considerable time ago, corroboration of his diagnosis. I reported to Messrs. Nobel's Explosives Co. on a possible claim for compensation, in the case of a gelatin worker who had been certified by her medical attendant to be suffering from "dermatitis due to chemicals."

On examination the worker did not show actual dermatitis, but a blotchy erythema of neck and chin, with urticarial swelling of eyelids. She was not exposed in her occupation to any nitro body that would give rise to such a condition, and her hands, which were chiefly involved in her work, were free from any inflammatory condition. Inquiry as to hair washes, face pomades, powders for complexion, photographic material, petrol and paraffin, and soaps yielded negative results. A feature was that on a Saturday she had been certified by her medical attendant as having recovered, and after two hours' work on the Monday following the face was so inflamed that the ambulance attendant at the factory sent her home.

The food, occupation, and clothing of the Sunday were considered. A mustard-coloured, cheap felt hat was inspected, and showed at the curled-up brim behind a dark smudge. The worker explained that this came from a new fur she had bought. The fur was then inspected. By wetting a prescription form and rubbing same on surface of fur a brown smudge was obtained. The lining was unpicked and a smudge was obtained by rubbing a moistened paper on the pelt. The distribution, the freedom of the hands from eruption, and the fact that the appearance of the eruption was not suggestive of nitro-body rash, were sufficient to warrant a report that the condition was due to the fur wrap.

The worker returned to work and ceased wearing the fur and had no further trouble. The reappearance of the eruption on the Monday is due to the fact that, whatever the dye is, it is one which is more irritant in presence of moisture.

The urticarial condition favours the impression that the dye is an arsenical compound.—I am, etc.,

HARRY M. ROBERTS.

Stevenston, Ayrshire, March 17th.

### HAEMOCLASIC CRISIS AS A TEST OF HEPATIC INSUFFICIENCY.

SIR,—Dr. Langdon Brown, in his most interesting lecture in the BRITISH MEDICAL JOURNAL of March 17th (p. 461), on laboratory tests in disease of liver and pancreas, quotes the above test as a sign of hepatic insufficiency. The main points of the test are the post-prandial leucopenia, fall in blood pressure, alteration in viscosity of blood, and the explanation was the entering into the systemic circulation of improperly metabolized protein, said to be due to insufficiency of the liver.

Müller, in an article entitled "New glimpses into the regulation of vascular tonus" in the *Jahreskurse für Ärztliche Fortbildung* (January, 1923), gives an entirely different interpretation of this reaction, showing that it is evidence of a vagotonic state, and that identically similar reactions can be obtained from the intracutaneous injections of various non-specific substances. The article seems to me to be very convincing, being supported by authoritative references and experiments all through. I should like to know which of the two views is the correct one.—I am, etc.,

Darlington, March 19th.

R. CHALMERS.

### HOSPITAL POLICY.

SIR,—In the JOURNAL of March 24th (p. 533) Dr. Fothergill states that if the staff of a voluntary hospital is paid for its services it follows that the members of the board of management must also be paid; this is an argument that has frequently been used, but for which I can see no foundation. Members of the boards of management of many institutions where the staff is paid, such as asylums, sanatoriums, and infectious diseases hospitals, do their work voluntarily as part of their public duties; indeed, I know of no such institution where they are paid. Moreover, the position of a member of a board of management is entirely different from that of a member of the medical staff; the former is not giving the services of his particular profession or business by which he makes his living, as is the latter; auditors, solicitors, architects, and other professional men whose special services are required by the hospitals are for the most part paid.—I am, etc.,

Bradford-on-Avon, March 24th.

CHAS. E. S. FLEMING.

SIR,—The correspondence in the JOURNAL on hospital policy is of much interest, though one could wish that there were a greater variety of writers so that a wider scope might be given to the discussion. Up till now it appears that there has been chiefly the reiteration of opinions by a few correspondents.

One point I would like to make. In letters in the issues for March 17th and 24th there have appeared statements to the effect that the policy of the Association will bring about the aggregation of all or nearly all the consulting and specialist work for contributory schemes within the voluntary hospitals. Such a statement as this shows that the writers of the letters have not refreshed their memories of the resolutions passed at the Annual Representative Meeting, 1922. The fear which they have in their minds is expressly guarded against in the Association policy. At the meeting of the Marylebone Division<sup>1</sup> when the application of Dr. Gordon Dill's contributory scheme to London was under discussion I pointed out that a serious danger, for London at any rate, arose from the risk that consultations and specialist services for the patients accepted under such schemes might tend to be limited to hospital staffs, and that measures must be taken to prevent this. Later the Hospitals Committee, the Council, a general conference of hospital staffs, and finally the Annual Representative Meeting, accepted two resolutions which are designed to prevent such a happening. They are as follows:

Para. 28. Where arrangements for consultations or specialist services for tariff patients are made under some contributory scheme or otherwise, such arrangements should provide that the services shall be given so far as is possible and consistent with the best interests of the patients by the private practitioner at his consulting rooms or at the patient's own home and not at the out-patient department of the voluntary hospital.

Para. 31. Full opportunity should be given to private practitioners who possess the necessary qualifications and experience to participate in the work of voluntary hospitals, and for that purpose—

(a) The age limit or tenure of office of members of the honorary medical staffs of voluntary hospitals should, where necessary, be so modified as to allow more and younger practitioners to obtain responsible hospital experience.

<sup>1</sup> SUPPLEMENT, BRITISH MEDICAL JOURNAL, November 25th, 1921, p. 121.











frequent contact with Sir William. At this period he was more concerned with the organization of work and with broad generalizations, yet I do not think he ever showed himself to greater advantage than in his dealings with these cases at this time; at this time, also, he was suffering severely from his own personal bereavements. After the war I knew him as a colleague on the staff of the Royal Infirmary, and another side of his complex character dominated. Questions of hospital policy and details of medical administration received the same attention as in earlier days had been expended upon the cutaneous distribution of spinal segments, or the clinical aspects of the cervical rib, and were left again in the same state of completeness.

It became more and more obvious during these latter years that Sir William's interests were turning in the direction of medical politics, and his untimely death has been a blow to all of us, his students and his colleagues, who felt that he might one day have filled with distinction the presidential chair of the Royal College of Surgeons. Sir William was, I should say, by nature a very nervous and a very self-conscious man, and his aloofness and somewhat terrifying personality were of the nature of over-compensation in the opposite direction. Such men are not always sufficient for themselves, but it is among them, often enough, that the best workers are found.

A special service was held on March 21st at the Manchester Cathedral, which was filled by a large congregation, medical and lay women as well as men, who attended to pay their last respects to a friend and fellow worker or trusted adviser. The Royal College of Surgeons of England was represented by Sir Berkeley Moynihan and Mr. Thelwall Thomas; the University of Manchester by Professors H. B. Dixon, J. Shaw Dunn, J. S. B. Stopford, T. F. Tout, and R. B. Wild; the University of Liverpool by its vice-chancellor, Dr. Adams; the Army Medical Service by Colonel F. H. Westmacott; and the Manchester Medical Society by Sir William Milligan. The Board of Management of the Manchester Royal Infirmary, the Medico-Ethical Association, the old Owensian Society, and the St. Andrews Society of Manchester were also represented. Very many members of the staff of the Manchester Royal Infirmary were present, and also representatives of the nurses, as well as many personal friends in the profession. The interment took place afterwards at the Manchester Southern Cemetery.

A slight correction has to be made in the notice published last week. Sir William Thorburn had three sons: one died in 1910, one died in China in June, 1914, and Lieutenant F. E. Thorburn was killed in Gallipoli.

Dr. J. LLEWELLYN REES of Pontardawe died on March 4th, aged 58. He was the son of the late Rev. William Rees, vicar of Llanboidy, was educated at Llandovery and at the London Hospital Medical College, and took the diplomas of M.R.C.S. and L.R.C.P. Lond. in 1883. After serving as clinical assistant to out-patients and in the skin department of the London Hospital, medical officer to the Provident Dispensary, Bethnal Green, and as senior resident surgeon to the Royal Sea-Bathing Hospital, Margate, he succeeded Dr. Grice Jones in practice at Pontardawe some twenty-three years ago. He was medical officer to the Pontardawe and District Fever Hospital at Gellynudd since its opening. Dr. Rees, who was a member of the Swansea Division of the British Medical Association, was a keen sportsman, and well known as a Rugby footballer in his hospital days. He is survived by two sons and two daughters.

We regret to announce the death of Dr. H. W. McCauley HAYES of Madras. He was educated at the University of Edinburgh, took the Scottish triple qualification in 1887, and became M.R.C.P. Edin. the following year. He also took the Diploma in Public Health of the University of Liverpool in 1909, and four years later the Diploma in Tropical Medicine at the University of London. After serving as surgeon to the Victoria Hospital, Swindon, he became medical officer of the South Indian Railway, where he gained the respect of all with whom he came in contact, and was particularly popular in the social life of Trichinopoly, where the headquarters of the railway are situated. Owing to the depletion of South India of its I.M.S. officers in consequence of the war, Dr. Hayes's services were requisitioned by the Government, and he was appointed to act as superintendent of the Madras Lunatic Asylum, in the work of which institution he showed great interest, especially in regard to the welfare of the inmates. Dr. Hayes was honorary treasurer of the South

Indian and Madras Branch of the British Medical Association, and was lieutenant-colonel in the Indian Defence Force Medical Department.

The death of Sir ERNEST CLARKE calls for at least passing notice here. He was born in 1856, and at an early age became a clerk in the Medical Department of the Local Government Board. He was a man of unusual ability and energy, possessed by the ambition commonly associated with these qualities, and that department then afforded little scope; he left it in 1881 for the Stock Exchange clearing house, and afterwards, in 1887, became secretary of the Royal Agricultural Society. He was the first incumbent of the office of Lecturer on Agricultural History at Cambridge (1896-99). Owing to a mistaken policy for which Clarke was in part held responsible, he retired from the service of the Royal Agricultural Society in 1905 and had not since held any public appointment. During the eighties he was an assiduous and valued contributor to this JOURNAL. It is difficult, even for those who lived through it, to put the mind back to the state of things in public health at that time. The awakening had begun, and the British Medical Association, through its old Public Health Committee, and its JOURNAL, then edited by Ernest Hart, with Clarke as one of his most trusted advisers, did much to stimulate public opinion to demand better things. A great deal of the time and energy of medical men and of the space of this JOURNAL were occupied in arguing for propositions which are now commonplace; big epidemics of typhoid fever were still common, tuberculosis was popularly regarded as a hereditary disease by which certain families were inevitably affected, the death rate was high, and the infant death rate still higher. Clarke whole-heartedly believed that these things could be mended, and worked ardently with the limited means open to him to end them. It was a characteristic example of English slowness to entertain new principles that means were not found to keep him in the central public health service. It was not the fault of the sorely tried medical department of that day.

## Medical News.

THE Medical Research Council issued, on March 23th, a report entitled the *Schick Test, Diphtheria and Scarlet Fever* (H.M. Stationery Office, 1s. net), by Surgeon Commander Sheldon F. Dudley, R.N. The report is founded on a study of the incidence of diphtheria and scarlet fever in the Royal Naval School at Greenwich. The author has been able to differentiate between the invisible "epidemics of carriers" and "epidemics of immunization" on the one hand, and the visible epidemics of disease on the other. He concludes that the *Schick test* is a reliable method for ascertaining who are immune to diphtheria, and that the percentage of doubtful reactions can be reduced to two or three. We propose to refer more fully to this valuable report in our next issue.

THE arrangements of the Royal Institution for lectures after Easter include a course of four lectures by Sir Arthur Keith on the machinery of human evolution; the first of this course will be given on April 10th at 3 p.m. Two lectures, of which the first will be given on May 31st, will be delivered by Sir William M. Bayliss, on the nature of enzyme action; and among the Saturday afternoon lectures are two by Dr. Leonard Williams on the physical and physiological foundations of character, of which the first will be given on April 28th.

THE memorandum on the Dangerous Drugs Regulations prepared by the Home Secretary in conjunction with the Minister of Health and the Scottish Board of Health, which was reproduced in the JOURNAL on January 13th, 1923 (p. 63), has now been printed and put on sale. Copies may be obtained, price 2d. each, through any bookseller or direct from the Stationery Office at Imperial House, Kingsway, London, W.C.2, or the dépôts at Edinburgh, Manchester, and Cardiff.

ESSAYS for the Gifford Edmunds prize in ophthalmology awarded every two years for the best compilation on a subject dealing with ophthalmology and including original work, must be sent by December 31st, 1924; the subject selected for the next award is irido-cyclitis. Particulars of the prize can be obtained on application to the Secretary, Royal London Ophthalmic Hospital, City Road, E.C.1.

MR. STEPHEN PAGET has contributed an introduction to a book, *Medical Practice in Africa and the East*, which is about to be published by the Student Christian Movement. The book consists of a series of open letters on professional subjects from men and women doctors with many years' experience in India, China, or Africa.



NOTE.—It is against the rules of the Post Office to address either in initials or numbers.



## A British Medical Association Lecture

ON

## CONGENITAL HYPERTROPHY OF THE PYLORUS.\*

BY

GEORGE F. STILL, M.A., M.D.CANTAB., F.R.C.P.LOND.,

PHYSICIAN TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET; PROFESSOR OF DISEASES OF CHILDREN, KING'S COLLEGE HOSPITAL.

So much has been written in the last few years on congenital hypertrophy of the pylorus that one is almost inclined to apologize for broaching the subject again. It seems, however, worth while to sum up the results of one's experience when that experience is perhaps unusually large and extends far enough back to give some sort of perspective of progress in respect of the particular disorder, especially as to treatment.

In the past twenty-four years I have had under my own observation, either in my wards at hospital or in private practice, 248 cases of congenital hypertrophy of the pylorus. These figures must not be taken as indicating that the condition is of frequent occurrence. On the contrary, it is so uncommon that many practitioners of large experience tell me they have never seen a case. In the past, no doubt, congenital hypertrophy of the pylorus must often have run its course unrecognized, labelled perhaps "marasmus" or "chronic gastric catarrh"; but time has changed all this, and whereas in former years a case seen in consultation had almost invariably been undiagnosed, now the condition has almost always been suspected, if not recognized.

In outline the picture is now very generally known, thanks largely to the writings of Dr. John Thomson of Edinburgh. An infant three or four weeks old who has hitherto shown no tendency to vomit, or perhaps has posseted a mouthful or two, begins to vomit occasionally. The vomiting is not necessarily very frequent, perhaps only twice in the twenty-four hours, but the vomit is large and evidently consists of more than the last feed; moreover, it comes up with such force that it comes through nostrils as well as mouth. At the same time the bowels, which have been working with more or less regularity, become constipated, and the weight, which has been rising satisfactorily, ceases to increase and very soon begins to fall. In some cases it is this wasting rather than the vomiting which has aroused the mother's anxiety. On examination of the abdomen there is seen peristalsis of the stomach and the characteristic thickening of the pylorus is to be felt.

I shall proceed to consider this affection in detail, basing my remarks on my series of 248 cases. Unfortunately I find that in my notes I have sometimes omitted to record particular points, so that my figures will not on all points include the whole series.

This is one of the diseases in which sex incidence is as remarkable as it is difficult to interpret. Of 247 cases only 37 were girls, 210 were boys.

Place in family is much less definitely a predisposing factor than sex. In 114 cases out of 230 in which I have noted this point the infant was the first-born child; so that the proportion of first-born is about 50 per cent. I would point out that the proportion of first-born affected does not necessarily correspond to the liability of the first-born. In my opinion there is a special liability of the first-born to this, as also to other congenital abnormalities, but it is difficult to give any conclusive evidence of this, especially in these days when in many families there is only one child or two, so that the chance is considerable that a large proportion of persons showing any condition will be first-born.

In speaking of congenital hypertrophy of the pylorus as a congenital abnormality I do not mean to imply that the hypertrophy, or even the spasm that leads to hypertrophy, dates from birth; it is conceivable that it may do so, although the symptoms do not appear until the infant is about 2 to 4 weeks old. What is congenital is apparently some lack of stability, if I may put it so, in the harmony of gastric and pyloric relaxation and contraction, so that the child starts life with a machine which, although able to work passably well for a few weeks, is certain soon to get out of order. In this sense, at any rate, the disorder is congenital, and, like other congenital abnormalities, it is sometimes

repeated in the same family. Amongst my 248 cases there were four instances of two cases of this affection occurring in the same family.

The age at which the first symptom appears—and for this purpose I have regarded vomiting as the first symptom—will be seen from the following table of 195 cases in which this point was noted:

Week of onset.	No. of cases.	Week of onset.	No. of cases.
1st	30	6th	6
2nd	38	7th	1
3rd	57	8th	7
4th	35	9th	1
5th	19	12th	1

## SYMPTOMS AND DIAGNOSIS.

I propose now to consider the symptoms in detail with special reference to diagnosis.

Vomiting, constipation, and wasting: this is the combination which in any infant under 3 months of age should always suggest the possibility of congenital hypertrophy of the pylorus. The association of constipation with vomiting at any period of childhood should make one suspicious of serious organic disease, such as meningitis or some form of intestinal obstruction, and early infancy is no exception to this rule. The vomiting of digestive disturbance is likely to be associated with looseness of bowels rather than with constipation: there is also usually with it some abnormal appearance of the stools, whereas with congenital hypertrophy of the pylorus there is marked constipation and the stools are usually otherwise normal. The constipation is no doubt due to the smallness of the quantity of food which passes through the pylorus into the bowel, and the gradual disappearance of the constipation is one of the indications of lessening of the pyloric obstruction in cases which are treated by lavage of the stomach.

The vomiting varies remarkably in its frequency. There are cases, and I think the commoner, in which the vomiting is almost insidious in its onset, occurring at first perhaps only once or twice in twenty-four hours. The baby has posseted from time to time, and it was thought that this was due either to flatulence or to some indigestion; then a larger and more forcible vomit began to occur once or twice in the day, but there was no date to which the beginning of the trouble could be definitely referred. There are other cases in which upon a particular day the infant begins to vomit, never having vomited before, and the vomiting occurs after nearly every meal, so that hardly any food is retained. Naturally in the latter class of case the loss of weight is much more rapid than in the less acute cases. I have known such to lose weight at the rate of several ounces a day, whereas in the more common type, with vomiting perhaps twice daily, a loss of 5 or 6 oz. a week is more likely.

The character of the vomited material is worth observing, for it may give some clue to the state of the stomach. In the early stage it usually consists only of food, but as time goes on there is more and more tendency to vomiting of much glairy mucus, evidently pointing to a catarrhal condition of the mucous membrane, and this is often associated with considerable dilatation of the stomach; the stagnation of food not only distends the stomach but sets up a catarrhal condition of the mucosa, and sometimes brown shreds or even red clots of blood appear in the vomit. Occasionally, in spite of the situation of the obstruction in these infants, bilious material has appeared in the vomit. This is rare, but is of interest as showing that the closure of the pylorus is not continuous. If any proof were needed that the pyloric obstruction is intermittent, and is therefore due at least in part to spasm of the pylorus, it would be afforded by cases, not very rare in my experience, in which infants with peristalsis and tumour, proved subsequently by operation to be due to hypertrophy of the pylorus, have had intervals of two or three days, sometimes even as long as five days, when the vomiting has temporarily ceased entirely and food passes through the pylorus normally. I mention this not only because it throws light on the character of the obstruction, but also because it has sometimes raised doubts as to diagnosis, both in the parents' and in the doctor's minds, when the spasmodic nature of the obstruction has not been fully realized.

In this connexion also I would mention another feature which is usual in this disorder, though not peculiar to it—that each change of food is apt to be followed by lessening or cessation of the vomiting for twenty-four to forty-eight hours, after which the vomiting becomes as troublesome as

\* Delivered before the West Dorset Branch of the British Medical Association, November 25th, 1922.



before. This repeated temporary improvement is another source of error in diagnosis. A condition apparently so responsive to change of diet is thought to be simply a digestive trouble, and it is concluded that if only the right food could be found the trouble would disappear. So one finds that often food after food has been tried and the infant has gradually lost weight and strength before the possibility of pyloric obstruction is realized.

Now the diagnosis of congenital hypertrophy of the pylorus, unlike the diagnosis of many other disorders and diseases, is not a matter of opinion; it is demonstrable, and its demonstration consists in seeing waves of peristalsis in the hypertrophied and dilated stomach, and in feeling the hard and thickened pylorus. Visible peristalsis of the stomach in an infant is not necessarily an indication of any obstructive condition; its significance depends upon the degree of the peristalsis. Without organic disease of any sort a slight wave of peristalsis is sometimes to be seen in a thin infant towards the end of a meal, and I have thought this was specially noticeable in infants who were much subject to vomiting, apart from organic disease of any sort, but the waves are much less marked than those seen in congenital hypertrophy of the pylorus. Even the large wave which is such a striking feature of pyloric hypertrophy, the rounded bulging, varying in size from half a walnut up to half a Tangerine orange, and emerging from under the left costal margin to pass slowly across the epigastrium, separated by a depression from the succeeding wave, and this by yet another depression from another wave, is not necessarily pathognomonic of congenital hypertrophy of the pylorus. Exactly similar peristalsis has occurred in cases of stenosis of the duodenum, and I have seen one case in which such peristalsis occurred with complete obliteration of the duodenum. These duodenal cases are much rarer than pyloric obstruction.

Peristalsis of the stomach is certainly not in itself proof of congenital hypertrophy of the pylorus, though it may be admitted that when the peristaltic waves are large this is by far the most probable explanation.

The only absolute proof of pyloric hypertrophy, short of opening the abdomen and seeing it, is to feel the tumour. The pylorus in these cases is to be felt as a small barrel-shaped hard tumour, which, as palpated through the abdominal wall, gives the impression of varying in size from the thickness of an ordinary lead pencil up to that of a hazel nut. Its position is usually about 1 to 1½ inches above the level of the umbilicus, close to the right side of the vertebral column, so that it is usually necessary to press slightly inwards and very deeply under the right rectus muscle towards the vertebral column. The characteristic feature of the tumour is its disappearance, so far as palpability is concerned, when the pylorus is relaxed, so that, like an intussusception, the tumour may be quite obvious at one moment and a minute or so later it may not be felt. This variability in the hardness of the tumour is important in diagnosis, for it may be necessary to distinguish between hard scybala and the tumour due to hypertrophy of the pylorus. The contraction and hardening of the pylorus may be stimulated, when its position has been located, by gently kneading with the finger, which often helps considerably in demonstrating the tumour. How often is this tumour to be detected? Twice only in my 248 cases have I failed to feel it definitely, and one of these was moribund, so that examination could not be very thorough. Allowing for such rare failures, I think one would be right in saying that the tumour is to be felt in all cases, if sought in the proper way. The characteristic tumour makes the diagnosis certain, and in such a serious condition, if certainty is attainable, we have no right to be satisfied with anything less than certainty; for our diagnosis may involve an extremely grave operation. And yet I find that it is only seldom in cases seen in consultation that the tumour has already been felt.

In the first place, let it be recognized that, whilst in some cases the tumour is found at once and with ease, there are others in which it is only to be found by painstaking and prolonged searching. I have sometimes had to see an infant twice, or even three times, before I could be certain of the tumour.

If a casual poking of the finger-tips into the abdomen is expected to discover the tumour the result will usually be failure; one must be prepared to sit down before the infant, have a feed given, and patiently palpate the abdomen, it may be, for ten or fifteen minutes before the tumour is detected, and even then, if the movements of the stomach happen to be

sluggish, one may fail to find the tumour until more brisk peristalsis occurs.

It is always advisable to have the infant fed during the examination, and this for three reasons:

1. The abdomen becomes relaxed, so that deep palpation is easy.
2. During the progress of the feed peristalsis of the stomach begins, and it is at this time that the pylorus is most likely to be felt.
3. If a full feed is given the pylorus is displaced somewhat downwards and to the right, so that it is more easily reached.

The cases in which the pyloric tumour is most difficult to detect are those in which the pylorus is, so to speak, tucked up high in the liver, and it is in such cases particularly that the giving of a large feed may assist detection of the tumour.

#### PROGNOSIS AND TREATMENT.

In 232 of my cases I have a record of the results (in 16 the notes were defective and the result not recorded); there was recovery in 156, death in 76. Of the fatal cases, 7 were in such an extreme condition of exhaustion when seen that either no treatment was possible or, at most, lavage was only just begun, and the child died within a week or less, several within twenty-four or forty-eight hours. These I shall omit from consideration, as they hardly affect the question of prognosis or treatment, except to emphasize the importance of early diagnosis. One may say, therefore, that 225 cases are available for considering the effect of treatment, and of these 156 recovered, 69 died. These figures, it must be remembered, cover a period of twenty-four years, and therefore include cases seen at a time when treatment was more tentative than it is now, and when surgery was invoked rather as a last and desperate resource than as an early and deliberate choice, which it usually is to-day. There is another point which must be considered if prognosis is to be based on statistics—namely, whether the figures are from cases treated in hospital or from cases treated in private, that is, in nursing homes or in the patient's own home. My own experience—and on this point I believe the experience of others has been the same—is that hospital results in this disorder are, for some reason difficult to ascertain, much less satisfactory than private results, and this holds good whatever method of treatment is adopted. If the figures given above are divided into these two categories the difference is evident:

		Recoveries.	Deaths.
Private cases	...	113	14
Hospital cases	...	43	55

No single cause seems sufficient to account for these differences; great efforts are made to obtain at least as good results in hospital as in private practice, and to some extent hospital results have improved in recent years. One factor which applies rather to my earlier cases than to those in recent years was the use of wet nurses, which certainly saved several of my private cases after operation; this has rarely been practicable in hospital. Anyone who is familiar with the treatment of infantile disorders in hospitals knows how often infants do badly with any condition, especially with any gastric or intestinal disorder, amongst a number of other ill children; they are specially apt to develop diarrhoea, and go down with symptoms suggestive of gastro-enteritis. Infants do best segregated as much as possible. This has, I think, something to do with the poor results in the hospital treatment of these pyloric cases. Whatever the explanation may be this difference has to be borne in mind in prognosis.

I pass now to the consideration of particular methods of treatment. Twenty years ago recovery by operation was regarded as a notable triumph of surgery, but since that time surgical technique has made such strides that recovery is now a commonplace; indeed, there is a tendency to lose sight of the fact that complete recovery can take place without operation at all. So far from operation being essential in all cases, there are some in which without special treatment of any kind beyond painstaking and efficient regulation of the feeding, generally in the direction of reducing the food to small quantities at short intervals, the tumour and peristalsis have gradually disappeared, and after many weeks or months of hovering on the verge of collapse the infant has completely recovered. Amongst my 156 recoveries there were six which were treated in this way,



and one in which after lavage had been perseveringly tried without success, the infant eventually recovered with prolonged care in feeding. Similar cases have been published by other observers. I mention this mode of treatment only as showing that the hypertrophy and obstruction can pass away spontaneously, but the chance of recovery by such treatment is probably extremely small. It must be remembered that a large proportion of the cases which have been eventually treated by other methods have been treated at first, and sometimes for several weeks, by dieting, and it is the failure of such treatment which has led to other methods being used.

Another line of treatment which has had so many successes that in former years it seemed only right to try it in all cases in the hope of avoiding what at that time was the much graver risk of operation, is stomach washing—lavage. Of 78 cases treated only by lavage 43 recovered, 35 died. It is only right to add that in former years I adopted this treatment always before resort to operation, so that these figures represent only those in which the result of lavage seemed sufficiently promising to justify continuance of it, a practice which eventually failed in some cases, as my figures show. But there are many others in which after lavage had been tried for some days or weeks the result, though sometimes a definite improvement, was not thought sufficiently good to justify postponing operation, so that my operation cases include many in which lavage had previously been done without effecting a cure.

Lavage, apart from its uncertainty of ultimate result, has drawbacks. Not all babies tolerate lavage; there are those who become so collapsed and exhausted by it that the lavage has to be abandoned. When it has been long continued I have known it to cause gastric irritation, so that the washing came back blood-stained and lavage had to be diminished or stopped. At the best it is only after many weeks of daily lavage, usually twice daily for a time and then once daily, that the condition is cured. I have generally reckoned twelve to sixteen weeks as the usual period during which lavage is necessary in cases which are cured by it. The gradual disappearance of the peristalsis and tumour under this treatment is very instructive as to the spasmodic origin of the hypertrophy. The vomiting ceases gradually, and is usually entirely stopped some weeks before the peristalsis and tumour have disappeared. The long duration of this treatment, the failure at first to gain weight, and then, after a week or two, the slow and unsteady gaining, make a trying ordeal for the parents, and the daily lavage necessitates either a specially trained nurse or a large amount of medical attendance, which is sometimes a practical difficulty.

With all its drawbacks, however, lavage has had sufficient successes, as my figures show, to justify its retention as a method of treatment which may be the best one to adopt in particular cases. Where the weight is only slowly falling and it is evident that a considerable amount of food passes through the pylorus, it may be right to try lavage and judge by daily weighing whether operation can still be postponed; but if the weight continues to fall, even for a few days, lavage should be abandoned. In cases where lavage succeeds the weight commonly ceases to fall, but does not rise during the first few days, perhaps not for a week or ten days, and then it begins slowly to rise. (I assume that the feeding is carefully regulated.)

In the decision as to whether operation or lavage should be the first line of treatment the possibility of obtaining surgery specially experienced in this disorder must weigh greatly. It makes a very great difference if the services of some surgeon who has operated upon many of these cases of congenital hypertrophy of the pylorus are available. Another point, and one of first-rate importance in the decision as to treatment, is the possibility of retaining the mother's milk. If the mother is still suckling the prolonged anxiety and the disturbances of suckling which are likely to be entailed by the lavage treatment will almost certainly end in loss of the breast milk, and this undoubtedly diminishes the prospect of success if operation becomes a necessity. My own feeling, therefore, is that when the mother is breast-feeding her infant it is usually the wisest course to proceed at once to operation, so that only with an interruption of forty-eight hours to allow for recovery from the immediate disturbance of operation the infant may continue the breast milk. Usually after a few hours' feeding with some watery solution such as glucose, and then a few more hours' feeding with milk pumped from the breast, the infant can within two or three days return to breast-feeding.

But if it is decided to operate there is still the question of method, and on this point the physician can only speak from his experience of results. Various operations have been tried; some have been abandoned by common consent. Pylorectomy, pyloroplasty, gastro-enterostomy are now things of the past so far as congenital hypertrophy of the pylorus is concerned. In two of my cases years ago gastro-enterostomy was done; both recovered, but in all the rest of the 139 cases in which operative treatment was adopted either forcible dilatation of the pylorus—that is, a modified Loreta operation—or in the last five years the Rammstedt operation, was done. The results of the various modes of treatment are perhaps best seen in the tabulated summary.

Results of Various Methods of Treatment of Congenital Hypertrophy of the Pylorus.

Method of Treatment.	Private Cases.		Hospital Cases.	
	Recovery.	Death.	Recovery.	Death.
Simple feeding ...	5	0	2	1
Lavage ...	24	6	19	29
Gastro-enterostomy ...	2	0	—	—
Forcible dilatation ...	74	6	12	16
Rammstedt ...	8	2	10	9

Anyone who has seen the Rammstedt operation—that is, a longitudinal incision through the peritoneal coat and muscular layers of the pylorus, leaving the mucosa intact—can hardly fail to have been impressed with its simplicity and rapidity, and it has already become the generally approved operation for congenital hypertrophy of the pylorus. But, as my figures show, it is by no means free from danger. The deaths from the Rammstedt operation in my fatal cases have, I think, all been within a few days afterwards; sometimes from bleeding from the pyloric incision into the peritoneal cavity, sometimes from shock, sometimes from collapse within two or three days, but always (except in one case where the child died when the recurrence of symptoms necessitated a second operation) as a direct result of the operation. So that although it offers great advantages and is no doubt the operation which most surgeons will adopt, it has a considerable mortality, and at present I have but seldom had it done in my private cases. Indeed, the results of forcible dilatation have been so good, especially in recent years, that it is hardly likely better could be obtained.

The operation of forcible dilatation has been done in nearly all my cases by Mr. F. F. Burghard, and the proportion of recoveries in the private cases hardly does justice to his recent results. These in the past few years show a much higher proportion of successes. In the past eight years Mr. Burghard has performed this operation on forty-six of my private cases, with only one death. It is clear that this operation, as done by him, has given results at least as good as those obtained by the Rammstedt operation. But this no doubt depends very largely on the particular operator and cannot be taken as proving that the operation itself is as good as, or better than, the Rammstedt method; indeed, in the hands of some surgeons it has had very little success. The hospital mortality of these forcible dilatation cases has, in my experience, been much less often due directly to the operation than is the mortality of the Rammstedt procedure; death has occurred more often after many days or weeks from gastro-intestinal disturbance or marasmus.

By whatever treatment recovery is obtained the recovery seems to be complete. It is true that recurrence has taken place both with Rammstedt operation and with the forcible dilatation, but this happens within ten days after the operation; it occurred three times amongst my earlier cases treated by dilatation, necessitating a further dilatation, which in each case was followed by recovery. It happened once also amongst those treated by the Rammstedt method, but in this case a second operation by the same method proved fatal. With increased experience of the degree of stretching needed in the one case and of the length of the incision needed in the other, recurrence is now hardly to be feared.

I have seen or heard of many of my cases years afterwards. The hypertrophy of the pylorus, whether treated by simple feeding, lavage, or operation, has seemed to leave no after-effect; they have been as a rule particularly healthy and fine children.



# TEN CASES OF OVARIOTOMY IN WOMEN OVER 70 YEARS OF AGE.

BY

HERBERT R. SPENCER, M.D., B.S., F.R.O.P.,  
OBSTETRIC PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL.

OVARIOTOMY on women over 70 years of age is so uncommon as to justify the publication of a complete series of cases. The advanced age of the patients introduces pathological, clinical, and therapeutical features which are worthy of consideration.

The following ten cases have been met with amongst 625 ovariectomies I have performed.

## CASE I.

M. A. F., aged 82½ years. This case was published in the *BRITISH MEDICAL JOURNAL* in 1893 (ii, 1271). The patient was, so far as I know, the oldest upon whom ovariectomy had been performed up to that time, except Homans's patient, who was apparently a few weeks older. The tumour was a multilocular cyst of the size and shape of a cottage loaf. There was some mental wandering, bronchitis, and loss of control of faeces and urine during convalescence; but a good recovery ensued and the patient was in excellent health eleven months later. The patient's mother died at the age of 76, two sisters at 70, and one was still living at the age of 79.

## CASE II.

E. F., a widow aged 71, who had had fifteen children, two miscarriages, was admitted to University College Hospital on May 10th, 1898, complaining of enlargement of the abdomen and prolapse of the womb for four years, and of a dirty vaginal discharge, sometimes tinged with blood, which had been present for some months. For six months she had had difficulty and frequency in passing water; sometimes there was an aching pain in the lower abdomen and back; the bowels were confined.

Menstruation began at 17, was regular, not excessive, and lasted for three or four days; it ceased at 50.

The patient's father and mother died at the age of 78. The abdomen was greatly distended, the half-girth being 22½ inches on each side, while the measurement from ensiform cartilage to pubes was 20½ inches. A large, evidently multilocular, ovarian tumour distended the abdomen. The vagina was inverted and had a large ulcer on it. The os was healthy. Under treatment by boric acid douches the ulcer gradually healed by July 1st.

On July 11th, 1898, ovariectomy was performed. Ventrifixation was also performed by means of the ligature on the right pedicle, and a second silk ligature passed under the left round ligament, tying the left side of the uterus to the abdominal wall; this ligature was removed on the seventh day. The abdominal incision was closed with silkworm gut passed through the abdominal wall, buried silk for the fascia, and horsehair for the skin. The operation lasted thirty-four minutes.

The tumour was a multilocular ovarian cyst without papilloma or solid growth, and contained 15½ pints of fluid. There was very little shock after the operation; a little sickness occurred at 5 p.m. and 11 p.m. The patient slept a good deal in the evening, was comfortable except for a slight pain in the back, and passed urine spontaneously. Some pain next day was due to pressure of a too tight bandage, and was at once relieved on relaxing the bandage. Flatus was passed on the second day.

The recovery was simple, the temperature only once reaching 100° after the operation. The wound healed by first intention, and the patient left the hospital on August 13th. Seen on October 25th the scar was sound, but there was still proclivity of the vagina and cervix. For a few days after the operation the patient was rather sullen, at a time when she slept badly; but later her spirits became normal.

## CASE III.

L. B., a married woman aged 70, who had had two children naturally, was admitted to University College Hospital on May 19th, 1908, complaining of a tumour in the abdomen which she had noticed for six months, increasing in size and accompanied by pain in the lower part of the back; she also had pain on passing a motion except when the bowels were relaxed with medicine. Menstruation had always been regular.

The patient was rather feeble. The abdomen was irregularly distended, chiefly below the umbilicus and on the right side by a cystic tumour which reached up to within one inch of the umbilicus and projected into Douglas's pouch, displacing the small atrophied uterus slightly forwards and to the left. The tumour fluctuated and was evidently a multilocular ovarian cyst.

Ovariectomy was performed on May 25th, the pedicle being tied with silk and the surface of the stump turned in and stitched over with fine silk. The abdominal wall was closed with through-and-through stitches of silkworm gut and buried continuous silk for the peritoneum and sheath of rectus. The operation lasted fourteen minutes. There was no abdominal discomfort or shock, and very little vomiting afterwards. The wound united by first intention.

The temperature rose daily to 100° for the first five days, and in the second week on two occasions reached 101.2°; but after the sixteenth day it did not rise above 99.5° and was normal when she was discharged well on June 30th.

The tumour was a multilocular cyst of the left ovary with no solid growth or papilloma; it weighed 2 lb. 7½ oz. The right ovary was normal and was not removed. No cause for the rise of temperature was discovered; there were no rales in the chest, and no pain or mental disturbance.

## CASE IV.

Mrs. B., aged 74 (two children, no miscarriage), was seen by me at New Barnet, in consultation with Dr. Elam, in May, 1914. She had lost a good deal at the menstrual periods, which ceased at the age of 50. At the age of 71 she had a grave attack of hemiplegia, for which Sir Thomas Barlow saw her in consultation. For nearly a year it was thought she would not recover. She gradually got about, but had since suffered from phlebitis in the veins of the arms and legs. Early in 1914 she began to complain of pain in the lower abdomen and of difficulty in micturition and defaecation. A tumour was discovered reaching up nearly to the umbilicus, most marked on the left side. It was fixed, was diagnosed as an adherent ovarian tumour, and was removed (at the patient's house) with some difficulty, on account of the strong adhesions, on May 4th, 1914. In cutting the tumour free the bladder was opened for about two inches and the hole was closed with silk sutures, not involving the mucous membrane. A drainage tube was inserted. The wound healed by first intention, except the track of the drainage tube, which closed quickly by granulation. There was no trouble after the operation.

The tumour was a multilocular ovarian cyst, with no solid growth or papilloma, the cyst having the usual columnar epithelial lining.

The patient remained well for more than six years after the operation, but died of hæmatemesis, thought to be due to gastric ulcer, when over 80 years of age, on October 15th, 1920.

## CASE V.

C. G., a virgin aged 71, was sent to me by Dr. Goulet on February 17th, 1916, complaining of swelling of the abdomen and aching pain for the past six months. Menstruation had ceased at 50. It had not been very regular at first, but became more so later on, and was always attended with a good deal of pain. The patient had lately suffered on most days from vomiting. On six occasions she had had to have a catheter passed for retention of urine. The bowels were confined. She had really had pretty good health; but when a young woman, having a "displacement" of the womb, she was kept in a recumbent position for twenty years, always being carried if she left her room; she suffered much from sickness during this time. The legs were not swollen and she had been getting thinner. A slight cough sometimes troubled her, but there was no expectoration. The tumour had been discovered by the doctor a fortnight before I saw her.

The abdomen was greatly distended by a multilocular ovarian tumour considerably larger than a uterus at term. The uterus was small and freely movable, and the lower end of the tumour could be felt in front of the body and movable apart from it.

A multilocular ovarian tumour of the left side which contained neither new growth nor papilloma was removed in a nursing home on February 20th, 1916. The right ovary, atrophied, was not removed. The patient made a simple recovery. The wound healed by first intention. She was in fairly good health in February, 1923, seven years after the operation. A sister is living at the age of 86.

## CASE VI.

C. D., aged 70½ years (four children, no miscarriage), was admitted to University College Hospital on July 18th, 1918. Her last child was born thirty years ago. She complained of being suddenly seized with pain in the abdomen when out walking recently. A doctor whom she consulted found an abdominal tumour, which had greatly increased in size during the last month.

Menstruation began at 17 and ceased at 54. It had been regular every four weeks, lasting seven days, unaccompanied by pain. The flow was rather free, fifteen diapers being used; micturition was frequent; the bowels regular. The patient had lost a good deal of flesh lately.

On examination an abdominal (evidently multilocular ovarian) tumour, as big as the uterus at term, reached up to the ensiform cartilage. The uterus was atrophied and movable. Behind and to the left side was a hard tumour, as big as a hen's egg, which appeared to be an ovarian fibroid. The large abdominal tumour could not be felt per vaginam. The case was diagnosed as an ovarian fibroid on the left side and a multilocular ovarian cyst on the right.

The large tumour was found to affect the left ovary when removed on July 20th, 1918, through a four-inch median abdominal incision; on tapping this cyst about a gallon of straw-coloured fluid escaped. The pedicle was tied and stitched over with silk. A small cyst was found in the right ovary, which was also removed. The hard tumour proved to be a subperitoneal calcified fibroid of the uterus and was not removed. The abdominal wound was closed with through-and-through stitches of silkworm gut, continuous silk for the peritoneum, interrupted silk for the sheath of the rectus, and silkworm gut for the skin.

The patient was a little sick after the operation and required the use of the catheter. She made an uninterrupted recovery, and left the hospital on August 12th, 1918.

The tumour was a multilocular cyst, quite smooth on the external surface and free from adhesions, and showed a few dilated lymphatics; an accessory ostium was present in the place of a tube. The inner surface was irregular and covered in places with pigment and thin patches of papilloma up to the size of a raspberry, and in a few places with little solid white growths not bigger than a grain of wheat or a pin's head. There was no extensive metastatic papilloma and no other solid growth. The right ovary measured







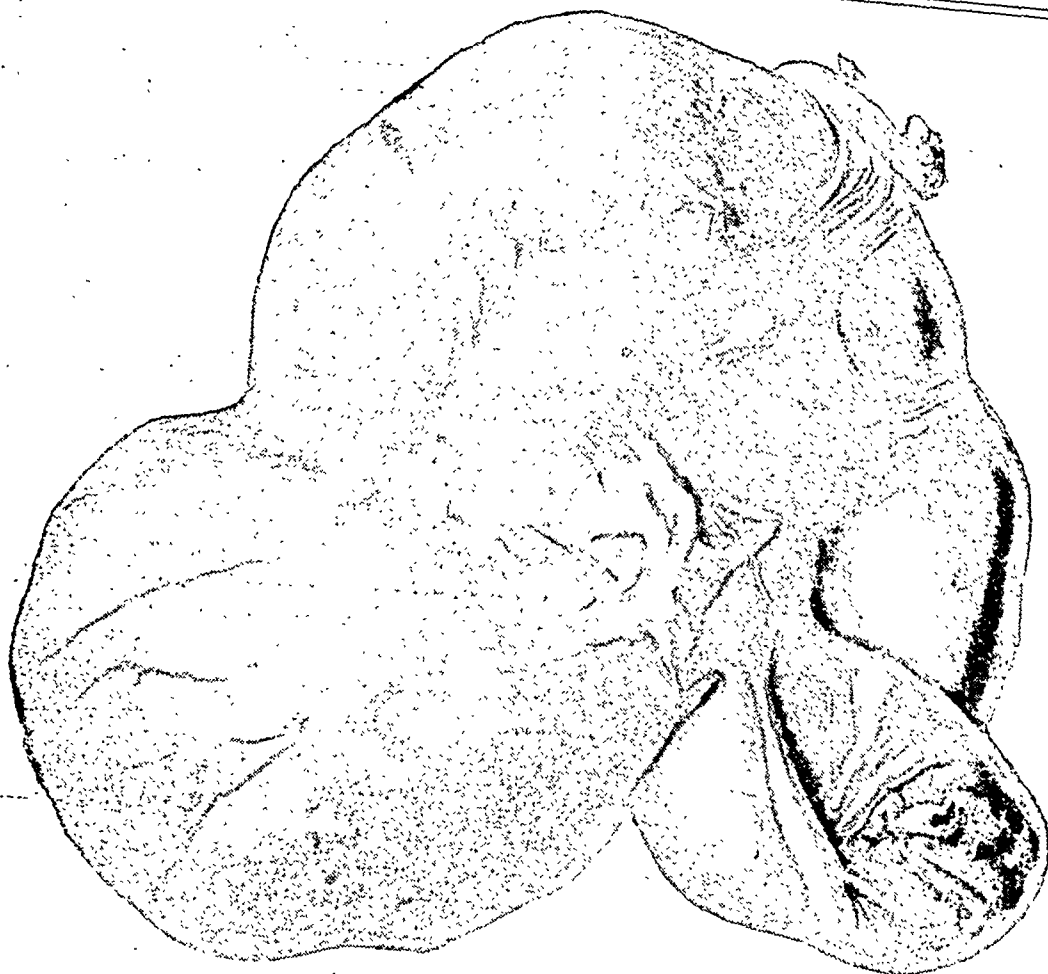


FIG. 2 (Case x).—Showing a few adhesions and collapsed cyst wall perforated at one spot. (Three-quarter natural size.)

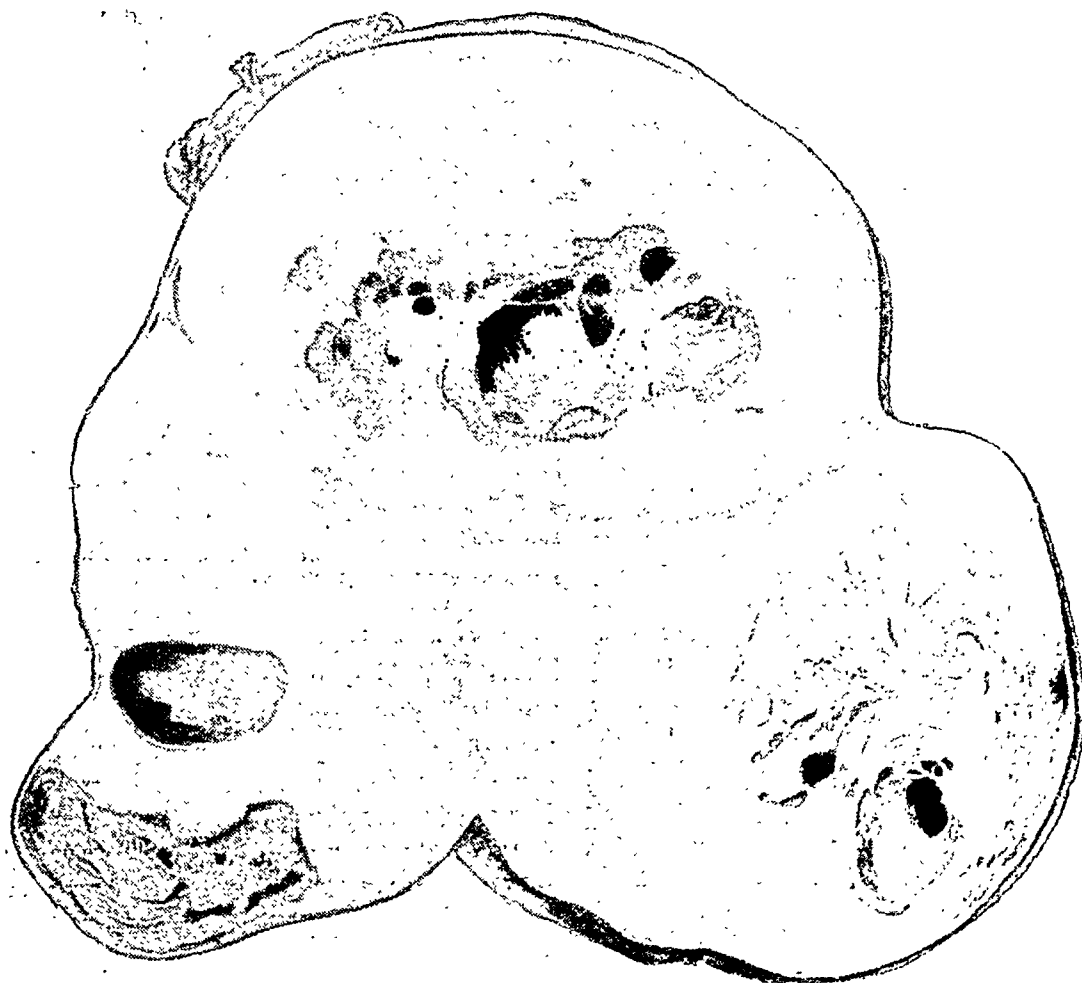


FIG. 3 (Case x).—Section of tumour, showing several cysts; below, partly filled with blood clot, the ruptured cyst. (Three-quarters natural size.)



was considerably distended, and there was a large amount of free fluid in the abdomen. Through this a firm mass could be felt three inches to the right of the left anterior superior spine; another mass could be felt by dipping on the right side, the whole mass reaching nearly up to the umbilicus, and being covered in front by free fluid. A very large rectocele protruded from the vulva and rendered examination of the vagina difficult; but a hard irregular mass fixed to the left pelvic wall was felt to the left of the cervix and in Douglas's pouch. The glands in the groins were not enlarged. The urine (sp. gr. 1010) was free from albumin and sugar.

The case was diagnosed as malignant disease of the ovaries and peritoneum, probably secondary to cancer of the stomach, which was suggested by the wasting and the vomiting, and by the pain and tenderness in the epigastrium. The patient was kept under observation in the ward, and gradually the oedema of the legs disappeared. At the same time the vomiting gradually ceased, and the amount of free fluid in the abdomen lessened, though it still was so considerable as to render palpation difficult. The tongue was rather dry, but fairly clean, and the patient remained cheerful. The temperature, which was 99.6° on the day of admission, and 99.4° the next day, was afterwards usually about 98°, and only reached 99° on one occasion during her long stay in the hospital. The pulse beat was about 90. The patient had been in the hospital for two months, but except for the extreme emaciation she had improved; especially the disappearance of the oedema of the legs was regarded as a good sign. She weighed 7 st. 7 lb. on admission, 7 st. on November 9th, and the same on November 28th. On that day, on examining the abdomen, I thought the hard abdominal tumour moved as one large mass from side to side, floating in the fluid though anchored below; and, as such a tumour could hardly be malignant, I diagnosed it as an ovarian fibroid which had probably ruptured.

At the operation on December 2nd, 1922, this was found to be the case. On incising the abdominal wall several pints of free fluid escaped and the large tumour was found to be free from adhesions except in Douglas's pouch, where two cystic portions had ruptured and led to adhesions there. They were separated without difficulty, leaving a layer of mucoid exudate at the bottom of Douglas's pouch, and the tumour was removed. It occupied the right ovary and its pedicle was adherent to the mesentery of the appendix, which lay in the small pelvis, but was apparently healthy. The pedicle was tied and stitched over with silk; the adhesion to the meso-appendix was also ligatured, and a string-like band which passed from the small intestine towards the fundus of the bladder was tied and excised. The uterus and left ovary were atrophied and were not removed. The wound was stitched with through-and-through stitches of silkworm gut, silk (continuous for the peritoneum and interrupted for the fascia) and silkworm gut for the skin. The operation lasted forty minutes. The anaesthetic was open ether.

The recovery after the operation was ideally simple. The wound healed by first intention and the temperature was normal or subnormal throughout the convalescence. The patient got up on December 27th and left the hospital quite well on January 3rd, 1923.

The tumour was hard, rounded, somewhat triangular, and flattened, measured 7 in. by 7 in. by 3½ in. and weighed 3 lb. 6½ oz. It had some small prominences on the surface and was irregularly depressed where the larger ruptured cyst lay. The tumour

was dusky red in places, especially below (where it had ruptured), and had several large veins coursing over its surface. At two places near the surface it had become cystic, one of the cysts being as big as a duck's egg, the other as big as a grape. Both these had ruptured, causing adhesions which were visible in the neighbourhood (see Fig. 2). The collapsed wall of the larger cyst lay in a depression of the tumour, and the rupture might have escaped notice on superficial examination; but the collapsed cyst could be picked up with the point of a needle, and by introducing a fine hollow needle into the cyst through the solid part of the tumour and injecting fluid the cyst and the hole in its wall were easily demonstrated.

On section through the tumour it was found to have the typical structure of an ovarian fibroid, degenerated in several places; the degeneration had advanced to the extent of forming a considerable irregular cavity in the middle of the tumour filled with jelly-like contents and having an irregular wall with bridges of tissue crossing it (Fig. 3). Another cyst near the surface as big as an almond had a smooth and slightly blood-stained wall. In addition the large cyst which had ruptured was partly filled with blood clot and the smaller ruptured cyst exuded clear yellow fluid. A section at the hilum showed the tumour sharply demarcated from the normal ovarian tissue. There was an accessory ostium in the Fallopian tube.

Microscopic examination showed the tumour to be a fibromyoma, being mostly composed of bundles of muscular tissue which had undergone hyaline degeneration and in places was oedematous or liquefied into cysts. The ovarian tissue at the hilum had also undergone marked hyaline degeneration.

#### Frequency of Ovariectomy in Women over 70 Years of Age.

The above 10 cases occurred amongst 625 cases of ovarian tumour operated on by me, the frequency being 1.6 per cent. They are the only cases I have seen—that is, every case seen has been operated on.

Amongst Spencer Wells's first 500 cases there was no patient over 70; amongst his second series of 500 two cases (aged 70 and 77) occurred; one of them died from the operation. No doubt a selection of cases for operation had been made, as was not unusual in the early days of ovariectomy. Spencer Wells's percentage of frequency, as the figures stand, is 0.2 per cent., or a little more, for in 15 cases of his second series of 500 the age is not given.

Howard Kelly<sup>2</sup> published 5 cases of ovariectomy in women over 70 years of age which occurred amongst 150 cases; one of these, however, was only an exploratory operation, was operated upon on May 2nd, 1896, and was published as a "recovery" ten days later; there were thus only 4 cases in which the patients were over 70 years of age in 150 ovariectomies (2.6 per cent.).

At the Würzburg clinic<sup>3</sup> amongst 100 cases of ovariectomy, and at the Jena clinic<sup>4</sup> amongst 257, making together 357 cases, there was no patient over 70 years of age.

Ten Cases of Ovariectomy in Patients over 70 Years of Age.

Initial.	Age.	Children.	Abortions.	Duration in Months.	Date.	Side.	Drainage.	Fascia Sutured.	Adhesions.	Operation.	Recovered.	Remarks.
M. A. F.	82	5	0	17	Dec. 19, 1891	L.	No	No	A few shreds on right side	L. ovariectomy	Yes	L. ovarian tumour, pedicle twisted 1½ turn; R. ovary normal, not removed. Anaesthetic, gas and ether.
E. F.	71	15	2	34	July 11, 1893	R.	No	Yes	No	R. ovariectomy and hysteropexy	Yes	Enormous R. ovarian cyst with procidentia uteri; pedicle tied to abdominal peritoneum and a ligature passed through abdominal wall around L. round ligament. Anaesthetic, gas and ether.
L. B.	70	2	—	14	May 23, 1908	L.	No	Yes	No	L. ovariectomy	Yes	Patient very feeble; operation very easy. Tumour size of ostrich egg. R. ovary normal, not removed. Anaesthetic, chloroform.
B.	74	2	0	45	May 4, 1914	L.	Tube three days	Yes	Dense to abdominal wall and bladder (opened)	L. ovariectomy	Yes	Patient had severe attack of cerebral apoplexy 3 years before; was ill for 5 months and thought on many occasions to be dying. R. ovary normal, not removed. Anaesthetic, ether. Died of haematemesis; Oct. 15th, 1920.
C. G.	71	0	0	20	Feb. 20, 1916	L.	No	Yes	No	L. ovariectomy	Yes	Virgin. Large left multicystic cyst size of uterus at term noticed 6 months; no solid growth, no papilloma. R. ovary small, not removed. Anaesthetic, ether. Living in fair health in February, 1923.
C. D.	70	4	0	25	July 20, 1918	L. R.	No	Yes	No	Bi-lateral ovariectomy	Yes	L. multicystic cyst size of uterus at term; calcified fibroid in uterus. R. ovary small, cystic, removed. Anaesthetic, ether. In good health, January, 1923.
I. E.	71	2	0	53	Dec. 21, 1918	L.	No	Yes	To omentum and abdominal wall; of omentum to sac of hernia	L. ovariectomy and herniotomy	Yes	Large multicystic cyst with no solid parts or papilloma; omentum in left inguinal canal reduced, adherent to mouth of sac (closed by purse-string suture). Anaesthetic, chloroform and ether. In good health, January, 1923.
L. A.	70	11	0	23	May 8, 1919	R.	No	Yes	No	R. ovariectomy	Yes	R. large multicystic cyst (no solid growths or papilloma). L. ovary normal, not removed. Anaesthetic, chloroform followed by (closed) ether. In fairly good health, January, 1923.
E. S.	70	7	3	32	July 2, 1921	L.	No	Yes	No	L. ovariectomy	Yes	L. ovarian fibroid (2 lb. 10 oz.), ruptured, free fluid in abdomen. Patient in good condition, cheerful. Anaesthetic, ether. In good health, February, 1923.
S. S.	71	0	0	40	Dec. 2, 1922	R.	No	Yes	To Douglas's pouch and mesentery of appendix	R. ovariectomy	Yes	R. ovarian fibroid (3 lb. 6½ oz.), ruptured, free fluid in abdomen. Patient very emaciated, cachectic, but cheerful. Anaesthetic, ether.







mortality rate as 12.3 per cent., but, as the result was not mentioned in 4 cases, there were really 16 deaths in 126 cases = 12.6 per cent.; adding my 9 hitherto unpublished cases and the patient of 92½ mentioned above, gives 136 cases with 17 deaths, or 12.5 per cent.—that is, 1 patient in 8 died from the operation.

If all the cases operated on had been published it is possible that the mortality would be higher; for if we take Kelly and Sherwood's table<sup>4</sup> of those ovariectomists who have published at least 5 cases and add my cases we get the results shown in the following table:

Operation.	Cases.	Deaths.	Remarks.
Halliday Croom ...	6	2	One had cancer of uterus; the other was a parovarian cyst.
I. Homans ... ..	12	3	One was a sarcoma, the other benign.
A. Martin ... ..	5	1	Embolism.
Werth ... ..	5	0	
H. R. Spencer ...	10	0	
Together ...	38	6	A mortality rate of 15.7 per cent.

The mortality is shown in Wiel's table<sup>18</sup> to be very high in malignant cases (which are fortunately rare), 4 out of 5 cases having succumbed; and in parovarian cysts, 2 out of 4 having died. One of the 8 cases of fibroma died (12.5 per cent.). The low mortality of the 17 recorded cases over 80 years of age (5.8 per cent.) has been already mentioned.

*Remarks on Ovariectomy in Old Women.*

These patients have outlived the allotted span of life show in their own persons a constitution of more than usual strength and in their family histories a tendency to longevity. If their organs are sound and the patients are not too fat they are good subjects for operation, especially if they are of a cheerful temperament.

The special points to be borne in mind in operating are their waning strength, their tendency to mental disturbance, and their liability to bronchitis and pneumonia. With regard to the anaesthetic, I think infiltration and spinal anaesthesia are *generally* unsuitable, as liable to upset the patient's mental equilibrium, though Igel,<sup>19</sup> Wechsberg,<sup>20</sup> and Pfannenstiel<sup>21</sup> have published very successful cases operated on under local anaesthesia, which offers many advantages for a simple ovariectomy in a courageous patient. I think ether is usually preferable to chloroform unless bronchitis be present. I should prefer to postpone operation if the weather were severe. The operation should be performed as rapidly as possible, with due regard to careful suturing. In case of urgency the abdominal wall may be sewn up with through-and-through stitches of silkworm gut by what I call the "reversed-B" suture, the loop of the B apposing the cut edges of the sheath of the rectus. This shortens the operation by *several minutes*, ensures good apposition of the fascia, and leaves no buried stitch. The head of the patient's bed should be screened from draughts, and the bed should be warmed. Old patients bear cold badly. When King David was old and stricken in years, though they covered him with clothes, yet he gat no heat.<sup>22</sup> The patient should be propped up in bed to prevent hypostatic pneumonia, and sedatives (not morphine) should be given, preferably by the rectum, if sleeplessness occurs.

It is fortunate that malignant tumours are rare in these patients, and a consideration of the results of ovariectomy for benign tumours in women over 70 years of age shows that the operation may be undertaken without selection of cases with every prospect of success, and the patients may survive beyond the fourscore years of the palmist, and yet their days may not be "but labour and sorrow."

## REFERENCES

- [illegible]

## Hunterian Lectures

0.5

# MAN'S POSTURE: ITS EVOLUTION AND DISORDERS.

GIVEN AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

BY

PROFESSOR SIR ARTHUR KEITH, F.R.C.S., F.R.S.,  
CONSERVATOR OF THE MUSEUM.

CONSERVATOR OF THE MUSEUM.

[Abstracts.]

LECTURE IV.—THE ADAPTATIONS OF THE ABDOMEN  
AND OF ITS VISCERA TO THE ORTHOGRADE  
POSTURE.

VERY early in my inquiries I became impressed by the fact that in the anthropoid or orthograde apes the viscera of the abdomen were very human in shape and arrangement, and that they were fixed to the walls of the cavity in almost the same manner as they are in the abdomen of man. On the other hand, a distinctly different pattern prevailed in the bellies of pronograde monkeys, even in the higher kinds, which are most akin to the gibbons in point of structure. It became apparent; then, as we have seen - to be the case with the spine and with the thorax, that the chief of these features in the human abdomen which we recognize as postural adaptations came into existence at that remote period when the gibbon type of anthropoid was evolved; these postural adaptations became further perfected with the appearance of the great anthropoid type, and reached their culmination in the human body with the evolution of the plantigrade mode of progression.

## HOW ARE VISCERA SUPPORTED?

At the time I was making these inquiries my conception of the mechanism which supported and kept the abdominal viscera in place was crude and mechanical. I supposed that when we stood up the organs within the abdomen were suspended by their mesenteries much as our coats hang from pegs within a wardrobe. I accepted a belief, then widely current, that in the erect posture a negative pressure or suction arose under the diaphragm and that thus the pressure of the atmosphere assisted in visceral support. Soon after I went to teach anatomy at the London Hospital in 1895 a series of events happened which showed that the mechanism involved in supporting the abdominal viscera was infinitely more complex than had been generally supposed. My attention had been attracted by certain dissecting-room subjects in which the abdominal organs were placed at an abnormally low level, as if their supports had given way. Of 71 subjects I found 10 in which the diaphragm and the organs within its domes were 2 inches or more below what was the usual level; in 15 other subjects there was a partial dropping of the viscera. My friend Dr. Christopher Addison, who had not then taken on the cares of statesmanship, had published very exact observations on the position of the abdominal viscera of 40 subjects; in 2 of them the upper abdominal viscera had dropped downwards to a marked extent, in 10 there was present a condition of partial prolapse affecting one or more organs. Then, when I was regarding this matter as one of merely anatomical interest, there appeared, in 1899, Dr. Franz Glénard's great volume entitled *Les Poses Viscérales*; he had become interested in the sagging of the abdominal viscera from a clinical point of view as early as 1885; in the patients who crowded to Vichy for the cure of dyspepsia and neurasthenia he found the condition of enteroptosis to be very common. In seeking for an explanation of how the dropping of viscera came about I turned to the out-patient department of the London Hospital, where an *x-ray* apparatus had been installed at an early date. It was possible then for all of us to examine the position of viscera in the thorax and abdomen of the living—particularly the organs which occupy the domes of the diaphragm. It became clear to everyone then that the viscera in the upper segment of the abdomen formed part of a respiratory piston. The upper end of the piston is covered by the diaphragm. When that muscle contracts during inspiration the upper end of the piston moves in a downward and forward direction; the piston is returned by a contraction of the muscles of the belly wall; the visceral piston is not only supported by muscles, it is delicately poised, in all phases of respiration, between the opposing



muscular groups. In those in whom the abdominal type of respiration is well developed the respiratory piston has a stroke of 3 inches, or even more when a deep breath is taken. Such observations compelled one to reconsider the mechanism of visceral support.

#### INTRA-ABDOMINAL PRESSURES.

It was an easy matter to show that subdiaphragmatic suction had nothing to do with keeping the viscera up. When the interior of the cardiac end of the stomach—which lies within the left dome of the diaphragm—was connected with a manometer the intragastric pressure was found, when the subject of the experiment was standing or sitting, to vary between +3 and +5 mm. of mercury. It was only when extreme inspiratory efforts were made to raise and expand the chest that a slight negative pressure appeared. When the subject lay on his back the intragastric pressure rose to 16 mm. Hg. On consulting literature concerning this subject I found my observations were not new; they had been made several times before. Pressures taken within the rectum when the living subject was standing in an easy posture throws further light on the mechanism of visceral support. The intrarectal pressure in these circumstances varied between 15 to 20 mm. Hg. Now if the whole weight of the semi-fluid column of abdominal viscera—360 mm. in height, and with a specific gravity of 1.50—rested on the floor of the pelvis, the intrarectal pressure ought to have been twice the amount observed; there must be, therefore, a suprapelvic mechanism which partially sustains the weight of the visceral column. This clearly cannot be the system of mesenteries and ligaments which pass from the viscera to the walls of the abdomen, for when the abdominal walls are measured from a dead subject, and the trunk is placed in the upright position, the contents of the abdomen, liver, stomach, spleen, and great and small intestine slip downwards until they hang from their mesenteries and ligaments. The descent of the upper organs amounts to about 3 inches, the lower viscera to about 5 inches.

#### THE REFLEX POSTURAL MECHANISM OF THE BELLY WALL.

Now, as is well known, when a living subject raises his body to the sitting or standing posture the upper viscera do not drop more than a half or three-quarters of an inch; the ligaments and mesenteries can therefore take no part in sustaining the viscera. The supporting structures are the muscles of the belly wall; particularly is the transversalis muscle important in this respect; it is a living belt which girds the loins. The moment we assume a sitting or standing posture there is set going a reflex mechanism which throws the muscles of the belly wall into a state of postural tone. François-Franck noted that when a dog was chlorotone, formed in the upright position tone departed from the muscles of the belly wall and the viscera sagged. When the posterior roots of the abdominal spinal nerves are cut, or, as Sherrington has demonstrated, when the afferent nerves from the viscera are severed, the abdominal musculature loses its postural tone. Surgeons are well aware that dragging on a mesentery or a ligament in an imperfectly anaesthetized patient gives rise to a dragging pain and to nausea. At the roots of the peritoneum has a rich supply of sensory nerves. The roots of mesenteries and within them are numerous Pacinian-like corpuscles. Very probably the afferent stimuli which set the reflex postural mechanism into operation arise from some or all of these sensory terminals. Possibly, too, the mechanism may require the accessory action of one or more hormone substances. It is sufficient for our present purpose to realize that the assumption of the orthograde posture demanded an elaboration of the mechanism of visceral support. Under modern conditions of life, this postural mechanism of man's body is particularly liable to break down. The cause of this breakdown we do not know, but all available evidence points to its being connected with errors in feeding and living rather than with any imperfection in Nature's evolutionary workmanship.

#### THE FUNCTION OF MESENTERIES AND OF VISCERAL LIGAMENTS.

If, as I have stated, mesenteries and visceral ligaments do not suspend the abdominal organs, then what are they for? If they do not serve the purpose of support, why is it that as we pass from the higher pronograde apes to the lower orthograde apes the areas of visceral fixation become much more extensive and closer? Then, again, as we pass from the gibbon to the large anthropoid apes we note that the

process of adhesion has extended, and reaches its farthest point in the human body. There cannot be a shadow of doubt that the degree of peritoneal fixation keeps step with the degree of adaptation of the body to the erect posture. The evolution of the maintenance of posture Nature never uses ligaments; it is always muscle, striped or unstriped, she employs for this purpose. I know of only one exception, and that is where yellow elastic tissue is employed between the laminae of vertebrae and in the subcutaneous tissue in the ventral wall of pronograde animals. This is into action when the muscular supports . . . overcome or have broken down; ligaments are a second line of defence—the first line is always held by muscles. Hence it is that if the postural tone of the abdominal musculature is damaged then the mesenteries and visceral ligaments come into action; the dropped organs become supported or suspended by their attachments. Very probably Mr. H. Tyrrell Gray is right in ascribing certain symptoms and disorders of intestinal function to tension on the nerves lying within the mesenteries. The increased areas of visceral fixation to be seen in the bodies of orthograde primates, particularly in the human body, are not for the suspension of organs, but to limit their movements and prevent entanglements. For example, it is not uncommon to find in the human body that the mesentery of the "ileo-caecal loop" has not become adherent to the posterior wall of the abdomen, but has remained free as in pronograde apes. In such cases neither the caecum nor ileum falls below its usual level; what does often happen is that the unfixed condition of the ileo-caecal tract permits a freedom of movement which may end in the loop becoming twisted and the bowel acutely obstructed.

#### INTRA-ABDOMINAL STRESSES.

There is another line of evidence which helps us to understand why peritoneal fixation has assumed so extensive a development in the human body. We are apt to forget that the chief muscles of the belly wall, the two recti, the external obliques, and the internal obliques, are primarily muscles of the spine; they are the powerful postural antagonists of the spinal muscles thus form a great cylinder, within which is packed the column of abdominal contents. Thus the abdominal contents are subject to the compressive action of the cylinder of postural muscle. During violent muscular effort the intra-abdominal pressure will mount up to 100 or 150 mm. Hg. In pronograde apes we cannot conceive that such high pressures can arise; the postural musculature of their trunks uses both fore and hind limbs as bases of action. With the evolution and maintenance of the orthograde posture, the shortening of and extension of the thighs, the abdominal contents the loins and extension of the thighs, the abdominal contents became subjected to greater degrees of compression and displacement, but even in the great anthropoids the maintenance of posture does not fall entirely on the musculature of the abdominal walls; weight in the upright position is partially borne by the upper extremities. It was with the evolution of the plantigrade posture of the human body that the postural compression of the abdominal viscera reached its highest point. The arms no longer assisted in supporting the body; the reverse became the case—the erect trunk had to afford a firm basis of action for the arms. For this purpose the postural complex of muscles which surround and enclose the abdominal cavity is called continuously into action. They tend to compress and displace the contents of the abdomen, and hence the human posture demands the most extensive system of visceral attachment.

It has also to be remembered that the upper viscera of the abdomen move with the respiratory tide. They must be fixed and shaped so that they may respond to all movements of the diaphragm and changes in shape of the thorax. The respiratory factor has to be kept in mind when we seek to explain the altered fixation of the abdominal viscera which occurred with the evolution of the orthograde posture.

#### TRANSFORMATION OF THE ABDOMINAL CAVITY.

Thus we see that the evolution of the orthograde posture was attended by a revolution in the attachment of the abdominal viscera and by an elaboration of the muscular mechanisms which keep the trunk erect and support the contents of the abdomen. Then, too, came a transformation in the shape of the abdominal cavity and a remodeling of such solid viscera as the liver and spleen. Everyone is familiar with the long loins of the common monkey and the keel-like form given to the hinder part of their bodies.



their usual pronograde or "four-footed" mode of progression the chest is more ventral in position than the flanks; hence the abdominal viscera tend to sag against the diaphragm. The iliac part of their pelvis is long, narrow, and situated dorsally, thus permitting the ventral musculature to exert an unfettered control over the contents in the hinder part of the abdomen. That part of their abdominal cavity which lies within the wings of the thorax is deep from back to front, but relatively narrow from side to side. We have seen that with the evolution of the orthograde posture the loins became shortened by the addition first of one lumbar vertebra to the sacrum, then of another. The dorsal wall of the abdomen was thus curtailed; so too were the abdominal aorta and the dorsal attachment of the mesentery. Attention has already been drawn to the widening of the orthograde trunk and to the flattening of its dorsal and ventral surfaces; the abdominal cavity necessarily underwent a corresponding change in shape: the domes of the diaphragm became wider and more capacious. A feature which is particularly worthy of note was the increased protrusion of the bodies of the vertebrae within the cavities of the thorax and abdomen. This vertebral protrusion led to a deepening of the hypocondriac recess which lies on each side of the vertebral column. In man, particularly after the lumbar curvature is fully developed, these recesses become deep and capacious. With the deepening of the recesses the viscera which lie within them, especially the kidneys, become withdrawn from direct muscular support, and hence are particularly liable to displacement. These changes in the shape of the abdominal cavity, which became more marked with each succeeding phase in the evolution of the orthograde posture, necessarily affected the form of the contained viscera and their mode of fixation.

#### THE EVOLUTIONARY RÔLE OF PERITONEAL ADHESIONS.

Having thus sketched in outline the chief changes which overtook the abdominal wall during the evolution of the upright body I now turn to note the postural adaptations to be recognized in the contained viscera. It is impossible in the course of a single lecture to deal with the matter fully; I shall restrict myself to one or two of the more significant changes, particularly those which have been brought about by a more extensive peritoneal adhesion of the viscera.

In the lowest and oldest primates known, as in the more recent and more highly specialized, the alimentary tract, from oesophagus to anus, falls into four natural sections or loops. These are: (1) the gastric loop, (2) the duodenal, (3) the ileo-colic, (4) the recto-colic. In the lowest primates these four loops are attached to the median line of the dorsal wall of the abdominal cavity by a continuous peritoneal sheet—the common mesentery. Even in this earliest of stages the gastric loop is seen to have undergone a rotation and its mesentery has become ballooned out to form a great omental sac—an occurrence which shows us that mesenteries are more than mere ligaments and that peritoneum is much more than a passive lining for the abdominal cavity. Even among pronograde monkeys the mesentery of the duodenal loop and the omental sac show various degrees of adhesion to the posterior wall of the abdomen. In the pronograde monkeys of the old world adhesions have already become extensive. The duodenum and pancreas have become sealed to the posterior wall of the abdomen. The rotation of the ileo-colic loop is now so complete that the proximal part of the colon falls into the right lumbar region in front of the duodenum. In the duodenal or right lumbar area an interesting complex of peritoneal adhesions is formed, chiefly out of the right extremity of the omental sac, which is attached to the pyloric end of the stomach and commencement of the duodenum. The fringes of the right end of the omentum have become plastic and adhesive in nature; they help to bind the colon to the right lumbar region and represent the initial stage in the evolution of the so-called Jacksonian membrane. In the old-world monkeys, too, is to be seen the first stage in the adhesion of the mesentery of the small bowel and transverse mesocolon—which collectively represent the common mesentery of the ileo-colon. The area of adhesion is restricted to the neighbourhood of the "root" of the mesentery. The mesentery of the distal part of the colon retains its primitive median attachment.

Then, when we pass from the highest of the pronograde apes to the lowest orthograde form represented by the gibbon, we find the process of peritoneal adhesion has proceeded apace. The omental sac has not only become adherent to the posterior abdominal wall but has become fused with the mesentery of the transverse segment of the

colon. Its right or hepatic extremity forms adhesive colic bonds in the loin, while its left or splenic extremity does the same in the left hypocondrium. The spleen has become adherent over the left kidney. The posterior aspects of both oesophageal and pyloric ends of the stomach have become more adherent. The fixation of the mesentery of the ileo-colon, which has reached only an initial stage in old-world monkeys, has become more extensive in the gibbon, but the extremity of the loop, including the terminal part of the small intestine and the beginning of the large intestine, is still free. It is in the gibbon we see the first stage in the process of sealing down the mesentery of the distal segment of the colon. The mesentery attached to the splenic flexure becomes fixed to the posterior wall of the abdomen, while the mesentery of the descending and sigmoid colons remains almost as free as in pronograde apes. In the great anthropoid apes we see a stage of adhesion which takes us almost to the extent seen in the human body. The colic adhesions developed out of the omental extremities at the hepatic and splenic flexures have become particularly abundant. The posterior aspect of ileo-colic mesentery has become adherent almost to the termination of the ileum. The mesentery of the descending colon has become sealed down to the left lumbar region, and the root of the meso-sigmoid shows signs of wider attachment. The human is but a slight exaggeration of the anthropoid stage.

Thus in the degrees to which the viscera are bound to the abdominal wall by a process of adhesion we have a complete series of evolutionary stages leading from the lowest stage seen in pronograde monkey to the stage seen in the highest orthograde primate—man. Nature has used the process of peritoneal adhesion as part of her evolutionary machinery. That she has done so is made manifest by the recapitulation of the evolutionary series in the developing abdominal system of the human foetus. It is but seldom that the developmental processes of the human body recapitulate evolutionary history with any degree of clearness; but in the development of the mesenteric adhesions I think there can be no doubt evolutionary history is repeated.

#### HOW DO POSTURAL ADAPTATIONS OF THE PERITONEUM ARISE?

Long ago Sir William Arbuthnot Lane recognized that there was a connexion between posture and the formation of peritoneal adhesions. He spoke of such adhesions as being "crystallizations in the lines of force." This explanation may be true, but it does not help us to understand how adhesions occur in the foetus. A more profitable approach to the problem is the recognition that all the cells which line the peritoneum have in them, as an inherent quality, the power to form adhesions; that power becomes manifest whenever an irritant or toxic substance is applied to them. We must suppose, then, that this quality which is inherent in living peritoneal cells can be evoked somehow during embryonic and foetal life. The stimulus, whatever its nature may be, acts in a controlled manner on a sequence of definite areas, and produces a series of adaptational adhesions which serve to meet a need of the body.

#### THE DESCENT OF THE TESTES.

To understand the protean and plastic qualities of developing peritoneum one has only to recall Hunter's account of the nature of the process which brings about descent of the testicle. The gubernaculum testis may be described as a peritoneal growth plug; it is a cellular mass formed out of peritoneum and subperitoneal elements. The gubernaculum as it approaches the groin brings about a proliferation and an evagination of all the strata of the inguinal wall. The descent of the testicle, whatever the physiological reason for it may be, is not a more obscure or a more wonderful process than the formation of a peritoneal adhesion. Both are manifestations of developmental or growth qualities inherent in the lining membrane of the abdomen. Hunter has been criticized for using the phrase "stimulus of perfection" to designate the cause which set the machinery of descent in motion. If we translate Hunter's phrase "stimulus of perfection" to mean a hormone substance which is produced by a normal developing testis, we are only giving his language and his explanation a modern garb.

One other instance I may cite to illustrate the active qualities of developing peritoneum. In all forms of primates the ileo-colic loop of intestine undergoes a rotation during development, the rotation bringing the beginning of the colon into the right lumbar region. In the human embryo the



rotation of this loop takes place as it is withdrawn from the umbilical sac at the end of the second month of foetal life. My friend Professor J. E. S. Frazer has made a very thorough study of the mechanism<sup>1</sup> which brings about the turning over of the colic end of the loop. From his observations there can be no doubt, I think, that the retraction of the loop from the umbilicus and its rotation are produced by certain growth bands—or rather retraction bands—which develop along certain sectors of the mesentery of the loop. The rotation of the ileo-colic intestinal loop is a growth phenomenon not unlike in nature to that which we see manifested in the descent of the testicle.

It would take us too far afield in this lecture to discuss the modifications undergone by the liver and stomach with the evolution of the orthograde posture. I shall content myself, so far as the liver is concerned, by drawing attention to the fact that the change in posture was attended, as in the adjacent right lung, by the disappearance of the large caudate lobe. In the human liver a vestige of the caudate lobe is always present, showing that man has come of an ancestry which was pronograde in posture. As for the stomach, I shall merely mention that in the human child this organ is shaped as in anthropoid apes, and occupies the same high horizontal position. At what period of adolescence the infantile form is replaced by the elongated, vertically placed stomach of adult life has yet to be ascertained, but the change in shape must certainly be attributed to man's erect posture.

## REFERENCES.

REFERENCES.  
<sup>1</sup> See Allbutt and Rolleston's *System of Medicine*, Visceroprolosis, 1900, vol. iii, p. 860, vol. iv, p. 3. <sup>2</sup> H. Tyrrell Gray, *Lancet*, 1920, i, p. 1345.  
<sup>3</sup> Keith, *Lancet*, 1903, i, p. 632; 1904, i, p. 558. <sup>4</sup> *Journ. of Anatomy*, 1915, vol. 50, p. 75.

# A NOTE ON THE NATURE OF THE SUGAR IN BLOOD.

338

J. A. HEWITT, Ph.D., B.Sc.

(From the Department of Physiology, King's College, University of London.)

The recent important advances made by Irvine and his co-workers as to the constitution of the carbohydrates lend themselves admirably to speculation regarding the possible function and significance of the now definitely established "γ" sugars in the metabolic processes of both plant and animal.

Direct evidence of the formation of these reactive isomerides in biological reactions was lacking until the present author and Pryde (Hewitt and Pryde, 1920) showed with some certainty that  $\gamma$  glucose and  $\gamma$  fructose are formed and can be detected when the stable  $\alpha$  and  $\beta$  isomerides are in contact with living intact intestine. We contented ourselves with recording the experimental facts, and refrained from discussing any theoretical extension of the work, attractive and obvious as such discussion was, beyond saying, "The possibility thus suggests itself that in the rapid transformation of carbohydrate in living tissues  $\gamma$  sugars may play an important if not an essential part." Later Hewitt and de Souza (1921) remarked with similar reserve on this question, "It may be presumed on *a priori* grounds that a structural change of the nature referred to has some fundamental reason."

Since the communications mentioned above, three publications have appeared in which Hewitt and Pryde's results are quoted in some detail, and in each case are accepted, extended, and employed for the formulation of a theory as to the causation of diabetes mellitus.

Before discussing the evidence adduced in these researches, on which this theory is based, it is perhaps advisable to emphasize the extreme difficulty that exists in interpreting results in this field of work. Most, if not all, of the biochemical data are and must necessarily be indirect; consideration is required, therefore, both in devising experiments and in drawing conclusions therefrom if advance is to be made without confusion avoided.

workmanship. The option avoided. The properties of  $\gamma$  sugars must be deduced from the LIGAM deal in discussing their formation and erroneous reactions at the processes, it might be well to the known grounds of alosenteries, it might be well to the final grounds of alosenteries, it might be well to the existence in metabolic processes, it might be well to the relevant salient features of such sugars as the study of their monosaccharide derivatives.

2. Two  $\gamma$  isomerides exist in the case of each hexene, analogous in their mutual relations to the  $\alpha$  and  $\beta$  modifications. Possibly these  $\gamma$  isomers undergo mutarotation *inter se* as well as stereochemical change to the stable form; the last reaction is undoubtedly extremely rapid.

3. The chemical reactivity of  $\gamma$  sugars is very great, and condensation with alcohols to form glucosides takes place rapidly at room temperature. Fehling's solution is reduced in the cold, they unite readily with oxygen to form explosives, which in turn easily undergo disaccharide formation.

4. Unsubstituted  $\gamma$  sugars show marked instability to traces of acid or alkali.

Such properties manifestly render detection a matter of difficulty, which is further increased when it is remembered that one isomeride of  $\gamma$  glucose is strongly laevo-rotatory, while  $\beta$  glucose is only feebly dextro-rotatory. Apart from isolation of derivatives of these sugars, identification in biological reactions depends on polarimetric determination of optical behaviour and on the reduction of alkaline potassium permanganate.

Polarimetric evidence alone, therefore, must exclude rigorously the presence of  $\beta$  glucose in amount greater than that found normally in aqueous glucose solution in equilibrium. This is referred to in further detail below. The dangers attending the use of permanganate with biological material are obvious; the employment of this reagent requires careful control, and at best can be applied only with extreme caution to such complex solutions as blood or urine.

In my opinion the evidence on which Cooper and Walker (1922), and Winter and Smith (1922) base their theory is insufficient when the essential properties of  $\gamma$  sugars are considered. Cooper and Walker separated blood from a hexose solution (glucose or fructose) by a dialysing membrane and examined, with negative results, the sugar polarimetrically and with permanganate. Several objections can be raised to this technique:

(a) The blood was extravascular and, having undergone at least preliminary stages towards coagulation, was not normal. If it were citrated or oxalated (this is not stated) its condition is possibly still more abnormal.

(b) Owing to physical properties no enzyme could pass from the blood inside the dialyser to the sugar outside. Before any action could take place the hexose substrate would have to pass through the membrane. Unless preferential dialysis of one of the  $\alpha$  or  $\beta$  isomerides had occurred no change in the specific rotation would be found, if the sugars were in equilibrium at the beginning of the experiment.

(c) As the concentration of hexose outside the dialyser was greater than within, no transference of sugar from within outwards would be produced. The value, therefore, of examining the sugar outside does not seem apparent.

(d) Inherent dangers in the use of potassium permanganate exist; as, however, no reduction took place, the inference is perhaps not without reason that no dialysis of any component had occurred in either direction, for the various extractives of blood are far from inactive as regards this reagent, and owing to relative concentration would be removed from the blood inside to the solution which was tested.

Negative results obtained from experiments based on such technique do not warrant the superstructure of theory erected thereon. Hewitt and de Souza (loc. cit.) had previously clearly demonstrated what Cooper and Walker attempted. Kunitz and Smith (1922), in a more elaborate study, reached the same conclusion. The sugar is  $\gamma$  glucose, and

Winter and Smith (1922), in a more elaborate study, reached the conclusion that the normal blood sugar is  $\gamma$  glucose, and that an enzyme exists (not in the blood) for effecting the transformation of the stable butylene oxide glucoses into  $\gamma$  glucose.

I agree that no such enzyme can be demonstrated in the blood (see Hewitt and de Souza, loc. cit.), but am of opinion that objections may be raised both to Winter and Smith's view of blood sugar and to the experimental evidence on which they found their theory.

Dealing with the technique employed by these authors it is to be observed that in the course of preparing their final filtrate for polarimetric examination the following manipulative operations, among others, were performed: (1) precipitation with tungstic acid; (2) heating to 45° C.; (3) addition of ethyl and propyl alcohol and contact with these alcohols for twenty minutes at moderate temperature; (4) concentration.

\* Possibility of preferential dialysis was apparently not excluded. It may be stated, however, that alteration of optical values due to it - not be detected. (Unpublished experiments.)



their usual pronograde or "four-footed" mode of progression the chest is more ventral in position than the flanks; hence the abdominal viscera tend to sag against the diaphragm. The iliac part of their pelvis is long, narrow, and situated dorsally, thus permitting the ventral musculature to exert an unfettered control over the contents in the hinder part of the abdomen. That part of their abdominal cavity which lies within the wings of the thorax is deep from back to front, but relatively narrow from side to side. We have seen that with the evolution of the orthograde posture the loins became shortened by the addition first of one lumbar vertebra to the sacrum, then of another. The dorsal wall of the abdomen was thus curtailed; so too were the abdominal aorta and the dorsal attachment of the mesentery. Attention has already been drawn to the widening of the orthograde trunk and to the flattening of its dorsal and ventral surfaces; the abdominal cavity necessarily underwent a corresponding change in shape: the domes of the diaphragm became wider and more capacious. A feature which is particularly worthy of note was the increased protrusion of the bodies of the vertebrae within the cavities of the thorax and abdomen. This vertebral protrusion led to a deepening of the hypochondriac recess which lies on each side of the vertebral column. In man, particularly after the lumbar curvature is fully developed, these recesses become deep and capacious. With the deepening of the recesses the viscera which lie within them, especially the kidneys, become withdrawn from direct muscular support, and hence are particularly liable to displacement. These changes in the shape of the abdominal cavity, which became more marked with each succeeding phase in the evolution of the orthograde posture, necessarily affected the form of the contained viscera and their mode of fixation.

#### THE EVOLUTIONARY RÔLE OF PERITONEAL ADHESIONS.

Having thus sketched in outline the chief changes which overtook the abdominal wall during the evolution of the upright body I now turn to note the postural adaptations to be recognized in the contained viscera. It is impossible in the course of a single lecture to deal with the matter fully; I shall restrict myself to one or two of the more significant changes, particularly those which have been brought about by a more extensive peritoneal adhesion of the viscera.

In the lowest and oldest primates known, as in the more recent and more highly specialized, the alimentary tract, from oesophagus to anus, falls into four natural sections or loops. These are: (1) the gastric loop, (2) the duodenal, (3) the ileo-colic, (4) the recto-colic. In the lowest primates these four loops are attached to the median line of the dorsal wall of the abdominal cavity by a continuous peritoneal sheet—the common mesentery. Even in this earliest of stages the gastric loop is seen to have undergone a rotation and its mesentery has become ballooned out to form a great omental sac—an occurrence which shows us that mesenteries are more than mere ligaments and that peritoneum is much more than a passive lining for the abdominal cavity. Even among pronograde monkeys the mesentery of the duodenal loop and the omental sac show various degrees of adhesion to the posterior wall of the abdomen. In the pronograde monkeys of the old world adhesions have already become extensive. The duodenum and pancreas have become sealed to the posterior wall of the abdomen. The rotation of the ileo-colic loop is now so complete that the proximal part of the colon falls into the right lumbar region in front of the duodenum. In the duodenal or right lumbar area an interesting complex of peritoneal adhesions is formed, chiefly attached to the pyloric end of the omental sac, which is vent of the duodenum. The fringes of the right end of the omentum have become plastic and adhesive in nature; they help to bind the colon to the right lumbar region and represent the initial stage in the evolution of the so-called Jacksonian membrane. In the old-world monkeys, too, is to be seen the first stage in the adhesion of the mesentery of the small bowel and transverse mesocolon—which collectively represent the common mesentery of the ileo-colon. The area of adhesion is restricted to the neighbourhood of the "root" of the mesentery. The mesentery of the distal part of the colon retains its primitive median attachment.

Then, when we pass from the highest of the pronograde apes to the lowest orthograde form represented by the gibbon, we find the process of peritoneal adhesion has proceeded apace. The omental sac has not only become adherent to the posterior abdominal wall but has become fused with the mesentery of the transverse segment of the

colon. Its right or hepatic extremity forms adhesive colic bonds in the loin, while its left or splenic extremity does the same in the left hypochondrium. The spleen has become adherent over the left kidney. The posterior aspects of both oesophageal and pyloric ends of the stomach have become more adherent. The fixation of the mesentery of the ileo-colon, which has reached only an initial stage in old world monkeys, has become more extensive in the gibbon, but the extremity of the loop, including the terminal part of the small intestine and the beginning of the large intestine, is still free. It is in the gibbon we see the first stage in the process of sealing down the mesentery of the distal segment of the colon. The mesentery attached to the splenic flexure becomes fixed to the posterior wall of the abdomen, while the mesentery of the descending and sigmoid colons remains almost as free as in pronograde apes. In the great anthropoid apes we see a stage of adhesion which takes us almost to the extent seen in the human body. The colic adhesions developed out of the omental extremities at the hepatic and splenic flexures have become particularly abundant. The posterior aspect of ileo-colic mesentery has become adherent almost to the termination of the ileum. The mesentery of the descending colon has become sealed down to the left lumbar region, and the root of the meso-sigmoid shows signs of wider attachment. The human is but a slight exaggeration of the anthropoid stage.

Thus in the degrees to which the viscera are bound to the abdominal wall by a process of adhesion we have a complete series of evolutionary stages leading from the lowest stage seen in pronograde monkey to the stage seen in the highest orthograde primate—man. Nature has used the process of peritoneal adhesion as part of her evolutionary machinery. That she has done so is made manifest by the recapitulation of the evolutionary series in the developing abdominal system of the human foetus. It is but seldom that the developmental processes of the human body recapitulate evolutionary history with any degree of clearness; but in the development of the mesenteric adhesions I think there can be no doubt evolutionary history is repeated.

#### HOW DO POSTURAL ADAPTATIONS OF THE PERITONEUM ARISE?

Long ago Sir William Arbuthnot Lane recognized that there was a connexion between posture and the formation of peritoneal adhesions. He spoke of such adhesions as being "crystallizations in the lines of force." This explanation may be true, but it does not help us to understand how adhesions occur in the foetus. A more profitable approach to the problem is the recognition that all the cells which line the peritoneum have in them, as an inherent quality, the power to form adhesions; that power becomes manifest whenever an irritant or toxic substance is applied to them. We must suppose, then, that this quality which is inherent in living peritoneal cells can be evoked somehow during embryonic and foetal life. The stimulus, whatever its nature may be, acts in a controlled manner on a sequence of definite areas, and produces a series of adaptational adhesions which serve to meet a need of the body.

#### THE DESCENT OF THE TESTIS.

To understand the protean and plastic qualities of developing peritoneum one has only to recall Hunter's account of the nature of the process which brings about descent of the testicle. The gubernaculum testis may be described as a peritoneal growth plug; it is a cellular mass forced out of the peritoneum and antiperitoneal elements. The gubernaculum as it approaches the groin brings about a proliferation and evagination of all the strata of the inguinal wall. This it may be, is not a mere chance or a more wonderful process than the formation of a peritoneal adhesion. Both are in the lining membrane of the abdomen. Hunter criticized for using the phrase "descent" a case of this kind, in motion. If we translate Hunter's "descent" as "descent of the blood was made, section" to mean a homocarpous, we have seen four similar cases, in each of a normal developing testis, examined during life; in three the and his explanation a mystery.

One other instance I have present, and in one *Bacillus coli*. Qualities of developing peritoneum in the blood in cases in the ileo-colic loop of the development, the relative into the right lumbar.



rotation of this loop takes place as it is withdrawn from the umbilical sac at the end of the second month of foetal life. My friend Professor J. E. S. Frazer has made a very thorough study of the mechanism<sup>1</sup> which brings about the turning over of the colic end of the loop. From his observations there can be no doubt, I think, that the retraction of the loop from the umbilicus and its rotation are produced by certain growth bands—or rather retraction bands—which develop along certain sectors of the mesentery of the loop. The rotation of the ileo-colic intestinal loop is a growth phenomenon not unlike in nature to that which we see manifested in the descent of the testicle.

It would take us too far afield in this lecture to discuss the modifications undergone by the liver and stomach with the evolution of the orthograde posture. I shall content myself, so far as the liver is concerned, by drawing attention to the fact that the change in posture was attended, as in the adjacent right lung, by the disappearance of the large caudate lobe. In the human liver a vestige of the caudate lobe is always present, showing that man has come of an ancestry which was pronograde in posture. As for the stomach, I shall merely mention that in the human child this organ is shaped as in anthropoid apes, and occupies the same high horizontal position. At what period of adolescence the infantile form is replaced by the elongated, vertically placed stomach of adult life has yet to be ascertained, but the change in shape must certainly be attributed to man's erect posture.

## REFERENCES.

<sup>1</sup> See Allbutt and Rolleston's *System of Medicine*, Visceroperiosis, 1900, vol. iii, p. 860, vol. iv, p. 3. <sup>2</sup> H. Tyrrell Gray, *Lancet*, 1920, i, p. 1345. <sup>3</sup> Keith, *Lancet*, 1903, i, p. 632; 1904, i, p. 558. <sup>4</sup> *Journ. of Anatomy*, 1915, vol. 50, p. 75.

## A NOTE ON THE NATURE OF THE SUGAR IN BLOOD.

BY

J. A. HEWITT, Ph.D., B.Sc.

(From the Department of Physiology, King's College, University of London.)

THE recent important advances made by Irvine and his co-workers as to the constitution of the carbohydrates lend themselves admirably to speculation regarding the possible function and significance of the now definitely established "γ" sugars in the metabolic processes of both plant and animal.

Direct evidence of the formation of these reactive isomerides in biological reactions was lacking until the present author and Pryde (Hewitt and Pryde, 1920) showed with some certainty that γ glucose and γ fructose are formed and can be detected when the stable α and β isomerides are in contact with living intact intestine. We contented ourselves with recording the experimental facts, and refrained from discussing any theoretical extension of the work, attractive and obvious as such discussion was, beyond saying, "The possibility thus suggests itself that in the rapid transformation of carbohydrate in living tissues γ sugars may play an important if not an essential part." Later Hewitt and de Souza (1921) remarked with similar reserve on this question, "It may be presumed on *a priori* grounds that a structural change of the nature referred to has some fundamental reason."

Since the communications mentioned above, three publications have appeared in which Hewitt and Pryde's results are quoted in some detail, and in each case are accepted, extended, and employed for the formulation of a theory as to the causation of diabetes mellitus.

Before discussing the evidence adduced in these researches, on which this theory is based, it is perhaps advisable to emphasize the extreme difficulty that exists in interpreting results in this field of work. Most, if not all, of the biochemical data are and must necessarily be indirect; consideration is required, therefore, both in devising experiments and in drawing conclusions therefrom if advance is to be made.

THE FUNCTION OF MESAD properties of γ sugars must be considered in discussing their formation.

If, as I have concluded, mesenteric processes, it might be well to consider the erroneous reactions of such sugars as γ glucose and γ fructose in the metabolic processes of the body. It is generally accepted for the

2. Two γ isomerides exist in the case of each hexose, analogous in their mutual relations to the α and β modifications. Possibly these γ isomerides undergo mutarotation *inter se* as well as stereochemical change to the stable form; the last reaction is undoubtedly extremely rapid.

3. The chemical reactivity of γ sugars is very great, and condensation with alcohols to form glucosides takes place rapidly at room temperature. Fehling's solution is reduced in the cold, they unite readily with oxygen to form oxy-compounds, which in turn easily undergo disaccharide formation.

4. Unsubstituted γ sugars show marked instability to traces of acid or alkali.

Such properties manifestly render detection a matter of difficulty, which is further increased when it is remembered that one isomeride of γ glucose is strongly laevo-rotatory, while β glucose is only feebly dextro-rotatory. Apart from isolation of derivatives of these sugars, identification in biological reactions depends on polarimetric determination of optical behaviour and on the reduction of alkaline potassium permanganate.

Polarimetric evidence alone, therefore, must exclude rigorously the presence of β glucose in amount greater than that found normally in aqueous glucose solution in equilibrium. This is referred to in further detail below. The dangers attending the use of permanganate with biological material are obvious; the employment of this reagent requires careful control, and at best can be applied only with extreme caution to such complex solutions as blood or urine.

In my opinion the evidence on which Cooper and Walker (1922), and Winter and Smith (1922) base their theory is insufficient when the essential properties of γ sugars are considered. Cooper and Walker separated blood from a hexose solution (glucose or fructose) by a dialysing membrane and examined, with negative results, the sugar polarimetrically and with permanganate. Several objections can be raised to this technique:

(a) The blood was extravascular and, having undergone at least preliminary stages towards coagulation, was not normal. If it were citrated or oxalated (this is not stated) its condition is possibly still more abnormal.

(b) Owing to physical properties no enzyme could pass from the blood inside the dialyser to the sugar outside. Before any action could take place the hexose substrate would have to pass through the membrane. Unless preferential dialysis of one of the α or β isomerides had occurred no change in the specific rotation would be found, if the sugars were in equilibrium at the beginning of the experiment.

(c) As the concentration of hexose outside the dialyser was greater than within, no transference of sugar from within outwards would be produced. The value, therefore, of examining the sugar outside does not seem apparent.

(d) Inherent dangers in the use of potassium permanganate exist; as, however, no reduction took place, the inference is perhaps not without reason that no dialysis of any component had occurred in either direction, for the various extractives of blood are far from inactive as regards this reagent, and owing to relative concentration would be removed from the blood inside to the solution which was tested.

Negative results obtained from experiments based on such technique do not warrant the superstructure of theory erected thereon. Hewitt and de Souza (*loc. cit.*) had previously clearly demonstrated what Cooper and Walker attempted.

Winter and Smith (1922), in a more elaborate study, reached the conclusion that the normal blood sugar is γ glucose, and that an enzyme exists (not in the blood) for effecting the transformation of the stable butylene oxide glucoses into γ glucose.

I agree that no such enzyme can be demonstrated in the blood (see Hewitt and de Souza, *loc. cit.*), but am of opinion that objections may be raised both to Winter and Smith's view of blood sugar and to the experimental evidence on which they found their theory.

Dealing with the technique employed by these authors it is to be observed that in the course of preparing their final filtrate for polarimetric examination the following manipulative operations, among others, were performed: (1) precipitation with tungstic acid; (2) heating to 45°C.; (3) addition of ethyl and propyl alcohol and contact with these alcohols for twenty minutes at moderate temperature; (4) concentration.

\* Possibility of preferential dialysis was apparently not considered. It may be stated, however, that alteration of optical values due to



almost to dryness; and (5) solution in water for at least three days.

Consideration of the known reactions of  $\gamma$  glucose renders it unlikely that such a labile substance would remain unaffected by tungstic acid. Since no strict proof is available as to the action of this reagent on  $\gamma$  sugars this point perhaps should not be stressed. The second operation, heating to 40° C., is one which undoubtedly hastens the mutarotation of any system of isomeric sugars not in equilibrium. The third operation, treatment with alcohol, appears to be one which would rule out all possibility of obtaining the free reactive sugar. I need only refer to the extraordinary capacity which these sugars possess for undergoing glucoside formation with alcohols, or for condensation with acetone. Finally, the acidity of the filtrate is in itself no small objection to the conclusions reached.

It is thus seen that the technique adopted by Winter and Smith is in its essentials one calculated to remove effectively any  $\gamma$  glucose which may have been originally present, and it is difficult to see how the optical observations of the filtrate throw any light on the condition of the original blood sugar.

Dealing next with the times taken to attain a constant optical value, it may be noted that final equilibrium was not reached till after two to four days. It need only be pointed out that such a slow reaction is not a feature of  $\gamma$  sugars or of their mutarotating derivatives. It is regrettable that more complete data are not given, as it is impossible to analyse as fully as might be desired the optical behaviour of the dilute filtrate with a view to interpreting the nature or course of the reaction. It does not appear, however, that the authors have excluded the presence (or formation) of  $\beta$  glucose, with specific rotation +19°, in amount greater than that in aqueous glucose solution in equilibrium. Similarly with diabetic blood where the optical change is a downward mutarotation, the possibility of the presence of excess of  $\alpha$  glucose (specific rotation +110°) must be admitted. So far as can be judged, the optical variations observed do not lie outside values arising from temporary disturbance of the equilibrium between the  $\alpha$  and  $\beta$  butylene oxide glucoses.

No mention is made of precautions to ensure sterility of the sugar solution kept for four days. Non-sterility of the final material obtained—containing, presumably, substances susceptible to bacterial action in addition to glucose—might well account for optical changes. The action on permanganate of the filtrate, fresh and after standing for several days, is similarly not conclusive. Relatively simple oxidative changes, or even saturation of unsaturated compounds, might account for the phenomena observed. This apparently was not controlled. Winter and Smith (1923) state also "the sugar" (of normal blood—that is,  $\gamma$  glucose) "gives an osazone with the same crystalline form and melting point as that of glucosazone." In this connexion Irvine, Fyfe, and Hogg (1915) have shown that  $\gamma$  glucose "reacts with phenylhydrazine and acetic acid, but is thereby resinified, and, in addition, a definite anilide, or other crystalline derivative, could not be obtained." This observation hardly supports the presence of  $\gamma$  glucose in the blood examined by Winter and Smith.

The experiments of Winter and Smith cannot be regarded as crucial, and the question demands rigorous investigation before the existence of  $\gamma$  glucose in more than normal traces can be accepted as the circulating sugar of blood.

In addition it may be pointed out that Winter and Smith's suggestion as to the non-formation of  $\gamma$  glucose in the diabetic does not in any way account for the downward change in optical values found in blood in this pathological state. If their conclusions were sound the optical value of diabetic blood should not vary on standing under aseptic conditions as there could be no transformation from one isomeride to another and the relation of the optical value to the copper value should be a constant throughout. Evidence from pathological conditions also fails to support the main thesis.

The experimental evidence brought by these authors is not, however, such as lends itself to profitable discussion, but among the many possible complicating factors may be indicated the opposed rotations of the conjugated glycuronates and of the free acid.

While admitting, in the absence of any proof, that the reactive forms of sugars are in all probability of fundamental metabolic importance, it is perhaps not necessary to assume that the normal blood sugar is this modification. If the reserve carbohydrate of plants and animals be considered, in no case (except inulin) is it found that  $\gamma$  sugars are present

in combination and are liberated on hydrolysis. Starch, glycogen, and cellulose are condensation products of stable butylene oxide glucose. (Irvine, 1922; Irvine and Macdonald, 1922; Irvine, Denham, and Hirst, 1922.)

Inulin is exceptional, and shares with cellulose the distinction of being of but small value to man as a source of carbohydrate. Sucrose appears to be the only foodstuff in which a  $\gamma$  sugar is available as such for absorption, and it will be noted that it has to undergo hydrolysis before the  $\gamma$  fructose is liberated. No form of reserve carbohydrate as such behaves as a  $\gamma$  sugar.

The sugar of blood cannot but be regarded as a store of carbohydrate ready for consumption at short notice, and following the analogy of the known condition of other reserve carbohydrates one would not be surprised to find the simple monosaccharide to be the stable butylene oxide modification. Furthermore, if one considers the extraordinary chemical reactivity of  $\gamma$  sugars it is but reasonable to suppose that they would not be in this condition in blood.

It may well be that only when required for oxidative processes would the stable form undergo stereochemical change into the reactive modification, and free  $\gamma$  glucose might have but a transient existence, and might almost be regarded as an intermediate product in the katabolism of glucose. Evidence of this will possibly be by no means easy to obtain. In this connexion also it may be noted that Dakin (1922), after reviewing the literature on carbohydrate metabolism, concludes: "Active glucose metabolism only seems to occur in the presence of living and surviving cells."

Until evidence is brought that  $\gamma$  glucose does exist as the sugar of blood and does not exist in diabetic blood, no theory of diabetes can be formulated as to the relation of these sugars to this pathological condition. Observations are in progress on the optical behaviour of equilibrated solutions of sugars in the intestine of the diabetic organism. It is hoped in this way to obtain a decision on this point.

#### Summary.

1. No evidence exists that  $\gamma$  glucose is a component of normal blood.
2. Theories of diabetes mellitus demanding the presence of  $\gamma$  glucose in normal blood are without experimental foundation.
3. Formation of  $\gamma$  glucose in carbohydrate metabolism may take place as and when required and the active modification may possibly have no more than a transitory existence.

#### REFERENCES.

- Cooper and Walker (1922): *Biochem. Journ.*, 15, 455-459.  
 Dakin (1922): *Oxidations and Reductions in the Animal Body*, Longmans, Green and Co., London.  
 Hewitt and Pryde (1920): *Biochem. Journ.*, 14, 395-405.  
 Hewitt and de Souza (1921): *Ibid.*, 15, 657-671.  
 Irvine (1922): *Brit. Assoc. Reports*, Pres. Address to Sect. B, *it. Assoc. Reports*, *Brit. Assoc. Reports*, *Ann. Chem. Soc.*, 107, 521-541.  
*Physiol.*, 1, 57, 100-112.  
*J. MEDICAL JOURNAL*, i, 12-13.

## ON SEPTICAEMIC INFECTION FOLLOWING OPERATIONS FOR APPENDICITIS.

### A PROPHYLACTIC SERUM.

BY

HERBERT H. BROWN, O.B.E., M.D., F.R.C.S.,  
 CONSULTING SURGEON TO THE EAST SUFFOLK HOSPITAL, IPSWICH.

I HAVE drawn attention in previous communications<sup>1</sup> to a train of symptoms which sometimes follows operations for appendicitis in children, if performed from the third to the sixth day from the commencement of the attack, and always leads to a fatal termination within about forty-eight hours; and I gave reasons for my belief that these symptoms indicated a septic infection of the blood taking place at the time of operation.

In the more recent paper I described a case of this kind, in which a bacteriological examination of the blood was made, and the *Streptococcus faecalis* was found in pure culture. Since that date I have seen four similar cases, in each of which the blood was examined during life; in three the *S. faecalis* was found to be present, and in one *Bacillus coli*. I have not found these organisms in the blood in cases in which these symptoms had not made their appearance.



*Symptoms of Septicaemic Infection.*

The train of events is as follows: The operation is performed on a child on the third, fourth, or fifth day. In some cases nothing but drainage of an abscess is undertaken with as little disturbance as possible; in others the appendix is removed; but in all the infection has already spread beyond the appendix, causing inflammation of the surrounding tissues or actual pus formation.

For the first thirty-six hours, or perhaps a little longer, the child seems to be doing well and all the symptoms are satisfactory. The temperature is often normal, pulse slower than before the operation, abdomen flat, no pain or vomiting. The child usually sleeps well for the first night, and everything appears to be satisfactory. Then a rapid and almost sudden change for the worse takes place; the face becomes pale, the pulse rate commences to rise, the temperature is usually subnormal, the child becomes restless and irritable (this is a very marked feature), then drowsiness with restless intervals supervenes, and an occasional shrill "meningeal" cry is uttered which is very characteristic; in fact, all the symptoms are of a cerebral type—the pupils become dilated; coma with a rapidly rising temperature is followed by death, generally within thirty-six hours of the onset of the symptoms. The clinical picture is a very tragic and striking one, and in each case which I have seen in my own practice or that of others the symptoms have been practically identical.

*Post mortem* nothing is found to account for death. There is no peritonitis, nothing abnormal in the site of operation, no sign of meningitis.

When my attention was first drawn to these cases, about thirteen years ago, I gave what I believed to be the true explanation of them, and further experience has strongly confirmed that belief. It is well known that patients suffering from appendicitis, even after perforation and abscess formation has taken place, may recover without surgical interference: this was more often seen in former years before operations were as commonly undertaken as they are at present and the disease was spoken of as typhlitis or perityphlitis: the abscess perforated into a neighbouring viscus, generally the caecum, and the patient recovered. Operations, which were performed as a rule later than they are now, some time during the second week, when a large abscess was evident, were attended by little if any danger.

If the infection is very acute or the patient's natural resistance low, Nature unaided by the surgeon is defeated. The appendix wall sloughs and perforates into the general peritoneal cavity, causing a rapidly fatal peritonitis and toxæmia. Nature has had no time to mobilize her forces. But in other cases where the resistance is stronger or the virulence of infection less, and the poison is for a longer period confined to the appendix, toxins leaking through its wall set up inflammatory changes in the surrounding tissues, omentum, bowel, or parietal peritoneum. Before actual pus has been formed, a wall of plastic lymph has been thrown up, covering the surrounding inflamed tissues and shutting off the general cavity of the peritoneum, and at the same time sealing up the lymphatics and blood vessels in the inflamed tissues. It acts like the porcelain of a filter, allowing toxins to percolate through into the lymphatics and blood vessels but holding back the infective organisms—*B. coli* and streptococci. This is the first line of defence.

Its production gives time for the development of the second line, which I believe to be of very great importance—that is, the production of antibodies in the blood. The toxins soaking through the wall of lymph into the blood lead to the production of antibodies, which by the middle of the second week have produced a considerable degree of immunity. There is often at this time (if the patient has been allowed to reach this stage) a considerable improvement in the general condition—the temperature may fall to normal and the pulse rate diminish. The abscess, which is frequently a large one, may be opened without any danger, without even infecting the wound, which has been freely irrigated with stinking pus.

When an operation is performed during the middle of the first week the wall of lymph may be disturbed, or rubbed off, or may not have been properly formed, and a direct inoculation of infective material, containing *B. coli* or *S. faecalis*, into the blood stream may take place. This, after a short incubation period (twenty-four to thirty-six hours, or a little longer), is followed by the onset of symptoms due to septicaemic infection. If the operation is deferred to the second week the blood will have been rendered immune to this infection—the second line of defence will have had time to be mobilized, and these septicaemic symptoms do not appear.

If a case of appendicitis is seen early enough—during the first twenty-four hours—there is no question as to the proper treatment. The appendix should be removed at once. The

post-operative risk is practically nil, and no drainage is required. But if the case first comes to the surgeon at a later stage the right line of treatment is not so obvious; the dangerous period from the third to the sixth day of disease is present. It might be wiser to wait for several days until the abscess has reached a fair size and the blood has become relatively immune to infection before operating. But there are dangers and disadvantages in delay. The abscess might burst into the general peritoneal cavity. The child is in pain and distress, the parents are anxious and expecting immediate relief by the surgeon. Should the case end fatally after all, the surgeon will be blamed for his procrastination. It is difficult, even if he so wishes, for the surgeon to withhold his hand.

It occurred to me that it might be possible by injecting a prophylactic serum before and at the time of operation and shortly afterwards, to produce an immunity for the time which would prevent or largely minimize the danger of blood infection at the operation if performed during the dangerous period. I explained my views to Dr. Ledingham of the Lister Institute, who discussed the matter with Dr. MacConkey, the bacteriologist in charge of the serum department. Dr. MacConkey very kindly arranged to immunize a horse with cultures of *S. faecalis* and *B. coli* provided from cases of mine, and last March sent me a supply of serum. Unfortunately I have not been able to test the value of the serum as a prophylactic sufficiently, and as in the meantime I have retired from active work on the hospital staff my opportunities have been lessened. But the serum is still available, and I hope, with the aid of surgical colleagues, to be able to give it a full trial, and publish a further report.

## REFERENCES.

*BRITISH MEDICAL JOURNAL*, 1910, ii, 103; *Lancet*, January 15th, 1921.

## Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

## HYPEREMESIS GRAVIDARUM.

The following case presents certain features which appear worthy of record:

The patient, a young Jewish lady, had had three pregnancies terminated artificially on account of intractable hyperemesis. She was most anxious to have a child. She became pregnant towards the end of December, 1921, and vomiting began within a few days. She came under my care on January 3rd, 1922. Vomiting was persistent and salivation profuse. I began the line of treatment elaborated by Professor Harding of Toronto. I also administered peptone intramuscularly, having known a number of cases successfully treated by this method by a former partner, in one of these cases the uterus had been emptied twice on account of hyperemesis.

My patient was able to take no nourishment by the mouth except lactose. She improved steadily until on January 16th there was no vomiting and she partook of lemonade, bread-and-butter, and lettuce. Fruit and fish were soon added to the dietary. The condition remained satisfactory until February 14th, when bile was vomited and salivation became profuse. The bilious vomiting increased in frequency and amount, and on February 17th I called in a colleague who had attended her in two previous pregnancies. He expressed his disappointment at her excellent general condition. The patient continued with slight intermissions. On March 6th the nurse reported that there had been a slight vaginal discharge. This was brown in colour and odourless. The patient became somewhat restless, but the pulse rate was only slightly raised (90). On the following morning the condition was not improved and the pulse rate had risen to 110. I arranged a consultation with my colleague at the earliest possible moment. When we saw her the pulse rate was 130, and it was decided to empty the uterus, the patient, who was fully conscious, protesting vigorously. The operation was carried out under ether anaesthesia with all possible speed, continuous saline being administered. The heart failed rapidly and death ensued some hours later.

There were no foetal products recognizable in the uterine contents. Albumin was at no time present in the urine, and was aceto-acetic acid, but bile appeared in the last few days.

NORMAN WILSON, M.A., M.D., B.Ch. Cantab.

Port Elizabeth, South Africa.



## British Medical Association.

## CLINICAL AND SCIENTIFIC PROCEEDINGS.

## SIERRA LEONE BRANCH.

The second scientific meeting of this newly organized Branch of the British Medical Association was held at the office of the Director of Medical and Sanitary Services, Freetown, on January 26th, with the President, Professor B. BLACKLOCK, in the chair.

Dr. J. D. DIMOCK presented two cases of interest.

The first was a boy, aged 14 years, with a dental cyst; a brief dissertation on the pathology of the condition was given, and the proposed method of treatment outlined. The second was a female child, aged 8 years, admitted to hospital with general anasarca, unable to open her eyes; distension made palpation of the abdominal viscera impossible: there was intense albuminuria. The provisional diagnosis was ankylostomiasis, but examination of the blood showed the presence of *P. malariae*. In the faeces the only ova found were those of ascaris; careful search on three occasions of the faeces in bulk, after administration of thymol and beta-naphthol, failed to reveal the presence of ankylostomes. Reference was made to a series of nine cases of a similar nature by Macfie, in which series, however, no details were given of examination of faeces. Dr. Dimock considered the oedema to be more severe than any he had observed in uncomplicated helminthic infection.

The PRESIDENT drew attention to a report<sup>1</sup> of the Rockefeller Foundation in which it was recognized that severe malaria cachexia was fairly often mistaken for hookworm disease.

Dr. J. Y. WOOD demonstrated two cases of beri-beri and one case of anaesthetic leprosy.

The first case of beri-beri was in the stage of exaggerated knee reflexes, the second had absence of knee-jerks. The first had no alteration in the cardiac rhythm, a feature of the second case. Both cases presented deep hyperaesthesia, Romberg's sign, and oedema over the tibiae. The drug treatment adopted for these

the dose had been raised from 5 to 20 minims.

Dr. E. J. WRIGHT showed two cases.

The first was a male Syrian, aged 30, who gave no history of a primary lesion, had a rash which resembled a well-developed macular syphilide all over the body, the maculae being dusky in the lower part of the abdomen and legs. The rash was irritating and tended to become pustular. There was a history of sudden chill, pain in the joints, and two days later the rash appeared. The joints of his wrists were slightly swollen, and the temperature was 100° F. There was slight albuminuria; no parasites in the blood. The second case was that of a child who, in the course of three weeks, had lost a large portion of his right cheek and of his upper jaw from an ulceration of the cheek. No organism was found which could account for the condition; symptomatic treatment was given. The result of the healing process was the almost complete loss of movement of the lower jaw.

Dr. E. S. WALLS showed a specimen consisting of a tangled mass of ascarides, which had produced severe symptoms in a Creole child aged 7 years.

The symptoms at first pointed to an acute abdominal condition, the temperature being 101.5°, the pulse rate 130, and respirations 130. Deep palpation caused pain in the right iliac fossa, but there was no definite localized rigidity. Bimanual rectal examination revealed nothing positive; constipation was marked; in the urine nothing abnormal was found. For several days symptoms persisted, and the repeated administration of santonin was undertaken owing to a previous history of the vomiting of two round worms. The symptoms, temperature, rapid pulse and respirations, passed off two days before the ascarides were passed, as a result of administration of repeated doses of calomel. It was suggested by Dr. Walls that the localizing symptoms were due to ascaris, which caused obstruction, and the general symptoms were caused by their toxin, the elaboration of which ceased at their death probably two days before they were passed.

Dr. EASMON referred to a case of a somewhat similar nature which had been under his care in the Protectorate.

Dr. WALLS showed also a case of periosteal sarcoma of the tibia in a male Creole of 48.

There was a history of injury in April, 1922. In November an exploratory incision into a small swelling in the situation of the injury revealed organized blood clot. The wound healed, but a rapid increase of the swelling took place, and the skin broke down in the first week of January, 1923. By January 25th there was a large fungating growth. Two other cases shown by Dr. Walls were (1) a child with a sequestrum of blackened bone three inches

long projecting upwards from the middle of the tibia, and (2) a boy aged 7 years who had a foreign body (a piece of laterite, in the external auditory meatus necessitating post-aural incision of the cartilaginous meatus.

## Reports of Societies.

## DIET, DENTAL STRUCTURE, AND CARIES.

At a meeting of the Odontological Section of the Royal Society of Medicine on March 26th, Mr. W. R. ACKLAND presiding, Mrs. MELLANBY gave an account of some of her later work on the relation of diet, dental structure, and caries.

Mrs. Mellanby said that finally in this investigation had not yet been reached; until dental caries could be produced in living animals in such a way that each factor could be controlled and tested in turn, the exact etiology of this defect must remain obscure. The new evidence she had to bring forward related to the resistance of the teeth to caries after their eruption as evidenced by the production of secondary—or, as it was sometimes called, adventitious—dentine of different types. In her previous work, which she briefly reviewed, the main principles brought to light were the importance of a certain factor, which might be described as vitamin A, in the formation of the teeth and jaws and in resistance to infection, also the importance of other factors in the diet in relation to this first factor, and, again, the importance of the diet of the mother during pregnancy and lactation. Although vitamin A was important, yet it was only one link in a long chain, and the amount of this factor which was necessary in order to maintain normal conditions depended on the amount of other factors in the diet. If, for example, two puppies were fed on exactly the same deficiency diet save for the single difference that to one was given double the quantity of cereal that the other received, the one which received the additional cereal would grow more rapidly than the other, and the condition of the teeth would be worse.

Recently she had carried out an examination on 302 deciduous teeth of children, which had yielded the following results:

	No. examined.	Well formed; no Caries.	Normal Structure; Caries.	Hypoplastic	
				No Caries.	Caries.
Incisors ...	47	34	5	—	8
Canines ...	29	1	—	12	16
First molars ...	83	1	5	1	81
Second molars...	133	—	1	—	137
	322	35	11	13	242

Thus 84 per cent. of these teeth showed a hypoplastic condition on microscopic examination, and over 90 per cent. were in absolute agreement with the theory of a direct relationship between structure and caries.

In trying to find a reason for the exceptions, she was struck by the varying types of secondary dentine seen in the sections. In a number of the 11 cases of carious teeth which were well formed, the secondary dentine was badly formed, with interglobular spaces, and in another case where the structure was good the pulp was found to be filled with cementum so that it could not resist the onset of caries. An analysis showed:

	Good Secondary Dentine.	Bad Secondary Dentine.	No Secondary Dentine or no Reaction.
Structure normal:			
Caries ...	—	8	3
No caries ...	23	8	5
Structure abnormal:			
Caries ...	15	130	97
No caries ...	9	2	2

Apparently in the large number of carious teeth with abnormal structure which showed no secondary dentine the onset of caries had been so rapid that there was no chance of

<sup>1</sup> Report of Uninariasis Commission to the Orient, 1915-1916, p. 110.



secondary dentine formation. Secondary dentine which was formed when the diet was good contained no interglobular spaces; that formed when the diet was bad did contain such spaces. Secondary dentine was formed by attrition or in response to an attack of caries, and in the latter event it might be that the secondary dentine was formed so quickly as to allow no time for good formation, or else that the diet was not good enough to permit of such good formation. There was at least some evidence that those conditions which produced good enamel and primary dentine were just those conditions which brought their influence to bear upon the teeth after eruption. The diets which produced normal teeth in puppies were also those which enabled the animals to resist bacterial infection. If there was an outbreak of distemper or mange those animals which were receiving cod-liver oil, suet, whole milk, butter, or similar food, survived; and if they got the disease—as they did sometimes—they got it in a mild form. The deciduous teeth of children which resisted caries, although the enamel and primary dentine were defective, were found generally to have normal secondary dentine. These investigations were still in progress, and new points were emerging continually. Some critics of the work rather took up an attitude which could be justified if—but only if—claims to absolute truth had been made. What she had so far elicited was only part of the story; much more information was needed before dental caries could be fully understood.

Mr. J. H. MUMMERY said that structure was evidently not the only condition to be considered in regard to caries. There were teeth of very defective structure which were not subject to caries. There was some other associated factor in addition to structure. He thought it must be concluded that the enamel was not altogether out of the pale of vitality. There was something in the permeability of the enamel which was not yet fully comprehended.

Mr. F. W. BRODERICK said that Mrs. Mellanby had previously shown that diet did affect dental enamel, but he thought that diet could not be the sole agent. He believed that there was a connexion between endocrine derangement and susceptibility to caries or to pyorrhoëa. W. B. Cannon had shown that in certain emotions, including anger and fear, also in hunger and pain, the activity of the suprarenal was increased, and amongst other results there was an increase in the calcium salts in the blood. He thought it could be said that that calcium was definitely a part of the alkali reserve, and that in threatened acidosis the calcium salts would be taken to neutralize the blood, so that under those circumstances the salts would not be available for their ordinary purposes—for example, hypercalcification of the enamel after eruption. He regarded the association of the periods of liability to acidosis, endocrine derangement, and susceptibility to pyorrhoëa or caries as not entirely fortuitous. Endocrine derangement, whether brought about by vitamin starvation, by infections or toxæmias, by inherited instability, or by the emotions, would be likely to lead to dental caries or to pyorrhoëa, as the case might be.

Mr. A. T. PITTS said that two years ago he read a paper describing his findings with regard to deciduous teeth. Out of something like 4,000 children he found only some 15 cases of visible (that is, macroscopic) hypoplasia; now Mrs. Mellanby said that out of 300 teeth she found 84 per cent. to show this defect on microscopical examination. This gave rise to the question as to what was normal enamel, and what was the significance of the interglobular spaces, and as to which opinions might differ. As to secondary dentine, it was well known that its formation was normally the product of the human pulp, but whereas it was sometimes laid down as the result of a normal physiological stimulus, in other cases, as in caries, it was laid down as the result of a pathological stimulus. The character of the stimulus must affect the nature of the secondary dentine laid down. The dentine laid down as the result of attrition was better than the dentine laid down in response to caries. It seemed to him in the present state of knowledge with regard to the subject to be a little hazardous to argue that the character of the secondary dentine as laid down in caries could be correlated with the diet. It was only rarely that he himself found anything wrong with the diet, yet many mothers when bringing their children said that the teeth came through decayed. That was not so, of course, but it always seemed to him that imperfection of structure must be a very strong predisposing cause in these cases of premature caries. He did not think that carbohydrate stagnation was the controlling factor.

Mrs. MELLANBY, in reply, said that so little was known about the functions of the endocrine organs that it was difficult to base any theories as to the production of caries on something which itself had so little foundation. She also remarked that, as the result of attrition pure and simple, one might get good or bad secondary dentine with or without interglobular spaces.

## EPIDEMIOLOGY OF SURFACE DISEASES OF THE EYE.

At a meeting of the Section of Epidemiology of the Royal Society of Medicine, held on March 23rd, Mr. BISHOP HARRIS read, by invitation, a paper on the epidemiology of surface diseases of the eyes. Epidemics were now, he said, rare and of mild character; this was not always so. After the Napoleonic wars Europe was ravaged by what was known as Egyptian ophthalmia. A remarkably clear account of this as it affected English troops was given by Dr. John Vetch, surgeon to the 54th Foot. In a time when the influences of miasma, effluvia, and the like were held to be the causes of such affections, he recognized that direct contagion was responsible, and that both he and other officers were immune even when they examined cases with lenses with foci of one inch, provided there was no direct communication of matter. He also abolished barrack towels and substituted individual towels and daily washings with separate basins. The disease was a severe purulent conjunctivitis. He noted that gonorrhoea was rife amongst the affected men, and that the subjects of the disease were liable to a succession of urethritis, purulent ophthalmia, arthritis, and iritis. In these days they had to rely upon the massed figures of endemic cases to show the influences of various conditions upon these diseases. He dealt with five conditions—social, age, sex, seasonal, and the influence of other epidemics. Social conditions were dominant, because these made the distinction between clean and less dirty, and dirt was found to be directly associated with liability to conjunctivitis. By several methods of examination of hospital cases and school children this point was made abundantly clear.

With rare exceptions conjunctivitis was much more common in infancy than in school age, and cases got fewer during adult years. This was especially true of purulent conjunctivitis. Blepharitis did not appear until the third year, when measles was rife, and phlyctenulæ had a maximum at the fifth year, when the mouth was septic from the decay of the milk teeth. Angular conjunctivitis did not appear until the teens for the most part, and it was most common amongst the elders. Despite these exceptions there was clear evidence that infants were more susceptible to conjunctivitis than grown-ups, probably because they revelled in dirt. Females were more liable than males. The second quarter of the year, with the onset of the strong drying winds of March, was marked by the peak of incidence of conjunctivitis. Epidemics of the exanthemata were responsible for much conjunctivitis and for the initiation of many cases of chronic blepharitis, but in all cases there was evidence of lack of personal care as an aggravating feature. Phlyctenular conjunctivitis had been held by some to be a tuberculous affection. He found, however, that these eruptions had a seat of election, the lower and outer quadrant of the limbus, which had as a nerve supply the second division of the fifth, which also supplied the upper teeth. Further, the majority of cases were rapidly cured by simple ointments, one-half of all in one week, and only a fraction (one thirty-second) became chronic, extending for months and years. In these few there might be a paratuberculous relation. The mass he believed to be herpetiform eruptions set up by oral and nasal irritation in the poor and ill fed. It was remarkable that certain alien people whose food was richly impregnated with oil rarely suffered from the disease, yet they lived in the same quarter of London and suffered from dirt conjunctivitis in excessive proportion. Finally, he pointed out that exanthemata were responsible for a considerable share of blindness amongst school children, to the extent of one-fourth the total due to ophthalmia neonatorum. In these surface diseases of the eyes dirt and disease were remarkably associated, and education and the improvement of the standard of cleanliness must be looked to for the prevention of their ravages. The past showed immense advances in this direction.

The PRESIDENT said they recognized that ophthalmia was remarkable for its precision, but he did not know what



he had heard Mr. Bishop Harman's paper how well it could show the effects of social conditions.

Sir WILLIAM HAMER said he was greatly interested in the story of the suppression of barrack towels by Vetch, and wondered if there were any similar experience in the late war. The greater liability of girls to these diseases of the eyes was paralleled in many other conditions.

Dr. DUFFIELD remarked that there were increasing notifications of ophthalmia neonatorum, but blindness arising therefrom was less. He discussed the influence of flies and dust as the cause of seasonal variations of conjunctivitis. Dr. E. W. GOODALL doubted whether warmth was really a favouring influence for dirt as Mr. Harman had suggested in reference to the Egyptian figures. Dr. MAJOR GREENWOOD commented upon the slowness with which clear conclusions upon the nature of disease became common property. The exposition of John Vetch on purulent ophthalmia was so clear that it would seem certain of acceptance, yet it took years to become widely known.

The meeting concluded with a vote of thanks to Mr. Bishop Harman for his paper.

### HYPERTHYROIDISM.

A JOINT meeting of the Sections of Medicine and Surgery of the Royal Academy of Medicine in Ireland was held on March 16th, with Dr. H. T. BEWLEY (in the absence of the President, Dr. T. G. MOORHEAD) in the chair, when the SECRETARY read a paper, written by the President, to initiate a discussion on the subject of hyperthyroidism, its diagnosis, varieties, and treatment.

Dr. Moorhead reviewed the existing knowledge of the subject, and referred to the frequent association of persistent thymus with enlargement of the thyroid. Mental factors such as frights were undoubtedly often associated, and he gave details of two such cases in his own experience. The possibility of gastro-intestinal infection as an etiological factor was also mentioned. As regards diagnosis, he thought that the gastro-intestinal symptoms of hyperthyroidism were those most likely to be overlooked, but mistakes sometimes arose from neglect to examine the patient properly. In obscure cases a determination of basal metabolism would decide. Lymphocytosis occurred in simple goitre, and was valueless as a test. Tachycardia was, in his opinion, the most constant sign; loss of weight was also very important. The association of Graves's disease and myxoedema in the same patient was sometimes, though rarely, found. As regards prognosis, gain of weight and diminution of tachycardia under treatment were favourable signs, but in cured cases the goitre and the exophthalmos frequently persisted. He was strongly opposed to surgery in the treatment of the condition, and held that medical treatment, with x rays, would cure the great majority of cases with more certainty and safety than surgery. His own routine and technique were carefully detailed, and the results were claimed to be entirely satisfactory.

Sir WILLIAM WHEELER said that his interest had been stimulated by a visit to the late Dr. Kocher of Berne on three different occasions, and subsequently by watching the operative work of Mayo and Crile. He believed in the surgical treatment of cases of hyperthyroidism, as recent advances had made operations safe, and the mortality was almost negligible. He was of opinion that there were really only three types of goitre. The first was the colloid, seen in young girls, with full symmetrical neck, associated sometimes with extreme nervousness, and difficult to distinguish from hyperthyroidism. The basal metabolic rate was the only sure method of differentiation. Furthermore, this was the one type of goitre which responded to treatment with iodine, or its derivatives, or with thyroid extract. The second type was the adenomatous goitre; in these cases operation might be delayed, in consideration of the importance of the thyroid gland in adult life; but it should be remembered that adenomata frequently became toxic after a period of fourteen to sixteen years. Toxic goitre should be referred to as Plummer's disease; these cases differed in many respects from Graves's disease, and were more dangerous, as they gave rise to more certain degenerative changes in the viscera. In the third type were the hyperthyroid cases, which were regarded in a general way as Graves's disease. He was inclined to depreciate x-ray treatment on the grounds that if the dose was too big myxoedema followed, and if too small the patient had a relapse. If surgery became necessary after x-ray treatment, it was complicated

by the production of fibrous tissue and adhesions. The only fatal case which he had come across was a case of adenomatous goitre, which at the time of operation was thought to be non-toxic, but the patient died suddenly from myocardial degeneration. He pointed out that by a measurement of the basal metabolic rate the nature of this case would have been recognized; this test was not only of sure and certain diagnostic aid, but was a definite index to the result of treatment.

Sir JOHN MOORE said that he was physician to a girls' school at which there were about sixty pupils, and not a year passed but some of these girls were brought to him suffering from more or less enlargement of the thyroid gland. These patients did very well when treated for anaemia, and when moderate doses of thyroid extract were given systematically. In the early stages of ordinary goitre and of exophthalmic goitre he was of opinion that if the patient was made to rise, with a fixed neck, from the recumbent position it would almost certainly empty the thyroid gland.

Dr. A. A. MCCONNELL thought that the treatment outlined by the President was more surgical than medical, as the essential part of it seemed to be that he destroyed the glandular tissue by means of x rays. The question seemed to be, Was it safe to treat cases by gradual destruction of the glandular tissue by x rays, or was it better to treat them at once by operation?

Dr. W. C. MACFETRIDGE said that the causation of exophthalmos was one of the most interesting points in connexion with cases of hyperthyroidism. There were a number of views put forward to explain the protrusion of the eyes, and the one most commonly held was that it was due to excess of fat in the orbit. He thought there were several objections to this view. Exophthalmos came on very suddenly, and he had heard physicians say that they had seen patients in which it had come on acutely. He personally had known one case which had been caused by the patient weeping all night over the death of her father. The exophthalmos, he believed, disappeared after death, and if this were so it could not be due to excessive fat in the orbit. *Post-mortem* examinations in these cases were rare—in sixteen years there had only been three deaths in Guy's Hospital from exophthalmic goitre. It was curious if an abnormal amount of fat should develop in the orbit, while at the same time emaciation took place in the rest of the body.

Dr. G. E. NESBITT thought that x-ray treatment was capable of almost mathematical accuracy. It undoubtedly destroyed the glandular tissue, but neither it nor surgery made any attempt at getting at the underlying factor of the cause of this disease.

Dr. H. T. BEWLEY said that he had noticed the frequency of cases of colloid goitre, and he did not believe that they were cases of hyperthyroidism. He did not agree with the President regarding the persistence of the exophthalmos, as he had seen several cases which had been cured, and the exophthalmos had disappeared altogether. Regarding treatment, he thought that cases of the extreme kind should be treated, at first at any rate, by rest, sedatives, and x rays. Cases of medium severity he thought were best treated by surgery.

### ECONOMICS AND PUBLIC HEALTH.

At a meeting of the Society of Medical Officers of Health held on March 16th, with the President, Dr. T. EUSTACE HILL, in the chair, Dr. R. J. EWART read a paper entitled "The economic circumstances of the country as a whole, and the various rates by means of which health is measured."

He dealt in the first instance with the relationship of man to his bacterial environment, and suggested that the economic revolution of the nineteenth century was dependent on the control of small-pox. He supported his argument by numerous references to the reaction of certain populations to organismal changes, amongst which he included the disappearance of the economic surplus in the Northern States of Italy due to the introduction of syphilis in the year 1500, and as a consequence the close of the Renaissance. Passing from this theme the nature and peculiarities of the economic revolution of the nineteenth century were discussed, and the author seemed to be of the opinion that foreign trade was the best measure of its progress. This was shown to be capable of division into—first, a fluctuation measured by the percentage number of trade unionists employed from year to year, and secondly, a general steady upward trend as measured by the amount of food and other necessities of



life consumed per head of the population on what could be taken as an alternative of the value of real wages. After discussing in some detail the probable origin of fluctuation of prosperity the author compared by means of graphs the relationship between fluctuation in employment, value of real wages, and the death rate from certain causes. The conclusions arrived at may be briefly stated in the following manner. The change in the epidemiology of scarlet fever which occurred about the year 1850 would seem to have been due to the migration of whole families from town to town, according to industrial necessity. Previous to 1830 areas or towns seemed to react independently, afterwards the county reacted as a whole. The high degree of immunity at present attained was stated to be due to this cause. Dr. Ewart suggested that the changes in infantile mortality were due to variations in the bacterial content of the food supply. The rise previous to 1899, when a fall was expected, was said to depend on the deterioration of the milk supply, itself dependent on the increased time of transport, and the fall after that date was the replacement of this contaminated fluid by the milk product. The sex ratio at birth also seemed to be dependent on economic factors. It was stated that the influence of the food supply on the germ plasm naturalized the differential sex death rate before birth. Should, however, a sudden change occur in that community, these two factors become separated, and an excess of boys or girls arose according to the existing conditions. Referring to the general death rate, he laid stress on the fact that this was unaffected by fluctuation in prosperity, but was closely associated with the value of real wages. He explained this as being dependent on the Poor Law, which was so adapted as to maintain the health of the community during periods of depression, without interfering with its economic life. Lastly, Dr. Ewart expressed his opinion that the liberal food supply at the present moment was the main factor upon which the favourable state of the public health depended, but that the means adopted was interfering with the economic life of the community, and, as a consequence, the value of real wages might come down. He pointed out that if such did happen the general and phthisis death rates would rise, but that the infantile mortality would not be affected.

## Rebuelus.

### INJURY AND RECOVERY.

PROFESSOR W. J. V. OSTERHOUT, in his monograph *Injury, Recovery, and Death in Relation to Conductivity and Permeability*,<sup>1</sup> sets forth a number of highly interesting conclusions that he has arrived at after about fifteen years' study of the variations in conductivity that occur in plant tissues.

These conclusions are derived chiefly from measurements of the electrical conductivity of the seaweed *Laminaria*. The typical method employed was to cut out a hundred discs from *Laminaria* fronds, arrange them in a cylinder and measure the conductivity of the cylinder and the changes which occurred in the conductivity when the discs were immersed in salt solutions of varying composition. Electrical conductivity is a factor which can be measured with great accuracy, and by using a large number of discs of tissue the author has sought to exclude individual variations, and claims to have obtained results of an accuracy sufficient to justify mathematical analysis. "Throughout these investigations," he says, "the aim has been to apply to the study of living matter the methods which have proved useful in physics and chemistry."

The study of the elementary properties of living matter has undoubtedly reached a point from which the chief hope of advance lies in the application of the mathematical methods employed in physical chemistry; but it is equally true that it is only possible in exceptional cases to obtain with living matter results which are sufficiently accurate to make mathematical treatment profitable. The work of Professor Osterhout, however, seems to be of this exceptional character, and his conclusions relate to matters of fundamental importance.

An analysis of the curves of the rate of death and recovery of the author to the conclusion that

living protoplasm obeys the laws of chemical dynamics and that the differential permeability of cells, and hence their life, is dependent upon the concentration at the surface of the cell of an unknown substance "M." This substance, he thinks, is continually breaking down and is continually renewed by the cell. Hence the life of the cell depends upon a series of catenary reactions which may be represented as  $O \rightarrow S \rightarrow A \rightarrow M \rightarrow B$ . The cell is in equilibrium when the rate of change  $A \rightarrow M$  is the same as the rate of change  $M \rightarrow B$ . When the tissues are placed in a solution of pure sodium chloride the permeability increases until death occurs, and this change is attributed to an inhibition of the change  $O \rightarrow S \rightarrow A$ , and an increase of the rate of change of  $M \rightarrow B$ , in consequence of which the concentration of M steadily falls. Professor Osterhout shows that upon this assumption curves can be calculated which fit exactly the curves obtained in experiment. The greater portion of the book is devoted to the analysis, upon the lines indicated, of the curves obtained during the death of tissues and during their recovery from toxic influences, and the question of the mode of action of antagonistic ions is also analysed.

According to this conception life is a dynamic process depending upon the relative rates at which the different stages in a series of catenary reactions occur. This hypothesis promises to be fruitful, for by it the processes of death and recovery can be explained; it should be possible also to extend it to the study of the changes in irritability which cause rhythmic activity. A point of considerable importance is that a substance which acts as a member of such a chain of reactions may be of greatest importance to the organism, even though it is only present at any particular time in extremely small amounts.

The general conception that the death process occurs continually in the organism throughout life, and that death is only an acceleration of this process, has been frequently put forward before, but Professor Osterhout has for the first time advanced definite evidence in support of this conception.

Chapter V, which deals with the action of anaesthetics, is of special interest to medical science. The mode of action of anaesthetics is very clearly demonstrated; in low concentration they cause a decrease in the permeability of the cell, and this decreased permeability is reversible; in higher concentrations anaesthetics cause an increase in the permeability of the cell and this action is irreversible. Since complete reversibility is the most essential characteristic of the therapeutic action of anaesthetics, we are asked to conclude that the action of anaesthetics in therapeutic concentration is to decrease the permeability of living cells.

Owing to the diphasic nature of their action on permeability, the fundamental nature of the action of anaesthetics upon protoplasm has been a matter of dispute, and it is an advance to have the action of these drugs thus analysed quantitatively. Nearly the whole of Professor Osterhout's work has been done upon vegetable tissues, and considerable research will be necessary before it will be possible to say how far his conclusions are applicable to the more complex and more labile animal tissues; he has, however, provided a fundamental hypothesis for the behaviour of living protoplasm based upon mathematical laws, and this should provide a foundation for a large amount of interesting work. The monograph is concerned chiefly with Professor Osterhout's own work, which is more exact and complete than any other on similar lines; mention is made, however, of most other important work on these lines, and the book concludes with a selected bibliography of about 300 references.

### HEART DISEASE.

THE appearance of a fifth edition of Dr. BROCKBANK'S book on the *Diagnosis and Treatment of Heart Disease* so soon after the fourth speaks well for its popularity. On this occasion the author has taken the opportunity of altering the arrangement of some of the chapters and of making considerable additions to the text that have increased the number of pages by about one-half. It still remains, however, a small book and will be useful not only to students in their clinical work but also to general practitioners who are seeking a short statement. The first ten chapters deal with the ordinary

<sup>1</sup> *The Diagnosis and Treatment of Heart Disease: Practical Principles for Students and Practitioners.* By E. M. Brockbank, M.D. 1922. (See 210, p. 110, 1922, p. 110.)



methods of physical examination, special attention being paid to auscultatory phenomena and the interpretation of the various murmurs that may be present. Some of the views expressed may not meet with universal acceptance, but the writer has the courage of his convictions and gives a reasoned opinion on all debatable points.

The chapter on cardiac irregularity is brief but practical. Two plates of electro-cardiograms have been used for the purpose of illustrating various defects of cardiac rhythm, but the aim of the writer is to explain the varieties rather than to discuss the analysis of graphic records. Probably one of the most useful chapters is that dealing with practical points in the treatment of cardiac disease, and we note here, as elsewhere in the book, that attention is directed to many matters which are often not sufficiently impressed on the student in other and larger textbooks, but which are of much value in actual practice. Other sections treat of septic endocarditis, auricular flutter and fibrillation, paroxysmal tachycardia, pericarditis, angina pectoris, the heart in school children, etc., while the closing chapter is devoted to examination for life insurance.

The additions which have been made to this book will increase its usefulness, and have made it very different from *Heart Sounds and Murmurs*, the title under which the first edition appeared in 1912. Any minor criticisms that we might have been tempted to make are more than outweighed by its many excellent qualities, and we are convinced that it will be much appreciated by an increasing circle of medical men who will find in it many practical hints. The students in the Manchester school should be particularly grateful to the author.

#### RADIOLOGY.

STILL another book is added to the increasing number published of late on the subject of the more recent methods of x-ray therapy. This one, under the title of *La Radiothérapie Profonde*,<sup>1</sup> is from the pen of Iser Solomon, radiologist to the Hôpital Saint-Antoine, Paris, who acknowledges in his preface his obligations to the two well known French authorities Drs. A. Bécère and Belot. By far the larger part of the book is taken up with instrumentation and physics, and very great stress is laid upon the point that the great advances in technique in recent years have only been made possible by the more precise methods for the measurement of x-ray dosage, and notably by the perfection of the iontoquantimeter. It cannot be said that there is anything new in this first portion, but the author deals with his subject in a simple and straightforward manner. The author first states the fundamental principles underlying the methods of deep therapy, and then enters into minute detail on the subject of the absorption of x-rays; this chapter is illustrated by many tables. In the second chapter the apparatus designed for the production of these high-voltage currents is described, and tubes—the boiling water, the Lilienfeld, and the Coolidge tubes—and accessory apparatus are dealt with in succession. The third chapter discusses all the important methods and instruments for the more accurate measurement of dosage; the larger part of the space is taken up with the ionization methods and the various devices suggested by Lilienfeld, Szilard, Friedrich, and the author. All these methods are illustrated. Having given about one hundred and twenty pages to this part of the subject, the author dismisses the important question of the result of treatment in only thirty more. He deals first with what is termed “benign affections”—including fibromata of the uterus and allied conditions, tubercle, blood diseases, and maladies associated with the endocrine glands. The author agrees with Bécère that for uterine fibroids x-ray therapy is the treatment of selection, and that it gives better results than surgery, without any risks. The second and final part discusses the results of treatment of neoplasms; the author points out that, whilst it is impossible to accept the theory of one exact lethal dosage for the different types of malignant disease, undoubtedly the results of x-ray treatment have been much improved by the administration of larger and more uniform dosage; that in the treatment of cancer of the uterus the results are equal to those obtained by either radium or operation; and that intensive x-ray therapy must rank as one of the most powerful therapeutic agents in this disease.

WITHERBEE and REMER, under the title of *X-ray Dosage in Treatment and Radiography*,<sup>2</sup> give an account of the methods they have themselves used and developed during the past few years. The authors have had no experience of the latest treatment for cancer, using high voltages of above a ten-inch spark-gap, and their book deals with tubes working between a three- and ten-inch gap and at distances from the skin varying between six and twenty inches. In the first chapter, in which the unfiltered x-ray dosage is discussed, the principles of their method, based upon the four fundamental factors of the voltage, the milliamperage, the time, and the distance, are explained. X-ray burns in radiography are next considered, and it is shown that this method of estimating x-ray dosage is also applicable to the determination of the number of plates which can be taken without danger to the patient. There is also a chapter on filtered x-ray dosage, followed by short notes on the principles and the cause of x-ray burns. The remaining portion is allotted to the technique of treating affections of the throat and tonsils, and tuberculous glands, skin diseases, uterine fibroids, leukaemia, and Hodgkin's disease. As a whole the book is a simple account of the technique used by the authors, a technique which they consider easy to follow and safe for the patient. The book will be of especial value to those using an x-ray apparatus who have not yet acquired the special knowledge necessary for its safe use.

In the introduction to his book on the x-ray diagnosis of gastro-intestinal diseases<sup>3</sup> SCHLESINGER points out the importance of the conventional Continental view that the x-ray examination of the digestive tract should be regarded as an aid to the clinical examination. He indicates clearly that the x-ray examination, even under the most favourable conditions, can only present a fairly faithful outline of the interior of the organs examined—that is, if an opaque material is introduced into any part of the alimentary tract the picture obtained on the screen or plate will be a reproduction of the lumen of the structure, showing any irregularity of its lining walls, together with the movements and the position of the organ. It is clear that, if the examination be thorough, any departure from the normal may be revealed. The picture obtained may show a defect, and from the appearances of the defect it is possible to indicate a lesion, but the exact nature of the lesion can only be determined by exhaustive investigations in which the clinical examinations play an important part. For example, a defect in the stomach contour may indicate the presence of a chronic ulcer, a cancer of the stomach, an artefact, the presence of adhesions, an irregular contraction, or an extra-gastric lesion causing pressure effects. Schlesinger, therefore, throughout his book adheres to the principle of correlated diagnosis, and in our opinion this is the correct method. He, on the other hand, believes in the use of the direct method so general in America, and insists upon the point that the radioscopy and the radiographic are indispensable. The serial method is advocated in the routine examination, in which he employs a number of plates exposed at intervals. The book is illustrated chiefly by a large number of excellent diagrams; these are of great teaching value, and draw more clearly the attention to the diagnostic points than a number of radiograms. The latter, unless very well produced, fail to show the finer points in diagnosis. The diagrammatic method has a distinct value, more especially when the drawings are made by a worker whose experience is so great as that of Schlesinger. The book is a worthy record of the work of one of the pioneers in x-ray gastro-intestinal diagnosis, and as such should find a place in the library of all practising radiologists and teachers.

#### MATERIA MEDICA FOR DENTISTS.

MANY remember the days when “Materia Medica and Therapeutics” had their place as one of the early studies in the curriculum of the “Conjoint Board.” When we had passed that first examination what knowledge was ours! what power against disease! There was a Latin name for everything, an antidote for every symptom. We had found an exact science! Disillusion followed when hospital practice revealed the far too frequent impotence of our drugs and the inapplicability of our knowledge. These were the thoughts and memories

<sup>1</sup> *X-ray Dosage in Treatment and Radiography*. By William D. Witherbee, M.D., and John Remer, M.D. New York: The Macmillan Co. 1922. (Capp. 8vo, pp. vi + 85; 4 figures. 8s. net.)

<sup>2</sup> *Die Röntgenphysik der Magen und Darmkrankheiten*. By F. Schlesinger. Zweite, neubearb. Urban und Schwarzenberg, 1922.

<sup>3</sup> *La Radiothérapie Profonde*. By Iser Solomon. Paris: Masson et Cie. 1923. (Imp. 16mo, pp. 152; 40 figures. Fr. 9 net.)



awakened by a perusal of FRANK COLEMAN's *Materia Medica for Dentists*.<sup>6</sup> Deodorants, antiseptics, astringents, counter-irritants, drugs innumerable! Has dentistry benefited by them? How many are used by the average dentist?

This is not written in disparagement of Mr. Coleman's work; on the contrary, we strongly recommend the book to every dentist; it is only that drugs have been disappointing, and the question arises as to how far the experienced dentist has travelled on the same road.

In this, the fifth, edition the pharmacological classification of drugs has been again followed, more information has been given on vaccine therapy and organotherapy, and short accounts of electro- and radio-therapy, vitamins, and delayed chloroform poisoning and other subjects have been added. An abstract of the new Act on the sale of poisonous drugs has been provided. On the other hand, the chapters on ionic medication and the bleaching of teeth have been curtailed. There are short but well written and instructive chapters on such specially dental subjects as mummifying agents and cleansing of the mouth and teeth; the latter includes a very good discussion on tooth powders, pastes, and washes which should not be without interest to the general practitioner.

Only occasionally is the author not quite clear, as in the repeated use of the word "solution" in explanation of colloidal solution, or in the presentation of the disadvantages of caustics. Occasionally, too, his opinion may be challenged, as for instance, that alcohol is a cerebral stimulant, or that purging should precede a general anaesthetic. Perhaps also the statement (quoted from Bruse) that "a natural mouth will be found to be quite free from food debris half an hour after a meal" may not meet with universal acceptance.

A fifth edition indicates an established position, and in our opinion the book well deserves its popularity. It is dedicated to Douglas Gabell and Harold Austin, the authors of the former editions.

#### PRACTICAL DERMATOLOGY.

PROFESSOR GOUGEROT's work, *La Dermatologie en Clinique*, favourably reviewed in these columns on its first appearance in 1917, has now reached its third edition.<sup>7</sup> This is the best evidence of a success thoroughly well deserved. The book is divided into two parts, the first devoted to general considerations of diagnosis and treatment, terminating with a most useful table of the principal external remedies, describing their action and giving the percentage strength in which they are used in their various preparations, solubilities, indications, and incompatibilities. The second part treats of the various affections of the skin. The new edition has been thoroughly brought up to date, and the last chapter, on "Dermatoses exagérées et simulées" (dermatitis artefacta), is most interesting. Much of it is founded on the author's experiences during the war, the influence of which is also seen in a previous chapter on the cutaneous complications of wounds. Another important subject, not usually dealt with adequately in textbooks of dermatology, is treated in the chapter on "Dermopidémies microbiennes," the name given to those lesions due to streptococcal infection which simulate eczematous eruptions. First recognized by Sabouraud some twelve years ago, they frequently arose in the neighbourhood of infected wounds during the war. Their proper treatment was a matter of considerable importance. Nevertheless, they have seldom been systematically described in works on the skin. Here they are given the prominence they deserve. Professor Gougerot possesses all the charm of style and incisiveness of expression we are accustomed to expect from our Gallie allies; his book is a delightful to read and well arranged. The illustrations, which are very numerous, maintain the high standard set in the former editions. With few exceptions they give a very good idea of the condition depicted. Everyone interested in the diseases of the skin should read Professor Gougerot's book, for in it will be found much that is stimulating and suggestive. The general practitioner will like to know that it is one of a series of manuals entitled "Comment guérir." Can he resist an invitation so seductive?

<sup>6</sup> *Notes on Materia Medica, Pharmacy, and Therapeutics for Dental Students and Practitioners*. By F. H. Coleman, M.C., L.R.C.P., M.R.C.S., L.D.S. Fifth edition. Oxford Medical Publications. London: H. K. Lewis, and Hodder and Stoughton. 1922. (Cr. 8vo, pp. iv+308. 10s. 6d.)

<sup>7</sup> *La Dermatologie en Clinique*. By J. H. Gougerot. Third edition. Paris: A. Maloine et Fils. 1922. (Cr. 8vo, pp. xi+852. 210 figures. 75 fr. 35.)

#### NOTES ON BOOKS.

THIS small book on *Infantile Cirrhosis of the Liver*,<sup>8</sup> by Dr. S. K. MUKHERJI, gives an account of a disease that has received very little notice in medical literature. According to the author, it is a serious and not uncommon disease in infants in India, and is a clinical entity separate from other causes of jaundice in infants and young children. Castellani, on the other hand, doubts its claim to separate recognition, and suggests that it may be a form of kala-azar. The author gives a short account of forty-eight cases, forty-five of which occurred in the first two years of life. The features of the disease are slowly progressive jaundice, fever and constipation, with great enlargement of the liver, and moderate enlargement of the spleen; death usually occurs within three months of the onset. The liver, according to Gibbons, shows at first a fine intralobular cirrhosis, followed later by coarser interlobular fibrosis in which numerous bile ducts are prominent. The disease is apt to occur in successive children of the family, and specially affects Hindus: it is rare among Anglo-Indians. The author makes out a good case for further investigation.

Mr. SAMLER BROWN's guide book, *Madeira, Canary Islands and Azores*,<sup>9</sup> now in its twelfth edition, contains the information tourists or invalids require about climatic conditions, steamship routes, fares, hotels, paths, and where the water is drinkable and where it is not; there are many excellent maps and illustrations. The historical notes are interesting, and there is a delightful chapter on the lost continent of Atlantis. The author states that the meteorological statistics compiled in the *Cañadas* and *Izafia*, Tenerife, at an altitude of over 7,000 feet, are the first tabulated statistics to be published. The Spanish Government is building a sanatorium in the *Cañadas*, on a site 7,285 feet above the level of the sea, at a cost of £90,000.

To give a description of modern conceptions of constitution of the chemical atom is not a simple task: to do so in popular language is still more difficult, but the attempt is made by Mr. J. MILLS in a little volume entitled *Within the Atom*,<sup>10</sup> which the jacket informs us is a popular view of electrons and quanta. The non-scientific reader, we expect, will find it laborious reading. The author begins by trying to discard scientific terms, but as he progresses falls more and more into their use, so that he has found it necessary to add a glossary. The ramifications of the subject into many branches of physics and chemistry can only be followed by those who already have some acquaintance with these sciences. But if the matter should prove too deep for the non-scientific reader it will be perused with interest and advantage by many who, having a certain knowledge of physics and chemistry, still desire a better understanding of the mechanics of the atom.

We have received the first number of *Clinica y Laboratorio*, a new Spanish journal of medicine and surgery to be published monthly at Saragosa under the editorship of Dr. Ricardo Horno Alcorfa. The first half of this issue contains original articles, and the second half abstracts from current medical and surgical literature. The original articles consist of papers on the treatment of jejunal ulcer following gastro-enterostomy by Dr. Urrutia, on auto-serotherapy in pulmonary tuberculosis by Dr. Codina, on diverticula of the oesophagus by Dr. V. Fairén, notes on hydrocephalus by Dr. Galán, treatment of injuries of the soft parts of the cranium by Dr. Vidaurreta, diagnosis of acute appendicitis by Dr. Rivas, and a description of Heister's eighteenth century treatise on surgery.

The title *Half-Past Bedtime*,<sup>11</sup> which suggests something between sleep and waking, aptly conveys the spirit of Dr. H. H. BASHFORD's book of short stories for children. The delicate fantasy of the tales and the charm of the author's drawings (for he is his own illustrator) will be appreciated by young people of all ages. Each of the fourteen stories has its own picture, and the intervals between prose and picture are filled in with jolly little verses from the same gifted pen. It must be a great asset to a household to have a father who can do the whole thing "just so."

<sup>8</sup> *Infantile Cirrhosis of the Liver*. By S. K. Mukherji, M.D. Indian Medical Record Book Department. 1922. (Cr. 8vo, pp. 9 illustrations. Rs. 2/8.)

<sup>9</sup> *Brown's Madeira, Canary Islands and Azores*. By A. Samler Brown. Twelfth edition, revised. London: Shapkin, Marshall, Hanley, and Co., Ltd. 1922. (Cr. 8vo, pp. xx+38. 14 illustrations. 7s. 6d.)

<sup>10</sup> *Within the Atom*. By J. Mills. London: Routledge and Sons, Ltd. 1922. (Cr. 8vo, pp. xiii+215. 35 figures. 6s. net.)

<sup>11</sup> *Half-Past Bedtime*. By H. H. Bashford. London: Harrap and Co., Ltd. 1922. (Post 8vo, pp. 22. 14 illustrations. 5s. net.)



## THE SCHICK TEST AND SOME EPIDEMIOLOGICAL REFLECTIONS.

THE Report on the Schick Test, Diphtheria and Scarlet Fever, issued by the Medical Research Council,\* was briefly mentioned last week. Its subtitle, "A Study in Epidemiology," is justified by its general tenor and by certain hypotheses put forward by the author, Surgeon Commander S. F. Dudley, R.N.

His practical observations were made in the Royal Naval School at Greenwich: the number of residential boys averages about 1,000, all of good physique, under constant medical supervision, and living under satisfactory sanitary conditions; in addition there are about 100 day boys who mix freely with the boarders at work and play and at some of the meals. The circumstances were favourable for the study of the origin and spread of infectious disease, and this report describes an exhaustive research in the two diseases diphtheria and scarlet fever as they occurred in this population.

The immunity condition of the school as regards diphtheria was first examined by means of the Schick intracutaneous test, which was found to be a very reliable method for ascertaining who are immune to diphtheria. The boys were grouped into three classes according to their reactions:

1. *Positive reactors* (susceptible to diphtheria).
2. *Negative reactors* (immune to diphtheria).
3. *Pseudo-reactors* (either susceptible or non-immune).

A certain amount of experience is necessary in interpreting pseudo-reactions; the report states that there will always be a few frankly doubtful reactions due to confusion caused by pseudo-reactions, but with repeated readings the error should not exceed 2 or 3 per cent. The transitory pseudo-reactions, although very variable in intensity, can be easily distinguished from the specific Schick-positive reactions, and are due to an anaphylactic or allergic condition of the skin caused by previous contact with diphtheria bacilli. The positive and pseudo-reaction combined is often an intermediate stage in the development of immunity; it may be of only a few months' duration, and therefore indicates recent contact with diphtheria bacilli. It does not hold that all individuals who give a Schick-positive reaction are equally susceptible to diphtheria; they may possess a certain amount of resistance and be immune to ordinary doses of diphtheria bacilli, only contracting the disease when heavily infected. A negative reaction is to be attributed to diphtheria antitoxin in the blood, and may be due to previous disease or to previous recognized or unrecognized contact with virulent diphtheria bacilli. Second attacks of diphtheria are not common, and it is concluded that "one attack of diphtheria confers immunity in the vast majority of instances, even if the Schick reaction remains positive."

### Diphtheria Carriers.

Some valuable information was obtained concerning diphtheria carriers. The swabbing of the throats of the whole population revealed the fact that diphtheria may spread in an institution when the carrier rate for virulent diphtheria bacilli is as low as 1 per cent. Whereas carriers of avirulent diphtheria bacilli may be either positive or negative reactors to the Schick test, carriers of virulent diphtheria bacilli always give a negative Schick reaction. In view of the fact that any inflammatory condition of the throat renders the subject more likely to be a carrier, the diagnosis of diphtheria can only be regarded as certain when virulent diphtheria bacilli are isolated, the Schick reaction is positive, and a characteristic pseudo-membrane is present. Should any of these characters be absent or unknown, "the diagnosis is no longer a certainty, but becomes a matter for debate, to be settled according to the prejudices of the clinician or laboratory worker." It is obvious that the clinical characters are the most important factors in diagnosis: for practical purposes bacilli indistinguishable morphologically from diphtheria bacilli may be considered virulent if the culture comes from a clinical case. But in unselected healthy subjects bacilli morphologically identical with diphtheria bacilli may be avirulent in 60 per cent. of cases.

No relation was found to exist between diphtheroids of the Hoffmann type and true diphtheria bacilli. A study of the distribution of cases of diphtheria in the dormitories of this institution showed that the spread of bacterial infection takes place more frequently in the sleeping quarters if the distance between the beds is small.

\* Medical Research Council, Special Report Series No. 75. H.M. Stationery Office, or through any bookseller, 1s. net.

### Mode of Spread: Penholders as Fomites.

Scarlet fever and diphtheria spreading in the same environment show striking similarities, but there is no reason to suppose that there is anything in common between their biological causative agents. Early in an epidemic, before the number of immune individuals is numerous, scarlet fever spreads directly from case to case, but it is probable that diphtheria spreads by chains of contact carriers from case to case. In both diseases the chief mode of spread is undoubtedly from one individual to another, but convincing evidence is adduced that fomites, such as penholders which boys have sucked and which are used as common property, can under certain conditions act as an indirect cause of the spread of scarlet fever and diphtheria. Virulent diphtheria bacilli were isolated from penholders which had been sucked by boys harbouring these organisms in their mouths. The results of repeated Schick tests on the population of this school, kept as it was under constant medical supervision, have shown that during an epidemic many individuals may become immune to diphtheria without showing any symptoms. The same applies to scarlet fever and probably to other diseases as well.

### "Velocity of Infection."

To explain the fact that far more infection took place in the dormitories than outside them the author has propounded a principle termed "velocity of infection." He argues that in many infectious diseases there is a certain minimal dose of infective agent necessary to cause the disease, and that a smaller dose is destroyed by the defensive mechanisms of the body.

"If a subject receives a number of subminimal doses which, when totalled, exceed a minimum infective dose, it is reasonable to suppose that it must depend on the rapidity with which these fractional doses are received as to whether or not he falls a victim to the disease in question—that is to say, as to whether the rate at which the doses of infective agent can be dealt with is greater than the rate at which they are received."

The velocity of infection is therefore the resultant of (1) the velocity at which a subject receives doses of a pathogenic agent, and (2) the velocity with which the immunity mechanisms of the subject can destroy this infecting agent.

This principle of the velocity of infection is held to explain the puzzling fact that there were no cases of diphtheria or scarlet fever amongst 103 day boys who played, worked, and ate with the boarders for over a year, yet 300 of the boarders with whom they mixed developed one or other of these diseases. During the day the immunity mechanisms were able to neutralize as rapidly as received the occasional doses of infective agent, to which it is assumed all were exposed; the conditions existing in the dormitories at night allowed of the continuous bombardment with infected droplets of saliva, so that the velocity at which the infective agent was received was greater than the velocity with which it could be destroyed by the mechanisms of resistance. This principle, it is thought, may account also for the development of immunity without symptoms and explain other difficulties in practical epidemiology.

During an epidemic of diphtheria many boys increased their resistance to diphtheria without manifesting any symptoms and without even developing recognizable antitoxin in their blood. There took place, therefore, a coincident "epidemic of immunization" among those who never even permitted a multiplication of the subinfective doses of the biological agents of the epidemic to which they had been exposed. At the same time there occurred an epidemic of contact carriers in the school. The author concludes that the information which may be derived from the consideration of this "epidemic immunity" should "soon do away with the necessity for postulating unknown mysterious influences as factors in an epidemic constitution."

DR. GEORGE WILLIAM PATERSON, colonial surgeon, has been reappointed to be an official member of the Legislative Council of the Island of Grenada.

SOME 350 members of the American College of Surgeons, with their families, have sailed on a cruise to South America, which will occupy about two months. The purpose of the trip is the promotion of professional and social relations between the surgeons of the United States and those of Central and South America. Meetings and clinics will be held at the various cities, and the medical schools and hospitals will be visited. At Colon, Panama, the party will be present at the laying of the foundation stone of the Gorgas Institute of Tropical Medicine.



# British Medical Journal.

SATURDAY, APRIL 7TH, 1923.

## THE SCHOOL OF HYGIENE.

THREE weeks ago we took occasion to refer to the fact that decisions must shortly be taken which will necessarily affect the whole future of the School of Hygiene, an institution that ought to have a very great influence in determining the manner in which practical hygiene and the sciences upon which it rests shall be studied and taught in this country. The problems before the founders and governors of the new School of Hygiene are not easy of solution. When it is a question of starting a new venture there is commonly a temptation to discuss it in terms of persons rather than in terms of ideas; and it is true that the decisions of an appointing body must be guided largely by personal considerations, for it would be idle to prescribe the doing of such and such things unless persons able to execute the tasks could be produced. Fortunately we can ignore personal factors and need attempt only to indicate the general scope of the work and the ideas which, having regard to that scope, must dictate the choice of personnel. The subject, thus limited, may be considered from three aspects—the type of pupil, the ideal curriculum, and the professorial organization of that curriculum.

All the students of the school will be post-graduates, but the preliminary knowledge they will possess will vary much. If we provisionally classify the main groups of subjects expected to be taught we shall have (1) bacteriology, (2) chemistry and physics, (3) applied physiology and hygiene, (4) parasitology, (5) medical statistics and general epidemiology, (6) public health administration, and (7) tropical medicine. The majority of students who have just graduated in medicine may be assumed to possess a sound knowledge of the elements of (1) and (2), some acquaintance with the leading principles of (3), but no knowledge whatever of the remainder. A minority of entrants, small numerically but of great importance, will possess more than an elementary knowledge of some one of these branches, and will seek in that subject graduate instruction of an advanced type. Again, there will be some who, while starting on the same level as the majority, will wish to extend their knowledge of a particular branch beyond the average need. This inevitable heterogeneity of the student class will make the planning of the curriculum more difficult—and, of course, more interesting—than if the question were merely one of bringing a batch of elementary students up to a common standard. Nevertheless, in shaping the curriculum it will probably be necessary to give to the needs of the elementary students the first consideration, and the requirements of the General Medical Council for a Diploma in Public Health will naturally be a point of departure.

There is, however, no reason why the precise allocation of times—which are minimum requirements—in the Council's rules should be adhered to. There is, for instance—even if the existing examination schedules are maintained—good reason for rearranging the instruction in meteorology and climatology and in vital statistics and epidemiology. Physical and chemical meteorology should be associated in time with the course of chemistry and physics. The study of climatology is more appropriately deferred until the student has a grasp of medical

statistics and epidemiology. The elements of vital and medical statistics should be taught contemporaneously with chemistry and physics. These elements are the tools the public health officer must employ in his daily work, and, although epidemiology is very far indeed from being a mere synonym for medical statistics, it is true that the main data of epidemiology are statistical in form and can only be utilized by a person familiar with the elements of statistical method.

The obvious danger to avoid is a watertight division between the two aspects of the course—the scientific, represented by Part I, and the technical, represented by Part II. Thus, in Part II we have the Principles of Public Health and Sanitation. In this course the student must learn the actual working of a very complex machine or set of machines; this instruction will be purely technical, but unless what may be called the embryology of these machines is understood, the reason why such or such principles of action have become established will not be appreciated. The embryology of the machines is written in the classical researches of the sanitarians of the nineteenth century; these pioneers employed various methods of investigation—clinical, bacteriological, statistical; the detailed study of their work must be co-ordinated with that of the methods of investigation, largely the theme of Part I. The rules make no provision for the study of applied physiology, owing, it must be supposed, to the lack of facilities for instruction in existing institutions. But it would plainly be wrong to discourage the development of a new and spaciouly planned institution. It follows that the elementary curriculum of the school should cover the whole of the instruction needed to meet the minimum requirement and more besides. The additions should be very great under the heading of applied physiology, quite appreciable in the matter of medical statistics and epidemiology.

The next point to be made is that the bulk of the teaching must be practical—there must be as few formal lectures as possible. The General Medical Council has already imposed this stipulation in the teaching of bacteriology and chemistry. It is equally important in other subjects. To attend lectures on, say, the methods of statistics is, for the ordinary student, a solemn farce unless he performs under supervision all the statistical operations described. This requirement carries with it that of small classes; it is as easy to preach to sixty students as to six; no man can efficiently conduct a class on, say, the methods by which knowledge of the means of transmission of diphtheria was acquired, with many more than six students, because such a class ought to be arranged on what has been called the *Seminar* system. The professor issues beforehand a list of the original authorities, each member of the class is expected to study an arranged portion of the literature and to come to the class prepared to give a critical account of what he has studied. This account is discussed and the students are made to feel that they are collaborators in an investigation, not mere sponges or transcribers of notes. Of course the method presupposes a certain intellectual maturity in the students, an assumption which can safely be made in post-graduate institutions.

The fascination of good public health research has not even yet been properly appreciated; textbooks of hygiene and preventive medicine are dull. But they ought not to be dull. We all love detective stories; there is a steady sale for reprints of criminal trials. It is fascinating to unravel the skeins in which human lives are involved. But there is as much human interest in the story of the great epidemic of typhoid at Maidstone, in following up, criticizing, and amplifying in the light of more recent information the evidence submitted at the public inquiry, as in trying to decide exactly how Palace



poisoned Cook at Shrewsbury seventy years ago. The public health annals of this country are full of such instances—not many perhaps on so large a scale, but many of equal interest. One of the causes of dullness in these matters is the attempt to cover too large a field, an attempt the didactic lecturer or the writer of an examination textbook feels bound to make. A careful study of a series of local epidemics of any one disease, the professor acting as the chairman of a group of researchers, would be both more interesting and far more educative than a session of formal lectures on the whole field. The system of instruction in a post-graduate school of hygiene should be penetrated with this idea. If the soundness of this principle be accepted, then it must influence the professorial organization. Administrative convenience will require that the number of full professors should be small, but each professor should regard himself rather as the chairman of a group, *primus inter pares*, than as an old-time lecturer with demonstrators.

Such are the general principles which, we venture to submit, the system of the new school should embody. We hope that it will give a sound general education to all its students, and facilities for special, more advanced and technical, instruction to some, but that in all departments instruction and research will mutually assist one the other. We do not wish to see either a mere machine for enabling youths to pass certain examinations or a temple of esoteric study and academic research.

### PHOTOSYNTHESIS AND SEA AIR.

Just eighty years ago Morren found that in the surface sea water near St. Malo the amount of oxygen was greatest and the amount of carbon dioxide smallest in bright weather, but the statement seems to have attracted no attention until recently, when the experiments of the late Professor Benjamin Moore on photosynthesis and the results of the prolonged studies of Sir William Herdman, in which Moore shared, on the plankton<sup>1</sup> of the Irish Sea, combined to awaken wide interest in the fact that seasonal variations of vegetation in the sea are determined by the seasonal variations of the amount of sunlight. From an examination of the records of fifteen years (1907–21) Herdman states<sup>2</sup> that there can be no question about the fact. There is always a great increase of the phytoplankton during the early spring: the first to multiply are the diatoms, which begin very rapidly to increase during the first fortnight of March, and reach a maximum in April or May, or at latest in June; at the time of their maximum hundreds of millions may be taken in one haul. About a month later come the dinoflagellates, and then the copepods (entomostracous crustaceans), which reach their maximum numbers at some time between June and October. The copepods devour the diatoms; young fish, and some adult fish, devour the copepods; the increase and distribution of fish thus depend in some measure, possibly a very large measure, on the number and distribution of the copepods and therefore indirectly on the number and distribution of diatoms. This relation is emphasized by the fact that many larval fishes feed on the diatoms directly; Herdman has found the stomach of the infant plaice full of them. In nine out of thirteen years the diatoms became abundant just before the very young plaice were set free, which happened in the first half of March, but in four years the diatoms were late and the young fishes

hatched in due time may not have found enough to eat. Fish hatched too early (February) seem always to run some chance of being starved.

All the investigations made on photosynthesis are in accord in establishing that the process is properly so termed and that it is due to light, not warmth, although, other things being equal, its velocity increases as the temperature rises. The general principle is illustrated by the phytoplankton of the Irish Sea, for in March, when its great spring increase begins, the temperature of the water is still low.

In a recent paper<sup>3</sup> Dr. William Butler and Mr. J. H. Coste have reported some observations on the seasonal variations in the dissolved oxygen content of the water of the Thames estuary, made in the course of a public health investigation for the London County Council. The starting point was the discovery, during the summer of 1914, that the water of the Thames estuary contained a proportion of oxygen greater than was required for saturation with atmospheric oxygen of water of the observed degree of salinity. This is spoken of as supersaturation. May and June were the months in which it was greatest, but the degree varied very much; in 1918 the maximum (June) was 177.5 per cent., in 1922 (May) only 116.3. The lowest degrees of supersaturation were observed in January, February, and March, and are within the limit of experimental error. The spring rise seems to be sudden, as the maximum may be reached in May, but unfortunately very few estimations were made in April. The plankton of the Thames below Southend, where the estuary may be said to begin, has not been fully studied, but Mr. E. T. Butler began a regular microscopical examination of the sediment from the water in July, 1921, and by September, 1922, had accumulated observations which are in general agreement with those of Herdman on the other side of England; he made rough estimates monthly of the numbers of diatoms, light green growths, and dark green (or blue) growths. He found that the diatoms and the light green growths began to increase rapidly in May, reached maxima early in July, and then rapidly decreased. What appears to happen is that the green growths and diatoms, stimulated by the sunlight, break up the carbonic dioxide, fixing the carbon and liberating the oxygen, which escapes only very slowly if the water be still. This is the condition to which the term "supersaturation" is applied, not perhaps quite happily, because it refers to the amount taken up from the atmosphere of the air, whereas from an atmosphere of pure oxygen nearly five times as much would be dissolved. The fact, however, serves to explain why the oxygen liberated by the growing vegetation does not at once escape. As the carbon dioxide is used up by the growth of the minute sea vegetation the water tends to become less and less acid, and in one set of observations made near the mouth of the Thames it became alkaline early in April; the alkalinity increased to a maximum at the end of June and then began to decline. It seems probable that this increase of alkalinity will cause sea water to take up more carbon dioxide, and that this increase, used up by the growing organisms, will lead to the production of more oxygen.

The fact that in still water oxygen is very slowly liberated is not of much practical importance, because sea and estuary water are seldom still, and even gentle stirring greatly increases the rate of loss of oxygen by sea water. When waves are breaking, the excess of oxygen is very rapidly got rid of; in fact, the amount dissolved may fall below the saturation point. As Butler and Coste point out, the seas during the spring, and perhaps during the autumn also, are a great natural factory where free oxygen is produced on a scale which,

<sup>1</sup> *Plankton* is a collective name for all the forms of floating or drifting organic life found at various depths in the ocean, or, by extension, in fresh water (N.E.D.). Phytoplankton is the vegetable part of the plankton.

<sup>2</sup> *Linnean Society's Journal—Botany*, xlv (1922); *Nature*, March 31st, p. 48.

<sup>3</sup> *Biochemical Journal*, xvii, No. 1 (1923), p. 43.



having regard to the relative areas of sea and land, may conceivably exceed that of land vegetation. "It is tempting," they continue, "to speculate on the part played by oxygen thus liberated in producing the salubrity attributed to sea air." The seas breaking on the shores "are liberating their surcharge of oxygen in its most active state, and it is seen that not the chemist, or the marine biologist alone, is interested in a phenomenon which has for its theatre of operations vast tracts of oceans and the littorals of continents."

However this may be, the observations are undoubtedly very interesting, though they fail to account for the rapid fall in vegetation and in the surcharge of oxygen during July and August in these latitudes. The sun is above the horizon as long in July as in May, and there is a rise in the temperature of the sea which is believed to favour photosynthesis.

#### THE TRAFFIC IN DANGEROUS DRUGS.

REPORTS recently issued by the League of Nations relevant to the enforcement of the International Opium Convention of 1912 indicate that that body is "making haste slowly" with the mondial control of drugs of addiction. The Advisory Committee which met for the fourth time in Geneva in January was specially invited to deal with a suggestion emanating from the Assembly of the League—namely, to boycott all exports of the scheduled "dangerous drugs" from non-adhering countries such as Turkey, Persia, Switzerland, and the Argentine. Further consideration of this suggestion, however, indicated that there were lions in the way. It was pointed out that a not impossible result of its adoption might be to give to India a virtual monopoly of the legitimate export trade in opium and that the total amount of the world's production of opium might even be thereby increased. Moreover, as the recalcitrant countries were reported to be showing signs of grace—indicative of a willingness to ratify the Convention—the further consideration of this question was postponed till the next meeting in May, when it was hoped a convenient occasion for a review of the whole situation would be afforded. The system of requiring licences or certificates in respect of all imports of the drugs in question, which is but a corollary to the stipulations of the Opium Convention, has yet been adopted by only twenty-seven of the fifty-one States which are members of the League of Nations; and a large number of the member States have neglected to furnish the statistics, which they were requested by the Council to supply, showing the amount of opium, morphine, heroin, and cocaine produced, consumed, imported, and exported by each country. A Joint Subcommittee of the Health and Opium Committees has given further consideration to the difficult problem as to what amount of the several drugs may be deemed to be legitimately required for internal consumption in each country, and also to the best methods of arriving at the quantity of each used for medicinal purposes. A previous attempt by the Health Committee to solve the question yielded inconclusive results. The Joint Subcommittee, after a detailed discussion, resolved, apparently by a majority of three to one, that the medical and pharmaceutical use of these drugs should be considered the only legitimate use, and that medical opinion did not regard the use of opium as a stimulant, even in tropical countries, as legitimate. The Opium Advisory Committee in its report to the Council recorded with particular satisfaction the participation of the United States in its labours by the nomination of a representative to act in "an unofficial and consultative capacity." American opinion has recently been reawakened on the subject of the drug traffic by a resolution of the House of Representatives, introduced by Mr. Porter, requesting the President to urge upon certain Governments "the immediate necessity of limiting the production of habit-forming narcotic drugs and the raw materials from which they are made to the amount actually required for strictly medicinal and scientific purposes." In this resolution the Governments of Great

Britain, Persia, and Turkey are specifically referred to as regards the cultivation of the opium poppy, and Peru, Bolivia, and the Netherlands as regards the production of coca. Evidence recently given by medical men and social workers before the Foreign Affairs Committee of the House of Representatives has emphasized the great increase in the illicit use of habit-forming drugs in the United States of recent years—more especially of heroin—and the depravity and crime attributable to this nefarious traffic.

#### THE THEORY OF VISION.

IN a paper read a short time ago before the Royal Society of Arts Dr. F. W. Edridge-Green contested the orthodox theory of vision put forward by von Kries and others, and very widely accepted, which supposes that the rods in the retina are sensory cells like the cones, and that, whereas the cones are used in the daytime for the appreciation of colour, the rods are used at night, when the light is so dim that colour cannot be appreciated. Dr. Edridge-Green disagreed with this duplex theory, as it is called, and held that there was no evidence that the rods are sensory. He maintained that they are accessory and are the sensitizers of the cones, secreting the visual purple which is changed by light. There was, he thought, good reason to believe that the means by which light stimulated the nerve endings was through a photochemical reaction; the decomposition of a photochemical film, sensitized by the visual purple, stimulated the ends of the cones, and a visual impulse was set up which was conveyed through the optic nerve fibres to the brain. He maintained that the function of the rods was to regulate the supply of visual purple to the film in accordance with the amount of light falling upon the eye, and expressed the opinion that this theory of vision not only explained all the known phenomena, but enabled various other facts to be predicted. The theory which supposed the rods to be percipient elements for perception in dim light, while the cones were the percipient elements in daylight, he believed to be irrational, for it was difficult to conceive an element stimulated by the decomposition of a photochemical substance which was excited by weak light and not more strongly excited by a brighter light. This theory was supported by what he described as misstatements. One of these was that certain animals had only cones and others only rods; he had made numerous examinations but had never found any animal with only cones or only rods. The creature which was most commonly said to have cones only was the tortoise, but the rods in the retina of the tortoise were as clearly defined and distinct as in the human retina. It was also said that the periphery of the retina was colour-blind; this was not the case when colours of sufficient intensity were used, as anyone could test for himself with a red lamp, which he would find could be seen as red to the extreme periphery. The statement that the eye was totally colour-blind in dark adaptation was also ill founded, as was proved in a masterly paper Burch had communicated to the Royal Society (*Proceedings*, vol. 763, p. 199). Yet another misstatement was that the Parkinje phenomenon and the recurrent image were not found at the fovea. Altogether it was difficult to comprehend how vision could occur on this theory. How were the central connexions in the brain arranged in order to obtain localization, with a large scotoma in the most important part of the field of vision? Professor E. H. Starling, who presided, said that Dr. Edridge-Green's theory was consistent with known physiological facts, and was therefore worthy of thorough investigation. The orthodox theory was brought forward with great authority by men of the intellectual magnitude of von Kries and others, but its weight of authority was really a disadvantage, because it caused the theory to be accepted unquestioningly. All such theories should be divested of the authority of the men who gave them birth and the facts regarded *de novo*. By physiological facts he meant such as could be observed sometimes on animals, more often on oneself.



## OXFORD OSLER MEMORIAL.

CONSIDERABLE progress has been made in the plans for a memorial to Sir William Osler in Oxford, where he was for fifteen years Regius Professor of Medicine. At a recent meeting of subscribers, Sir Archibald Garrod, speaking on behalf of the Committee, put forward certain proposals which he said had the entire approval of Lady Osler, as well as of other friends from whom letters had been received. The first proposal was to place in the University Museum a bronze portrait plaque of Sir William Osler, a replica of that made for the Medical Faculty of Maryland by Vernon of Paris. A second proposal was to establish an Osler Memorial Medal in bronze, to be awarded every five years to a graduate of the University of Oxford who has made some distinguished contribution to medical science, learning, or practice. It was decided to use the remainder of the sum contributed for an Osler Travelling Fund for the propagation or acquisition of medical knowledge or for medical research. The intention is to invest the fund and to use the interest to assist teachers of the Medical Faculty to travel for these purposes. The sum in hand, however, is not adequate, amounting only to about £1,700, and further subscriptions are invited. The motion to adopt these proposals was seconded by Major-General Sir Frederick Bradshaw, K.C.B., A.M.S.; it was carried without dissent, and the Executive Committee, which consists of Sir Herbert Warren, President of Magdalen College (chairman), Sir Archibald Garrod, F.R.S., Sir Charles Sherrington, P.R.S., Professor Arthur Thomson, Mr. Dodds-Parker (honorary treasurer), and Professor J. A. Gunn (honorary secretary), was empowered to carry the proposals into effect, and to negotiate the necessary arrangements with the University. Further subscriptions should be sent without delay to Mr. A. P. Dodds-Parker, 2, Holywell, Oxford.

## CONJUGAL TUBERCULOSIS.

DR. PAUL ROUSSEL has issued an interesting account of the statistical information he has obtained from an inquiry into the frequency of tuberculous infection amongst families of the poorer classes at Nancy, and in particular with regard to conjugal tuberculosis.<sup>1</sup> He prefaces the account of his own observations by a review of the results and conclusions of others as recorded in the literature, and a discussion of his own conclusions on the basis of the immunity afforded by mild, repeated infection during childhood. His statistics concern a homogeneous working-class group, living generally under bad social conditions, which has come under the care and supervision of the Villemin Dispensary since its foundation in March, 1920. They comprise altogether 423 families in which either one or both of the married persons were suffering from tuberculosis. In 211 cases the husband alone, and in 163 cases the wife alone, was affected, while in 49 cases both partners were attacked. Examining these 49 cases of concurrent disease, he found that in 27 of them the possibility of conjugal infection could be dismissed. There remained, then, 22 instances to be explained, and in these direct contagion appeared certain or highly probable in 14 and possible in 8. Taking the former figure, it is seen that the proportion of cases of conjugal transmission of tuberculosis may be given as 5.2 per cent. The smallness of this estimate shows how comparatively slight is the danger of such transmission. But, further, it was found that of these 22 accepted cases no fewer than 15 were latent. In fact, in only 4 individuals out of 423 married couples did a rapid type of disease result from the intimacy contingent on the married state. Of the 22 cases referred to, it is interesting to note that in as many as 18 of them the infection was from husband to wife. The length of cohabitation before the disease manifested itself was from six months to twelve years and in 4 instances it did not commence till after the death of the primarily infected partner. Dealing only with open cases of tuberculosis having a positive sputum, the proportion of cross-infections was raised to 11.56 per cent.

<sup>1</sup> *La tuberculose conjugale: contagion et mariage.* By Dr. Paul Roussel. Paris: A. Maloine et Fils, 1922. (Illo.), 8vo. pp. iv + 160. Fr. 10 net.)

Excluding 85 families who were without offspring, it was found that in 25.02 per cent. of general cases and in 37.59 per cent. of open cases the children were tuberculous. These figures are probably on the low side, as simple cases of adenopathy were not included, unless they were accompanied by definite evidence of tuberculosis in the lungs or elsewhere. Summing up, then, it may be said that conjugal infection is uncommon, even in the poorer classes, and that when it does occur it is generally only after a lengthy period of cohabitation, that the wife is more likely to suffer than the husband, and that the disease usually runs a benign course. The danger to the children, however, is so serious that, in the event of the marriage being fruitful the very greatest care must be exercised by a rigid—albeit humane—system of prophylaxis to prevent their early and fatal contamination.

## HOSPITAL ALMONERS.

THE Institute of Hospital Almoners carries on a branch of social work of which the late Sir Charles Stewart Loch was the founder; it has its offices in the house of the Charity Organization Society, Denison House, 296, Vauxhall Bridge Road, S.W. The institute selects and trains suitable candidates for the work of hospital almoners, grants certificates and diplomas, keeps a register of trained almoners, and co-operates in preventing the abuse of hospitals and in promoting health amongst the industrial and poorer classes. The report for 1922 points out that the sphere of activities of a hospital, a general hospital in particular, is wider than might at first sight appear, for the welfare of the patient is influenced by the educational and public health authorities, by war pensions committees, and many other organizations. Further, the records of the almoners on the social and economic conditions of the patients are proving of statistical value, and during the past year an almoner has been engaged by the Medical Research Council for special investigations into the records of the social work done during the past seven years at St. Thomas's Hospital and the neighbouring Lying-in Hospital in York Road. Evidence of the care displayed in selection is afforded by the fact that over 40 per cent. of the candidates who apply for training are rejected as unsuitable. The training lasts for at least two years, and includes four months' work in an office of the Charity Organization Society in London, and nine months under the direction of the Ratan Tata Foundation of Social Science and Administration; there follows eleven months' work under an almoner at a hospital training centre, two of them being spent in visiting other hospitals, and one in practical work outside the hospital—for example in infant welfare centres, rescue homes, and tuberculosis clinics. The fee for the training, covering the whole course of lectures and instruction, is 40 guineas. In the membership of the institute are included the almoners of a number of the larger hospitals in London and the provinces. The President is Sir Napier Barnett, M.D. The report lays stress on the special qualifications required in an almoner, such as a generous education, a wide outlook, and broad sympathies, so that she may become "the link between the hospital and the home." This view of the almoner's duties is emphasized by a quotation from an article in *The Hospital*, stating that "too much attention was at first directed merely to one of the almoner's functions—the exclusion, namely, of the unsuitable recipient of charitable help, but this . . . has now fallen into its rightful place as a comparatively subordinate matter." The council of the institute finds it difficult to estimate what demand there will be for almoners two years hence, but it feels that not enough women are entering upon the work to fill the vacancies that are likely to occur.

## EPIDEMIC HICCUP.

FOLLOWING the recognition of encephalitis lethargica attention has been called, especially in France, to epidemic hiccup. Its etiology is obscure, but epidemiological and clinical data suggest that it is related to encephalitis lethargica, as it often



occurs in the course of that disease; the two appear contemporaneously in the same districts, and the diaphragmatic spasm may be regarded as a manifestation or variant of the myoclonic form. Rosenow, of the Mayo Clinic, who in 1921<sup>1</sup> produced spasms of the diaphragm in monkeys and rabbits inoculated intravenously and intracerebrally with a streptococcus isolated from pus obtained from the tonsils of patients with epidemic hiccup, now carries this research farther.<sup>2</sup> Intracerebral injections with dead streptococci and filtrates of cultures were found to give rise to spasm of the diaphragm, the duration of symptoms being shortest after the injection of filtrates, longer after the introduction of dead streptococci, and most persistent after the inoculation of the living organisms. The streptococcus is similar to the diplo-streptococcus, which he described in 1916 in encephalitis lethargica and recently identified microscopically in or adjacent to the lesions in a series of 21 cases of epidemic encephalitis<sup>3</sup>; it belongs to the pneumococcus-streptococcus group of organisms normally present in the upper respiratory tract. It was recovered from the experimental animals and produced spasm of the diaphragm and other muscles in further animals but symptoms of lethargic encephalitis became more frequent and diaphragmatic spasm less common with the number of animal passages; it therefore appears that the peculiar localizing power or *neurotropic* property of the hiccup streptococcus is acquired and perhaps a phase in the life cycle of the pneumococcus-streptococcus group of organisms. The symptoms were permanently controlled by anti-encephalitis serum in an animal inoculated by a strain of streptococcus which was specifically agglutinated by the serum. The central nervous system of the animals showed perivascular infiltration, in early stages with leucocytes, later with mononuclear or plasma cells. The streptococcus produces a chemical substance, and the persistence of hiccup depends on the continued production of this substance in the central nervous system or elsewhere. That the impulse producing the spasm is of central origin is shown by the observation that heroin, a depressant of the respiratory centre, controls the spasms. This may possibly be of service in practice, for morphine has generally been found to be the most successful of the numerous drugs tried in obstinate hiccup, and it has been stated that in epidemic hiccup nothing is effectual in stopping the paroxysms, though pressure upon the eyeballs has been said to be successful.

#### PLUMBISM AND LEAD PAINT.

In 1911 Home Office Departmental Committees recommended the total prohibition of the use of paint containing more than 5 per cent. of its dry weight of a soluble lead paint except for certain special purposes. At the third conference of the International Labour Organization of the League of Nations, held at Geneva in October and November, 1921, a draft convention was presented to which the British Government took exception, stating that it had reason to doubt the conclusions reached by the committees in 1911, and was making further inquiries. The conference eventually adopted almost by unanimity a convention inviting the various countries represented to bring into force, six years from the date of the conference, regulations prohibiting the use of white lead or lead sulphate for interior painting, except in the case of railway stations and factories where lead painting may be considered necessary by a competent authority. The British inquiry referred to was committed to another Home Office Departmental Committee presided over by Sir Henry Norman, M.P. This committee has just presented its report. The committee was instructed to examine the question of the danger to the health of workers in the painting trade, and inquire into the questions of comparative efficiency and cost. The committee reports that it is satisfied that for outside

painting and for certain kinds of internal painting there is at present no efficient substitute for lead paint, and that the prohibition of lead paint for certain purposes is likely to involve an increase of cost. The committee at the same time recognizes that the statistics of lead poisoning arising from lead paint, in its production and in its use, are sufficiently serious to make it desirable to limit its employment as far as possible, and to make it subject, where used, to statutory regulations; the British regulations for trades concerned in the production of lead and its use as a glaze in pottery have worked well, and there are none superior to them in any country. New regulations are necessary only for painting and the rubbing down of old paint. As regards white lead and lead sulphate, and paint bases containing these substances, the committee considers that the needs are adequately met by the agreement reached at the Geneva Conference and subsequently embodied in the convention adopted there. Legislation will be necessary to give effect to the principles contained therein, and the committee agrees that the prohibition of the use of white lead and lead sulphate for internal painting should not come into force until 1927 as the convention prescribed. It is suggested, however, that regulations to deal with the continued use of lead paint should be brought into force at the earliest possible moment. An important practical point is that the committee accepts the view that lead poisoning among painters is almost entirely caused by dust produced in dry rubbing down, and that dry rubbing down is no longer necessary and can be replaced by a damp process. It therefore advises that the dry rubbing down process should be prohibited, and expresses approval of a draft code of regulations drawn up by the Home Office in collaboration with representatives of the Painters' and Decorators' Industrial Joint Council, and unanimously accepted by both sides of that Council and also by the National Federation of Building Trades Employers.

#### THE ROYAL SOCIETY OF MEDICINE.

We have already called attention to the institution by the Royal Society of Medicine of an order of Associates. The action of the Society seems to have escaped the attention of some of those eligible, for we understand that very few applications have been received. Any qualified man or woman, whether British or otherwise, is eligible to be elected an Associate within five years of obtaining a first professional qualification. The annual subscription is three guineas, but there is no admission fee, and an Associate who has paid three annual subscriptions does not pay an admission fee on election to the Fellowship. Associates are entitled to all the ordinary privileges of Fellows, but may not borrow more than one volume at a time, and do not receive the *Proceedings* gratis.

THE Chartered Society of Massage and Medical Gymnastics which was formed by the amalgamation of the Incorporated Society of Trained Masseuses and the Institute of Massage and Remedial Gymnastics (Manchester), received its charter in June, 1920, and numbers amongst its objects the improvement of the training, education, and professional status of persons engaged in the practice of massage, medical gymnastics, electrotherapeutics, and kindred methods of treatment; the promotion for such persons of a uniform curriculum and standard of qualification, and the maintenance of registers of persons qualified in the opinion of the society to practice or teach the practice of these forms of treatment. Members are required not to undertake any cases of massage except under the direction of a registered medical practitioner; not to advertise except in recognized medical and nursing papers; not to sell goods to patients in a professional capacity; and not to accept secret commissions on the sale of goods. The society has now issued its first register of members covering the period from July, 1920, to September, 1922; it contains the names and addresses of over 4,500 masseuses and masseurs in the United Kingdom and abroad. The possession of additional certificates (as in medical electricity and gymnastics) is indicated, and a place index adds considerably to the usefulness of the main register. There are separate sections for masseuses and masseurs.

<sup>1</sup> Rosenow, E. C.: *Journ. Amer. Med. Assoc.*, Chicago, 1921, lxxvi, 1745.

<sup>2</sup> Idem: *Journ. Infect. Dis.*, Chicago, 1923, xxxii, 41-94.

<sup>3</sup> Rosenow and Jackson: *Ibid.*, 1923, xxxii, 144.



## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

THE House of Commons adjourned on March 30th until Monday, April 9th. The following are notes of the business of medical interest done during the last three days before the adjournment, and of some other matters, which we were compelled to postpone last week owing to pressure on space.

### The Cost of State Relief.

Sir Walter de Frece asked, on March 20th, the aggregate amount per head of the population now distributed by the State for various services and insurances. The Chancellor of the Exchequer replied that the amounts per head of the population distributed in 1922-23 in Great Britain on the services stated were estimated to have been approximately as follow:

	s.	d.
Unemployment benefit	...	19 6
Poor Law relief	...	19 0
Old age pensions	...	10 0
Service and kindred pensions, including the pensions of school teachers and the police	...	13 6
War pensions	...	30 0
Health insurance benefits	...	11 0

The figures included not only money provided from taxes and rates, but also, in the case of the health and unemployment insurance schemes, contributions by employers and employed. Separate figures were not available for uncovenanted unemployment benefit.

### Dangerous Drugs Regulations.

In reply to Dr. Molloy, on March 29th, the Home Secretary, Mr. Bridgeman, said he proposed to make a regulation revoking No. 1 of the amending regulations made on October 2nd, 1922, under Section 7 of the Act. [This provided for the insertion of the words: "The prescription shall not be given for the use of the prescriber himself."]

### Imports of Dangerous Drugs.

The Home Secretary, on March 28th, gave the following statistics of the importation of dangerous drugs in the years 1920 and 1921, mentioning that the only figures for 1920 were those of the Customs' officials, and were incomplete. For 1921 the figures of return prepared by the Home Office were available.

In 1920 there were imported into the United Kingdom 423,530 lb. of opium, 320 oz. of morphine, and 7,227 oz. of cocaine. These amounts were made up by consignments from various foreign countries and British possessions as follows:

Opium.—France, 130 lb.; Turkey (European), 210,377 lb.; Turkey (Asiatic), 122,713 lb.; Persia, 3,910 lb.; other foreign countries, 2,370 lb.; British India, 82,956 lb.; Hong Kong, 820 lb.; other British possessions, 244 lb.

Morphine.—United States of America, 320 oz.

Cocaine.—Germany, 2,368 oz.; France, 2,083 oz.; Switzerland, 1,000 oz.; Peru, 1,424 oz.; other foreign countries, 352 oz.

In 1921 the total amounts of these drugs imported were: Opium, 58,161 lb.; morphine and morphine salts, 1,100 oz.; cocaine and cocaine salts, 24,653 oz. The amounts consigned by various countries were as follows:

Opium.—Greece, 8,348 lb.; Italy, 339 lb.; Persia, 1,246 lb.; Spain, 176 lb.; Switzerland, 848 lb.; Turkey (European and Asiatic), 45,079 lb.; other countries, 2,125 lb.

Morphine and Morphine Salts (including morphine content of preparations and admixtures).—France, 1 oz.; Switzerland, 870 oz.; Turkey, 229 oz.

Cocaine and Cocaine Salts (including cocaine content of preparations and admixtures).—France, 19,955 oz.; Germany, 2,073 oz.; Greece, 61 oz.; Holland, 2,544 oz.; United States of America, 30 oz.

**Mortality from Cancer.**—Dr. L. G. Molloy asked, on March 28th, what was the death rate from cancer in Great Britain at the present time; what was the death rate from this disease in the previous four decades; what proportion of deaths from all causes other than accident or violence were due to this scourge; and what financial provision was made by His Majesty's Government towards assisting those engaged in fighting this plague by endeavouring to ascertain its causes and the best means of combating its ravages. Mr. Chamberlain replied that the standardized death rates from cancer in the four decades 1881-1893, 1891-1900, 1901-1910, and 1911-1920 were respectively 610, 761, 867, 966, and 1,007 per million of the population. In England and Wales the cancer deaths during the above decades represented 3.2, 4.3, 6.1, and 8 per cent. of the total deaths from all causes other than those due to accident and violence. The promotion of cancer research was among the purposes for which an annual subsidy was made by Parliament to the Medical Research Council, and the Council from time to time made grants in aid of investigations which might bear on the incidence, causation, and treatment of cancer. The Council also had in its charge a quantity of radium salt belonging to

His Majesty's Government, and with this had organized an investigation into the treatment of cancer by means of radium in ten different hospital centres in this country. Dr. Molloy was no doubt aware that an extensive research into the causes of the disease had for some time past been undertaken by the Imperial Cancer Research Fund.

**War Pensions Act Amendment Bill.**—Mr. Frederick Roberts, on March 21st, introduced on behalf of the Labour party a bill to provide that where an ex service officer or man, after leaving the service, was found suffering from tuberculosis, neurasthenia, or any other disease or incapacity reasonably attributable to war service, acceptance for such service should be taken as proof of attributability unless or until the contrary was proved. In other words, the measure proposes that pensions should be granted unless the Ministry of Pensions can prove that the illness be not attributable to war service, the onus of proving the negative to be placed on the department. The bill was read a first time.

**Assessment of Pensions.**—Mr. Ponsonby asked, on March 22nd, whether the Minister of Pensions had received complaints from the Handsworth branch of the British Legion as to cases in which local medical boards were alleged to have contradicted the decision of the Pensions Appeal Tribunal when it had been in the applicant's favour, and whether the Appeal Tribunal could, at the time of the hearing of an appeal, assess the disability so that the Ministry of Pensions could make the award accordingly. Major Tryon said that the complaint was based upon a misapprehension, for decisions of the Pensions Appeal Tribunal were invariably accepted. An assessment tribunal might, in confirming the finality of the award, increase or reduce it, or might simply decide that the case was not ripe for final decision. This did not necessarily mean that the tribunal disagreed with the rate at which the man's disablement had been assessed, and steps were being taken to make this clear in announcing decisions of this nature. Major Tryon has stated that, in cases of disability accepted by the Ministry as due to war service, pension was always awarded at the rate appropriate to the degree of disablement certified by the medical board by whom the man was examined. If a claim was based on deterioration the man was referred for examination by a medical referee, not for an assessment for pension purposes, but for a preliminary expression of opinion on the merits of the claim. If the medical referee reported the claim the man was then examined by a board, whose assessment was accepted and acted upon, whether higher or lower than the estimate given by the medical referee. The Ministry granted an allowance to carry on. The total number of four-year cases submitted in Great Britain and Ireland for consideration for final award under Section 4 (2) of the War Pensions Act, 1921, was 48,183, and the percentage recommended for final awards was 58.4. The total number of medical practitioners on the panel from which members of medical boards for the Glasgow area were drawn was 172, of whom 85 per cent. were ex-service doctors. The number of pensions to officers is approximately 2,000, and the annual value of about £3,100,000. During the last year, 1923, some 30,000 pensions to officers were granted. The medical re-examination as required by the warrant. Of these, 67 per cent. remained unaltered or were increased, while 33 per cent. were decreased or terminated. The result of these changes represented a net decrease in the annual value of the awards reviewed of approximately £345,000. The first part of the Handbook of War Pensions is now ready.

**Pensions Appeals.**—Major Tryon has stated that approximately 1,400 appeals by officers and 70,000 appeals by other ranks were decided by the Entitlement Tribunal during the two years ended December 31st, 1922. The percentages of these appeals allowed were 48 per cent. and 56 per cent. respectively. Of awards which have become final the Pensions Department up to December 31st, 1922, made 153,000 of nil or less than 20 per cent., and 40,000 of 20 per cent. and over. Up to the same date approximately 13,050 appeals against final awards were decided by the Assessment Appeals Tribunal. In 62 per cent. the final award was confirmed unaltered; in 19 per cent. the final award was confirmed at a higher assessment; and 19 per cent. were set aside by the tribunal. The number of cases within each of the last six months in which medical advisers of the Ministry of Pensions have declined to accept the mental derangement of applicants as due in any way to or exaggerated by war service were: September, 34; October, 16; November, 57; December, 34; January, 52; and February, 58. The Minister said that he was satisfied that this type of case received most sympathetic consideration. There was, moreover, statutory right of appeal to a tribunal independent of the Ministry.

**Service Patients in Asylums.**—Captain Craig stated, on March 20th, in reply to Mr. Frederick Roberts, that by arrangement with the Board of Control a systematic inspection of all "service patients" in asylums had been carried out for some time past by medical inspectors of the Ministry of Pensions. Considerable progress had

been made in the exercise of his powers under the Lunacy laws, insisted on the removal of a patient against the advice of a medical superintendent, it was the practice to point out to the responsible relatives that, should application be made for the readmission of the patient to the asylum (which experience showed frequently happened), the question of reissuing family treatment allowance must be considered afresh. This was a reasonable procedure, which was exercised with the greatest discretion, and solely in the interests of the patient's treatment, and in no way conflicted with the provisions of the Lunacy Act. Asked the cost of maintenance of



There is at present no intention of discontinuing medical benefits in Dublin, which are necessary to meet the needs of persons there. Constant attention is paid to the possibility of making economies, but it is not probable that any substantial saving can be effected.



## HEALTH OF THE ROYAL AIR FORCE.

The public anxiety about the condition of our Air Force defences may have attracted the attention of medical men to what its medical service has been doing, and the second Report on the Health of the Royal Air Force for the Year 1921, submitted by Air Commodore D. Munro, Director of Medical Services, may therefore be said to have appeared at an appropriate moment.

This report is on the same general lines and of almost exactly the same length as the previous and first report, for the year 1920, which was fully noticed in the *BARRIST MEDICAL JOURNAL* of December 31st, 1921 (p. 1122); but statistics relating to the health of the Royal Air Force in India which were not included in the first report are now given. It is admitted that the health figures for India are not satisfactory, and this is ascribed to the inexperience of both officers and men in the precautions and sanitary measures necessary for the preservation of health in the tropics, to the presence of men new to tropical climates, living under camp conditions in several of the stations, to the disposing influence of heavy physical work for long hours, and in some units to lack of trained unit sanitary squads, the provision of which, it is hoped, will be supplied in time. Disinfection has not been so thoroughly carried out as it should have been, apparently from lack of disinfectors, and flies have therefore been unnecessarily numerous. The water and food supplies have been good, but the fly-proofing of some of the kitchens proved to be unsatisfactory on account of the large mesh of the gauze employed. In spite, however, of the greater incidence of sickness in India than elsewhere it is satisfactory to learn that the health of the total force shows a well marked improvement, and that the death rate (excluding the twenty-four deaths in the R.38 disaster) for 1921 works out at 3.9, as compared with 4.4 per 1,000 in 1920.

Efforts made to reduce venereal disease have been successful in lowering the total case incidence in the Royal Air Force from 49.6 in 1920 to 36.1 per 1,000; the prophylactic measures adopted have been educational, recreational, and preventive; all men acquiring venereal disease are questioned by their medical officer as to the measures of prophylactic disinfection adopted, and, according to the statement given, are recorded as "used properly," "used improperly," or "not used," the first term being applied only to instances in which the procedure was carried out within two hours of exposure. The case incidence per 1,000 of scabies fell from 32.2 in 1920 to 14.3, and the average duration of each case from 12.3 to 10.3 days, but this is still too long; the case incidence of the group of affections included under the heading of "upper air-passage infection" was slightly lower, but that of influenza was 26.4, as compared with 12.7 per 1,000 in 1921, chiefly from a mild type of the disease.

Graphs of the incidence of sandfly fever show a well marked reduction in Iraq for 1921, where experience shows that the severity varies so much from year to year that it is impossible to say how much the lowered case incidence was due to the prophylactic measures. The disease is usually more frequent and severe in new arrivals. Research carried out at Malta by the R.A.F. bacteriologist led to the isolation, from cases of the disease, of an organism very similar to *Leptospira icterohaemorrhagiae*; but, as transmission of the disease in its characteristic form to men or animals has not been obtained, no specificity is claimed for the spirochaete. At Bagdad blood examinations of 70 cases showed the same features as in Malta—namely, a leucopenia for the first three to five days, followed by a leucocytosis. By routine treatment consisting of starvation, purgation, and doses of aspirin, the duration of disability was shortened. In sandfly fever the early leucopenia is accompanied by a relative lymphocytosis; this is of value in making a diagnosis from the effects of exposure to the direct, or less often the indirect, action of the sun's rays. For cases of a comparatively mild nature, for which the only terms in the Official Nomenclature of Diseases—heatstroke, sunstroke, and insolation—are not warranted, the term "heat exhaustion" has now been introduced; the older names can therefore be reserved for cases with a sudden onset, usually accompanied by hyperpyrexia, and with or without cerebral symptoms and unconsciousness. The clinical picture of heat exhaustion

includes comparatively slight fever, dizziness, intense headache, pain in the back and limbs, and varying degrees of collapse; it must be distinguished not only from sandfly fever, but from sudden pyrexias which often appear to be due to constipation.

The nomenclature of functional nervous disorders has also been revised in the light of modern psychological research: the term "psychosis" is confined to the diseases designated in the official nomenclature as "mental diseases," with the partial exception of psychasthenia. The term "psychasthenia" is restricted to the clinical entity described by Janet, which is mainly characterized by volitional defects and obsessional ideas or impulses; when the latter are antisocial, psychasthenia may fall under the heading of a psychosis, otherwise it belongs to the next group. The psychoneuroses are disorders of function other than the psychoses that are purely psychic in origin, and are subdivided into: (1) hysteria, including suggestion neurosis and conversion hysteria; (2) neurasthenia, characterized by symptoms of mental and physical fatigue; (3) anxiety neuroses with "nervousness," depression, insomnia, emotional instability, lack of concentration, defective memory, with or without tremor and tachycardia; (4) border-line cases with, in addition to the symptoms of anxiety neurosis, so much intellectual impairment that the patient is incapable of looking after himself and his affairs properly. The form of psychoneurosis most commonly met with in the Air Service is the anxiety neurosis which is generally speaking associated with flying stress, whereas neurasthenia specially occurred as the result of arduous administrative responsibilities and lack of physical exercise.

The section on physical efficiency shows that all officers are examined yearly, and the results of both the routine clinical examination and of the physical efficiency tests compared with the previous records; the effects of climate and flying can thus be estimated. The importance of this is that an officer who, after much flying in India or Iraq for a year or more, remains physically fit for full flying duties may be assumed to be well adapted to withstand the strain of war flying.

This report, with its charts and numerous tables, contains much interesting information, and bears witness to the energetic spirit of the medical service of the Royal Air Force.

## England and Wales.

## WELSH NATIONAL MEDICAL SCHOOL.

The Privy Council has written another letter adhering to its view that the constitution recently submitted for the Welsh National Medical School is unsuitable. It is pointed out that the principal objects of any scheme should be:

1. To provide the organization which will give the school the best opportunity of developing successfully into a first-rate centre of medical teaching and research.
2. To give the school a genuinely national status.
3. To recognize the special interests of the Cardiff University College in the school.

The Privy Council finds that in the scheme submitted the attempt to harmonize these objects has resulted in neglect of the first, though from the point of view of the interests of university education it is undoubtedly the most important of the three, and in giving less than its due weight to the second. The Council considers that it will not be a short or easy task to build up out of the existing material a complete and well equipped school, and that as a matter of common prudence care should be taken that the mere machinery of government should interpose no unnecessary obstacles. The proposal actually made, however, is for a division of controlling functions between no fewer than four bodies—the University Council, the Advisory Board of Medicine of the University, the College Council, and the College Board of Medicine. The school's chances of success would, it is considered, be far greater under the simpler method of administration recommended by the recent Royal Commission. The reasonable claims of Cardiff University College could be met, not by bringing within its administration an institution whose government it is desired to put on a broad national basis and for which separate financial provision seems advisable, but by giving it a very substantial representation on the governing body of that institution. The Cardiff College would gain by being relieved

<sup>1</sup> Report on the Health of the Royal Air Force for the Year 1921. Air Publication 924. Published by H.M. Stationery Office. 1923. (12p. 20; 5 charts, 32 tables. Price 5s. net.)



of a partial and ill defined responsibility for an institution the ultimate control of which no one proposes to give to it, and the School of Medicine, if established as an independent unit, would, to its great benefit, receive a status and form of government which would be simple and easy to understand; its administration, under the University, would be in the hands of a single authority with an undivided interest in the furtherance of medical education and research.

#### NURSING AND MIDWIFERY EXHIBITION.

What is probably the largest Nursing and Midwifery Exhibition yet held in this country has been open during the present week at the Central Hall, Westminster. It is the thirteenth of an annual series of such exhibitions, and, thanks to the larger space available on this occasion, it includes for the first time a hospital section.

A model operating theatre has been installed, various firms supplying the equipment, model offices for a matron and a hospital secretary, and a model ward kitchen. The British Red Cross Society has given demonstrations in this section of the treatment by light baths and electrical apparatus administered to service pensioners and others, and the St. John Ambulance Association has demonstrated its various activities. The remainder of the section is occupied by an exhibition of coloured anatomical models, lent by the Science Museum at South Kensington, some pathological exhibits from the Cancer Hospital and the Chelsea Hospital for Women, and various charts, photographs, and radiographs. The main exhibition comprises well over a hundred trade stands, chiefly displaying various modern requisites for the sick-room, the lying-in chamber, the nursery, and the nurse's personal outfit. In addition to most of the familiar foods and toilet preparations, such things were noticed as a "chiro-pody clinic," and an improved incubator, or "thermostatic nurse," for premature or sickly infants, in which the electrical heating of the chamber is automatically reduced day by day so as to prepare the child for the outer temperature. We were informed that these appliances can now be hired in an emergency.

In association with the exhibition a four days' conference has been held. The programme, arranged by a committee of matrons of the principal hospitals, included such subjects as district nursing, the place of the midwife in the public health scheme, dental care and food values, venereal diseases, and the conditions of nursing in certain European countries. The exhibition closes to-day (Saturday).

#### LIVERPOOL ROYAL INFIRMARY.

The annual meeting of the subscribers of the Royal Infirmary took place on March 21st, with the President, Mr. Thomas H. Bickerton, consulting ophthalmic surgeon, in the chair. The honorary treasurer's report showed that £14,837 had been received as legacies during the past year, and £2,665 represented a grant from the Voluntary Hospitals Commission. The result was that on the year's working of the institution there was an excess of—total income over total expenditure—£5,852. Unfortunately, owing to a further decrease in annual subscriptions, the ordinary income showed a deficit of £11,214. The building of the new nurses' home was progressing rapidly, towards the cost of which £28,000 was available, and an urgent appeal for the amount outstanding—£9,000—was made by the treasurer, who commented upon the extraordinary number of legacies the Infirmary had received during the past year. The number of in-patients was 4,477, an increase of 324 over the preceding year. The number of out-patients that attended the various departments was 26,821.

Mr. Bickerton, in moving the adoption of the report and financial statement, gave an interesting historical sketch of the Royal Infirmary, which was instituted in 1749, up to the present time. Henry Park was one of the first surgeons appointed, and three successive generations of Bickersteths covered the whole period from 1749 to the present day. During these years nursing had developed from the Sairey Gamp type of nurse to the present efficient trained nursing sister. Previous to 1862 convalescents were frequently used to wait on the other patients, and not infrequently the so-called nurses were discharged for "want of steadiness." He made a special appeal on behalf of the new nurses' home, which was essential for their health and happiness. The public should not forget what an important part nurses played in maintaining the health and administering to the sick in all ranks of the community. Mr. G. Thurstan Holland, having resigned office owing to the age limit, received the warm thanks of the meeting for his services as honorary radiologist during the past eighteen years, and (as we announced last week) he was appointed honorary consulting radiologist. Mr. Bickerton's address was much appreciated, and he was unanimously re-elected president for the ensuing year.

## Scotland.

#### EXCHANGE OF PROFESSORS.

An interesting development in the relations between Edinburgh and some of the American medical schools has been initiated by a visit of Sir Harold Stiles to Boston. Sir Harold Stiles, who is Professor of Clinical Surgery in the University of Edinburgh, will take the place at Harvard University of Professor Harvey Cushing, and has been appointed pro tempore a surgeon to the Peter Bent Brigham Hospital, where Professor Cushing has a charge of 170 beds. Sir Harold Stiles will be in charge for the last fortnight of the term and will have the fullest opportunity of studying the surgical methods practised at the celebrated Harvard School, as well as of demonstrating Edinburgh methods to the American students. He intends to be back in time to attend the meeting of the Association of Surgeons of Great Britain and Ireland during the first week of May; an arrangement of this kind, therefore, does not involve an undue expenditure of time. The development of these temporary inter-university relations must tend to broaden professional study and conduce to increased efficiency in teaching methods, as well as giving a busman's holiday to the professors granted leave of absence from their own home duties.

#### CHURCH OF SCOTLAND DEACONESS HOSPITAL.

At the annual meeting of contributors to the Deaconess Hospital, Edinburgh, the Right Rev. the Moderator of the Church of Scotland presided, and the annual report was submitted by the Hon. Lord Sands. It showed that 751 in-patients and 4,492 out-patients had been treated by the hospital in the past year, and the chairman described the hospital as, for its size, one of the most valuable institutions in the country. It had recently been recognized by the General Nursing Council for Scotland as one of the hospitals at which training qualifies for the nursing certificate. Although the training was mainly reserved for those intending to become missionary nurses at home or abroad the applications had been very numerous. The finances of the hospital had been satisfactory, the year's work showing a net credit balance of £36 as compared with a debit balance of £64 at the end of the previous year. The report was adopted on the motion of Professor G. Lovell Gulland, C.M.G., M.D.

This hospital, it may be noted, affords an interesting example of the smooth working of a contributory scheme. During the twenty nine years of its existence an increasing number of the beds have been in some instances permanently endowed and in a larger number of cases are voluntarily supported from year to year by various church congregations and other organizations such as guilds and societies within the Church of Scotland. Over 60 per cent. of the beds are thus supported with the implied condition that patients recommended by a supporting body will be given priority of admission over those on the ordinary waiting list, subject to acceptance as suitable cases by the medical or surgical staff of the hospital. The actual cost of maintenance per bed per annum is over £108, but the Board accepts £90 per annum for the support of a special bed for the above-mentioned purpose, or £45 for support of a cot in the children's ward. Private donors who have benefited from the hospital, or guilds with a personal interest, are encouraged to present £10, representing the average cost for the maintenance of one patient admitted. The scheme, which works smoothly and satisfactorily as a combination of charity and sound business principle in hospital administration, may interest those who are concerned in the changing hospital conditions of the present day.

#### LETHARGIC ENCEPHALITIS.

The medical officer of health for Glasgow has reported that since March 14th, when 39 cases of lethargic encephalitis had been notified, 18 more cases have occurred. No further deaths, however, had taken place, the number remaining at 8. During March there had been a decrease in the severity of the disease, such cases as were reported being of a mild character. The experience in Edinburgh has been similar, a decrease having appeared in the number of new cases, the mortality, and the severity in the type of case.

#### EDINBURGH ROYAL MATERNITY HOSPITAL.

During the year 1922 the numbers treated by the hospital were as follows: in hospital, 1,672; at their own homes



1,252; in the ante-natal department there were 1,297 new cases, with 3,480 revisits. Dr. William Fordyce succeeds Dr. Haig Ferguson as physician in charge for the quarter commencing April 1st, 1923, and Dr. James Young acts as assistant physician.

## Ireland.

### RECEPTION BY THE PRESIDENT OF THE ULSTER MEDICAL SOCIETY.

THE President of the Ulster Medical Society (Mr. R. J. Johnstone, F.R.C.S.Eng., M.P.) and Mrs. Johnstone gave a reception to the Fellows and Members and friends on the evening of March 22nd in the Medical Institute, Belfast. There was some delightful music, lightning sketches of some of the medical teachers in the school by Mr. Sheran, and at 10 p.m. refreshments and a dance, for which special curfew permits had been arranged. An interesting incident was a presentation to Dr. W. W. D. Thomson on his return to work after his long and very trying illness. The President, in making the presentation, said that when it was known that Dr. Thomson was returning after his long illness of two and a half years he and the secretary were inundated with requests to do something to show the profession's sympathy with one who was so popular and had reached so high a standing in the scientific ranks of medicine. No one was asked and no sum mentioned, and yet the result exceeded all expectations; he had the greatest pleasure in handing Dr. Thomson a beautiful piece of silver plate, on which were engraved the names of the 169 subscribers, and also in handing to Mrs. Thomson a diamond ring, tokens of the profession's sympathy during the long illness and a welcome on their return. A total of nearly £750 had been subscribed.

The profession is deeply indebted to the President and Mrs. Johnstone for their hospitality, and to the honorary secretary (Dr. Marshall) for the great trouble he took to make the meeting and presentation such a success.

### ROYAL VICTORIA HOSPITAL, BELFAST.

The Lord Mayor of Belfast took the chair at the annual meeting of the hospital on March 23rd in the King Edward Memorial Hall. Professor Lindsay, F.R.C.P., chairman of the board of management, in seconding the adoption of the report and statement of accounts, said that when the hospital was built in 1903 the population of Belfast was 355,000. It was now supposed to be close on half a million. Belfast was under-hospitalled; the waiting lists were increasing, and many patients were kept from treatment, and unnecessary suffering and economic loss entailed. Plans of extension had now been adopted, including three new wards, enlargement of the out-patient department, a new nursing block, and some minor details; these extensions would leave room for much needed accommodation for x rays, massage, and some special departments; the estimated cost was £64,000, exclusive of equipment. A building committee had been appointed and operations would be commenced at once, and so help to meet the unemployment.

Mr. A. B. Mitchell, F.R.C.S., in moving the adoption of the medical staff report, said that the figures, which were a "record," gave but little idea of the actual work done day by day; the medical staff had formed a high standard, and they were determined to keep it up; and he could bear testimony to the enthusiasm and energy with which the work was done. He threw out a word of caution as regards the public estimation of the x rays, which was not as simple as was often supposed; it was a highly specialized department, and required much careful and scientific study. The staff recognized with gratitude the liberality and readiness of the board of management to meet all requirements.

Dr. Calwell, in seconding, drew attention to the new department of metabolism, and said that, although started only a few months, it was already making itself felt, and was proving of great help in diagnosis and treatment. If it increased at a similar rate it would soon require laboratories, wards, and a kitchen for itself. He drew attention also to the necessity of a psychiatric clinic, which would cost nothing and would deal with those cases of incipient insanity, border-line cases, backward children, and the neuroses. Such out-patient departments, sometimes involving an arrangement with a mental hospital, were found in the Middlesex Hospital, at Cardiff, Birmingham, and elsewhere; the Maudsley Hospital was their type. Professor R. J. Johnstone, in moving

the re-election of the honorary secretary (Mr. B. M. Young) and of the honorary treasurer (Mr. Berrington), paid them a well deserved compliment for their interest in the hospital and their readiness on all occasions to help the medical staff.

### FREE STATE ARMY MEDICAL SERVICE.

The remuneration of medical officers in the army of the Irish Free State has been announced as follows:

	£	s.	d.
Lieutenant ... ..	1	0	0 a day.
Captain... ..	1	10	0 "
Commandant ... ..	2	2	0 "
Colonel ... ..	1,000	0	0 a year.
Colonel (while holding the rank of Deputy Director of Medical Services)... ..	1,250	0	0 "
Major-General Director of Medical Services ... ..	1,500	0	0 "

These salaries do not include allowances, which have not been yet fixed. At present medical officers are only engaged for one year. It is understood that when the end of the present civil war is reached the necessity for the present comparatively large service will cease, and officers will be appointed on a permanent basis at the remuneration already stated with allowances fixed on a peace basis.

Major-General M. R. J. Hayes, F.R.C.S.I., Director-General of the Free State Army Medical Service, has retired; he had occupied the position for eight months, having accepted the office temporarily to organize the service. His retirement, however, is very much regretted by the Irish profession generally, but more especially by the officers of all ranks in the Irish Free State Army Medical Service. The position which General Hayes was called upon to fill was a very difficult one, as he had to lay the foundations of his organization in the midst of a very violent civil war. It is stated that his successor will be Colonel F. J. Morrin, M.B., who has been in charge of the Corragh district for the past year. General Hayes and Colonel Morrin both served in France during the European war.

## India.

### THE RETRENCHMENT COMMITTEE.

LORD INCHEAPE and the other members of the Retrenchment Committee formally presented their report to the Viceroy on March 2nd, but copies are not yet generally available. The recommendations of the Committee are unanimous; the net reductions recommended amount to 19½ crores (£12,800,000). Of the total reduction more than 10½ crores is to be effected in military expenditure. The total reduction on expenditure on medical services and public health is put at nearly 1½ lakhs (about £9,000). The abolition of the separate post of Public Health Commissioner is recommended, and it is also advised that the directorship of medical research should be abolished, the duties being taken over by the director of the Kasauli Institute. It is recommended that the payment of research officers from central revenue should cease and that the grant-in-aid to the Research Fund Association should be discontinued. The association, it is stated, has accumulated 33 lakhs, derived from the Government contribution and earmarked for a new central institute. The interest on this, it is advised, should be used for the maintenance of medical research, which seems to imply that the proposal to erect a central institute at Delhi is to be dropped. The Financial Secretary has stated that the Government hopes to give practical effect to the recommendations of the Committee at an early date. In some preliminary comments on the report the *Pioneer* mentions that the inclusion of medical research undertaken in the interests of public health among the directions in which retrenchment can be effected on any large scale can only be regarded as false economy in the long run; any such suggestion should, it considers, be closely scrutinized. At the same time the need for economy is admitted, since for five successive years the budget has shown a deficit, and the reception of the report in India has been not unfavourable. It is estimated that the deficit for the year 1923-24 will be nearly 6 crores, although some of the reductions recommended by the Inchcape Committee have been embodied in the budget.

### RETRENCHMENT IN BENGAL.

The Bengal Retrenchment Committee has issued a report which makes some sweeping recommendations in regard to the public health service. The abolition of the school hygiene branch of the public health service is recommended, the



Committee considering that a special staff for school hygiene and the medical inspection of school children is unnecessary. A permanent assistant director for investigation into the progress of kala-azar is also believed unnecessary, a recommendation which apparently means that kala-azar field work in Bengal should be shut down. It is recommended that district hospitals and dispensaries should cease ultimately to be a direct charge on provincial revenues; the opinion is expressed that there is no reason why the Government should pay any part of the salaries of district health officers—which means, it may be assumed, the dismissal of the few existing health officers. The importance of increasing, and not diminishing, the work of the public health department in Bengal is, on the other hand, emphasized in an article in the *Statesman* (Calcutta) of February 15th. It is pointed out that what is needed in India is a modern health policy and better co-ordination of the responsible health authorities. The Director of Public Health of Bengal has repeatedly pointed out the need of improved sanitary administration in the province. Antimalarial work has been seriously hampered owing to insufficient staff, and much work remains to be done also to combat cholera, tuberculosis, beri-beri, kala-azar, leprosy, and other diseases. There is need also, it is stated, for extending propaganda work in public health throughout the province. Attention to industrial hygiene is urgently required; it has been shown that there are 680 registered factories in Bengal employing over 524,000 workers, which does not include hundreds of thousands of workers in tea-gardens, brick-fields, and other industries, nor in the vast number of minor occupations—in Calcutta alone, for example, there are over 500 printing establishments. There is, however, no staff available for the purpose of collecting information regarding industrial hygiene, as a preparation for taking the measures necessary to improve the health of the workers and the conditions under which they labour.

#### AMERICAN MEDICAL DIPLOMAS IN INDIA.

The Government of Bengal has issued a warning to Indian students against taking courses at a private institution to be established in Calcutta called "The International Medical College." This institution purports, it is stated, to train students for the M.B. and M.D. degrees of the Lincoln Jefferson University of Illinois, U.S.A.; the Bengal Government has pointed out that this university is not recognized by the General Medical Council of the United Kingdom, and that its degrees and diplomas cannot, therefore, be accepted by the Government as satisfactory qualifications for the practice of Western medical science.

## Correspondence.

### A HOSPITAL "MAINTENANCE" SYSTEM.

SIR,—I have to thank you for the friendly notice given in your issue of March 31st to my proposed "maintenance" system in connexion with the finance of our voluntary hospitals, and, with your permission, I will reply to certain points raised. They are three in number, and I will deal with them seriatim.

The first is the inquiry as to what is meant by the term "necessitous poor." The answer will not be found in any dictionary, for the expression, at any rate in Scotland, has a different meaning according as it is used by the Education, the Health, and the Poor Law authorities. It is, however, that of the latter that is implied in my pamphlet, for it was to aid that class that our voluntary hospitals were originally established, and my reply is that the expression means "persons who are eligible for hospital treatment in terms of the Poor Law." In other words, the "necessitous poor" are, as our Glasgow Royal Infirmary charter aptly puts it, those "labouring under poverty and disease." From personal knowledge and experience I am satisfied that in the present day 99 per cent. of the patients in our voluntary hospitals would not satisfy this Poor Law test, which would entitle them to free hospital treatment. That is why I state in the pamphlet that our voluntary hospitals are no longer carrying out the role for which they were originally established in the eighteenth century, the period when the first ones came into existence.

The second point in your article calling for notice is that it is difficult to make a sharp distinction between the two

headings of expenditure for maintenance of hospital and expenditure incurred for maintenance of patients. I fail to see how any difficulty can arise, seeing that the term "maintenance of patients" is distinctly limited to the cost of the food consumed by them and of the drugs, lotions, and surgical dressings used by them. The cost of the feeding of the hospital staffs is borne by the hospital and comes under its maintenance, so that there need be no confusion on this item. It is true that in the pamphlet the suggestion is made that the cost of the renewals of the ward feeding vessels and of the surgical dressing equipment might be considered as belonging to the maintenance charges against the patients, but it is such a small item that it may be omitted from them and be placed under the hospital maintenance expenses, and thus avoid any confusion. If this is done there is a clear and sharp distinction between hospital and patients' maintenance, and it is fully detailed in the pamphlet.

The third and last point alluded to in the article is the bearing that this proposed "maintenance" system has upon the present hospital policy of the British Medical Association. In my opinion it is outside it altogether, and in no way affects it. Reference to the resolutions and memorandum of the Association will show that the suggested "staff fund" will only materialize when the contributions from patients, or from any other sources on their behalf, are made to "the hospital maintenance fees." Under my proposed "maintenance" scheme nothing is paid to the upkeep or expenses of the hospital maintenance. It is a payment made to defray the expense of the food consumed by the patients and of the drugs, lotions, and surgical dressings used by them. I cannot contemplate the Association collectively advocating a claim for any share of such a payment, nor, I am sure, would members of the Association individually approve of such a step.—I am, etc.,

Glasgow, April 2nd.

GEORGE THOS. BEATSON, M.D.

### HOSPITAL POLICY.

SIR,—I have already agreed with the essentials of Dr. Fothergill's arguments (March 24th, p. 538), and support the Brighton resolution; but I remain unconvinced of error by his latest contribution and am not enamoured of his scheme for reform. Agricultural labourers furnish a large proportion of our hospital occupants and still form about one-fifteenth of the working population. They are quite unable to subscribe, in addition to their compulsory insurance, another 3d. a week against the comparatively remote contingency of in-patient hospital need. Many other workers receive small or irregular wage, and are equally incapable, while something like 10 per cent. are unemployed.

I cannot, therefore, accept Dr. Fothergill's estimate. He is evidently a convert to the so-called "Sussex," in reality Brighton and Hove, "Provident Scheme." I have studied it with care, and discussed it fully with Dr. Gordon in eighteen months ago, but was unable to recommend it to our hospital board. I am still of the same mind. Although this scheme has now been in operation for over two years, the financial position of the Royal Sussex County Hospital is quite deplorable, whereas of the eight hospitals in West Sussex where no such scheme is in operation only one qualified under the terms set out by the Hospitals Commission to obtain a grant on account of deficit. Again, out of a population in Brighton and Hove of 173,000, only 4,790 have even yet joined the scheme, and of these it is probable that a large number in other places would subscribe as much without expecting benefit, for their ordinary subscription list is particularly low, furnishing but 8 per cent. of their income, while ours yields 14.5 per cent., and 14 per cent. is the average for such hospitals. Again, although "from every side of the county has come tidings that 3d. a week was too much, the men simply could not pay it," and although even on a 3d. basis the scheme barely pays its way, despite the fact that no one can claim benefit who has not subscribed for twelve months, yet we find that the plea put forward that it is "not in any sense a charity" will not bear investigation, since nothing is allowed for the immense capital outlay on land, building, furnishing, and equipment of a large hospital. Only actual running expenses are catered for even in affiliated hospitals, and but £1 a week in others; yet these subscribers every one of whom is, if admitted, receiving charity in various degree, are taught to imagine that they are paying their full cost, remunerating the staff, and benefiting the institution in addition.

I believe that the great majority of hospital staffs is



Great Britain will decline to allow themselves to be roped into what is simply a glorified contract practice, having the drawbacks that there is neither free choice of doctor (for the doctors are limited to the staff) nor of patient (for the doctors must attend all eligible subscribers), and further that, if the scheme is really to succeed, it will require advertisement, louting, and systematic collection on a large scale, in competition with doctors perhaps equally capable not on the staff, and with hospitals outside the scheme. Moreover, I doubt extremely if the working and lower middle class will ever, except under such compulsion as can be exercised in large works or powerful unions, insure at adequate cost in large numbers against a mere possibility, especially so long as the uninsured can reap the same benefit. On the other hand, if compulsion is to be employed, it were far better done universally and equitably by municipal or Government intervention, while the refusal to admit the uninsured, however urgent his need, would be repugnant to public opinion.

Therefore I do not visualize that Utopia predicted by Dr. Fothergill, and while agreeing on other matters shall continue to believe that the only alternative to our present voluntary system, with its appeals to the charitable, is State or municipal hospitals, which most of us would avoid. For my own part, indeed, I regard that commingling of all classes towards a common beneficent object, that local patriotic pride and human interest of rich and poor together in their local hospital, which finds expression in the manner despised by Dr. Fothergill, and yields results so cogently set forth by Sir Anthony Bowlby in his evidence before the Cave Committee—that spirit I regard as not only unobjectionable, but entirely admirable, and to be commended as one of the best bulwarks left to us against those perilous forces tending towards class disruption and revolution which menace our national peace. Let us tread warily lest we lightly imperil a precious heritage, whether in search of some elusive Utopia or in mere pursuit of gain.—I am, etc.,

Chichester, March 25th.

G. C. GARRATT.

#### TREATMENT OF EARLY MENTAL CASES.

SIR.—Two letters on the subject which appeared in the JOURNAL for March 24th induce me to ask you to insert the following remarks. Both your correspondents mention the Maudsley Hospital in relation to the early treatment of mental cases. It is not perfectly clear from Dr. Goodall's letter whether he has safeguarded himself from being taken to the "Maudsley" or any similar institution in the deplorable event of his ever needing mental treatment. For the rest Dr. Goodall's letter is worthy of all acceptance. But Dr. White's letter clearly disapproves of such institutions as the Maudsley Hospital for the purpose of early treatment, and condemns all places of care of early mental cases where the patient may run any "risk" of being detained.

It is not questionable that there are many instances in which persons have shown the first signs of mental aberration and have very soon afterwards proved themselves to be in need of constant care and watching. For such cases, be they transitory or not, the attractive sanatoriums indicated, as Dr. White says, by "common sense" and apparently not subject to any approved authority, would be certainly unfitted.

Of course it is a well known fact that "mental" patients of all sorts and degrees dread the thought of being sent to a mental institution by whatever name it may be called. Equally, I deem, it is known that the near prospect of being thus treated will often contribute, or indeed lead directly to their sudden or more or less gradual recovery. Such cases include so-called "psychoses," "neuroses," and the conveniently styled category of *psychoneuroses*. More than twenty-five years ago, while in practice, I had several such cases, all apparently and rapidly cured for an indefinite time, and a few, which I was able to follow out for some years, where no recurrence of untoward symptoms took place. One of these was a case of an intensely introspective young woman with a voluminous knowledge of psychological and medical literature. After a long interview with her I informed her mother, in answer to a question whether the girl was incurable, that there was every prospect of recovery if she would let her come into a nursing home for about a week. I was told that she could not agree to this, partly because the girl would refuse to go, and partly on the score of expense. I then advised the mother to take her to consult a friend of mine who was then superintendent of an asylum, but not to inform her daughter further than that I desired to know my friend's opinion of her case. After I had communicated with him, the patient

was taken by her mother, but on arriving at the entrance the girl asked what the building was, and, though the mother told her the exact truth, she steadfastly declined to go further, walked away more actively than she had moved for many months, and very soon lost all her "psychoneurotic" symptoms. The symptoms were such as would, I think, have precluded any mental expert from sending the patient to any attractive sanatorium uncontrolled by outside authority, and necessarily unprepared to cope properly with sudden emergencies. I mention this case as it illustrates another aspect of the utility of mental hospitals, including, specially, of course, the Maudsley, in the possible treatment of early mental cases, and even of several who may never enter them. It cannot be doubted that relatives will be far more ready to take their patients to institutions like the Maudsley than to ordinary asylums, whether or no they may be admitted within.—I am, etc.,

London, W., March 25th.

H. BRYAN DONKIN.

#### SUGAR VERSUS ALCOHOL.

SIR.—I have read with interest your leading article on sugar versus alcohol (March 24th, p. 523) with respect to the reduction in their taxation. I trust, however, that the tax on sugar will not be reduced. Excessive consumption of sugar is now very common in England, and its influence in predisposing to diabetes mellitus is deserving of greater consideration. Excess of starchy food, or a diet consisting chiefly of starchy carbohydrates, probably does not increase the risk of diabetes. But, though diabetes often occurs in those who have not taken sugar in large quantities, it is probable that the excessive consumption of sugar greatly increases the risk of the disease. (I have given reasons for these opinions in articles on "The geographical distribution of diabetes,"<sup>1</sup> on "The etiology of diabetes mellitus,"<sup>2</sup> and on "The prevention of diabetes mellitus.")<sup>3</sup> Joslin has drawn attention to the marked increase of diabetes in the United States between 1900 and 1918, and points out that the yearly average consumption of sugar by each individual had greatly increased in this period. He remarks: "It is possible that the recent increase in the quantity of sugar consumed *per capita* in the United States has increased our number of diabetics."

Sugar is a luxury and not a necessity in food. If any articles of food have to be taxed there is no hardship in taxing sugar. So much sugar is now used in many articles of food, supplied in restaurants and hotels, that they are very distasteful to those who are not specially fond of sweet food. If any reduction of taxation is now possible in England, I think many readers will consider that a reduction of some other form of taxation (the income tax, for example) would be desirable before a reduction in the tax on sugar and alcohol.—I am, etc.,

Manchester, March 24th.

R. T. WILLIAMSON.

SIR.—All serious students will be grateful to you for the valuable article in the issue of March 24th. May I venture to suggest three points which emphasize some of the physiological differences in the action of these agents, which may help in the discussion the article will provoke?

1. The metabolism of sugar is under unique physiological control in the human body whereby excess within fairly wide limits is promptly and efficiently dealt with. By this means the blood sugar content is maintained at a remarkably uniform level, and the excess not needed for immediate purposes is stored as glycogen ready for future demands. Alcohol is not so controlled and it cannot be stored for future use.

2. Excessive ingestion of sugar may lead to a temporary alimentary hyperglycaemia or even glycosuria. If a second dose of sugar be given as the hyperglycaemia is declining it is followed by a much less marked reaction (Bang). Macleod, in referring to Bang's work, says: "It indicates that assimilation of sugar causes stimulation of the sugar-destroying functions of the body; the first absorbed sugar stimulates the metabolic functions." Here, again, the action of alcohol seems to be entirely different. Mellanby has demonstrated that a second dose of alcohol given eighteen and a half hours after the injection of 50 c.cm. leads to a higher concentration of alcohol in the blood, accompanied by a more profound

<sup>1</sup> Med. Chronicle, July, 1920.<sup>2</sup> British Medical Journal, 1921, 2nd, 1918.<sup>3</sup> Ibid., 1922, 2nd, 1918.<sup>4</sup> Ibid., 1922, 2nd, 1918.<sup>5</sup> Macleod in Physiological Review, American Phys. Soc., April, 1921.



intoxication. This is due, he claims, to the accumulative effect of the alcohol.<sup>1</sup>

3. With an excessive dose of glucose not only is the glyco-genic function stimulated to meet the demand for a uniform blood sugar content, but more glucose is oxidized, as evidenced by a rising respiratory quotient. Sugar has a specific dynamic action, alcohol has no such specific dynamic action; and, moreover, a high alcohol concentration in the blood not only limits its own oxidation, but also the oxidation of other sources of energy.<sup>2</sup>

These facts, coupled with many others, lie behind such a dictum as: "Throughout the body generally the presence of even a slight amount of undecomposed alcohol leads to a diminution of the chemical energy of the cells, which interferes with metabolism and may result in chronic disease. . . . The habitual consumption of alcohol in quantities which, though insufficient to produce any outward and visible signs of intoxication, are yet beyond the immediate oxidizing power of the cells, may end in playing havoc with the tissues."<sup>3</sup>—I am, etc.,

Beckenham, Kent, March 26th.

COURTENAY C. WEEKS.

#### INTRACAPSULAR EXTRACTION OF CATARACT.

SIR,—In the review of Nesfield's book on ophthalmic surgery (BRITISH MEDICAL JOURNAL for February 24th, p. 334) a statement occurs which I think should not be allowed to pass unquestioned.

It is stated that the suspensory ligament of the lens is "much tougher in Europeans than in Hindus. Hence the failure of European ophthalmic surgeons to obtain satisfactory results with the several intracapsular operations that have been evolved in India." I have extracted the lens in a number of Europeans in the capsule, and while I have met with tough suspensory ligaments in some cases, in others the operation has been as easy as it is possible to imagine. It must not be forgotten also that the suspensory ligaments of Indians are often very tough, as anyone who has extracted a few thousands of lenses knows from bitter experience. Also I think most experienced operators by the capsulotomy and allied methods have learnt by sad experience that the suspensory ligament of Europeans is often very fragile. If it were not, escape of vitreous would, I think, be less often seen in these operations even than it is. The strength of the suspensory ligament, though it may be a factor, is by no means the sole factor, nor in my opinion the chief one.

There are other reasons why European operators have not obtained more satisfactory results by Smith's operation. I mention this method as it, or some modification of it, has been very extensively practised, not only in India, but in America and elsewhere. In my opinion a very important reason why most European operators have not obtained more satisfactory results by this method is that it is a very much more difficult operation to learn than the older operations, and requires for its successful performance a much higher degree of technical skill. I speak with a large experience of both methods. To get the best results one needs to have more practice than the ordinary clinic of Europe affords to the individual operator. It is also necessary for the beginner to have a very skilful assistant. His training requires special experience which the operator does not usually possess, I have trained several and know the difficulties.

In spite of its difficulties, however, in addition to several American ophthalmic surgeons one European operator at least appears to have obtained satisfactory results with Smith's operation, for in the *American Journal of Ophthalmology* for 1920 (p. 726) E. E. Maddox reports a case in which he successfully extracted a cataract in the capsule in a patient who suffered from gout, myxoedema, and malaria, and who had lost the other eye after a cataract operation from intra-ocular haemorrhage. From private information I understand that Smith's technique was adopted.

It is certain that a cautious surgeon like Maddox would not have employed this operation in such a formidable case had his previous experience of this method not been such as to give him considerable confidence.

I am of opinion after many years of experience that much better results would be obtained by the ordinary operator if he knew how to select his cases for this operation, especially in the beginning. It is not easy I admit. If, for instance, one selects for the first operation a stout, nervous patient with

a prominent eye, escape of vitreous will be very likely to occur. If, on the other hand, one selects a thin, placid patient with a deep orbital cavity and a sunken eye, the operation will be found much easier. There are numerous other points which I cannot mention here for want of space.

Those of us who have had the great privilege of working with Colonel Smith know that he can usually recognize a difficult case, and that he would not allow an inexperienced pupil to perform the operation, no matter what his experience might have been of the older methods.

It is, however, not always possible to recognize such cases till the actual extraction of the lens commences. While Smith with his huge experience and great technical skill may be justified in extracting any lens in its capsule I believe others would do better, if not experienced, to lacerate the capsule if on trial the suspensory ligament is found to be very tough. When operating in India I always kept a sterilized cystotome ready in a separate receptacle in case it might be required, though I seldom had occasion to use it in cases which I had marked as suitable for Smith's operation.

Nesfield's operation is said by the reviewer to be simple. I do not wish to detract from its merit when I say that it is not so simple to perform as may appear from the description.

Finally, I would say that some opponents when passing judgement on intracapsular operations are apt to lose sight of the fact that loss of vitreous may occur in any form of operation for cataract and to pass lightly over the dangers resulting from lens matter left behind, the possibility of capsule being left in the wound to open the door to sepsis, and other drawbacks to the older operations.

I do not wish for a moment to underestimate the danger of loss of vitreous in any operation, but in a series of ninety-eight cases which I collected and published in 1903 I showed that escape of vitreous in intracapsular operations is apparently less serious than in capsulotomy operations, where it gets mixed up with lens matter. The average time which had elapsed after operation in these cases was three years. My subsequent experience has confirmed the opinion I expressed then, and I have had a large experience of both methods of operation, and have had special opportunities of observing the cases of other operators in India and in Europe.—I am, etc.,

A. E. J. LISTER, M.B., F.R.C.S.,  
Lieutenant-Colonel I.M.S.(ret'd.).

Amberley, Glos., March 16th.

#### PUBLIC EDUCATION IN CONTROL OF CANCER.

SIR,—The members of the Royal Society of Medicine have agreed that the public require education with regard to cancer, and that the Royal Red Cross is the body which should undertake this work. Mr. J. E. Adams (BRITISH MEDICAL JOURNAL, March 24th, p. 509) says that the Royal Society of Medicine is the headquarters of scientific intelligence in the medical profession, an observation with which one may courteously join issue. There is the Ministry of Health, surely.

The question many will ask is whether the excellent Red Cross Society is the best body to undertake this work. Surely not. To commence with, numerous local authorities have already sanctioned schemes put forward by their medical officers of health for the spreading of the light. Deptford's effort consisted in newspaper articles, the printing and distribution of literature on the subject, and a supply of pamphlets for each of the nine clinics held in connexion with ante-natal and maternity and child welfare centres.

Public health departments are clearly the best centres for the spread of information and advice as to prevention. By all means add thereto any ancillary aids to the desired end, but, mayhap, one may be pardoned for suggesting that public education regarding cancer and every other disease should be carried out with an even, insistent, and tireless reiteration to the facts by trained persons who are known to the people as the accredited and qualified representatives of the local authorities who hold the nation's hall-mark, the guinea stamp.

If the Red Cross Society takes on the work, who will supply the ammunition, the information to it, and how will the same be broadcasted? We already have Health Weeks, Baby Weeks, Rat Weeks, and, I understand, a "Pencil Week." Will a cancer week be the next to be added unto us? With the advent of infant welfare centres we have witnessed a steady fall in the infant mortality rate to its present comparatively reasonable proportions. The joint operations of the hard-working practitioner and his brother in

<sup>1</sup> Special Report Series, No. 31.

<sup>2</sup> Also BRITISH MEDICAL JOURNAL, August 5th, 1922.

<sup>3</sup> R. Hutchison, *Food and Dietetics*, 1922.



the health department has made this country the safest and the best to live in that the world has ever seen.

Could the Royal Society of Medicine do better than ask our splendid Red Cross Society to canvass for funds for those good men who are engaged in cancer and other research work? Would this not be better work than any cancer week—a rocket, a flare, and a silence?—I am, etc.,

CHARLES S. THOMSON,  
Medical Officer of Health.

London, S.E., March 26th.

SIR,—In the discussion at the Royal Society of Medicine on this subject (reported on page 509 of your issue of March 24th) no mention was made of the propaganda which has been carried out by the Central Midwives Board.

In 1908 a leaflet on "Cancer of the Womb" and subsequently a leaflet on "Cancer of the Breast" were framed at the request of the Board by its chairman, Sir Francis Champneys, and copies of these are placed in the hands of every midwife on passing the Board's examination, together with the rules. These leaflets lay stress on the earliest signs and—in leaded type—on the necessity of medical treatment without any delay. Other leaflets deal with ophthalmia neonatorum, gonorrhoea, and syphilis.

Taking into consideration the fact that these leaflets have been distributed to many thousands of midwives who are, in a sense, at the centre of action, the steps taken by the Central Midwives Board ought not to be ignored. I enclose copies of the various leaflets.—I am, etc.,

H. G. WESTLEY,

Secretary, Central Midwives Board, 1, Queen Anne's  
Gate Buildings, Westminster, S.W.1.

March 27th.

\* \* The leaflets on cancer are short and very clearly expressed. Both are endorsed, "May be distributed to the Laity as well as to Midwives."

#### IONIC MEDICATION.

SIR,—The gist of Dr. David Campbell's paper (March 10th, p. 409) is that only a small quantity of any drug could be introduced into the human body through the electric current, and that drugs so introduced enter the blood as rapidly as a hypodermic injection, have the same action, and are as rapidly eliminated. Local concentration and penetration of ions beyond the skin are also denied.

The quantity of an ion introduced electrolytically into the human body in a given time, by a given current, depends on its electrochemical equivalent and the relative speed of the ions which participate in the conduction of the current.

The electrochemical equivalent signifies the mass of matter associated with a unit charge of electricity, and was first measured by Faraday, and afterwards by Lord Rayleigh. That of iodine is 0.0013 gram per coulomb = 0.078 mg. per milliampère-minute. Therefore, in forty minutes a current of 200 milliampères would transport into the tissues 624 mg., or 9.62 grains of iodine. This is not a small quantity, and, far from being whisked off in the blood stream, it was taken up and metabolized by the cells of the body, only 146 mg. being excreted in twenty-four hours. It is this local effect that is desired in ionization.

A hypodermic injection has no local action and is carried away by the blood stream at once. But ions are active, carry a charge of electricity, are propelled by an electromotive force, and attracted by the opposite pole. They could travel with, against, or across the blood current in whatever direction the opposite pole is placed. The position of the latter determines the degree of ionic penetration and concentration. This pole is erroneously called the "indifferent" electrode in textbooks, and one is led farther astray by the instruction to place it at any convenient position. To obtain local concentration and penetration in the right direction the part under treatment should be included between the two electrodes so that ions would travel in the most accessible direction.

Results must vary according to the technique and are bound to be bad where the technique is wrong. Then the critic, like the mechanic who blames the tools, would be vehement in the condemnation of the treatment, and would even call it dangerous if the patient got burnt. Wonderful results are obtained with the right technique—the outcome of several years' experience which cannot be picked up from books.

Living tissues impregnated with saline solutions are electrolytes and conduct electricity. The electric current in living tissues consists of nothing but the double current of ions.

There is no other galvanic current to which Dr. Campbell attributes relief of pain, etc. When cocaine is ionized, is the anaesthesia due to the galvanic current? Is there no local concentration and penetration of the cocaine ions? There can be no current without the ions.

In the ionization of iodine, electrons from the generator enter the dissociated iodine atoms, and these iodine ions go through the glands of the skin and the liquids of the body. The atoms travel with their charges, and at the same rate; they are inseparable even if the ions pass from one liquid to another of different composition (Lodge). But on reaching solid conductors like muscles, nerves, ligaments, cartilage, bone, inflamed and thickened tissues, of different density and conductivity, the charges and the iodine atoms separate, but not before. The electrons get re-embodied in the atoms of the body juices, and there is an interchange of ions all along the path of the electrons to the opposite electrode, where again the ions become disembodied and are conducted along the wire. Each act of disembodiment and re-embodiment of the electrons means a modification of the ions and an adjustment of the electric equilibrium of the different tissues, particularly the diseased tissues. The body cells metabolize the iodine, the exhausted cells get recharged with electricity, germs are killed, toxins are neutralized, and healthy function is restored. With each treatment more and more iodine is unloaded along the path of the ions, and concentration and penetration are gradually increased.—I am, etc.,

London, S.W., March 19th.

CHARLES E. DE SILVA, M.D.

#### DERMATITIS AND DYED FUR.

SIR,—In my note, "Dermatitis from dyed fur," in the BRITISH MEDICAL JOURNAL (March 17th), I stated that the dye responsible for the dermatitis which has recently been so prevalent was probably a member of the paraphenylenediamine group.

Mr. Herbert Skinner, M.P.S., pharmaceutical chemist and analyst to the Royal Northern Hospital, was good enough to undertake the laborious and difficult task of identification of the dye, and has sent me a full report, of which the following is a short abstract:

The fur, cut away from the leather, yields nothing to distilled water. Dilute saline solution, alkalis, acids, and wool fat (if digested with it for a few hours), extract from the fur a coloured principle, which in its reactions and comparative tests accurately agrees with those described for the metaphenylenediamine base, which is one of those dyes stated by Dr. W. F. Castle, in his instructive letter (published in the BRITISH MEDICAL JOURNAL of March 24th, p. 535), to be in common use in dyeworks at the present time. A bichromate mordant appears to have been employed, and an ineffective technique at this stage is probably responsible for failure in fixation, proved by the ease with which the dye can be dissolved.

Mr. Skinner is satisfied that this dye is present in the samples of irritating fur submitted for investigation, and informs me that the meta-base is considered more poisonous to the skin than its better known isomer—paraphenylenediamine—which, according to Dr. Castle, is used for the deep black tones in certain types of fur. It is of considerable interest and significance to note that the dye which has been isolated is soluble in saline and wool fat, which have their analogues in the sweat and sebaceous secretions of the skin. Without such solubility it would have been a matter of great difficulty to establish a relation of cause and effect.

In justice to Dr. A. C. Roxburgh, who discusses the subject in considerable detail in your issue of March 24th, I desire to add that since my note was published I have met with several cases in which there was no oedema of the eyelids, and I should therefore elect to retract this symptom as pathognomonic of the specific reaction.

Such information concerning the place of production and issue as I have been able to obtain is so vague and conflicting that I have abandoned the attempt to determine it. This aspect of the problem is in any case one which is better left in official hands.—I am, etc.,

London, March 24th.

HENRY C. SEMON.

THE Filled Milk Bill, which previously had passed the United States House of Representatives, has been adopted by the Senate. It declares "filled milk" an adulterated article of food, injurious to public health, and states that its sale constitutes a fraud on the public. "Filled milk" is defined as any milk, cream, or skimmed milk, whether or not condensed, evaporated, concentrated, powdered, dried, or desiccated, to which has been added or with which is blended any fat or oil other than milk fat.



## Obituary.

T. J. CREAN, V.C., D.S.O.

MAJOR THOMAS JOSEPH CREAN, V.C., D.S.O., R.A.M.C. (retired), died in London on March 25th. He was the second son of the late Michael Theobald Crean, barrister, of the Irish Land Commission, and was born in Dublin in 1873. He was educated at Clongowes School, and in the medical school of the Irish College of Surgeons, taking the L.R.C.S.I. and L.R.C.P.I. in 1896. In 1902 the Royal College of Surgeons of Ireland conferred the Fellowship upon him in recognition of his distinguished services. In 1891 he received the Royal Humane Society's testimonial for saving life at sea. For three years—1894 to 1896—he was a member of the Irish International Rugby fifteen, and in 1896 went to South Africa with the British Rugby fifteen which toured in South Africa that year. He made that country his home, settling in practice at Roxberg.

When the South African war began he at once enlisted as a trooper in the Imperial Light Horse, and a few months later, in March, 1900, he received a commission as captain in that corps. In June, 1901, he resigned his combatant commission to become surgeon-captain in the same corps. He was wounded at Elandsagte, at the very beginning of the war; he was wounded again, this time dangerously, at Zygorskloof, in December, 1901, when he was awarded the Victoria Cross "for great gallantry in attending to the wounded under a heavy fire at 150 yards range, although himself wounded, only desisting when he received a second, and what was thought to be a mortal, wound." He served with the Imperial Light Horse from the beginning to end of the war (1899–1902), taking part in the operations in Natal in 1899, including the actions at Elandsagte, Rietfontein, and Lombard's Kop, and the defence of Ladysmith, the relief of Mafeking, operations in the Transvaal, including the action at Frederikstad, and operations in the Orange River Colony. In addition to the V.C. he received the Queen's medal with five clasps, and the King's medal with two clasps. At the close of 1902 he accepted a regular commission as captain in the R.A.M.C., but resigned it four years later when he joined the Special Reserve of the R.A.M.C. He then started practice in London.

When the great war began, in August, 1914, he rejoined for duty as a major, and served with the first cavalry brigade in France in 1914–15, being mentioned in dispatches in the *London Gazette* of June 22nd, 1915, and receiving the D.S.O. from the same date. In 1916 he served in France as commanding officer of the 44th Field Ambulance, and subsequently as medical officer in charge of the hospital in the royal enclosure at Ascot. In 1905 he married Victoria, daughter of Don Tomas Heredia, of Malaga, and had one son and one daughter. He received the Arnett memorial gold medal in 1902.

ELFRIDA SPENCER, B.A., M.R.C.S., L.R.C.P.,  
House-Surgeon, Victoria Hospital for Children.

THE death of Miss Elfrida Spencer, on March 17th, came as a great shock to all connected with Charing Cross Hospital and its Medical School. Miss Spencer, the only daughter of Mr. Walter G. Spencer, senior surgeon to the Westminster Hospital, and honorary librarian to the British Medical Association, was educated at the Cheltenham Ladies' College and at Bedford College for Women, London. In 1914 she passed the Final B.A. (London) examination with second class honours in classics. Her arts course concluded, her active mind then turned towards medicine. After a preliminary year at science she entered as a student at Charing Cross Hospital Medical School. From the outset of her career she was recognized as a student of considerable promise, and her sunny disposition rendered her most popular with her fellow students, while her versatility and organizing capacity made her a leader in all the social activities of the school. Miss Spencer obtained the Conjoint qualification in 1921, and was fortunate in holding, in succession, the three resident posts of house-physician, house-surgeon, and obstetric officer at Charing Cross Hospital.

We are indebted to Sir HERBERT WATERHOUSE for the following appreciation: As Miss Spencer was my house-surgeon I can testify to her skill, kindness, and zeal. She had a man's judgement and a woman's charm. To illustrate the all-roundness of her knowledge, I can recall asking her, within a few minutes, the derivation of a Greek word, the

branches of a cranial nerve, and the treatment she would adopt in a difficult surgical case, and receiving from her an intelligent answer in each instance. She proved herself a worthy daughter of one of the most learned of surgeons. Recently Miss Spencer was appointed house-surgeon at the Victoria Hospital for Children, where, for the second time, she became my house-surgeon. Only a few weeks after she had taken up her new duties a severe attack of influenza, followed by pneumonia, prematurely ended her useful life, every moment of which she had lived to the full. She leaves behind her a record of work well done and a gracious memory in the minds of her many friends.

ALFRED GEORGE SIMMINS, M.B., B.S. LOND.,  
M.R.C.S., L.R.C.P.

It is with deep regret that we record the death, within a few hours of each other, on March 23rd of Dr. A. G. Simmins and his wife. Both had recently been attacked by influenza, which in his case was followed by pneumonia and in that of his wife by heart failure.

Dr. Simmins was a student at Guy's and Westminster Hospitals and in 1914 took the diplomas of M.R.C.S. and L.R.C.P. On the outbreak of war he gave up a post under the Metropolitan Asylums Board and was gazetted temporary surgeon lieutenant R.N. on August 5th, 1914, and served throughout the war. He served on the battleship *Bellerophon*, the hospital ships *Plassy* and *Karapara*, and for a year at the R.N. Hospital, Haslar. While in the navy he took the M.B., B.S. degrees of the University of London, and also, in 1918, contributed a paper on the value in diagnosis and prognosis of the Arneith polymorphonuclear neutrophile leucocyte count to the *Journal of the R.N. Medical Service*.

After being demobilized in 1919 he acted for a time as medical registrar at the Westminster Hospital, but decided to go into general practice. He succeeded Dr. Croly at Hornsey and in a few years had built up an increasing practice there, and in 1921 he started a practice in the City, where he acted as medical examiner to the Canada Life and other insurance companies. He was also assistant medical officer in the venereal departments at the Royal Northern Hospital and the Hospital for Sick Children, Great Ormond Street. All this professional work—carried on for a considerable time without any real break or holiday—proved too much for his physical strength. He had been attending a number of patients with influenza when he himself contracted the disease, and in spite of all the devoted care and attention of his medical advisers and of his wife—herself a trained nurse—he succumbed to pneumonia. Mrs. Simmins, who had also been attacked, insisted on sharing the duties of nursing her husband. Towards the end she knew that he was dying and the shock of this, added to her own illness, was so great that she passed away in her sleep early on March 23rd, while her unconscious husband lay almost breathing his last in an adjoining room. They were laid to rest together at the New Southgate Cemetery on March 27th amid many signs of sympathy and respect.

Dr. Simmins was only 32 years of age and his wife a few years older. They leave three children—a boy of 6, a girl of 4, and a boy of 15 months; the two youngest are totally unprovided for. As will be gathered from the recital of Dr. Simmins's activities he was a man of great energy and industry, and under a quiet and unassuming demeanour he possessed considerable force of character. During the few years that he was in practice he had earned the gratitude and affection of his patients, both private and hospital. He was, moreover, a man of considerable originality, introducing several new details in the method of treating the venereal patients in his clinics. His death at such an early age is a real loss to the profession, for had he been spared he would have made a name for himself. Our sympathy is extended to the relatives and particularly to the three orphaned children.

Dr. WILLIAM THOMSON of Hull, who died on March 23rd at the early age of 39, was a native of Thornhill, Dumfriesshire, and was educated at the University of Edinburgh, where he graduated M.B. Ch.B. in 1907. In 1910 he took the F.R.C.S. (Edin.). After serving as house-surgeon at the Hull Royal Infirmary he succeeded to the practice of Dr. Parkin. During the war he did temporary work at the Hull Royal Infirmary, to which institution he was appointed surgeon in August, 1919. Dr. Thomson was a member of the East York Division of the British Medical Association. He is survived by his widow and a young son.



## Universities and Colleges.

## UNIVERSITY OF LONDON.

PROFESSOR A. V. HILL, Sc.D., F.R.S., who, as already announced, succeeds Dr. E. A. Starling in the Jodrell chair of physiology at University College, was educated at Blundell's School and Cambridge (Trinity College). He was third wrangler in 1907, and in 1909 took a first class in physiology in the second part of the Natural Science Tripos. He was University lecturer in physical chemistry from 1914 to 1919, and afterwards University lecturer in physiology. During the war he was director of the Anti-Aircraft Experimental Section of the Munitions Inventions Department and a member of the Inventions Committee. Since 1919 he has been professor of physiology of Manchester.

The chair of physiology, declared vacant; the salary is £800 a year. The chair must be received not later than May 19th, should be sent to the Academic Registrar, University of London, South Kensington, S.W.7.

The Senate will hold a reception for the sixth triennial congress of the Société Internationale de Chirurgie, which is to meet in London in July next.

The presentation for degrees will be held at the Royal Albert Hall, Kensington Gore, on Thursday, May 3rd, at 2.30 p.m. A programme of music will be provided by the Trinity College of Music.

## UNIVERSITY OF LIVERPOOL.

THE following candidates have been approved at the examinations indicated:

**FINAL M.B. AND CH.B.—Part I (Pathology):** C. P. Allen, A. Ashworth, P. D. Barling, T. Bellis, E. C. Feno, T. A. Clarke, H. A. Cole, R. Cotter, L. A. R. Evans, M. Fisher, F. F. Fuller, G. A. Garrett, M. Godwin, W. J. Griffiths, L. F. Henry, F. C. S. Hinsbeeck, S. Howard, Enid M. Hughes, Bertha H. Irvine, R. C. Jones, E. Miles, D. H. Mills, J. R. Oddy, A. Oerovi z, E. R. S. Owen, P. Strelitz, A. C. Terry-Thompson, J. J. du Toit, B. J. van de S. de Villiers. **Part II (Public Health, Forensic Medicine, Toxicology):** J. M. Brodriek, G. E. Church, R. Y. Dawbarn, J. C. D. Hammond, Clara M. V. Gleave, D. C. G. Haulon, W. F. Jones, T. S. King, W. J. Laird, C. Sharp, N. Weinberg. **D.P.H.—Doris M. Cassidy, E. R. Peirce, G. H. Potter.** **DIPLOMA IN TROPICAL MEDICINE—D. Basu, J. C. Cruickshank, Winifred I. Doherty, J. Elson, R. N. Raja, C. F. White.** Dr. J. C. Cruickshank has been recommended for the Alan H. Milne Medal.

## UNIVERSITY OF ABERDEEN.

THE spring graduate on ceremony took place in the Mitchell Hall, Marischal College, on March 28th.

Among the recipients of the honorary degree of LL.D. were Sir George Makins, G.C.M.G., C.B., consulting surgeon to St. Thomas's Hospital, and Dr. William Mackie, Fellow and past vice-president of the Edinburgh Geological Society and a medical practitioner of Elgin.

The following were the principal prize winners in the Faculty of Medicine:

Gold Medal in Anatomy: W. Marshall. Keith Clinical Surgery: A. Lyall. Shepherd Principles and Practice of Surgery: R. R. Trail. Dr. James Anderson Gold Medal and Prize in Clinical Medicine, etc.: A. Lyall. Matthews Duncan Gold Medal in Obstetrics: W. Gunn. Alexander Ogston Prize in Surgery: W. J. Ogilvie.

## CONJOINT BOARD IN ENGLAND.

THE Committee of Management of the Examining Board in England of the Royal Colleges of Physicians and Surgeons has prepared a revised synopsis of the examination in pharmacology, practical pharmacy and materia medica, drawn up by the examiners. It will come into force at the examination in October next.

The Maudsley Hospital has been added to the list of hospitals recognized for instruction in mental diseases for the diploma in medicine. It has also been decided that a candidate for this diploma who acquires himself in biological medicine, but fails to pass the discretion of the examiners be allowed to present himself for re-examination only in the subject in which he failed. The regulations have been altered also so as to allow the appointment at an institution for mental diseases to be a whole-time appointment; hitherto the appointment must have been a resident one. The Manchester Eye Hospital has been added to the list of hospitals recognized for the diploma in ophthalmological medicine and surgery, and the Calcutta School of Tropical Medicine and Hygiene for six months' course of instruction for the diploma in tropical medicine and hygiene.

The Cairo, and the Co. and Hospital, on his report recommending that the examinations and course of education should continue to be recognized by the Royal Colleges for another year. The Committee, however, proposes to make some recommendations to the Minister of Education of the Egyptian Government based on Mr. Waring's observations. The suggestions relate to the extension of the period of instruction in chemistry, physics, and biology with the subject of English, the cataloguing of the pathological museum,

the creation of additional house appointments, the provision of additional facilities for clinical instruction, and the general administration of the Government has expressed an instruction and examinations in the medical school conducted in Arabic, to be supplemented by courses given by the English professors in English. It is considered that the effect of this change will be to create two standards: (a) the course of study and examination in Arabic, and (b) a higher course of instruction and examination in English.

The Committee expressed the unanimous opinion that the Royal Colleges should definitely lay it down that the continued recognition of the school will be dependent upon instruction in all subjects of the curriculum being given in English concurrently with or supplementary to the instruction in Arabic, that the examinations to be recognized by the Royal Colleges shall be conducted in English only, and that courses of study and examinations in Arabic alone will not be given any recognition whatever.

The Committee's recommendations were approved.

## SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have passed in the subjects indicated:

**SURGERY.—K. C. Chock, M. K. El Khadem, M. A. Lawson, M. Mc. W. Lopez.** **MEDICINE.—M. A. Lawson.** **FORENSIC MEDICINE.—G. K. Butterworth, M. Hawke, C. M. John, M. A. Lawson.** **MIDWIFERY.—G. K. Butterworth, K. C. Chock, M. Hawke, H. Hirst, M. A. Lawson, H. M. White.** The diploma of the Society has been granted to Messrs. G. K. Butterworth, K. C. Chock, H. Hirst, M. A. Lawson, and H. M. White.

## The Services.

## ROYAL NAVY MEDICAL CLUB.

THE annual dinner will be held at the Trocadero Restaurant, Piccadilly Circus, W.1. on Thursday, April 19th, at 7.30 p.m. for 8 p.m. Members who wish to be present are asked to inform the Honorary Secretary, Royal Navy Medical Club, 68, Victoria Street, S.W.1, not later than seven clear days before that date.

## Medical News.

THE April course of museum demonstrations at the Royal College of Surgeons of England will commence on Friday, April 13th, at 5 p.m., when Sir Arthur Keith will demonstrate madder stained specimens illustrating the process of bone growth. On Monday, April 16th, at the same hour, Professor Shattock will give a demonstration of specimens illustrating repairs of fractures. The demonstrations, which are open to advanced students and medical practitioners, will be continued on Mondays and Fridays up till and including April 30th.

A COURSE (the sixth) of lectures and practical courses of instruction for a diploma of psychological medicine has been arranged at the Maudsley Hospital, Denmark Hill, S.E. The first part will begin on Tuesday, May 1st, at 2.30 p.m., when Sir Frederick Mott will give the first of eight lectures on the anatomy of the nervous system. Dr. Henry Devine will begin a course of eight lectures on psychology on Thursday, May 3rd, and Dr. Golla a course on the physiology of the nervous system on May 4th. The courses will be followed by practical instruction and demonstrations. The second part of the course will begin in October next. The fee for the two courses is 15 guineas, for each course separately 10 guineas. Further particulars can be obtained on application to the cashier, London County Council, County Hall, Westminster Bridge, S.E.1.

A COURSE of lectures for medical practitioners on mental deficiency, supplemented by a course of clinical instruction, will be held from May 23rd to June 2nd, under the auspices of the University of London Extension Board in co-operation with the Central Association for Mental Welfare. The course is intended more especially for those medical practitioners who are engaged as certifying officers to local authorities under the Mental Deficiency Act, 1913, as school medical officers or medical officers of institutions, or who are otherwise definitely concerned with mental defectives. The course will be based on the requirements of the syllabus for the University of London Diploma in Psychological Medicine, and the university will grant a certificate of attendance to those who attend the whole course. The fee is three guineas, and full particulars may be obtained from Miss Evelyn Fox, University Extension Department, University of London, South Kensington, S.W.7.

THE *Yorkshire Evening News* states that two gifts, each of £150,000, have been made to a fund for cancer research, for which an appeal is about to be issued. The sum to be asked for, it is stated, is two million sterling.



SIR DAVID BRUCE, K.C.B., F.R.C.P., F.R.S., has been nominated by the Council as President of the British Association at its meeting next year in Toronto.

Medical Association, 15, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853,

THE TASTE OF POTASSIUM BROMIDE.

WE have received an inquiry as to the best method of disguising the taste of potassium bromide, especially when it is given to children, but it is not easy to give a satisfactory reply. According to Martindale's *Extra Pharmacopœia*, syrup of ginger, liquid extract of glycerin, or preparations of rose or vanilla are among the best. Special flavouring preparations of glycerin to which the name of glyl and syl respectively are given are advised; a glyl flavoured with rose, or a syl flavoured with vanilla. The preparations mentioned amount to solutions of essential oils in glycerin or syrup respectively. In response to an inquiry as to whether he had anything to add to what is published in his book, Dr. W. H. Martindale mentions bitter orange and pepper-mint. Potassium bromide must not, of course, be taken in solid form, but it has been administered mixed with sodium chloride as a table salt to be taken with meals.

"J. C. G." bought in 1916 a 16-h.p. four-seater for £255, and during the last financial year a 12-h.p. four-seater for £395; the first car was then sold for £29. What its present cost would be is unknown. If it may be assumed for this purpose that the present cost of a 16-h.p. would not be less than £395, "J. C. G." is entitled to his actual out-of-pocket expenditure—that is, £395 - £29 = £366—as an expense of the "last financial year."

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 108.

NOTE.—It is against the rules of the Post Office to send letters addressed either in initials or numbers.



# An Address ON THE NEW MIDWIFERY: PREVENTIVE AND REPARATIVE OBSTETRICS.\*

BY  
THE LATE J. W. BALLANTYNE, M.D., F.R.C.P.E.,  
F.R.S. EDIN.

LECTURER ON MIDWIFERY AND GYNAECOLOGY (TO WOMEN STUDENTS)  
IN THE UNIVERSITY OF EDINBURGH; PHYSICIAN IN CHARGE  
OF THE ANTE-NATAL DEPARTMENT IN THE EDINBURGH  
ROYAL MATERNITY HOSPITAL, ETC.

THE "new midwifery" is not entirely new; hardly anything ever is quite new. It is easy to think that one is looking at a new scene whilst all the time it is an old one viewed from a new angle or in a new light. It is so to some extent with what one may call the "new midwifery"; but the new view-point has brought with it changes so momentous as to justify careful consideration and to warrant the suggestion of novelty contained in the title.

## *The Old and the New.*

The obstetrician in the past went to his midwifery case determined to prevent, so far as in him lay, difficulty and danger to mother and child; and before he said farewell to his two patients he endeavoured to repair, as far as he could, any damage done to either or both of them. He was practising preventive and reparative obstetrics. There was, however, one great point of difference in the "old" as compared with the "new" midwifery. In the "old," prevention and repair were attempted practically within the time limits of the labour itself, whereas in the "new" prevention begins away back in the early months of pregnancy, if not earlier still, and reparative measures pursue the patient without regard to any time limit and solely with respect to complete restoration of the damaged parts to their original structural and functional efficacy. In the past it has been far too common for the medical attendant to concentrate his whole attention upon the supremely critical hours in which the child is passing through the mother's pelvis in the act of birth; it has been his pride, and also his sole endeavour, to step promptly forward when labour has been evidently not proceeding normally, to "sense" with a flash what has been wrong, and brilliantly, by ingenious manual or instrumental or operative devices, to correct what has been amiss, presenting triumphantly to an impressed father and a relieved mother a more or less uninjured baby. At the end of a fortnight or three weeks he has been in the habit of saying farewell to his patients after a somewhat perfunctory inquiry into their fitness. By preventive measures founded upon ante-natal supervision and treatment the obstetrician of the present, and still more of the future, is and will be able to gain a less dramatic, a less spectacular, but an infinitely more comfortable and less exacting victory in labour; and by a careful and continued "follow-up" of his patients (mother and infant) he will be enabled to return them to the ranks, so to say, of the general population intact and fit for what the future may demand of them.

In two directions the changed outlook upon midwifery has been revealing itself; it has thrown new responsibilities upon maternity hospitals, upon medical practitioners, and upon obstetric teachers; and it has demonstrated that great possibilities of life-saving (both maternal and foetal) and of disease- and disability-preventing come with its adoption. It brings new obstetric responsibilities, but it also promises new obstetric triumphs. The promises, further, have been already, in some measure and in certain places, redeemed; successes have been realized.

## *New Obstetric Responsibilities.*

In a paper read at the Conference of the Royal Institute of Public Health at Plymouth last June (1922)\* I endeavoured to enumerate the new responsibilities laid upon maternity hospitals and their staffs by the application of the principles of preventive and reparative obstetrics. I had no difficulty in making out a somewhat formidable list both on the ante-natal

and post-natal sides; and I further showed that by reason of certain recent legislative enactments maternity hospitals were brought in to share in the burden of caring for the public health of the country in a much more definite fashion than ever before. It has always been the honourable tradition in the medical profession that responsibilities once clearly proven must be accepted; and that immediate measures be taken to fulfil all consequent obligations without argument and certainly without any preliminary bargaining as to remuneration. As soon as it is demonstrated that the maternity hospital is responsible, not only for the welfare of women in the hours of labour and in the days of the puerperium, but also in the months of pregnancy and in the time that immediately follows their departure from the institution, just so soon is it incumbent upon the hospital staff and the board of directors to provide the care required even if it entail a remodelling of the whole work and a marked expansion of the premises.

## *New Obstetric Provisions.*

To carry out the new commandment in obstetrics certain new provisions have to be made. This is primarily a matter for the maternity hospitals and the maternity nursing homes; but it has to be accepted by the general practitioner and worked into the everyday routine of private obstetric practice as well. If there is benefit in the new system of pre-natal and post-natal supervision and management it must necessarily be made available for all.

Stated first in terms of the maternity hospital, the new provisions involve the setting up of the ante-natal clinic in the hospital, with smaller and more distinctively preventive ante-natal clinics in the districts from which the patients of the institution come, and along with the staffing of these with doctors, midwives, and nurses. They involve the establishment of the pre-maternity or ante-natal ward or wards in the hospital, for the treatment of the expectant mothers who are so ill as to require such accommodation, or who, in view of special interference in labour, need to be under supervision of a daily kind. They mean the development of the venereal diseases clinic for infected expectant mothers and of the venereal diseases ward or wards for the treatment of the same women and their infants both from the obstetric and the medical standpoints. The maternity hospital must accept responsibility for these patients and for this specialized work; but, having done so it will soon discover how full of life-saving and health-restoring possibilities it is. It may yet be discovered that it will be profitable to set agoing a dental clinic also for the expectants. The provision of a small pathological laboratory for diagnosis and, generally speaking, for what is called "side-room" work is an essential part of the equipment of the new maternity hospital.

These are the provisions for the ante-natal part of the hospital, and they must be accompanied by a corresponding expansion of the obstetrical and nursing staffs. Even more pressing is the establishment of a post-natal department where the "follow-up" work can be carried on. This will involve the giving of mothercraft instruction to women, especially to primiparous women, before they leave the hospital with their babies; the setting up of a neo-natal or prematurity ward for the delicate infants; the provision of reconstructive beds for the repair of all injuries or weakenings of the generative organs in women who have been confined in the hospital—a small gynaecological department in fact; and the carrying on of post-natal clinics for mothers and babies who have left the hospital both in the hospital and also in the districts from which these patients come. These additions may seem to constitute a formidable list of new burdens to be borne by the maternity hospital of the future, but several things must be remembered; first, when the maternity is part of a general hospital many of the provisions needed will be found in other departments—for example, in the gynaecological, dental, pediatric, and medical or surgical wards; secondly, in the case of the maternity hospital which is self-contained, the same accommodation and the same staff will to some extent serve for the ante natal and the post-natal work; and thirdly, some assistance, both financial and administrative, may be looked for from the public health authorities, especially in respect of the mother and child welfare and the venereal diseases work. The last statement suggests the acceptance of the new responsibilities of the maternity hospital as a part of the general public health system of the country.

The obstetric hospital has been gradually brought from a

\* This address was delivered before the Nottingham Medico Chirurgical Society on January 3rd, 1923. In preparing it for the press the author omitted a number of passages. The proofs were revised by him shortly before his lamented death.



more or less isolated position into the general scheme of the provisioning of the country with hygienic agencies, known as the Ministry of Health and the Scottish Board of Health. The points of contact have been established through the National Insurance Act with its maternity benefit, the Notification of Births (Extension) Act, the Midwives Acts for England and Scotland, the setting up of civic and country schemes for mother and child welfare work, the launching of schemes for the prevention and treatment of the venereal diseases, and the development of a Child-Life Investigation Department in the Medical Research Council's activities. No maternity hospital at the present time can afford to stand aside from these movements. It is foolish to grumble about the State's invasion of the territory of the obstetric specialist, or to ask what it is doing *dans cette galère*. The pregnant, the parturient, and the puerperal woman and her infant have passed under the aegis of the public health authorities just as surely as the fever patient, the tuberculous patient, the insane, and the school child.

#### The General Practitioner's Part.

The general practitioner cannot, any more than the maternity hospital, afford to stand aside from new obstetric responsibilities; he, like it, must adapt himself to new conditions. Many practitioners who before the war were carrying on practices with a large proportion of obstetric cases found on their return from military to home medical work that a far-reaching change had occurred in midwifery. As a result of *inter arma* legislation he discovered, not without some feelings of dismay, a whole series of mother and child welfare agencies at work under the care of women doctors and midwives; he heard what was to him almost a new language being spoken, full of references to ante-natal work, clinics, supervision, prevention, prophylactic rectifications, maternity preventive centres, pre-natal nurses, pre-natal wards, neo-natal mortality, intra-natal deaths, and the like. At first it seemed as if in this system there was no place for him, and in some cases he simply surrendered what had always been an exacting, often an arduous, and never a very lucrative branch of family practice. If, however, he looked more closely into the matter, he modified his first opinion and saw that there was a field of usefulness for him, too, in the new midwifery; he found that expectant mothers were ready to be watched over in the time of their expectancy and did not regard as unnecessary preliminary measurements, examinations, and preventive treatment; he found that through the strict enforcement of the Midwives Acts doctors were frequently being called in for the deliveries which were in one detail or another abnormal and were acting in a sense as obstetric consultants; he found that health authorities, medical officers of health, town councils, and the like, now with an informed interest in obstetric affairs, were ready to help him in the emergencies of his midwifery practice, were prepared to set up maternity homes where he might send and himself conduct difficult cases, and were willing to aid him in every endeavour to stamp out or, better, prevent sepsis and syphilis and gonorrhoea in connexion with pregnancy and labour; he found that there were openings for him in connexion with the staffing of ante-natal clinics and dispensaries and small maternity hospitals, and he discovered that even the health visitor, when properly supervised by experienced certified midwives, might be of use in his practice by persuading patients to consult him in their pregnancies than they had ever been in the old days when ante-natal work was almost unknown. There was, perhaps, still an undervaluation of the money values of such increased ante-natal work, but there was a growing sense that the doctor, as he was now being remunerated on a higher scale and in abnormal and less and less in the puerperal woman. With all this the general practitioner was not at work for some time as a midwife with its attendant extensions did not see the necessity of this rearrangement of his practice.

In order fully to incorporate the new midwifery into general practice it would seem that certain changes must be effected.

In the first place, the new outlook must be recognized in medical education, both undergraduate and post-graduate. There have of late been signs of life among the dry bones of the established medical curriculum, and there have been whispers that the General Medical Council was considering how existing arrangements for and methods of teaching obstetrics might be improved. There has been talk of intensive courses, during which the medical student shall, say for three months, devote himself exclusively to midwifery, gynaecology, and diseases of infants and young children; it is to be hoped that if any such system be introduced the ante-natal and later post-natal aspects of midwifery will be sufficiently represented. Great good will follow if the Council will no longer ask for practical training entirely in the management of labours and puerperia, but will include attendance for a certain period on the ante-natal and post-natal work of hospitals, and possibly prescribe the number of clinics on these matters necessary for graduation. The new distribution of the emphasis which would thus be brought about would soon be reflected in the teaching, both theoretical and practical: lectures on the supervision of pregnancy and the intelligent preparation for labour would be expanded and would deal less with generalities and more with practical details, for there is great truth in the old Latin tag *generalia non pungunt*; the ordinary clinics in the hospital would be interspersed with a proportion dealing with ante-natal diagnosis and treatment and with post-natal repair and supervision; and the textbooks would not contain special chapters on ante-natal and post-natal work, but would reveal in every page the new obstetric ideal that all diseases of pregnancy be cured in pregnancy and without the artificial ending of pregnancy; that all labours be prepared for during pregnancy and conducted in accordance with discoveries then made; and that all structural repairs rendered necessary by labours be carried out before the sufferers were returned as healthy into the population. It is a rather startling fact that at present the curriculum prescribed for midwives lays more stress on ante-natal work than that for medical students. Thus the certificate of training necessary for the pupil midwife before she can appear for examination requires that she shall have "undergone a course of training in midwifery (including ante-natal instruction) extending over a certain period." Unfortunately this is not reinforced by the requirement that the candidate shall have "been instructed and supervised by a qualified midwife or nurse in the management of labour and delivery." The instruction and opportunities would have to be given in post-graduate teaching to enable the graduates of the past few years to make themselves familiar with recent advances in ante-natal and post-natal methods and aims.

In the second place, general practitioners who include midwifery in their daily work must extend the sphere of their responsibility to their obstetric patients. They must regard themselves as in charge from the earliest weeks of the gestation—from the time, in fact, when the expectant mother puts herself in their keeping. They will, further, encourage their patients to come as soon as the first monthly period has been passed; and they will find that such a request will not be disregarded so often as it would have been a decade ago, for there is a better appreciation in the public mind of the value of preventive measures in the hygiene of pregnancy and labour. At the first visit the doctor will make it his business to find out his patient's past obstetric and general health history, and, more especially if she be a primipara, he will arrange for seeing her in her own home, where he will carry out a complete examination. Possibly, if he be an up-to-date man and have a large clientele, he will set aside a certain hour or hours each week for a sort of private ante-natal clinic at his own house to which expectant mothers will be invited. At any rate he will at this first interview give his patient the same care and thoroughness of examination as he would a male patient coming to him for life insurance. Instead of merely putting her name and address and the probable date of her delivery down in his engagement book and letting her go with perhaps a vague admonition to return if she felt ill, or to send for him when her pains came on, he will make her realize not only that he has now assumed full responsibility for her well-being, but that she also is under promise to keep him informed at regular intervals of her condition (even if she detect nothing unusual and to return or send at once if she feel anything unusual. He will initiate



upon her that he is anxious to foresee and prevent dangers to herself and her unborn infant, and also to alleviate the discomforts and minor ailments of child-bearing. He will, in a word, attempt to establish at once the same degree of confidence and reliance between his patient and himself as was formerly only gained after he had attended her in a confinement and seen her safely through the puerperium. He will of course find himself described by some as a faddist, and his precautions branded as unnecessary and meddlesome; but some day he will have an honourable revenge in the rarity in his practice of the nerve-racking eclampsia and the unexpected and profoundly unsatisfactory midnight craniotomy.

\* \* \* \* \*

There will remain, however, the difficulty of adequate remuneration, a difficulty which can hardly be hoped to disappear entirely in the present generation. In time, as the general practitioner is able to offer greater security from suffering and danger in pregnancy, it will become customary to reward his or her services by fees, and so to break down the habitual attitude of mind which regards the obstetric remuneration as given for attendance in labour and the puerperium. Similarly it will be recognized that the doctor who does reparative gynaecology some weeks after the confinement deserves an adequate reward for so doing. In the meantime the general practitioner who is unable to render such aid as a gift may rightly look around for help from those who are supplying it with the assistance of Government grants. In any case in which the patient is unable to give more than the ordinary fee for attendance at labour and in the lying-in time the doctor may and ought to make use of such ante-natal clinics and mothercraft classes as may be available in the district. He may send his patient to the former for a report on her obstetric fitness, and to the latter for instruction in the provision of a layette and in the method of caring for an infant; he may do this and yet quite fairly retain his personal attendance on the woman in her labour. He may even send her to a hospital possessing ante-natal beds if she suffer from such maladies of pregnancy as hyperemesis, pre-eclamptic symptoms, chorea, etc., without severing his connexion with her. He does similar things when he makes use of the hospital or Government provisions for fevers, venereal diseases, maladies of the ear, nose, throat, eye, skin, etc., and yet remains the family medical attendant. Of course, all these new procedures cannot be looked for in a day, and they will come sooner in the city than in the rural practice. No great rearrangement of general practice such as is outlined can be carried through easily; it takes a clever engineer to insert new wheels and escapements into a complicated machine which cannot be stopped for a moment for the alterations to be made. But a beginning can be made at once; and it may be confidently expected that, as soon as the public know that child-bearing can be rendered safer and more comfortable to mother and child by the "new midwifery," the transformation will come with a rush.

\* \* \* \* \*

In such ways as have been indicated the general practitioner may come into the new midwifery: he will find it in undergraduate and post-graduate teaching, and he will be able to graft it into his daily work and make use of the various public health facilities. But in the third place he may make it an important part of his practice, specializing in it to some extent. To do this effectively he must begin at the beginning.

He must throw himself with special vigour into the midwifery part of his training, attending ante-natal clinics, even if they be not compulsory for graduation purposes; and he must familiarize himself with the public health aspects of the matter, visiting infant centres, seeing mothercraft work, learning the office work, and generally getting a grasp of the links which bind obstetrics and hygiene together. Then, after graduation, he will endeavour to gain the post of house-surgeon to a maternity hospital or home with an ante-natal department, or he may serve as resident medical officer in the ante-natal department and so gain a still more intimate and extensive knowledge of preventive midwifery. He will be wise also to study specially the venereal diseases in their relation to obstetric cases, clerking at venereal disease clinics, and studying the ways in which the presence of these maladies complicate midwifery, and the way in which the presence of a pregnancy modifies the diagnosis and treatment of the venereal diseases. He will not neglect the laboratory side of ante-natal work, and will carry out post-mortem examina-

tions on stillborn infants and those dying a few hours or days after birth. He will be wise, too, to make a special study of some little known part of the subject and publish the results of his research; he will find abundant problems to investigate. He must next try for the appointment of physician in charge of a small preventive ante-natal clinic in the town or district in which he settles; and, of course, he will be ready and willing on all occasions to go to the aid of certified midwives when they are faced by abnormal labours, pregnancies, and puerperia in their practices, or when they find themselves helpless in connexion with disease or deformity in newborn infants. In process of time he may come to be a lecturer to pupil midwives, and, later still, an examiner of them under the Central Midwives Board. In these ways, and in others which local circumstances and personal qualifications will suggest and render easy, he will find himself in possession of a practice in which midwifery, not of the old haphazard sort, but preventive and reparative, will form a large and important and a growingly remunerative part. Finally, he may devote himself entirely to obstetrics, entering the ranks of the specialists by the way of the new midwifery; he will make a better and in every sense a more fully equipped consultant by reason of the mode of approach by which he has reached his goal.

In sketching the general practitioner's part in the new midwifery I have purposely referred to him as a man. I have done so because the woman doctor is already in most cases alive to the possibilities of the situation produced by the union of obstetrics with hygiene; it fell to her during the war to carry on in this as in other branches of medical practice, and naturally enough she entered and occupied the new positions and appointments which came into being under mother and child welfare schemes and such novel developments. She does not, however, claim the new midwifery as her exclusive possession, although her sex and, more particularly, personal merit when it is conspicuously present, will undoubtedly mark her out as a suitable candidate for such posts as inspector of midwives' work and practice under the local authorities who are administering the Midwives Acts, as teacher of pupil nurses training for the diploma of the Central Midwives Board, and as physician in charge of ante-natal and post-natal clinics. There is a need for the younger men also in this sphere of medical practice, if the obstetric and gynaecological consultants of the future are to build up their reputation on the sure foundation of acquaintance with all the details of their specialty.

#### *The Gains of the New Midwifery.*

It is time now to enumerate the advantages which may be expected from the wide adoption of the new midwifery; they can be gauged from those which have already followed its partial and local employment.

There is, in the first place, the removal of anxiety and dread from the minds of expectant, parturient, and puerperal patients. It is no longer sufficient to say to such women, "Child-bearing is a natural if somewhat painful business." Their reply is, "That may be, but it has for us women, as you admit, a mortality which is not negligible, and for our infants (unborn, in birth, and newly born) a death rate which is the highest for any time in life." They may add, "Do you wonder that we who know and have seen are anxious?" To use a modern phrase, what are we doctors going to do about it?

Preventive and reparative obstetrics put the doctor alongside of his or her patient throughout the whole course of her time of anxiety. With the etymology of obstetrics (Latin, *ob*, over against, and *sto*, I stand) in his thoughts the doctor stands beside his patient during the nine months of her pregnancy as well as in the ten or twelve hours of her labour, and he does not leave her till she is restored and as fit (or fitter) for the next child-bearing as she was for the one which is just finished. Are there those who will say that such being watched over will make women apprehensive and nery? The answer from all who have any knowledge of ante-natal and post-natal work is clearly in the negative. Such intelligent and informed supervision removes nervous apprehension, worry, and strain. One can see the restoration of confidence taking place at the ante-natal clinic. The doctor listens to the woman's story, guiding her by useful questions; he does not at once say, "You'll be all right," for no sensible woman would be content with so hasty a prognosis on so limited an inquiry; but he carefully makes his examination, explaining sometimes why he is doing this or that, and then, if he find all well, he says so frankly and unreservedly,



and names a date for the patient's return to be seen again. The woman who has entered the clinic nervous, anxious, scared even, leaves it with a brisk tread and a smiling face; in the doorway she turns for a second to say brightly, "Then I'm all right; many thanks; and I'll come back in three weeks"; and the physician replies, "Yes, or at any time sooner if you feel anything, however slight, which either hurts you or is strange to you." There is another little volley of "Thank you's" from the door and the interview is over. The patient goes home happy and strengthened, and the physician goes over the facts, checks them, and tries to forecast the probable course of things, so as to be prepared at all points for whatever may emerge as time goes on.

Similarly there is removal of anxiety at the other end of the reproductive cycle. When the mother of three or four months' standing visits the post-natal clinic with her baby she and he will be carefully examined; if her organs have returned to the normal in position and in function, if suckling is going on satisfactorily, if the infant has attained the proper weight, and if there are no signs of disease in either of them, then it is a great relief to the mother to be told so. She may have questions about the future to ask, and it will be an ease to her mind to have them answered by one who has the knowledge to make the answers worth having.

There is, in the second place, a great gain from the new obstetrics in the removal of much discomfort, amounting in many cases to suffering. I doubt whether anyone who has not been in charge of an ante-natal clinic has any idea of the sum of inconvenience and malaise borne by pregnant women even in cases describable as normal; and post-natal "follow-up" work is revealing similar conditions in the months which follow many deliveries. A great deal of this suffering is removable, and much of it need not occur at all under proper supervision. Some time ago I made an analysis of 500 women attending the ante-natal clinic at the Edinburgh Royal Maternity Hospital. I found that 210, or 42 per cent., of them complained of no trouble, whilst 258, or 51 per cent., suffered from minor ailments, and 32, or 6 per cent., were gravely incommoded or seriously ill. Further inquiry among the 42 per cent. who did not complain elicited a great deal of inconvenience which was being quietly accepted as necessarily bound up with child-bearing. Of course one has to remember that this clinic served as a sort of clearing house for the dispensaries and preventive clinics in Edinburgh, and took its share also in the care of the many abnormal cases which are always being sent into hospital: doubtless the proportion of suffering will be less in other clinics and in other neighbourhoods. It can be safely said that not one of the 258 women suffering from minor ailments but was the better for her visit or visits to the clinic.

A third gain has come from the adoption of ante-natal supervision and treatment; it has as yet come only in part, and its full extent cannot yet be accurately gauged. I refer to the early and much more satisfactory treatment which can be given to the dangerous complications of pregnancy, such as the toxæmias, syphilis, abortions, and heart disease. In order to obtain this gain in its fullness the ante-natal clinic alone is of small value; an ante-natal ward, with beds and medical and nursing staffs, and if possible a small laboratory, is essential. With these things it is, in my opinion, almost impossible to set a limit to the usefulness of ante-natal prevention and cure. The same conclusion will be reached for post-natal morbid states when similar provision has been made after labour. The time has come now when it is no longer necessary to write in textbooks about so many of the serious maladies of pregnancy: "This is a very dangerous complication of pregnancy; its cause is hardly understood, and in many cases the best treatment is the induction of abortion, done early before the mother's strength is exhausted." The "best" treatment is that which sacrifices a foetal for a maternal life. The hospitalization of pregnant patients has wrought a marked change in the outlook, and the "best" treatment now is to get the case of hyperemesis, or pre-eclampsia, or pyelitis, or heart disease in pregnancy into the ante-natal beds of the hospital as quickly as possible. Having got her there the best powers of diagnosis must be applied, and the most rational treatment, founded on the diagnosis, must be administered; and these things must all be done with the new ideal in sight all the time. The new ideal is to cure the disease which complicates pregnancy, or so to ameliorate it that the pregnancy may continue and a living

child be born to a restored mother. Under the new obstetrics one writes down the so-called therapeutic induction of abortion as a failure, not as a success; no result can be called a success in which one of two persons is sacrificed for the other. It is not claimed that therapeutic foetocide can be avoided in every case, for there are still cases of pre-eclampsia which pass relentlessly on to convulsions, and of hyperemesis which defy all treatment short of termination of the gestation; but it is asserted that, with the new ideal in full view, with the disease under observation early in pregnancy, and with the appliances (diagnostic and therapeutic) of a fully equipped ante-natal department at command, the number of failures will rapidly fall.

There can be as yet no limit set to the possible therapeutic triumphs of an ante-natal department with ante-natal beds and a competent and devoted staff. When such departments have been widely provided the general practitioner will probably find that it will be for his pregnant patient's benefit and for his own ease of mind to send his serious cases of gestation complications into them, just as he sends his fever cases into hospital and his insanity cases into an asylum. Even if he decide to treat them at home under his own care, he may feel sure that with good nursing they will in many instances react to treatment, and, at any rate, he will have less anxiety with them when they fall into labour than he would have had if they had received no supervision and treatment from him in their pregnancies.

A fourth great gain in the new midwifery will be, and already is, the increase in the number of normal labours due to ante-natal work, and of normal pregnancies due to the post-natal work. Both these results will follow, and, after all, post-natal supervision and treatment is simply the ante-natal care of the succeeding pregnancy and confinement. The principle of prevention of danger and difficulty which is beginning to permeate obstetric practice is already calling forth a sort of humorous protest from the staffs of hospitals, to the effect that the ante-natal department is seriously lessening the total amount of operating at labour. Certainly the timeous application of measures decided upon after a reasoned scrutiny of all the conditions discovered during pregnancy will lead to a restriction of some varieties of operative interference and an expansion of others; craniotomy, for instance, will give place to Caesarean section on induction of labour.

The restriction of abnormal labours will make wholly for the welfare of both mother and child. Many instances might be given of its mode of production; a few must suffice. As everyone knows, pelvic presentations, especially in primiparae, are a source of danger to the infant; if they do not greatly increase the mother's risks they do, by their tendency to cause stillbirths, disappoint her wishes, depress her spirits, and retard her recovery. In all first labours and in most later ones the discovery of a breech presentation means by the new midwifery the performance of cephalic version by external manipulations, aided when necessary by the use of an anaesthetic. Similarly, transverse lies and face presentations should be turned as soon as they are detected at the ante-natal clinic. By the application of towel pads, as suggested by R. C. Buist, right and left occipito-posterior positions of the vertex may be almost certainly converted into the corresponding anterior positions, with immense relief to patient and doctor when labour comes. This is no small advantage to the general practitioner. Who would not willingly give a few minutes in pregnancy to the rectification of a posterior position rather than spend strenuous hours in labour on the delivery of a foetal head lying persistently posterior? A rectification in time saves stitching a perineum and endeavouring, often unsuccessfully, to resuscitate an asphyxiated infant. Then, again, the detection of a pelvic contraction in pregnancy, its exact measurement, and the periodical estimation of the relation of the size of the foetal head to it, will enable the obstetrician to choose in good time and to prepare for the best method of delivery at or before the full term. In one case it may be safe to leave the birth to the natural efforts aided by moulding of the foetal head; in another induction a month before term will be best; and in yet another the Caesarean section will be preferred. In any case the labour will be approached after a full and reasoned consideration of all the factors involved. We shall in the future hear less of the case in which the natural efforts were found after



These fistulae are found in front of the sterno-cleido-mastoid muscle, from the sterno-clavicular articulation to the external auditory meatus. These are the first and fourth clefts, the second and third being found between these points. They extend towards the pharynx or oesophagus. The opening may be internal, external, or both. I have never met with a complete fistula. Bland-Sutton says the length of these fistulae varies from 2 to 5 cm., and are lined with ciliated epithelium, or by skin containing sebaceous glands. A case



## Hunterian Lectures

ON

MAN'S POSTURE: ITS EVOLUTION  
AND DISORDERS.

GIVEN AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

BY

PROFESSOR SIR ARTHUR KEITH, F.R.C.S., F.R.S.,  
CONSERVATOR OF THE MUSEUM.

[Abstracts.]

LECTURE V.—POSTURAL MODIFICATIONS OF THE  
PELVIS, PERINEUM, AND GROIN.

NATURE in her evolutionary creations has often, like modern statesmen, to effect a compromise between contending interests. I may cite the human pelvis as an instance to illustrate my meaning. The pelvis has a locomotory interest: it is an extremely complex lever by which the muscles of the hip and buttock balance the weight of the trunk on one or on both lower limbs. Then it has a visceral interest; it has not only to contain certain organs, but must also give suitable attachment to the musculature which supports the contents of the abdomen. It has a spinal interest in that it affords the chief base for the musculature of the vertebral column. It has an obstetrical interest, having to be so framed in women as to give a safe passage to the child at birth. It has to give attachments to the external genital organs and to the terminal parts of the rectum and urethra. Even the most hypercritical of anatomists and surgeons agree that Nature has combined these contending functional interests in the pelvis of man with the utmost ingenuity. No one has been able to suggest an improvement on her design, and yet the fact remains that in modern civilized communities pelvic defects, among which I would classify hernia and prolapse, are very common.

*Are Hernia and Prolapse to be Reckoned as Postural  
Defects?*

Are we to say, then, that Europeans and peoples of European origin are more liable to hernia and to uterine prolapse than more primitive peoples, such as the aborigines of Australia, because the European body is less perfectly adapted to the upright posture? I think not; the Australian aborigine spends his days amidst conditions very similar to those for which early man was evolved, while our conditions of living and working are of recent development, and very different from the aboriginal kind. We shall be wise to search in these modern conditions of life for the factors which contribute to our liability to hernia rather than to lay the whole blame on postural imperfections of our bodies. Two of these modern factors solicit the attention of medical men. The first of these is the states of high pressure which arise within the abdominal cavity of modern labourers during violent effort, as in lifting heavy weights, or in the physically weak during fits of coughing or of straining at stool. On standing up the pressure on the floor of the pelvis, taken from within the passive rectum and registered on a mercury manometer, will be found to vary from 15 to 25 mm. so long as we stand still, but the moment we attempt any arm movement, particularly if we bend down and seek to lift a heavy weight, the intra-pelvic pressure, as registered on the manometer, instantly rises to the neighbourhood of 80 to 100 mm. If the effort is made suddenly the initial rise is much greater—reaching as much as 150 mm. In all such movements the visceral contents of the abdomen are compressed within the envelope of the postural musculature and seek out the weakest points in the containing walls; they act as water-hammers. No one will deny that modern civilization has increased the abdominal strain for labouring men and women.

*Probable Effects of Errors in Diet.*

Then there is another modern factor at work, to which attention has been already drawn. In modern communities visceroptosis is common; we cannot explain this postural displacement of the abdominal viscera except by supposing that the reflex mechanism which controls the supporting musculature has become damaged. Such damage to the musculature of the abdominal and pelvic walls must increase the liability to pelvic prolapse and to hernia. But when we have made all allowances for these two factors—increased

intra-abdominal stresses and disordered action of the parietal musculature—the fact still remains that the modification of man's pelvis to answer the needs of plantigrade progression has weakened the pelvic walls, particularly in the regions of the groin and of the pelvic outlet.

*Defence of the Pelvic Outlet.*

The defensive structures of the outlet of the human pelvis are represented by the levator ani muscles and certain fascial and ligamentous structures. The human type of pelvic floor is not peculiar to man; it is found in all members of the orthograde group of primates—in the great anthropoids, in the gibbons or small anthropoids as well as in man. It may be called the orthograde type of pelvic floor and was evolved with the appearance of the orthograde posture. Reasons have already been given for deriving the earliest orthograde forms from a pronograde ancestry. Now in all pronograde apes, whether the tail be long or short, its root is made to serve the purpose of a perineal shutter. It was, as we shall explain, the evolution of the orthograde pelvic floor which led to the coccygealization of the tail. An external tail had disappeared from the orthograde stock long before the human form came into being.

*The Pronograde Defence.*

We can best realize the extent to which the defensive mechanism of the pelvic outlet underwent a postural transformation if we compare the pelvic structures of a pronograde ape, such as a macaque, with the same parts in the orthograde gibbon. However short the tail may be, it will be found to have its own proper muscles—muscles which rise from dorsal and ventral aspects of the sacrum and have the power to extend, flex, and move the tail from side to side. On the ventral or perineal aspect of the second, third, and fourth vertebrae of the tail are small V-shaped or chevron bones to which the guardian muscles of the pelvic outlet are attached. The guardian muscles of the outlet—which become modified to form the levator ani muscles of the orthograde pelvis—are arranged in two pairs. The median pair—the pubo-caudal muscles—arise within the whole length of the symphysis pubis, and, leaving between them a narrow chink through which escape the urethra, vagina, and rectum, run backwards to the chevron bones beneath the base of the tail. The lateral pair—the ilio-caudal muscles—arise from the brim of the pelvis and pass to the chevron bones of the tail. These muscles have fascial sheaths, so have the pelvic viscera; muscular and visceral sheaths fuse at the chink of exit. The arteries and nerves passing to the pelvic viscera are clothed with connective tissue sheathing to guard them from being strained when the floor yields. Thus the pronograde pelvic outlet is guarded by muscles to which the pelvic viscera have fascial attachments.

In the horizontal gait the pelvic outlet is the highest point of the abdominal cavity; when a human patient is placed in a similar position—on elbows and knees—the pelvic pressure becomes negative. But if the patient strains or attempts to rise the intrapelvic pressure at once mounts up. It is so in the active pronograde monkey. When preparing to jump it will be observed that the muscles which guard the outlet of the pronograde pelvis immediately depress the root of the tail and close the outlet. In defaecation the tail is raised, the median intermuscular chink is lengthened; the pubo-caudal or guardian muscles then act between two fixed points—the pubis and base of the tail.

*Shedding of the Tail.*

Conceive for a moment what would happen were a pronograde monkey to assume the orthograde posture of a gibbon. The lower end of the column, formed by the visceral contents of the abdomen, would then come to rest on the guardian muscles of the pelvic outlet—the levatores ani. The muscles would then contract and close the pelvic outlet by depressing the root of the tail; so long as the animal maintained the orthograde posture the muscles would have to keep contracted and the tail depressed and immobile. The pubo-caudal and ilio-caudal muscles have thus become postural in function when an upright position is assumed, and the depressed tail has become, except for its basal part, a useless structure. Now when a structure becomes useless it disappears; we do not know the process which Nature uses to get rid of useless structures, but we do know that the tail of the tadpole withers when the animal passes into the frog stage, and that the shedding of the tail is dependent on a



full action of the thyroid gland. We are certain, at least, that with the first stage in the evolution of the orthograde posture the external tail disappeared; the basal vertebrae became vestigial or coccygealized. The coccyx of the gibbon is more reduced than even that of man; it has reached its most atrophic form in the orang.

#### *The Orthograde Pelvic Floor.*

With the coccygealization of the tail the pubo-caudal and ilio-caudal muscles of the pronograde pelvis became spread out to form a supporting muscular hammock, but still attached to the vestige of the tail. Man's pelvic floor is an ancient heritage; it came into being with the evolution of the oldest orthograde type.\* Not only have the attachments and arrangement of the pelvic muscles been modified to suit the assumption of a new posture, but the nerve mechanisms which control these muscles must also have become modified.

#### *Evidence of the Former Existence of a Tail.*

What evidence have we that the tailless pelvic floor of man and of the orthograde apes was evolved from one which was tailed and pronograde in type? Our evidence is most complete as regards man. Children are occasionally born with true tails; in the sixth week of development the human embryo has a free projecting tail, containing nine to twelve segments; by the twelfth week the terminal three or four vertebrae have been absorbed, and a dimple on the rump marks the point at which the free tail has sunk below the surface. Most significant of all is the presence in the tail of the human embryo of vestiges of the chevron bones, which give attachment to the muscles of the pelvic outlet in pronograde monkeys. We cannot explain the vestiges of chevron bones in our bodies, nor of a caudal lobe in the liver, nor of the azygos lobe of the right lung, unless we suppose that there was a pronograde stage in man's ancestry.

#### *Evolution of the Human Perineum.*

The outlet of the human pelvis is a diamond-shaped space, made up of rectal and urethral triangles. The posterior, rectal, or ischial part of the outlet is old; the anterior, urethral, or pubic part of the space is new. In pronograde monkeys the ischial tuberosities come almost into contact; the whole outlet in them represents only the posterior part of the outlet of the human pelvis; only a rudiment of the pubic part of the space is present. In the gibbon the ischial tuberosities and rami are as in pronograde apes, but in the orang, chimpanzee, and more especially in the gorilla, the ischial tuberosities do not meet and there is the beginning of the subpubic space which becomes so marked a feature of the human pelvis, particularly the pelvis of European women. In anthropoids the perineum is placed on the dorsal surface of the body; the roomy outlet of the pelvis looks backwards; the symphysis forms the lowest part of the pelvis. The levatores ani enter into the formation of the posterior wall of the pelvis rather than form a floor for it. In the human pelvis the posterior part of the outlet has been diminished in size and strengthened in its framework (1) by a bending forwards of the apical part of the sacrum and a strengthening of the vertebrae of the coccyx; (2) by a strengthening of the great sacro-sciatic and small sacro-sciatic ligaments. These ligaments are present only in orthograde primates. But if the human pelvic outlet has been strengthened posteriorly it has been weakened anteriorly by the opening out of the subpubic arch. Also the symphyseal part of the human pelvis has been tilted upwards, in the direction of the umbilicus; it comes to occupy a higher level, taking the coccyx as a guide or mark, than is the case in man's nearest allies, the great anthropoid apes. These changes have brought the human vulval orifice towards the anterior or ventral surface of the body. They have also brought the levator muscles into a more horizontal position so that in man they form a pelvic floor designed to support the abdominal contents.

#### *Pelvic Supports Strongest in Man.*

At this point I cannot forbear giving a quotation from the writings of John Hunter.† "The contents of the human pelvis," he wrote, "adhere to the sides by a much greater extent of surface than in any other animal. The intention of this is perhaps to prevent a protrusion of these parts (the

womb, the bladder, the rectum, and bowel) from the weight of the viscera above, in the erect posture of man." Since the above passage was written, some one hundred and fifty years ago, we have learned that these pelvic adhesions are almost equally extensive in the orthograde primates. All have wide adhesions, fascial unions, and vascular supports, but in strength and toughness they reach their climax in man. These adhesive supports came with the evolution of the orthograde posture. In all pronograde forms only part of the bladder and uterus lie within the pelvis. In the human infant, as in the young of anthropoids, the pelvic viscera are situated as in pronograde apes; but in the adults of anthropoid, as of man, bladder, uterus, and ovaries have sunk within the cavity of the pelvis. A natural visceroptosis takes place at the lower end of the abdominal cavity of all orthograde primates as adolescence is reached.

#### *The Dimensions of the True Pelvis.*

We are apt to think of the human pelvis as being exceptionally capacious. The conjugate diameter of the pelvis of the gorilla is often double that of the human pelvis; in the chimpanzee the conjugate is half as much again as the human. In transverse width the true pelvis of the gorilla attains human dimensions, while in the chimpanzee it falls short. In depth the anthropoid pelvis is the greater and its outlet the more roomy. In them there is no pelvic bar to the birth of big-headed progeny. And yet, in spite of their orthograde posture, they do not seem to suffer from the forms of uterine prolapse to which women are so liable.

#### *The Weak Point of the Female Perineum.*

Why, then, are women, particularly women of European stocks, so liable to uterine prolapse? The weakest point in woman's pelvic floor is represented by the vaginal passage; the vaginal canal, like the inguinal and femoral canals, may become the site of a hernia. It is not the mere presence of the vaginal passage which makes a woman liable to prolapse; the rectal or anal passage would be equally weak, did it not possess strong muscular coats guarded by efficient sphincters. The vagina has neither strong muscular coats nor an efficient sphincter. In the anthropoids this passage is no better protected than is the human one, yet it does not become the site of prolapse. No doubt the opening up of the subpubic space and the tilting up of the pubic part of the pelvis to bring the vulva towards the ventral surface of a woman's body has weakened the vaginal and vesical areas of her pelvic floor. But the chief causes of woman's liability to prolapse have to be sought for, as is the case in all hernial formations, in the high and varying degrees of pressure generated within the abdominal cavity in consequence of the plantigrade posture. As already pointed out, when we sit or stand the column of abdominal viscera becomes the core within a compressing cylinder of postural musculature. Every movement of the arms, every cough or strain, sets going a multitude of water-hammers within the abdominal and pelvic cavities which search out the weak points in the surrounding walls. Just over the vaginal passage is the *perineal membrane*; every intra-abdominal impulse sets at the vaginal exit. At the upper end of the *cervix* of the uterus; it too responds to intra-abdominal pressures and strains, beating downwards into the passage. It is the continual repetition of small forces, more frequently than the sudden application of a great effort, which wears down the vaginal defence.

In cases of uterine prolapse, several of which I have had an opportunity of examining after death, I have found the muscles of the pelvic floor elongated but not atrophied. The ligamentous supports had become stretched; the pelvic structures had been forced outwards. Yet, I think, it will be found that prolapse would not have taken place if the musculature of the pelvic floor and the musculature of the vagina and supporting tissues of the uterus had been normal in tone and possessed the reflex reactions of health. There is a great lack of any real evidence on this point, but of this there can be no doubt—the idle and luxurious are just as liable to these infirmities as are women who have to perform heavy labour.

#### *THE EVOLUTION OF THE HUMAN GROIN.*

We now turn to the human groin to see if our knowledge of its evolution can throw any light on its two weak points—the inguinal canal and femoral ring. In all primates, in

\* For fuller details see Peter Thompson's *Myology of the Pelvic Floor*, R. H. Paramore's *Hunterian Lectures*, and also Keith's *Embryology and Morphology*, fourth edition, 1921.



consequence of an elaborate series of developmental or growth processes, parts of the abdominal cavity containing the testes are extruded and come to occupy a position in the scrotum. In pronograde monkeys the peritoneal passage, although very narrow, remains open; in orthograde primates it usually becomes closed; but even in man, in whom the process of closure is most complete, the canal remains unclosed in 30 per cent. of newly born children. In all primates, then, there is a breach in the musculature of the groin caused by the descent of the testes or of the round ligament. In all there is a second breach in the groin caused by the passage of the great blood vessels from the abdominal cavity to the thigh. The vascular aperture of the groin must vary in size; at times the vessels—particularly the vein—are greatly distended; at other times they are partially collapsed, thus giving a potential space for the escape of abdominal contents. In man the femoral vessels are of exceptional dimensions in consequence of the massive development of his thighs; hence in him the vascular apertures of his groin are large. It is not the presence of an inguinal canal or femoral ring which makes the human groin exceptionally liable to become the site of hernia, for these apertures are a common possession of the whole order of primates.

#### *The Groin of Apes.*

The human groin is one of the most distinctive features of man's anatomy; it is in a class by itself; in only one animal do we find a tendency towards the human form, and that is in the gorilla. If we did not possess some of the intermediate stages it would be difficult to believe that the human groin had been evolved from a pronograde form, such as is seen in the commoner monkeys. In monkeys the infraumbilical part of the belly has a narrow keel-like form terminating posteriorly at the sharp projecting symphysis pubis; on each side is the long narrow furrow or fold of the groin, separating the abdomen from the flat inner surface of the thigh. The two groin furrows form a V-shaped arrangement, the limbs of the V ending above at the anterior superior iliac spines, which are buried in the flanks. In the fold of the monkey's groin can be felt the particularly long anterior edge of the ilium, offering a firm line of attachment for the musculature which controls the apertures of the groin—the lower parts of the internal oblique and transversalis muscles. The groin is further strengthened by the fact that the external oblique muscle has no insertion to the iliac crest, but expends its strength on rendering tense the structures round the apertures of the groin. The whole arrangement makes up a most competent sphincteric mechanism; although the peritoneal passage to the scrotum remains open, escape of the abdominal contents is very rare. Further, these guardian muscles are under a reflex control.

#### *The Orthograde Groin.*

With the evolution of the simian orthograde posture the form and structure of the groin underwent surprisingly little change. In the gorilla we find a premonition of the changes which have transformed the human groin. The first of these is the extension of the crest of the ilium in an outward and also in a slightly forward direction. The fibres of the external oblique muscle, which rise from the lower ribs, no longer sweep to the groin but are inserted to the anterior end of the extended iliac crest; there is also the first appearance of the inguinal (Poupart's) ligament, formed out of the tendinous fibres of that part of the external oblique which is inserted to the crest. Further, in the gorilla the anterior border of the ilium, lying along the fold of the groin, has become relatively short. In man these changes have reached a climax; the crest of the ilium has become extensive and has undergone a marked bend forwards; the external oblique has gained a powerful insertion to the crest, and Poupart's ligament has become a strong and differentiated fibrous bridge between the anterior superior iliac spine and pubic spine. Lastly, the anterior border of the ilium has been reduced to a little more than a third of the primitive length seen in great anthropoids; the long iliac border which gave so secure an origin for the guardian muscles of the groin has gone. The lower parts of the internal oblique and transversalis muscles have now to seek a less advantageous origin from a new base—namely, Poupart's ligament. The folds of the human groin have been shortened and opened out, and thus assumed a wide U-shaped form. The lower abdominal region has become flattened in front.

All these changes have weakened the defensive mechanism of the human groin. To understand the meaning of these changes one has to remember that the pelvis is made up of a series of levers, which serve in balancing the body on the thigh. The climbing habits of the great anthropoids demand long and powerful pelvic levers; to suit man's plantigrade needs, to balance the body quickly and easily as he walks, short pelvic levers with short-fibred but powerful gluteal muscles become necessary; hence the transformation of his pelvis and shortening of his groin. It is not the orthograde posture which weakened the human groin but the transformation of his pelvis to suit the needs of plantigrade progression. As we have already seen, plantigrade progression is necessarily attended by high degrees of intra-abdominal tension. Modern methods of living—exactly how we do not know—can damage the reflex postural mechanism of the belly wall. Man's liability to hernia must be sought for in all these factors.

#### *The Liability to Femoral Hernia.*

At the beginning of this lecture I pointed out that the human pelvis was the sport of contending interests. In answering the needs of locomotion it has become less efficient as a part of the abdominal wall. In the liability of women to femoral hernia we see a disharmony between the sexual and containing functions of the pelvis. At puberty a growth takes place in the pelvis of women at three sites—at the symphysis pubis and at the two ilio-sacral joints. The new bone laid down at these joints leads to an increase of all diameters of the pelvis. Exactly the same kind of growth is seen in the pelves of men suffering from the later stages of acromegaly; the sexual transformation of the pelvis is the result of a growth mechanism controlled by hormones. In women, in whom the sexual growth is marked, the pubic part of the pelvis becomes elongated and the vascular compartment under Poupart's ligament widened.<sup>2</sup> Hence an increased liability to femoral hernia in women. A femoral sac is never the result of a developmental process; it is a structure which has never been seen at any stage in the development of human embryos or fetuses.

#### REFERENCES.

- <sup>1</sup> *Essays and Observations*, edited by Sir Richard Owen, vol. 1, p. 45
- <sup>2</sup> See a recent paper on this subject by Dr. J. Allison Pantou, *Journ. Anat.*, 1923, vol. 57, p. 106.

## VENOUS PULSATIONS AND VENOUS TRACINGS IN GENERAL;

WITH SPECIAL REFERENCE TO THE "V" WAVE OF THE POLYGRAPHIC TRACING.

BY

HARRINGTON SAINSBURY, M.D., F.R.C.P.,  
CONSULTING PHYSICIAN TO THE ROYAL FREE HOSPITAL AND  
THE VICTORIA PARK CHEST HOSPITAL.

In the first place it must be stated that the polygraphic tracing is a fact; it is Nature's own record. This is true, but the statement needs qualification, for an instrument intervenes between Nature and the recording surface. Nature, therefore, actuates a mechanism, and we must ask, Does the latter transmit faithfully, does it render an exact transcript? This is a primary question, and it raises an element of doubt as to the record.

Passing from the objective side of things to the subjective, we find the observer—another instrument, but one much more complex—intervening between the tracing and its real significance. The observer reads, conjectures, draws conclusions, and makes pronouncement, the judgement speaking the final word. But the judgement, Hippocrates tells us, is difficult, "*judicium difficile*" (Book I, Aphorism 1), and it is fallible we know. Again, therefore, there enters an element of doubt, this time as to the interpretation.

Proceeding now to the subject before us let us endeavour to follow, as closely as we are able, the course of the cardiovascular activities, as they repeat themselves in each cardiac cycle; then let us look at the tracings obtained by the polygraph and see in how far the two harmonize the one with the other.

We shall first note that normally the venous flow from the capillaries onwards presents a smooth current without trace of pulsation, until we come within a certain radius of the



heart. True the velocities change, increasing as we proceed centrally, but these merge into each other insensibly: the current keeps its smoothness.

Within the certain radius mentioned the blood in the veins comes into touch with the events passing through those chambers, and theoretically should be influenced by and show these events. The events are two—namely, (1) the auricular systole, (2) the ventricular systole; juxtaposed, they follow in

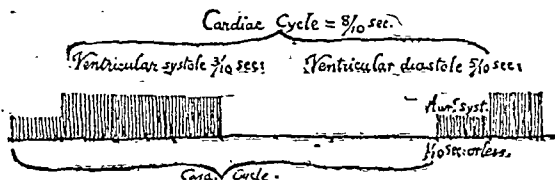


FIG. 1.—The diagram measures the time relations but not the magnitudes of the two systoles. The cardiac cycle, calculated upon a pulse rate of about 72, measures 8/10 sec. The figures must vary with different pulse rates. The duration of the auricular systole is about 1/10 sec. Thus the auricle is active for 1/10 sec., and rests for 7/10; the ventricle acts during 3/10 sec., rests for 5/10. The auricular and ventricular cycles, taken separately, overlap by 1/10 sec.

this order, with an interval scarcely perceptible between the two. A pause follows, then the couple reappear. The auricular systole is a small act, difficult to determine except instrumentally; not so the ventricular, and therefore we usually reckon the cardiac cycle from the onset of one ventricular contraction to the onset of the next, as for the pulse. It would, however, be more physiological to reckon

from auricular systole to auricular systole, as this would not dissociate the two systoles.

Each systole, being a muscular act, is more or less abrupt in its onset and ending. Each, while it lasts, interposes an obstacle to the venous afflux; each, when it ceases, withdraws that obstacle and the accumulated blood unloads itself, readjusting pressure differences. This done, the afflux is resumed under a uniform *vis a tergo*—namely, that obtaining in the tributary veins of the right auricle.

As to the *vis a tergo*, it will be remembered that in the great veins at the root of the neck the pressures in health are very small—namely, from 0 to -8 mm. Hg. Unfortunately we have very little precise information concerning the venous pressures which rule in pathological conditions, and therefore, in dealing with this aspect of things, shall be obliged to rely mainly on presumptive evidence.\* Before entering upon this it will be advantageous to introduce here a diagram, which is intended to show certain points bearing directly upon the subject in hand.

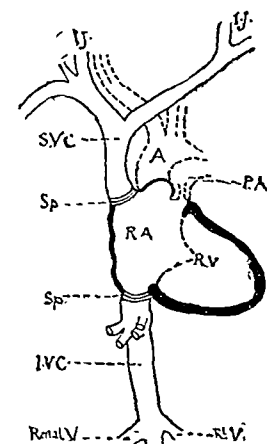


FIG. 2.—The figure is based upon Henle's *Handbuch der Anatomie*, second edition, p. 342, with considerable modifications, as follows: The veins are shown in thin line; the heart itself in thick line; the arterial system in dotted line; and the lymphatic system in dashed line.

of distribution corresponds to an area of no valves, for, though the internal jugulars have valves at their endings, these are rarely efficient, and the venous blood is free to flow in either direction. In case of the circular fibres of the auricle they are marked on the is during auricular contraction. I.J. = Internal jugular; Sp. = Site of sphincter fibres.

This diagram before us, let us consider the effect of the auricular systole upon the venous afflux. The circular disposition of the auricular fibres around the cavæ must tend to close them more or less, and in health the probability is that the closure is very appreciable, perhaps almost complete, otherwise the systole would be defeated in its objective, taking effect backwards into the capacious, thin-walled,

ill-filled veins as the line of less resistance, rather than forwards into the already partially filled and thick-walled ventricle. It is most probable, further, that this sphincter action is an *initial* event of the systole, for, the end in view being the raising of intra-auricular pressure, here also would be more or less frustration unless leakage backwards were checked from the outset. The part played by these sphincter fibres in auricular systole would thus be the equivalent of the action of the *a-v* valve in ventricular systole—namely, to supply a *point d'appui* for the contraction of the heart walls.

Assuming complete closure of the cavæ during auricular systole the effect would be the same as that of ligation of both vessels; no impulse would be sent back into the veins, but behind the block and proceeding backwards from it the blood would gradually accumulate. Can we see here the development of any wave (justly so named) within the veins by the smooth afflux under the low pressures of health? The period of accumulation lasts one-tenth of a second.

Assuming incomplete closure of the cavæ in health there will be more or less of actual reflux from the auricle and a wave of sorts might be registrable in the internal jugular, in spite of the comparatively small power of the auricular contraction, which would scarcely be able to generate a percussion wave. Such wave would be pre-ventricular systolic in time and in magnitude it should be quite small.

In disease, where marked congestion of the right heart and its great venous tributaries was present, there would be appreciable reflux, and it there should happen to be much hypertrophy of the right auricle (a rare occurrence) the reflux would be proportionately greater and an actual percussion wave might be present.

Whether in health or in disease, if there is reflux, it would add its volume to the accumulation by afflux, which would continue unchecked during the whole of the auricular systole. The congestion of the veins would be correspondingly accentuated, but the factor bearing the pulsation would be the reflux, not the afflux, which *ex hypothesi* contains no pulsation.

Reverting to the venous afflux, there arises an interesting question—namely, During congestion of the veins, however brought about, does the intravenous pressure begin to rise forthwith and proceed *pari passu* with the accumulation of the blood? The answer is, No; there will be no appreciable rise until the veins have reached their full capacity and their walls have begun to be distended—that is, stretched. Until stretch begins there is no resistance; until resistance begins there is no rise of pressure. But the venous system in health is never distended, in particular the great venous trunks; there is not enough blood in the body to distend arteries, capillaries, and veins. The valveless cavæ and their main branchings interpose thus a very large potential capacity between the heart and the main body of the valve-bearing veins, and until congestion has exhausted the whole of this superfluous capacity no perceptible rise in blood pressure can take place. In life the feature of the arterial system is its stretch; that of the great veins their slackness. This slackness ensures the uniform delivery of blood into the heart by preventing—or shall we say keeping down?—rise of blood pressure in the great veins during the temporary obstructions at the heart caused by the systoles of auricle and ventricle.

A complete venous block of one of the smaller or medium-sized veins may be followed by great rise of blood pressure in its branchings, but time is of the essence of this *local* manifestation; it is slow. Block at the heart itself (due to the systoles) lasts one-tenth of a second for the auricle, three-tenths of a second for the ventricle. No appreciable accumulation can take place within these short intervals.

If we put at about 4 oz. the capacity of each of the chambers of the heart, and assume that in systole the chambers empty themselves, then during each auricular systole of 1/10 sec. the amount of blood held up will be only 4.3 oz. (the cardiac cycle being 8/10 sec.)—that is, half an ounce—and during ventricular systole (3/10 sec.) it will be exactly 1½ oz. These quantities are small when compared with the size of the valveless area of the great veins, and should be easily accommodated without appreciable rise of pressure when the accumulation is by *afflux*.

If the chambers do not empty themselves the quantities of blood will be proportionately reduced.

As to the local rise of blood pressure in *reflux*, we gather that no figures are available.

Contrasting venous afflux, in its continuity (evenness) of flow, with venous reflux, in its discontinuity, we shall note that, whereas the former will tend to spread its accumulation (during arrested flow) over a large venous area, by reason of the gradual distension effected, and so will minimize rise of

\* I am indebted to Dr. Charles Bolton, C.B.E., F.R.S., for information on this point.



blood pressure; the latter by its relative suddenness will limit distension to the parts nearest the heart, thus causing much greater rise of blood pressure *in situ*. This will be most observable in disease with marked backflow.

#### Right Ventricular Systole.

At the cessation of auricular systole the state of the ventricle should show:

1. The ventricular walls slightly on the stretch as a result of the auricular thrust.
2. The tricuspid valve in position and slightly on the stretch, owing to the elastic recoil of the ventricle. The latter involves a slight backward movement of the valve, but this is probably too small a quantity to impart any appreciable impulse to the contents of the auricle, let alone to record itself in the internal jugular vein. This minimal thrust would immediately precede ventricular systole.

At the same point of time the state of the auricle would show:

3. The auricular walls in complete relaxation (including, of course, the sphincter fibres of the cavæ); the blood content everywhere in contact with the flaccid walls and in direct continuity with the blood in the great veins; the auricular walls absolutely passive and ready to be dilated by venous afflux or venous reflux (should the valve be incompetent); the blood content ready to receive and transmit any impulse impressed upon it by the ventricle.

The ventricular systole now sets in with a force and abruptness far exceeding that of the auricular systole. In a piston-like stroke the tricuspid valve is driven towards the auricle, carrying with it the blood in the funnel-shaped space between the valve segments. The stroke takes effect upon the contents of the auricle, and a wave of propulsion or percussion is started and transmitted along the fairway of the open cavæ into their main branchings. There is nothing to hinder such transmission, and the slack walls of the auricle lying passively upon their contents should favour oscillation.

Should the tricuspid valve be incompetent more or less of reflux will add itself to the wave, modifying its characters. In heart disease with overloaded right chambers the reflux may be very marked and appear in the veins at the root of the neck as a pulsation definitely ventricular systolic. No sphincter action intervenes, as in the case of the auricular systole. If, then, this latter can register itself in the internal jugular, the stronger unimpeded ventricular impulse should surely be recorded.

The time of this wave will be early ventricular systolic. As to magnitude, and as measured by the forces engaged in its production, it should greatly exceed the auricular systolic wave.

Another wave must now be considered, which is also ventricular systolic, and, according to accepted teaching, appears at the root of the neck. Its cause is referred to the left ventricle, which develops it at the origin of the aorta and propagates it thence throughout the arterial system as the pulse. Its presence in the jugular vein is explained by the close proximity of carotid and jugular, whereby the throb in the artery is communicated to the contents of the adjacent vein. This is a percussion wave pure and simple; the venous flow is in nowise affected; no question of reflux arises; no changes in the volume of the blood within the vein accompany the wave. This is the *c* wave of the venous pulse tracing.

The time of this wave is ventricular systolic, but it is not earliest systolic, for it does not begin till after the *a-v* valve has been fully closed, and not before the blood pressure within the left ventricle has been raised sufficiently to force the aortic valve. It therefore must follow upon the early ventricular systolic contraction.

There remains for discussion a wave marked "*v*" on the polygraphic tracing, which is said to arise during the ventricular systole, and is regarded as owning two factors—namely:

1. A rising intra-auricular and intravenous pressure due to afflux.
2. A sudden fall of the pressure upon the onset of ventricular diastole.

It has been described as a wave of storage or *stasis*. The name is unfortunate, for a wave is essentially a dynamic manifestation, and statics do not beget dynamics. The

\* There is no such thing as an actively expanding auricle.

teaching amounts to this, that the gradual venous congestion of arrested afflux during the ventricular systole accounts for the up-stroke of the *v* wave; the sudden onset of ventricular diastole for the down-stroke. But, if so, then the up-stroke should be as gradual as the venous accumulation and the down-stroke as sudden as its release—that is, as short as the click of the second heart sound. The form of such "wave" should be as shown in Fig. 3.

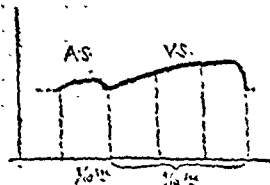


FIG. 3.—Intravenous pressure curves of arrested afflux during auricular and ventricular systoles.

But true waves, undulations, are ridge-and-trough manifestations, each one of the series showing the descending limb as the counterpart of the ascending limb; presenting, in fact, just such a curve as the *v* wave shows (see Fig. 4).\*

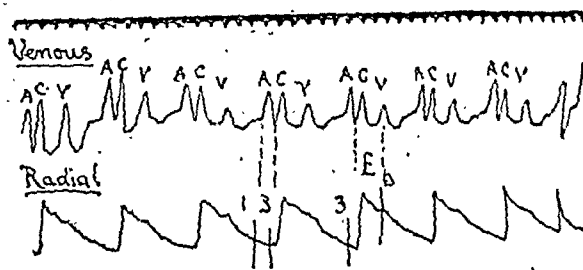


FIG. 4.—Phlebogram and radial tracing from a normal individual. Note in particular the form of the *v* wave.

There is evident conflict here between the tracing and the process which is held to be responsible for it. Quite apart from this argument as to the form of the wave, it is difficult to conceive how a head of pressure of only 0 to -8 mm. Hg could yield a wave of magnitude even approaching that shown.

#### Summary.

To summarize, with brief comment, the cardiac sequence of events and the polygraphic tracings.

1. *The Auricular Systole*.—The *a* wave appears to conform with this in time, but so close-set are the two systoles that more exact timing seems desirable; in magnitude the tracing seems disproportionately great, seeing the small power of the auricle and the block interposed by the sphincter action at the mouths of the cavæ.
2. *The Auricular Diastole*.—No hint of this shows on the tracing, though the ventricular diastole is credited with causing so marked a feature in the phlebogram.
3. *The Ventricular Systole*.—This is a very powerful and abrupt event; the conditions for backward transmission are very favourable, all sphincter action being withdrawn. Why is it conspicuous by its absence from the tracing?
4. *The Forcing of the Semilunar Valves*.—This event takes place in the course of the ventricular systole, at some time subsequent to the closure of the auriculo-ventricular valves. It should therefore be preceded by an early ventricular systolic wave, whereas it stands alone.
5. *The Onset of Ventricular Diastole*.—This event is supposed to correspond with the onset of the down-stroke of the *v* wave; but the want of conformity of this wave of the tracing with its theory of production has been dealt with. As shown it is exactly like waves *a* and *c* in type, yet in mode of production quite different.

In view of these apparent discrepancies I suggest a reference of the whole subject to the physiologists.

\* For permission to use this figure I am indebted to the courtesy of Dr. Frederick Price and the Oxford Medical Publications. See Dr. Price's *Textbook on Diseases of the Heart*, 1918, Fig. 53, p. 101.  
† Do we know what is the exact point of time when the semi-lunar valves are forced?

THE congress of French-speaking gynaecologists and obstetricians, which is held every two years, will take place at Geneva on August 9th, when the following subjects will be discussed: (1) The indications and technique in operations for retro-deviations of the uterus apart from pregnancy; introduced by MM. Henneberg and Pronst; (2) treatment of pregnancy complicated by tuberculosis, introduced by MM. Voron and Weymeersch; (3) methods of anaesthesia in gynaecological operations, introduced by MM. Kappeler and Schickele.



## A CASE OF CHRONIC INTUSSUSCEPTION.

BY

G. A. EWART, F.R.C.S.,

ASSISTANT SURGEON, ST. GEORGE'S HOSPITAL; SURGEON, HOSPITAL OF  
BS. JOHN AND ELIZABETH.

THE case recorded below is of interest not only on account of the long duration of the intussusception, but also because of the condition found at the first (palliative) operation, and the discovery at the second operation of a tumour which proved on examination to be a carcinoma.

A man, aged 68, had for a year been greatly troubled by constipation. Three days prior to admission to hospital he had taken a large dose of purgative, and the bowels had acted once; there had been no action since, and pain in the rectum and copious discharge of blood-stained mucus. Vomiting had not occurred.

The abdomen was considerably distended, and peristalsis was obvious. On examining the rectum the anal sphincters were found to be very lax, and a tense smooth mass was discovered reaching to within half an inch of the external orifice.

The patient on overhearing a remark that "there was something to be felt" volunteered the fact that he himself had made that discovery over a year previously, and had noticed something inside the rectum constantly, this discovery coinciding in point of time with the onset of his constipation.

Immediate operation was advised; this the patient refused, but changed his mind on the following day, when the symptoms of intestinal obstruction had become more distressing.

The patient was anesthetized and placed in the lithotomy position, to facilitate a more thorough examination. On passing a speculum it was found that the rectal mass was trunk-shaped, and digital examination failed to reach any attachment to the rectal wall. The only possible diagnosis seemed to be chronic intussusception causing obstruction, through engorgement brought about by purgation.

The patient was placed flat on the operating table and the abdomen opened by retracting the left lower rectus outwards. An intussusception of the sigmoid into the rectum was found, the ensheathing joining the entering layer, at a point about one inch above the recto-sigmoid junction. All the intestines were greatly distended, the large intestine, as far back as the caecum, being a solid mass of faecal material; this seemed to bear out the patient's statement of the duration of the trouble. All attempts to reduce the intussusception proved of no avail, even though one hand was placed in the rectum to manipulate its apex. In these circumstances some palliative measure had to be decided on, the choice lying between caecostomy and colostomy. Eventually colostomy was performed through the outer left rectus with the idea that it would give more efficient drainage to the overloaded intestine, and in the event of the patient refusing further operative measures allow him to get about. The colostomy was opened at the end of twenty-four hours by simply cutting across one of the longitudinal bands. The patient got on well, but the discharge of blood-stained mucus from the rectum continued.

Six weeks after operation rectal examination showed that the intussusception had considerably decreased in bulk, but still reached to within three-quarters of an inch of the anus. It was decided to open the abdomen again to see if the intussusception could be dealt with in any way. The patient was put in the Trendelenburg position, and the abdomen opened by displacing the left rectus outwards. Contrary to expectation, it was found that the intussusception was now easily reducible, and that a hard mass was present in the sigmoid about seven inches from the recto-sigmoid junction. Nothing suggestive of this mass had been felt at the first operation, presumably because of the large amount of oedema present. No glands were discovered in the sigmoid mesentery. After careful packing off of surrounding structures the suspicious portion of the sigmoid was excised, together with its mesentery, and an end-to-end anastomosis performed with Dulox catgut. The abdomen was closed without drainage.

The patient got on well, and three weeks later, having changed his mind as regards surgery, expressed a wish that his colostomy should be closed. This was done by Greig Smith's method, without opening the peritoneal cavity. Flapine solution was used at the operation to prevent infection of the tissues. The wound kept clean, but at the end of eight days a small faecal fistula made its appearance, which has since closed. Since the closure of the colostomy the bowels have been regularly opened without any gripping pain, and for some time past without any purgatives.

Examination by my colleague Dr. Donaldson of a portion of the mass in the sigmoid shows a typical columnar-celled carcinoma.

The chief points of interest in this case are:

1. The very long duration of the intussusception—over a year. This, of course, depends on the patient's story, but there seems no reason to doubt this, as he is a most intelligent man.

2. The slow growth of the sigmoid carcinoma, if we grant the fact that the growth was the primary cause of the intussusception.

3. The marked effect that drainage of the intestine above the intussusception had in decreasing the size of the intussusception, making its reduction possible.

4. The advisability of suspecting the presence of some

growth in all cases of large-gut intussusceptions in adults. It is often quite impossible to palpate a neoplasm in the intestine at operation because of oedema of the parts.

In my opinion all such cases should be re-exposed when the patient has recovered from the acute symptoms.

## QUININE IDIOSYNCRASY AND CINCHONINE.

BY

WILLIAM FLETCHER, M.B., B.Ch.,

AND

E. A. O. TRAVERS, M.R.C.S., L.R.C.P.

(Institute for Medical Research, Kuala Lumpur, Federated Malay States.)

IDIOSYNCRASY to quinine is much less common than one would gather from the textbooks. One of us has been in the Malay States for twenty years, and the other for more than thirty-five; but, though it is a very malarious country, the only case of pronounced idiosyncrasy to quinine which we have encountered is the patient who forms the subject of this note. Even in this instance there is some doubt whether her illness, which resembled exfoliative dermatitis, was due to quinine or to some other cause. During the war we treated large numbers of soldiers who had contracted malaria in all quarters of the world, but saw no similar cases.

MacGilchrist has shown that the several alkaloids of cinchona differ in their toxic properties, and Acton claims that the members of the laevo-rotatory group, which includes quinine, have different therapeutic properties from those belonging to the dextro-rotatory group, which comprises cinchonine and quinidine. As our patient was quite unable to take quinine and was becoming dangerously ill from malaria, we determined to try an alkaloid belonging to the latter group, and we gave her cinchonine base, with the happiest results.

One can hardly suppose that, in every case of quinine idiosyncrasy, the sensitiveness is limited to one or other of the cinchona alkaloids, and does not extend to them all; but in this instance, no sooner was cinchonine substituted for quinine than the swelling of the face and limbs subsided, the vomiting ceased, and the patient recovered.

A lady, aged 30, weighing between 7 and 8 st., became infected with benign tertian malaria and was taken ill on June 10th, 1922. On June 15th she was admitted to a nursing home, where she was treated by the medical officer with large doses of quinine. She received 30 grains of the bihydrochloride by intramuscular injection every day for three days; subsequently she was given 45 grains of quinine daily, in a mixture containing 15 grains of quinine sulphate and 3 minims of liquor arsenici hydrochlorici in each dose. On July 1st she left the nursing home, but continued to take the mixture for several days.

On July 5th, three weeks after she had commenced quinine treatment, a blotchy rash appeared, especially on the exposed parts of the body—the face, neck, arms, and hands. This rash persisted with varying intensity, until the writers met in consultation on August 31st, eight weeks after its first appearance. In the meantime malaria parasites, which were now of the subtertian variety, had been found in her blood on several occasions, and, with the exception of an interval of seven days, she had been taking quinine.

The condition at the time of our consultation was as follows: The skin over the whole body was swollen, red, dry, and peeling. The face was bloated, the eyelids were so swollen that they could hardly be opened. The lips were protruding, reddened, blistered, and cracked. There were small bullae and vesicles about the mouth. The tongue and buccal mucosa were red, peeling, and sore. The throat was inflamed and painful. The general appearance at once suggested exfoliative dermatitis due to arsenical poisoning. The patient's temperature was 102° F., and there were subtertian parasites in her blood. She was taking 10 grains of quinine bihydrochloride, in solution, three times a day, but she vomited after almost every dose.

From August 31st she was given 16 grains of cinchonine base (Messrs. Howard and Son) every day, in doses of 4 grains dispensed in gelatin capsules, and its absorption was checked by daily examination of the urine. The vomiting ceased at once, the temperature came down, the malaria parasites disappeared from the blood, the rash and swelling subsided, and within a few days the patient was up and walking about. The disappearance of the rash was followed by very definite pigmentation of the skin—it looked like dirty skin—not on the abdomen, as in arsenical poisoning, but more particularly over those exposed areas where the inflammation had been most acute.

The cinchonine was continued for several weeks, and then the dose was reduced to 8 grains daily. On one occasion, in October, the patient had a slight attack of fever with swelling of the eyelids, but it quickly subsided on resuming the original dose of 16 grains daily. The dose of cinchonine was once more dropped



to 8 grains a day in November, and on two or three days none at all was taken; a relapse of subtertian malaria occurred on November 26th, which was quickly controlled by increasing the dose.

The patient left for England on December 1st, and was in good health when we last heard of her.

## THE PULSE PRESSURE IN EXOPHTHALMIC GOITRE.

BY

I. HARRIS, M.D.,

HONORARY PHYSICIAN IN CHARGE OF CARDIOGRAPHIC DEPARTMENT,  
NORTHERN HOSPITAL, LIVERPOOL.

The height of the pulse pressure (the difference between systolic and diastolic pressure) is usually influenced under normal conditions by two factors—the height of the systolic pressure and the pulse rate. The higher the systolic pressure the more pronounced is the pulse pressure; the more frequent the pulse rate, the smaller the pulse pressure.

The systolic arterial pressure is usually increased in exophthalmic goitre, although in cases where symptoms of heart failure manifest themselves it may become lower than normal; but the most striking feature in exophthalmic goitre is the relation of pulse rate to pulse pressure. As is well known, the pulse rate is increased in exophthalmic goitre. A frequent pulse in any other condition is usually accompanied by a small pulse pressure. In tachycardia due to bacterial toxins acting on the heart muscle and other forms of myocardial trouble, and in cardiac neurasthenia and heart failure, etc., the pulse pressure is small, usually less than 40 mm. Hg. In rapid heart action due to amyl nitrite and atropine the pulse pressure is likewise diminished.

The following table records the various pressures in cases of exophthalmic goitre:

Initial.	Blood Pressure			Pulse Rate.		Initial.	Blood Pressure.			Pulse Rate.
	S.	D.	P.				S.	D.	P.	
M.	125	80	45	130		S.	120	80	40	120
E.	140	70	70	140		W.	138	67	71	160
C.	140	80	60	120		S.	165	95	70	†
J.	125	75	50	100		G.	170	85	80	120
C.	115	50	65	60		R.	170	95	75	90
D.	137	80	57	90		S.	140	80	60	120

S. = Systolic pressure; D. = Diastolic pressure; P. = Pulse pressure.

\* Pronounced cardiac dilatation.

† Auricular fibrillation.

So far as I am aware it is only in thyroidism that there is both an increase in pulse rate and at the same time a high pulse pressure. In some cases of irritable heart with manifest signs of thyroidism pulse pressure is also increased. This fact is of value in the differential diagnosis between thyroidism and other conditions. It is also important from the point of view of treatment. I have shown elsewhere<sup>1</sup> that digitalis increases the pulse pressure. Obviously this drug is not indicated in a condition where the pulse pressure is already high.

The electro-cardiograph reveals still another characteristic sign of exophthalmic goitre; the P wave is usually exaggerated in this condition, suggesting hypertrophy of the auricle. A similar electro-cardiographic condition is found in mitral stenosis, and it is significant that exophthalmic goitre, too, predisposes to auricular fibrillation.

### REFERENCE.

<sup>1</sup> *Lancet*, 1921, i, 1072.

THE seventh Sicilian Medical Congress will be held at Palermo from April 20th to 22nd, when the following subjects will be discussed: Deficiency diseases, introduced by Dr. Giuffrè of Palermo; the present state of our knowledge on the etiology and treatment of cancer, introduced by Dr. Parla-vecchio of Palermo and Dr. Fichera of Messina; and the organization of the Italian medical profession, introduced by Dr. Salpietro of Palermo.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### SUPPRESSION OF URINE AFTER LABOUR.

SUPPRESSION of urine after labour is apparently very rare, and is not even mentioned in most obstetric textbooks. I have inquired of several medical practitioners—some of them of thirty-five years' experience—and find that none of them have ever seen a case. The following may therefore be of interest.

Mrs. G., aged 30, had the following obstetric history. She was married in 1916, had a miscarriage in May, 1917, a full-time child in May, 1918, a full-time child in August, 1919, a two-months miscarriage on January 30th, 1922, and twins on February 4th, 1923. I attended her on all occasions except the first miscarriage; in 1919 I attended her continuously for the last two months of her pregnancy, and feared acute phthisis, but, to my surprise, she improved and got apparently quite well after the birth of the child. During her last pregnancy she complained of vague symptoms, most of them nervous, but there were no physical signs, and she appeared in better health than ever before. Repeated requests for a specimen of urine, however, were made in vain (a not uncommon event in general practice), so that I cannot be sure as to the state of the renal system.

On January 20th, 1923, I examined her and diagnosed a twin pregnancy. On February 4th I was sent for by the midwife because "the placenta had not arrived after forty-five minutes," a child having been born. On examination I found that another foetus was present in the uterus; it was presenting transversely, and there was prolapse of an arm. With the help of a colleague who gave chloroform, I performed internal podalic version. Both twins lived; there was little shock after the manipulations, and the haemorrhage, though rather free from a flabby uterus, was not alarming. On the following morning I was told that the patient had had continuous bilious vomiting, and she was still retching. I hoped that this was due only to the anaesthetic, but I noticed that there was extreme oedema of the eyelids, and the patient told me that "everything was a mist before her." There was no headache—which I mistakenly took to be a good sign. The same day, at 6 p.m., I was informed that the patient had passed no urine, and on discovering that there was no distension of the bladder, the seriousness of the situation was apparent. I passed a catheter, but found, as I expected, that not a drop of urine was obtained. Later in the evening, after appropriate treatment, the patient looked and said that she felt better; the oedema of the eyelids had improved, and she did not complain of headache. The following morning, however, when I saw her at 8.45, she was unconscious, breathing stertorously, the pupils were pinpoint, and she died an hour later—forty-one hours after labour was completed. There was no headache nor convulsion at any time. No urine had been passed.

The vomiting was uncontrollable by drugs, and none of the usual measures, such as hot blankets and bottles, hot steam, cupping of the kidneys, pilocarpine, etc., had the slightest effect. No post-mortem examination was obtained.

In view of the feared development of phthisis the possibility of a tuberculous focus in the renal system is suggested, though there was nothing to lead me to suppose this during her pregnancy, when, as I have remarked, she appeared in better health than ever before. However, as I did not have the opportunity of examining the urine, I cannot be definite on this point. The urine was normal on all other occasions on which I had examined it.

AMBROSE W. OWEN, M.D., B.S.Lond.,  
Honorary Surgeon, Aberdare and District General Hospital.

#### TRAUMA AND APPENDICITIS.

THE reports of cases under this heading (January 6th and 13th) induce me to record a similar case which came under my observation at the Marine Lines War Hospital, Bombay, in 1920.

A young clerk was hit by a ball over the right iliac fossa while playing hockey. He was admitted into my ward the next morning suffering from a typical attack of acute appendicitis. He refused operation at first, but submitted to it a week later, when the pain and swelling had increased. At the operation the caecum and the terminal ileum were found matted into a hard lump, with the tip of the appendix projecting about the middle. This last was removed by examination, and a drainage tube was tied in. The patient made a good recovery after some days of suppuration. Microscopic examination showed a sclerosed appendix with the lumen obliterated.

B. P. SARAWALA, F.R.C.S.F.,  
Major I.M.S. (Retd.).

Bombay.



## Reports of Societies.

### OPERATIONS ON THE ROUND LIGAMENTS.

At a meeting of the Edinburgh Obstetrical Society on March 14th, with the President, Dr. LAMOND LACKIE, in the chair, Dr. HAIG FERGUSON read a communication on the relative merits of operations on the round ligaments for retroversion of the uterus, with a suggestion for a procedure for increasing the scope and usefulness of the Alexander-Adams operation.

The operation of ventrofixation should, he considered, be reserved for women beyond the child-bearing age, or who had been rendered sterile by the removal of the tubes and ovaries for disease. Operations which utilized the round ligaments were now generally regarded as being the best means of keeping the uterus forward in women of child-bearing age. The speaker discussed the structure and function of the round ligaments, and pointed out that under normal circumstances they were under no tension and were quite slack when the uterus was lying anteverted. They did not keep the uterus forward by mere traction, but acted, so to speak, as a delicate hair-spring, and, when of normal length, by their gentle restraining action on the fundus just kept up the balance of anteversion which enabled the intra-abdominal pressure to act on the posterior uterine wall. The latter was the main factor in keeping the uterus forward, but associated with it was the action of the utero-sacral and broad ligaments. If the uterus became retroverted, the round ligaments became abnormally long, so that before they could again resume their normal function not only had the uterus to be replaced but the ligaments had to be restored to their usual length. The strongest portions of the ligaments were those within the abdomen. Further, the operation adopted should not lead to difficulty, either during pregnancy or parturition, and should stand the strain of childbirth. The Gilliam operation utilized the strongest portion of the ligament, but left three pockets in the anterior portion of the pelvis through which a coil of intestine might become entangled—although the speaker personally had never seen that accident occur. That could be obviated by the method of passing the perforating forceps between the layers of the broad ligament. This, however, was liable to lead to haematoma of the broad ligament, owing to injury of one of the veins. Moreover, he had seen several cases of recurrence after this operation, two of them after pregnancy. The Baldy-Webster operation was open to the objection that it utilized the weak portion of the ligament, and it was doubtful whether it would withstand the strain of subsequent pregnancy.

The extra-peritoneal method of shortening the round ligament (Alexander-Adams operation) had fallen into disfavour, partly on account of its limited scope, partly because of the difficulties sometimes experienced in finding the ligament, which had discouraged many operators, and because it allowed no visual examination of the pelvic organs. The last difficulty could be largely discounted by a careful bimanual examination, if necessary under an anaesthetic, which enabled an experienced gynaecologist to get an accurate idea of the pelvic condition. The operation was contraindicated by any pelvic complication, such as a fixed retroversion or diseased tubes or ovaries. If the retroverted uterus, though not fixed, was large and heavy and with a tendency to prolapse, preliminary treatment by pessary or otherwise (for example, curettage, trachelorrhaphy, perineal repair, etc.) was usually advisable before resorting to the operation. A prolapsed ovary was not necessarily a contraindication to the Alexander operation, for the ovary was usually raised up when the uterus was replaced. The results of the operation in the speaker's hands had been so uniformly good that he strongly felt that its usefulness should if possible be extended. In a series of 100 cases, all done within recent years, he had seen no instance of recurrence of the displacement even after pregnancy. He had only once had to open the abdomen after an Alexander operation, and that was for an ovarian cyst. It was the only operation which resulted in a natural pull on the ligaments and was therefore anatomically and physiologically the most correct.

Dr. Haig Ferguson then described a combined intra- and extra-peritoneal operation which he had found successful, and which, he submitted, removed all the difficulties and limitations of the Alexander-Adams operation while retaining its advantages.

A transverse incision was made two fingerbreadths above the symphysis pubis, extending down to the aponeurosis. The upper and lower flaps were detached from the latter, and a vertical incision was made either in the middle line or paramesially through the aponeurosis and, after separating the recti, vertically through the peritoneum. Any intrapelvic complication was then dealt with as required. The lower skin flap was now reflected still more, and pulled downwards by a retractor. The external abdominal rings were then defined, and the round ligaments pulled out and shortened as in the ordinary Alexander operation. If there was any difficulty in finding the ligaments in the external abdominal ring they might be caught by a pair of forceps inside the abdomen and gently pulled on by an assistant, which rendered their recognition easy. The operator could either sew up the peritoneum, recti muscles, and aponeurosis before fixing the ligaments in the inguinal canal, or preferably he could suture the round ligaments first, before finally closing the abdomen.

This operation was so simple and satisfactory that Dr. Haig Ferguson was now inclined to recommend it in all cases, complicated or otherwise, in which an operation for retroversion was indicated.

Dr. FORDYCE had long since given up the Alexander-Adams operation because of the frequent difficulty experienced in finding the ligament. He had never seen bad results follow the Gilliam operation, although there was sometimes a great amount of pain immediately after it, which he thought was due to strangulation of the loop of ligament pulled through the rectus sheath.

Professor B. P. WATSON thought that the symptoms complained of in retroversion were frequently due to a slight associated prolapse, and any operation for simply fixing the uterus to the front was, therefore, in such cases inadequate. He agreed with Dr. Haig Ferguson that the pelvic floor should in such cases be repaired. The operation which he used was a modified Gilliam, and he had never seen the haematoma in the broad ligament referred to by Dr. Haig Ferguson. A recurrence after pregnancy did not necessarily mean a failure of the operation. The patient should be examined in the puerperium and, if a retroversion were found, replacement followed by pessary treatment would result in a cure.

Dr. R. W. JOHNSTONE pointed out that the association of the round ligaments with the uterus was a mere accident of development. He had lately preferred the sling operation because of the pain so frequently experienced after Gilliam's operation, although this might be to some extent obviated by making a large opening in the rectus sheath. He had seen Dr. Haig Ferguson carry out his operation, and considered it a great advance on the original Alexander-Adams. Miss HENZFIELD used the sling operation and so far had found it satisfactory, though she was unable to say how it bore the strain of pregnancy.

Dr. H. S. DAVIDSON had met with recurrences after Gilliam's operation, and he had sometimes had to operate to remove the stitches in the loop of ligament because of the excessive pain. He had generally used linen thread. Dr. JAMES YOUNG had also seen cases develop considerable pain even after the use of catgut. He thought this was one of the chief drawbacks of the Gilliam operation. The President hoped that the routine examination of puerperal women would soon almost entirely obviate the need for operations of any kind for the cure of retroversion. He relied upon a modified Gilliam's operation, and had also seen occasional pain at the site of fixation of the ligaments, though it always passed away after a short time.

Dr. HAIG FERGUSON, in reply, said that he had also had experience of pain after the Gilliam's operation and had seen painful swellings over the anchored round ligaments; in one case the ligaments had apparently partially slogged. There had been no complaint of pain after the combined operation he had described, neither had he ever found it after the Alexander-Adams operation.

### CROUPOUS PNEUMONIA IN CHILDREN.

A JOINT meeting of the Liverpool Medical Institution and the Manchester Medical Society was held at Liverpool on March 22nd, with the President of the Institution, Professor J. HILL ABRAHAM, in the chair, when Dr. H. T. ASHBY read a paper on croupous pneumonia in children and its complications. He said that croupous pneumonia was a common disease at all ages of childhood after about the ninth month, before which age bronchopneumonia predominated. Croupous pneumonia might be classified according to the time when the physical signs made their appearance. These might be present at



once, they might at times be delayed for a day or two, or they might never be present at all. The diagnosis of the last type was made by the history of the sudden onset, the cough, the rapid breathing, the high temperature, which kept up, and the general look of the child. Fever of obscure origin in children often turned out to be croupous pneumonia. The delirium and convulsions during a severe attack of pneumonia, especially in highly strung children, were sometimes so marked that the disease was diagnosed as meningitis. The progress of acute croupous pneumonia in children was good in uncomplicated cases, and even in the so-called chronic pneumonia the outlook was good. Tuberculosis was a rare complication of pneumonia. There was no complication to rival empyema in frequency and in seriousness. It should be a golden rule, said Dr. Ashby, to explore any doubtful case, and if pus was present the earliest possible moment for its evacuation was essential to get the best results. Empyemata in older children did well with the ordinary operation, although there was often a tedious recovery and a weak lung for the future. Empyemata in young children under two years of age did very badly, and that was where some new treatment was needed. The method of aspirating the empyema seemed to give the best results, and it had the advantage that the child began to take food well and to gain strength, even though the usual open operation had to be resorted to later. The pneumococcal empyemata did better, as a rule, than any other kind.

#### Injuries to the Cervical Spine.

Mr. GEOFFREY JEFFERSON read a short paper on injuries to the cervical spine, confining himself in the main to those cases where concomitant nerve and spine injuries were not present. He said that during the last forty years it had been learnt how to recognize, and usually accurately to diagnose, vertebral fractures of the lower thoracic and lumbar vertebrae, even when the fracture involved the bodies of the vertebrae alone and the spinal canal was in no way encroached upon. In 1891 Kuemmell had drawn attention to spinal deformity resulting from previous injury. The clinical picture resembled healed spinal caries, but the clinical histories were, of course, quite different. Not so much attention—indeed, very little—had been paid to the very similar cases which were seen not uncommonly in the neck. These, again, were sometimes compression fractures, sometimes dislocations. Mr. Jefferson referred to the pathological anatomy of the injuries and to the conditions found at autopsy in the fatal cases. Most careful x-ray examinations were necessary for the diagnosis, and the speaker referred to certain fallacies in the clinical examination of these subjects. As for treatment, his figures showed a greatly improved mortality rate over that usually quoted, but that was, he said, not due to any special excellence of treatment, but rather to improvements in diagnosis which led to the recognition of the slighter cases, these reducing the percentage of deaths very considerably. The death rate in cases with complete physiological division of the cord at a high segment would probably always be enormous. Mr. Jefferson counselled against laminectomy in cervical injuries—at all events in the early stages—and pinned his faith to reduction of the broken or dislocated bones and immobilization.

#### Urticaria.

Dr. G. H. LANCASHIRE read a paper on urticaria. He dealt especially with the treatment of the chronic form in adults, laying stress on the importance of an initial rest, bodily and mental, in addition to diet and drugs. The value of the skin protein reaction appeared doubtful. Clothing was a matter of importance, and, in fact, success was only obtained by attention to detail in many directions, the cause of the trouble being often complex, including a psychic factor.

### SYPHILIS AND MARRIAGE.

At a meeting of the Medical Society for the Study of Venereal Diseases, held on March 23rd, Dr. AMAND ROUTH, by request of the Council, read a paper on syphilis and marriage. He said the association of these two should never occur if syphilis was to be eradicated, but the nation did not yet realize the importance of preventing marriages of infected persons. Doctors were powerless to enforce their warning to a patient not yet cured if he or she insisted upon marrying, owing partly to his desire to avoid the breach of professional confidence, but also because the law of libel did not protect him, especially as regards making such communications

"privileged," even between doctors. Communications between the doctor and a husband about his wife, or with a wife about her husband, were "privileged" even in venereal cases, but such a communication would usually be very indiscreet without the patient's consent.

One of the questions still undetermined is as to how long a man should be kept under treatment and observation before being allowed to marry. Before the discovery of the spirochaete and the Wassermann test (1905) it was easy to treat a wife by mercury pills, if the husband admitted a previous infection, without the wife having to be told that her still-births, for instance, were associated with her own infection. Treatment by salvarsan, especially during pregnancy, made it very difficult to prevent the wife knowing this. In these cases the doctor should avoid telling the wife the real cause of her dead children, and should try to get the husband to tell the wife of the need for treatment to enable them to have healthy children.

Dr. Routh then discussed the question of compulsory notification and the proposal to introduce health certificates for both partners as regards fitness for marriage. He showed that the investigations which might be required to certify the absence of venereal disease were the main cause which held up the proposal to have such health certificates organized. He suggested that it might be possible legally to insist upon both partners obtaining a life insurance policy which would be a guarantee of health. In poor or pauper patients this would involve State aid. He alluded to the matrimonial laws, which determined that where a wife established the fact that she was suffering from a venereal disease, and had been faithful to her husband, she could get a divorce if she could prove that her husband had acquired the disease after marriage, for the infection would be a proof, not only of legal cruelty, but also of adultery. If the disease had been acquired before marriage, and was conveyed "knowingly or negligently," it would constitute "legal cruelty" but not adultery, and the woman could only obtain an order for judicial separation, which, as the Royal Commission states, is a very inadequate remedy.

As regards treatment during marriage, the results of mercury before 1905, especially during pregnancy, in the form of hydrarg. perchlor. 1/16 grain thrice daily, were sufficient almost always to ensure a healthy child and Dr. Routh said that children thus treated over twenty years ago had remained healthy and normal till now. It was thought necessary to repeat the treatment during each succeeding pregnancy, for as the woman showed as a rule no symptoms she was thought to be free from personal infection, and it was believed that the infection was directly conveyed to the ovum by the husband's seminal fluid. It was now assumed that if a woman had a syphilitic child she was herself infected. The question whether a child could be directly infected by the father's seminal fluid as an alternative to the infection being derived from the maternal blood was still uncertain. As it was now known that the spirochaete both spontaneously and as a result of various agents broke up into small granules, it was easier to understand conceptional syphilis, but further research was required.

In his presidential address to the Harveian Society in January, 1918, Dr. Routh had stated his belief that nature provided chemical products arising at the junction of the maternal and foetal portions of the placenta, which were capable of granulating the *Spirochaeta pallida*, and by controlling the biological activity of the granules preventing them from sprouting. He suggested that this action would render the infection latent during the pregnancy in both mother and child. After the pregnancy the chemical products gradually disappeared, and the granules might spread and develop into the mature organism, which would become generalized and clinical syphilis would declare itself. If maternal treatment was adopted during pregnancy whilst the infection was being controlled and kept in the latent form, the offspring in 90 per cent. would be healthy. The latency of syphilitic infection in pregnancy was now accepted, and the possibility of there being an earlier stage in the development of the mature spirochaete was also believed in by many. It was now known, however, that both mother and child must be treated after the birth to ensure the good result now being obtained.

In conclusion Dr. Routh hoped that the Commission recently appointed by the Minister of Health would expediently consider what further steps could be taken to prevent infection.



marriages, and also to prevent congenital syphilis by ensuring more efficient medical supervision of pregnant women, and by making expert venereal treatment more generally available when indicated.

### CARDIFF MEDICAL SOCIETY.

A CLINICAL meeting of the Cardiff Medical Society was held on March 13th, with the President, Professor E. J. MACLEAN, in the chair, when Dr. H. GORDON GREAVES gave a demonstration of gas-oxygen-ether apparatus and its uses. Dr. Greaves reviewed the history of anaesthetics, and pointed out that it was largely owing to Howitt and his great scientific and mechanical skill that it became possible for "gas and oxygen" to be applied to everyday surgical use. The war gave an enormous stimulus to anaesthetic and surgical procedures, and, in his opinion, the best of the present day types of apparatus was that devised by Mr. Boyle. The dangers of gas and oxygen were few, and the advantages were enormous, because very ill patients recovered quickly from its effects, feeble and septic patients did well, long operations could be undertaken with very little risk, and nausea and vomiting were less likely to follow.

Dr. IVOR J. DAVIES showed specimens from a case of small white kidney with an associated congenital hydronephrosis; death ensued from a terminal intussusception.

The patient was an intelligent small girl of 15, and the duration from the onset of symptoms to the termination was fifteen months, the last three of which were spent in hospital. There was much thickening of the peripheral arteries, with a hard pulse; the systolic blood pressure only fell below 200 mm. on a few occasions, and was generally a little higher. Albuminuric retinitis with haemorrhages was intense; a fair amount of slightly alkaline urine was passed throughout; the specific gravity varied from 1005 to 1010, and albuminuria, averaging 0.2 per cent., was constant. Acute abdominal pain came on suddenly, the abdomen becoming a little distended, and a hard mass could be felt in the umbilical region; no blood or mucus was passed, and an enema produced a small result. Consciousness was preserved almost to the end, and no convulsions nor twitchings occurred, death taking place two days later. Necropsy disclosed the presence of an intussusception of the ileum as the immediate cause of death. The right kidney was very small and weighed barely an ounce; the cortex was much diminished and almost absent in places, otherwise very little renal tissue was left, the gland being almost entirely occupied by a uniform dilatation of the calyces. The left kidney weighed three ounces, and was triangular in section; the distinction between cortex and medulla was almost entirely lost; the pelvis was slightly and the

detached the microscopic he right kidney suggested kidney with superimposed arterio-sclerotic and chronic nephritic changes; the left kidney presented a similar picture, but the changes were less marked, producing the retinal condition. Two months before the patient died the fundi showed typical albuminuric retinitis, with a star of exudate on the macula, and many scattered small round foci of exudate over other parts of the fundi; one or two small haemorrhages were present in one eye near the disc. A month later the condition was much the same.

Mr. J. W. GEARY GRANT showed a girl, 18 years of age, with multiple swellings over the face, arms, trunk, and buttocks. The diagnosis lay, he thought, between multiple haemorrhagic sarcomata of the skin, endotheliomata, naevi, and an unusual form of von Recklinghausen's disease. A section through one of the swellings showed a predominating connective tissue element, with myxomatous change and evidence of oedema.

Mr. J. BERRY HAYCRAFT showed a specimen of bone formation in a laparotomy scar.

A laparotomy was performed on a pensioner, aged 33, and four months later a lump was noticed in the centre of the scar; it was painful and gradually got bigger and became tender on pressure. The tissue in the centre of the scar was found, on operation, to consist of a hard mass in the rectus muscle, and deep to this was a thin plate of what appeared to be bone lying between the peritoneum and the rectus muscle. Sections of this showed the presence of true bone with Haversian systems.

Professor E. EMMS-ROBERTS pointed out that actively proliferating fibroblasts could, as a result of environmental stimulus, give rise not only to ordinary fibroblasts, but, under certain circumstances, to myxoblasts, chondroblasts, and osteoblasts; the variants resulting from the alterations in the types of intercellular material secreted by the cells concerned. In this case the fibroblasts had developed directly into osteoblasts, without any indication of intermediary

forms, in a manner similar to the development of membranous bone.

Mr. J. W. TUDOR THOMAS showed a case of embolism of the central artery of the retina.

The patient was a young man, aged 27, who had suddenly become blind in the right eye; the fundus showed a dark red macula, with a large area of greyish-white retina around, in which the arteries were visible only as lines. Seventeen days after the onset of blindness the patient was able to count fingers at about a metre, but there was an absolute central scotoma. Examination of the heart did not reveal any murmurs, and it appeared to be normal. The Wassermann reaction was negative. Although the appearances in the case were those of embolism of the central retinal artery there was no clinical evidence as to the source of the embolism, and it might be that the condition was due to spasm of the retinal arteries, with subsequent thrombosis.

### TREATMENT OF VENEREAL DISEASES.

A MEETING of the Section of State Medicine of the Royal Academy of Medicine in Ireland was held on March 23rd, with the President, Dr. T. HENNESSY, in the chair, when Dr. T. P. C. KIRKPATRICK read a paper on the work of a venereal disease treatment centre. He described the procedure adopted at the venereal diseases treatment centre opened at Stevens's Hospital in January, 1919, under the auspices of the Corporation of Dublin and the Local Government Board. In the four years ending December 31st, 1922, 4,222 patients presented themselves at the clinic, of whom 743 were women and children; of these women and children 355 were suffering from syphilis. The treatment relied on was the intravenous administration of novarsenobillon, given in weekly injections over a period of eight weeks, during which time 4.05 grams of the drug were given. Subsequent treatment was guided by the condition of the patient and the blood Wassermann reaction. The results on the whole had been satisfactory, and out of the 78 patients with syphilis who presented themselves at the women's department in 1919, eleven had given birth to healthy children subsequent to treatment. The results of the treatment were illustrated by charts showing the treatment given and the blood Wassermann reactions.

Sir ARTHUR BALL said that it had been found necessary to make the centres as attractive as possible for the patients, in order to make sure that they would attend for a sufficiently long time and give themselves a chance of being cured. He thought Dr. Kirkpatrick had done well in stopping giving injections of mercury owing to the pain caused by them, though he personally was rather a believer in giving mercury at the same time as arsenical injections. In former days the patient had rather shirked the injections of mercury, but now this difficulty had been, to a large extent, got over by administering it intravenously.

Mr. A. CHANCE dealt with the general organization of the centre, and with the treatment and diagnosis of the various cases. The most difficult thing, in his opinion, in the treatment of cases of gonorrhoea was making the diagnosis, particularly in chronic cases, when success depended entirely upon the diagnosis. They had not had any complaints from patients about being written to regarding regular attendance for treatment, though he was sure that the letters were sometimes opened by people other than those for whom they were intended, but the forms were worded in such a way as not to give any information to anyone except the person to whom they were sent.

Sir JOHN MOORE did not think that they were yet in a position to make any statistics as to the effect of the more recent treatment of syphilis on the after-effects of that disease.

Dr. ELLA WEBB, Dr. W. D. O'KELLY, Dr. W. M. CROFTON, Dr. W. BOXWELL, and Dr. G. E. NESBITT continued the discussion, and Dr. KIRKPATRICK replied.

A REUTER'S telegram from Simla, dated April 7th, states that plague is epidemic in almost all the provinces of India. Statistics for the week ending March 24th show about 9,000 cases for all India, of which 8,000 resulted fatally. The epidemic is said to be worst in the United Provinces, the Punjab, the Central Provinces, the Bombay Presidency, and Delhi. In the principal towns 131 died in Bombay city, 150 in Delhi, and 48 in Rangoon. In the Sialkot district of the Punjab and the Azamgarh district of the United Provinces, the deaths numbered over a thousand each. Bengal is almost free, though there were three cases, all fatal, in Calcutta during the week.



## Reviews.

### ORTHOPAEDIC SURGERY.

THE mere names of the authors of *Orthopaedic Surgery*<sup>1</sup> are enough to guarantee that the book should be worthy of our serious attention. The name of ROBERT JONES is closely associated with the best work on deformities and disabilities in this country both in peace and war, while Dr. R. W. LOVETT has been long well known on both sides of the Atlantic as the joint author of Bradford and Lovett's *Orthopaedic Surgery* and of many valuable monographs. It is, therefore, safe to presume that we have here all that is best in orthopaedics in Britain and the United States. The opinions expressed in the book are common to both writers, and there is little internal evidence of the difficulties which must have occurred in their collaboration when separated by some three thousand miles. In a few instances, however, it is distinctly stated that such and such an opinion is that of the British or of the American author only.

In defining this special department of general surgery, as they prefer to consider it, the authors group their subjects under six headings, which it may be as well to quote at the outset. Those are:

1. Joints and their affections.
2. Bones and their affections (including ununited and malunited fractures).
3. Disturbances of the neuro-muscular mechanism.
4. Congenital deformities.
5. Static and other acquired deformities.
6. The principles and details of apparatus.

This statement at once shows how difficult it is to draw up any satisfactory definition of orthopaedics; for at least four of the above headings, if understood literally, would include a great deal more than the most enthusiastic specialist would think of claiming. The facts that the *Journal of Orthopaedic Surgery* has been renamed the *Journal of Bone and Joint Surgery*, and that more than three-fifths of the work now under notice are devoted to those same subjects, afford evidence of the direction in which the specialty has widened of late years. The good results which have been attained in special orthopaedic hospitals in the treatment of tuberculosis of the bones and joints amply justify this extension of the field.

No attempt is made in this book to discuss various methods of treatment and to weigh their merits; the authors have wisely, as we think, decided to use the space at their disposal to set forth the views of pathology which have seemed to them most sound and to describe the methods of diagnosis and treatment which they have found to be the most satisfactory.

It is not possible within the limits of a review to touch upon all the subjects in such a book as this, but an impression of its merits may be conveyed by reference to salient points of interest.

The first chapter, on the anatomy, physiology, and general pathology of joints, is a valuable one, for it gives in short space a clear and philosophic survey of the phenomena which occur in and around an inflamed articulation, and lays a good foundation for subsequent discussions. Of late years operations for the repair of ruptured ligaments have been introduced, and the best methods of performing them are described, but in the case of the crucial ligaments of the knee the reader is warned against operating in recent cases. The section on displacements of the semilunar cartilages is, as might be expected, practical. The surgeon is advised when in doubt to remove the whole cartilage. The important question of fibrous ankylosis and of adhesions in and around joints is fully discussed and excellent advice given as to when and in what circumstances they should be broken down, and when all hopes of mobility are abandoned in what position the stiff limb is most likely to be useful to the patient. It is interesting to find that the authors' views on arthroplasty are rather conservative and that they are not able to share the roseate outlook of some Continental surgeons on the results of these operations when performed upon the knee-joint. When, however, a patient is so unfortunate as to have two stiff hips a mobilizing operation upon one of them is almost imperative. In such a case it is pointed out that the

longer (if there be a difference) of the two limbs should be chosen for operation. Sir Robert Jones still performs subcutaneous osteotomy with the Adams saw in some cases of stiff hip at a faulty angle.

The authors are enthusiastic advocates of the complete open-air treatment of surgical tuberculosis. Even in the severe winter climate of Massachusetts, where the temperature of the wards or shelters is allowed at night to fall as low as 34° F., the tuberculous children have better health and fewer respiratory troubles than the "healthy" inmates of neighbouring boarding schools. Only in very young children is any exception recommended. The statistics quoted as to the bovine and human origins of infection in children bear out the contention of the authors that if the milk supply were safeguarded juvenile surgical tuberculosis would be almost abolished. Experiments are quoted showing, what has been clinically observed, that it is impossible to maintain extension of a diseased spinal column in the erect or sitting position. Both of our authors succeed in relieving diseased vertebrae from pressure and in correcting kyphoses in the recumbent position, but the American relies upon plaster-of-Paris and the Englishman on the double Thomas splint for this end. The much vaunted bone-graft treatment of Pott's disease of the spine has been tried long enough and extensively enough to enable certain conclusions to be stated. These are that in children relapses are frequent, that the operation should not be done as a routine, and that when done prolonged subsequent immobilization is imperative. In adults the procedure is generally to be recommended.

In the United States, judging from surgical and some other literature, most of the population suffer from flat-feet and nearly as many from backache, and this latter trouble is fully discussed here. Various bony abnormalities have been accused as the cause, and the sacro-iliac joint has been credited with a development and a mobility which is not observed in Europe. Even so small an inequality of the lower limbs as half an inch may apparently cause backache—or at least its correction may be followed by relief. The section on this subject is well worth study, for such cases are proverbially difficult and obstinate, and if the surgeon cannot relieve them they generally fall into the hands of osteopaths, bone-setters, and other irregular practitioners.

The United States have been the scene in the present century of several epidemics of anterior poliomyelitis, of which the last, in New York State and City in 1916, included 13,233 cases, with a mortality of 25.2 per cent. It is therefore not surprising that American physicians and surgeons should have increased our knowledge of the disease and improved its treatment, and the chapter on this subject is not the least important in the book and well repays study, but hardly lends itself to brief summary. A much needed warning is given against amputation in severe and extensive paralysis, when the resulting stump is useless because it has no muscles by which an artificial limb can be actuated. The only practical amputation in such a case is at or just below the hip-joint, and it is a mistake to suppose that there is no satisfactory artificial limb available for such a case, although its usefulness must depend upon the extent to which the trunk muscles have escaped paralysis. A patient without good muscular control of the lumbar region and pelvis cannot be expected to use an artificial limb.

Muscle training for paralysed children and others is well described and its importance duly insisted upon. Congenital deformities of all kinds, static deformities, and, last but not least, scoliosis, are adequately dealt with. In this last connexion it is of interest to note that the Abbott method of treatment by plaster jackets, for which some years ago extravagant claims were made, is dismissed in a few lines.

This book is sure to become the standard work on the subject in the language, and will probably long retain that position. It is exceedingly well illustrated, and the type is large and clear. It would be improved, however, by a much more copious index.

### THE VASOMOTOR SYSTEM.

THE appearance of Professor Sir W. BAYLISS's volume on *The Vaso-motor System*<sup>2</sup> in Professor Starling's series of monographs on physiology provides a welcome and authoritative review, by a leading physiologist who has done much pioneer research on it, of a subject closely bound up with practical medicine. The field covered is large, for not only does

<sup>1</sup> *Orthopaedic Surgery*. By Sir Robert Jones, K.B.E., C.B., Ch.M., F.R.C.S., F.A.C.S., etc., Lecturer on Orthopaedic Surgery, Liverpool University, and Robert W. Lovett, M.D., F.A.C.S., etc., Professor of Orthopaedic Surgery in Harvard University. New York: William Wood and Company, 1923. (Medium 8vo, pp. 659 + xv; 712 engravings.) To be published in this country by the Oxford University Press, price 42s. net.

<sup>2</sup> *The Vaso-motor System*. By Sir William M. Bayliss, D.Sc., F.R.S., F.R.S. Monographs on Physiology. Edited by Ernest H. Starling, M.D., D.Sc., F.R.S. London: Longmans, Green and Co. 1923. (Demy 8vo, pp. 163; 17 figures. 7s. 6d. net.)



the author describe the nerves supplying the blood vessels and their mode of action, the influence of chemical bodies, such as adrenaline, pituitrin, ergotoxin, histamine, acetyl-choline, nitrites and nicotine, on the calibre of the blood vessels, but he also discusses how the blood pressure is affected by the vascular changes and how the blood supply of individual organs is modified in response to their requirements in activity and rest.

The problem is so far simplified that the heart is assumed to be beating at a constant rate and with a uniform output. In view of Krogh's work, which is quoted, special interest attaches to the account of the circulation in the capillaries and of the part they play in the normal blood pressure. Professor Bayliss agrees that the capillaries have the power of contracting, but appears somewhat unconvinced by the evidence available that they have a direct nerve supply, and he concludes that the peripheral resistance is chiefly exerted by the arterioles. After quoting the experiments of Dale and Richards with histamine and their conclusion that the resulting fall of blood pressure is caused by decrease of the peripheral resistance in the capillary area, he expresses the opinion that this fall is mainly a capacity effect, due to the accumulation of a large volume of blood in the dilated capillary region; but, like another famous physiologist, he remarks that the subject requires further investigation.

Another question discussed in an interesting manner is whether, since the adrenals are excited by splanchnic stimulation, the normal blood pressure is maintained to any important degree by the continuous inflow of adrenaline; the evidence on this subject is conflicting, but on the whole it would appear that the amount of adrenaline in the circulation is too small to have any influence of importance in this direction. A chapter is devoted to the contractility and nerve supply of the veins, and the concluding chapter deals with the important subject of haemorrhage and shock, showing the physiological reason for adding to the fluid used for intravenous injection some colloid, such as gum acacia, having an osmotic pressure equal to that of the plasma colloids. This valuable monograph has a select bibliography and on all accounts deserves the attention of the profession.

#### GUY'S HOSPITAL REPORTS.

In the first quarterly part of this year's volume of the *Guy's Hospital Reports* the absence of any contribution from the editor, Dr. A. F. HURST, is a matter for regret, but his inspiration is evident in at least two of the twelve articles. The most considerable paper is Dr. G. W. NICHOLSON'S continuation of his "Studies on tumour formation," dealing with the importance of congenital malformations in tumour formation, in which he brings forward an elaborate argument with much evidence of thoughtful investigation to prove the error of Cohnheim's theory of the origin of all, or at least the majority, of neoplasms in cell rests. In the course of his article he concludes that cystic disease of the kidneys and embryonic renal tumours represent different end-results of the same original malformation and occur with about equal frequency; cystic kidneys are, he believes, extensively altered by accumulated secretion and thus do not represent the malformation in its original form; the embryonic tumours are simply enormous "malignant cell rests" which have always been malignant. Cutaneous melanomas arising in congenital moles—the other example that might lend support to Cohnheim's theory—arise *de novo* from the differentiated tissues of congenital pigmented moles, often at an advanced age and in response to altered environment, such as an irritant; they are not considered to support Cohnheim's view. Mr. A. R. THOMPSON discusses the clinical features of renal growths, and from analysis of 81 cases shows that the right kidney is attacked more often than the left in the proportion of 4 to 3. Professor PEMBREY, Dr. DEBENHAM, and Dr. JOFFE record their physiological observations on the excretion of urine in a case of ectopia vesicae; they did not succeed in producing diuresis by hypodermic injection of pituitrin. Mr. W. M. MOLLISON reviews 18 cases of new growth arising in the maxillary antrum or ethmoidal cells, and considers their diagnosis and treatment; reference is made to John Hilton's paper in the first volume of these *Reports* (1836) on a large bony tumour in the face completely removed by spontaneous separation; it is here reprinted. In

a charmingly written account of want of appetite and refusal of food in childhood, Dr. H. C. CAMERON shows a shrewd knowledge of the psychology of the young, and points out that refusal of food by a physically healthy child shows that his or her management is at fault. Mr. R. P. ROWLANDS considers the treatment of complete obstruction of the colon, and Dr. J. R. BELL provides a useful account of the tests for occult blood in the faeces; he recommends the benzdine test and four days' diet free from haemoglobin and chlorophyll before the stools are tested. Drs. RYLE and PASSEY show that Surrey rats may be infected with the *Leptospira icterohaemorrhagiae*, that cases of human spirochaetosis icterohaemorrhagica have thus arisen, and that this possibility should be thought of in a patient with febrile jaundice of obscure origin with pains in the limbs and haemorrhages. Dr. H. W. BARBER brings forward cases to prove that, just as asthma may be due to more than one variety of micro-organism, so urticaria and angeo-neurotic cedema may depend on sensitization to *Streptococcus longus*, *Bacillus coli*, and *Staphylococcus aureus*. Dr. GORDON GOODHART, formerly Douglas Demonstrator of Pathology at Guy's Hospital, writes a commentary on Drs. CAMPBELL and CONYBEARE'S statement in the July (1922) number of these *Reports* that in Addisonian anaemia a colour index of between 0.7 and unity is almost as common as one between unity and 1.2 and quite as common as one between 1.3 and 1.6. This is quite contrary to his experience, and with engaging tact he suggests that the Guy's figures might have been different if a proportion of them had not been based on blood counts done by clinical clerks.

#### PSYCHOLOGY AND PSYCHICAL RESEARCH.

Dr. T. W. MITCHELL has written a volume entitled *Medical Psychology and Psychical Research*,<sup>4</sup> which deals with those branches of psychological medicine which have thrown most light on the problems of psychical research—namely, hypnotism, hysteria, and multiple personalities. The author has devoted much study and clinical investigation to the various forms of dissociation, and he writes from the strictly scientific standpoint. A considerable part of the book deals with the problem of the appreciation of time by somnambules. It is well known that hypnotized subjects exhibit a remarkable accuracy in estimating time intervals, and that this power may persist into post-hypnotic life, so that an action suggested in hypnosis, to be performed in waking life after a certain interval, is generally carried out at the appointed time. It is not easy to explain this supernormal ability of somnambules, and Dr. Mitchell feels that the difficulties presented by this problem are of such a nature as inevitably, on any hypothesis, to leave a considerable residuum of unexplained phenomena. At the same time his discussion and suggestions do much to remove the mystery of time appreciation in these cases, and he makes it clear that there is no need to postulate some transcendental faculty in explanation of the phenomenon.

In further chapters the author gives a detailed account of a case of grave hysteria with recovery under hypnotic and suggestive treatment; he describes and discusses some cases of multiple personality, gives an account of the famous Doris Fischer case, and concludes by considering the bearings of the facts observed in dissociated states on the ultimate problems of personality. The book contains much of interest and importance to those who are concerned in the problems of the mind, and will well repay careful study.

#### CHRONIC DIARRHOEA.

Dr. J.-CH. ROUX says in a preface he has written for a volume by Dr. LOUIS TIMBAL, entitled *Les Diarrhées Chroniques*,<sup>5</sup> "Chronic diarrhoea is the most apparent symptomatic manifestation of many different pathological conditions, and often it is the only one noticed by the patient." This statement briefly expresses the point of view emphasized repeatedly in the subsequent pages that chronic diarrhoea must not be regarded simply as an intestinal disease or even as necessarily due to intestinal disturbance: it may be the only apparent symptom of pathological processes at work in the liver, pancreas, or kidney, or of functional disturbance of the nervous system. In the clinical examination of a patient

<sup>4</sup> *Guy's Hospital Reports*, vol. Ixxiii (vol. III, Fourth Series), No. 1, January, 1923. Edited by A. F. Hurst, M.D. Issued quarterly. London: Henry Frowde, and Hodder and Stoughton, 1923. (Hors: 8vo, pp. 116; 1 plate, 15 figures. Subscription, 2 guineas, post free, for volume of four numbers; single numbers, 12s. 6d.)

<sup>5</sup> *Medical Psychology and Psychical Research*. By T. W. Mitchell, M.D. London: Methuen and Co., Ltd. 1922. (Cr. 8vo, pp. 244; 2 pls. cr. 7s. 6d. net.)

<sup>6</sup> *Les Diarrhées Chroniques. Etude Clinique, Coprologique et Thérapeutique*. By Dr. Louis Timbal. Paris: Masson et Cie. (Demy 8vo, pp. 270; 10 figures. Fr. 12 net.)



complaining of diarrhoea the condition of all the organs of the body should be carefully considered.

The first part of the book is concerned with diagnosis—clinical examination, examination of the stools, radioscopic examination, and rectal examination. The tests described for the investigation of the faeces are all such as can be carried out with very simple apparatus and are designed to give information with regard to undigested food constituents and pathological products in the faeces.

In one instance the method advised calls for criticism. The deductions which can be drawn from the study of stained films of the faeces are not so reliable as the author declares, and it is misleading to suggest that the bacteriological examination may be regarded as complete when films only have been examined after staining with iodine and Gram's stain. The other methods described, and the table illustrating the value of chemical tests are, however, very useful. The second part of the book deals with the clinical types of diarrhoea according to their origin—functional, toxic, infectious, reflex, etc. Fermentation and putrefaction are clearly defined and differentiated. The third part deals with treatment, including diet, general hygienic conditions, and physical agencies.

It cannot be said of this treatise that its outlook is cosmopolitan. Scattered throughout its pages are references to some 290 publications; of these, 278 are from French sources and 11 from German; only to one publication in the English language does the author own his indebtedness. We commend this book, therefore, as embodying French views.

### PREVENTIVE MEDICINE AND HYGIENE.

THE issue of a fourth edition of Professor ROSENNAU'S *Preventive Medicine and Hygiene*<sup>6</sup> is full justification for the welcome we accorded the work in 1914. The author has adhered to his original grouping of communicable diseases into those, such as small-pox and venereal diseases, for which specific or special prophylactic measures are available; those spread largely through the alvine discharges, such as typhoid fever and cholera; those spread largely through discharges from the mouth and nose, including diphtheria and tuberculosis; and insect-borne diseases. In 1913 Professor Rosenau gave only qualified approval to the notification of venereal disease, and he is still of opinion that compulsory methods of notification are only partially successful, and that little may be expected from voluntary notification. He states that notification by serial number has been effective in Massachusetts since the beginning of 1918, and that in 1919 there were reported to the State Department of Public Health 9,435 cases of gonorrhoea and 4,127 cases of syphilis. While theoretically every case of venereal disease should be isolated until all danger of infection is passed, he agrees that this course is impracticable, but advocates better and more attractive hospital facilities and free beds as a means of securing voluntary isolation. He is in general agreement with those who consider that venereal diseases are both preventable and curable, and that their control depends upon early diagnosis and facilities for prompt treatment. In a neatly turned epigram he expresses a well recognized truth that gonorrhoea is the great preventer, syphilis the great destroyer of lives. A great deal of new matter has been added to the present edition, including a very informing section dealing with public health measures and methods.

After the manner of other American writers an attempt is made to assess the relative values of public health work, and it is of interest to learn that in general sanitation Professor Rosenau considers privy sanitation as nearly five times more valuable than housing and ten times more than plumbing. In child hygiene he places a high value on health visitors, whose work he considers is four times the value of infant consultations. When discussing the question of public health propaganda the author gives very sound advice, which is especially valuable when there are in the field so many amateur and irresponsible propagandists.

"It is very important," he insists, "that the facts stated should tell the truth. It is more important to be correct than to be clever. Half truths are often dangerous. Wrong teaching undermines confidence in health authorities. It is a question whether the subject is dignified by the use of circus methods or the antics of the clown."

Few writers in clothing their subject so . . . His short crisp

<sup>6</sup> *Preventive Medicine and Hygiene*. By M. J. Rosenau. Fourth edition. New York and London: D. Appleton and Co. 1921. (Med. 8vo, pp. 1567; 194 figures. 45s. net.)

sentences, his scant use of technical terms, and the apposite illustrations he makes use of to emphasize his statements add very much to the value of the work whether it is considered in the light of a textbook for the student, a book of reference for the public health officer, or a guide for the lay social reformer. The large number of well selected and excellently executed illustrations are a noticeable feature in the volume.

### NOTES ON BOOKS.

DR. BERNARD HOLLANDER has written a book on *The Psychology of Misconduct, Vice, and Crime*.<sup>7</sup> He deals with the problem from the standpoint of the "new psychology," and endeavours to present systematically, in their medical and psychological aspects, the various divergencies from normal conduct which come under the observation of the physician. He holds that many moral offenders belong to the domain of mental pathology, and that many of them are amenable to treatment by psychotherapy. He makes a number of suggestions for dealing with the criminal suspected of mental disorder, and pleads for the most careful medico-psychological study of delinquents, not only from motives of humanity and justice to the delinquent, but for the prophylaxis of future offences and the protection of society.

DR. CHARLES W. HAYWARD has written a volume entitled *What is Psychology?*<sup>8</sup> He does not use the term "psychology" in the conventional sense, and the book is not intended to be a scientific treatise. Its aim is to suggest a remedy for the "diseased psychology" of the human race, and the author unsparingly denounces the modern tendencies of the press, the drama, art, literature, society, politics, finance, and commerce. He believes that the cure of present evils will be effected if children are brought up entirely free from bad influences, and the book is largely devoted to the development of this theory. Dr. Hayward writes with sincerity, and he is evidently deeply moved by those elements in modern life which he deplores so strongly. At the same time, while fully recognizing the importance of environment in the formation of character, we do not feel convinced that Dr. Hayward has discovered what all social reformers are seeking—namely, a means of changing the heart of man. After reading this book we still feel that the millennium is a vision rather than a possibility.

The figurative expression that molecules are built up of atoms has been given a literal significance by EDWARD E. PRICE, who has devised a geometrical model to represent the carbon atom.<sup>9</sup> The conception on which the author has founded his idea is that "it is difficult to conceive of spherical or ellipsoidal forms having the power to arrange themselves according to geometric laws so soon as the vibrations of heat are reduced to a certain degree, and in the absence of any other directive force so far as is at present known, but if the atoms themselves have definite geometric forms, then arrangement in an orderly space-lattice, so as to produce definite geometric figures peculiar to each atom, appears to be the natural result of the withdrawal or reduction of the vibrations of heat." The positive origin of his deduction regarding the carbon atom is found in the crystal properties of the diamond and of graphite. It is further imagined that chemical combination takes place with the faces of the atoms in contact. A concept of such simplicity must have already occurred to a great many chemists and physicists, only to be rejected on more critical examination; had a solution or these lines been possible, progress in that direction would have been made long ago. Mr. Price has done a considerable amount of work in surveying assemblages of the parts that can be fitted, but it cannot be said that he has developed from his theme a theory upon which anything substantial may be built. His postulates are mostly extravagant. Frequently they are weak. He writes: "If it be allowed that the hydrogen atom has the form of a very oblate pyramid, it will follow that nascent hydrogen will adopt a position in which the base of the pyramid will be above and the apex will occupy the lower position. . . . In this position the hydrogen atoms will readily combine with the lower surface of the benzenoid," and so on. This mode of reasoning is not the less astonishing as it is clear from other statements that the author is acquainted with the nature of the electronic theory and its developments.

<sup>7</sup> *The Psychology of Misconduct, Vice, and Crime*. By Bernard Holland, M.D. London: George Allen and Unwin, Ltd. 1922. 8vo, pp. 222. 7s. 6d. net.)

<sup>8</sup> *What is Psychology?* By Charles W. Hayward, M.D., C.M., D.P.H. Barrister at Law. London: George Allen and Unwin, Ltd. 1921. 8vo, pp. 251. 7s. 6d. net.)

<sup>9</sup> *Atomic Form with Special Reference to the Configuration of the Carbon Atom*. By E. E. Price. London and New York: Longmans, Green & Co. 1922. (Gr. 8vo, no. viii+140; 61 figures. 1s. net.)



## MEDICAL AND SURGICAL APPLIANCES.

*A Dosimetric Apparatus for Intratracheal Anaesthesia.*

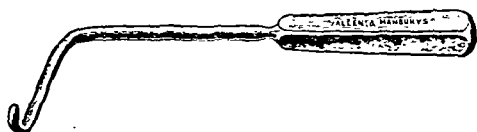
Dr. C. H. MOTT, Senior Honorary Anaesthetist to the North Staffordshire Infirmary, sends us a description of his modification of the ether intratracheal insufflation apparatus designed by Mr. R. E. Kelly of Liverpool. To Kelly's ether apparatus he has added 1) a device ("flowmeter") indicating the amount of air passing, 2) a chamber for chloroform in addition to the ether chamber, 3) a sight feed nitrous oxide and oxygen bottle similar to Boyle's or Gwathmey's, and 4) a water manometer for giving the respiratory index in addition to the usual mercurial manometer for showing the intra-apparatic pressure. Dr. Mott states that the most important of these additions is the "flowmeter," which has enabled the makers to place on the apparatus, above the chloroform and ether chambers, dials showing in plain figures the percentages of anaesthetic vapour added to the air stream under varying conditions of temperature and rate of flow. The chloroform and ether chambers are surrounded by water jackets to stabilize their temperatures (in accordance with the suggestion originally made by Mr. H. M. Page). The whole apparatus, mounted on a nickelled plate and fitted on a mahogany board, forms a convenient anaesthetic unit for the equipment of the anaesthetic room of a hospital, since it can be used for almost any form of inhalation anaesthesia. Dr. Mott then describes in detail the special features which distinguish his modification from Kelly's apparatus, and summarizes his personal experience of the modified apparatus during the past six years in hospital and private practice. His experience is recorded in the following table, which shows the number of times the apparatus has been employed (both for intratracheal and intrapharyngeal insufflation) and gives an analysis of some of the regions operated upon and the anaesthetic employed.

	Intratracheal Insufflation—			Intrapharyngeal Insufflation—		
	Ether.	Mixture.	CHCl <sub>3</sub> .	Ether.	Mixture.	CHCl <sub>3</sub> .
Total number of insufflations	205	361	405	76	97	80
Intra-abdominal ...	58	166	152	23	33	16
Thyroid ...	7	8	6	3	7	3
Glands of neck ...	4	13	6	3	11	13
Breast ...	4	5	12	2	4	4
Kidney ...	1	6	13	3	4	4
Piles ...	7	5	12	—	2	2

Dr. Mott acknowledges his indebtedness to the late Dr. Augustus Waller, to Dr. Dorée, and Dr. Thompson, for facilities placed at his disposal in making his anaesthetic unit a dosimetric apparatus; also to Mr. Guy Drew for collaboration in the scientific work necessary to draw up the dosimetric dials and in designing the machine. The apparatus has been made throughout by Messrs. Down Bros., Ltd., of London.

*Elevator for the First Rib.*

Mr. W. H. ROMANIS, M.Ch.Cantab., F.R.C.S. Eng., has devised a modification of the ordinary Doyen's curved rib elevator for removal of the first rib in extensive thoracoplasty to collapse a phthisical lung. Mr. Romanis's instrument differs from Doyen's



in having the hook-shaped end very short and narrow, to correspond with the ribbon-like shape of the first rib. The hook is set at a lateral twist to the shaft and is 2 inches below the line of the shank. The instrument is made by Messrs. Allen and Hanbury.

## MEDICINAL AND DIETETIC PREPARATIONS.

*Nasal Creams in Ampoules.*

We hesitate to say that any method of dispensing is new, but we have not previously seen the device which Messrs. Duncan, Flockhart and Co., 104, Holyrood Road, Edinburgh, use for dispensing nasal creams. The cream is put up in an elastic gelatin ampoule, with a long nozzle; the tip is cut and the nozzle is then introduced into the nostril, the ampoule is squeezed, and the cream expelled. Each holds enough for some dozen applications. Various prescriptions are used—alkaline, antiseptic, astringent, iodized, sedative, or stimulant. Details of the drugs used will be supplied to any member of the profession who wishes to prescribe the ampoules. They seem to us to be a very convenient and practical method of introducing medicaments into the nostrils.

## THE KATA-THERMOMETER, BODY TEMPERATURE, AND EFFICIENCY.

THE Medical Research Council has just issued a volume entitled *The Kata-thermometer in Studies of Body Heat and Efficiency*.<sup>1</sup> The very extensive observations therein contained are an advance on those published in *The Science of Ventilation and Open-air Treatment*,<sup>2</sup> by Dr. Leonard Hill. It is recognized that in securing conditions suitable for workers the wet bulb thermometer temperature is more important than the dry, and vapour pressure than relative humidity; most important of all, however, is the velocity of movement of the air, as on this chiefly depends loss of heat from the body by convection and evaporation. The body is not a static instrument like a thermometer, but dynamic, producing heat which must be lost at equal rate. The kata-thermometer measures the rate of heat loss from its surface, which is approximately at skin temperature, and evaluates the important effect of air movement. It is obvious that the more comfortable the conditions for the worker, the more contented will he be and the better work will he do. The body is fashioned for getting food by active muscular work, and upon this activity depends the proper vigorous function of the digestive and respiratory organs, and keen enjoyment of life. Hothouse conditions of life suitable for the failing power of the aged and those sinking from disease are mistakenly supposed to be suitable for the young and healthy. A traditional fear of cold is handed down, not only from mother to child, but to medical students in almost every medical textbook, and for fear of catching cold children are confined, and adults confine themselves, too much indoors and are overclothed. They are debilitated thereby and exposed at the same time to massive infection in crowded places. How utterly wrong is the still far too common medical advice to keep warm and fear all exposure is shown by the results obtained from the great degree of exposure of children, more or less naked, to the sun and air out of doors, which is practised with suitable precautions by Rollier at Leysin, Gauvain at the Treloar Hospital, and many others.

The atmospheric conditions suitable for healthy muscular activity are not those habitual to many living a sedentary monotonous life in an environment of overwarm, stagnant, and moist air; nevertheless they should approximate to the open-air conditions such as those enjoyed in playing open-air games. The breathing of cool air entails a greater flow of blood and lymph through the respiratory membrane, and as by vigorous open-air activity the volume of air breathed is increased many times the respiratory membrane is far better "washed" by open-air life and so protected from infection. Experience during the great war showed how much this improved the general condition of the city inhabitants as regards health, vigour, and efficiency. Our modern populations have purer water and more food; they are better clothed and much less drunken than a generation ago. Nevertheless the agricultural population, in spite of low wages and indifferent housing, sanitation, and water supply, have a mortality lower than the industrial population half a century ago. Moreover, while much has been done to lower the mortality of children, and to increase the average duration of life, almost nothing has been done to extend the life of the middle-aged. As Farr established fifty years ago, there is a close relation between crowding and mortality. Now the ventilation of workplaces and homes in the sense of this and the previous reports is little better, and probably in some respects worse, than it used to be. Herein lies a working hypothesis to explain why the rate of mortality at later ages does not sensibly improve. Not only does crowding lessen vigour and increase infection, but it divorces the people from the green foodstuffs which are the great ultimate source of vitamins and afford variety of proteins and salts most advantageous to growth and health. The smoke curse of the cities comes into play in lessening the desire for outdoor exercise, in robbing the body of the stimulating effect of the ultra-violet rays which are filtered off by smoke and glass, and in preventing the growth of salads in city courts, roof-tops, and gardens.

"Perhaps the mortality of adults from respiratory diseases in the north-western industrial districts of 1923 will produce upon the sanitarian of 1930 the same impression as produced upon ourselves by the history of enteric fever in England and Wales between 1850 and 1880."

<sup>1</sup> Special Report Series, No. 73. H.M. Stationery Office. Price 5s.

<sup>2</sup> *Ibid.*, Nos. 32 and 52.



More than two thousand years ago Hippocrates said that those who live in sheltered places were in general a weedy lot. "Those exposed to the cold winds must need be strong, great eaters and drinkers. They were big fellows, too, and their wounds did not suppurate and one can easily understand that such people live longer than the average." Only now are we beginning to learn the truth of this and to recognize that the balcony of a hospital is much more important than the ward for the treatment not only of tuberculosis but of rickets, wounds, pneumonia, and all febrile diseases. So, too, the garden space round a house is far more important than the house itself. People can be very healthy in the cramped crofter's cottage, while a model dwelling confining them in close warm rooms under glass can cause rickets, tuberculosis, and nervous debility.

The evidence submitted in this report goes to prove: (1) That in all parts of the world atmospheric conditions classed on the objective basis of kata-thermometric readings as unsatisfactory are, when tested by the subjective sensations, hard to endure. (2) That in every case in which subjective sensations were controllable by an objective test of industrial output the test gave proof of diminished efficiency. (3) That in the industries investigated—for example, boot and shoe, printing, pottery, and cotton industries—the mortality increases as the cooling power lessens. (4) That the basal metabolic processes of the body respond rapidly and considerably to changes of atmospheric condition, and respond in the sense predicted by the general reasoning based upon kata-thermometric measurements.

In Part I the more recent researches regarding the kata-thermometer as a physical instrument are recorded, and the information required by those who use it put in an available form. Much herein is due to Miss D. Hargood Ash's mathematical treatment. The new recording kata thermometer contrived by Dr. E. H. J. Schuster is described. This instrument, automatically alternately heated electrically and allowed to cool, writes a record of cooling rate on paper. Several kata-thermometers can be in turn connected to the recording mechanism; a manager is thus able to sit in his office and see the cooling power in any shop of his factory.

In Part II recent observations in temperate, alpine, and subtropical climates are related. Very interesting are those taken by C. Dorno at Davos, showing the moderate and uniform cooling power and high evaporative power there. Cold, dry, calm air and sunshine are the great merits of the alpine winter climate.

In Part III the use of the kata-thermometer in industry is summarized by Dr. H. M. Vernon from the numerous researches which have been carried out by the Industrial Fatigue Research Board workers in boot and shoe, printing, pottery, cotton and linen factories, and in laundries. The conclusion is reached that such systematic investigations ought to be made in all our chief industries.

"We should be firm in maintaining that the atmospheric conditions observed in the healthy trades, as indicated by statistics, ought to be imitated as far as possible in the less healthy ones, even if this means a considerable outlay in installing a better system of ventilation or more efficient machinery."

Quite apart from ethical considerations, it is probable that the initial outlay will more than repay itself in the improved health and increased efficiency of the workers. Striking examples are given from a laundry and from a textile factory of the effect of simple improvements carried out as the result of kata-thermometric measurements. Cooling powers were thereby doubled, and raised from one-half of, up to, the standard fixed for sedentary workers as a minimum.

In Part IV the conditions produced by certain different types of ventilation and heating appliances in factories are dealt with by Mr. T. Bedford and Mr. T. C. Angus. The latter also details a very interesting series of tests carried out on a large Atlantic liner. They show the inefficiency of an expensive plenum system of supplying warm air to first-class cabins, and the very great defect of third-class cabin ventilation arising from the heat of the ship and lack of adequate ventilation with cool air. It may be pointed out here that the defects are not due to chemical impurity of the air, but to defective cooling and evaporative power.

In Part V Dr. Vernon, considering the index of comfort at high atmospheric temperatures, shows the importance of the wet bulb temperature and of clothing, and insists on the special value of the kata-thermometer as a measure of velocity of movement.

In Part VI Drs. Leonard Hill and Argyll Campbell describe extensive studies of basal metabolism carried out in indoor

and outdoor conditions, with subjects clothed and stripped. Herein are included observations made at the Trelow Hospital with Sir H. Gairdner, at the English Sanatorium, Montana, with Dr. B. Hudson, at High Carley Sanatorium with Drs. Cox and Pask, at Sevenoaks Hospital with Dr. Siebel, and at the Berks and Bucks Sanatorium with Dr. Carling. The main conclusion reached is that open-air treatment increases the basal metabolism some 50 to 100 per cent., and this remains high, even when the subjects are put for some days in a warm room. This increased metabolism is regarded as an important part of the curative effect of open-air treatment. The effect of local and general cooling by water on metabolism is also considered, and it is shown how very local cooling or heating—for example, of the hands—can take away or add almost as much heat as the body produces. Most important experiments were made on working efficiency in a wind tunnel fitted with a moving platform on which the subjects ran. It is shown that during hard work the pulse frequency is lessened some thirty times a minute when the subject is properly cooled by a wind. The heart gets tired, and efficiency of the worker falls off when much of the blood has to be sent to the skin to be cooled instead of to the muscles—that is, when the cooling power is too low. In a South African mine Dr. Orenstein and Mr. Ireland found the efficiency of native workers 50 per cent. less in the galleries where the kata-thermometer readings were lowest than in properly cooled places. Another interesting research detailed in this report is on the protection afforded by clothing, wet or dry, and in particular by waterproofs, for shipwrecked people. Wet wool clothing affords considerable protection both from wind and from sea waves, and a waterproof over such wet clothing can adequately conserve the body heat. Metabolism when work was done by night instead of day was also investigated by examination of respiration and urinary excretion, and interesting conclusions reached.

The Medical Research Council has done well to produce this report, which has a direct and practical application to securing better health and greater happiness to the people, provided the necessary attention is given to the simple rules which should govern domestic and industrial life.

## ROYAL MEDICAL BENEVOLENT FUND.

At the meeting of the Committee on March 13th 38 cases were considered and £489 voted to 35 applicants. The following is a summary of some of the cases relieved:

Widow, aged 53, of L.R.C.S. Edin. who died in 1912. His youngest daughter (aged 20) requires training to enable her to earn her own living. Applicant is at present out of a post herself but hopes to get one.

Widow, aged 60, died in 1903. Through age and infirmity she is unable to accept hospitality to visit her own home for long visit was formerly her own reduced circumstances. She is crippled with rheumatism and can only get about on two sticks. Total income £68. Rent £28. Voted £25 in twelve instalments.

Daughter, aged 65, of M.R.C.S. Eng. who died in 1873. The applicant, who is a nurse, has not been able to work since October, 1921. She failed in 1922 to get sufficient votes for Epsom College. Her only income is 7s. 6d. a week from the Nurses' Insurance Fund and occasional gifts from friends. Voted £18 in twelve instalments.

Widow, aged 37, of M.R.C.S. Eng. who died in 1922. Owing to the sudden death of her husband she is left with two children, ages 10 and 8, with an income of only £100 a year. She asks for help towards education. A small grant was made to render the applicant eligible for consideration for an education grant.

Widow, aged 32, of M.R.C.S. Eng. who died in 1922, after an illness of eight years which prevented him from working and saving. She is left with a son at school. Her only income is the interest on £200. As she is a trained nurse a small grant was made to grant.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters Symonds, K.B.E., C.B., M.S., F.R.C.S., at 11, Chandos Street, Cavendish Square, London, W.1.

In these days of exorbitant prices for clothing and household necessities the Royal Medical Benevolent Fund Guild is overwhelmed with applications for coats and skirts for ladies and the girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles for the benefit of the widows and children who in happier times would not have needed assistance. The gifts should be sent to the Secretary of the Guild, 43, Bolsover Street, W.1.

THE Government of Afghanistan, according to the *Mündel medizinsche Wochenschrift*, is offering inducements for German physicians to settle in Afghanistan. Ten are wanted at once in the army and in hospital and contract practice or private practice.



## Nova et Vetera.

### CUPPING, DRY AND WET.

I AM old enough to remember when venesection was in vogue; indeed, probably the very first quasi-surgical procedure at which I was privileged to assist, as the pupil of a provincial practitioner, was that of bleeding a plethoric publican. I remember his pale, puffy face, swollen abdomen, and fat, sad voice. I remember, too, that he was much pleased with the relief afforded him. Yet, curiously enough, this old-fashioned country practitioner never spoke to me of cupping, nor did anyone of my subsequent principals do so. I feel, therefore, at liberty to infer that cupping has never been generally resorted to in England, at any rate not within the last century or so.

I have now practised for many years abroad, and I have been struck by the frequency with which dry and wet cupping are employed on the Continent, and by their efficacy in relieving inflammatory and congestive states.

Nevertheless, most physicians must have, at any rate, heard of it, for at a time when I was going through the English and French curricula concurrently I remember accompanying my chief, a well known physician, round the wards in my London hospital, and when we came to a case of inflammation of the lung I happened to mention that in Paris the first thing we should do would be to apply *ventouses*, alias cups. "An excellent idea," exclaimed the physician, adding, to the other students, "this will give you an opportunity of seeing how it is done." Then, having asked for the "cups" to be brought, he turned to me and asked how we did it over there. I replied that as a rule we used methylated spirits of wine or a little cotton-wool. The patient's back having been bared he put some cotton into the tumbler, which in this instance figured as cupping glass, lighted it, *blew it out*, and applied it rapidly to the chest wall—but of course nothing happened. I saw at once that he had never before applied cups and I began to feel anxious; he, too, was a little flushed and embarrassed. I took this opportunity of slipping round to the other side of the bed so as to face him, and when he tried a second time and failed I leant forward and said, "Allow me, sir, I am perhaps better placed than you are." Taking the glass from his hand I lighted the cotton and applied it *without* blowing it out, and a triumphant success was the outcome. "You see, gentlemen," he remarked, "it's easy enough when you have the knack of it."

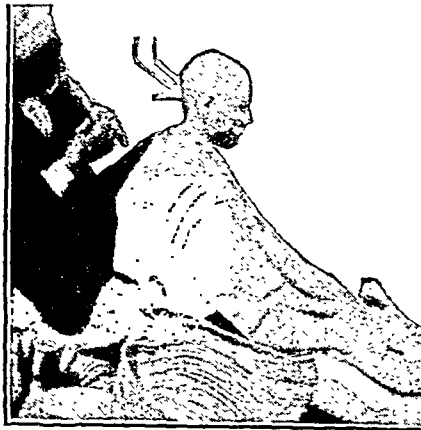
On another occasion, several years later, by which time I was in practice, I had occasion to call in consultation in a very grave case of pneumonia a one-time president of the Royal College of Physicians. Here again I suggested cupping, in which he cordially acquiesced, and at his request—for he admitted that he had never seen it done—I applied the cups. Thereafter my patient swore by this consultant in that he had cupped him to his very great satisfaction.

In France cupping is in such great request that every farm wench is an adept thereat. It is the universal panacea for aches and pains, for stitch in the side or shortness of breath, and so on. Among the Arabs in Algeria, where the native medicine man will trepan you as soon as look at you, cupping, especially of the temples, is very popular. Any Sunday morning in the native quarter, alongside the native dentist who is extracting teeth with a mediæval "key," is the *tonbib* with his cups, and in front of him a patient suffering from headache or loss of memory, or what not, with several long narrow cupping glasses projecting from his shaven scalp. The temples and the nape of the neck are favourite areas for this purpose.

The country doctor to whom I was apprenticed in the good old-fashioned way certainly possessed a scarificator, the which is usually employed for wet cupping, but as certainly

he never used it to my knowledge. Now the scarificator seems to be unknown in France, and when wet cupping has been done the practitioner makes a few random incisions with a scalpel before cupping. This, of course, answers the same purpose, but it is a much more painful, because more tedious, operation than when the scarification is used. The only objections to the scarificator I can think of are the difficulty of keeping it strictly aseptic, with its multiplicity of inaccessible tiny blades and the difficulty of maintaining a good cutting edge on the blades. I find that it produces a very good impression on the *entourage* of the patient in cases in which wet cupping is indicated. "Click!" and there are twelve little rectilinear incisions ready to be sucked dry. Now that venesection has fallen into disrepute wet cupping affords a simple and safe way of abstracting blood. I have applied it with immediate and marked success in several cases of oedema of the lungs, and I succeeded in withdrawing quite a quantity of blood even when previous attempts at venesection had proved abortive, no blood issuing from the incised vein at the elbow.

I would venture to suggest to my fellow practitioners at home that recourse to cupping in suitable cases will benefit their patients. In pneumonia, in congestion of the lungs, in bronchitis, in pleurisy, in lumbago and sciatica, great and immediate relief can often be afforded. It is easy to apply:



A NATIVE PRACTITIONER CUPPING AN ARAB AT BOU-MEDFA, ALGIERS.

half a dozen thick rimmed kitchen tumblers—nothing can be better—a little cotton-wool or spirits of wine. If cotton be selected (the patient must be sitting up straight in bed) a loose tuft is placed at the bottom of the tumbler and when everything is ready a match is applied to it and the open end of the tumbler is sharply pressed into the chest wall. There is no fear of a burn if the patient be sitting straight up. It is important not to place the tumblers on loose tissue (such as the anterior abdominal wall), and they must not be placed too near to one another, otherwise they are apt, when the skin is drawn up, to pinch it very disagreeably. They are left on for five or ten minutes, and are removed by depressing the skin with the nail so as to let in air, whereupon the tumbler falls off. The skin is then dabbed dry and dusted with talc—never rubbed. When wet cupping is

contemplated the skin of the back must be thoroughly washed with soap and water, then rubbed with methylated spirit or a weak solution of iodine before applying the scarificator as well as after. Then the tumbler with the lighted cotton is placed over the scarified spot.

Some people use spirits instead of cotton, and as a matter of fact it gives better results, though it is attended by one or two risks against which one has to be on one's guard. A teaspoonful of spirit is poured into the tumbler and is swished round so as to moisten the sides. It is then poured out to the last drop, and a band an inch or so deep near the rim is wiped dry on the inside of the glass all round, so as to prevent the flame approaching the skin. The glass held in the right hand, is gently rotated so as to prevent the formation of drops, a match is applied, and it is quickly placed on the skin and firmly pressed. All danger of a burn is avoided (1) by having the patient seated bolt upright, (2) by keeping the tumbler rotating until ready to be applied, and (3) by having a towel handy to extinguish the flame in the event of a drop of lighted spirit falling on the sheet.

Algiers.

ALFRED S. GUBB, M.D.

PROFESSOR JULES BORDET, Director of the Pasteur Institute of Brussels, has been elected a foreign associate member of the Academy of Sciences of Paris.

A CONGRESS of French-speaking dermatologists and syphilologists will be held at Strasbourg from July 25th to 23th. The subjects to be discussed are: Desensitization in diseases of the skin, introduced by Ravaut of Paris and Spillmann of Nancy; Naevus-carcinoma, introduced by Masson of Strasbourg and Bloch of Basle; Treatment of the early stage of syphilis, introduced by Queyrat of Paris and Malvoz of Liège; Value of the various methods of administration of drugs in the treatment of syphilis.



# British Medical Journal.

SATURDAY, APRIL 14TH, 1923.

## PUBLIC HEALTH AND MEDICAL RESEARCH IN INDIA.

DELAY in making available here reports published in India is the rule, and the report of the Retrenchment Committee over which Lord Inchcape presided has not formed an exception. As was indicated last week (p. 609) abstracts in the Indian newspapers stated that while the chief reduction recommended was in the large military expenditure, the small sums allotted to public health and medical research were not to escape. The Finance Department of the Government of India has submitted to the Legislative Assembly a revised schedule of demands for grants for the expenditure of the Central Government, from which it would appear that the Government has agreed to the abolition of the posts of Director of Medical Research and of Public Health Commissioner, and also to the cessation of the annual grant to the Indian Research Fund. From a later statement by the Finance Minister, however, it seems that the Government has not yet made up its mind about the Public Health Commissionership. The abolition of the separate post of Director of Medical Research may possibly be a necessary economy; the proposal to transfer his duties to the Director of the Research Institute at Kasauli does not seem very happy, though it is proof that the Committee considered them to be of some importance. It is stated also that the Government is considering a recommendation of the Retrenchment Committee which aims at abolishing twelve bacteriological research appointments.

The annual grant to the Indian Research Fund was originally 5 lakhs (about £30,000); it was reduced during the war to 3½ lakhs, but the fund has accumulated a considerable sum of money, put at 33 lakhs (£200,000), to meet the cost of the erection and equipment of a Central Medical Research Institute at Delhi. Apparently the plans for this Institute are not to be proceeded with, and the Research Fund is to make use of the interest on the 33 lakhs to meet current expenses. The *Journal of the Indian Medical Research Fund* bears witness to the importance and variety of the researches carried out under its auspices and with funds supplied by it. It seems a paltry piece of economy to cut down the relatively small sum provided for the scientific study of the causes which lead to the high mortality among the 350 millions of the population of India. It represents an expenditure of about one-twelfth of a farthing a head a year.

Thus bad begins, and worse remains behind. The proposal to abolish the office of Public Health Commissioner for India (formerly called the Sanitary Commissioner with the Government of India) is a step backwards. All medical and sanitary subjects, including general provisions for public health, hospitals, dispensaries, research institutes, and sanatoriums, are among those transferred to provincial Governments, in pursuance of the policy, with which we have no quarrel, of making the Indian people self-governing. The Montagu-Chelmsford report said that the work of the European official in India may be expected gradually to undergo a change, so that "instead of continuing to the same degree as now as the executive agency of Government, he will stand aside more from

the work of carrying out orders and assume the position of a skilled consultant, a technical adviser, and an inspecting and reporting officer." But this has no bearing on the proposal to abolish the Public Health Commissionership.

In a statement lately put out by Colonel W. G. King, C.I.E., formerly sanitary commissioner with the Government of Madras, Sir Ronald Ross, K.C.B., and Professor W. J. Simpson, C.M.G., it is estimated that during the decade 1910-20 the death rate among the census population of 228 millions was in four years within a fraction of 30 per mille; in four other years it was considerably higher; in one year the rate, owing to influenza prevalence, rose to 62.4 per mille; the lowest rate recorded in any year was 28.72. These statements are based on the statistical abstract recently issued as a parliamentary paper. It is pointed out also that the mean expectation of life of the Indian male at birth, which was 24.59 in 1891, had decreased to 23.63 in 1901, and to 22.59 in 1911. In England the expectation of life of the male infant, which was 40.17 in 1841, had risen to 51.50 by 1910-12. The death rate of England and Wales last year was 12.9. There would seem, therefore, to be a good deal for the skilled consultant and technical adviser in public health to do in India.

The international aspect is also of very great importance. It must be remembered that though to officials, whether European or Indian, who are working in India the peninsula may seem to be a congeries of provinces and states, yet for the rest of the world India is a whole, a single country, with a rather evil reputation as a reservoir for great epidemic diseases such as cholera and plague. India is represented at official international sanitary conferences, and it is represented also in the Health Section of the League of Nations. How it is to make its voice heard, and how it is to deal effectively with the suggestions of other nations made at such conferences if it has no central public health department under skilled direction, it is difficult to see. In its letter to the India Office, published in the Supplement of April 7th (p. 103), the British Medical Association confessed its inability to understand the hesitation of the Government of India in giving effect to a progressive policy in health matters in India, and went on to point out that in this country it has been found politic recently to establish a Ministry of Health as an independent department of State with a Cabinet Minister at its head. That was written before the recommendation of the Inchcape Report to abolish the office of Public Health Commissioner in India was known. It is a criticism in anticipation of that recommendation, and it expresses, we believe, not only the medical but also the general public opinion in this country. However wise devolution in public health administration may be, the fact remains that from the international, as well as from many internal aspects of the matter, India must be regarded as one whole, and should therefore have an efficient central public health organization, responsible through the Governor-General and the Central Government of India, to the rest of the world.

## "THE NEW MIDWIFERY."

WE are glad to be able to print to-day an address by the late Dr. J. W. Ballantyne, delivered before the Nottingham Medico-Chirurgical Society at the beginning of this year and revised by him shortly before his death on January 23rd. The lecture will be read with interest as a concise and stimulating statement of "The New Midwifery," which has been evolved owing to the proved value of ante-natal hygiene, and the great success which has attended the treatment of the child during its mother's pregnancy. This success has been specially



marked in cases which, if not treated, would end in congenital syphilis, or in the less understood dangers incurred by the child in the presence of maternal toxæmias. Effective supervision of pregnant women, especially primigravidae, has saved both mothers and children from the dangers of obstructed labour in cases of contracted pelvis or other pelvic abnormalities, by a timely induction of premature labour, or by surgical interference at a prearranged date. Intelligent anticipation of obstetric complications has revolutionized midwifery by making it largely a preventive science, so that by preliminary measures the coming labour can be safeguarded and its risks avoided or minimized. Previous to the appreciation of ante natal hygiene, the obstetrician went to his midwifery cases prepared up to a certain point to prevent complications and to repair damages, but his efforts were practically concentrated within the time limits of the labour itself, whereas the management of the "new midwifery" goes back to the beginning of the pregnancy, or even to the preparation of the parents to become fit progenitors of their children. Dr. Ballantyne was practically the first to describe scientifically the diseases of the foetus. His book, published in 1892, was followed ten years later (1902-4) by his comprehensive *Manual of Ante-natal Pathology and Hygiene*. He has recorded his regret that this work was published just before the discovery of the spirochætal source of syphilitic infection (1905). The national importance and significance of his ante-natal observations were for many years not fully realized, especially as regards the loss to population from intrauterine disease and death.

In 1914, in an address on "Ante-natal Hygiene," published in the *BRITISH MEDICAL JOURNAL* of February 14th, 1914 (p. 355), Dr. Amand Routh collected estimates from various sources which seemed to indicate that as many fertilized ova perished *in utero* as infants died in their first year; the infantile death rate was then about 100 per 1,000 births. This estimate of the ratio of intrauterine to infantile deaths still holds the field, but cannot be scientifically established owing to the lack of organized statistics, especially as regards abortions. The loss of life in the war, which broke out six months later, emphasized the value of life even in its early stages, and ante-natal clinics are now at work throughout the country. Dr. Ballantyne did not cease to insist on this national aspect of foetal morbidity and mortality; he showed also that a large and unsuspected proportion of the foetal deaths occur during the actual birth, especially if the child be weakened by ante-natal disease or prematurity, or if there be a relatively contracted maternal pelvis. He gave the name "intra-natal" to this birth mortality, and this nomenclature has been universally adopted. It is estimated that its death rate probably represents about 25 per cent. of the total stillbirths. Dr. Ballantyne went farther and pointed out that a large percentage of the early post-natal deaths of children should really be included in this birth mortality because they are often due to preceding ante-natal conditions in mother and child. This explains the fact that in 1920, out of 76,552 infantile deaths, 9,894 (12 per cent) died in the first twenty-four hours of life, and 20,679 (27 per cent.) during the first week.

The value of Dr. Ballantyne's ante-natal researches has been enhanced by the conclusive demonstrations given in his wards and lecture room at the Royal Maternity Hospital, Edinburgh, where he had been able to reduce the stillbirth rate of his cases by 50 per cent. He proved that in order to render ante-natal clinics and pre-maternity wards fully effective they must be associated with a pathological laboratory for diagnostic purposes, and for research into the pathological chemistry of maternal toxæmias; he maintained also that

facilities should be provided for the treatment of venereal disease during the pregnancy. These aids he considered essential. He suggested, too, that a dental clinic should be available as a part of pre-maternity work, so that the mouths of all women likely to become mothers should be free from sepsis—a precaution which could be advantageously extended to the nurses, midwives, and doctors in attendance. These essential developments have been built upon the work begun by Dr. Ballantyne over thirty years ago, and it must have been a great source of happiness to him to have lived to see his views brought to full fruition. Many of those who have followed in his steps have been encouraged to do so by his personal advice and co-operation, by his numerous published addresses, and by the cordial private communications which his generous sympathy for the work of others impelled him to write. He realized that unless his medical colleagues endorsed his views and methods he could not, unaided, be successful in his aim and object—that every pregnant woman should arrive, at the hour of her labour, in a suitable environment, and with every recognizable risk removed, so that the obstetrician, when summoned to attend his patient, whether in hospital or private practice, would know that everything had been done to facilitate the passage of a healthy child through the normal pelvic canal of a healthy woman.

Dr. Ballantyne's address should be read by every practitioner and by every student, for it is only possible to ensure uncomplicated midwifery cases if everyone concerned in their management will accept his last message—truly a legacy of his life's work—and will carry out with care and intelligence the essential points in his recommendations.

#### JOHN VENN OF CAIUS.

ON April 4th passed away John Venn, Sc.D., F.R.S., F.S.A., who will be remembered by medical men as the biographer of Dr. John Keys and the historian of the college which bears his latinized name, Caius—more correctly *Gonville* and *Caius College*. The works which he wrote about the college are somewhat voluminous, and are characterized by thoroughness; but are for the most part full of human interest. As a rule they are pleasant reading, though in parts they are necessarily statistical. They include the following: *A Biographical History of Gonville and Caius College, 1319-1897*, a work in four large volumes, with portraits and other illustrations. *Gonville and Caius College*, an octavo volume in the Cambridge College Series. *John Caius*, a biographical sketch written in commemoration of the 400th anniversary of his birth, celebrated on October 6th, 1910. "The Annals of Gonville and Caius College," 1934. *Admissions to Gonville and Caius College, March, 1553-9, to January, 1603-9*. He wrote also several works dealing with the University in general, among which the following may be mentioned: *Early Collegiate Life*, containing sketches of life in the university in the olden times, with an appreciation of Dr. Caius, and the story of Thomas Dover, "The Buccaneer Physician," inventor of Dover's powder, and discoverer and rescuer of Alexander Selkirk on the island of Juan Fernandez. In addition he compiled, with the aid of his son, J. A. Venn, *Alumni Cantabrigienses*, a biographical list of all known students, graduates, and holders of office in the University of Cambridge from the earliest times to 1900 (the later volumes of which are yet to be published), and the Book of Matriculations and Degrees from 1544 to 1659; and with his wife he wrote Notes on the Persæ School, Cambridge, from 1619 to 1864, from the admission registers of *Gonville* and *Caius College* and other sources. The work of his early life was in the domain of logic, and he published three important books on that subject—namely, *The Logic of Chance* (1866), *Symbolic Logic* (1831), and *The Principles of Empirical or Inductive Logic* (1889), each of which went



through two or more editions. He also lectured on the subject, and was examiner for some years in the Moral Sciences Tripos; but he gradually laid it aside as his work in history developed. He took a prominent part in the work of the Cambridge Antiquarian Society, and was a frequent contributor to its publications. In his book, *Annals of a Clerical Family*, he records the history of the Venn family during some four centuries, tracing its origin to the Venns of Devon, who had probably migrated from Somerset. The name was at first spelt Fenn, but the spelling was changed to Venn to accord with the West Country pronunciation. John Venn was born in 1834 at Hull. He entered Caius College in 1853, and was Sixth Wrangler in the Mathematical Tripos of 1857. He was elected Fellow in the same year, subsequently became Senior Fellow, and was appointed President in 1903. He was in holy orders for some years, and in 1869 was Hulsean Lecturer, but he relinquished orders in middle life. Born of an evangelical stock, he was always an advocate of evangelical views. At his death, though in his 89th year, Dr. Venn retained to the full his clearness of mind and much of his activity of body. He was always willing to place his great store of knowledge at the disposal of others.

#### HOME MILK PRODUCTION.

THE Agricultural Tribunal of Investigation appointed towards the end of last year issued, on April 6th, an interim report which contains a section dealing with milk supply. At present nearly all the fresh milk we use is produced in this country, and the tribunal recommend that fresh milk and cream should only be allowed to be imported (under licence) when there is satisfactory evidence that the conditions of production and transport in the foreign country reach a hygienic standard equal to that required in this country. Imported dried milk should, it is recommended, be certified as free from adulteration, and on the tins of imported preserved liquid milk the constitution of the contents should be clearly stated. The committee has also considered the economic conditions under which fresh milk is produced in this country. There is, it is stated, evidence of a considerable increase in the number and extent of operations of farmers engaged in the production and supply of fresh milk. As a result there tends to be a recurring crisis, due to over-production of milk, particularly in summer, and resulting in considerable loss through wastage or uneconomic use of milk. The remedy for this lies in the erection by associations of farmers, or by companies who purchase their milk, of milk-collecting dépôts at local centres, equipped with plant for the proper treatment of the milk before raling and for the conversion of the surplus milk into dried or preserved milk, butter, or cheese. The economic value of such societies is great, for they assist payments according to quality, economy in collection, and treatment of surplus milk, while the by-products can be used locally for feeding stock. Foreign and colonial experience has fully demonstrated the advantages of such dépôts equipped for converting surplus milk. Dépôts in Scotland have been of much benefit to dairy farmers, and the same is or was true of the creameries in Ireland. The Tribunal expresses the opinion that the State should actively encourage the formation of such societies or companies—advancing loans to assist in the erection of the necessary plant, as has been done in Scotland. Further, in the interests both of the farmers and of the food of the community, an active propaganda should be carried on to increase the consumption of milk, as has been done with most marked success in recent years in the United States.

#### THE EFFECT OF TROPICAL CLIMATE ON EFFICIENCY.

At a meeting of the War Section of the Royal Society of Medicine on April 9th, Squadron-Leader T. F. Rippon, R.A.F., discussed the effect of tropical life upon physical and mental vitality. A good deal of the paper was occupied with a description of his investigations on eye trouble due to

tropical glare. Such trouble might manifest itself, he said, as a superficial irritation, with certain slight symptoms including frontal headache, or as retinal fatigue, with dimness of vision at night and prolonged after-images, or as an inability to sustain accommodative and convergent efforts for any length of time. He had examined certain flying men in Egypt who showed signs of this last defect. Every exciting cause other than glare was excluded, and an attempt was made to measure the impairment of accommodation. It was possible only to represent the results roughly, but he found in a certain group of men who had complained of eye fatigue that their power of accommodation was only about half what it should have been. The disability was more noticeable in the months of May and June than in April. This inability to sustain accommodation caused discomfort, but in its mild form it did not interfere with the estimation of distance on landing an aeroplane. Only when there was marked failure of accommodation and convergence for near points was the judgement disturbed; but, of course, a degree of fatigue which might cause no error of judgement in an able and experienced pilot might so result in a novice. Even the seasoned pilot, however, when his eyes showed signs of wear and tear on account of tropical glare, would admit that he no longer made his landings automatically as he used to do, but had to take conscious care and deliberation, and was often filled with apprehension. Thus he tended to lose self-confidence and the visual disorder became, in its turn, the cause of psychological trouble. From this it appeared that the receding of near-point accommodation was the sentinel symptom of eye fatigue, calling for further examinations. The association between tropical glare and the breakdown of convergence was studied also. Optometric measurements showed poor convergence—the near-point of convergence being outside 4 in.—in eight out of a group of thirteen cases suffering from effects of glare, and here again the condition was worse in May and June than it had been in April. The speaker then discussed the influence of a tropical climate in developing a psychoneurosis. Besides the fatigue caused by heat and glare, and the irritation from insect bites, there were other tropical conditions, such as lack of nourishing food and periodic attacks of gastric disorder, which were likely to impair the higher centres' control over the lower. Thus the resident in the tropics might be unable to concentrate, or might give way to anger over trifles. An intelligent adaptation to environment would discount these effects in time; nevertheless, before this adaptation was learnt there might be sufficient loss of control to produce a psychoneurosis. Other predisposing factors in tropical life included the sense of being always under critical observation, an exaggerated desire to maintain prestige, and the strain of keeping watch over emotions, associated perhaps with racial antipathies. The European in India, where the Mutiny was still remembered, could not forget that he was living in the midst of a potentially hostile race, and it was this which accounted probably for the habit of Englishmen in India at every station to congregate in clubs. To these conditions, in the case of men in the Air Service, was added the emotional stress of an occupation which was a new adaptation of the human organism, was taken up by the individual in adult life without previous education, and was associated with danger on every occasion. In the course of a brief discussion Major J. W. Spencer suggested that neurasthenia might explain many of the mental or nervous symptoms seen among men on tropical service. The neurasthenic was under the sway of an emotion of which he could not get rid by the exercise of his free will, and which paralysed or undermined his judgement; he showed also a loss of power of concentration and a general lack of mental energy, or an inability to pull himself together. The man who had been in the tropics for a number of years, although he returned home vigorous enough in general health, often complained of some impairment of memory and a difficulty in taking up close work, such as study for an examination, which might be required of him; also he inclined to pessimism. These were the symptoms of the neurasthenic. The great saving thing in the trouble was



to have some interest outside oneself which would serve as a way of escape. It might take the form of religion, family devotion, or genuine interest in work or sport. Service abroad took a man away from all his former associations and subjected him to the strain of a hot climate and to other strains, but the worst thing it did was to leave him with considerable unoccupied spaces of time. Such conditions gradually led to a habit of introspection, which was the beginning of the neurasthenic state. The remainder of the discussion consisted of a few remarks by several speakers on the irritability often shown by the tropical resident. There was a disposition to accept a physiogenic rather than a psychogenic explanation, and the general idea appeared to be that it was due to congestion of the liver. Squadron-Leader Rippon agreed that the liver might have much to answer for, but he still held to the view that the primary cause was a loss of psychic tone, resulting in a diminished control by the higher centres over the lower.

#### HARVEY AS AN ART CRITIC.

AN interesting paper on Dr. William Harvey as a man and an art connoisseur was read by Sir D'Arcy Power at the Paris Congress of the History of Medicine in 1921, and has now been published in its *Transactions*. For the most part Harvey's biographers have concentrated upon his scientific attainments, and few have thought of him as a man of like parts and passions as ourselves. Sir D'Arcy Power deals with his human side—with his hobbies and his earlier years. The early Stuart period was marked by a renaissance of art in England. Even in the later years of Elizabeth's reign art collectors existed, chief among them being the Lord Lumley, founder of the Lumleian lectures at which Harvey was destined to announce his discovery of the circulation of the blood. The fashion spread rapidly under James I. Within ten years of his accession the Earl of Arundel, the Earl of Essex, the Duke of Buckingham, and Lord Pembroke were buying art treasures in Italy, in Spain, and in the Levant; were commissioning artists like Rubens and Van Dyck; and were employing such agents as Inigo Jones and the Rev. William Petty to advise and help them. Whilst Inigo Jones was studying painting and architecture in Italy at the expense of Lord Pembroke, Harvey was studying medicine at Padua, where he graduated in 1602. Later in life they certainly were acquainted, for in 1655, three years after the death of Jones, John Webb published *Stonehenge Restored* at the instigation of Harvey and Selden, a work which Jones had left unfinished. Apparently Harvey's residence in Italy had engendered in him a love of the arts, especially painting. The number of portraits for which he sat suggests that he was an unusually good sitter, who was thrown much into the company of artists. In 1636 Harvey travelled in the suite of the Earl of Arundel when that nobleman was sent as Ambassador Extraordinary to the Emperor Ferdinand II. In the course of this tour Harvey was given "a little start" into Italy with "some employment to Mr. Petty about some pictures for His Majesty." The Rev. William Petty was one of Lord Arundel's agents and art collectors, and it is to his artistic acumen that we are mainly indebted for the Arundel marbles. Harvey's journey from Ratisbon to Venice was not without adventure. On the pretence of an irregularity in his passport he was detained at Treviso, whence he wrote angry letters of complaint to Lord Feilding. Lord Arundel heard of his difficulties and wrote to Mr. Petty: "I hope poor Dr. Harvey is with you by this. I received a letter from him yesterday that he has been miserably vexed in the lazaretto at Treviso. I hope he will recover his time lost with satisfying his curiosity, which you will assist him in at Florence and Rome." Of Harvey's energy the Earl speaks jestingly in another letter to Petty: "I hope I shall see the little perpetual movement called Dr. Harvey here before my going." These letters show throughout that Harvey was held in high estimation for his personal qualities, and that so great a judge of men and art as the Earl of Arundel thought him

worthily to be entrusted with a commission to buy art treasures at Rome for the King. It is true that the Earl considered Harvey only as an amateur and entrusted him to the care of Petty, who was a professional in the art of collecting. But the correspondence bears out what we knew from other sources—that Harvey in his prime was a genial and lovable little man with artistic taste that ran in the direction of pictures. It is perhaps not without importance to reflect that other great scientific discoverers, notably John Hunter, Jenner, Sir Charles Bell, Charcot, and Pasteur were, like Harvey, men of uncommon artistic tastes.

#### SMALL-POX PREVALENCE.

THE Registrar-General's returns show that 213 cases of small-pox were notified in England and Wales outside of London in the five weeks ending March 31st, the latest date to which the official returns are at present available. In the successive weeks the numbers were 45, 53, 35, 28, and 52. The counties affected were Derby with 67 cases, the West Riding of Yorkshire 41, the North Riding 23, Lancashire 42, Nottingham 20, Durham 7, Gloucestershire 8, Stafford 4, and Lincolnshire (the Lindsey) 1 case. In Derbyshire Clowne had 31 cases and Heanor 26, in the West Riding Doncaster had 24 cases and Adwick-le-Street 8, in the North Riding Middlesbrough had 22 cases, in Lancashire Nelson had 40, the county borough of Nottingham had 6, in Gloucestershire Cheltenham had 5, and the county borough 3. From local newspapers we learn how the disease continues to manifest itself in places already attacked, as in Clowne and Stapleford and Nelson. At Clowne it seems a prominent local anti-vaccinationist was summoned to the police court for failing to notify a case in his house, but he was unable to obey the summons, as in the meantime he himself had been attacked by the disease and removed to hospital. At Nelson, where it is said there are many anti-vaccinationists, special efforts were being made to control the infection. Day schools and Sunday schools were being closed, children were being excluded from cinemas, many proposed entertainments and meetings had been postponed, a political club bazaar had been deferred to November, various other arrangements cancelled, and the existing hospital accommodation has been largely extended. At Hebden Bridge a Bradford woman on a visit to friends felt ill and went to the consulting-room of a local doctor, where, after being seated in a waiting-room with fifteen other persons, the doctor found she was suffering from small-pox; he had her removed to hospital whilst he vaccinated all the people in the surgery and the contacts as far as discovered. His prompt action is much to be commended. At West Bromwich a case was notified on March 27th and isolated in hospital, all known contacts being vaccinated. In our issue of March 10th it was stated that in the first eight weeks of the year 305 cases had been reported outside of London. The 213 notifications in the succeeding five weeks bring up the total to 518 for the quarter, and the disease, as just indicated, continues to be heard of from various localities. Fortunately London remains so far free from the infection since the suppression of the outbreak in Poplar workhouse. From Geneva intimation has been received of epidemic small-pox in mild form in various parts of Switzerland.

#### ENVIRONMENT AND INTELLIGENCE.

THE Medical Research Council has issued a report<sup>1</sup> of a piece of work, originally undertaken by Mrs. Frances Ward, and on her death arranged for publication by Dr. L. Isserlis, on the relation between home conditions and the intelligence of school children. The material analysed was collected mainly in two London schools in similar neighbourhoods and near together. The social conditions of the children were ascertained by reference to the medical record cards. The teachers furnished estimates of the intelligence of the children, and, further, a psychological test was made by the investigator.

<sup>1</sup> Stationery Office, 1923. pp. 23. price 1s. net.



The correlations of the marks obtained in the intelligence tests with age and the teacher's estimate of intelligence were sufficiently high to warrant confidence in the teacher's work. In the lower classes the younger children and in the upper classes (to a slight extent) the older children were considered by these teachers to be more intelligent. This was possibly explained by the presence of mentally defective children in the lower classes who would have been removed to special schools before upper classes were reached. The correlations between the teacher's estimate of intelligence and social position were all positive—that is, the children of higher social position showed more intelligence. The more intelligent girls were better clothed. It is considered that on the present data it is justifiable to conclude "that progressive improvement in home conditions may be expected to react favourably not only on the health but also on the intelligence of school children. Another argument, if additional arguments are needed, is thus provided for further efforts to ameliorate the home conditions of the children who attend elementary schools." It is, however, admitted that this conclusion is open to argument, for it may be that the better clothed and cared for children who show superior intelligence are better cared for because their parents are of superior intelligence and industry and the superior parents hand on their superiority to their children. The research is of much interest, and it is to be hoped that it will be extended so as to throw some real light on the shares of environmental and inborn factors in producing intelligence.

#### RACIAL ASPECTS OF ALCOHOLISM.

An address, designed to introduce discussion on the differences in the distribution of alcoholism in different races, was delivered by Dr. W. M. Feldman before the Society for the Study of Inebriety on April 10th. Unfortunately, perhaps because the subject was too complex, little or no discussion was forthcoming. The fact that there was a differential incidence of alcoholism among the various races was accepted by Dr. Feldman as unquestioned. The sobriety of the Jew was, he said, proverbial, and was borne out by his own professional experience. In the course of some twenty years' practice among Jews of all classes he had come across not more than two or three cases of alcoholism. His patients included a number of Jews who were engaged in the sale of alcoholic drinks, but they were nevertheless perfectly sober. He also quoted some statistics of the American Army in 1917-19, showing the percentages of alcoholism found among the men of fifteen different races. The Mexicans were at the bottom of the list, and the Irish at the top. The percentage among African negroes, Jews, and Italians, was very small. The question was whether these wide differences in the frequency of alcoholism were truly racial in character or due to circumstances connected with environment. Was it to be believed that there was a correlation between the inborn physical or psychological characters of a race and its tendency towards or away from alcoholism, or must the differences in sobriety be assigned to such external factors as climate, social control, and economic conditions? The answer called for the patient co-operation of unbiased experts in several fields. It had been suggested that there was some peculiarity in the composition of the blood of the different races which altered the nervous stability so that some races fell an easier prey to alcoholic indulgence than others. This theory was no more than a vague belief; the evidence seemed to be against it, for if the craving for alcohol was determined by the blood, it was to be expected that particular hormone in the blood connected with the craving the same constituent would be as or narcotics, but statistics for other kinds of stimulant failed to reveal any positive correlation between alcoholism and other drug addiction. In some detail with sober in all climates. Dr. Feldman dealt with the theory advanced by Sir Archdall Reid that the craving for alcohol is a hereditary character

parent to offspring, and that the drug has tended in the course of generations to weed out its addicts. It was urged by the supporters of this theory that the modern Jew was temperate because the ancient Hebrews drank to excess. Dr. Feldman denied that alcoholism was excessively prevalent among the ancient Hebrews. Nor was it the fact that Jews drank less than Gentiles. Jews drank considerable amounts of alcohol but they did not get drunk, probably because they seldom drank alcohol without at the same time taking food with it, and because there were social prohibitions among Jews which prevented intoxication. On the theory of selective action environment should have no effect upon the incidence of alcoholism, but the statistics of the American Army showed that the tendency amongst the native-born of the various races was to approach the mean for alcoholism for the whole of the United States, so that offspring of parents amongst whom the percentage of alcoholism had been high had a lower incidence of alcoholism, and the converse, almost in accordance with Galton's law of filial repression. According to the selective theory, alcoholism could only be cured by the extermination of the drinker, not of the drink. Elaborate and extensive eugenic measures might ultimately eliminate alcoholism, but the remedy might be worse than the disease. Moreover, biological evidence tended to show that it was not the actual but only the potential personality which was predetermined in the germ cells. In a brief discussion Dr. C. F. Harford said that he could not believe that racial susceptibility to alcohol was something in the blood or something handed down in the germ plasm. He believed that it was determined by the habits of races. The restraining or provocative influences were social customs, religious observance, the existence of facilities for drinking, and the economic situation.

#### CLUBBED FINGERS IN SUBACUTE INFECTIVE ENDOCARDITIS.

The physical sign of clubbing of the ends of the fingers, sometimes called Hippocratic fingers, though the Father of Medicine referred rather to overcurving of the nails, has been the subject of many short studies, and its causation has excited no little interest. Its association with cyanosis and local venous stasis of cardiac origin on the one hand, and with infective conditions, especially in connexion with the lungs, such as bronchiectasis and empyema, has long been recognized; but it is rather remarkable that infective endocarditis has only recently been realized as a frequent and important causal factor. This may be due to the increased incidence of subacute bacterial endocarditis as a result of war conditions and especially to the opportunity thus provided for their intensive study in the Sobraon Military Heart Hospital at Colchester. The history of this clinical observation and the results of a collective investigation into this subject carried on at University College Hospital between September, 1919, and March, 1921, have recently been given by Dr. Thomas F. Cotton.<sup>1</sup> Soon after the Colchester Hospital was opened in 1917 the association between clubbed fingers and subacute infective endocarditis was thought to be more than a coincidence, and before the hospital closed this sign was regarded as one of the most reliable guides to the diagnosis of this cardiac lesion. Attention was called to this in 1920 in our columns by Sir Thomas Lewis and by Dr. Cotton (BRITISH MEDICAL JOURNAL, 1920, ii, 301, 851), and Dr. Cotton has now expanded his observations and given an elaborate analysis with several tables dealing with 63 examples of clubbed fingers among 798 cases of acquired cardiac disease in army pensioners. Statistically clubbing of the finger-tips was found to be specially associated with chronic venous congestion and aortic regurgitation; but this relationship was not direct or exclusive and is explained by the almost constant presence of venous stasis in subacute infective endocarditis, the predominant lesion of which is aortic incompetence. Out of the 63 cases with clubbed fingers no fewer than 41, or 70 per cent., undoubtedly were examples of infective endo-

<sup>1</sup> T. F. Cotton: *Heart*, London, 1921, ix, 317-321.



carditis and proved fatal within a year; 4 more presented doubtful signs of infection. In the remaining 15 cases, 5 of which proved fatal, the clubbing of the fingers appears to have been unconnected with the cardiac disease; in 2 instances it had existed for many years, and in some of the others it consisted in thickening of the nail bed associated with small breaks in the skin of the lunule of the nail; the chronic superficial irritation thus excited probably caused the clubbing, which is not uncommon in the damaged fingers of labourers.\*

#### STATISTICS OF A BABY CLINIC.

THE latest publication of the Department of Applied Statistics at University College is a *Study of the Data Provided by a Baby Clinic in a Large Manufacturing Town*, by Miss Mary Noel Karn and Professor Karl Pearson.<sup>1</sup> The general problem the authors attempted to solve was: "What factors are there in heredity or environment which influence the general health of our babies?" The material appears to them "neither superlatively good nor, on the other hand, superlatively bad. It is just what you might anticipate it would be, after the first enthusiasm of promotion has died down when a big scheme is carried out largely by voluntary and only partially trained 'field workers' who lack the intense earnestness of real scientific minds. Yet on the whole the results are in good accordance with the more weighty material we hope shortly to publish on infant welfare as investigated under the control of the local medical officers." Information was supplied respecting rather more than 1,700 infants, and the data have been analysed by the method of correlation, but salient features are, for the benefit of the non-statistical reader, exhibited in diagrammatic form. The general conclusions are set out under thirty-three headings, and may perhaps be indicated by saying that no factor evaluated could be deemed of paramount importance in the determination of infant welfare. A large majority of the coefficients of correlation were small, many not significant having regard to their "probable errors." In some instances where a correlation was large, its *prima facie* interpretation was suspect. A good example is the use of a baby "pacifier" or "comforter." Most medical men, perhaps most people who attach importance to cleanliness, have stigmatized these dirt-accumulating instruments. Considering the data as a whole, there were 769 records of the use of a comforter, 496 where it was not used. Taking the record of experience down to the end of the first year, 75 per cent. of the comforterless infants are in good health, and only 2.4 per cent. dead; 60.3 per cent. of the users of comforters are in good health, 13.9 per cent. dead. Expressed in the scale of correlation, the correlation between use of comforter and health is  $-0.2501 \pm 0.0298$ . This looks very bad for the comforter, but if the relation between a baby's health during the first fourteen days of life and the use or non use of the comforter during the whole year be scrutinized, it is found to be much larger—namely,  $-0.47 \pm 0.08$ , while again the mother's health is appreciably ( $-0.1662 \pm 0.0298$ ) correlated with the use of the comforter. "Thus," write the authors, "as far as the present statistics are concerned, we have not been able to trace any marked influence of the comforter. Whatever influence it may have is screened by the selection of the babies on the one hand and the mothers on the other who adopt it." The criticism which will be passed upon the data as a whole—that is, that the smallness of the various correlations is a consequence of the dilution of the material by errors of observation, careless or inaccurate recording, etc., a criticism which is only of value when more exact particulars leading to other conclusions have been assembled—cannot explain away this difference. We do not suppose that the most pessimistic reader of Miss Karn and Professor Pearson's memoir will be convinced by it that infant welfare work is waste of money and energy. We do not think that Miss Karn and Professor

Pearson desire to create that conviction. The lesson which is inculcated is that, in the matter of infant welfare, as in every other problem of preventive medicine, truth is hard to come by; one must travel by a long, difficult, and weary road. The correlational method of locomotion is not particularly exhilarating, but its devotees are entitled to cite Horace:

Vive; vale. Si quid novisti rectius istis,  
Candidus imperti: si non, his utere mecum.

#### SCHOOLS FOR MENTALLY AND PHYSICALLY DEFECTIVE CHILDREN.

THE Board of Education has issued a circular<sup>1</sup> on the arrangements of the "special schools" for defective children. The Board desires that all those children who need special educational methods should have this advantage, but that it should be provided at the least possible cost. To that end it has decided to adopt a less costly standard of staffing. At present teachers for these schools must possess certain specific qualifications. It is now proposed "to recognize as a teacher a person who does not possess those qualifications, provided that they are satisfied by inspection that he or she is competent to do the work, and that the staff of the school as a whole is adequate and suitable." Further, the teachers are to work harder. The numbers of the children in each type of school are to be increased: in the schools for the blind from 15 to 20; in the schools for partly blind from 20 to 25; in some schools for the deaf from 10 to 15; in those for mentally defectives from 20 to 25 in the junior classes; in those known as open-air schools from 25 to 40; and in the schools for cripples from 20 and 25 to 30. The question arises: Will the teachers be able to cope with this increase of work? These "classes" are not classes in any real sense of the word; the children in them are not fairly homogeneous groups of similar age and capacity who can be taught as a whole. The variety of age and disability makes individual teaching the rule rather than the exception, and it would seem that the additions of, roughly, 25 per cent. to the numbers each teacher has to teach will make the task so difficult that it will fail to be done. The proposed economy may in the end prove a serious waste of money and energy. The difficulty will be increased if untrained teachers are accepted as is provided in the circular; and it may be noted that no indication is given therein of what the Board considers fitness for this difficult work in the absence of any recognized qualification. Will the Board interview each candidate for a teachership, from whatever part of the country he or she may hail? A further circular letter issued by the Board of Education<sup>2</sup> deals with the payments by a local education authority for the education of children who are blind, deaf, or otherwise defective, in a school maintained by another authority or voluntary managers. Hitherto the Board has required that each such arrangement should be submitted to it for its approval, together with a statement of the payments to be made. Now it proposes, as a means of reducing clerical and administrative work, that the local authority should only be required to submit for approval a single application in general terms for the payment by the authority to any and every special school duly certified under the Act of 1921 to which the authority may wish to send children at fees that are current and approved.

#### AN ANCIENT EGYPTIAN MEDICAL PAPYRUS.

It is announced in a preliminary number of the Oriental Institute Communications of the University of Chicago that the New York Historical Society has entrusted Mr. J. H. Breasted, director of the Oriental Institute of the University of Chicago, with the preparation for publication of a medical papyrus acquired by the Society in 1936. The papyrus is believed to be of the end of the seventeenth century B.C., but may be as late as 1600 B.C. It is a roll over 15 feet in length, with columns 11 or 12 inches high. The important part of it

<sup>1</sup> Drapers' Company Research Memoirs—Studies in National Deterioration, X, pp. 128, with 48 diagrams and two charts. Cambridge: at the University Press. 1922. Price 15s.

<sup>1</sup> Board of Education Circular 1297, January 29th, 1923, to local education authorities and to managers of special schools.

<sup>2</sup> Circular 1298, February 9th, 1923.



is contained in seventeen columns in the front of the roll, in which there is a portion of an ancient treatise on surgery and external medicine. Unfortunately the beginning, which dealt with the head, is lost, and the scribe did not continue his copy farther down than the thorax and the beginning of the spine. The document differs strikingly from all the other known Egyptian medical books in that it is not a list of recipes or prescriptions, but an orderly arrangement of cases carefully observed. It contains a series of forty-eight, each recorded in the following order: Title, always beginning, "Instructions for . . ." (name of ailment); examination, always beginning, "If you examine a man having . . ." (symptoms follow); diagnosis, always beginning, "You should say concerning him: 'A sufferer with . . .'" (name of trouble follows); verdict, which is always one of three, "An ailment I will treat" (favourable), or "An ailment I will contend with" (doubtful), or "An ailment I will not treat" (unfavourable); treatment; explanatory glosses. This systematically arranged material, especially in the examinations and the explanatory glosses, reveals a scientific attitude which approaches the modern standard. The cases are in the main examples of various forms of injury, such as a sword-cut in the skull, and as these are due to physical causes quite clear to a physician they can obviously, even to the Egyptian mind, have no connexion with the activities of malignant demons of disease. The document is therefore not influenced, as other Egyptian medical documents are, by demoniacal medicine, and the mind of the ancient Egyptian is revealed as interested in the observable facts of science for their own sake. Mr. Breasted hopes to have his translation and discussion, with a facsimile reproduction of the hieratic text, ready for publication towards the end of the year; it will be issued by the New York Historical Society. —

and abet counsel or procure the commission in any place outside Great Britain of any offence punishable under the provisions of any corresponding law in force in that place," or to do "any act preparatory to or in furtherance of any act which if committed in Great Britain would constitute an offence against this Act." This seemed to him to place British law at the disposal of any other country which at any time might pass an enactment making, say, alcohol a dangerous drug. That was, perhaps, a farcical illustration, but let them take, for instance, laws which might be passed in Turkey, China, Japan, or the United States. He did not know whether there was any precedent for enacting in advance such severe penalties for aiding, abetting, and counselling the commission of any offence punishable under the provisions of any corresponding law in some other country. It seemed to be opening a very wide door.

Sir Sydney Russell-Wells said he would like to compliment Mr. Webb on the interest he had shown in medicine, but could not compliment him on being up to date. If he had followed the bill as amended in Committee most of his speech would not have been made. The distinction originally drawn between the medical man in actual practice and the other medical men had now disappeared. Moreover, if Mr. Webb had looked up the Acts to which reference had been made in the bill, he would have found that the schedules had been revised several times since they were first drawn up. Sir S. Russell-Wells, on behalf of the medical members of the House, expressed great appreciation of the courtesy and consideration shown by the Home Secretary to their representations. He had adopted in spirit every suggestion put before him. He had recognized that they were anxious to help him in making a bill which would remove abuses. It was impossible to say that all points had been provided for. It was almost certain that in actual practice small difficulties would arise, but he was sure that under the present administration they would be removed so far as possible by administrative Order. He thanked the Home Secretary for removing the Regulation which prevented doctors prescribing for themselves.

Mr. Bridgeman said that Sir Sydney Russell-Wells had really answered the questions put by Mr. Webb. What had happened in Committee was that the words "in actual practice" had been omitted from the bill, and thus the difficulty which Mr. Webb had mentioned had gone. If the House allowed the Regulation (revoking the prohibition against self-prescribing), then the words complained of would be entirely removed both from the bill and the Regulation. The schedule to the Amending Bill was made up under Section 2 of the original Pharmacy Act of 1868, and it had been brought up to date to 1908. Under Section 2 of that Act it was possible, on the advice of the Pharmaceutical Society Council, to add to the schedule. If they could convince the Home Office that any other drugs ought to be added, these could be added under Order in Council. With regard to corresponding laws in other countries, Mr. Bridgeman referred Mr. Webb to Subsection (2) of Clause 6, which explained the corresponding law very fully. It read:

"Any law stated in a certificate purporting to be issued by or on behalf of the Government of any country outside Great Britain to be a law providing for the control and regulation in that country of the manufacture, sale, use, export and import of drugs in accordance with the provisions of the International Opium Convention signed at the Hague on the twenty-third day of January, 1912."

That should provide sufficient safeguard to meet any apprehension.

Dr. F. E. Fremantle referred to two points of particular interest. One was the reduction of penalties for minor offences under the bill. There were now two series of penalties for two series of offences. As the bill originally stood a medical man who, through carelessness or through the fatigue of a day's work, might have failed to enter particulars in a book or to keep some records, would be subject to the highest penalty. It was desirable to have that matter corrected. The other point was contained in Subsection 2 of Clause 4. Under the clause every bottle containing medicine which included any of these poisons was to be labelled with the name of the poison and with particulars as to the proportion of the poison to the preparation. That met a difficulty in reference to patent medicines. The medical profession and the chemists always insisted in the public interest that it was essential that patent medicines, in view of the protection which they had from the law, should be bound to show their ingredients. On the other hand, those who stood for patent medicines and the commerce which they represented held that such a course was not in the interests of British trade, and that it involved revealing trade secrets. This bill met the conflicting claims. The pill maker or the patent medicine maker might still put all sorts of confections and infusions into his medicine—all the frogs' livers, the flowers, the herbs, and various other things—without revealing the secrets, but he was bound to give the proportion of any dangerous drug in the mixture. That formed a remarkable instance of sound legislation meeting two opposing views in the public interest. He joined in thanking the Home Secretary for his action in amending the bill.

Dr. Chapple recalled the report of the Patent Medicines Committee, which showed that one of the greatest evils spreading throughout this country was that of the traffic in secret remedies with which this bill did not deal. He appealed to the Government to take a long step farther and introduce legislation to remedy the evils which were there brought out. The report came at a very unfortunate time, being issued in July, 1914. It actually called attention to the vested interests which were supporting the patent medicines traffic, and therein lay a difficulty in legislation but he hoped that the Government would take the matter up.

Mr. Russell-Wells was read a third time.



# NINETY-FIRST ANNUAL MEETING of the British Medical Association, PORTSMOUTH, 1923.

## OLD AND NEW HOSPITALS IN PORTSMOUTH AND NEIGHBOURHOOD.

The origins of our hospitals are wrapped in the mists of the past. Even before the time of Tutankhamen sick and ailing Egyptians were taken to the temples that they might sleep in the mystic shadows of the pillars in the hope that the gods would in their kindness make whole the sick.

When and by whom the first hospital in this country was founded it would be difficult to state. One of the results of the revival of religion which followed the Norman settlement was the establishment of houses for the relief of the sick, the poor, and the infirm. Probably the earliest distinct record of the building of a hospital in England is that recorded in the life of Lanfranc, Archbishop of Canterbury. It is therein stated that in 1080 he founded two hospitals—one for the cure of leprosy and one for the cure of ordinary illnesses. These early charitable establishments remained in the hands of the religious houses till the time of the Reformation. St. Bartholomew's in London is about the oldest of these pious foundations, having been established in 1123. A few years later St. Thomas's was opened. These two, with Bethlehem, Bridewell, and Christ's Hospital, were for a long time known as the five Royal Hospitals.

### ANCIENT HOSPITALS OF HAMPSHIRE.

In the county of Hants we have one of the best examples of these mediæval hospitals that has come down to us. Bishop Henry du Blois—younger brother of Stephen—built his Hospital of St. Cross in the meadows south of Winchester. In 1136 he gave to it a statute placing it under the care of the knights of St. John of Jerusalem, but the charter was not confirmed till sixteen years later. Early in the thirteenth century control of the hospital was finally surrendered by the knights to the Bishop of Winchester, after considerable controversy between the knights and Henry II. Subsequently Cardinal Beaufort grafted on to the ancient foundation of Henry du Blois his "Hospital of Noble Piety." Having endured many vicissitudes and abuses the hospital fell into desuetude, but in 1831 the old foundation was revived, and the brethren of St. Cross are again in residence, and the daily dole to travellers is again dispensed. In connexion with this foundation it may be interesting to note that Henry du Blois gave command that thirteen of the poorest scholars of St. Swithun's School should each have his meals daily from St. Cross. St. Swithun's was in those days an old scholastic foundation that gave free education. Here, then, early in the thirteenth century, was already carried out in practice the present-day demand of free education and free meals for necessitous children.

As St. Cross was the great hospital for Winchester, so that of St. Julian functioned in like manner for Southampton. The old Maison Dieu was founded by Gervase le Rich, a wealthy merchant of Huguenot extraction, a Burgess of Southampton towards the end of the twelfth century. It was dedicated to St. Julian, the patron saint of travellers and those in want of hospitality. It was intended probably for the special use of pilgrims who were wending their way to Canterbury, a fashion that was then coming into vogue. The road to Winchester runs over the site of the old hospital.

Other ancient hospitals in Hants were those of St. John the Baptist at Basingstoke, founded by Walter de Merton in 1261; and one similarly dedicated at Andover, reputed to have been established by the Conqueror. In addition to these general hospitals others were especially established for lepers on Magdalen Hill, Winchester; at Southampton, Christchurch, and Newport.

### *Hospital of St. Nicholas, Portsmouth.*

The Hospital of St. Nicholas, better known as the "Domus Dei," was founded by Petro de Roche. Bishop of Winchester

between 1236 and 1212. It was the oldest foundation of its kind in Portsmouth. It was dedicated to St. Nicholas, a saint whose special function was to look after sailors and those in peril on the seas. The long main building consisted of a chapel at the east end, a large central part used as the hospital, with a wide porch at the west end. In addition to the large building there was a gatehouse, a guesthouse, and a Master's house, a large kitchen, larder, bakehouse, and stables. It was governed by a Master and Brethren, and derived some of its income from ground in St. Mary's Street given by King John, and from a portion of the manor of Fratton given by the burgesses of Portsmouth. It did good work for many years, but there were occasional complaints. One, for example, in the fifteenth century that "the pour pepull has nott ther bred baked and ther drynke brewed in the howsse as yt was wont for to be, and the Master kepeth there no ospitalite wiche ys a gret decay to the toune." The hospital was closed by Henry VIII in 1540, and subsequently the building was used as a munition store. The fabric was neglected and became ruinous, but in 1581 the church was repaired and the other buildings converted into the official residence of the Military Governor of Portsmouth and continued as such for three hundred years. In 1826 the Governor's House was demolished, but the dilapidated chapel was allowed to remain. Its restoration was begun in 1866, and it is now used as the garrison church.

The hospital for lepers was a little way outside the old town wall, on the site now occupied by the Guardians' offices. The hospital was dedicated to St. Mary Magdalene and St. Anthony. Mr. Gates says there is some evidence of another ancient hospital in the old borough. It was connected with the Chapel of Our Lady of Close, which stood on land now covered by Colewort Barracks, and appears to have been founded by a social and religious guild. On this old site the first military hospital in Portsmouth was erected, and that probably was the first in the kingdom.

### MODERN HOSPITALS.

The Hants County Hospital, Winchester, was founded in 1736 by Dr. Alured Clark, a Prebendary of Winchester (afterwards Dean of Exeter), in imitation of St. George's Hospital, London. This was the first attempt to found a hospital of this kind in this country outside of London and Westminster.

The hospital movement commenced in Portsmouth just a hundred years ago. The Portsmouth Public Dispensary was opened in St. George's Square in March, 1823. The work at first was partial and spasmodic. In 1836 Dr. Engleue started a campaign for establishing a general hospital. He submitted a plan to the committee of the dispensary which, together with the introduction of beds in some of the rooms, would make the institution suitable for the reception and treatment of patients. Considerable opposition was offered to his scheme, especially by his brother practitioners. A few years later Dr. Engleue made a second attempt, which resulted in the foundation of the Portsmouth, Portsea, and Gosport Hospital. In 1845 a meeting of townsmen decided to build a permanent institution, and there and then subscribed £700 towards the cost.

### *The Royal Portsmouth, Portsea, and Gosport Hospital.*

The earliest record of the Royal Hospital, as it is now more frequently called, is found in a deed dated May 5th, 1847. The Board of Ordinance granted a site in what is now known as Fitzherbert Street at a peppercorn rent for 999 years. The foundation stone was laid by H.R.H. Prince Albert on September 27th, 1847. The hospital was opened on January 2nd, 1849. The buildings cost £2,360. At first there were twelve beds, increased in the following year by the addition of three wards containing twenty beds. In 1868 the building in commemoration of the late Sir Francis T. Baring (first Lord Northbrook), for thirty-nine years member of



*The Borough Mental Hospital.*  
This hospital was opened in 1879. It is situated in beautiful grounds at Milton. There are several three-storied blocks in Gothic style, built in red brick, with Bath stone dressings, connected by corridors on the ground floor. A few years ago



four detached villas were erected in the grounds for the accommodation of private patients. There is a handsome hall for entertainments and a detached chapel in the grounds. There are very complete farm buildings and most of the work is done by patients. The grounds contain 117 acres. Accommodation is available for 922 patients. Dr. Henry Devine is the medical superintendent.

During the last year of the war these buildings were handed over to a medical unit of the United States Army for use as a base hospital.

#### *The Municipal Infectious Diseases Hospital.*

Situated in Milton, this hospital began in 1882 as a small building to accommodate twenty-four patients. At the present time it consists of eleven pavilions and affords accommodation for 265 patients. The buildings stand on a large area of land, which would allow of the erection of hospital tents if required for an unusual epidemic. The most modern pavilion is the observation ward. This consists of four wings radiating from a central room; each of the wings contains five single-bed wards, and as the sides of these are composed of plate glass it is possible for one nurse to keep the whole under observation from the central room. One pavilion containing thirty-two beds is used for advanced cases of tuberculosis.

#### *The Municipal Tuberculosis Service.*

The *Municipal Tuberculosis Dispensary* is a temporary structure situated in Victoria Park, in the centre of the borough. It was first opened in 1911 in a small building, which was soon found to be too small. The present building was opened in 1913, and contains clinical rooms, waiting and dressing rooms, and a laboratory.

*Langstone Hospital* is a small hospital for the treatment of early cases of tuberculosis. It is situated at the south-east extremity of the borough and overlooks Langstone Harbour, near the old locks. At one time a canal ran from here to where the town railway station now stands. A private house was acquired here in 1900 for the treatment of small-pox. In 1911 it was appropriated for the treatment of patients attending the Tuberculosis Dispensary. An iron building has been added, and there is now accommodation for nineteen patients.

In these grounds is another building known as *Beach Lodge*, with nine beds. It is used with great success in the treatment of tuberculous children.

#### *Maternity and Child Welfare.*

The *Municipal Maternity Hospital* is in Elm Grove, Southsea. It was opened in April, 1920, and is intended for the use of necessitous persons only, who are bona fide inhabitants of the borough. There are fourteen beds, and it is recognized as a qualifying training centre for midwives. There were 167 cases admitted in 1920.

*Child Welfare Centres.*—The main centre is in Fratton Road, with subsidiary centres in Portsea, Stanisham, and Eastney. There were more than 22,000 attendances during the last year.

*Natal Maternity Hospital.*—A small maternity home for the wives of sailors in the Royal Navy is situated in Clarence Parade. It is supported by the men of the navy.

#### *The Alexandra Military Hospital.*

Until recently the hospital for the treatment of the sick in the garrison was situated in Lion Terrace, Portsea, in a building at least one hundred years old. The site was sold some years ago to the Admiralty for £80,000. The War Office moved its hospital to a fine site on the southern slope of Portsdown Hill. A fine modern hospital was built here and opened in 1907. The structure is of red brick. The main building consists of an administrative block in the centre, with four blocks for wards attached and a special ward for officers. Each ward contains twenty-two beds and the hospital has accommodation for two hundred patients. In the extensive grounds are several detached wards for observation and for infectious cases. The commanding officers' quarters are on the west of the main block with the officers' mess in the rear.

Still farther back are the company barracks, offices, stores, and recreation room. On the east side are married quarters.

The *Military Medical Reception Station* is situated in Cambridge Road, Southsea. From here those soldiers who are sick and cannot be treated in quarters are removed to the Alexandra Hospital, Cosham.

*Hilsea Hospital.*—This is a small hospital a little way within the fortified lines guarding the entrance to the borough from the mainland. It is used for the treatment of specific cases.

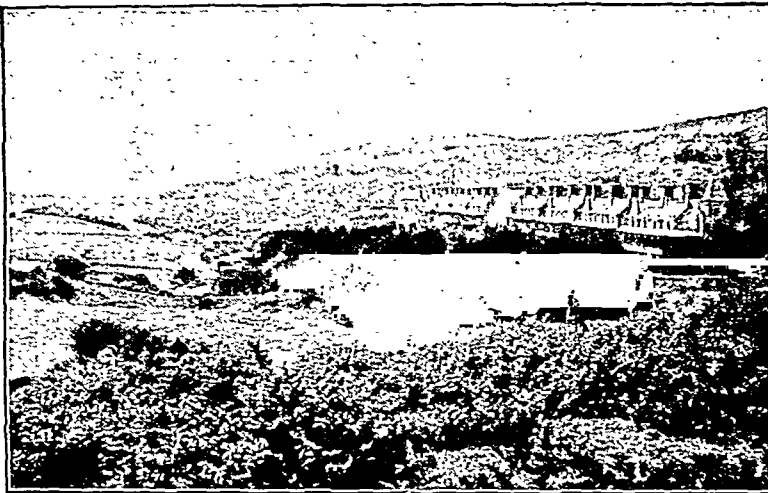
The *Military Families Hospital.*—This hospital was in Lion Terrace, Portsea. It has just been removed to a site at Hilsea. It is for the treatment of the wives and children of the soldiers in the Portsmouth Garrison.

#### *Haslar Hospital.*

In the good old days little provision was made for the care of sick and wounded sailors. After the battle of La Hogue in 1692 many wounded were brought to Portsmouth, and fifty surgeons sent down from London to look after them. Queen Mary made arrangements for some to be treated in the London hospitals of St. Bartholomew and St. Thomas—the only ones of their kind at the time. Orders were also given for the Palace at Greenwich, commenced by Charles II, to be completed and used as a retreat for disabled seamen.

In 1713 we hear of a "Fortune Hospital" near Gosport, where sick and wounded were treated under contract between Nathaniel Jackson and the Lords Commissioners of the

Admiralty. Similar contracts were in existence in the various ports up to the middle of the eighteenth century. Owing to difficulties frequently arising from these contracts it was decided, on the earnest recommendation of the Earl of Sandwich, to found a Royal Hospital at Gosport. The site chosen was known as Hazelar, or Haslar, or Hasleworth. At this spot, on a map of 1603, a castle is marked "Haselworth," but the place is called "Haslehorde" in



THE ROYAL NATIONAL HOSPITAL FOR CONSUMPTION, VENTNOR.

the "Usages of Portsmouth" as far back as the fourteenth century.

Horace Walpole says the architect was Theodore Jacobson. It is of the "Palace" type after the model of a portion of Greenwich Palace designed by Inigo Jones. Local tradition saith that the bricks were made on the spot—hence Clay Hall in the immediate vicinity—and that there are as many bricks in the foundations as there are above ground. The building was commenced in 1746, the front block completed in 1754; the wings were added in 1762 and the chapel on the west side was opened in 1763. It is said to have cost £90,000. The quadrangle of the hospital measures about 7 acres; the area enclosed within the boundary walls is 58 acres.

The hospital was originally intended for 1,800 beds, allowing an air space of 600 cubic feet a head; during the Crimean war it was made to hold 2,000, but the numbers have since been limited to 1,200. Patients on being landed at the pontoon in Haslar Creek are brought up to the hospital by a tramway running right up to the main entrance. The pavilion opposite the main entrances reminds us of the old press-gang days. Here was posted in those days a strong guard to prevent desertion.

Within the hospital there is an interesting museum of pathology and natural history. Amongst the osteological collection are some delicate skeletons set up by a curator who had but two fingers on one hand and none on the other. There are also some rare bird skins.

The hospital is well equipped and the medical school well up to date. All medical officers entering the Royal Navy have to pass through its portals.



By RICHARD J. CYRIAN, M.D., BRUX, M.R.C.S., L.R.C.P.

\* A paper read before the Nantaton and Tamworth Branch of the British Medical Association.



printed forms for distribution by practitioners, with the proviso that the latter should give such additional directions as particular cases may require. The Council advises also that patients should be requested to sign acknowledgements that they have received the information which the law requires practitioners to give them, and has issued a printed form of acknowledgement for the purpose. The practitioner need not, however, inform the patient of the nature of the disease if, in the first place, either the patient's state of health or other circumstances so demand; or, secondly, if the patient is a child under 15 years of age, in which case the necessary information must be imparted to the parents or guardians.

The practitioner must ascertain the source of infection as stated by the patient, provided that the case has not been under the care of another practitioner. Patients who make false statements regarding the source of infection are liable to heavy penalties.

Every case of venereal disease in a communicable stage is compulsorily notifiable by the practitioner to the medical officer of health of the district in which the practitioner resides. It rests with the medical officer of health to forward the notification to the medical officer of health of the district in which the patient resides, provided that the patient and practitioner reside in different sanitary districts.

The following particulars are required to be given on the primary notification forms, printed copies of which are provided.

(i) The kind of disease—that is, acquired syphilis (primary or secondary), congenital syphilis, gonorrhoea, or soft chancre; (ii) the sex, (iii) date of birth, and (iv) address of the patient; (v) particulars of the locality and actual place in which the disease was acquired; (vi) the name, occupation, and address of the person from whom it was acquired; (vii) a space is provided for "remarks."

Notification must be made at latest on the day following that on which the patient was seen.

Reinfection with the same disease for which a patient has already been notified must be treated as a new case and be renotified, but a relapse is not to be regarded as constituting a new case, and need not be renotified. A separate notification form must be sent for each disease—that is to say, if a patient acquires more than one kind of venereal disease simultaneously, each kind must be notified separately and attention drawn to this under the heading of "remarks."

In cases of congenital syphilis the mother's address must be given as that of the place in which the disease was acquired. If the practitioner does not himself treat a case which he is notifying, but passes it on either to another practitioner or to a venereal disease clinic, this must be noted under "remarks."

Notifications must be transmitted to the medical officer of health in sealed envelopes. Envelopes on which the postage has been prepaid are provided for the purpose.

If the patient fails to carry out the directions given him by the practitioner, or ceases treatment without the latter's consent, and without satisfying the latter that he is being treated by another practitioner, the first practitioner must send written notice to this effect to the medical officer of health. The Medical Council suggests, however, that the practitioner should send the patient a notice warning him to resume treatment before reporting him as a defaulter to the medical officer of health, and has issued a printed form for the purpose. On the back of this form are printed the penal clauses of the Act relating to failure to continue treatment for as long as the practitioner requires.

If the patient fails to resume treatment in spite of this warning notice, the practitioner must notify the fact to the medical officer of health. In this case the patient's name must be given. Printed notification forms are provided for the purpose. In the event of wilful opposition on the part of the patient, the practitioner is required to give particulars of this on the form in the space provided for "remarks."

The matter is now in the hands of the medical officer of health. If he considers that extreme measures are not immediately necessary he gives the patient notice to resume treatment within a specified time and to forward a medical practitioner's certificate that he has actually done so, warning him that the matter will be placed in the hands of the health authority if he fails to comply. If the patient on receipt of this notice resumes treatment and sends a certificate to this effect no further action is apparently taken, but the medical officer of health must inform the practitioner who is now treating the case why a warning notice was sent to the patient. Report forms for this purpose, and printed forms of certificates referring to resumption of treatment, have been issued by the Medical Council.

If the patient fails to resume treatment the medical officer of health can bring the matter before his health authority, who, with or without the assistance of the magistrates and the police, can order the patient to submit to examination, and, if found necessary, to treatment, and can compel his removal to hospital if public interests so demand. The

medical officer of health has power to act on his own responsibility in an emergency, pending the decision of the health authority. The patient has the right of appeal if the latter decides against him.

A course of procedure which is very similar to that described above is followed with regard to the person who is stated by the patient to have been the source of infection. If the medical officer of health has reason to believe that the patient's statement on this point is correct, he notifies the accused person to submit to examination within a specified time and to send a medical certificate that he or she has done so. If venereal disease be found in a communicable stage, the person in question can be compelled to undergo treatment. Steps which are similar to those mentioned already are taken in the event of refusal. The medical officer of health, if the accused person resides outside his district, sends the requisite particulars to the medical officer of health of the district concerned.

Persons who are charged with certain offences (apparently such offences as are against public morals) can also be compelled to submit to examination and, if found necessary, to treatment.

If a patient suffering from venereal disease in a communicable stage proposes to marry without the consent of the King, the practitioner who is treating the case must forthwith send notice to this effect to the medical officer of health. The latter must then immediately communicate with the officiating clergyman of whose congregation the patient is a registered member. If a certificate of publication of banns has been or is about to be issued, the minister must at once notify the authorities who are charged with receiving notice of impediments to marriages.

Finally, either the Act itself or the regulations of the Medical Council stipulate the records which the medical officer must keep with regard to venereal diseases, and the kind of information required in annual Health Reports. The Act imposes secrecy upon all persons concerned in its working, but expressly absolves them if information is required under certain circumstances in the course of legal proceedings. It provides also for the transfer of notifications if, for instance, the patient changes his place of residence, enters or is liberated from gaol, or is discharged from the army.

## Paris.

[FROM OUR CORRESPONDENT.]

If we follow the work that is being done simultaneously on the two sides of the Channel, we see that the same problems are being tackled at the same time, and we are tempted to dream of what an International Academy of Medicine might be and to curse the builder of the tower of Babel!

### Acidosis.

The problem of acidosis, which is the order of the day at the National Institute for Medical Research, has recently been the object of impassioned discussions on Tuesday after Tuesday at the Academy of Medicine. According to MM. Desgrez, Bierry, and Rathery, the acidosis of fasting is identical with diabetic acidosis, but M. Labbé sees a radical difference between them. The two theses have been maintained with equal conviction and equal eloquence. The discussion might have gone on for ever had not M. Linossier, at the meeting on March 6th, been able to reconcile, if not the orators, at least the conflicting theses. The short speech with which he intervened I may fairly describe as a model of conciseness and clearness (qualities on which we pique ourselves, perhaps without sufficient grounds, as eminently French). He showed that both the acidosis of fasting and the acidosis of diabetes were to be traced to the same immediate cause, deficient glycolysis. The cause of this defect, however, is different; during a fast the glycolytic function remains intact, but there is too little sugar; in the diabetic the sugar is abundant, but the glycolytic function is impaired. The most learned assemblies sometimes need to be brought back to first principles, and M. Linossier's paper—short as it was—rendered the most signal service to the "docte compagnie."

### Prophylaxis of Whooping-cough.

At the meeting on March 13th Dr. Robert Debré reported the results of his inquiry into the preventive treatment of whooping-cough. He employed the method quite recently introduced by Nicolle and Conseil for the prevention of measles—the injection of the serum of a whooping-cough



patient in the fourth week of the disease—the period when the serum is rich in sensibilizers. If the injection be given at the beginning of the period of incubation it prevents the development of the disease; if given at the end of that period the severity of the disease is considerably diminished; but when once the disease has definitely begun, injection has no effect whatever. We seem now to be on the road to cut short the two epidemic infections that most frequently occur in crèches, and owing to their serious consequences are much to be dreaded.

#### Syphilimetry.

I have already spoken about the systematic campaign against syphilis carried on by the prophylactic institutes founded by Dr. Arthur Vernes. It may be remembered that it is not so much a question of a new therapeutic method as of a means of measuring the luetic infection, of "syphilimetry." After using the Wassermann reaction for some time Dr. Vernes has arrived at certain conclusions with regard to the physical principles on which it may be held to rest. In his opinion it is a matter in particular of optics. Syphilimetry makes it possible to measure the successive levels of the infection step by step, to record them graphically, to observe the effects of the therapeutic measures employed, and to go on diminishing the infection until it has been completely extinguished. Vernes's researches and methods have been described in a series of communications to the Academy of Sciences, which has bestowed upon him certain *prix d'encouragement*, but never before has his method attained the measure of success it enjoys to-day. A propaganda committee has been formed under the patronage of the President of the Republic and the Minister of Hygiene, with the famous philosopher Bergson as president, and a public appeal has been made for subscriptions to a fund to add to the prophylactic institute a teaching establishment where medical practitioners can make themselves acquainted with all the details it is essential to observe in applying a method which is of importance to everybody and has already given fruitful results. The first public subscription at once reached a seven-figure total (in francs). It only remains for me to add that the prophylactic institute itself is presided over by Dr. Roux, and has as its patrons persons of the highest scientific distinction, including the dean and eight professors of the Faculty of Medicine.

#### Hard Times for Scientific Workers.

Existing economic conditions have a most unhappy recoil upon the intellectual worker. One of our most active societies, the Société de Biologie, finds the length of the programmes of its meetings strangely reduced. Before the war its meetings were too short to gather the harvest of the labours of the young investigators in our laboratories. To-day there are hardly any recruits to scientific research. It practically means starvation. Our young people are compelled to obey the dictum *primum vivere*, and none of their masters can withhold their approval. The scandal of the poverty of the intellectuals has, however, led to some reforms, and the chefs de laboratoire (senior demonstrators) have been given salaries sufficient to assure the symbiosis of soul and body. But this measure has not really been of service to science; it has led to a quite unexpected result. Posts which were never regarded as anything but transitional appointments to be held for a limited time are now occupied by incumbents who are not thinking of giving up their places to newcomers.

The question of the rate of exchange has an effect also on our university libraries; their income has not been increased since 1914, and they find themselves too poor to buy publications in the English language. The Parisian libraries have agreed among themselves to subscribe for one copy only of periodicals published at a prohibitive price; this may compel a scientific worker to run about from library to library, and often perhaps to give up his search. On the other hand, our organization is perhaps to blame, for our foreign friends have never failed us when we have asked help in the name of Science. We have been so imbued with the idea of continued progress in the intellectual order that the mind refuses to admit the possibility of regression. And yet, if tools are wanting? If workers are not recruited?

#### Pasteur Centenary.

The celebration of the centenary of Louis Pasteur at the Royal Society of Medicine in London has had a warm and

sympathetic echo here. The *Presse Médicale*, in reporting this function, ends with a remark the symbolism of which is striking. A badge formed by the united flags of the two countries was distributed to the guests, and our contemporary remarks: "The colours may indeed differ, but they remain attached to one and the same staff."

## India.

#### ROYAL COMMISSION ON THE SERVICES.

It was announced some time ago that a Royal Commission on the Services in India was about to be appointed. The terms of reference have now been published, as follows:

Having regard to the necessity for maintaining a standard of administration in conformity with the responsibilities of the Crown for the Government of India and to the declared policy of Parliament in respect of the increasing association of Indians in every branch of the Administration, and in view of the experience now gained of the operation of the system of government established by the Government of India Act in respect of the superior Civil Services in India, to inquire into—

- (1) The organization and general conditions of service, financial and otherwise, of those Services;
- (2) The possibility of transferring immediately or gradually any of their present duties and functions to Services constituted on a provincial basis;
- (3) The recruitment of Europeans and Indians, respectively, for which provision should be made under the constitution established by the said Act and the best methods of ensuring and maintaining such recruitment;

And to make recommendations.

#### THE MILK SUPPLY OF BOMBAY.

The problem of the milk supply of Bombay has been engaging the attention of the corporation for some time, and the municipal commissioner has now made some interesting proposals which if adopted should lead to considerable improvement. Since 1920 endeavours had been made to establish a limited company to take up the production of milk on a large scale; later on reason was found to believe that the Government would be willing to consider certain concessions of land if the corporation were prepared to undertake the production of milk itself. The scheme required an initial capital of 40 lakhs of rupees during the first three years. Long discussions took place between the municipal commissioner and Mr. W. Smith, the Imperial Dairy Export, who agreed that it would be better for private enterprise to be encouraged. A scheme has been put forward to form a company with a capital of Rs.10,00,000, of which it is proposed that the Bombay Corporation should contribute one-fifth, also guaranteeing a yield of 5½ per cent. on the whole capital for the first ten years. The municipality would have the right of inspection and audit, and would appoint one-fifth of the directors.

#### NURSING DEVELOPMENTS IN INDIA.

The Countess of Reading opened the Lady Reading Hostel, the new residence for the nursing staff of the Lady Hardinge Medical College, on January 13th. Major-General MacWatt, Director-General Indian Medical Service, in inviting Lady Reading to open the hostel, thanked her for her deep practical interest in the welfare of the college and its activities in general. Lady Reading pointed out that the institution was the only university medical college for women in India. Of the fourteen students sent up from the college for the last professional examination all had passed, two obtaining honours in pathology and topping the university list of successful candidates, both men and women. The new hostel was another step in the development of the college, and would afford accommodation to the nurses engaged under the Nursing Association, which is yet in its infancy. Much could be done by hospitals, baby clinics, and welfare centres, but it was increasingly clear that the problem of suffering amongst women and children in India could never be fully dealt with until the influences of skilled nursing reached the homes. The association intended to send Indian girls to England to be trained there in the fine traditions of nursing; on their return they would be able to train others in their own country. The total amount contributed to the Hostel and the nursing association amounts to Rs.10,75,000.



## Scotland.

### CLINICAL MEETING OF THE EDINBURGH BRANCH.

THE annual clinical meeting of the Edinburgh Branch of the British Medical Association was held in the Edinburgh Royal Infirmary on February 23rd, and proved a great success. A number of demonstrations, which had been arranged by Mr. F. E. Jardine, were held at different hours throughout the day at the various departments of the Royal Infirmary. Dr. Chalmers Watson, Dr. A. N. Smith, and Mr. J. H. Gibbs gave a laboratory demonstration of the clinical bacteriology of alimentary sepsis, with radiograms of normal teeth, apical suppuration, and changes due to pyorrhoea; Dr. Chalmers Watson also gave a clinical demonstration of alimentary sepsis. Mr. Robson and Dr. Lambie gave a demonstration, in the biochemical laboratory, of the preparation and effect of insulin. A urethroscopic demonstration of venereal diseases was given by Mr. David Lees, who also gave a lantern demonstration of acute venereal conditions. A demonstration on radium and its application in the treatment of disease was given by Dr. Dawson Turner. Dr. John D. Comrie and Dr. Malcolm Smith gave a demonstration of the chemical tests for renal function. Mr. D. M. Greig, conservator of the Royal College of Surgeons, gave a lantern demonstration of pathological specimens, including double tongue and congenital achalasia of the colon. A surgical and medical demonstration was held in the large surgical theatre of the infirmary, which is seated for some 400 persons, and was filled, the audience consisting partly of members of the Branch and other medical practitioners, and partly of final year medical students. Sir Harold Stiles showed a case after removal of extra-dural tumour pressing upon the lumbosacral enlargement, and two other cases. Mr. D. P. D. Wilkie showed two cases after operation for carcinoma of the rectum, using the following methods: (1) Preliminary colostomy, three weeks' interval, during the third week prophylactic inoculations of *B. coli* and streptococcal vaccines, and, the evening before operation, of nucleic acid; (2) twilight sleep, spinal storage, and invert V position. Mr. Pirie Watson showed patients illustrating the use of whole-thickness skin grafting for the alleviation of traumatic deformities of the hand. Dr. W. Stewart gave a demonstration of a simple apparatus for exercising the forearm after fracture. Dr. Murray Lyon showed a case of severe diabetes treated by insulin; and cases were also shown by Professor Edwin Bramwell, Mr. Carlrow, Dr. Fleming, Mr. Hartley, Miss Herzfeld, Dr. McNeil, and others. A pathological museum was arranged in the Pathological Department of the Royal Infirmary and was open all day. A large number of interesting specimens were exhibited, including an album of photographs of paraffin cancer, by Dr. Scott; a series of photographs illustrating plastic nose operations, by Dr. Guthrie; specimens of gall bladders, by Sir Harold Stiles and by Mr. Struthers; specimens of kidneys, by Sir David Wallace; and specimens of early rupture of tubal pregnancy, by Dr. Lamond Lackie. In the evening a dinner took place at the Caledonian Station Hotel, which proved a very enjoyable function. Dr. J. S. Muir, President of the Branch, was in the chair, and Dr. R. A. Bolam, Chairman of Council of the Association, was the guest of the evening, while representatives were also present from some of the other Scottish Branches; the Royal Medical Society was represented by Mr. H. P. Anderson, senior president, and the resident physicians and surgeons of the Royal Infirmary by Dr. Stronach. The honorary secretaries, Dr. John Stevens and Mr. F. E. Jardine, are to be congratulated on the continued success of the annual clinical meeting of the Edinburgh Branch.

### BICENTENARY OF GEORGE WATSON.

An Edinburgh baillie of former days, on being asked to mention the staple products of that city, replied that they were Books, Beer, and Boys. The large and successful schools for boys have long been a feature of the city, and George Watson's College has prepared for entry upon their course of medical study probably a larger number of boys than any other school in the country. Last week this school celebrated the bicentenary of George Watson's death. Watson was born about 1650, and belonged, like George Heriot, his predecessor by a hundred years and founder of another school for boys, to a family of merchants. After a commercial training in Holland, where he also traded to some profit, Watson returned to Edinburgh in 1676 and became cashier

to Sir James Dick, a celebrated Lord Provost of the city. Later, when the Bank of Scotland was originated, he became its accountant, and he did a large business in bills of exchange, chiefly with London correspondents. At his death on April 3rd, 1723, he left several benefactions for the descendants of impoverished Edinburgh merchants, and, among these, £144,000 to establish a hospital, constituted on the Dutch plan, for the education of boys. This school has increased in prosperity and numbers for 200 years. In 1870 the building, which Watson himself had helped to plan, was sold to the managers of the Royal Infirmary and the school moved farther west, but the old building still exists as a central part of the Royal Infirmary.

### OPPOSITION TO EXPERIMENTS ON ANIMALS.

The annual general meeting of the Scottish Society for the Prevention of Vivisection was held last week in Edinburgh. It is an indication of the number of misinformed, though doubtless kindly people who still maintain an attitude antagonistic to the acquisition of further medical knowledge, that the subscriptions and donations for the past year amounted to £515 and the total income to £2,132. Miss Lumsden, in moving the adoption of the report, stated that the number of experiments performed on animals in 1921 had been greater than in the previous year, and the number of experimental licences had also increased, but she admitted that opposition to this form of research received less public encouragement than formerly.

### DENTAL BOARD LECTURES.

A course of four lectures on "The Diseases of the Periodontal Tissues due to Infection in their Relation to Toxaemia," which had been arranged in Edinburgh by the Dental Board of the United Kingdom, concluded last Saturday. The lectures were given in the surgery classroom of the University. The course was intended for and free to dentists and medical practitioners as well as dental students, and was well attended. This first tentative attempt at a post-graduate course organized by the Dental Board has proved so successful that the Board should be encouraged to continue it on a more elaborate scale in future years. The individual lectures, which dealt with the subject from the standpoints of the patho-histology, the local clinical systems, the systemic effects, and the bacteriology, were delivered respectively by Mr. J. Howard Mummery, Mr. J. G. Turner, Sir William Willcox, and Professor E. E. Glynn.

### ROAD WORK FOR SCOTTISH UNEMPLOYED.

A conference of the various local authorities concerned was held last week in Edinburgh to consider the plans for a new arterial road between Glasgow and Edinburgh. The estimated cost is £2,000,000, to be divided equally between the Treasury and the local authorities. It is calculated that the work will provide employment for an average of 4,500 men for two years, and as there are about 100,000 unemployed at present in the two cities, this will be a material alleviation of the situation, since 60 per cent. of the cost will be disbursed in wages. The provision of a thorough road 140 feet wide will greatly facilitate intercourse between the two cities in the future. Various routes have been considered, and that finally approved utilizes portions of the south and middle roads at present existing, in such a way that centres of population like Bathgate, Airdrie, and Bellshill will be avoided, and various new portions and by-passes at villages will be constructed. The route will be the most direct, and will be forty-four miles long.

## Ireland.

### MEDICAL INSPECTION OF IRISH SCHOOL CHILDREN.

SIR JAMES CRAIG, M.D., in the course of his address delivered at a meeting of the Irish National Teachers' Congress held in the Mansion House, Dublin, said that it was better that they should turn their eyes and activities to the future rather than dwell upon the inactivities of the past, for surely they were now at the dawn of a more enlightened era, when they might hope that the health of the people might be regarded as an important function of the State, and when they might endeavour to put in practice the well accepted but rarely adopted maxim that prevention was better than cure. Youth was the time in which the foundation of future physical



well-being should be well and truly laid, and unless they were equipped with a strong and healthy body, all their professional usefulness and scientific attainments would be sadly hampered in the days to come. The broad requirements of a healthy life were few and elementary, but they were essential and should not be regarded as applicable only to the rich. The medical inspection of school children, if properly administered, should prove to be economical in the best sense of the word. Its justification was not to be measured in terms of money, but in the decrease of sickness and incapacity among children and in the ultimate reduction of inefficiency and poverty in after-life arising from physical disabilities. The science of public health included the prevention and extinction of all manner of preventable disease, its distant goal being the rearing of a healthy race and the attainment of a high standard of national physique.

Fundamentally the State control of health inspection depended upon the fact that a large proportion of the children attending the national schools were suffering from preventable and remediable disease. An important fact that they should endeavour to comprehend was that many of the defects were unrecognized either by teachers or parents who alone were in contact with the children. He was quite prepared in that connexion to meet with the criticism that the provision of healthy homes and a plentiful supply of nourishing food would in themselves go far to wipe out much of the ill health and poor physique which were prevalent amongst school children of the day. While people were compelled to live in insanitary tenements or crowded together in damp and airless hovels so long must infectious diseases flourish and a poor standard of general physique be expected. Healthy homes and proper feeding would not by themselves alone cover all the ground that medical inspection claimed to cover. As soon as they had full-time county medical officers of health in the Irish Free State the medical inspection of schools would form part of their duties, and the success of this important work would depend to a great extent on the special qualifications of these health officers. All of them must be possessed with a special diploma in public health, but, in addition to this, it would be most advisable that they or their assistants should have some experience not only in the medical inspection of schools, but also that they should have spent some time in the study of disease as met with in childhood. Efficiency should be the essential qualification in these officers, and if any other consideration prevailed in gaining them their appointments they could not look forward to progress and success. In some instances the county medical officers of health would require assistance in the performance of their duties. Sir James Craig was inclined to think and hope that many qualified medical women would be given opportunities to show that the work entrusted to them in this respect would be performed even more satisfactorily than by medical men.

Under the provisions of the Public Health Bill, which the Minister of Local Government had promised to lay before the Dail within the next few months, there would be health boards appointed by the county councils, and on these health boards he trusted the managers and teachers of primary schools would have due representation, for these health boards would control all medical and public health services of the counties. It would be a duty of the whole-time county medical officers of health who would be appointed under the new Act to advise the County Health Boards in the drawing up of a scheme for the medical inspection and treatment of school children in their respective areas. When such a scheme had received the approval of the Minister for Local Government it would be immediately put into force, and he was not sure that the Minister of Education would have any effective control further than giving his assent to the schemes, and to see that their provisions were complied with. In England, since the passage of the Ministry of Health Act in 1919, the control of the medical inspection of schools rested with the Ministry of Health, while the Board of Education was merely responsible for approving the schemes, paying grants, and carrying on the service. He had said that the schemes would be worked in connexion with the Public Health Service of this country, and he was altogether in favour of a separate Ministry of Health to formulate and control the functions associated with the public health of Saorstát Éireann. This, however, was a departure which the present Government did not view with favour, although it could not be denied that the Irish people were far behind any other civilized nation in their attitude to and their requirements of public health matters.

Having suggested what should be the functions of the medical officer and school nurse, Sir James Craig outlined a programme which they might fairly expect to be put in practice in the inspection and treatment of school children, as follows:

1. A whole-time medical officer of health will be appointed for a county or for several of the smaller counties combined. Part of his regular duties will be to inspect the pupils of the schools in his counties several times a year, and on other occasions as well, in order to ensure that treatment had been carried out in the cases considered by him to require it.
2. A district nurse should be appointed in every dispensary district, whether by the local authority or by voluntary associations. Part of her fixed duties will be to aid in the inspection of pupils, to help to fill their health cards, and to carry out such treatment as she is competent to perform.
3. The treatment of all minor affections should be undertaken by the school nurse and by a whole-time lady assistant to the medical officer of health.
4. The cases requiring institutional treatment will be sent to the district hospital or to the county hospital, but where the treatment by a specialist is necessary then the cases must be sent to the metropolitan special or general hospitals, or to those of the larger towns to which specialists are attached.
5. The provision of dental treatment presents no serious difficulties in the cities or towns where dentists are in practice, but in cases of rural schools a motor car equipped with the necessary apparatus must be provided for the use of the visiting dentist.

Dr. M. Russell, medical officer of health for Dublin, said he was strongly of opinion that a scheme should be evolved by which children should be subjected to medical examination before they entered school. It was reckoned about 35 per cent. of school children under 5 years of age brought into schools physical defects and seeds of diseases which handicapped them in their school life. He would like to see co-operation between the various public health schemes and between the State and local authorities so that they would have medical supervision of the children from their birth till they left school.

#### ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

On April 3rd a deputation representing the Royal College of Physicians of Ireland presented an address of welcome to the Governor-General of the Irish Free State, Mr. T. M. Healy, at his official residence in the Phoenix Park.

The members of the deputation were Dr. M. F. Cox, President; Sir William J. Thompson, M.D., Vice-President; Dr. J. Dargan and Dr. R. E. Tottenham, Censors; Sir John W. Moore, M.D.; Dr. T. P. C. Kirkpatrick, Registrar.

#### The Address.

May it please your Excellency.—We, the President and the Fellows of the Royal College of Physicians of Ireland, desire to offer to you our heartiest good wishes on your appointment as Governor-General of the Free State of Ireland. During the two hundred and sixty-nine years of its existence our College has seen many changes in the country, but throughout this long period its policy has ever been to promote the study of medicine and to foster all true efforts for the improvement of the health of the people. Our trust is that in the future we shall be permitted to continue in the pursuit of these aims, and we place freely at the disposal of the Government our services and advice in the remoulding of both medical education and public health administration, which must of necessity follow on the constitution of a new State. To His Gracious Majesty, whom you represent, to the Government of which you are the head, and to yourself, we offer our loyal and dutiful service.—President, Michael F. Cox; Registrar, T. Percy C. Kirkpatrick.

#### The Governor-General's Reply.

I have to thank the President and Fellows of the Royal College of Physicians of Ireland for their good wishes on my appointment. Your College, in an existence of nearly three centuries, has had, I am aware, one beneficent and constantly in view—the fostering of scientific effort for the improvement of public health. You can, I am sure, always rely on the co-operation of the Irish Free State Government in your efforts for the advancement of medical education and sanitary reform. On behalf of His Majesty and of the Government, I express my gratitude for your assurance of the same loyal and dutiful service which has distinguished your College in the past.

The deputation afterwards remained to luncheon with his Excellency.

#### A FREE STATE MINISTRY OF HEALTH.

At a largely attended meeting of Limerick citizens and county representatives held recently in the town hall, it was proposed by Lord Monteagle, seconded by Dr. W. J. O'Sullivan, and passed unanimously:

That this meeting of the Borough and County of Limerick urge on the Irish Free State Government that it should without further delay establish a Ministry of Health for the twenty-two counties on the basis of the recommendations of the report of the Irish Public Health Council.



Dr. T. Hennessy, Irish Medical Secretary of the British Medical Association, attended the meeting by invitation, and delivered an address on the urgent necessity for the reform of Irish Public Health.

#### DISTRIBUTIVE WORKERS' ANNUAL REPORT.

The annual report of the Irish Union of Distributive Workers and Clerks refers to the past year as "the most difficult one yet," and one which taxed the capacity and endurance of the wage-earning classes in this country more than any previous year within living memory. The total income of the organization for the year was £14,443 12s. 6d., an increase of £2,782 11s. 1d. over the previous year. The total expenditure, including £6,598 10s. 8d. in respect of sickness, unemployment, and death benefit and disputes pay, was £11,999 15s. 9d. To the amount set out above in respect of benefit must be added the sum of £4,087 5s. 3d. paid in benefit under the National Health Insurance Act, which brings the total amount paid in benefit for the year up to £10,685 15s. 11d. The excess of income over expenditure was £2,443 16s. 9d. The report of the insurance section of the union expresses the hope that the new legislation contemplated by Dail Eireann in reference to national health insurance will tend to improve the structure of the existing Acts and modify certain regulations contingent on them.

## England and Wales.

#### THE WORK OF VENEREAL CLINICS IN LONDON.

ACCORDING to a report presented to the London County Council at its last meeting, the number of new cases of venereal disease treated at the London clinics in 1922 was 17,762, a decrease of 1,606 on 1921, and of more than 5,000 on 1919 and 1920. Of the new cases, 8,188 were of syphilis, 471 of soft chancre, and 10,632 of gonorrhoea. Of the cases examined during the year 6,049 cases proved to be non-venereal. The ratio of such cases to cases found to be venereal has increased, owing, it is believed, to a growing appreciation by the public of the serious nature of venereal diseases and the necessity for treatment. The most striking feature of the statistical returns is the increase of attendances, both absolutely and in comparison with the number of new cases. The attendances last year numbered 527,635, an increase of 30,000 upon the year before, and of nearly 60,000 upon 1920. This is regarded as evidence of an increasing disposition to continue the treatment necessary, instead of discontinuing attendance as soon as the outward signs of the disease had disappeared. The number of pathological examinations undertaken for the treatment centres was 75,351, and for private practitioners 18,507. The venereal department of St. Thomas's Hospital, which has been expanded and improved, registered 149,682 attendances. If it were possible to have five similar centres in convenient situations, all the cases coming for diagnosis and treatment in the county could be dealt with, but the Public Health Committee of the Council regards it as a wiser policy to spread the work over a larger number of centres. For the ensuing year the scheme, which embraces clinics at eighteen general and ten special hospitals, is to be renewed. The amount voted for the work of the centres is £97,960; in addition, £4,100 is voted for the eight hostels for the reception of pregnant women and children suffering from the disease, £5,000 for a possible additional grant in respect of the new clinic not yet opened at Guy's, and a further £5,000 to cover possible expenditure arising out of the Trevelthinn report. The amount voted for drugs is £3,000, a reduction of £2,000 on the amount hitherto included for this purpose; £2,500 may be spent on propaganda and publicity work. The Council now carries out its publicity work through its own official channels, and the arrangement with the National Council for Combating Venereal Diseases to undertake such work on its behalf has been terminated. Certain neighbouring county and county borough councils which share in the facilities afforded by the London hospitals reduce the expenditure of London proper to about 84 per cent. of the total sum, and three-fourths of the expenditure is recoverable by Government grant.

#### BIRMINGHAM GENERAL HOSPITAL.

The 143rd annual report of the General Hospital, Birmingham, records that the financial position of the institution still gives rise to anxiety, and further effort is called for to

increase income. On the advice of Sir Napier Burnett the Board has appointed a financial secretary who will be responsible, under the house governor, for raising the funds needed to run the hospital, and for the new system of cost accounting. Under this system it will be possible to present a balance sheet showing the exact financial position of the institution. A section of the report, on the need for development of the hospital, states that owing to the great advance in medical and surgical knowledge and practice since the present building was erected twenty-five years ago, and owing also to the increase in the population of the district served, the accommodation and equipment, more particularly in the special departments and staff quarters, have become inadequate. The Medical Committee represented to the Board this inadequacy, both for the treatment of patients and the training of students; the Nursing Committee reported to the same effect; and a special committee has been set up to consider the two reports. In drawing the attention of the governors and subscribers to this situation the Board sets out certain comparisons between 1897 and 1922. In the former year 183 abdominal operations were performed; in the latter, 1,018, and the cases were, in general, of a more serious type, making a very much greater demand upon the surgical and nursing staffs, upon dressings and instruments, and upon every other requirement. Operations on the ear and throat increased from 66 a year to 247 in the same period. There was, of course, no x-ray department in 1897; last year 5,658 photographs were taken, and the department had become inadequate in space and equipment. A very much larger volume of work is being carried out in the pathological department. There is now a radium department, and (as recorded recently in this column) an extern midwifery department has been established. Generally speaking, the Birmingham General Hospital is endeavouring to do an amount of work which it was neither designed nor equipped to deal with, and the time has come to decide whether it is to retain its position as one of the leading hospitals of the country.

#### VENTILATION OF LONDON THEATRES.

New regulations have been issued by the London County Council for ventilating theatres, kinemas, and places of public resort for entertainment or dancing. They are to apply to premises for which new licences are sought and to premises which may be reconstructed, and are to guide the Council in its requirements with regard to existing places when it considers that an improvement in their ventilation is necessary. Before the erection or alteration of the premises is started the approval of the Council must be obtained to the proposed ventilating and heating arrangements, which must be capable of giving a supply of outdoor air at the rate of 1,000 cubic feet per person per hour. It is considered, however, that satisfactory results cannot be obtained in large premises unless the plant is capable of giving a supply of warmed air delivered by fans. It must be capable of maintaining a minimum temperature of 55° F. with full air supply in the building when the outdoor temperature is 30° F., that it does not contaminate the air, that it is not in conflict with the regulations for protection against fire, and that no surface used for warming the air is of a higher temperature than 250° F. The condition of the air is not to be regarded as satisfactory if the amount of carbon dioxide in occupied portions of the premises, taken at a level of 3 ft. 6 in. above the floor, exceeds ten parts in 10,000. Independent means of extraction from lavatories and sanitary conveniences must be provided, so arranged that the air movement does not carry from these places into the public parts.

#### HUMANE SLAUGHTERING.

The London County Council has decided to amend the by-laws regulating private slaughterhouses by the incorporation of the clause from the optional by-laws issued by the Local Government Board in 1915, which provides that "a person shall not in a slaughterhouse proceed to slaughter any animal until the same shall have been effectively stunned, and such stunning shall, except as hereinafter provided, be effected with a mechanically operated instrument suitable and sufficient for the purpose." The exception relates to the Jewish method of slaughter. Hitherto the by-laws of the Council have not contained a provision expressly requiring the stunning of animals. In Switzerland the slaughtering of animals without previous stunning is prohibited by Federal law, and in some cantons mechanically operated instruments



are used. In Berlin and various parts of Germany previous stunning is compulsory. In Holland all animals brought to slaughter must be stupefied by ball or needle bullets. In Norway all cattle are killed by shot before blood-drawing. In France generally the pole-axe and pith are used for large animals, and small animals are stunned and bled. In Chicago, where meat production is on a vast scale, cattle and sheep are stunned with a long-handled hammer, or the spinal cord is severed by means of hammer and chisel. In London the practice has been, in the case of bullocks, to strike on the forehead with the pole-axe; in the case of sheep, to divide the large vessels of the neck and immediately sever the spinal cord between head and neck; and in the case of pigs usually, though not always, to stun with a wooden mallet. The Local Government Board in 1915 advised the adoption of the mechanical appliance popularly known as the "humane killer." The Public Health Committee of the Council has heard evidence from the Royal Society for the Prevention of Cruelty to Animals in favour of mechanically operated instruments which produce immediate unconsciousness, a bullet or bolt smashing through the skull and causing concussion of the brain. The meat traders have opposed the new by-law on account of the risk involved in firing a bullet in a slaughterhouse and of the possibility that the quality of the meat may be adversely affected owing to the ineffective draining of the blood from the carcasses of animals so shot. There is conflict of evidence as to the results of a demonstration which took place in Belfast when certain animals were submitted to slaughter by the new and certain others by the old method. The traders state that it was proved that the meat of the animals on which the pole-axe had been used kept better; on the other hand, the local society for the prevention of cruelty to animals had traced the carcasses of the bullocks put to death by mechanical methods and found that the meat was sold in the usual way at market prices without loss or inconvenience to the butchers or complaints from their customers. Dr. Gerald Leighton, medical officer (foods), Scottish Board of Health, is quoted as having found by microscopical examination of the meat that the view that the bleeding was imperfect when mechanical instruments were used could not be upheld. Sixty-four local authorities have adopted the by-law requiring a mechanical method of stunning. In many cases their experience has been too brief to admit of any proper judgement, but twenty-three reported favourably on the "humane killer," subject to slight qualifications in six cases. The proposed new by-law, which was agreed to by the London County Council without a division, applies to 153 slaughterhouses, but not to the large slaughterhouses associated with the Islington Cattle Market, which are under the control of the City Corporation. The number of slaughterhouses in London has greatly declined during the last thirty years, owing chiefly to the large percentage of imported meat now consumed. In the London Central Meat Market the average weekly pitch of meat is from 8,000 to 10,000 tons, and 85 per cent. of the beef and 93 per cent. of the mutton is imported.

#### ROYAL SANITARY INSTITUTE CONGRESS.

The annual congress of the Royal Sanitary Institute will be held at Hull from July 30th to August 4th, with the Right Hon. T. R. Ferens, High Steward of Hull, as president. The work of the congress will be carried on in sectional meetings and conferences. The sections are four in number—namely, sanitary science (of which Sir William H. Hamer is president), engineering and architecture, maternity and child welfare, including school hygiene (of which Dr. J. R. Kaye is president), and personal and domestic hygiene. There will be conferences of representatives of sanitary authorities, representatives of port sanitary authorities, medical officers of health (chairman, Dr. T. Eustace Hill), engineers and surveyors, veterinary inspectors (chairman, Dr. O. Charnock Bradley), sanitary inspectors, and health visitors (chairman, Professor H. R. Kenwood). Sir Alexander Houston will deliver a lecture to the congress on "A pure water supply," and Mr. B. Seeborn Rowntree will give the popular lecture on "Industry and national welfare." A health exhibition will be held in connexion with the meeting. A public luncheon will take place in the Guildhall on the first day, and the congress dinner on the last day of the congress; arrangements are being made for visits to places of interest in connexion with the sanitary administration of the district. The honorary local secretaries of the congress are Mr. H. A. Learoyd, town clerk, and Dr. J.

Wright Mason, medical officer of health, Hull. Papers intended to be read at the congress should be sent before June 25th to the secretary, Royal Sanitary Institute, 50 Buckingham Palace Road, London, S.W.1.

## Correspondence.

### L'ENTENTE HYGIÉNIQUE.

SIR,—The Second International Interchange of Public Health Officers held under the auspices of the Health Section of the League of Nations, and organized by the Society of Medical Officers of Health, having completed its course in Great Britain on April 10th, the visiting health officers are proceeding to Austria and Switzerland for further studies.

At the moment of departure the foreign delegates to this Interchange are happy to avail themselves of the columns of the BRITISH MEDICAL JOURNAL in which to voice some expression of their appreciation of the magnificent opportunities for study which have been placed at their disposal, and of the courtesy with which all arrangements have been carried out.

This is not the time to present a critical analysis of the current health practice of England in detail. That will come when the delegates, after careful study of the extensive reports and documents with which they have been furnished, and a resurvey of their own notes in perspective, are in a position to hand in their reports to their respective Governments. But at the present time the outlines of the composition are before them, and a sufficiently impressive picture it makes.

What the visitors intend to refer to at present is not the public health system of Great Britain, but rather the course of study which they have enjoyed the privilege of taking here. On this subject they are of one opinion, that it was wisely planned, and has been carried out in the most efficient and graceful manner, so as to set a standard for future interchanges of this nature which it will be difficult to maintain and perhaps impossible to surpass.

The delegates feel that it will be impossible for them to thank by name the hundreds of officials who have contributed with unflinching courtesy and patience to their instruction and comfort, or even to mention the various Government departments which have planned and contributed to the programme, or the voluntary organizations which have joined with the rest in their entertainment. Let us say to all of these earnest, public-spirited men and women, who spend their lives in the service of humanity, that they have given us freely of their best, that they have instructed our minds and have touched our hearts, and that we are grateful. The task remains to us to turn to the best account the effort which has been expended here in behalf of human welfare.—We are, etc.,

ANTON SMOLA	Austria.
ERNST BREZINA	
I. H. APERS	Belgium.
G. F. TIMBAL	
Y. MASEK	Czecho-Slovakia.
MAX CHRISTIANSEN	Denmark.
BENDIX POULSEN	Finland.
G. G. W. BORG	
E. F. ENERIC	France.
ANDRÉ CAVAILLON	
P. J. DE BOISSEZON	Hungary.
FERENCZ WOLF	
ROCCO RONCA	Italy.
MARIO COLLINA	Japan.
GORO KASHIDA	
ANDRÉS DIESEN	Norway.
K. KARAFFA-KORBUIT	Poland.
BRUNO NOWAKOWSKI	
STANISLAS STYPUKOWSKI	Roumania.
PETER STOKNESCU	
ALEXIS N. SYSSINE	Russia.
I. G. GELMAN	
L. GINTON	Serbia.
NATHALIE NICOLAEVITCH	
M. NORDMAN	Sweden.
ARTHUR M. STIMSON	U.S.A.
GROVER A. KEMPF	

London, W.C., April 10th.

### PSYCHO-ANALYSIS.

SIR,—From Dr. Ian D. Suttie's letter in the BRITISH MEDICAL JOURNAL of December 23rd, 1922, I gather that even in Great Britain—the nerve centre of empire—prophets are still without honour in their own country, otherwise he might have found that the "wild conjectures such as Dr. Berry mistakes



for facts" are almost entirely based on the acknowledged works of, to mention but a few, Sherrington, Flack and Hill, Dr. J. S. Bolton, Dr. G. A. Watson, and in America, Ranson and Herrick. In the second edition of the last mentioned author's *Introduction to Neurology* will be found a complete list of the various receptors of the human body, without which, I venture to remind Dr. Tippet, there cannot even be a "hypothetical psyche," but merely an idiosyncrasy from deprivation of the senses. In the 1919 edition of Flack and Hill's *Textbook of Physiology*, page 732, may be read "extero-, proprio-, and entero-ceptive impulses stream into the central nervous system from the time of its embryonic development until death, ceaselessly modify the pattern of its structure, lay down the pathways of reflex actions, and establish habits. A very large proportion of these impulses, and particularly the proprio- and entero-ceptive, never enter into consciousness, and yet occasion actions which are perfectly adapted to the end in view." On page 720 of the same work—and, indeed, in many others—we find that the functions of the great brain are, amongst other things, "the reception of impulses and the storing of the effects of such impulses." The italics are mine.

In Dr. J. S. Bolton's book, *The Brain in Health and Disease*—a masterpiece of scientific observation and logical deduction—as also in his article in Leonard Hill's *Further Advances in Physiology*, will be found an account of the control exercised by the supragranular layer of cortical neurons, and of the effects of removal of such control from either maldevelopment or disease. Whilst it would be easy to multiply authority upon authority in support of my original statement, space will not permit, so, though I cannot claim the honour, as some of your correspondents seem to imagine, of being a disciple of Sir Clifford Allbutt, I can at least pay him the compliment of quoting his words: "Is it unfair to say that the interpretations given by psychoanalysts to the dreams of our modern Jacobs and Daniels are incredible nonsense?"

Dr. Charles F. Harford leaves a weightier missile. He quotes the President of the British Association as having said that "the physiologist could not explain mind." It has not been my privilege to read this address, but I venture to believe that its distinguished author was rather venturing to hint the unspoken thought of most of us who study the human brain, which is our humble admiration of a mightier power than ourselves. Whether this be so or not—I hope it was—I feel confident that Sir Charles Sherrington was neither unadvised nor ignorant of the labours, in this very field, of the morphologist who can indisputably prove from comparative anatomy, embryology, physiology, and pathology, that neurons in combinations of arcs are the physical instruments of mind.

It is not uncommon to find the human mind spoken of—especially by those with no knowledge of brain structure, and these are unhappily many—as though it were something which had no physical basis whatsoever, but was the result of a Psyche or soul. This conception is both erroneous and productive of error. Comparative anatomy clearly proves that the gradual rise in the scale of animal intelligence is strictly correlated with a progressive increase in the numbers of cephalic neurons, particularly those of an internuncial character.

Every branch of study shows that the structure of the nervous system is everywhere built up of a series of long conducting neurons, connected together by a series of shorter neurons. The former comprise the receptor and effector neurons; the latter, the internuncial. Medical attention has so far been chiefly devoted to the long conducting neurons, because lesions occurring therein have been fairly obvious and are of everyday frequency. In the study of the phenomena of mind and its aberrations it is, however, the shorter internuncial neurons which become of supreme importance, and to these an altogether insufficient amount of attention has been devoted.

In the human brain the association or "silent" areas contain many million neurons of this type, and physiological and neurological opinion of the functions of these areas may be gauged from the following:

Starling says that the greater part of the brain surface is taken up "with the nervous material of the type which is connected with the functions of association involved in the higher processes of reflection, intelligence, and volition."

Flechsig advocates the view that the association areas are the portions of the cortex in which the higher and more complex mental activities are mediated, the true organs of thought.

Howell says, "In the association areas our memory records of

past experiences and their connexions are laid down in some, as yet unknown, material change in the network of nerve cells and fibres."

The extraordinary thing is that these association areas do not differ materially in structure from any other part of the nervous system. They simply contain millions of short neurons which, from their morphological construction, appear to be of the internuncial variety. They resemble the neurophile of the common earthworm, with this striking difference, that whereas the neurophile of the earthworm contains but few internuncial neurons the association areas of the human brain contain many millions. From the brain of the normal man remove about one-half of his 9,280 million neurons (Herrick) and there will result either the microcephalic idiot or the anthropoid ape—the former with little speech, the latter with none. Clearly then neurons in sufficient numbers are the instruments of all mental phenomena, and our knowledge of their connexions, though leaving much to be desired, is really very much more precise than Dr. Harford seems to imagine.

Now the importance of all this is that we are beginning to know that there are quite a large number of human individuals who, from some cause or another, do not possess their fair share of cortical neurons. Dr. Bolton's work—as well as that of others—affords ocular and indisputable proof of this, and yet we go on expecting these unfortunate people to react to their environment in a normal manner, and delude ourselves with the idea that psychoanalysis can replace nature. Just as bricks cannot be made without straw, neither can the brain perform its correct mental reactions if it be deficient in numbers of properly functioning neurons. From the neuronic standpoint, all human individuals may be divided into three great groups: cerebral aments, who swell the ranks of our prisons, gaols, reformatories, and asylums—though I must not be supposed to imply that all such inmates are aments; normal neuronic individuals, who form the bulk of mankind; and the few to whom we owe almost all progress, the multi-neuronic men of genius. To one and all alike dementia, given a sufficient longevity, is the common ultimate fate—that is, an atrophy of mental power, through a gradual death of the cortical neurons. As a matter of fact there are far more cerebral aments outside our institutions than in them, and many of these find their way into our consulting rooms, where they largely remain unrecognized.

It was in the hopes that some slight indication of the trend of modern neurology might be of service to the practising profession that I ventured to enter this discussion. If psychoanalysis is to be of any real benefit to suffering humanity its practice must be removed from the hands of the ignorant, and placed upon a sure basis of structure, for, as Starling says, "in the central nervous system, more than in any other part of the body, function is directly dependent on structure."

Even on the outposts of empire some of us, within our limitations, do endeavour to keep abreast of modern scientific progress, and, strangely enough, occasionally contribute thereto. We are not, therefore, cursed with credulity, and require something more than the entrancingly and easily uttered "wild conjectures" of certain schools of psychoanalysts as a substitute for the much more laboriously acquired "facts" of neurology.—I am, etc.,

University of Melbourne, Feb. 19th. RICHARD J. A. BERRY, M.D.

#### LUNACY LAW AND THE TREATMENT OF THE INSANE.

Sir,—Dr. Edwin Goodall's letter in your issue of March 24th contains an implication which, if unchallenged, must certainly further obscure the grounds of this controversy. Dr. S. E. White, in the same issue, writes a characteristic letter which, while rightly appealing for the establishment of cheerful hostels for early cases, runs on purely hospital lines, repeats the usual misleading inferences in regard to the wider question involved.

Both your correspondents seem to underline that "Abandon hope, all ye who enter here" which unkindly and irresponsible thought has imagined for the portal of an asylum, so utterly unjust and cruel.

Now, Sir, Dr. Goodall, whose opinion must command respect and who is himself a medical superintendent of a mental hospital which he is no doubt determined shall be second to no other hospital, nevertheless appears to have become so moonstruck by his "assemblage of splendid persons" that he is led to express views the reverse of



helpful to the cause which he, equally with all of us, must have at heart.

The tendency of both your correspondents is to divide up an indivisible question. Mental disease will not be altered in kind by being treated in a hostel or clinic, and the improvement of mental hospitals will not be advanced by implying that they must not, or cannot, be expected to supply "the most effective treatment." It is the same problem everywhere, and everywhere there must be the same ideal—namely, the most efficient treatment.

In this vexed controversy it may serve some purpose to summarize those points about which practically all opinion is in agreement; they are:

1. Amendment of certain provisions of the Lunacy Act, 1890.
2. The establishment of central clinics for incipient mental disease in close association with the general hospitals and medical schools.
3. The general principle that early mental illness must not be placed in close association with protracted insanity.
4. The hospitalization of asylums, and the provision of improved training for the nursing staff.
5. The freedom to treat early border-line cases without certification, wherever the patients and their doctors like to arrange for this, whether in hostel, sanatorium, or elsewhere. Most of us would, I think, include amongst the latter the mental hospital, although the National League for Lunacy Reform in its wisdom would probably object, and Dr. Goodall appears to agree.

No doubt we shall soon be allowed to receive voluntary boarders in county hospitals, and while no one would suggest that there is any necessity to force ("lure" is a word often used by critics) early cases to seek treatment in mental hospitals, I have personally little doubt that many will of their own accord apply, and past experience has frequently borne testimony to the fact of the desire of many persons suffering from mental trouble to be readmitted and placed under treatment in mental hospitals.

Underlying these points of agreement are the following fundamental requirements:

1. Medical research and training in psychiatry.
2. The better training of nurses and the attracting of the right class of nurse for mental patients.
3. Public enlightenment as to the meaning and cause of mental disorder.

These are objectives which can alone be attained by concentration upon the main question—What is the most effective means for obtaining the most efficient treatment for all persons mentally ill?

Does anybody suppose that centrally placed clinics and the staffs of general hospitals are really within measurable time going to deal with more than a fraction of the great mass of mentally afflicted that annually require help?

I submit that there is the most urgent need for asylums to continue their evolution into hospitals, which they are courageously attempting at the present time, often in the face of much discouragement, and that, *pari passu*, they must become affiliated to general hospitals and schools—the reverse of Dr. Goodall's suggestion that the place where early mental patients are to be treated must be entirely "divorced" from the mental hospital. The mental hospital needs the help of the general hospital and its staff, its boundless opportunities for educational development and advanced treatment.

I venture also to think that the general hospital will have some need of the mental hospital, and that the "galaxy" will be glad to feel that when their failures need treatment in a mental hospital that treatment will be "the most effective treatment."

It is even conceivable that when more enlightened notions prevail, as they do in some other countries, it will really be possible to secure the most effective treatment in any mental hospital, even in this land of ignorant prejudice, where one of the deepest roots of the whole trouble lies in the false stigma attached to insanity. At any rate, the realization of this is the aim of those who, like myself, venture to have faith in the progressive evolution of the mental hospital, and in the development of a more intelligent attitude of public opinion.

Psychiatrists were among the first to study the question of clinics and to advocate the treatment of incipient cases in such clinics; and if now it is advocated that owing to present needs, economic and otherwise, mental hospitals shall develop separate admission units, run on hospital lines and free from association with protracted insanity, where effective

treatment will be available, and from which, it may be, cases recovering will be discharged to central clinics or convalescent homes, this in no sense would imply any opposition whatever to the greatest possible concentration on treatment and research in close association with medical schools, and under the guidance of "the high priests of medicine," nor would it run in opposition to the treatment of paying patients in private hostels.

So far from being "divorced" from mental hospitals, central clinics will in many ways require the co-operation and help of the mental hospitals without which the problems connected with the treatment and care of the majority of the mentally afflicted cannot be successfully solved.

Dr. Goodall's letter widens, instead of narrowing, the gulf which separates the mental hospital from participation with the school in a combined movement towards a better understanding and treatment of mental disease, by implying that the former should be excluded from the hospital orb.—I am, etc.,

G. F. BARHAM.

London County Mental Hospital,  
Claybury, March 28th.

#### TREATMENT OF EARLY MENTAL CASES.

SIR,—I was surprised to read in Sir Bryan Donkin's letter in your issue of April 7th (p. 611) the following: "Of course it is a well known fact that 'mental' patients of all sorts and degrees dread the thought of being sent to a mental institution by whatever name it may be called." My experience does not coincide with this statement. In institutions such as Bethlem Royal Hospital in London and Morningside in Edinburgh, the numbers of voluntary patients often exceed those who are "certified."

During the year 1921 (Board of Control Report) registered hospitals in England and Wales admitted 330 voluntary boarders, and licensed houses (better known as private asylums) admitted 315 voluntary boarders. I have numbers of applications to receive patients here on a voluntary basis, but I cannot do so as this is technically a "borough asylum," and no county or borough asylum can receive "voluntary boarders." In one instance a woman was so desirous to come for treatment that when she found she could not be admitted on her own application she persuaded two doctors to give certificates. Quite recently a girl who was out on trial evaded the vigilance of her relatives and returned here. Only last Friday I saw a man at King's College Hospital suffering from melancholia with suicidal thoughts, and he begged to be admitted into a mental hospital. I must admit that there are numbers of patients with no insight who think there is nothing the matter with them, and are therefore unwilling to enter a hospital of any kind, mental or general. On the other hand, newspaper correspondence under the above or similar headings often fails to take into account the large numbers of mental cases anxious for treatment in a mental institution.—I am, etc.,

City of London Mental Hospital,  
Dartford, Kent, April 9th.

R. H. STEEN.

SIR,—Why does Dr. S. E. White impute false motives to the "lunacy authorities," and that not for the first time? By what obsession is she influenced which obstructs her judgement? These questions naturally arise on reading the statement in her letter that—

The "Health Minister is led by the lunacy authorities to frame a bill which, under the specious title of 'Reform in Lunacy,' is intended to diminish or annul the safeguards provided by the Lunacy Act, and to set up institutions . . . which shall serve as feeders to asylums."

Dr. White herself advocates "homes or hostels" or "suitable sanatoriums for early cases as an alternative to asylums." She herself wishes to set up such institutions as alternatives to asylums, without providing any safeguards whatever or any means of protecting the mentally affected patients in them from the danger of being exploited by designing persons. Let her cast out first the beam out of her own eye before she presumes to pass judgement on others! The mote she now beholds may then be found not to exist.

In the second place, it is false to say of any institutions that may be set up under a bill, that they "shall serve as feeders to asylums." If they serve any purpose of this kind at all it will be not to feed but to starve asylums. All this is as plain as a pikestaff to any unbiased person.

Sir, is it not time that this correspondent, despite her name, ceased to call white black, and black white?—I am, etc.,

March 25th.



### THE INFLUENCE OF INTESTINAL BACTERIA UPON THE THYROID GLAND.

SIR,—I read with interest the article on this subject by Dr. Harries (March 31st, p. 553). The view that exophthalmic goitre is in part dependent on excessive absorption of tryptophane owing to a deficiency of tryptophane-splitting organisms in the intestine is one which I have held and taught for several years. The theory, moreover, is in my view capable of considerably wider application and explains many of the abnormal conditions affecting the internal secretions. In a paper read before the Medical Society of London in 1912 as part of a discussion on alimentary toxæmia<sup>1</sup> I pointed out that the view that the evidences of suprarenal deficiency so often seen in intestinal stasis depended on excessive destruction of tyrosin by the intestinal organisms and a consequent deficient supply of the precursor of adrenaline to the suprarenal. I also suggested that the same explanation probably held in regard to other glands and substances, instancing tryptophane. This was before Kendall's isolation of thyroxin and before its formula had shown that tryptophane is the direct precursor of the thyroid secretion.

It seems probable that all the internal secretions are normally elaborated by the glands from certain definite amino-acids resulting from protein digestion, and that the amount of internal secretion formed depends, within limits, upon the amount of precursor available. The regulating mechanism of the absorption of the precursor from the gut would appear to be the intestinal flora; and an excess of bacterial activity will lead to a deficient absorption, just as a diminution of organisms will lead to an excessive absorption. The fact, which is becoming increasingly clear, that exophthalmic goitre is not primarily a disease of the thyroid gland, but is a polyglandular syndrome affecting especially the suprarenal and the thyroid secretions, is thus explained on a common hypothesis, and one which bears that hall-mark of truth, simplicity. The rationale of thyroid surgery in exophthalmic goitre is that, since at present one cannot control the supply of fuel, one can at least shut down a proportion of the furnaces, or in other words one can limit by thyroidectomy the extent to which an excess of tryptophane can be turned into thyroxin. Finally, I note that Dr. Harries states that in operating for exophthalmic goitre he removes "about half the gland" and that thereby "the symptoms will be reduced for a few months." This is a result which is far less than surgery can and does bring about, and I would emphasize that it is seldom enough to remove half the gland. The whole of one lobe, the isthmus, and from one-half to two-thirds of the other lobe, must usually be removed if the full and striking relief which operation offers is to follow.—I am, etc.,

London, W., March 31st.

E. G. SLESINGER.

SIR,—The lucid and awakening paper of Dr. Harries makes one ask wherein lies the action of iodine given internally for parenchymatous goitre? Is it likely, in his opinion, to affect directly the chemistry of tryptophane and indican? Mine is a rural practice on chalk. Parenchymatous goitre is common, and I have not yet seen one fail to react beneficially to iodine.—I am, etc.,

Salisbury, March 30th.

G. C. ADENEY.

### IONIC MEDICATION.

SIR,—Dr. Campbell's paper on ionic medication (BRITISH MEDICAL JOURNAL, March 10th, p. 409) should arouse general interest in the matter that is sadly lacking. During the four years that I have been working at it I have got results that cannot be made to tally with his deductions. There is no doubt that some of the ions that are being introduced are "whisked off in the blood stream" as soon as they get through the skin, and some will combine with tissue elements at the electrode (as with zinc and chlorine, forming zinc chloride), but only some. The main volume of electric ions will pass on into deeper structures, carrying their corresponding medicinal ions with them until their impulsive force is overcome by the resistance of the structures, and to complete the journey which they must perform to the opposite pole they then go on alone and from that point become a simple electric current. Accepting the old tag that "an ounce of fact is worth a ton of theory" as I do, let me give some cases that may be looked upon as facts.

Both knee-joints (my own) were affected by gouty arthritis, on and off, for a considerable but unnoted period. At the end of January, 1919, the left had become so bad that only a few steps could be taken before the pain became unbearable. An x-ray photograph showed a number of osteophytes, massed adhesions, and erosion of the articular surface of the patella. The joint was put under ionization at the beginning of February with potassium iodide. After the second application I walked on an uneven road for over an hour in complete comfort. The treatment was continued regularly for a month, less regularly for the next month, and occasionally in the third month. In May an x-ray examination showed no osteophytes or adhesions and an apparently normal patella. If the iodine ions did not cause the absorption, what did?

Again, a case was admitted to the infirmary of cancer of the rectum, extending as far as the finger could reach and all the part around the anus. The patient was treated with zinc ions from a large pad which covered the whole growth, but did not enter the anus. At the end of fifteen months the outer parts were healed and no growth could be found in the rectum. There could be no doubt about deep penetration there.

The next case will be seen to provide a positive proof in its first and a negative in its second stages—cancer of the tail of the pancreas. An exploratory opening of the abdomen was closed up and the patient came home to die, the malignant mass being the size of a large lemon. He was treated with zinc ions, with the result that the growth became steadily smaller until at the end of seven months it could not be felt. He then rapidly put on fat, which, being non-conducting, established an impermeable barrier to the current, which passed to the opposite pole by the superficial parietal layers, and the growth increased quickly to its former size. By that time, assisted by appropriate dieting, the fat had disappeared, and then the mass again lessened by about half; by this time secondary growths had appeared in the stomach and liver, and the patient died, having lived fifteen months after the operation.

One more case showing deep penetration—enlarged cervical glands. A pad moistened with a solution of potassium iodide was placed over the glands and within two seconds the patient said he experienced a "coppery taste." This distinctive taste of potassium iodide could not have reached the tongue and palate in the time, if conveyed there by the circulation, and must have been caused by iodine ions that had been carried through all the neck structures of that side. This case seems to prove that the diffusion of the medicinal ions is not only fairly deep but is limited in area, otherwise we should expect to find the typical symptoms of iodism that were so common fifty years ago—in the days of small doses.

My own experience goes to prove that we are able to apply certain remedies to a localized area by means of ionization, with results that could not be obtained through the circulation without affecting the general system. Take, for instance, a case of sciatica. Under salicylic acid (whether as sodium salicylate or aspirin) given by the mouth, by the time the pain was conquered there would be the usual symptoms of tinnitus and so on. With solution of sodium salicylate by ionization I have seen no symptom appear beyond a total disappearance of pain with one application lasting thirty minutes.

In practising ionization it is of the utmost importance to be sure of correct technique. Given that, I am sure that good results can always be obtained; if it had received as much attention at the hands of the profession as has been accorded to such follies as removing adenoids, tonsils, and prepuces it would by now have been an acknowledged and generally used method.—I am, etc.,

Bishop Auckland, March 14th.

MARK WARDLE.

SIR,—Dr. Campbell frankly states that he has had no experience with ionic medication in the cure of local surgical disease; but lest his researches in the purely medical domain should be confused with those cases of a surgical nature, due to local septic conditions, where the organisms or their spores are so deeply placed in the tissues that no amount of local antiseptic treatment avails, I wish to give testimony to the enormous value I find in this treatment. It is over twenty years ago (speaking from memory) since I first saw the wonderful results obtained by my friend the late Dr. Samuel Sloan in septic conditions of the uterus and cervix and adjacent tissues by means of ionization, using copper ions.

I realized that if such results could be had in his specialty, it should be possible to get the same in mine (the mouth and teeth). Since then I have used constantly this method in all septic conditions of the gums and teeth. Where I want a sedative antiseptic result I use iodine locally with negative pole, and where I desire a more powerful (and incidentally a trifle irritating) antiseptic I use zinc, either as zinc chloride or zinc sulphate solution.

What I desire to emphasize is that the results are always excellent, sometimes wonderful. I would find the loss of this method of treatment a very serious one indeed. X-ray

<sup>1</sup> And the Boston Medical and Surgical Journal, vol. clix, No. 1, 1913.



findings as to septic foci about the tooth roots lose their significance when ionization can be successfully used and a cure effected.—I am, etc.,  
Glasgow, March 25th.

DAVID FYFE, M.D., F.R.C.S.

SIR,—The question of ionic medication and the introduction of ions from without into the deeper parts of the body crops up from time to time and Dr. Campbell's paper on this subject (March 10th, p. 409) will be welcomed, but it is liable to be misleading, because, to those not familiar with the present-day teaching, it may appear that he has shown to be without foundation and worthless a method of treatment which is commonly practised and taught by recognized teachers of electrotherapy. This is not so, because, as far as it concerns medical ionization, he is simply repeating what amounts to the commonly accepted doctrines on this subject.

When, however, the author gets beyond the limits comprised within the term "medical ionization"—that is, the introduction of ions from without—there are certain aspects of the question about which there will not be the same agreement.

It cannot be doubted that there are chemical changes in the interpolar regions as a result of ionic movements under an applied electromotive force. Dr. Campbell admits this, whether he intends to do so or not, when he says that stimulation of coils beneath the skin occurs. It is admitted that "the passage of an electric current through the tissues will have a general stimulating effect upon them." This effect must be due to either physical or chemical changes, the result of the current.

Chemical changes take place at the poles, and virtual poles exist at each situation where ionic concentration varies. In the tissues and fluids of the body we have not to deal with an electrolyte consisting of one salt only, as in Dr. Campbell's example and in the experiment of Faraday to which he refers. The current in the body is carried by ions of different ionic velocity and variations in velocity of the ions will produce variation in chemical composition. Stimulation by direct current is due to chemical change and the chemical change is due to ionic movement. Dr. Campbell admits that stimulation of tissues occurs, but says it is not due to chemical changes. What, then, is it due to? It is not sufficient to say merely that it is due to the passage of the current.

Dr. Campbell seems to have been unfortunate with his cases, but without more details of their etiology and characteristics and of his technique little can be said to throw light upon the cause of his failures, except that the cases were evidently unsuitable for the treatment. In rheumatoid arthritis permanent benefit cannot be expected from direct current if the original focus of infection is still in existence, though it undoubtedly influences the resolution of the peri-articular deposit and synovial swelling when the focus has been removed.

Some cases of sciatica, brachial neuritis, trigeminal neuralgia, etc., will get permanently well with the use of sodium salicylate or quinine sulphate solution to moisten the pads, although direct current applied with solution of sodium chloride has been used previously without benefit. This happens fairly frequently in cases of trigeminal neuralgia.

The so-called lytic effect is well known to exist. The softening of scars, the resolution of fibrous deposits and the absorption of exudates are produced and hastened by the action of direct current. The mode of action of the current and whether it occurs more readily under the anode or the cathode are proper subjects for discussion, but that the action does occur is well known and must be recognized.

Whether the results of the direct current upon morbid conditions are obtained or not by one or other method of direct current application is a matter of clinical experience. Dr. Campbell has given neither clinical details of the cases which were the subject of his investigation nor details of his technique in applying the currents.—I am, etc.,  
C. A. ROBINSON, B.A., M.B. Cantab.,  
D.M.R.E.

Isleworth, March 27th.

#### TREATMENT OF PUERPERAL INFECTIONS.

SIR,—Professor Watson's article on the above subject (March 24th, p. 505) is interesting, and he is to be congratulated on his results.

As a clinical bacteriologist I often get cases of this type to investigate, and I find the most prevalent bacteria are those mentioned by Professor Watson; I would, however, add one more—*Micrococcus tetragenus*. Now these are bacteria

which are associated with chronic infections, and if we exclude gross contamination by midwife or medical attendant, which, I think, can be done in a very large proportion of cases, we have still got to explain what has set up the acute condition.

Some cases of tuberculosis after pregnancy and confinement take on an acute phase, and we do not look for a cause or blame ourselves for causing the infection. We believe that the stress and strain of pregnancy and childbirth have in some way upset the balance and given the chronic tubercle its chance. If, then, we argue in this way in one chronic infection why should we not do so in others?

A careful bacteriological examination of the urine of pregnant women in the last months of pregnancy would in many cases reveal some chronic infection. If we did not believe in the use of prophylactic vaccines, the examination would still be useful, for it would help to put us on our guard and it would show, or help to show, whether we were dealing with a chronic infection lit up by the confinement or a fresh infection from outside. If medical officers of maternity hospitals took up the question of puerperal infection from this standpoint it would, I feel certain, be a step in the right direction, and might even help in solving the riddle of puerperal septicaemia.—I am, etc.,  
J. L. RENTOUL, M.B.

Belfast, March 25th.

#### "ATHLETIC HEART."

SIR,—It is significant that a physician of Dr. G. A. Sutherland's reputation, in writing upon the "athletic heart" (BRITISH MEDICAL JOURNAL, March 24th, p. 496), is not prepared, even with the recollection of his own profound experience, to deny categorically "the possibility of a healthy youth producing a condition of injurious strain in his own heart." Perhaps it may be urged that only a rash or very foolish person categorically denies anything, more especially a possibility of this character, which would seem to be the most reasonable view to take on *a priori* grounds. And so the expression "strain" or "overstrain" still flourishes enshrined in cardiology and undisturbed even by the *ex cathedra* pronouncements of eminent authorities. Yet, when one hears that Dr. Sutherland has never met with a case of "strained heart," and remembers that Sir James Mackenzie has "personally never seen such a thing," and that Sir Thomas Lewis, in his *Clinical Disorders of the Heart Beat*, expresses the same view, it need not perhaps be regarded as an act of very great temerity for a junior first to include himself in such good company and then to go further than any of them in a dogmatic denial of "athletic heart."

If one is willing to accept as evidence of "cardiac strain" any of the various symptoms which may follow upon a severe physical effort, then the "athlete's heart" may be encountered in great profusion. The boy or young man who has been completely run out, or rowed out, may suffer more or less severely according to his fibre from symptoms which, as Dr. Sutherland points out, are referable to the vasomotor system. And it may well be that the best corrective for such instability is not the sedulous care directed to the heart as if it were a bomb ready to explode, but another exhortation to exertion.

It is some sixteen years ago, but I recollect to this day the appalling disturbances ensuing upon a hard two hundred yards race, culminating in nausea, persistent dyspnoea, and dreadful headache, which persisted for the rest of the day. As this occurred in the middle of what was to me a very important athletic season, I adopted a "try out" of crucial significance, and next day ran, with very great relief to my doubts, one of the best quarter miles I have ever run. It may be said that to continue athletics in the face of such contraindications was the act of a fool. Yet I find myself, after twenty-one years of almost continuous competition, a good deal slower it is true, but more, not less, capable of prolonged exertion. I could recall some extraordinary opportunities of incurring "heart strain" when all circumstances were favourable thereto, but it would be trivial to indulge in further personal reminiscences.

Of the cases referred to one as suffering from heart strain, a few, as Dr. Sutherland points out, actually afford evidence of an organically damaged heart the symptoms of which have remained latent until a breakdown occurred. A considerable number have sought advice on an anxious parent's natural solicitude at the exhibition of some such symptoms following exertion as I have described in a personal experience, and who have been condemned by a doctor with a whole-hearted belief in the malevolence of athletics or on



account of his discovery of such a peculiarity as sinus arrhythmia. Not a few correspond to a type temperamentally and constitutionally unfitted for physical exertion—"faint-hearted"—in the spiritual sense. I am most interested to see that Dr. Sutherland refers to these as candidates for "soldier's heart," a pathological opinion which I maintained at a time when "soldier's heart" was on the crest of its popularity.

It may be objected—and an eminent physician for whom I have the greatest respect and admiration has employed this argument—why should the heart enjoy as a monopoly this immunity from becoming strained? I think Dr. Sutherland answers such a question, even if his answer begs the question. The heart enjoys such a monopoly because it is indispensable as a survival factor that it should be so privileged, and with a large measure of reserve is defended by the breakdown of less vital structures. Even if one conceives of some permanent strain following exertion, I should not allocate such strain to the heart but to the body as a whole. For it seems to me that too much attention has been centred upon the heart; yet the thing which makes a man an athlete is the perfect co-ordination of muscles, respiration, circulation, and so on, and if strain ensued as a result of exertion I should picture such strain as a breakdown in co-ordination, the cardiac element being the least of all concerned.—I am, etc.,

London, W., March 29th.

ADOLPHE ABRAHAM.

SIR,—In the BRITISH MEDICAL JOURNAL of March 24th Dr. Sutherland, writing under the "athletic heart" (p. 497), throws doubt on the possibility of a healthy young heart being strained, and says he has never met with such a case, and that in cases of heart breakdown there was always some predisposing cause such as organic disease. He recalls a case of a young miner who was said to have injured his heart by lifting a heavy piece of coal, but when seen it turned out that he had a marked mitral stenosis.

Dr. Sutherland goes on to say: "By no stretch of imagination can mitral stenosis be induced by physical strain." Quite so, but a murmur simulating the condition may be produced by cardiac dilatation. (See chapter on "The relation between cardiac dilatation and heart murmurs" in my work on asthma published some years ago.) Again, he writes: "Perhaps it is dilatation of the heart that crops up most frequently as the result of this so-called heart strain. Now dilatation of the heart is an evidence not of strength but of weakness." Precisely, but a tired heart is a weak heart, and the heart even of a trained athlete can become tired. The overstrain is caused by the individual persisting in his efforts, after Nature tells him he has done enough, by sheer will power. Now a strained heart tends to become dilated, as the following example will show:

After a certain severely contested boat race at Henley "bow saw red, 2 went blue, 3 fainted, and stroke fell out of the boat." On percussing the heart of No. 2 I found the left heart margin to be well outside the mid-axillary line. After some rest and brandy the heart returned to its normal dimensions in about half an hour, but, had it not quite done so, a degree of chronic dilatation would have become established, which might only make itself felt years afterwards.

By "athletic heart" I presume is meant what is well known to the public as an "athlete's heart." Every normal heart is athletic—remarkably so. From the time we are born until we die it never ceases to beat night or day.

In a lay paper a year or two ago appeared an article signed "A Professor of Medicine" in which an eminent authority on the heart was quoted as having said that the athletic heart was a "figment of the imagination." On writing to Sir James Mackenzie asking for his opinion on the question, his reply was as follows:

"My views on the athletic heart correspond to those of Dr. Sutherland as expressed on page 497 in the BRITISH MEDICAL JOURNAL of March 24th, 1923."

I consider that to ignore the possibility of heart strain in the healthy heart, owing to physical indiscretions, is to hold a very dangerous doctrine indeed, as I have come across many cases in my practice who have suffered from the after-effects of such indiscretions such as fatty heart, emphysema, asthma, and angina pectoris. I have been and still am somewhat of an athlete myself. I have found when mountaineering that if one climbs too strenuously in the Alps, even although the heart is perfectly normal and strong, one is apt to acquire some cardiac dilatation accompanied by swollen ankles and albuminuria from prolonged walking uphill, especially over deep snow, and when out of breath.

If this be not due to heart strain I do not know what is. This condition passes off, as a rule, after a few days' rest in the valley. But sometimes it does not, and a state of chronic cardiac dilatation is established which would require special treatment in order for it to be dispersed. Many a man's climbing career has been cut short in this manner, and he has never climbed again.—I am, etc.,

London, W., April 3rd.

ERNEST KINGSCOTE.

### HOSPITAL POLICY.

SIR,—What a marvellous success is the Oxford Contributory Hospital Scheme! Dr. Collier may well feel proud. No more anxiety about how to support our voluntary hospitals. What a docile population is ours! They all contribute their 2d. or 3d. a week regularly, just as if it were for a hospital club or an insurance against the need of surgical treatment. There is no contract. They still remain objects of charity, and the voluntary hospital staff can attend them just on their own terms.

Well, are not our people wonderful? They provide the material for hospital experience and teaching, and then we use that in our nursing homes and private wards to make money out of "their betters." Why talk of paying hospital staffs? We will be paid as long as appendectomies and circumcisions are necessary or fashionable. Of course, some private practitioners will be hit. I heard of one such the other day. He and a midwife arranged to do circumcisions. She provided the "nursing home" in her cottage. Sunday was operating day. They divided 30s. a case between them; the doctor took the sovereign and was quite satisfied.

I suppose the Oxfordshire workers do not demand representation on the board of management of the Radcliffe Infirmary? Anyhow, it is not worth while bothering about paying hospital staffs. You see, it might unsettle the minds of the lay board, and they might begin to talk about efficiency, regular attendance, etc., if they were not so lay.

It is grand. No more worry about how to finance our voluntary hospitals. Because if the workmen do not pay up—well, it can be deducted from their wages.

Did not the club system end in national health insurance? Which do we prefer—Friendly Society control or State control? If the gods wish to destroy us they first make us mad.—I am, etc.,

Helston, March 25th.

FERDINAND REES, M.D.

### THE MNEMIC PRINCIPLE.

SIR,—I have read with care Sir Frederick Mott's article on the "mnemonic principle" in your issue of February 24th, but after close study I am bound to say that the illumination I received was by no means proportionate to the attention I gave. Discussions of psychology founded on biological data, such as here exhibited, remind me of the disquisitions of the Schoolmen on mechanics before Galileo arrived to lay down a true foundation of the science and to point the way to development.

Speaking dogmatically, but simply for the sake of brevity, I say that to start by positing three primal instincts as the basis of a study of psychology has its analogue in the disquisitions on proper and improper motion or the nature of centrifugal force. The propositions set forth can hardly be grappled with; they are neither true nor false; they do not pose the problem in the proper manner at all. Where they appear profound and scientific they amount to garnishing familiar notions with new coined technical terms. Beyond that there is no closely consecutive developmental argument, but merely clothing a descriptive form with pedantic symbols.

The instance given to show that painful stimuli have a more powerful influence than pleasurable is unscientific, in that out of phenomena which depend on a multitude of factors, of which the freshness and intensity of the stimuli may be noted particularly, Semon selects but one, and draws conclusions which are not only not warranted by the argument but are not true. I speak here with complete confidence; for many years I conducted a series of experiments in memory, controlled where possible by quantitative determinations, and these, though extremely laborious, permitted me to obtain certain definite results.

I could criticize paragraph by paragraph, but that is not necessary, for this so-called mnemonic principle is, as a basis of a scientific psychology, quite illusory. The true principle consists in laying the foundation at the level of the most rudimentary psychic processes, and thence proceeding by



closely consecutive, rigorous reasonings up to definite conclusions. This involves, of course, the discovery of a mode of analysis which will yield us the fundamental processes by whose combinations the whole world of thought may be exhibited. That work has been carried out. Again I speak with assurance, because I do not depend on the support of any authority, but on the rigorous, inevitable character of the arguments I have introduced. I have not been content with this foundation. I have thrown in, as a piece of artistry, a demonstration that by no other route, in its ultimate course, could this exposition of the fundamental processes be attained.

Also I have examined in a new light some of the famous "positions" of philosophy and psychology, and amongst these that of memory. I have also shown, contrary to what one would gather from Sir Frederick Mott's article, the influence of heredity and of habit; I have demonstrated, again with experiments quantitatively expressed, the influence of habit, and in a manner both more precise and more fertile, in the sense of development, than he will find in Semon's mnemonic theory, or in the writing of those others whom he quotes as authorities.—I am, etc.,

London, N.W., March 12th.

ARTHUR LYNCH.

### MEDICAL PHYSICS IN THE CURRICULUM.

SIR,—We desire to bring before your readers our views on the teaching of medical physics in the later years of the course. We understand that it is suggested in Edinburgh that the student might obtain some teaching of medical physics from the physiologist, some from the ophthalmologist, some from the laryngologist, etc.; but we are of opinion that unless a definite course by a definite teacher, who is qualified to teach medical physics, is attended, and unless this is followed by a definite examination ad hoc, the subject would not receive the study and attention which it deserves. The information would be patchy, important points would inevitably be omitted, and the instruction would lack the consecutive and coherent character which is essential for an efficient course.—We are, etc.,

ALFRED DANIELL, M.A., LL.B., D.Sc.,

DAWSON TURNER, B.A., M.D., F.R.C.P.E.,

M.R.C.P.Lond.,

WILLIAM GEORGE SYN, M.D., F.R.C.S.E.,

Examiners in Physics for the Triple Qualification.

Edinburgh, March 31st.

### A MEMORIAL TO ARTHUR BACOT.

SIR,—It is just a year since Mr. Arthur William Bacot's name was added to the long roll of martyrs of medical science. It is quite unnecessary and, on the part of a personal friend, would even be indelicate to attempt to add anything to what has already been said respecting Mr. Bacot's services to preventive medicine, but there is a peculiarity in his case which is worthy of commemoration.

Most men, certainly most medical men, cannot but be appalled by the complexity of modern scientific research, the vast amount of special training which seems to be an indispensable preliminary of any hopeful attempt to extend the bounds of knowledge. This feeling, almost as much perhaps as lack of time and opportunity, has discouraged research in general medical practice. But Mr. Bacot's case is one of those instances which prove that very fine work can be done with but a slender technical outfit. Mr. Bacot's scientific education, in the formal sense, was immensely inferior to that of the worst taught medical student in the country, yet before 1911, before he enjoyed the advantages of a whole-time research post in a properly equipped institution, he had carried out a piece of first-rate medico-entomological work.

The sole educational foundation of Mr. Bacot's work was a knowledge which is part of the curriculum of all pupils in our modern elementary schools, nature study, and he regarded training in that study as the most valuable of all teaching.

Even nature study involves some outlay. To foster and turn to good ends the child's collecting instinct imposes on the teacher a little expenditure upon the impedimenta of a school museum. Even a herbarium requires material.

This is no time to pester people for subscriptions to memorials however worthy the object. But some of Bacot's personal friends and neighbours have thought that the collection of a small sum of money, to be called the "Bacot Memorial Fund," the interest on which, whether a few

shillings or a few pounds, would be placed at the disposal of the local (Loughton) Council Schools for the assistance of nature study teaching, might not be too ambitious. Should any reader of the JOURNAL care to contribute a few shillings to this object, subscriptions would be gladly received either by me or by the treasurer, Mr. Hubert Baines, C.B.E., Bryn Mawr, Church Hill, Loughton.—I am, etc.,

Loughton, April 4th.

MAJOR GREENWOOD.

### THYMIC ASTHMA: A PROTEST.

SIR,—In the February number of the *Archives of Pediatrics* there appeared an article written by me on "Thymic asthma"; it was written especially for the British number of that journal. On March 21st the article appeared verbatim in a London medical paper, transferred bodily without authority and without my knowledge, though the source was indicated in a footnote. I wrote at once to the editor demanding an explanation and an apology for this act of piracy, and although it is now nearly a fortnight ago my letter remains unanswered and unacknowledged.

I protest against such a proceeding. It places me in an odious position. I must apologize to the editor of the *Archives* for a robbery in which I had no part; it leaves me under the suspicion of an attempt to broadcast my literary efforts after a fashion which I have always heartily condemned; and, not least distasteful, of contributing to a paper for which I have always felt a profound contempt. Yet, even from such a paper, I confess that I had not expected the addition of insult to injury by the failure even to acknowledge my letter of protest.—I am, etc.,

London, W., April 5th.

HUGH THURSFIELD.

### Obituary.

ROBERT JOHNSTON, M.D.,

Portrush.

On March 24th there passed away a personality well known throughout the North of Ireland, Dr. Robert Johnston of Portrush, the younger son of the late Dr. David Johnston of Belfast.

Graduating M.B., B.Ch., B.A.O. in 1904 in the Royal University of Ireland after a successful student career at the Belfast School of Medicine, Johnston held the resident posts at the Royal Victoria Hospital, where he almost at once showed evidence, not only of his clinical instinct in the diagnosis of disease, but also of a tendency to rheumatic affections which were soon to cripple his professional work and eventually cause an early death. Leaving the Royal he became resident medical officer at the Belfast Maternity Hospital, and in a comparatively short time his enthusiasm and his devotion to hard work made him a master in the obstetric art and gave him opportunities for the performance of almost every obstetric operation. The irregular hours and the wide limits of the practice attached to this hospital produced within a brief period their effect on his health, and on the advice of the late Dr. McQuitty he gave up this appointment and took a prolonged holiday at sea. On medical advice also he relinquished his intention of specializing in obstetrics and disease of women as beyond his physical capabilities. He therefore became house-surgeon at the Liverpool Eye and Ear Infirmary, Myrtle Street. After he had worked there for six months, exhibiting marked administrative capacity with unusual operative dexterity, the visiting staff did him the honour of asking him to accept a post on the staff. His health, however, did not justify him in accepting the offer, though it was with great regret that he refused. In 1909 he proceeded M.D., and soon afterwards settled in Portrush where for some years he had a large consulting practice in ophthalmic and aural surgery. In recent years his practice had been greatly curtailed by long periods of grave disability, and for many months previous to his death he had been unable to go up or down stairs.

A colleague writes: It would not be easy to state wherein Johnston gained his undoubted hold on his patients or his friends. Abrupt, at times even brusque in manner, he yet gained the affection and respect of both. He had a clearness of vision, a unity of purpose, and an unerring clinical instinct which inspired confidence. In recent years he was universally visited by the younger medical men on holiday in Portrush, and few ever came away without having added to their store of



knowledge. Whether the conversation turned on his own specialty, medicine or surgery in general, military or naval policy in the war, or motor cars, Johnston was invariably well informed, and never hesitated to express his views tersely and without hesitation or excuse. Johnston was upright and sincere to a fault, if that be possible. Diplomacy in private life or in professional work he neither used nor countenanced. His cheeriness and friendliness, his optimism in spite of a clear view of his own prospect of life, were alike the wonder and the admiration of visitors, many of whom will miss him for years to come. He is worthy to be placed in the category with his teachers, Robert Campbell and William McQuitty, too early gone to their reward, leaving a rich memory to their friends, and to their school an irreparable loss.

DANIEL B. BALDING, F.R.C.S.,  
Royston.

THE death of Mr. D. B. Balding, of Royston, at the ripe age of 92, is reported elsewhere in this issue. He received his medical education at the Middlesex Hospital and took the diploma of L.S.A. in 1852 and that of M.R.C.S. in 1853. He became F.R.C.S. Eng. in June, 1858. He was the oldest Fellow with the exception of Mr. T. Pridgin Teale, of Leeds, who took the diploma on May 23rd, 1857, and who continues to follow the progress of medicine and surgery from his retreat near Leeds. After acting as resident medical officer at his old hospital, Mr. Balding began to practise at Royston, where he was medical superintendent of the hospital. He was coroner for Hertfordshire for more than forty years, and was very well known throughout the counties of Cambridgeshire and Hertfordshire, in both of which he was justice of the peace. He had served with the first Hertfordshire Volunteer Regiment, attaining the rank of surgeon lieutenant-colonel and receiving the Volunteer Decoration.

He was long a loyal member of the British Medical Association, and had been president of the Cambridge and Huntingdon Branch. For many years he represented the interests of the Poor Law medical officers on the Parliamentary Bills Committee of the British Medical Association, and was also for some time President of the Poor Law Medical Officers' Association. He was an adviser and frequent contributor to this JOURNAL on Poor Law matters. In early life he was associated in this work with Dr. Joseph Rogers, and strenuously maintained the principles which that remarkable man enunciated. Mr. Balding was in his prime a big burly man, with a genial manner and generous heart, which combined with his obvious sincerity to endear him to all who were associated with him in the crusade for the betterment of Poor Law conditions, both for doctors and patients, which was his chief life work, and owed so much of its success to his energy and tenacity.

THE death of Dr. T. A. MURRAY of Penketh, near Warrington, took place somewhat suddenly on March 21st; he had been in ill health for eighteen months, but his cheerful manner kept his trouble hidden even from his friends. At midnight on the 19th he had a severe heart attack; he recovered, and insisted on doing a full day's work on the 20th, but during the night had another attack, which proved fatal. Thomas Alexander Murray was born 61 years ago at Levenshulme, near Manchester; he was educated at the Manchester Grammar School, the Owens College, and the Manchester Royal Infirmary. He obtained the L.R.C.P.I. in 1887, and started practice in Penketh in 1889; this village was up to then dependent on the doctors from Warrington, but he soon established a very large and wide practice. Shortly after qualifying he joined the British Medical Association, and had always been an enthusiastic member; for many years (about sixteen), and at the time of his death, he was honorary secretary to the Warrington Division, never missing a meeting whatever the weather, although he lived three miles from Warrington. He was the first secretary of the Warrington Panel Committee, and held that post for seven or eight years. During the war he was for a long time—and after the armistice—a visiting physician at the Lord Derby War Hospital (Winwick Asylum, near Warrington) which meant a six miles' journey each way from his residence; this journey he often did twice a day in addition to carrying on his large practice. He was also a member of the National Service Medical Board, and since the war he has been a chairman of the Pensions Medical Board. In addition to his medical work he entered into the village life: he held or had held

such posts as chairman of the Old People's Treat, manager of the Council School, chairman of the Warrington Rural District Council, and member of the Warrington Board of Guardians. Some ten years ago he resigned from the Rural District Council and was appointed medical officer of health, and continued to act in his usual thorough manner until his death. To the foregoing particulars Dr. E. E. Bowden adds: "Among his professional brethren Dr. Murray was highly respected; he was conspicuously honest and straightforward, and while he was never known to do an unkind act, he did many kind ones. His funeral on March 24th was attended by large numbers of villagers (his patients) and representatives of the Rural District Council, Warrington Insurance Committee, personal friends, and nearly all the medical practitioners and dentists of Warrington and district."

WE regret to record the death at Kelso, on March 21st, of Dr. GEORGE MCKELLAR, medical officer of health of the burghs of Hawick, Kelso, and Selkirk. Dr. McKellar received his medical education at Edinburgh University, and graduated M.B., C.M. in 1896, and M.D. (with high commendation) in 1898; he took the D.P.H. in 1897. He was house-surgeon in the eye wards of the Edinburgh Royal Infirmary, and subsequently assistant ophthalmic surgeon at the British Ophthalmic Hospital, Jerusalem. He went to Kelso twenty-two years ago, and, besides holding the appointments mentioned, he was also school medical officer of Hawick and a medical officer of Kelso Cottage Hospital. For some years he was chairman of Kelso School Board, maintaining to the end a keen interest in educational matters. He was a Fellow of the Edinburgh Obstetrical Society and an old member of the British Medical Association. He formerly held a commission in the R.A.M.C. (T.F.), retiring with the rank of captain; during the war he was commandant of the local detachment of the V.A.D. Whatever interested him Dr. McKellar took up with enthusiasm; he was a man of strong and forceful personality, yet with a kindly, sympathetic disposition.

DR. CARL SPENGLER, a Swiss authority on tuberculosis, has recently died at Davos at the age of 64.

## Universities and Colleges.

### UNIVERSITY OF LONDON.

#### Meeting of the Senate.

A MEETING of the Senate was held on March 21st. The resignation on the ground on ill health by Professor W. D. Halliburton of the University chair of physiology at King's College was accepted as from July 31st, 1923.

It was reported that the King and Queen had consented to lay the foundation stones of the new buildings provided by the Rockefeller Trustees in connexion with University College and University College Hospital Medical School at the latter part of May, and that on the conclusion of the ceremony their Majesties would visit and inspect the new anatomy building.

The Senate approved revised regulations in medicine for internal and external students; they will apply to all internal students who commence their courses of study for any of the examinations leading to medical degrees in or after October, 1923, and to external students in respect of the following examinations: (1) first medical examination in and after July, 1924; (2) second medical examination in and after July, 1924; (3) Part I, in and after March, 1924; (4) Part II, in and after March, 1925; (5) M.B., B.S. examination in and after October, 1926. Copies of the revised regulations may be obtained in due course on application to the Academic Registrar or the External Registrar.

The regulations for exemptions at examinations in medical degrees for external students (Blue Book, September, 1922, paragraph 4 (iii)), were amended as below; the amendment consists of the addition of the words printed in italics:

1 Candidates who have passed the B.Sc. (Pass) examination with physiology, or the B.Sc. Honours examination in physiology, or who have obtained honours at the B.Sc. examination, having taken the pass examination in physiology in respect of their subsidiary subject, will not be required to pass the physiological portion of the second examination for medical degrees, Part II, but candidates who avail themselves of this exemption will not be eligible for marks for distinction.

The Vice-Chancellor (Mr. H. J. Waring) was appointed a member of the Council of the London Day Training College and Dr. E. Graham Little a governor of the Chelsea Physic Garden.

The annual service for members of the University will be held at Westminster Abbey on Presentation Day, May 3rd, at 5 p.m., when the Dean of St. Paul's (Dr. W. R. Inge) will preach. The graduation dinner will take place on the same evening at the Grocers' Hall at 7.30 p.m.

Mr. V. Warren Low, C.B., has been appointed the representative of the Royal College of Surgeons of England on the Senate for 1923-27, and Lord Dawson of Penn and Dr. H. L. Fason have both



The annual reunion dinner of No. 55 General Hospital will be held at the Trocadero Restaurant on Saturday, May 12th, at 7 p.m. The matron and nurses are holding a reunion at 7.30 p.m. The matron and nurses are holding a reunion at 7.30 p.m. The matron and nurses are holding a reunion at 7.30 p.m.

The United Services Club, 37, Cavendish Square, at 8.06 p.m. on the same day, to which all officers are cordially invited. All those intending to be present please notify as soon as possible to Dr. H. B. Roderick, 17, Trumpington Street, Cambridge.



## NAVAL MEDICAL COMPASSIONATE FUND.

The annual meeting of the subscribers of the above fund will be held at the Medical Department of the Navy, 68, Victoria Street, on Tuesday, April 17th, at 11.30 a.m., for the purpose of electing six directors.

## HONOURS.

g the honours and awards conferred by the service rendered in the field with the 1921, to December, 1921:

C.B.E. (Military): Colonel Alfred E. C. Keeble, C.B., C.M.G., D.S.O., late R.A.M.C.

O.B.E. (Military): Captain (acting Major) Galvin A. E. Argo, M.C., R.A.M.C.; Captain (temporary Major) John Moir Mackenzie, M.C., R.A.M.C.; temporary Captain Joseph S. Pinto, I.M.S.; Captain (acting Major) Michael P. Porter, M.C., R.A.M.C.

N.B.E. (Military): Assistant Surgeon (4th class) B. A. Irvine, I.M.D.

## DEATHS IN THE SERVICES.

Inspector-General William Harris Lloyd, K.H.S., R.N. (retired), died in London on April 2nd, aged 85. He was the second son of the late William Lloyd, of Newtown, Waterford, and of Kyle, Templemore, County Tipperary, and took the L.R.C.S.I. and the M.D. St. Andrews in 1856. He entered the Navy as assistant surgeon on December 12th, 1856, attained the rank of I.G. 1893, and retired in September, 1896, with nearly forty years' service. He first served in H.M.S. *Calcutta*, in the second China war of 1857-58, receiving the medal, with clasps for Canton and Taku. While serving in the flagship *Nile* in August, 1862, he took charge of yellow fever cases from the *Hinaldo*, and in the same month was fortunate enough to get promotion to staff surgeon through a death vacancy. In 1866 he was appointed to H.M.S. *Jason*, on the North Atlantic Station; and, though he served for nearly thirty years longer, this was his last experience of ordinary medical duty at sea. In 1870 he was appointed on special duty to Haslar Hospital, in 1872 to Lisbon Hospital, and in 1876 he was posted to the Admiralty, where he remained for twelve years, receiving promotion to D.I.G. in November, 1884. During this time he represented the Admiralty at various scientific congresses, being secretary to the section of military surgery at the International Military Congress in London in 1881, and also officially attended the same Congress at Washington in 1887. He was subsequently D.I.G. of Hong-Kong Hospital from 1888 to 1890, and I.G. of Plymouth Hospital from 1892 to 1895. He was appointed honorary surgeon to the Queen in 1894, and received a Greenwich Hospital pension on February 4th, 1919. He married Phoebe, daughter of General Vincent, Bengal Army, in 1870, and had two daughters.

Captain Chakalyit Chandry Ittychariya, Indian Medical Service, died of pneumonia at Bannu, on the Punjab frontier, on February 12th. His family belonged to the State of Travancore, and in 1914, when the war began, he was a medical student in Madras University. He volunteered for service as a dresser on the Indian hospital ship *Madras*, and served in that capacity for about a year, after which he returned to his studies and graduated M.B. and B.S. Madras in 1917, taking the university gold medal. He took a temporary commission as Lieutenant in the I.M.S. in 1917, and was promoted to captain after a year's service, and in 1922 was confirmed with rank as permanent captain from August 24th, 1920. He had served in the recent great war, and, since its conclusion, in the operations on the North-West Frontier of India.

## Medical News.

THE first number of *Hygeia*, a popular magazine of health, to be issued monthly by the American Medical Association, has reached us. It is a large quarto, attractively got up, with plenty of illustrations. Among the articles in this first issue is one by Professor Walter B. Cannon of Harvard on the control of bodily processes by glands, and another by Dr. George de Schweinitz on eyestrain and its prevention; on the cover is a portrait of Pasteur, to whom Dr. Victor C. Vaughan pays a becoming tribute in the text. There are not wanting quips and cranks which may attract the frivolous to read the more serious articles, among which, in conclusion, we may mention the first of a series on "patent medicines" by Dr. Arthur J. Cramp, Director of the Bureau of Investigation of the American Medical Association. The price of *Hygeia* is 25 cents a number.

AN interesting opportunity is to be afforded to English doctors to visit a number of important Italian spas under the auspices of the Italian Government. A special tour of foreign medical men is being organized in conjunction with the Italian medical authorities, and amongst the places to be visited will be Acqui, Salsomaggiore, Lerico, Roncegno, Montecatini, Fuggi, Sirmione, San Pellegrino, and Agnano; stops will also be made at Rome and Naples. The departure from London will take place on May 29th, and the arrangements on this side are in the hands of Major W. Stormont, Italian State Railways and State Tourist Department, 12, Waterloo Place, Regent Street, London, S.W.1, from whom all details can be obtained. Special arrangements have been made for suitable Italian medical men speaking fluent English to accompany the party throughout.

THE Medical Defence Union has removed to 49, Bedford Square, W.C.1.

A POST-GRADUATE course will be held at the National Hospital for the Paralyzed and Epileptic, Queen Square, Bloomsbury, W.C.1, from May 7th to June 29th. The course will consist of clinical lectures, demonstrations, teaching in the out-patients' department, and pathological demonstrations. A course of lectures on anatomy and physiology of the nervous system will also be given if sufficient entries are received. The fee for the course, excluding anatomy and physiology, is £10 10s. and £12 12s. inclusive. If taken separately the fee for the course in anatomy and physiology will be £4 4s.

THE annual meeting of the American Medical Women's Association will be held at San Francisco on June 25th and 26th, under the presidency of Dr. Grace N. Kimball, of Poughkeepsie. The date coincides with that of the annual meeting of the American Medical Association.

A SERIES of practical demonstrations in dermatology will be given at the Hospital Saint Joseph, Paris, by Dr. Lenglet, with the collaboration of Drs. Desaux and Rabreau, and the occasional assistance of Dr. Brocq. The course will begin on May 1st. The fee is 50 francs.

DR. H. H. DALE, C.B.E., F.R.S., head of the department of biochemistry and pharmacology of the Medical Research Council, has been elected to the Athenaeum Club under Rule 11, which empowers the Committee to elect annually into the Club persons of distinguished eminence in science, literature, arts, or public service.

SIR FREDERICK MOTT, K.B.E., F.R.S., will give a course of ten lectures on "Body and Mind" in the large theatre of the medical school buildings of the University of Birmingham on Thursdays at 4 p.m., commencing on April 26th. The lectures are open to members of the medical profession, who may obtain cards of admission on application to the Dean.

AN extensive outbreak of trichinosis has recently occurred in Spain.

A MEETING of the Fever Hospital Medical Service Group of the Society of Medical Officers of Health will be held at 1, Upper Montague Street, Russell Square, W.C., on Friday, April 27th, at 3.45 p.m. Dr. W. J. J. Stewart will read a paper on "The failure of the isolation hospital to reduce the incidence of scarlet fever: a possible explanation and remedy," and Dr. M. O. Howell will report a case.

THE Prince Albert Convalescent Home, Worthing, is making a special appeal for funds, as it is in financial difficulties. This home is now maintained for the reception of convalescent women as well as men, and has accommodation for eighty-five patients. Donations or subscriptions may be sent to the Secretary, 76, Finsbury Pavement, E.C.2.

THE fifth congress of the Far Eastern Association of Tropical Medicine will be held at Singapore from September 3rd to 17th. The first congress was held at Manila in 1908, and subsequent congresses were held at Manila in 1910, at Hong-Kong in 1912, at Saigon in 1913, and at Batavia in 1921. The object of the Far Eastern Association of Tropical Medicine is to promote the science and art of tropical medicine in the Far East, and for this purpose it endeavours to unite into one compact organization the medical profession of the Far East, for the growth and diffusion of medical knowledge. The association's aim is to promote friendly international intercourse among medical practitioners, and to raise the standard of medical education. It endeavours to enlighten and direct public opinion in regard to the problems of hygiene, to form habits which may conduce to the prevention of disease among the native population, and to present to the world the results of scientific observations. Membership is open to the members of all duly constituted, regularly organized medical societies, and to all medical officials in the civil, military, naval, and other organized services of Governments, within the field of the association. According to the preliminary syllabus of the congress, its work will be carried out in four sections—namely, physiology, pathology, medicine and surgery, and hygiene. It is the wish of the scientific committee that the term "tropical medicine" should not be interpreted in its narrow sense to the exclusion of the many interesting problems in Far Eastern medicine and surgery. Dr. A. E. Horn is to be president of the congress, and the honorary secretary is Dr. J. W. Scharif, Government Health Office, Singapore, to whom correspondence should be addressed.

AT the meeting of the Medico-Legal Society to be held at 11, Chandos Street, W., on Tuesday next, at 8.30 p.m., Dr. T. W. Eden will open a discussion on the duration of pregnancy in its medico-legal aspects.



## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Attitology*, Westrand, London; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand, London; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra*, Westrand, London; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus*, Dublin; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate*, Edinburgh; telephone, 4361, Central).

### QUERIES AND ANSWERS.

#### BACTERIOLOGY OF SEA-WATER BATHS.

"A. G." asks for information, or references to publications, bearing on the bacteriology of sea-water swimming baths. According to his own examination, the water in a large swimming bath in the tropics shows no growth at the time it enters the bath. The water is renewed twice a week. After use by 500 people the water gives 100 organisms in 1 c.cm. and 1 *B. coli* in 10 c.cm. Our correspondent can find no published work on the subject.

#### INCOME TAX.

A, B and C were in partnership to January 1st, 1923, when A retired on terms that he was to be paid one and a half year's purchase of his share plus 6 per cent. on outstanding capital instalments.

\*\* For 1923-24 A's liability in respect of the practice is confined to the interest at 6 per cent. which he receives, and the balance of the assessment is divisible between B and C accordingly. They will, of course, pay tax on a greater amount of cash than they will receive and retain, but that is really because they are using their earnings to buy a further share in the practice—a question of saving capital, not of incurring a professional expense.

#### Car Transactions.

"D. D. R." in October, 1919, bought a four-seater 12-h.p. F. car, secondhand, for £170 (new cost was £203). In April, 1921, he bought a two-seater, 12-h.p. R. car, secondhand, for £340 (new cost in 1921 was £735). In May, 1922, he sold the F. for £24. In view of the small residual value of the F. we consider that the cost of replacement should be allowed as an expense of the year 1921. The fact that both cars were secondhand makes it difficult to separate the renewal cost from the capital improvement, and on the facts stated we do not think that "D. D. R." is likely to obtain a greater allowance than £170 - £24 = £146.

"OMEGA's" transactions have been as follows: 1908 bought second-hand Renault Coupé (£350 new) for £225; 1917 bought second-hand Adler (£350 new) for £180; 1920 bought second-hand Douglas motor cycle for £43; 1922 sold the Renault for £30—loss £195.

\*\* It is important to bear in mind that the only allowance legally due is for the cost of replacement; nothing is due for the loss on realization as such. "Omega" might—if the facts as to the use of the Renault permit—contend that the Adler was in substance purchased in replacement of the former, but the cost was incurred in 1917, which is now outside the three years' average; the Douglas similarly is only partially claimable, as it was an expense of the year 1920. Our advice is that, assuming a car will be purchased before long, to wait until then and to put in a claim that that car is in replacement of the Renault, and if the Adler is then disposed of the allowance might cover both losses, though dealt with as one for the expense incurred on the new car.

### LETTERS, NOTES, ETC.

#### WHOOPING-COUGH.

DR. THOS. CARRUTHERS (Kilbarchan, Renfrewshire) writes: Dr. Middleton's remarks on his "cure" for whooping-cough in your issue of March 10th (p. 450) occasions me to say that I have often thought of compiling a book entitled "The natural history

of disease." By the time whooping-cough is diagnosed it is about a fortnight old and it cures itself in the next month. A healthy child with its stomach kept in order never turns a hair. Until a "stopper" (as in diphtheria) is discovered that is all we can do.

#### "ORIFICALISM."

WHEN it was mentioned recently (JOURNAL, February 3rd, 1923, p. 220) in connexion with another subject, that a certain osteopath advertised himself in his craft journal as a specialist in "orifical surgery," it was not realized that this "specialty" is itself the latest development among the quack cults of America, and has already attained a notoriety there. Dr. John F. W. Mcagher of Brooklyn discussed this form of charlatanism in the *New York Medical Journal and Medical Record* of February 21st, 1923 (p. 221). His attention was first drawn to the "cult" a few years ago when caring for certain patients suffering from insanity, who had been "treated" by certain so-called "orifical surgeons." Some of these quacks (he says) have medical degrees of a kind, and they carry on their work and propaganda mainly through church clubs and women's societies. In Chicago they publish a journal of their own, and have the hardihood to call it *Constructive Surgery and Medicine*. The first idea of "orifical" or "constructive" surgery was apparently hatched some thirty years ago, and, as their organ states, "So much was said about rectal work, that the idea prevailed that orifical work meant surgery of the rectum alone, when, in fact, as we all know, it included surgery of all the lower orifices." To the true "orifical surgeon" the nose and mouth are of little account. Reference is made in their journal, nevertheless, to at least one nose and throat specialist among them: "His special work for some time has been troubles of the upper orifices and cavities, but unlike the usual nose and throat specialist, a large part of his treatment for these troubles is pelvic attention . . . the true spirit of the orificalist." The following is a case report published in the journal—the spelling is that of the author: "With fear and trembling I began dissection of the pus sack, and when I got through, I had a whole in the buttock as large as a baseball. I kept the patient in bed, and wrote the school for suggestions." One of these "surgeons" cured a case of constipation by dilating the os uteri; another cured a case of diarrhoea by treating the clitoris (vol. 7, p. 230). One writes: "I never knew where cures came from until I became a student of your course," another says, "I have been thinking orifical ever since." The osteopath and the chiropractor will have to pull up their socks.

#### A CIRCULAR OFFER.

A FEW months ago a correspondent sent us a copy of a circular handed to him by a local chemist as a curiosity. It was issued by a manufacturer of thermometers and glass apparatus in Germany and is perhaps, as our correspondent suggests, a sufficiently curious example of English as she is wrote to be worthy of reproduction:—

"Herewith I allow me to recommend you the purchase of my praiseworthy Fabricats. Principally there is to-day the artificial Men-Eyes which I offer you.

"I manufacture this artikel in the best quality, almost infrangible with imitation illusory of the naturel Eye, the best what exist and I offer you extr. mely as I.ug there is stock: [Here follows a list of prices]

"In brevity we shall have a new Price-raising-at least of 50 per cent. and thence do you not tarry a moment with your orders.

"Advanantagous Purchase—occasion for only some days. Who purchase immediately, makes very good business and gains much money by sell again. Who this occasion loses by delay makes a great mistake."

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 34, 35, 38, and 39 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 36 and 37.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 115.

### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not safeguarded.

Advertisements should be delivered, addressed to the Manager, 429 Strand, London, not later than the first post on Tuesday preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *post restante* letters addressed either in initials or numbers.



## An Address

ON

## THE CHRONIC ABDOMEN.\*

BY

ROBERT HUTCHISON, M.D., F.R.C.P.,

PHYSICIAN TO THE LONDON HOSPITAL.

Our surgical colleagues describe a condition which they speak of, in their clinical slang, as the "acute abdomen." There is, however, another condition more familiar to the physician which may be designated with equal propriety the "chronic abdomen," and if the one is, as we are told, a catastrophe, the other is certainly a conundrum.

The subject of the chronic abdomen is usually a woman, generally a spinster, or, if married, childless and belonging to what are commonly termed—rather ironically nowadays—the "comfortable" classes. To such a degree, moreover, do her abdominal troubles colour her life and personality that we may conveniently speak of her as an "abdominal woman." An abdominal man, on the other hand, is by comparison a rare bird, and when caught has a way of turning out to be a Jew—or a doctor.

## SYMPTOMS.

The symptoms of the chronic abdomen are many, various, and ever-renewed. Some of them refer directly to the abdominal organs, others are of a more remote and general character; but, whatever they are, they are always described with great prolixity and in minute detail. Amongst those most commonly complained of are abdominal aches and pains of various sorts and in various places, but especially in the right iliac fossa. Instead of actual pain the patient may speak of a "raw feeling inside," or of "an indescribable sensation in the stomach," or of a "dragging." Constipation of greater or less degree almost always figures prominently in the list of symptoms, and flatulence is also frequent. Amongst the commoner remote symptoms one finds a feeling of general weakness or "exhaustion" (especially after an action of the bowels), "mental and physical torpor," "inability to think," "a poisoned feeling," and "neuralgic pains all over." Head-aches and insomnia are also very frequent, and a great many patients complain of undue susceptibility to cold and of a constant catarrh in the throat.

## EVOLUTION OF THE CHRONIC ABDOMEN.

If one inquires of a patient with a fully developed chronic abdomen how her lamentable state has been arrived at it will be found that the process of evolution is fairly constant. These sufferers are very fond of presenting anyone whom they may consult with a full record of their previous medical history and experiences, and the following are a few such records as supplied by the patients in their own words. They may be taken as typical.

## CASE I.

Mrs. L., aged 47, gave the following record of her various illnesses and their treatment:

Bad fall at 2 years of age. Rheumatic fever at 13. Always bad digestion and overloaded bowel. Married at 21. After birth of first child, ulceration of rectum. Uterus never strong.

1900: Two operations for fistulae and abscesses—tumour (fibroid) discovered in uterus. Always feeling ill from auto-intoxication (enemas curing this) and rheumatism in knees (cured by inoculation).

1901: Cocaine poisoning.

1902-1909: Cures at Aix, Strathpeffer, Bath, Carlsbad, and quinine.

1910: Operation for "chronic appendicitis" and six tumours in uterus. Intestines never felt in place or strong after this. Same as: Pyorrhoea; inoculations.

1911: Cancer of the breast—operation.

1912: Went to Bath for "nerves." Several teeth extracted.

1913 (March): Played golf for first time and thought intestines were dragged down. Jumped out of train and ran hard (quite fast); inside never comfortable since then; pains in bladder; craves!

May: Small fibroid discovered. Uterus half size too large. Inflammation of bladder, uterus, and general tissue; nerves terribly bad; douches, etc., in a home.

August: Contrexville (concentrated urine and excess of uric acid). Contraction of intestines; pains in kidneys; always pain in bladder—diarrhoea. Nerves—nerves. Constipation. Passed large quantities of sand.

\* Delivered before the Clinical Society of Manchester, March 8th, 1923.

Now  
pressed  
Always

Rectum feels as if  
nerves better.  
ience.

## CASE II.

Miss M., aged 48. Seen in 1913, complaining of constant acidity, flatulence, vomiting of green fluid, etc.

## History.

At 5 years of age had severe jaundice and stoppage of bowels; always constipated.

At 20: Influenza and bronchitis with prolonged fever; this left "stomach trouble" which persisted.

At 32: "Dilatation of stomach," and was in bed three months.

At 33: Uterus curetted; indigestion better for a time.

At 35: Complete hysterectomy and appendectomy. Digestion much better for over a year.

At 38: Digestion bad again—stomach lavage—much benefit for a month.

At 40: Cholecystitis and "ulcer of stomach."

At 42: Rest. cure in hospital. Stomach massage. "Much benefit."

At 48: Exploratory operation. Stomach and colon fixed with catgut sutures.

One and a half years later she wrote:

"... Am glad to say I never now (since operation) get those turns of agonizing pain in region of gall bladder which used to suggest gall stones; but there is always a sore burning spot there, sometimes pretty bad, with often slight cutting sort of pains (but only slight), and it goes when the apparent cause of corrosion of wind or food has moved.

"My old 'sore spot' (on left side under lowest rib near middle) has come back, and I am in constant distress from the burning, gnawing sensation right across below waist line. Also all over back and under shoulder blades.

"I have really been little more than an invalid for months, finding it most difficult to continue my teaching, having scarcely strength to speak. It seems to be the continued acidity and tremendous flatulence, and the sensation of weakness (I suppose) is because the heart is being almost continually choked with dilatation of stomach. About a month ago it was 'murmuring'—I do not know if it is still doing so. It feels as if a heavy weight is pressing the heart and sometimes there is neuralgic pain in its region and in left arm and I can't breathe easily. But doctor says it is not due to heart itself; that appears strong, but the effect of faintness and exhaustion is very bad sometimes, though occasionally I am able to forget it for a day or more. Of course it hinders sleep when bad. Am glad to say the fearful violent jumping—which was such a trial all the time in hospital and for eighteen months after—is almost gone and the rheumatism is better and the sudden turns of sickness less frequent. I rest all I can and do most of my work at home, so that if I find a heart turn coming on I can drop lesson and let off the tremendous flatulence in violent noisy 'spasms.' If I check them I become helpless.

"I have just started to try and take olive oil (a large teaspoon a day) and since doing so have felt easier and had no spasms, but this may be chance, but shall persevere. Bowels need 20 or 25 senna pods now to move them."

## CASE III.

Miss J., aged 29. Seen in January, 1908. She had always been delicate, especially as regards digestion.

## History.

June, 1889: Peritonitis. Abscess came away into rectum.

January, 1897: Entered on office work—health became worse.

October, 1898: Influenza (high temperature) followed by jaundice. Since have always had constipation.

1899-1900: Indigestion becoming worse.

June, 1900: Operation—two abscesses in glands on right side of abdomen, one of which had broken; considerable amount of matter; slight perforation. Since digestion has always been very troublesome.

1902-4: Digestion becoming worse and worse.

October, 1903: Six weeks' "rest cure" in bed with massage; no permanent improvement.

February to April, 1904: Being in Switzerland, six weeks' treatment in hospital there; no improvement.

May and June, 1904: Seven weeks' treatment in Zurich: no improvement.

October, 1904: Operation (gastro-enterostomy)—pylorus said to be fixed by adhesions. Digestion has since been very indifferent.

Since last date, pain and distension at intervals of from two to four weeks, lasting from periods varying from one to six or more weeks.

## CASE IV.

Mrs. T., aged 41. Seen 1917, complaining of pain in epigastrium and left hypochondrium, flatulence and acidity.

In 1907 right kidney fixed.

In 1908 appendix removed.

In 1909 operation for tubal pregnancy.

In 1913 other tube and ovary removed—since then indigestion.

In 1915 rest cure.

In 1917 exploratory operation—nothing found except that the omentum was adherent to the scar in the right iliac region.

Remained well for four months, when epigastric pain returned acutely with the symptoms described above.



## CASE V.

Mrs. H., aged 53. Seen 1915 for obstinate constipation; "neuritis" in various parts of the body, swelling and tenderness of the breasts, etc.

## History.

1886: Haemorrhoids removed.

1887: Curetting.

1888: Five cauterizations of uterus.

1898: Haemorrhoids removed again, and bowel stretched as far as they could reach. This resulted in loss of power in lower bowel and aggravated the trouble.

1905: Uterus and large fibroma removed and one ovary, in which was a cyst. The surgeon thought the fibroid growth behind the uterus was strangling the intestine, but the latter was not improved after the operation.

1910: Bismuth test and exploratory operation. Five places where tight bands had grown round the intestines—worst place left side of the colon three times round and a very thick string. It left a deformed colon, but as the place seemed elastic they did not cut it out.

This trouble continues, and since May last I have had mucous colitis. The slightest solid undigested matter causes stoppage, and there is constant delay. I only make matters go at all by daily injections and aperients. The poisoning is resulting in nerve pain and swellings in different parts of my body.

It will be observed that the road to chronic abdominalism is paved with operations. The usual sequence seems to be this: the patient begins by complaining of pain or discomfort in the right iliac fossa, for the relief of which the appendix is removed. For a few months she is better. (It is characteristic of the disease that almost any new treatment, and especially any operation, produces benefit for a time.) Soon, however, her symptoms return. This is put down to "adhesions," and another operation is performed to remedy these, with the same result as the first. Warming to his work, the surgeon undertakes bolder and yet bolder proceedings; a complete hysterectomy is probably carried out or some short-circuiting device, or the colon is fixed, or even partially removed, but still the patient is not cured of the pains, whilst the state of the nervous system has steadily worsened.

It is interesting to note at this point how medical history repeats itself. Writing in the eighties of last century on the abuse of gynaecological operations in the treatment of visceral neurosis, Sir Clifford Allbutt said of the abdominal woman of that day:

"She is entangled in the net of the gynaecologist, who finds her uterus, like her nose, is a little on one side, or again, like that organ, is running a little, or it is as flabby as her biceps, so that the unhappy viscus is impaled upon a stem, or perched upon a prop, or is painted with carbolic acid every week in the year except during the long vacation when the gynaecologist is grouse-shooting or salmon-catching, or leading the fashion in the Upper Engadine. Her mind, thus fastened to a more or less nasty mystery, becomes new-y apprehensive and physically intro-spective, and the morbid chains are riveted more strongly than ever. Arraign the uterus and you fix in the woman the arrow of hypochondria, it may be for life."—On Visceral Neurosis, Goulstonian Lectures, 1884.

Substitute "surgeon" for "gynaecologist" and "appendix" for "uterus" and the parallel is complete. At that time the uterine organs were the scapegoat of the abdomen; now it is the appendix—if, indeed, it is not already the teeth or the tonsils.

Meanwhile, and between the more dramatic entries and exits of the surgeon, the physician has not been idle. The patient has been thoroughly "investigated"—possibly at a "team-work" clinic; she has certainly been provided with an x-ray picture-book of her entire alimentary canal; her teeth have been extracted and her tonsils excised; her motions have been analysed by a biochemist and her mind by a psycho-analyst; she has had several rest cures; she has been given prolonged courses of vaccines, of intramuscular tonic injections, of intestinal antiseptics, and of endocrines; she has been fed on sour milk or minced beef or raw vegetables; she has experienced various forms of massage, has been subjected to the latest kinds of electrical current, and has had her colon repeatedly washed out at Plombières or Harrogate.

In a word, she has run the whole gamut of "modern" therapy, has submitted to every "stunt" and conformed to every fad—but is none the better. And just as she can only escape the attentions of the surgeon when—as Sir Clifford Allbutt said of the gynaecologist—he is "grouse-shooting or salmon-catching or leading the fashion in the Upper Engadine," so she is only at peace from the physician when the latter is recruiting his exhausted energies by a short holiday at an inexpensive seaside resort.

## PHYSICAL AND MENTAL STATE.

On examination of a fully developed case of the chronic abdomen one will find that it has both a physical and a mental aspect, and that the latter is often the more important of the two.

Physically the patient is undernourished and sallow. To use an abominable term current at the moment, she looks "toxic." The abdomen is of visceroptotic shape and the surface criss-crossed with scars, the signs-manual of the surgeons who at one time or another have conducted exploring expeditions into the interior. The stomach is dropped and splashy and the right kidney more or less movable; there is tenderness at various points over the colon. Constipation will probably be obstinate, and the motions usually show the presence of mucus or even membranes.

The mental side of the case is more difficult to analyse. There is notable, in the first place, a general discontent, "disgruntlement," and peevishness, added to which is an intense egotism which leads the patient to regard herself and her symptoms as of the utmost importance. In a play called *The Mollusc*, which appeared some years ago, this aspect of the abdominal woman was admirably depicted, but I noticed that all my patients of this type who went to see it simply remarked, "How absolutely like Mrs. So-and-so!" None of them recognized the Mollusc as herself. Needless to say, the patient is also intensely introspective and hypochondriacal. She studies and catalogues her symptoms with minute care, and is expert in a knowledge of the action of drugs and a connoisseur of doctors and "specialists."

"She has seen heaps of specialists," a doctor wrote to me of a typical example, "and no doubt will continue to do so. You will be amused and interested to hear that she promptly went off to another specialist after seeing you."

The operation habit has often a strong hold on her. Added to all this, and most trying of all, is an intense craving for sympathy which must be satisfied at all costs, and it is noteworthy that there is usually someone in her entourage who is always ready to supply the need. Sometimes an unmarried daughter is the victim; sometimes it is an over-devoted husband. One should not, however, commiserate him too much, for, like the husband in *Bunty*, he is often a "weelin' victim" and always ready to kiss his chains.

Her incessant demand for sympathy and understanding makes the abdominal woman a veritable vampire, sucking the vitality of all who come near her. Half an hour with her reduces her doctor to the consistence of "a piece of chewed string," and is more exhausting to him than all the rest of his day's visits put together, for she is always discontented, covering fresh symptoms, will not admit any improvement in her condition, and has an objection to everything that is proposed. Crabbe must have had her in mind when he wrote of the patients—

"Who with sad prayers the weary doctor teases  
To name the nameless ever new disease."

"My *bête noire*, Miss —, is coming to see you soon," a medical friend feelingly wrote to me of an extreme example. Fortunately, however, she never sticks to one doctor long, but is always rushing off after fresh advice, and her nurses can always be changed at short intervals; if they were not, they would go mad.

## THE NATURE OF CHRONIC ABDOMINALISM.

When one comes, then, to analyse a case of the chronic abdomen, it is found to consist on the physical side of a state of visceroptosis along, usually, with a greater or less degree of mucous membranous colitis, and, on the mental side, of that morbid psychological state which was sketched above. But now comes the conundrum. How can the physical basis produce the multifarious symptoms of which the patient complains, and what is its relation to the mental side of the picture?

It is common knowledge, of course, that many women have pronounced visceroptosis without being much affected by it either physically or mentally. Why, then, do these particular patients appear to suffer so much? Again, what part does mucous membranous colitis play? It is true that one rarely sees a sufferer from that disease who does not exhibit in greater or less degree the mental characteristics of chronic abdominalism, but what is the relation of the one to the other? Does the colitis affect the mind, or is it the other way round? I need not remind you, of course, that there is a school of thought which would attribute all the remote



ical symptoms of chronic abdominalism, and presumably mental symptoms also, to "auto-intoxication." This line has been so much discussed in recent years that I do not propose to weary you with a further consideration of it; although there may be an element of self-poisoning in some of these cases, I feel bound to express the opinion that it does not account for all the symptoms. Nor have I any theory to offer. There remains, when all is said and a good deal of mystery about the chronic abdomen, and I do further study—especially, perhaps, from the psychological side and from the standpoint of the relation of the digestive nervous system to the emotions.

#### TREATMENT.

the treatment of the chronic abdomen the most important thing is to catch the patient early. If she has once got on to the slippery slope which leads to successive relapses she is undone. A timely "fattening cure," followed by the provision of an efficient abdominal support, regulation of the bowels by the mildest laxative, supplemented if necessary by simple enemata, an abundant but unirritating diet, soothing of the nervous system by bromides—these are the physical measures. On the mental side the patient should be encouraged to take up some definite occupation which will provide her with an interest outside herself.

In an incipient case such means may suffice, but if one has to do with a confirmed example of the disorder one's task is much more difficult. At the outset the question of operation is sure to arise. The patient will probably have already had her appendix removed at least, and if any further operation is decided upon it is best, I believe, to make it of a purely exploratory character. The incision should be large enough to permit of a thorough investigation of all the viscera—for even the chronic abdomen may be the seat of organic disease—any bands or kinks may be dealt with, but short-circuits are to be avoided at all costs, and organs should not be removed unless they are demonstrably diseased. Whether fixation of the colon is worth while I do not know, as I have not seen a sufficient number of cases in which at least two years have elapsed since the operation. Immediate benefit is no criterion of permanent relief, for, as I have already pointed out, these patients are always improved for a time by a new treatment. Colectomy of any degree is a grave proceeding not to be undertaken lightly. In any case a thorough exploration may at least satisfy the patient's mind as to the absence of serious organic disease, and so pave the way for a healthier mental attitude in future.

Apart from operation, the physical treatment will proceed on the same lines as in an early case, but success is much more difficult to attain.

There remains the mental side to be dealt with. What is to be desired here is something which will dislocate the patient's mind from its perpetual revolution round her umbilicus and set it open to wider horizons. The war cured some and loss of fortune and bereavement have cured others; but these are drastic remedies which it is not within our power to prescribe. Suffragetteism undoubtedly was the salvation of some abdominal women, but the suffragettes are now experiencing the tragedy of fulfilled ambition, and probably many of them have relapsed. Marriage, and the advent of a child—even an adopted one—are often potent remedies, and the fancy religions—Christian Science, Theosophy, Spiritualism, and so forth—may be ways of escape. One of my patients, an ex-nurse (and ex-nurses furnish the most malignant types of the chronic abdomen), once consulted a palmist, who after looking at her hand said, "If I were your husband I would take a stick to you!" The advice was sound, and might often, perhaps, be effective. Whether the methods of M. Coué will help these patients remains to be seen. The difficulty is that many of them, despite their protestations to the contrary, really lack the will to be well, and their daily litany is: "Day by day, and in every way, I get worse and worse."

I confess, therefore, to some feeling of despair as regards the treatment of the more advanced cases of the chronic abdomen, and on the whole I am inclined to think that the less one has to do with them the better both for one's peace of mind and one's professional reputation. Yet, unfortunately, these cases are likely to increase in the future, for as civilization gets more complex, as fewer women in the upper classes marry, or, being married, have fewer and fewer children, all the factors which favour the development of chronic abdominalism will be more intense. It is a bleak prospect.

## Hunterian Lectures

ON

## MAN'S POSTURE: ITS EVOLUTION AND DISORDERS.

GIVEN AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

BY

PROFESSOR SIR ARTHUR KEITH, F.R.C.S., F.R.S.,  
CONSERVATOR OF THE MUSEUM.

[Abstracts.]

### LECTURE VI.—THE EVOLUTION OF THE HUMAN FOOT.

WHEN dealing with the evolutionary history of the spine, thorax, abdomen, and pelvic floor we found that the human condition was the last of a series of steps which are seen to begin in the small orthograde ape, the gibbon. The missing evolutionary stages are not those which bridge the hiatus between the great anthropoids and man, but those which fill the gap between the orthograde gibbon and the older pronograde condition seen in monkeys. When, however, we came to consider the structure of man's groin and, to lesser extent, his pelvic floor, we found that the evolutionary gap was seen to lie between the human and the anthropoid stages. This is the case as regards all parts of man's lower extremities; more particularly it is true of his foot. Even in the gorilla, the anthropoid which shows the nearest approach to man in the use of its lower extremities for support of the body, the great toe is free and used as a grasping thumb.

The central evolutionary problem of the human foot is: How did the thumb-like great toe lose its independent nature and become merged in the metatarsal series? By what process did the free mobile great toe of the prehensile primate foot come to form the principal part of the rigid plantar arch of man? The transformation is all the more remarkable when we remember that a prehensile hallux was present at the first dawn of the primate type of animal, and has retained this form throughout the long history of the order, with the exception of that aberrant being, man.\* In him the hallux has reverted to a primitive position in the metatarsal series.

#### *Has the Foot of Man been Evolved from one which was Prehensile?*

At the very outset this question must be asked and answered: What evidence is there that the human foot has passed through a prehensile stage? The human foot has the same structural composition as the ape's foot—the same bones, the same muscles, the same ligaments; it is only their arrangement and form that have become modified in the human foot. If in the higher primates we compare bone after bone, muscle after muscle, ligament after ligament, we find in every case a series which leads from the type seen in the pure prehensile foot of monkeys to the stage reached in the human foot. Take, for example, the three contrahentes muscles to be seen in the sole of the monkey's foot; they serve to approximate the heads of the metatarsal bones. In the sole of the human foot they are represented by mere fibrous strands; the story of their degeneration can be read in the feet of the orthograde apes. They are still present in the gibbon; they are in the retrograde stage in the chimpanzee, they are almost as much reduced in the foot of the orang and gorilla as in that of man. The interosseous muscles of the monkey's foot do not lie between the metatarsal bones, as in the human foot, but on their deep or plantar aspect. In the gorilla and orang they are set as in man; in the gibbon they occupy an intermediate position. Yet as the interosseous muscles appear in the foot of the human embryo they are set and arranged as in pronograde apes. In the course of development they take up their intermetatarsal position. We shall cite, when dealing with the structures which maintain the arch of the human foot, other evolutionary links which make us certain that the human foot is but the culminating stage in a series foreshadowed by anthropoid feet.

#### *Flexion Lines of the Sole.*

No more convincing evidence of the prehensile history of the human foot can be cited than the flexion lines to be seen

\* See Professor Wood Jones's *Arboreal Man*, 1916.



on the sole of the baby's foot. Line for line they agree in their relative position and form to the flexion folds to be seen on the sole of the gorilla's foot. The sole of the newly born child has the inverted anthropoid position—an adaptation for grasping and climbing. The articular face on the internal cuneiform, on which the base of the hallux moves, is set obliquely in the foot of the human infant, thus recalling the original prehensile nature of the great toe. The astragalus of a baby has, in its general shape, and in the form of its articular surfaces, many points in common with the astragalus of the great anthropoids. Seeing how different is the use to which the great toe is put in man and apes it is wonderful that the muscles which serve the one can be made to answer the needs of the other. Only one hallucial muscle has been radically transformed in man—the short flexor of the great toe has had a second belly added to it. The other muscles have undergone a mere change in size and attachment.

#### *The Shaping of the Human Foot.*

When we take all these points into consideration there can be no hesitation in believing that the human foot has been evolved from one which was prehensile, and that stages leading on to the human form are to be seen in the feet of anthropoid apes. And yet in the development of the foot of the human embryo a prehensile stage—an ape-like foot—is at no time to be seen. If it were true that the human embryo, at every point of its development, recalled, or passed through, an ancestral phase, then we should expect to see a simian stage in the developing human foot. But the law of recapitulation is only partly true; development is a double process—it is recapitulatory, but it is also anticipatory. We see the two processes proceeding side by side and masking each other; atavistic features appear in the developing foot side by side with the new ones. The human foot was never shaped by any effort made by the growing or grown anthropoid ape, as Lamarck supposed, but arose for the first time in the embryonic foot—under the influence of the growth mechanism which controls the development of that organ. Hence it is that, up to a stage corresponding to the point reached by a human embryo at the end of the second month of development, the foot and toes of man and ape are much alike—the toes radiate forwards from the tarsus and all are united in a common web. At this stage the arrangement of digits is really that seen in five-toed mammals; it is an ancient form. Even at this stage the great toe of man is predominant in thickness although not in length. Then at the stage where the webbing disappears from the digits of the foetal ape and the great toe assumes its separate status, the foot of man goes on retaining the great toe in the primitive adducted embryonic position. The adducted position of man's great toe came about by arresting development at an early point of digital differentiation. It will be found to be true of nearly all the structural features which are distinctive of man's body that they make their first appearance in the embryonic or foetal stages of apes; subsequently they blossom to their full in man's body. Such foetal structures are not, as so often thought, recapitulations of ancestral phases; they are new evolutionary creations.

#### *Functions of the Foot.*

Such evolutionary studies as I am now laying before you are of interest and of use to medical men only if they throw light on how the human foot came by its functions as well as by its form. How did the supple prehensile simian foot become modified to serve as a lever—the "stepping-off" lever—so necessary for man's progression? In cases of "flat-foot" the lever becomes broken, and we know well how crippling this disaster can be. If we examine the foot of a pronograde monkey, or even of the orthograde gibbon, we see that it is in reality a Y-shaped prehensile organ. The stalk of the Y is represented by a short tarsus; the limbs of the Y represent the opposed digital and hallucial elements of the grasping organ. The hallucial limb is directly articulated on the tarsus, for its metacarpal bone serves as a phalanx in the grasping foot. In the digital limb of the grasping foot the four metatarsal bones are fixed with some degree of rigidity to the tarsus; the mobile toes articulate on the metatarsal segment of the sole. Thus, taking no notice of the great toe in the meantime, we see that the primate foot is made up of three functional segments—tarsal, metatarsal, and digital—each serving its own peculiar use in the prehensile foot. Now if we note what has happened to these three elements in the feet of the higher primates, as set out in the following table, we see that,

*Table Showing the Proportion formed by each Element of the Foot in Man and Allied Primates.*

	Proportion of Tarsus.	Proportion of Metatarsus.	Proportion of Phalanx.
<i>Semnopithecus</i> (monkey)	28 per cent.	33 per cent.	39 per cent.
Gibbon ... ..	28 ..	30 ..	42 ..
Orang ... ..	27 ..	33 ..	40 ..
Chimpanzee ... ..	32 ..	33 ..	35 ..
Gorilla ... ..	39 ..	23 ..	33 ..
Human infant ... ..	46 ..	31 ..	23 ..
Man (adult) ... ..	52 ..	30 ..	18 ..

in all, the proportionate length of the metatarsal element remains nearly the same; on the other hand, as the digital element shortens, the tarsal element increases in length and strength. If we measure the length of a monkey's foot, from the heel to the tip of the longest toe—which is the middle digit in old-world monkeys—we note that while the tarsal element makes up only about 28 per cent. of the total length the digital or phalangeal element makes up 39 or 40 per cent. At the other end of the series we find the foot of man, in whom the tarsal element makes up more than 50 per cent. of the length while the digital element provides less than 20 per cent. of the length. Between these extremes lie a series of intermediate forms. In the proportion of the three elements the foot of the gibbon differs but slightly from those of the monkey; the evolution of the orthograde posture did not affect the proportion of the elements in the foot. With the evolution of the heavy bodies of great anthropoids the supporting or tarsal element underwent a great relative growth. This is not so evident in the orang because the foot has become specialized in a way opposite to that which occurred in the human stock; in the orang the hallucial element of the foot atrophied while the digital element underwent a great development. In man the hallucial element became predominant, the digital greatly reduced. Were it not for the form represented by the foot of the gorilla there would be a very decided break in the series leading from the anthropoid to the human foot. The proportions seen in the infant's foot helps to bridge the gap between the gorilline and adult human types. Thus we see that in shaping the feet of the higher primates Nature has gained her ends by increasing the tarsal or supporting element and diminishing the digital or grasping element. The human foot represents the climax of an evolutionary movement which began long ago in an anthropoid ancestry.

#### *History of the Great Toe.*

Turning now to trace the evolutionary history of the great toe or hallucial element, we note that in pronograde monkeys the length of the great toe is about 55 per cent. of the length of the middle or longest toe. In this measurement is included the length of the metatarsal bones as well as of the phalanges. Measured by the same standard, the great toe of the gibbon is 67 per cent., that of the gorilla and of the chimpanzee is 68 per cent., while in man the great toe is usually equal to or greater than the length of either the second or third toe. The great toe of man has reached the 100 per cent. standard, but it must be remembered that this result has been attained as much by the reduction of the phalangeal elements of the four outer toes as by a real growth on the part of the constituent bones of the hallux. Nevertheless, the peculiar features of the human foot have been worked out by an overgrowth of the hallucial element as well as by the incorporation of this element in the metacarpal series.

#### *Evolution of the Plantar Arch.*

We come now to the most difficult part of our inquiry: How did man come by that peculiar feature of his foot—the longitudinal plantar arch? When the arch collapses, as in cases of flat-foot, the chief breakdown occurs at the mid-tarsal joint—particularly between the head of the astragalus and the rest of the tarsus. Now in pronograde monkeys the mid-tarsal is a flexible joint; when a monkey is "stepping off" from a branch it will be noticed that, while the heel is being raised, the hallucial and digital limbs of the foot still maintain their grasp; the heel is raised at the mid-tarsal joint. Although the orthograde gibbon retains the flexibility



of foot seen in pronograde apes, one no longer sees a pure flexion movement taking place at the mid-tarsal joint. In the great anthropoids the tarsus has gained in strength and rigidity, yet movements of inversion and eversion still take place at the mid-tarsal joint with the greatest freedom. The tarsus of the great anthropoid serves the purpose of a lever, but there is no plantar arch. Even in the gorilla, the least arboreal of the great anthropoids, there is no arch; the sole of the foot is applied flatly to the branch which supports the weight of the animal. All the muscles of the sole and digits are concerned in grasping. The foot thus fixed to the branch becomes a base from which the muscles of the leg act in supporting and balancing the weight of the animal. Every muscle which has a tendon ending in the foot becomes a mover and balancer of the leg. It is only when we note the manner in which the chimpanzee, and particularly the gorilla, applies its feet when walking on the ground that we realize the possibility of the grasping anthropoid foot becoming converted through a series of serviceable intermediate stages into a supporting plantigrade one, such as we see in man. We obtain further confirmation of the possibility by observing the manner in which an infant learns to use its feet in walking. The anthropoid traits, very recognizable in the feet of Neanderthal man, lend countenance to the same line of reasoning. The gorilla, when on the ground, rests the weight of its body on the outer margin of the inverted foot. The foot is maintained in the inverted position by the anterior and posterior tibial muscles. The inverted margin of the tarsus is the beginning of a plantar arch; it is maintained in position by the action of the tibial muscles, which now assume a postural function. They have become postural muscles and work against their opponents—the long and short peroneal muscles—which also have now assumed a postural rôle. Between the invertors and evertors the foot is steadied, and the in-turned position of the sole maintained. The feet, being no longer grasping structures, become props on which the body has to be balanced.

In the application of the sole of the human foot to the ground in walking we can recognize three phases: first the heel comes in contact; then the weight of the body is brought to rest on the outer margin of the foot, and on the transverse pad of the sole; lastly, in stepping off, the weight of the body is thrown on the front part of the foot, particularly on the phalangeal elements of the great toe. In the gorilla there is the same sequence of events: the heel is applied first; the weight of the body comes to rest on the outer margin of the inverted foot; lastly, in stepping off, the toes, particularly the abducted great toe, are applied and used as a fulcrum. Now the inversion of the foot has raised the inner margin of the tarsus on which the great toe of the gorilla is hinged. We have only to suppose the incorporation of the metatarsal element of the great toe as a member of the metatarsal series of an inverted anthropoid foot to obtain the arrangement of parts which go to make up the longitudinal plantar arch of the human foot. The incorporation of the first metatarsal takes place, as already mentioned, in early embryonic life. The evolution of the plantar arch was dependent on an assumption by the tibial muscles of a postural supporting action.

We have spoken as if the simian great toe had been adducted to the other metatarsals during the evolution of the human plantigrade foot. There is evidence that the approximation was brought about as much by the bending inwards of the four outer metatarsals as by a bending outwards of the great toe. In the anthropoid foot the outer metatarsals continue the axis of the os calcis; the great toe continues in the main axis of the astragalus. In the human foot the great toe still maintains the direction of the astragalus but the outer metatarsals are turned inwards from the axis of the os calcis.

From these facts we infer that in the evolution of the human foot all the elements of the great toe became hypertrophied and that the hallux soon became functionally important in the act of stepping off. The four outer toes underwent a retrogression and their metatarsals were approximated to the hallux as much as the hallux to them. Much depended on the hypertrophy of all the elements of the great toe and on the retrogression of the phalangeal elements of the four outer digits. The growth of the tarsus, particularly of the heel, and the retrogression of the outer toes have already given a semi-humanoid character to the foot of the gorilla.

### *Evolution of the Supporting Structures of the Sole of the Foot.*

The tendon of the plantaris muscle plies over a synovial groove on the heel of pronograde apes and ends in the plantar fascia. In the orthograde gibbon the heel has grown through the tendon; the plantar aponeurosis, being cut off, now forms a supporting structure for the sole. This is the case in all orthograde primates; in all of them the plantaris has become a vestigial muscle; it is more frequently present in the calf of man than in the leg of any kind of anthropoid, which probably is due to the overgrowth which has overtaken all the muscles of man's calf.

In the cutting off of the plantar aponeurosis and its fixation to the heel we see the first step in the evolution of the set of structures which help to support the sole of the foot. Another evolutionary change is seen in the short flexor muscles of the toes. In man all four bellies of this muscle rise from the heel and end in the toes; they serve to support the arch. In the prehensile, flexible foot of a monkey only the belly to the second toe arises from the heel; the other three have their origin from the movable tendons of the long flexors of the toes. In the great anthropoids the belly of the muscle to the third toe has also shifted to the heel; in a certain proportion of orangs and gorillas the muscle to the fourth toe has also gained an attachment to the heel; in man only has the belly to the fifth toe been shifted. Here we see further adaptations for plantar support. The action of the short flexor muscles has been changed by a migration of their point of origin.

Further changes of the same kind are seen in the strengthening of the quadratus plantae of the human foot; in only man is found the inner head of this muscle. Mention has already been made of the migration of the interosseous muscles to a position between the metatarsal bones. Such a position gives them power to brace together the metatarsal elements of the foot. In the human foot the internal ligaments of the tarsus and of the tibia and tarsus have been strengthened.

### *Flat-foot.*

The evolution of the human from a grasping foot was necessarily attended by the creation of a neuro-muscular mechanism for maintaining the plantar arch. The muscles which became adapted for this new function were those used for inverting, everting, and fixing the tarsal elements of the prehensile simian foot. Slight modifications in the tendinous insertions of the anterior and posterior tibial muscles made them efficient supporters of the instep; the evertors, the long and short peroneal, required no alteration to serve their new purpose. A new evertor—the peroneus tertius—came into being in the human foot; it arose by the separation of the outer part of the long extensor of the toes. Every stage of its evolution is represented in the variations which occur profusely in the leg of modern man. The grasping muscles of the sole became converted into postural supporters of the arch. Flat-foot occurs when the postural function of the supporting muscles breaks down. Why the postural muscular mechanisms of the human body are so apt to become disordered we do not know. When that of the plantar arch breaks down the human foot reverts to a condition comparable to that seen in the grasping arboreal foot of anthropoids. The mid-tarsal joint becomes again freely movable; the metatarsal elements of the foot become turned outwards or everted—just as they are in the foot of an anthropoid when seizing a branch. Flat-foot is a reversion also in this sense: it results from the loss of a recently evolved function—one which man has attained late in his history.

### *Hallux Valgus.*

Of all the primates, only man suffers from disorder and disease of the condylar joint of the great toe—the joint between the head of the first metatarsal and the base of the proximal phalanx. A knowledge of man's history helps us to understand why he has become the subject of this crippling deformity. Even in the gorilla, the most terrestrial of man's next-of-kin, the great toe is constituted so as to serve as a grasping thumb. Its metatarsal bone is freely movable, having the tendons of two muscles inserted to its base—the tibialis anticus and peroneus longus. Three short but stout muscles—the abductor, flexor brevis, and adductor obliquus—bend the proximal phalanx and thus assist in securing the arboreal foot grasp. The terminal phalanx is bent by the long flexor. Now in man all of these muscles have been retained, but their actions have been changed. The metatarsal bone has become stabilized



as part of the arched lever of the foot; the two muscles attached to its base—the peroneus longus and tibialis anticus—have become postural in function, assisting in maintaining the arch of the foot. The two terminal phalanges, in place of being the movable parts of a grasping digit, have become the chief part of the fulcrum or base from which the human foot steps off; with each step the weight and force of the body falls on this joint of the great toe. Hence, with the evolution of the human foot the muscles which act on the phalanges, particularly the short muscles acting on the basal phalanx, had to take on a new rôle—they had to adjust and maintain the position of the hallucial phalanges at every phase of the “step off.” Hallux valgus results from a breakdown of the neuro-muscular machinery which guards the condylar joint of the great toe. No doubt ill fitting boots contribute to this breakdown, but when it is remembered that the action of muscles which cross a joint are largely regulated by stimuli which arise within a joint, we see good reason for suspecting that the initial factor in the cause of hallux valgus arises within the joint itself. We do know that people of certain constitutions are particularly prone to disorders in the ball joint of the great toe.

#### *The Normal Position of the Great Toe.*

One last point as regards the “normal” position which the human great toe should hold to the rest of the foot. From a study of the footprints of native and unshod races, and also of English infants and children, I realize that a healthy and unblemished great toe may vary in position between two extremes. If on a footprint a line be drawn along the inner border so as to touch the impresses of the margin of the heel and of the ball of the great toe, what may be called an “inner directional” line is obtained. If a similar line be drawn along the outer border of the imprint—from heel to the outer margin of the foot-pad—an “outer directional line” is obtained. In healthy normal children and natives the great toe may be parallel to either outer or inner line, or may lie at any angle between these lines. The inner direction is the more simian, but which is the more liable to become the site of hallux valgus I have no evidence.

## A CASE OF HYPERPIESIA.

REPORTED BY

D. C. L. VEY, M.C., B.A., M.B. CANTAB., M.R.C.S., L.R.C.P.,  
HOUSE-PHYSICIAN, UNIVERSITY COLLEGE HOSPITAL.

With Commentary by

SIR CLIFFORD ALLBUTT.

FREQUENT as this malady is amongst the well-to-do classes of life, it is—so far as my experience goes (C. A.)—scarce in hospital practice. Moreover, by the duration of the malady, and its consistency for some long period with good health, the story is often broken or incomplete. When the patient has to seek advice, he may pass from one physician to another; in private practice, for various reasons, necropsies are rarely obtained, and when obtained may be very perfunctory. Consequently, until Dr. Batty Shaw made, in his recent book, a solid and valuable contribution to its pathology, our stock of fully observed instances of hyperpiesia was very scanty.

A patient, a man aged about 60, died during last Lent term in the Addenbrooke's Hospital with arterio-sclerosis, a very large heart, and a systolic pressure of 210 mm. But little was known of his history, and before death there had not been much time for an adequate series of biochemical and other observations. The necropsy was made by Dr. J. F. Gaskell, who reported that the kidneys (of which I made a naked-eye inspection) were quite normal. Death was by cardiac defeat and its effects. The case was clearly proved to be one of hyperpiesia.

In this default of instances it seems well therefore to add to our store of evidence by publishing the following notes by Dr. Vey of a case of this kind at University College Hospital. Dr. Vey, then house-physician, watched the patient very closely and made ample clinical notes during the last fifteen months of his life, including the laboratory reports and the post-mortem findings. Dr. Vey described the case in his thesis for M.B. at Cambridge; and, with his permission, I have made (I hope not too

drastic) an abridgement of his notes. I think that I have not omitted any relevant abnormal feature or reaction.

#### *Report of Case by Dr. D. C. L. VEY.*

A male patient, aged 61, a clerk, was admitted into University College Hospital, under Sir John Rose Bradford (and later under Dr. Sidney Martin), five times in fifteen months. The first occasion was on September 3rd, 1921. He had complained of dyspnoea on ascents for ten months, and of swelling of feet and abdomen for nine months. Previous personal history good; no bad habits.

On admission, respiratory rate 32, much general oedema; liver full; heart large and heaving; pulse regular, large in volume, rate 50 to 72. Systolic blood pressure 200. Urine very scanty; specific gravity high; albumin abundant; a few epithelial cells and leucocytes; no casts. Under treatment, which included digitalis, he improved greatly.

Second admission, December 28th, 1921; symptoms as before, but drowsiness also. Bled to 24 oz. Heart still larger, but in seventh left space in mid-axillary line. Second aortic sound much accentuated. Blood urea, on two occasions, 20 and 37. Blood pressure (systolic) 210. Improvement as before. Blood pressure on discharge 180.

On the third and fourth admissions similar reports and results. Fifth admission, November 8th, 1922: oedema and dyspnoea worse than ever; but pulse regular, full and hard, rate 80. Radial thick; blood pressure 190. Heart as before. No murmurs in any area. Urine in first twenty-four hours 34 oz., and about the same for next seven days; specific gravity 1018; some albumin. Head-ache and drowsiness. Respiration at times tidal. No twitchings. Multiple incisions of legs answered well, relieving symptoms; and blood pressure fell a little to 180-200. Urine now generally reached to 70 oz., and on each of two days to 120. Blood urea on admission was 48 mg. per 100 c.cm.; a little less on the two following days. During a period of three weeks the total amount of urea in the urine ranged between 1.5 and 2.5; the total averaged about 40 grams. Chlorides averaged 3 grams daily. Two averaged about 40 grams. On the former date the concentration was 1.6 per cent. at the end of the first hour (vol. 160 c.cm.), and 1.7 per cent. at the end of the second hour. On the second date (vol. 140 c.cm.) at the end of the first hour, and 2.05 per cent. (vol. 224 c.cm.) was noted at the end of the first hour, and 2 per cent. at the end of the second hour. There never had been any pyrexia, and the patient, as before, was doing well, when he had a sudden rigor; he was distressed and speechless; the temperature rose to 104.8°; he became unconscious, and died. The cause of this event was not apparent at the necropsy. A few days before death recent small haemorrhages had been reported in the right fundus oculi, and a single larger one in the left.

The diagnosis during life was very difficult. “Chronic parenchymatous nephritis” was suspected, though the extreme cardiovascular symptoms seemed hardly to confirm the suspicion. Dr. Goodhart in the post-mortem room, before the necropsy, expressed the opinion that “the kidneys would be found normal, or nearly so.”

The relevant features of the necropsy were briefly as follows: Heart, 39 oz.; left ventricle much hypertrophied and dilated, and right ventricle also. Aorta, traces of old syphilis; many patches of atheroma, calcareous and ulcerative. Pulmonary artery and branches dilated, stiff on section, and showed atheromatous patches. Spleen large and fibrotic, with internal thickening of the arterioles, and fat droplets. Liver nutmeg, and some arteriolar thickening. Kidneys each 9 oz.; except that the renal artery was stiff, no abnormal appearance to the eye. Brain normal to the eye. Microscopically the myocardium revealed well marked interstitial fibrosis; no fatty degeneration.

From the kidneys frozen sections were taken and stained with haematoxylin and Scharlach R.; and paraffin sections were stained with haematoxylin and eosin. The larger arteries showed a moderate degree of internal thickening; this was more pronounced in the smaller, especially the interlobular and afferent, but not to obliteration. Fat droplets in the smaller vessels. Glomeruli “surprisingly little affected; a very few showed some atrophic change with fat droplets, but nearly all were remarkably healthy.” The tubules were practically free from change. Interstitial fibrosis was minimal.

Such in epitome is Dr. Vey's record of a case of hyperpiesia, in its later phases thoroughly investigated. That the patient, as was the case with the one mentioned in Addenbrooke's Hospital, died with more or less of uraemic symptoms may, and often do, occur in the “cardiac kidney,” but in case of the patient's amendment pass off entirely. That the syndrome is essentially incidental in these cases, and, in periods of amendment, transitory, has been very fully illustrated by certain French physicians; but as I am writing away from home I cannot give references. Dr. Vey reported drowsiness on the second, third, and fourth admissions; but during the temporary recoveries the uraemia passed off.

Little by little, then, our knowledge of hyperpiesia in its later phases is increasing, yet its causes still lie in obscurity, and, except in early phases, we are gaining but little power of relief. To some amendment we can attain, but in the later issues, and unfortunately these are too often the first symptoms

\* The amounts of protein and salt taken in the diet were not calculated, but the diet was a very light one.



to drive the patient to seek medical advice, cure is out of the question. Venesections do some temporary good—and are useful at critical moments—but frequent repetitions hardly prove acceptable or satisfactory. Calomel still holds its ground as perhaps the best single drug. The high-frequency current (diathermy) is the best of the “symptomatic” remedies, but too often I fail to persuade the x-ray specialists to take much interest in invisible results. In the long run intermittent courses of calomel, diet, regulated life, diversions of mind, and an annual visit to one or other of certain spas seem at present to be all we can do. C. A.

## THE CUTANEOUS TUBERCULIN TEST (PIRQUET):

WITH REFERENCE TO ITS FAILURE IN ADVANCED  
TUBERCULOUS DISEASE IN CHILDHOOD.

BY

CHARLES McNEIL, M.A., M.D., F.R.C.P. EDIN.,

PHYSICIAN, ROYAL EDINBURGH HOSPITAL FOR SICK CHILDREN; LECTURER  
ON DISEASES OF CHILDREN, UNIVERSITY OF EDINBURGH.

THE cutaneous tuberculin test (Pirquet) is now accepted as a delicate indicator of tuberculous infection in childhood—so delicate, indeed, as often to reveal a latent focus, buried out of reach of clinical methods of detection, and producing no effect upon sound health. On the other hand, it is common doctrine that the test fails in a considerable number of cases of advanced and widespread tuberculous disease in childhood. It is enough to say that these failures of the test are admitted by Pirquet himself,<sup>1</sup> by Calmette,<sup>2</sup> and are confirmed by many published investigations, of which those of McLean and Jeidell,<sup>3</sup> and Dunn and Cohen,<sup>4</sup> may be quoted as representative and recent.

It would seem rash to question such weighty scientific teaching and general clinical experience, and in a previous communication to the BRITISH MEDICAL JOURNAL (1909)<sup>5</sup> I have myself subscribed to the frequent failure of the test in advanced tuberculous disease. But for some time I have used a more careful technique in the performance and reading of the Pirquet test, and with this I have not failed to obtain a positive reaction in any case of severe tuberculous disease proved to be such by the discovery of the bacillus or by *post-mortem* examination. It seems worth while, therefore, to describe this technique and to give some examples of its results.

### TECHNIQUE OF THE PIRQUET TEST.

There is great variation in the directions given for the performance and reading of the test. Undiluted tuberculin is now generally advised, but a dilution is permitted by Calmette and others. For the preparation of the skin, multiple scratches or a single scratch, or the use of a dental burr or small chisel (Pirquet), are variously recommended. The test is advised to be read as positive or negative in twenty-four hours, or at latest forty-eight hours, though it is admitted that late reactions may occur after this time. The control test is made by a similar lesion on the dry skin and the application of a drop of normal saline. The technique which I now use, and which is, I think, more thorough and less free from error, is as follows:

1. *Undiluted Old Tuberculin (O.T. Koch) must be used.*—In my first series of cases, published in the JOURNAL in 1909, a 25 per cent. dilution of old tuberculin was used, and it is very probable that some of the failures there recorded were due to this. Calmette himself still advises such a dilution. In another paper<sup>6</sup> I have published photographs showing the simultaneous use of undiluted tuberculin and 25 per cent. dilution in two cases, and the diminution of the test in the one case and its failure in the other with the diluted tuberculin. It is necessary, therefore, to emphasize the importance of using undiluted old tuberculin for the cutaneous test.

2. *Preparation of an Area of Skin to Ensure Contact of the Tuberculin with Vascular Tissue.*—The method of the single scratch, or of a number of scratches, is too haphazard. Pirquet's method of placing a drop of tuberculin on the skin and of making a lesion by rotating through it a small drill or borer, may also fail to reach and expose the vascular cutis. I always use the following method: A small circular area of skin on the front of the forearm is chafed with the sharp point of a darning-needle until the epidermis is removed and the pink cutis vera is exposed. Care is taken to avoid bleeding. The eye of the needle is now charged with un-

diluted old tuberculin, and pressed into the prepared vascular surface with a rotary motion. A small bruised pit is thus formed from which the tuberculin is rapidly absorbed. This procedure is similar to that advised by Pirquet; but it differs in the careful preliminary excoriation of the skin, and thus renders more certain the contact of tuberculin with the skin capillaries; this difference is enough, I think, to secure success in cases where the tuberculin reaction is feeble. In seven cases in which both methods were tried side by side the reaction was positive in five with the method just recommended, and in only two with Pirquet's method. The reaction is a vascular reaction, and it is only after a careful removal of the tough epidermis that contact with the blood vessels of the skin can be ensured.

3. *The Time-Reading of the Test.*—The routine in clinical work is to read the test as positive or negative at the end of twenty-four hours, and later observations are seldom made. This is another source of fallacy. It may be granted that in a large majority of cases a positive reaction is visible after one day; but it is quite common for the reaction to be delayed until the end of two or three, or rarely four days. Therefore, though a test may be pronounced positive at the end of one day, it is never safe to record it negative until four days have elapsed. I shall give presently an example (Case 1) of how easy it is to make mistakes when, in the routine of clinical work, the arm is examined after twenty-four hours, is recorded as negative, and is never looked at again.

In a previous paper<sup>7</sup> I suggested the definition of a positive reaction as a “red papule that persists for seven days.” Since that was written in 1909 my subsequent experience has confirmed me in this definition. Calmette<sup>8</sup> states that the reaction generally disappears in “a few days.” I have watched the behaviour of many positive reactions for weeks. Even in feeble reactions I have never failed to see a dark discoloured papule at the end of two weeks; and it is common to see clear evidence of a positive reaction at the end of a month. The tuberculin cutaneous reaction is a chronic enduring reaction: it may be slow in appearing, but it is always long lasting; and in that respect it shows its kinship to the slow inflammation of a true tuberculous process. There need be no fear that if a test has not been read until after a week a positive reaction may have come and gone in that time. It is worth repeating that while a positive reaction may be recorded after a day, a negative reaction (and this is the more valuable clinical aid) may not be accepted until at least four days have elapsed. It would be a safer, though perhaps less convenient, way to read the test at the end of a week rather than at the end of a day. In all important and doubtful cases the practice of observing the arm daily for a week is to be recommended.

The size of the papule is of little importance. It generally exceeds 5 mm. with the above technique; but in a few cases is less than that, and yet is to be regarded as positive if it persists for a week.

4. *The Use of a Control.*—Up to a few months ago the control I used was a 50 per cent. solution of glycerin and water. Since then I have used normal horse serum, which has proved a more severe control, as it gives not seldom a small inflammatory papule. This, however, has always disappeared in four days. But its appearance makes it necessary to delay the recording of a small or doubtful positive reaction until this time has elapsed; if this is not done, pseudo-reactions, sometimes called traumatic reactions, may be accepted as true positives. It will thus be seen that the practice of reading the cutaneous reaction at the end of one day may introduce two kinds of fallacy: it may omit late and feeble positive reactions which may develop after a day; and it may include false positive reactions which will have disappeared in a few days. But the use of a normal serum control ought to guard against the latter fallacy.

There are obstinate critics who argue that any albuminous substance rubbed into the skin may produce an inflammatory reaction, and who put no faith in the specific character of the tuberculin test. Such an argument can neither be proved nor disproved. But *post-mortem* evidence, which has now been produced in great amount, makes it reasonably certain that a positive cutaneous reaction indicates a tuberculous focus in the body.

### Alleged Failure of Test in Advanced Tuberculous Disease.

I shall now cite a few examples from my own experience to show that, with the technique just described, positive reactions can be obtained in cases of massive and advanced



tuberculosis in children. With the above technique I have not failed so far to obtain a positive reaction in any case of tuberculous meningitis, acute miliary tuberculosis, massive abdominal tuberculosis, and acute pulmonary phthisis.

*Case 1.*—Mary F., aged 11 years; acute phthisis. Admitted June 3rd, 1921. Great emaciation and weakness. Large hard mass of glands in the right side of neck; signs of consolidation and catarrh in the right lung. Cutaneous test, performed June 5th, was negative two days later; the child was not seen again until June 23rd, when the reaction was positive. A second test, done on June 23rd, was positive. July 25th: emaciation and weakness extreme; tubercle bacilli in sputum; third cutaneous test positive. Death, sixteen days later. No post-mortem examination.

*Case 2.*—Charles S., aged 13 months; pulmonary and miliary tuberculosis. Admitted December 3rd, 1921, with fever, emaciation, and weakness. Signs of consolidation in right middle lobe of lung; rapid progress of disease. Cutaneous test, made nine days before death, positive. Post-mortem examination showed tuberculous bronchopneumonia of right middle lobe; miliary tubercles in both lungs, liver, and spleen; and tuberculous mediastinal glands.

*Case 3.*—Francis C., aged 15 months; general tuberculosis. Admitted February 1st, 1922, in extreme weakness and emaciation; death in twelve days. Cutaneous test positive six days before death. Post-mortem examination showed tuberculous cervical and mediastinal glands; large miliary tubercles in both lungs, especially the left; tuberculous ulcers in intestine, and tuberculous mesenteric glands; miliary tubercles in liver, spleen, and kidneys.

These cases have been selected because of the extensive or acute nature of the disease, and also because a positive test was obtained in an extremity of weakness and emaciation and within a few days of death.

McLean and Jeidell,<sup>3</sup> in a report on 3,742 Pirquet tests in young children, found 44 negative reactions in cases proved to be tuberculous by autopsy or by the discovery of tubercle bacilli during life. The technique of the test was as follows:

"Two light scratches were made approximately 1/4 in. in length and 2 in. apart. Into one scratch the tuberculin (undiluted O.P.) was lightly rubbed with a toothpick having a flat end; the other scratch was used as a control. In doubtful cases the test was repeated. It was not usually considered negative until forty-eight hours after application."

Dunn and Cohen,<sup>4</sup> in reporting failures of the test in a considerable number of cases of tuberculous meningitis, peritonitis, and miliary tuberculosis, give no account of the technique of making and reading the test. It may be presumed that it was carried out in a similar way. There is no doubt that their experience of failure in advanced tuberculosis is amply confirmed by other investigations employing a similar technique.

My own experience with a different technique is as yet small compared with that of the investigators mentioned, but it has included every type of tuberculous case, and it suggests that when care is taken to apply tuberculin thoroughly to the skin, and that when the standard of a negative test in severe disease with weakness and emaciation is not the absence of reaction in one or two but in seven days, the Pirquet test does not fail even in massive tuberculous disease. If further experience should confirm this, the clinical significance of a negative test will be increased; it will then absolutely exclude tuberculous disease. But the technique of the test will require modification on the lines laid down in the present paper.

One other point may be briefly mentioned. I am not as yet prepared to say that with this improved technique positive tests can be obtained in acute illnesses, such as pneumonia or measles, with an underlying tuberculous infection. At present I am trying to collect evidence on this point. In any case, the point is not of clinical importance; a considerable personal experience of such cases with the ordinary technique has shown me that a positive reaction can be obtained soon after the crisis of the acute illness.

## REFERENCES.

<sup>1</sup> C. F. von Pirquet: *Feer's Pediatrics*, 1922, p. 737 et seq. <sup>2</sup> A. Calmette: *La Tuberculose*, 1920, p. 458 et seq. <sup>3</sup> S. McLean and H. Jeidell: *Amer. Journ. Dis. Children*, vol. xxiv, p. 73. <sup>4</sup> C. H. Dunn and S. A. Cohen: *Amer. Journ. Dis. Children*, vol. xxi, p. 187. <sup>5</sup> C. McNeill: *British Medical Journal*, 1923, ii, p. 564. <sup>6</sup> C. McNeill: *Edinburgh Med. Journ.*, April, 1912.

## THE THERAPEUTIC USE OF TUBERCULIN.

BY  
W. CAMAC WILKINSON, M.D. (LOND.), F.R.C.P.,  
LATE LECTURER IN MEDICINE, SYDNEY UNIVERSITY.

Views on the use and value of tuberculin are so various, discrepant, and contradictory that no final judgement can be reached until the actual protocols of evidence are produced and submitted to a close and searching analysis and criticism by a judicial tribunal that recognizes the distinction between evidence and comment or assertion. Guessing in the process of diagnosis and uncertainty in the evaluation of essentially different methods of treatment should be excluded.

The diagnosis must be based upon the presence of tubercle bacilli in the discharges from the affected parts or organs; and since in all but pulmonary cases in adults and in all cases in children it is impossible to determine whether the disease is due to the bovine or to the human type of bacillus, these cases should be excluded. Pulmonary tuberculosis in adults with tubercle bacilli in the phlegm is almost invariably due to the specific action of the human type of bacillus, and therefore constitutes the ideal material for determining the value and trustworthiness of tuberculin in treatment and even in diagnosis. Another cogent reason why pulmonary tuberculosis should be selected for this investigation is that this is the prominent lesion in almost 90 per cent. of all the serious forms of tuberculosis in man; and of the remaining 10 per cent. at least half may be reasonably traced to pulmonary tuberculosis.

Long ago I laid it down that in testing the value of any method of treating pulmonary tuberculosis, logic required that no other system should be used. At the Tuberculin Dispensary we allowed patients to continue their life as usual, neither insisting upon the "open window" nor using drugs, and only giving extra food when it was quite obvious that the patient had not the money to buy enough food to maintain normal nutrition. Pulmonary tuberculosis is, however, a very variable disease, because both soil and seed vary. Inherent qualities, often inherited, in the individual, age, local conditions of the lungs, sometimes created by certain infections, such as measles, whooping-cough, and influenza, which may convert a latent into an active process of tuberculosis, and general biochemical anomalies in the tissues, blood, and lymphatics (deficiency of endocrines, deficient calcium, malnutrition), are among the factors in the soil that favour definite disease. The seed also varies in quality, virulence, and quantity, but there is no clinical way of measuring these variations. Accordingly one must not draw conclusions from the results, whether good or bad, in a few cases, must not select cases, and must not publish anything short of a series of at least fifty consecutive cases in various stages of the disease treated exclusively with the remedy to be tested.

After a full course of treatment the cases must be examined regularly two or three times every year for three years, and then once a year at least for another three to five years. Anything less than supervision for five years spoils the investigation, because it is well known that early stages of tuberculosis without any treatment may not become serious for four or five years. For cases treated in the second stage five years may be considered ample, but in my investigation there has been supervision for eight years and more. The control of these cases is very difficult among the poor, who constantly change their home; and during the war the difficulties were intensified. Nevertheless this exacting condition is essential, because the sure test of the value of any method lies in the duration of life after treatment has begun. The length of life, ability to work, sense of energy, the state of the pulse and appetite, even the appearance of the patient to the practised eye, and especially the evidence in changes in the quality and amount of the phlegm, furnish more useful evidence of improvement than the most meticulous description of physical signs. Paying due respect to these exacting conditions, I am prepared to produce evidence which goes to prove that the method, which I have evolved from a continuous experience since the earliest days of tuberculin, yields results far better than any I have seen published in any English, German, or American literature. Tuberculin has not had a fair trial in England, except at the hands of myself and a few of my pupils, who soon learnt from experience that tuberculin, used in accordance with definite principles, is quite free from danger, and that the timid use of tuberculin is a poor substitute for



the method of increasing doses, controlled exclusively by a meticulous regard for the clinical signs, manifested in variations in temperature, in weight, and in pulse rate.

The value of tuberculin treatment cannot be accurately assessed in children affected with enlarged cervical glands. The reasons are obvious to those familiar with the varying nature of glandular swellings in children, especially between the ages of 5 and 15. At this age period children are liable to suffer from many sorts of gland swellings, quite independent of tuberculosis. Further, except by operation and laborious investigations, one cannot say whether the swelling is due to infection with human or bovine tubercle bacilli or with other infective agents.

In certain cities, notably Edinburgh, the bovine tubercle bacillus is shown to be a very common cause of enlarged cervical glands, and the concentration of these forms of gland tuberculosis in children's hospitals may give a wholly wrong impression of the prevalence of tuberculosis in children even in Edinburgh. There is certainly some evidence that in children over 5 years of age the bovine type of tubercle bacilli causes lesions more prone to regress and to become fibrotic than those induced by the human type. In Edinburgh especially any deductions based upon the effects of tuberculin in tuberculosis of the cervical glands in children must be suspect.

Statistics show that in children between the ages of 5 and 15 the mortality from tuberculosis is one-third to one-fifth of that in the earlier years of life, and one-fifth to one-tenth of that in the later years. It would seem that at this period the human tissues acquire a special resistance, and at no other period is this natural resistance greater. I have suggested that this remarkable immunity during these years is due to mild infections with bovine tubercle bacilli in early life. The great prevalence of general tuberculosis, and of tuberculosis of the udder in dairy cows, justifies the assumption that very few children can be expected to escape the risk of infection with bovine tubercle bacilli by the lymphatics of the mouth and cervical glands and other sections of the alimentary tract. These mild infections explain, too, why so many young children, all of whom drink cow's milk, give a von Pirquet reaction. The value of this reaction as a diagnostic test must therefore be discounted; it is just the cutaneous expression of these mild infections. These lesions tend to regress at this period. My own inclination is to the view that if the lesions do not regress the infective agent is more likely to be the human type of bacilli. Certainly the frequency of a von Pirquet reaction does not indicate the frequency of infection by the human type of tubercle bacillus. But the main point I wish to urge is that with so many indeterminate variants in the processes of gland tuberculosis in children, especially between the ages of 5 and 15, children of this age furnish about the very worst material for affording clear evidence as to the value of tuberculin either in diagnosis or treatment. Hundreds of children between these ages are taken to the seaside, and of course improve, because at these ages the natural tendency is towards improvement. No harm is done. Margate is better than London, if people can afford it, but it is not proved by any means that Margate air has cured the tuberculosis because the symptoms and signs regress. The symptoms and signs would have regressed if the child had stayed in London. The test of the value of Margate air must be made at a time of life when this disturbing age factor is eliminated. In like manner Sir Robert Philip's opinions must remain suspect until he gives proof that the subjects of his experiments with inunctions of tuberculin did not belong to this age period, distinguished by an extraordinary phase of immunity.

With much that Sir Robert Philip has stated I agree; I have expressed the same views again and again. But good observer though Petruschky is, I do not approve of his method of dosage, and I do not trust his method of inunction. The test of the relative value of different methods of using tuberculin depends upon the duration of life after treatment in a series of cases of similar character. Years ago I came to the conclusion that the minimum dose for securing permanent results was at least 0.6 c.cm. of the stronger preparations. This opinion is based upon more than twenty-five years' continuous experience in hundreds of cases, in various stages. Shortly before his death, when I related this experience to Professor Koch, he said:

"That is remarkable. We have proved, by complement fixation tests, that 0.5 c.cm. must be given before antibodies can be demonstrated in the blood; while not less than 0.3 c.cm. neutralizes a pre-existing von Pirquet reaction."

I have also shown, by some experiments independently controlled, that, after large doses, the opsonic index may be raised to 2 and even 3, and there is no negative phase of any duration. Moreover, in 1906, I proved, by Arnet's method, that, after large doses of tuberculin, a great improvement occurs in the character of the leucocytes, which probably play a part in the production and action of antibodies. Apart from these laboratory methods I have shown that the subcutaneous injection is a simple, painless, and accurate means of exhibiting tuberculin. I can produce the protocols as evidence at any time, and, while my methods may be far from perfect, I can only be convinced by the details of protocols in evidence that Sir R. Philip can in any way approach the success I have achieved by large doses given subcutaneously.

Subcutaneous injections, given properly and in the proper place, are not painful; and young children, properly handled, rarely ever shed a tear. Ten years' experience at the dispensary proves this. The subcutaneous method is painless, and is free from danger in competent hands; my thirty years' experience convinces me of this. And after three years' experience at my Tuberculin Dispensary, all the doctors assisting me wrote to the *BRITISH MEDICAL JOURNAL* and subscribed to this view. The subcutaneous method is the best way of giving large and progressively increasing doses—perhaps the only way—as all of the tuberculin passes into the circulation. There is no way of telling how much tuberculin may be absorbed by inunction, and Sir R. Philip does not mention any maximum dose. It would vary with the type of skin, sex, age, temperature, and other conditions. Possibly inunction has an advantage when the lesions are localized in the cervical glands. The lymphatics of the skin drain certain areas, and the lymph makes straight for the associated glands of these areas. Hence inunctions would favourably affect these glands harbouring the bovine type of bacillus. But the dominating purpose in the treatment of tuberculosis in man is, not to treat these mild conditions due to bovine tubercle bacilli, but to treat all tuberculous lesions in the body, and above everything the more dangerous lesions, associated with the presence of the human strain of bacillus, in the lungs, kidneys, deep glands of the body, and in serous membranes. On anatomical grounds I cannot see that inunctions can be as effective as subcutaneous doses in tuberculosis of bones or joints. Tuberculin is not a counter-irritant.

Except in lupus and tuberculosis of the cervical glands, tuberculosis is mostly situated in parts which can be best approached by large doses through the general circulation. No doubt in subcutaneous injections tuberculin travels also by the lymphatics, and may cause the lymphatic glands to swell; but the crux of the argument is the success achieved by the methods in question. In cases of pulmonary tuberculosis treated in 1910, 1911, and 1912 at the Tuberculin Dispensary, these are the results:

In cases in Stage I, with tubercle bacilli in the phlegm, no death was known to have occurred in any case from tuberculosis in the succeeding ten years. In cases in Stage II, with tubercle bacilli in the phlegm, 67 per cent. were proved to be alive nine years later. In fact in Stages I and II, after a period of nine years, 72 per cent. were still alive and able to work.

The success or failure of any method depends exclusively upon the results obtained in these stages of the disease (Stages I and II). If Sir R. Philip will produce the protocols of any similar consecutive cases of pulmonary tuberculosis, with tubercle bacilli in the phlegm, treated by the percutaneous method (inunction), I am ready to produce my protocols and leave the decision in the hands of an unbiased tribunal.

Dr. William Gordon<sup>2</sup> has given a comparison of results, four years after treatment, at different sanatoriums in cases (open and closed) in Stage I as follows:

Frimley	...	...	...	15 per cent. dead
Midhurst	...	...	...	20 " "
"London cases" (Dr. Bardswell)	...	...	...	31 " "

The Brompton Hospital Reports show that in 86 cases in Stage I with tubercle bacilli in the phlegm treated in 1905, 1906, and 1907, and checked by after-examinations up to 1912 (four to seven years after treatment), the results were 23 dead and 29 lost sight of. This is equivalent to 23 deaths out of 57 cases in the course of the four to seven subsequent years—a death rate of over 40 per cent.

In 1910, 1911, 1912, and part of 1913 I treated with large doses of tuberculin (TA) alone (as a rule a final dose of 1 c.cm.) 166 early cases, of which 16 had tubercle bacilli in



the phlegm, and I had not a single death from tuberculosis to record down to the year 1920. Moreover, I had one striking control case.

A young boy was brought to us. He had positive physical signs at one apex, and at the Lister Institute a few tubercle bacilli were found in his phlegm. We treated him for two months and he gained 2 lb. and improved very much. Unfortunately we notified the mother to take the boy to Brompton Hospital. I lost sight of the boy for more than a year, when the mother told me the tragic story. At the instance of the lay visitor the boy went to Brompton and was six weeks in the hospital for observation. The mother was then told that the boy had not tuberculosis. (Tubercle bacilli had been found by us.) When I saw the boy again he was in a hopeless third stage, and he died in a few months. Our diagnosis was tragically confirmed.

Thus the only early case that we were not allowed to treat died within two years; surely a striking control. These results obtained by me in England almost exactly tally with the results I have published in my book.<sup>2</sup> My records in Australia and London are quite good enough to give me unswerving faith in large doses of tuberculin given subcutaneously as easily the best remedy for tuberculosis in all its forms.

## REFERENCES.

<sup>1</sup> BRITISH MEDICAL JOURNAL, March 24th, 1923, p. 493. <sup>2</sup> Ibid., March 31st, 1923, p. 556. <sup>3</sup> *Tuberculin in the Diagnosis and Treatment of Tuberculosis.*

## THE TREATMENT OF PNEUMONIA.\*

BY

A. G. NEWELL, M.D., D.P.H.,

HARRINGAY.

PNEUMONIA causes more deaths than tuberculosis, and more people die from it between the ages of 35 and 55 than at any other period. It carries away insidiously the aged without an acute attack. The death rate is put at 20 per cent., and with influenza at 30 per cent. This means one death out of every five or six patients; annually over 40,000 persons die from it.

Pneumonia at its outset is a septicaemia caused by a diplococcus. All its symptoms are the result of the influence of the bacillary toxin on the nervous system. Its entrance is always at some local focus of the lung evidenced early by dullness and diminished air entry, but its spread is often very rapid. Hence the importance of the early localization and diagnosis and active measures.

The early attempt at defence is consolidation, to limit the focus of infection; the organisms are surrounded, and there is a leucocytosis whereby the phagocytic action of certain blood cells destroys the organisms. It must be remembered that the lungs contain a larger number of leucocytes than any other organ, except the marrow (their birthplace) and the spleen (their grave). The clotting of the fibrinous exudate in the alveoli which gives rise to consolidation, and the attack by emigration into this of the leucocytes shows an attempt on the part of Nature to localize the infection and prevent its spread. But leakage occurs, and before consolidation takes place certain organisms and toxins have already spread to the blood, causing the acute septicaemic symptoms. Nature's third attempt at defence is the formation of antibodies. Let me summarize the main principles, as it appears to me, on which we should go in attempting to counteract the septicaemia.

There is acute nerve exhaustion from intoxication. This demands absolute rest. The least movement of the patient is exhausting, especially any efforts by himself. Once the diagnosis is made he should not be moved for examination. He should not be allowed to do anything, and bed pans and urine glasses are essential. With this acute nerve exhaustion there is nerve exhaustion to the heart from the poisoning of the vasomotor centre and of the heart muscle. Therefore the importance of rest is especially demanded by an organ called upon to do extra work by the resistance to the circulation in the lung alveoli. A patient may fall back dead on attempting to sit up. The consolidation of the lung alveoli lessens the oxygenation of the blood, and has therefore thrown out of action a defensive auxiliary of the blood. This demands free ventilation around the patient.

The high temperature, the rapid breathing, rapid pulse, the

pain, all add to the patient's discomfort, and therefore it is essential that his comfort and his environment should be attended to by a skilled nurse, or one to whom all the particulars of the necessary details are made plain.

Various lines of treatment have been adopted in the past:

1. Active bleeding and purgation; its ancient history and objects are well known, and I need not dwell on this.

2. Poultices and expectorants may be said to have died out.

3. "Expectant" treatment may be summed up as doing what each individual fancies best. Where groups of cases have been treated by certain definite drugs it has not infrequently been claimed that some of them were "specific"; types of cases may vary greatly in severity, according to the virulence of the organism, or the influence of the locality, or of the acquired natural resistance, so that claims founded on statistics are of little value. I believe at present there is no specific drug for this disease. Any drug to be specific, or any combination of two drugs to deserve such a claim, must show equal results in the hands of any practitioner anywhere. By the expectant treatment thousands of lives are lost annually.

4. "Chloroform" treatment has been used in America. Its object was to give rest to the inflamed lung. It has not had, so far as I know, a long run. It aids, in my opinion, the basic factors causing the distress, and can have no influence on the intoxication.

5. The application of ice has been advocated by many, the late Dr. David Lees among others, and has been tried in Dublin hospitals. It demands the earliest recognition of the disease—the localization at its earliest site. Two ice-bags are placed so as to include between them the inflamed lung. It has a scientific and rational basis, and good results have followed its use. The pneumococcus is very sensitive to changes of temperature, and will not live below 28° C., nor above 42° C.—the optimum being 37.5° C. The greater the virulence of the organism the more marked its sensitiveness to temperature. The ice inhibits its multiplication, lowers the patient's temperature, adds to his comfort, and is helpful to sleep. I have often used ice in high temperatures with benefit. In general practice no doubt public opinion would be shocked, but it is of great use to give ice to suck. Chills do not occur. It takes time to reduce high temperatures by rubbing with ice, but the sensation is comforting. I have often seen and used ice for the hyperpyrexia of sunstroke, the whole naked body being on blocks of ice and rubbed with ice.

6. The object of lung puncture is to cause a local accumulation of polymorphonuclear leucocytes by setting up a focus of irritation in the pneumonic areas and so stimulating phagocytosis. It is applying to the lung Kraske's principle in the local treatment of erysipelas, his treatment for the latter disease being to make superficial incisions about an inch or two from the spreading margin all round the affected part. It is considered analogous to laparotomy in the aseptic variety of tuberculous peritonitis. This line of treatment demands accurate determinations of situation and area, consolidated patches; a hollow needle or trocar about 1½ inches long is put into the consolidated patch and left there for thirty seconds. If more than one patch is present, frequently general practitioners get these cases with many, the largest is selected, and if there are several large patches other punctures are made. Strict asepsis is essential, and the best sites are said to be the axillary lines. Striking results have been claimed by its advocates, but as a method for general practice it does not seem desirable with other measures yet available.

7. Studies at the Rockefeller Institute of Medical Research (referred to in the memorandum on pneumonia issued by the Local Government Board in 1919) led to the recognition of four types of pneumococcus; so far antipneumonia serum has been found effective only in cases due to Type 1. In so acute a disease we cannot afford to wait for the determination of the type, and as the serum has to be injected every eight hours it is out of court in general practice.

A bright hope lies in the success attending vaccine treatment. Recovery depends on the patient providing sufficient antibodies against the bacteria and their toxins in the blood; this and this only is the specific treatment available. Early diagnosis is essential: given during the first twenty-four hours, brilliant results have been obtained. A vaccine must be used early, and it is not necessary to wait for a vaccine to be prepared. By the use of vaccine we are helping Nature, and by accumulating antibodies in the blood we have them available for the lung when the fibrin has been liquefied. In other septicaemias (streptococcus, staphylococcus, gonococcus, B. coli, etc.) vaccines have been successful. Should we not

\* A paper read before the North Middlesex Division of the British Medical Association.



all adopt this method and see the result on all hands? Is the gravity of the disease and the saving of life not sufficient to warrant its trial? I think it is. Dr. Wynn of Birmingham says:

"I know nothing in the whole range of medical treatment so dramatic as the rapid defervescence which follows the injection of a suitable dose of vaccine to a patient suffering from pneumonia or influenzal pneumonia within twenty-four hours of its onset. The vaccine I have used is made from primary cultures or at most first subcultures. It should not be detoxicated or sensitized. For acute pneumonia it contains several strains of pneumococci. . . . The important points are that it should be given early and in sufficient amount."

He gives 100 million pneumococci to an adult; to a child aged 12 to 14 he gives 40 to 50 million, and to a child aged 2 to 3 years 10 to 20 million. These doses have been arrived at after many years of experience. When such a dose is used during the first day of the disease, in the majority of cases the temperature falls to normal on the day following and no further treatment is required. By each day's delay defervescence is less likely, and the dose has to be repeated every twenty-four hours until the temperature is normal. His results\* show:

Day Treated.	No. of Cases.	Recoveries.	Deaths.	Temp. Normal in —	
				24 hours.	48 hours.
First	23	23	Nil	Per cent. 7.4	Per cent. 15.7
Second	23	22	1	47.85	55.5
Third	22	23	2	50.0	50.0
Fourth	10	15	5	30.0	43.0
Fifth	14	12	2	35.7	63.5
	107	97	10	50.0	65.0

In pneumonia there is no evidence of a negative phase, and so the early large dose is given safely.

Stock vaccines should be used from first cultures and from a highly virulent strain. Even if a case is injected from a stock vaccine and the case does not afterwards develop consolidation, no harm is done. No harm is done by using antitoxin for a suspected case of diphtheria. Sir Almroth Wright, in his work on the use of vaccines in pneumonia, states that inoculation in the form of a single large dose, administered in the incubation period, often arrested the disease and prevented death. I put this method forward with a plea for trial, as it seems to me our best line of action for the future. My results from stock vaccines are striking.

I cannot lay too much stress on the hygiene of the room—free ventilation is essential. Cases have been treated in America in all weathers on the roofs of hospitals, and in the Philadelphia General Hospital, where the cases were of unusual severity, the death rate of 53 per cent. before the adoption of the open-air treatment was reduced after its adoption to 38 per cent. In the Prince Edward Hospital, Sydney, the patients have since 1908 been treated in the open day and night, and have recovered more rapidly and with less complications and less necessity for drugs. I always advise the windows to be well opened, and so long as there is no discomfort from draughts and there is sufficient light covering, no harm will accrue. Overheating of the room should be avoided—the patient is already hot enough; fresh air is the best germicide, and the patient is gasping for a cooler air.

The actual degree of temperature is of little scientific interest, as one can usually tell from the skin and the pulse the existence of a feverish state. Its record is of value to the nurse to avoid too heavy clothing and at a crisis for more. There is a tendency to put on too much covering both by nurses and relatives. It adds to the discomfort of a feverish patient. If the patient is hot it is well he should lose heat. Pneumonia jackets are useful provided they are thin and not too heavy.

Pulse and breathing rates should always be recorded. The respiration-pulse ratio normally is 1:4; but in pneumonia it may be 1:3, 1:2, 1:2.5, 1:1, or even 2:1. It is the index factor of how the patient is going, and helps in prognosis under ordinary lines of treatment. A case is not necessarily hopeless with 1:1. The heart condition decides.

Potassium iodide and creosote have been advocated. With a tuberculous focus it is possible to loosen some fibrous tissue of a semi-healed area. Inunction of 10 minims of pure creosote in half an ounce of water, with or without one drop of oil of peppermint, has been used with success; it causes sweating and, it is claimed, aborts the disease. One of the oldest and best drugs is calomel. Digitalis is recommended from the outset by some, strophanthus by others. Neither of them raises blood pressure, and the cardiac muscle is enabled to act with regular impulse. They are the only cardiac stimulants necessary, and if employed should be used from the outset. Strychnine and alcohol are probably of little avail. Tincture of nux vomica with digitalis is better than injections of strychnine for a flagging heart. To produce sleep 1/6 grain heroin may be given: 5 to 10 grains of Dover's powder in a saline has been recommended, but I never use it. Paraldehyde in doses of 1 to 2 drachms in very sweet tea is safe. Soap liniment will relieve localized pleuritic pain. For heart failure injection of 10 per cent. glucose is said to be the most valuable measure.

The cyanosis depends on anaemia of the arterial blood, and if oxygen is administered properly and by a suitable apparatus, such as Haldane's, it has been proved that this anaemia will be diminished and so the cyanosis relieved. Otherwise it is probably useless. Too often it is used as a last resource when nothing could be achieved. It is more important to let the fresh air into the room from the very outset.

As regards diet, milk (citrated if there is vomiting), with soda-water or barley water, or a little flavour of tea, or malted milk may be given. All sugars are good for the heart, so from the outset sugar or honey should be given. Water is essential in small quantities, as also is ice. Two pints of water should be given in the day—albumin water or water flavoured with beef-tea; beef-tea alone is not advisable. The mouth should be cleaned every two hours.

## PERNICIOUS ANAEMIA WITH FOCI OF INFECTION IN THE ALIMENTARY TRACT.

BY

VINCENT COATES, M.C., M.D., M.A. CANTAB.,

PHYSICIAN, ROYAL MINERAL WATER HOSPITAL, BATH; ASSISTANT PHYSICIAN,  
ROYAL UNITED HOSPITAL, BATH.

It has long been held that foci in the alimentary tract may play an important part in the production of pernicious anaemia; it has not been clearly established exactly how this obtains, and the theory does not reconcile the facts that, whereas pernicious anaemia is comparatively uncommon, septic foci are relatively of frequent occurrence.

Hurst<sup>1</sup> believes that achlorhydria is almost invariably the predisposing cause. He collected 12 cases in which this was known to have preceded the onset of anaemia by periods of from one to twelve years. He considers the absence of HCl, probably in the majority of cases of constitutional origin, to be the important factor, and not the cause of the absence. According to him the achlorhydria not only favours infection but results in the arrival in the intestine of proteins in an unaltered condition. He classifies the possible results which may accrue from achlorhydria thus:

1. Delayed protein digestion, with an undus proportion remaining in the lower part of the ileum, in a form readily prone to bacterial decomposition.
2. Provision of material likely to form toxins, which may be (a) haemolytic, the cause of the anaemia; (b) neuro-toxic, causing subacute combined degeneration of the spinal cord; (c) a toxin stimulating bone marrow to form abnormal types of red blood cells.

The fact that subacute combined degeneration of the cord may appear with little or no evidence of blood changes in no particular detracts from the likelihood of the above theory being practically possible, and this is enhanced in value by the good results Büttner and Werner<sup>2</sup> obtained by duodenal lavage. Nor does the order in which changes may appear in the blood or in the cord. On the other hand, Biffi<sup>3</sup> states that achylia gastrica may be absent, and that it occurs later than the blood changes. Maynard and Sturton<sup>4</sup> record two cases of pernicious anaemia with foci in the alimentary tract, one with dental sepsis and the other with colitis. The autopsy of the latter showed ulcers in the ileum. They

\* *Lancet*, September 2nd, 1922, p. 535.



It is mainly because of the prominence of the alimentary lesions that the following three cases are described.

### CASE I.

W. D., male, aged 39, was admitted to hospital for dysentery on December 13th, 1921, with a history of having had malaria, gastritis, colitis, and dysentery in 1919 while in India and Mesopotamia. In April, 1919, examination of stools, liver, and spleen proved negative. In January, 1920, the spleen was palpable and there was tenderness of the descending colon; some carious teeth were removed. In June, 1921, he was sallow, and there was tenderness of the colon; the liver and spleen showed nothing abnormal.

On examination the patient was sallow and anaemic; the mouth was clean; nothing gross was detected in heart, lungs, or abdomen. Blood pressure 96. There was oedema of feet. The urine was normal; examination of stools repeatedly negative. There was nothing to note in the central nervous system except marked pallor of the optic discs without haemorrhages. A test meal gave no free HCl. The Wassermann reaction was negative. Examination of the blood showed:

Red corpuscles	...	...	...	...	1,370,000
White corpuscles	...	...	...	...	2,700
Haemoglobin	...	...	...	...	37 per cent.
Colour index	...	...	...	...	1.5
Differential count—					
Polymorphonuclears	...	...	...	...	45 per cent.
Lymphocytes	...	...	...	...	48 "
Large mononuclears	...	...	...	...	6 "
Eosinophiles	...	...	...	...	1 "

Microcytes, megalocytes, and poikilocytes were present. There were no normoblasts nor megaloblasts.

*Course.*—There was occasional slight to moderate rise of temperature. Severe vomiting for one week. The liver became easily palpable. After several courses of arsenic and drachm doses of dilute HCl with his meals, he was discharged, after five months, with a blood count of nearly 5 million red cells and 3,000 white, and a colour index of just over 1, declaring himself well. The spleen could never be felt, and no megaloblasts were ever seen.

### CASE II.

G. S. C., male, aged 23, was admitted to hospital for sprue on November 21st, 1922. He had had jaundice and diarrhoea when in China from November, 1919, till May, 1920. In London, in 1921, he was treated for sprue by alkalis, pancreatic extract, *B. coli* autogenous vaccine, and by dieting. He gave a history of frequent copious stools, sore mouth and tongue, and much flatulence.

Examination showed: marked pallor of membranes; much emaciation with dry scaly skin. Teeth excellent; tongue smooth and ulcerated. There was no enlargement of the heart; apex beat fixed; reduplicated basal second sound. Early clubbing of fingers. Blood pressure, 88. Friction over lower half of lung from base to heart's apex. No tubercle bacilli had ever been found in the sputum. The abdomen was doughy and distended; liver dullness decreased. The stools were copious, acid, and frothy, with excess of fat, and yielded a plentiful growth of *B. coli* and streptococci; yeasts also were present, but no protozoa. There was nothing abnormal in the central nervous system except marked pallor of the optic discs without haemorrhages. The patient was too ill for analysis of the gastric contents. Examination of the blood showed:

Red corpuscles	...	...	...	...	1,500,000
White corpuscles	...	...	...	...	2,000
Haemoglobin	...	...	...	...	40 per cent.
Colour index	...	...	...	...	1.4
Differential count—					
Polymorphonuclears	...	...	...	...	45 per cent.
Lymphocytes	...	...	...	...	52 "
Large mononuclears	...	...	...	...	3 "

Polychromatophilia, anisocytosis, and poikilocytosis were present. There were two normoblasts and many megakaryocytes.

*Course.*—There was an occasional rise of temperature; petechial haemorrhages; loss of left knee-jerk. Hypostatic pneumonia developed, and death took place on February 8th, 1922, in spite of all forms of treatment, both dietetic and therapeutic. No *post-mortem* examination was obtained.

### CASE III.

W. A., male, aged 34, was admitted to hospital for dysentery on September 16th, 1922. His history showed that he had had bacillary dysentery in August, 1918, and malaria in September, 1919. In January, 1920, however, he suffered from no disability. In April, 1920, he had his teeth attended to. In February, 1921, the spleen was palpable. He complained of loss of appetite, sore tongue, and diarrhoea.

On examination he seemed to be in fair condition, but was very pale. The mouth was clean; tongue atrophied. Liver not palpable; spleen, two fingers. Nothing to note in the central nervous system except pallor of the optic discs without haemorrhages. He passed one to three stools daily with nothing to note. The Wassermann

reaction was negative. A test meal gave no free HCl. Examination of the blood showed:

Red corpuscles	...	...	...	...	2000000
White corpuscles	...	...	...	...	4100
Haemoglobin	...	...	...	...	42 per cent
Colour index	...	...	...	...	0.95
Differential count—					
Polymorphonuclears	...	...	...	...	25 per cent
Lymphocytes	...	...	...	...	60 "
Large mononuclears	...	...	...	...	3 "
Eosinophiles	...	...	...	...	2 "

There was some anisocytosis and poikilocytosis; granular leucophilia well marked; one normoblast.

*Course.*—He ran an evening temperature of 103°. His liver became palpable. He developed copious early morning stools, very acid, and containing undigested fat. Yeasts, but no or, anisms of protozoal nature were found. There was one attack of bright red rectal haemorrhage. One knee-jerk disappeared, to reappear; his red cells became progressively less in number; megaloblasts and high colour index made their appearance, and he died on November 15th, 1922.

It is quite possible that many would place Case 1 in the category of aplastic anaemia, but this contention need not be disputed, because, however strongly this might be urged, the fact remains that the anaemia was of a primary as opposed to a secondary type. It is not unlikely that the colitis was never of dysenteric origin, since no evidence could be found in his army documents as to the exact cause of the dysentery, but presumably at one time he was diagnosed as suffering from true dysentery by those competent to make the clinical diagnosis.

Case II is of exceptional interest. Manson-Balu<sup>6</sup> says that the anaemia of sprue may approach the pernicious type, with alteration in the size and shape of the erythrocytes and with the appearance of normoblasts, and that it is apparently secondary to the intestinal toxæmia. Bassett-Smith<sup>7</sup> holds that sprue is different from pernicious anaemia in that the colour index is low, and that the anaemia is a true secondary and not a primary one. The anaemia in this instance also would appear to be of the aplastic type.

The autopsy of Case II showed not only the changes usually found in pernicious anaemia but definite ulcers in the large gut, which was in part entirely denuded of mucous membrane, so as to be quite transparent. An enlarged ileocolic gland was seen draining the area of an ulcerated patch in the intestine. This was especially looked for, since these enlarged glands can be felt through the abdominal wall in many cases of chronic dysentery. The gastric mucous membrane was much atrophied, and 1½ inches from the pylorus there was a thickened encapsuled mass in the duodenal wall, projecting into the lumen of the bowel, giving the appearance of an adenoma.

Until some organism or virus can be identified as the specific cause of pernicious anaemia it would not appear unscientific to suggest that the disease may be caused by a combination of circumstances. The importance of achlorhydria can be gauged by the emphasis rightly laid upon this by all authorities. Hunter has placed stress on the co-existent secondary anaemia from oral sepsis and the improvement obtained by dental toilet. The fact that toxins can more easily get into the circulation through an abraded or ulcerated surface than through a normal one lends colour to the part played by the ulceration in two of the cases quoted above, and there is every reason to think that secondary infection can be imposed upon an ulcer in the large bowel, originally dysenteric. The following case illustrates this contention.

S., aged 25, admitted to hospital for dysentery. He gave a history of having had dysentery, caused by Flexner's bacillus, in France in 1917. Had had colitis and attacks of diarrhea with frequent stools containing blood and mucus since that time—the last attack incapacitating him for ten weeks.

Examination showed thickening of gut in both iliac loops, and large tender glands in these regions, more marked on the left. The stools were semi-formed, and contained much bright blood and glairy mucus, and small patches of necrotic tissue lying on the outside of the faeces, and not intimately mixed with them as in the enteritis of malignant malaria. Amoebic cysts were recovered from the mucus. Sigmoidoscopy revealed congested bowel mucosa covered with yellowish-white mucus, and 12 cm. from the anus a small superficial ulcer. A direct swabbing from the ulcer effected, and the stained smear showed six acid fast, pleomorphic, morphologically bovine in type.

These cases are published in the hope that any additional factor, however apparently trivial, brought to light in the investigation of pernicious anaemia may help towards establishing the cause of this disease, be it specific, or consequent



upon a chain of circumstances, the sum-total of which leads to the ultimate production of such an intractable malady.

Either Colonel Cowan or Dr. P. O. Ellison kindly carried out the bacteriological and biochemical investigations referred to in this paper.

## REFERENCES.

- <sup>1</sup>Hurst, A. F.: *BRITISH MEDICAL JOURNAL*, 1922, ii, 978. <sup>2</sup>Büttner, A., and Werner, G.: *Deut. med. Woch.*, 1921, 47, 1552-3. <sup>3</sup>Bills, P.: *Politica.*, 1921, *Sez. Prat.*, 28, 877-884. <sup>4</sup>Maynard, E. F., and Sturton, S. D.: *BRITISH JOURNAL OF TROPICAL DISEASES*, seventh issue, 1922, ii, 1.

979.

## THE ACTION OF HISTAMINE ON THE VEINS:

A METHOD OF DIFFERENTIAL PERFUSION: NITRITES  
IN THE PREVENTION OF HISTAMINE SHOCK.

(Preliminary Communication.)

BY

O. INCHLEY, M.D.

(From the Pharmacological Laboratories, Cambridge and  
King's College, London.)

DALE and LAIDLAW<sup>1</sup> have shown that in histamine shock there is capillary dilatation, with fall in blood pressure and respiratory failure within a very short time of the injection of the drug. They conclude that histamine produces an active dilatation of capillaries, and dismiss the possibility of active constriction of veins. I have devised a method of perfusion which differentiates between the action of a drug on arteries and on veins respectively.

## Method.

Cannulae are inserted into the artery and vein of the organ; bleeding points are ligatured, and the organ after excision is perfused for a short time in the ordinary way with warm oxygenated Ringer's fluid under hydrostatic pressure, in order to wash out the blood and to determine there is no leakage. An incision is made in the organ, avoiding large vessels, or the surface may be scarified. For perfusion of the veins the Ringer's fluid is led to the cannula in the vein and the artery is occluded. The perfusion fluid now passes backwards through the veins and escapes by the incision, and the rate of flow is measured. For arterial perfusion the reverse process is adopted—the vein is occluded and the fluid from the arteries escapes as before. A fresh preparation must be used for arteries and for veins, because after the tissues have been perfused with the drug by the one channel they are so affected that only a small effect may be obtained if perfused afterwards by the other channel.

Certain details of procedure may be briefly indicated for particular organs. For the small intestine cannulae are inserted distally in the portal vein and superior mesenteric artery. The incision in the isolated loop of gut is made longitudinally on the opposite side to the attachment of the mesentery. In the liver a cannula is inserted in the portal vein directed towards the liver; another cannula is placed in the inferior vena cava in the thorax, directed tailwards, and the diaphragmatic veins are ligatured. The liver is then removed after a ligature has occluded the inferior vena cava and hepatic artery in the abdomen. After scarification of the liver separate perfusions of the portal ramifications in the liver and of the hepatic vein may thus be obtained.

For the hind limbs the usual preparation is made, and after skinning the limbs the fascia lata is removed and the superficial fibres of the thigh muscles cut away with scissors. The perfusion fluid exudes from the raw surface thus exposed.

In the lung a cannula is inserted into the pulmonary artery through the right ventricle; another cannula is inserted into the left auricle through the mitral orifice. The remains of the heart are cut away and the lungs with the trachea removed from the body. Into the trachea a small quantity of warm liquid paraffin is introduced, and the lungs are inflated to about their normal volume in the chest and the trachea ligatured. In this way airlocks are made in the bronchi. The surface of the lungs is then scarified to provide exit for the perfusion fluid. The airlocks prevent the lungs from collapsing, and the scarification allows the pulmonary artery and veins to be perfused separately.

By this method of perfusion it was found that after histamine both venules and arterioles were constricted in the isolated limbs and lungs of both cats and rabbits, and constriction of both portal and hepatic veins occurred in the liver of these animals. In the isolated intestine of the cat a similar constriction of venules and arterioles was observed. The rabbit's intestine, however, showed no constriction of mesenteric venules but only the arterial constriction. Ring preparations of the portal vein and mesenteric artery of the pig (from the slaughterhouse) also showed tonic constriction by histamine. It would appear that constriction of venules is an important action of histamine, leading to capillary engorgement and consequent oedema. In view of the above observations the shock induced in the cat, and its absence in the rabbit, would appear to be largely due to the difference in the reaction of the splanchnic veins to histamine in these animals.

These experiments suggested that a preliminary treatment by nitrites in order to dilate the veins, followed by the infusion of a sufficient quantity of Ringer's solution into the veins to fill the dilated vessels, might prevent death in the cat after a toxic dose of histamine.

A cat of 1.9 kilos anaesthetized with urethane received an intravenous injection of 16 mg. of sodium nitrite in 1 per cent. solution; Ringer's solution was then intravenously under 20 cm. water pressure into the vein; 6 mg. of ergamine (B. W. and Co.), containing approximately 2 mg. histamine base, were injected intravenously. The animal did not require artificial respiration, and was alive one and a half hours after the injection of the histamine; the blood pressure and respiration improved considerably within half an hour.

Further experiments on these lines are in progress; a method of treatment after the induction of histamine shock is being attempted.

These experiments suggest that the wheal described by Dale and Laidlaw which arises at the point of local application of histamine may be due to intense local constriction of venules leading to local congestion and consequent oedema. This may be a protective response on the part of the organism to prevent the admission of histamine into the general circulation. If histamine shock be regarded as a generalized extension of such a response it is clear that for treatment the venules must be dilated sufficiently to provide an adequate circulation in the organism, but the oedema must be encouraged in order to assist the elimination of the histamine from the blood.

The regulation of the flow of blood through the veins would appear to be important. Gunn<sup>2</sup> has shown already that veins are constricted by adrenaline.

## REFERENCES.

- <sup>1</sup>H. H. Dale and P. P. Laidlaw, *Journ. of Physiol.*, lii, 355. <sup>2</sup>J. A. Gunn and F. B. Chevassé, *Proc. Roy. Soc.*, vol. 85, 192.

## A SIMPLE DIET TABLE.

BY

H. S. PEMBERTON, M.B., M.R.C.P.,

ASSISTANT PHYSICIAN, DAVID LEWIS NORTHERN HOSPITAL, LIVERPOOL.

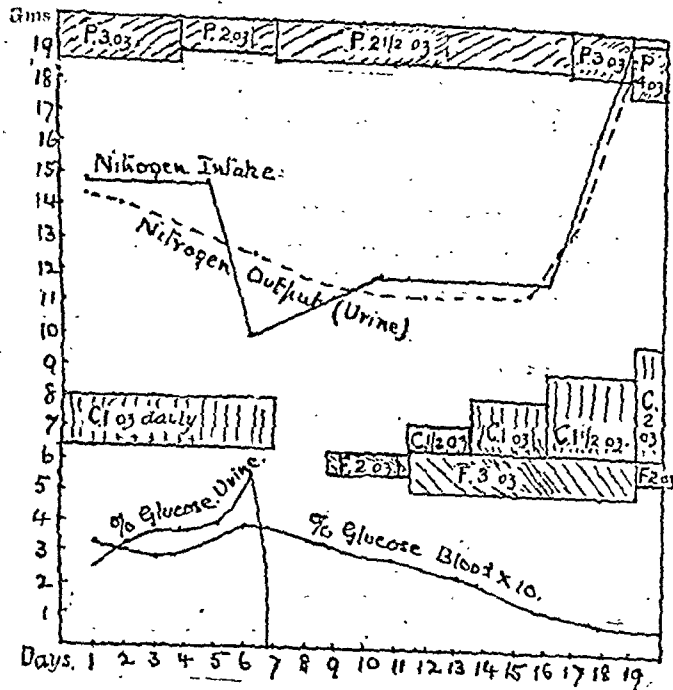
THE following table has been in use in both hospital and private practice for nearly twelve months; the results obtained have been so satisfactory that I venture to think that it may prove of value to others who have to undertake the dietetic management of various metabolic disorders.

Most food analyses are expressed in percentage values of carbohydrates, fats, proteins, water, and salts, the quantity of food itself being given a unitary or workable value. In clinical work, on the other hand, it is obvious that what is required is a unitary value for the specific carbohydrate, fat, or protein content, and with this end in view I was led to devise this simple table. The factors which determine the success and accuracy of any particular diet would appear to be the ease of original construction, an elasticity which allows, if necessary, of a daily change, and a small demand only on the time and intelligence of helpers and patients. This table has been found to meet these requirements, the only other essential being a small pair of scales. The specific contents have been worked out from the excellent tables given by Joslin<sup>1</sup> and Cammidge<sup>2</sup> and from other sources; the quantities are not strictly accurate, as the unit idea was kept mainly in mind, in view of the ordinary conditions under which patients arrange their own dietary. The scheme has been principally used in the dietetic management of chronic nephritis, diabetes mellitus, hyperchlohydria, and achylia gastrica. In these conditions, where specific intolerance of carbohydrates, fats, proteins, or their derivatives is often manifested, a simple control of intake has been obtained by the use of this table; determinations of output or utilization have been made in the case of carbohydrates by glucose estimations in blood and urine, in the case of proteins by determination of urea in the blood and of total nitrogen and urea in the urine, and in the case of fats by the ordinary methods of detecting the onset or degree of acidosis. By these means it has been found that growth or loss of tolerance for carbohydrates and proteins is readily observed and that the onset of acidosis is easily controlled.

The following chart may serve to illustrate the simple method of prescribing food, quantities of which are shown daily; growth of tolerance for carbohydrate (without fasting or the use of "ladder" schemes) and maintenance of nitrogenous equilibrium are also clear. The case is one of a woman of 26 suffering from diabetes mellitus. Blood sugar



was estimated four hours after a meal, and nitrogen intake calculated as 16.5 per cent. of the protein intake; total nitrogen (T.N.) was determined by a modification of the Kjeldahl method.



C = Carbohydrate. F = Fat. P = Protein. Example: On the seventh day on a diet of 1 oz. of carbohydrate and 2 oz. of protein, glucose in urine stood at 6 per cent., in blood at 0.4 per cent., and the nitrogen output in the urine stood at 12.6 grams per diem.

The last section of the diet scale shows the calorie requirement of the particular patient per diem; it is made up according to age, occupation, or severity of disease, and is subject to revision as tolerance varies.

#### Diet Scale.

One ounce of carbohydrate or protein yields 120 calories. One ounce of fat yields 270 calories.

One ounce of carbohydrate is contained in—

- 1½ oz. dry oatmeal (contain 1/3 oz. protein, 1/10 oz. fat).
- 1½ oz. shredded wheat biscuits (contain 1/2 oz. protein).
- 12 Kalari biscuits (Callard).
- 1 pint of milk (contains 2/3 oz. fat, 2/3 oz. protein).
- 1½ pints cream (contain 1 oz. protein, 6 oz. fat; rich cream contain 12 cz. fat).
- 5 oz. potatoes (contain 1/6 oz. protein).
- 5 oz. baked beans (contain 1/3 oz. protein, 1/10 oz. fat).
- 5 oz. boiled rice or macaroni.
- 1½ oz. bread or toast (contain 1/6 oz. protein).
- 10 oz. strawberries, lemons, or oranges.
- 10 oz. Brazl nuts (contain 1½ oz. protein, 7 oz. fat).
- 10 oz. filbert nuts (contain 1 oz. protein, 7 oz. fat).
- 10 oz. carrots or onions.
- 20 oz. grape fruit.
- 20 oz. ripe olives (contain 1/2 oz. protein, 5 oz. fat).
- 6 oz. apples, currants, pears, cherries, grapes.
- 5 cz. plums, bananas, or prunes.
- 20 oz. tomatoes or radishes.
- 20 oz. lettuce (contain 1/2 oz. protein).
- 1 pint beer.
- 1/2 pint stout.
- 1/2 pint port wine.
- Thrice-cooked spinach, celery, or cabbage contains no carbohydrates; the carbohydrate in soy bean or mushrooms is not assimilated.

One ounce of protein is contained in—

- 10 oz. smoked uncooked bacon (contain 6 oz. fat).
- 6 oz. ordinary uncooked bacon (contain 3 oz. fat).
- 5 oz. lean smoked ham (contain 1 cz. fat).
- 5 oz. lean uncooked beef or mutton (contain 1/2 oz. fat).
- 4 oz. roasted lean beef or mutton (contain 1 oz. fat).
- 6½ oz. corned beef (contain 2 oz. fat).
- 5 oz. fresh fowl (contain 1½ oz. fat).
- 5 oz. boiled cod, haddock, sole, or whiting.
- 7 average sardines (contain 1 oz. fat).
- 2 large or 3 small hen's eggs (contain 1 oz. fat).
- 4 oz. cheese (contain 1½ oz. fat) (American, Cheddar, Cheshire).

One ounce of fat is contained in—

- 1½ oz. fresh butter.
- 1 oz. oleo margarine.
- 1 oz. lard, cod-liver oil, olive oil.

One ounce of whisky, brandy, rum, or gin yields 165 calories.

Requirements: Calories per day in the form of—  
oz. carbohydrates.  
oz. proteins.  
oz. fat.

#### REFERENCES

- <sup>1</sup> E. P. Joslin: *Diabetic Manual*, 1919. <sup>2</sup> P. Cammidge: *Glycosuria and Allied Conditions*, 1915.

## Memoranda: MEDICAL, SURGICAL, OBSTETRICAL.

### ADENO-CARCINOMA OF THE APPENDIX.

The following report is of interest, as the case is probably the youngest of the kind to be recorded.

A boy, aged 14, was admitted to hospital complaining of abdominal pain, which had come on suddenly the previous night. It was at first referred to the umbilicus, and later to the right iliac region, and was unaccompanied by vomiting or constipation. He had had no similar attacks, and no other important illness. Tuberculosis had occurred in several members of the family (including a sister with peritonitis), but there was no family history of malignant disease.

On admission the temperature was 102.2°, the pulse 108, and the respirations 28. The tongue was furred, and the breath foul. The abdomen moved well with respiration; there was slight distension in the right iliac region, and tenderness over McBurney's point, just below which a cord-like thickening about 2 inches long was palpable. The rectus reflex was less marked on the right than on the left. The examination per rectum was negative.

The patient appeared fairly comfortable, and next morning presented no symptoms, though the tenderness and thickened cord in the right iliac fossa persisted; the tongue was cleaner, the bowels regular, and there was no vomiting. The patient was kept in bed on an ordinary light diet and watched for a week, but beyond an evening rise of temperature to 105°, the daily range being about 1.5°, there were no abnormal signs. A diagnosis of tuberculous appendix was made.

At operation the appendix was found to be 5 inches long, knicked, lying in the "4 o'clock" position, and bound down by adhesions. It showed signs of recent inflammation. On being removed and slit up along the lumen, which was patent, it was found to contain two small faecal concretions at the tip, and in the wall at the point where the kinking occurred were two small yellow masses, very hard, and cutting like an unripe pear.

The report received from Dr. Walker Hall of Bristol on the microscopical examination of the specimen is as follows:

"The condition present is an adeno-carcinoma. There are several small adjacent nodules, each of which represents the same structure. One of them, however, has extended more rapidly than the others, and has reached the peritoneal lymphatics."

The patient made an uneventful recovery, the wound healing by first intention; and when last seen (six weeks after operation) appeared very well. There is a clean, smooth scar, and nothing abnormal palpable per abdomen.

I am indebted to Dr. W. Thompson for permission to publish these notes.

The Hospital, Bridgewater.

A. O'DWYER THOMAS.

### EBONITE POISONING.

In view of the great vogue of amateur "wireless" building and entertaining, the following case may be interesting. So far I have not seen any reports of cases due to work on making "wireless" receiving sets, though it would seem that such cases may shortly become more numerous. The disease referred to is simple ebonite poisoning, and occurred in one of my panel patients a short time ago.

The patient is employed in the room of a factory where the ebonite plates are cut, ground, and lored for holding the parts of amateurs' receiving sets. After a week's work in this room, although he did very little ebonite grinding himself, symptoms of an irritant enteritis occurred—namely, nausea, vomiting, giddiness, headache, diarrhoea, and abdominal cramps. The attack was not very severe and ended the patient left work yielded in a few days to treatment by copious drinks of lemonade, milk, or barley water, stimulants in moderation, and light (milk) diet, with saline aperient thrice daily.

My patient stated that three other men employed in the same room had had similar, but more severe, symptoms, and had had to be absent from work a few days before he himself was attacked. His employers appear to have agreed that the source of the trouble was ebonite dust, as he understood that they had already made arrangements for hoods and suction-ventilating fans to be fixed on the grinding benches. The workers are also encouraged to drink large quantities of milk, and to be scrupulous in washing their hands. These measures, and prevention of eating in workrooms, should prove sufficient to prevent further trouble in these factories.

M. W. GILES,  
M.B.S., L.R.C.P., D.D.

London, W.



## RUPTURE OF THE SPLEEN.

Rupture of the spleen is not very common, and in public school boys must be a very rare event. The following case is of interest, in that the original injury damaged the spleen, but rupture did not take place till eight days later, following on slight exertion.

A boy, aged 15½, was kneed in the abdomen at football on February 8th. He was able to walk back to the school sick-house, when he vomited freely (dark-brown matter) and became collapsed. There was considerable tenderness in the epigastrium, just to the left of the middle line; his condition steadily improved from hour to hour; there was no blood in the urine or stools, and I came to the conclusion that probably no abdominal organ was injured but that the solar plexus had been affected. Beyond slight epigastric tenderness for a couple of days he had no further symptoms, and was discharged on the evening of February 13th to school with leave off all exercise.

On the morning of February 16th, instead of reporting to me, he played squash rackets after breakfast, and in a few minutes felt acute pain, vomited, and had to be carried into the sick-house in a state of collapse, with acute abdominal pain and slight muscular rigidity on the left side. In consultation with Dr. Lawson Smith we agreed that there was probably some internal haemorrhage; Mr. H. W. Carson came down at once and the patient was operated on within three and a half hours.

*The Operation: Note by Mr. Carson.*

I agreed with Dr. Lempriere and Dr. Lawson Smith that the patient was suffering from internal haemorrhage, and I operated at once, opening the abdomen through the left upper rectus sheath, displacing the muscle inwards. This did not give good exposure, and was supplemented by a transverse incision backwards into the loin from the middle of the vertical incision. There was a quantity of blood and clots in the abdomen. The spleen was found to be torn on its inner surface, but the bleeding was coming from within the hilum. A nodule was felt in the pedicle just at its attachment to the spleen, which may have been a haematoma from the first injury. There was no old blood clot, which confirmed the opinion that internal haemorrhage had not occurred as the result of the first injury. Removal of the spleen was decided upon, but it was made difficult by the shortness of its ligaments. The pedicle, too, was short and contained the tail of the pancreas.

Beyond troublesome post-anæsthetic vomiting (he was two and a half hours on the table) there was no drawback, and he went home to convalesce on March 14th.

A specimen of his blood was sent a fortnight after the injury to Dr. C. H. Andrewes of St. Bartholomew's Hospital, who reported that there were no changes from the normal.

L. R. LEMPRIERE,  
Medical Officer, Haileybury College.

## Reports of Societies.

## RADIOLOGY IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.

A MEETING of the Royal Medico-Chirurgical Society of Glasgow was held on April 6th, when a number of communications were made on the diagnosis of pulmonary tuberculosis, with special reference to radiology.

Dr. LEONARD FINDLAY, whose remarks referred particularly to the disease in the young, said that his conclusions were based upon clinical, radiological, and pathological examinations, and that meticulous care had been taken in the matter of diagnosis. He believed that in the period of life before puberty tuberculosis of the lung was a disease of infancy and early childhood, and that it ran an acute or subacute course. In an older child a pulmonary lesion, and especially a chronic pulmonary lesion, should be diagnosed as of a tuberculous nature only with the greatest hesitation and in the presence of the utmost proof. Charts were shown in support of this opinion. Dr. Findlay also pointed out that pulmonary tuberculosis, unless in the very young infant, was seldom, if ever, limited to one lung or one lobe of the lung.

Dr. D. CAMPBELL SUTTIE showed radiograms of cases of pulmonary tuberculosis, and said that admittedly recognizable x-ray appearances had a definite value in the face of negative clinical findings, and negative x-ray appearances had no claim for consideration when clinical signs were undoubtedly present; there were pathological conditions which in their early stage were undetectable by either—for example, miliary tuberculosis. Certain pathological conditions were shown, he said, by radiograms, before clinical signs or symptoms appeared, and also after clinical signs and

symptoms had disappeared. Certain pathological conditions, on the other hand, were detected by the clinician before x-ray appearances were present.

Dr. A. S. M. MACGREGOR introduced the subject from the public health point of view, and referred to the work done by Drs. Wilson, Henderson, and himself in correlating clinical and radiological features in special groups of cases. Some of the earlier ideas as to the nature of apparent abnormalities in radiograms had had to be discarded, and he pointed out that radiographic appearances varied within wide limits in normal chests. In regard to the routine diagnosis of lung conditions, perhaps the most important aspect of radiology was the aid it gave in a negative sense in doubtful cases; in this respect the right apex was a constant stumbling-block. Radiology was also of value in many cases of chronic bronchitis where the symptoms suggested a coexistent tuberculosis. X rays often detected hidden, unsuspected, and otherwise undiagnosable lesions.

Dr. J. A. WILSON said that if the cases notified as pulmonary tuberculosis in a district of Glasgow were analysed it would be found that the error in diagnosis, in the best year, was about 33 per cent. For the past three years efforts had been made to evolve a scheme to deal with the increasing number of notifications of cases which were doubtfully tuberculous. While it was too early to dogmatize, the conclusions arrived at, as a result of the combination of careful x-ray and clinical work, were that (1) cases of tuberculosis of the lung had a definite radiological picture; (2) hilus tuberculosis was an uncommon disease; (3) basal lesions were, as a rule, non-tuberculous, the exceptions being those secondary to a chronic tuberculous infection of the abdomen; (4) there might be physical signs of moderately extensive infection of the respiratory tract with no radiological counterpart—such infections were non-tuberculous.

Dr. FERGUS L. HENDERSON gave a demonstration of radiograms illustrating points in diagnosis.

## PROLAPSE OF THE UTERUS.

At a meeting of the Aberdeen Medico-Chirurgical Society held on April 5th, with the President, Dr. ALEXANDER OGSTON, in the chair, a lantern demonstration on pelvic hernia (prolapse of the uterus) was given by Mr. ALEXANDER and Mr. VICTOR DON. The anatomy of the pelvic floor was demonstrated, and the authors pointed out that the real support was formed by the levators, coccygei, etc., and their coverings, the true fascia of the muscles. Sections of the pelvis showed the sub-peritoneal tissues impregnated with fat, with no definite ligamentous bands. The physiology affecting the abdomino-pelvic pressure was explained, showing that gravity had little to do with prolapse, or the so-called ligaments with retention of organs, the onus being entirely on the pelvic muscles and their fascial coverings. A new operation, founded on the methods which had proved successful in dealing with herniae elsewhere, was demonstrated, the edges of the levators being brought together and their fascial coverings overlapped, or, if these were found much scarred or thinned, a piece of fascia lata from the thigh was introduced to strengthen the support. Operations which depended on the suturing of connective tissues only were condemned as unreliable. The authors said that they had not yet had sufficient experience of the results, but the operation was stated to be comparatively simple and safe, and healing was ensured by gentle handling of the tissues. The demonstration was followed by a discussion.

A MEETING of the London Association of the Medical Women's Federation was held at the Elizabeth Garrett Anderson Hospital on April 10th, with Dr. LOUISA MARTINDALE in the chair. Miss IDA C. MANN read a paper on some congenital defects of the eye and their confusion with acquired conditions. She described many congenital defects of the fundus, of the iris, the cornea, and the lids, but confined her attention to those defects which had to be diagnosed from acquired pathological conditions presenting very similar appearances. Her paper was illustrated by a series of drawings in colour. Miss ROSA FORD read a paper on a case of intracranial tumour, diagnosed by the visual defects produced. The diagnosis both of the presence and the site of the tumour in this case rested mainly on the detection of an increasing contraction of the visual fields, especially with regard to colour vision, and associated with papilloedema. The tumour was located in the occipital region. Mr. Percy Sargent operated on the case at the National Hospital, Queen Square, and successfully removed an endo-thelioma from the occipital lobe.



## Reviews.

### THE PHYSIOLOGY OF REPRODUCTION.

CONSIDERING the very common and not unnatural curiosity which exists in regard to questions relating to reproduction, it is remarkable that so few books have been devoted to the subject by human physiologists. Probably no class of medical practitioner gets less encouragement to seek for information in physiological textbooks than the obstetrician or gynaecologist. In the ordinary textbooks of physiology the subjects in which he is particularly interested are usually dismissed in one or two chapters dealing in a superficial way with the male and female reproductive organs; for anything like a full description of the functions of these organs he is thrown back upon textbooks of midwifery or gynaecology. It is not sufficient explanation of this curious lack that few if any individual physiologists are in a position to write a textbook on reproduction. It is indeed true that the author of such a book has to be a biologist, a biochemist, an embryologist, a histologist, and in some degree an agriculturist and even a veterinarian. With great advantage he might also be an obstetrician and a gynaecologist. But we have known physiologists tackle problems and write books upon subjects in which as wide and varied a range of knowledge was really required for complete mastery of the subject.

It is now thirteen years since Dr. F. H. A. MARSHALL'S *The Physiology of Reproduction* appeared to remove in some measure this reproach from physiology and to fill in very large measure the gap in our scientific literature to which we have just referred. For some years the first edition has been out of print and many readers will be glad to know that a second edition has been produced.<sup>1</sup> Dr. Marshall does not profess to be in *propria persona* the scientific Proteus we have just described as the ideal editor of such a textbook, but he has, as the next best thing, elicited the help of various specialists, and has himself presided over the editing of their contributions. Thus Dr. William Cramer has again contributed the sections upon the biochemistry of the sexual organs, a subject on which he has made himself a recognized authority, and he has also revised the section on changes in the maternal organism during pregnancy originally written for the first edition by Dr. James Lochhead. Dr. Lochhead's other contribution to the first edition, the chapter on foetal nutrition and the physiology of the placenta, has been reprinted practically as it stood; only slight additions, chiefly in the form of footnotes, for which Dr. Marshall is responsible, have been made. It is to be regretted that Dr. Lochhead's duties at Gibraltar have prevented his revising his earlier work, and in our opinion the book suffers in some degree from the lack of adequate revision of these chapters. Several omissions occur which it is unnecessary to specify in detail, but we may mention the work carried out by Slemons and his colleagues in the Johns Hopkins Hospital and embodied in his oration at Toronto in 1919. Dr. Cresswell Shearer has written in this edition a most excellent chapter on fertilization, in which he includes a description of the oxidation processes occurring in the egg on and after fertilization. He also gives a short but lucid account of Child's brilliant, suggestive, and far-reaching work on the life cycle. For the remaining chapters Dr. Marshall is himself responsible.

This edition undoubtedly maintains the high reputation acquired by its predecessor, and the book taken as a whole remains the most comprehensive and authoritative treatise on the general aspects of the subject in the English language. Particularly is this the case with regard to all questions of "comparative" and of what is sometimes called "pure" as opposed to "applied" physiology. The value of the book would, however, be enhanced by a more consistent endeavour to link up these "purely" physiological matters with the practical and clinical considerations associated with obstetrics and gynaecology in the human subject. This might have been done by associating an obstetrician and gynaecologist in the preparation of the book. None of the medical contributors to the present edition would appear to have the special experience of the processes of reproduction in the human subject which in its normal and in its abnormal aspects falls to the lot of an obstetrical and gynaecological specialist, and the

result is that the sections dealing with the human subject lack the ring of authority and personal knowledge which characterizes the rest of the writing. There are also omissions, and in some instances the quotations from obstetric textbooks are either out of date or imperfectly assimilated. We note, for example, that some important work on the cause of menstruation by various gynaecologists receives scant if any attention. Menstruation is to a great extent—indeed to a possibly disproportionate extent—regarded from the standpoint of comparative physiology. There is little or no reference to much of the later work embodied in Novak's recent monograph. The same criticism applies also to the discussion of the question as to the time relationship between ovulation and menstruation. It is quite true that observations on the human subject are not so easy to make or to control as similar observations on the lower animals, but their importance is, *ceteris paribus*, much greater. That obscure subject, the cause of the onset of labour, is rather briefly dismissed, and the view that it is due to a stimulus arising in the pituitary gland is not considered. The section on prolonged gestation hardly seems adequate from the point of view either of veterinary experience or of the observations of obstetricians. That most interesting question, the determination of sex, is, however, very fully and most excellently discussed, and all the latest work on the subject has been summarized. The section upon sterility in females is disappointing, and once again shows the need of collaboration with someone who is familiar with gynaecological literature.

Such disappointment as the above criticisms indicate is really a compliment, even though rather "back-handed," to Dr. Marshall's book. Its great merits stimulate our expectations to a perhaps unreasonable extent. We would, however, earnestly commend to Dr. Marshall the project of elaborating the book along the lines suggested, and so making it in future editions even more the veritable authoritative and comprehensive work which it already very nearly is. Such a treatise as we contemplate might attain double the size of the present volume, but its value would be more than doubled to medical scientists, and it would form an even more noble contribution to British scientific literature than the volume under review.

### THE PREPARATION OF PATIENTS FOR OPERATION.

THERE are several good books on the after-treatment of operation cases, but it has occurred to Dr. CHARLES LEBEYRE of Toulouse to write a volume<sup>2</sup> on the treatment of patients in the period whilst they are awaiting operation. Such a book would seem to fill an unoccupied niche in medical literature, but the successful accomplishment of the task is much more difficult than at first appears. The general preparation of patients is to-day more or less standardized, and for special operations, or rather for operations on special organs, surgeons are already in the habit of attending to certain points in order to have their patients in the best possible condition. This is seen to best advantage perhaps in urological cases, and particularly in operations upon the prostate, where within the last few years very great progress has been made and results certainly improved. Every operator is further aware of the advantages of attention to the mouth in abdominal cases, and no one will deny that gastric lavage and the giving of fluids by other channels than by the mouth have a beneficial effect upon dehydrated sufferers from pyloric stenosis. Recently the Mayo have demonstrated the value of the pre-operative estimations of hepatic function and of blood-coagulation time in chronic biliary stasis, and attempts have been made in Harvey Cushing's clinic to reduce intracranial tension in tumour cases by giving hypertonic solution intravenously or by the mouth. All of these straws (if we may attach to which way the wind is blowing. Surgeons most assuredly are taking infinitely more pains to ensure the success of their operations. The enucleation of a prostate or the removal of a stone from the common duct is no longer the *tour de force* that once it was, sufficient in itself and awe-inspiring in the beholder. To-day we demand, and not unreasonably, a living patient at the end of it all.

It is to further this excellent tendency that Dr. Lebevre has written his little book. It is prefaced by an extract from

<sup>1</sup> *The Physiology of Reproduction*. By Francis H. A. Marshall, Sc.D. Camb., D.Sc. Edin., F.R.S. Second and revised edition. London and New York: Longmans, Green, and Co. 1922. (Roy. 8vo, pp. 770; 182 figures. 36s. net.)

<sup>2</sup> *La Période Pré-opératoire*. By Charles Lebevre, Chief of the Surgical Clinic of the Faculty of Toulouse. Paris: A. Maloine et Fils. 1922. (Post 8vo, pp. 260; 2 figures. Fr. 10.)



J. L. Faure which is worth quotation because it shows also a modern revival, and that is the declaration of reverence with which many surgeons regard their work. This attitude was once, we think, rather the right of the physician, and the passing of it to the surgeon as well is not something more lost by the former to the latter, but something which medicine as a whole must welcome and in which it must rejoice. Faure says:

"And surgery to-day is truly the *res sacra* of ancient times, the sacred thing which one must approach with fear and speak of with respect as a goddess who holds in her sovereign hand the life and death of those who sacrifice at her altar."

The scope of Dr. Lefebvre's book is wide and would have been better had he confined himself to fewer subjects. A series of more or less disjointed chapters or essays would better have fulfilled his purpose. We find ourselves but little interested in general dissertations on the preparation of tuberculous, syphilitic, malarial, and gony patients, and of drug takers. And yet these subjects are not without their interest, so that perhaps our lack of sympathy is the fault of the author. An interesting section is furnished on diabetics as possible subjects for operation, and we are glad to see that obesity receives attention. There is no doubt whatever that the obese patient is anything but a first-class operative risk, and most surgeons of experience have learned to regard him with considerable apprehension. The author has some sane suggestions to make on the improvement in the general hygiene of this class. The dangers of subsequent fat embolism might have received more attention. Nor has the author referred to the special studies of which we have made mention above.

In one thing we can whole-heartedly agree with Dr. Lefebvre, and that is his condemnation of pre-operative purgation. He quotes again the excellent J. L. Faure, and we will transcribe the extract in full:

"For a very long time I did what I had always seen my masters do, and I purged my patients conscientiously on the eve of operation. Then I asked myself why we purged them thus, and I thought that it was without doubt because our masters purged them. I also thought that if our masters purged them it was because they had seen their masters do it. So that finally I arrived at this conclusion, that if to-day we purge our patients on the eve of operation it is really because Dupuytren purged them."

Some three years ago the question was discussed in a leading article in this JOURNAL (1919, vol. ii, p. 570), and recently the opinions of a number of surgeons were collected in a short article published in our issue of March 17th (p. 476).

#### URETHROSCOPY.

*The Urethra and the Urethroscope*,<sup>3</sup> by Dr. F. CARMINOW DOBLE, gives an account not only of the various models of urethroscopes in use, but also of their method of employment. The author asserts that although many textbooks on the subject of venereal disease, and of gonorrhoea in particular, have appeared within recent years, but scant attention has been paid in them to the subject of urethroscopy. His book is intended to be used as an adjunct to general textbooks of treatment, and its aim is to be, above all things, a thoroughly practical guide to urethroscopy. With the opening of large numbers of venereal clinics throughout the country many medical men who have perhaps no previous knowledge of urethroscopy find themselves in the position of having to diagnose and treat urethral conditions. Although a practical demonstration must always be a better method of education than that afforded by textbooks and manuals, it is not always possible for those who wish to learn the rudiments of urethroscopy to visit clinics where urethroscopy is habitually carried out.

The book is divided into three parts: the first deals with anterior urethroscopes and the examination of the anterior urethra, the second with posterior urethroscopes and posterior urethroscopy, and the third with the examination of the female urethra. All the principal urethroscopes of British manufacture are included, as well as a few of the better known Continental models. The descriptions are made more easy of comprehension by excellent plates, and the good points and deficiencies of each type of urethroscope are noted in turn. Dr. Doble would appear to have used all these instruments, but he does not state his personal preference.

<sup>3</sup> *The Urethra and the Urethroscope*. By F. Carminow Doble, M.R.C.S., L.R.C.P. Lond. Oxford Medical Publications. London: H. Frowde, and Hodder and Stoughton. 1923. (Demy 8vo, pp. x + 120; 45 figures. 6s. 6d. net.)

He has himself been responsible for an addition to the Holborn Surgical Instrument Company's anterior urethroscope, which allows of it to be used for posterior urethroscopy. In spite of the absence of water dilatation, Dr. Doble has found that this instrument gives him a very satisfactory view of the posterior urethra. The commoner pathological conditions of both the anterior and the posterior urethra are described as tersely as possible, as are also the procedures best calculated to remedy them. Although anyone who reads Dr. Doble's book must agree with most of what he writes, some will wonder whether urethroscopic methods of treatment are as important or as successful in the cure of gonorrhoea as he would lead us to believe. However, even although these doubts may obtrude themselves on the attention of the reader, he will in the end be forced to admit that no one can pretend to treat gonorrhoea successfully unless he has made himself an expert in urethroscopy. Even if intraurethrosopic surgery be limited in its scope, there can be no doubt that the urethroscope, regarded solely as a means of deciding what measures shall be adopted, is a therapeutic weapon of the very greatest importance. To those who wish a complete, practical, and on the whole an unbiased explanation of the subject, we recommend his book.

#### GREEK BIOLOGY AND MEDICINE.

Dr. H. O. TAYLOR's pleasantly written book, *Greek Biology and Medicine*,<sup>4</sup> which forms the third volume in the American Library of *Our Debt to Greece and Rome*, though intended for laymen and not professing to compete with more elaborate works on this subject, will yet be read with advantage by most medical men. It shows how the scientific spirit of Greek biology and medicine still influences modern intellectual activity, and that it is the method rather than the substance of Greek science that constitutes our debt. In an interesting chapter entitled "The Hippocratics" the principles rather than the details of the Father of Medicine's practice are described, and it is said that ethically the most influential document in the history of medicine is the famous Hippocratic oath. The most notable hypotheses of the Hippocratics were the four humours, the natural origin of disease, and the *vis medicatrix naturae*. A certain amount of hypothesis entered into the Hippocratic art of healing, as it necessarily does into every art and science, but Hippocrates was sparing in hypotheses, as few men after him were, and always introduced them with extreme conscientiousness.

In the account of Aristotle's biology this greatest of Greek biologists, and almost the greatest of Greek philosophers, is described as not only a pioneer of natural science but as correlating the processes of nature with the *how* and the *why* of living things.

In the chapter on the progress in anatomy and medicine the Alexandrian school and the influence of Herophilus and of Erasistratus are sketched. This is followed by a critical and specially attractive account of the final development of Greek medicine and biology by Galen, whose work was a constructive synthesis amalgamating the Hippocratic and Aristotelian traditions with his own observations. In the final chapter the linkage with modern medicine is considered; the influence of Aristotle on Harvey is discussed, and it is seen how Sydenham turned away from the chemical and mechanical hypotheses of disease to follow the principle of independent observation set up by Hippocrates. Both in name and matter this book recalls the recent publications of Dr. Charles Singer, to whom Dr. Taylor makes full acknowledgement.

#### PNEUMOCOCCIC INFECTIONS.

*Les Pneumocoques et affections pneumococques*,<sup>5</sup> a monograph from the Pasteur Institute, Drs. COTONI, TRUCHE, and Mlle RAPHAËL give a comprehensive account of the pneumococcus, its bacteriology and serology, the infections it produces, and their specific treatment. The volume contains the results of much original work begun as long ago as 1908 under the supervision of Professor Maurice Nicolle, to whom this monograph is dedicated; but it contains also full references to the

<sup>4</sup> *Greek Biology and Medicine*. By Henry Osborn Taylor. *Our Debt to Greece and Rome*. Editors, G. D. Hadzits, Ph.D., and D. M. Robinson, Ph.D., LL.D. London, Ca'cutta, Sydney: George G. Harrap and Co., Ltd. 1923. (Cr. 8vo, pp. xv + 151. 5s. net.)

<sup>5</sup> *Pneumococci*. By Par L. Coton, C. Truche et Mlle A. Ra. Pasteur. Paris: Mas-on et Cie. 1922. temperature charts. Fr. 14.)



researches of other workers, such as Douchez, Avery, R. Cole, Theobald Smith, Washbourn, and F. S. Lister, and there is a useful bibliography with 270 entries. The relation of the enterococcus and the *Streptococcus mucosus capsulatus* to the pneumococcus group is discussed, and the groups of pneumococci are described, the classification made by Nicolle and Dubains being adopted. The preparation and properties of antipneumococcic serum are considered, and contrary to the views of the American workers the authors do not insist on the use of a typed serum, but prefer a serum possessing the most active powers against the pneumococcus. Intravenous injection is preferred to the hypodermic administration of the serum.

The crisis in pneumonia is fully dealt with, both from its clinical side and from the interesting point of view of its mechanism. The clinical features are thus correlated with the changes that are taking place in the blood. The exacerbation of the symptoms immediately before the crisis coincides with a maximum accumulation of pneumococcic poison, and in response to this emergency the body discharges into the blood lytic antibodies which attack the albuminous pneumococcic poisons, thus causing a secondary intoxication, so that the crisis is regarded as a phenomenon of hypersensitiveness. As a result of this anaphylactic reaction great vaso dilatation of the intestinal and peripheral vessels and fall of blood pressure, leucopenia sweating, diarrhoea, and polyuria follow. The return of chlorides to the urine may be explained by their previous fixation to the pneumococcic toxins. Although the presence of pneumococci in the blood makes the prognosis worse—and here it is noted how much more often blood cultures are positive in blacks than in whites—there is, it is held, no real pneumococcic septicaemia in these cases, for the pneumococci are merely on their way to set up potential metastases. The section on preventive vaccination contains many statistics from the war experience. This valuable monograph concludes with a short account of chemotherapy in which the danger that optochin may cause amblyopia is mentioned.

#### A FRENCH TEXTBOOK OF MEDICINE.

THE title of Dr. JOURNÉ's book, *Précis de Pathologie Médicale*,<sup>6</sup> is, for the English reader at any rate, doubly misleading. It suggests in the first place that the book is a small one, whereas in reality it contains over 1,200 closely printed pages, uninterrupted by either illustrations or diagrams; and in the second place it gives the impression that the book deals mainly with pathology, which it does not. It deals with medicine; it is a textbook of medicine, and would far more suitably be called so. In aim, outline, and general treatment it resembles the usual standard works, differing from them, however, in being rather more comprehensive in some ways—for example, in the inclusion of mental diseases—and rather less so in others, omitting for the most part the references to the history of disease, and spending less space on treatment. It contains an immense amount of information, mostly of a highly exact nature. It is true that some statements are rather dogmatic, such as those dealing with d'Herelle's bacteriophage, the pathology of cerebrospinal fever, and the therapeutic value of antitetanic serum; others are not sufficiently comprehensive, as in Dr. Journé's omission of Flexner's bacillus from the etiology of bacillary dysentery, and in the somewhat inexact account of the life history of *Bilharzia haematobium*. But, on the whole, there is very little to which exception can be taken. On some subjects it is remarkably good; functional diseases of the kidneys, Vidal's work on haemoclasia, colloidoclasia, hepatic insufficiency, herpes, and kindred conditions to which the French have recently been devoting themselves are well summarized.

The book has, in fact, a very distinct French stamp upon it, and it is partly for this reason that it is so attractive. To the post-graduate, to the aspirant to higher medical degrees, and to the young consulting physician, we would highly recommend it, and shall be surprised if its clear, terse sentences, its fascinating descriptions, and its wealth of information do not appeal to all who wish to step aside from the older and more weather-beaten volumes of their own country.

<sup>6</sup> *Précis de Pathologie Médicale*. By M. Journé. Paris: A. Maloine et Fils. 1923. (Imp. 16mo. pp. 1269. Fr. 25.)

#### CARRIERS.

ALTHOUGH there is considerable difference of opinion as to the importance of "carriers" in spreading disease, no one will deny the need for further inquiry and research in this work of transmission. In *Carriers in Infectious Diseases* Dr. HENRY J. NICHOLS renders great assistance in such an inquiry. He defines a carrier as an individual who harbours and transmits pathogenic parasites without showing the usual evidences of infection, and he classifies carriers as true carriers, where the parasites are pathogenic and virulent; pseudo-carriers, where they are non-pathogenic and non-virulent; and possible carriers, which include those cases in which the organisms are of uncertain significance. On the treatment of carriers Dr. Nichols has not much to say that is new. The chronic diphtheria carrier is the despair of the public health officer, especially where there are no facilities for obtaining a virulence test; patients are frequently kept in hospital or otherwise isolated for very many weeks because successive cultivations of material taken from throat or nose reveal the presence of diphtheria bacilli. When the throat is affected removal of the tonsils is recommended, but no definite advice is given with regard to nasal carriers. For the treatment of persistent typhoid or cholera carriers surgical interference is suggested, though it is known that it does not invariably meet with the success which might be expected. A plea is put forward for an organized search for carriers. Contacts with known cases of disease, as well as those persons known as food handlers, should, in the author's opinion, as a routine measure be subjected to examination which would include a search for diphtheria bacilli from the throat and nose, haemolytic streptococci from the tonsil, meningococci from the nasopharynx, pneumococci from the saliva, typhoid bacilli from the faeces and urine, and the organisms of cholera and dysentery from the faeces.

The value of the book is increased by the inclusion of a section on carriers in veterinary medicine by Captain R. A. Kelsor of the Veterinary Corps, U.S. Army. He divides animal carriers into three groups. The first includes carriers of organisms which are pathogenic for man as well as for the lower animals; the second deals with carriers of organisms which are pathogenic for lower animals and may possibly prove pathogenic for man under certain circumstances; and the third group includes carriers of organisms pathogenic for animals only.

Although no new ground has been opened by the authors of this volume they have succeeded in giving a clear exposition of the carrier question as it is known at present.

#### NOTES ON BOOKS.

WHEN the war broke out in 1914 the Division of Economics and History of the Carnegie Endowment for International Peace turned its attention to the economic problems of war. Incidental studies and surveys of portions of the field were made, but during hostilities it was, for obvious reasons, impossible to undertake the general history. By the summer of 1919, however, the Endowment was able to take up the plan for an economic and social history of the world war. One of the first steps was to set up an editorial board in each of the larger countries and nominate special editors in the smaller ones. After weighing various proposals a series of monographs was projected, consisting for the most part of unofficial yet authoritative statements, descriptive or historical, "about halfway between memoirs and blue books," besides these a number of studies by specialists are in preparation dealing with technical or limited subjects, historical or statistical. Among the British series of volumes already issued is the *Bibliographical Survey of Contemporary Sources*, compiled by Miss M. E. BULLOCK. This large and well produced book of 650 double columned pages is put forward as a tentative survey of British literature dealing with the economic and social history of the United Kingdom during the war and reconstruction periods. The list is primarily one of Government publications. In addition some thirty or forty periodicals (including the two principal

<sup>7</sup> *Carriers in Infectious Diseases: A Manual on the Importance of Pathology, Diagnosis, and Treatment of Human Carriers*. By Henry J. Nichols, M.D., M.A., Major Medical Corps, U.S. Army. With a section on Carriers in Veterinary Medicine, by R. A. Kelsor, D.V.M., Major Medical Corps, U.S. Army. Baltimore: Williams and Wilkins Co. 1922. (Med 8vo. pp. 181; 11 illus. 350 pages.)  
<sup>8</sup> *Bibliographical Survey of Contemporary Sources for the Economic and Social History of the War*. By M. E. Bullock, B.A., D.Litt. Clarendon Press: London and New York: Humphreys, Blot & Co. (Roy. 8vo. pp. xix + 658. Price not stated.)



medical journals) were consulted in order that important articles bearing upon the subject might be noted. Students of sociology and economics will no doubt find this compilation valuable for reference.

*The Principles and Practice of X-ray Technic for Diagnosis*<sup>9</sup> is the title of a book compiled by Dr. JOHN A. METZGER of Los Angeles, as a guide to students and operators in obtaining good x-ray results. There is a short chapter on apparatus, tubes, and the x-ray laboratory, but the main part of the book deals with the standardized positions for the radiography of the various parts of the human body. Each part is dealt with separately, and a photographic illustration shows the patient, tube, and plate in the position the author recommends as giving the best result. Then, after explanatory notes, a short paragraph gives the exact details of diaphragm, filter, distance, milliamperage, spark-gap, exposure, etc., with an interrupterless transformer and a Coolidge tube. It should, however, be noted that all the positions are equally applicable to the use of coil and gas tubes. The chapters on stereoscopy and localization are short and do not go much into detail. The Sweet-Brown method for the localization of foreign bodies in the eye is sufficiently described and illustrated. There is a useful chapter on dental and oral radiography in which again numerous illustrations add to the value of the text. The final chapter is on the developing room appliances and the technique of development, in which all the most important points are stated. There is not much, if anything, which is new in this book, but students of radiology and those who have not much experience or expert knowledge should find it useful.

Under the title of *Medizinisches Vademecum*<sup>10</sup> Miss B. LEWIS, who is a teacher of medical German in Vienna, has edited a series of handbooks in German and English, of which we have received volumes dealing respectively with *Otology*, *Rhino-Laryngology*, and *Ophthalmology*. Each book has first a number of clinical lectures by various Viennese authorities on the different subjects, then a number of anatomical illustrations, followed by verbatim reports of clinical examinations of patients and directions during operations, with lists of instruments, etc., printed in German and in English on facing pages. The volumes we have seen are calculated to be very useful to British medical practitioners who may desire to visit the special clinics in German-speaking countries, by giving them a large vocabulary of modern German medical terms.

The important book on *Orthopedic Surgery*, by Sir Robert Jones of Liverpool and Professor Robert W. Lovett of Harvard, reviewed in our columns last week (p. 634), has now been issued in London as an Oxford Medical Publication by Henry Frowde and Hodder and Stoughton, price 42s. net.

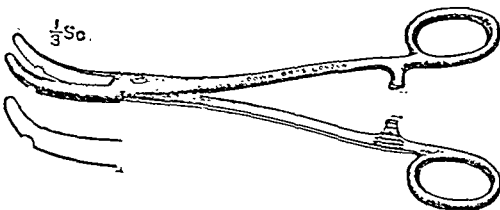
<sup>9</sup> *The Principles and Practice of X-ray Technic for Diagnosis*. By John A. Metzger, M.D. London: Henry Kimpton. 1922. (Roy. 8vo, pp. 141; 61 figures. 14s. net.)

<sup>10</sup> *Medizinisches Vademecum in deutscher und englischer Sprache*. Von B. Lewis. I. Für Ohrenärzte (pp. xiv + 205); II. Für Nasen- und Halsärzte (pp. viii + 215); III. Für Augenärzte (pp. viii + 247). London: H. K. Lewis and Co., Ltd.; Vienna: B. Lewis. 1922. (Med. 8vo, illustrated. 12s. 6d. each volume.)

## MEDICAL AND SURGICAL APPLIANCES.

### *Pedicle Forceps for Nephrectomy.*

MR. HENRY WADE, C.M.G., D.S.O. (Edinburgh), writes: The pedicle forceps for nephrectomy made for me by Messrs. Down Bros., Ltd., of London were designed to provide a powerful crushing



haemostat which could be conveniently applied to the blood vessels of the renal pedicle and simplify the subsequent ligation of them. The blades are powerful, broad, and serrated, and have on their convexity a notch which facilitates transfixing the pedicle without the risk of having haemorrhage from puncturing a vessel. The blades are curved, which renders easier the passage of the loop of the ligature over the point when it is being tightened. I have found them a convenient and useful instrument.

## HOSPITAL PROVISION FOR DISABLED WAR VETERANS.

### AN AMERICAN REPORT.

ON October 6th, 1917, Congress by Amendment to Public Act 193 of September 2nd, 1914, provided for the "hospitalization" of disabled veterans of the war into which the United States of America had recently entered. The amendment provided that the United States should furnish the injured person with

"such reasonable services and with and similar app useful and reasonably necessary." l, and hospital limbs, trusses, etermine to be

### *Congress and the Care of Ex-Service Men.*

In March, 1919, Public Act 326 authorized the Secretary of the Treasury to provide immediate additional hospital and sanatorium facilities for the care and treatment of certain persons employed at sea and in various Government services in addition to soldiers and sailors, thus augmenting the provision at the disposal of the United States Public Health Service. The method employed by Congress to meet this particular hospital problem was through lump-sum appropriations to the Public Health Service, providing for the maintenance of patients in existing institutions, and the maintenance of Public Health institutions themselves. Much of this expenditure was economically unsound because it provided expensive and unsatisfactory facilities of no permanent value. In June, 1920, the maintenance appropriation for the care of disabled men was transferred from the Public Health Service to the Bureau of War Risk Insurance, and thereby it became possible for the latter body to utilize other facilities for the maintenance of beds in addition to those of the Public Health Service. But these facilities were still inadequate, and on March 4th, 1921, Public Act 384 was passed "providing additional hospital facilities for patients of the Bureau of War Risk Insurance and of the Federal Board for Vocational Education, Division of Rehabilitation, and for other purposes."

### *Appointment of Expert Advisers.*

The duty of carrying out the provisions of this Act devolved on the new Secretary of the Treasury, the Hon. A. W. Mellon, who appointed a small advisory board of Consultants on Hospitalization; and it is from their report, which has just been issued,\* that we have summarized the early history of hospital provision for ex-service men in the United States.

The consultants appointed were Dr. William Charles White, formerly professor of neuro-pathology, and now medical director of the Tuberculosis League Hospital in Pittsburgh, Pa.; Dr. Frank Billings, dean of the faculty of Rush Medical College; Dr. John E. Bowman, Chancellor of the University of Pittsburgh; and Dr. Pearce Bailey, the neurologist, now deceased, who resigned after three months' service, and was succeeded by Dr. George H. Kirby, director of the New York Psychiatric Institute at Ward's Island, N.Y.

The consultants met for the first time on March 16th, 1921, obtained the assistance of an advisory committee under the chairmanship of Dr. T. W. Salmon (who represented the National Committee for Mental Hygiene), and proceeded to assemble data on which to build a Federal programme for "hospitalization." For this purpose an enormous amount of evidence appears to have been taken, and analyses were made of data concerning population, number of draftees, physical examinations by the army authorities, number of patients in the hospitals, prospective number to be hospitalized, their distribution by district, sex, colour and nationality, available facilities for treatment, percentages of empty beds, railroad facilities, climate, distribution of population, and so forth.

### *Problems before the Consultants Board.*

The first great difficulty met with by the Board of Consultants was the division of authority in dealing with the veterans, and they felt that a centralization of authority would materially assist in establishing a "broad Federal hospital program." Three different bureaux of the Government dealt with the care of the veteran—the Bureau of War Risk Insurance, the Public Health Service, and the Federal

\* Report of the Consultants on Hospitalization appointed by the Secretary of the Treasury. Washington: Government Printing Office. 1923. Pp. 112.



Board for Vocational Education—together with a large number of accessory organizations and private institutions.

Recognizing the desirability of a centralization of authority and decentralization in districts, the consultants submitted their views to the Secretary of the Treasury, who adopted their proposals to the extent of transferring to the Bureau of War Risk Insurance those functions of the United States Public Health Service which had to do with the care of ex-service men, and could be legally transferred.

In analysing the data for the purpose of establishing fundamental principles the consultants were faced by several secondary problems. Thus they found that there were large numbers of men in hospitals whose final recovery would be attained more quickly outside institutions. This was especially the case with psychoneurotics of the neurasthenic type, to the majority of whom hospital treatment was probably detrimental. The opinion of the consultants was that these patients should receive treatment in out-patient clinics, having a uniform policy of treatment under central control, the staffs being under divisional directors, and these directors under supervision from the central office at Washington. They pointed out also that patients should be made to realize that psychoneurosis is not a permanent disability, and that therefore permanent compensation was not to be granted.

Then the consultants found that the liberal provision by the Government for the care of ex-service men had led to a more pronounced influx into hospital during a period of great depression in trade than would otherwise have happened. Further difficulties arose in connexion with the personnel of the hospitals. In general, the consultants found that the civil institutions were much more economical in their administration than the Government institutions. They noted also the absurdity of trying to standardize personnel in institutions differing so widely in the requirements of the patients as a tuberculosis sanatorium and a surgical hospital; and they could see no reason in the demand of the Veterans' Bureau that all personnel should be housed on the property of the hospital. The consultants deprecated the tendency in Government institutions to centralize in the matter of special medical services, and to refuse the assistance of expert consulting advice from civil teaching institutions. In questions such as these the consultants found great difficulty because of the variation of expert opinion; but they felt that "in fields of human activity where positive knowledge is not available no standard could be set, and any attempt to standardize human organization could only meet with failure."

#### Standard Hospital Buildings.

The only field in which standardization was accomplished was in hospital planning; and to the Report is appended a series of ground plans and views of hospitals erected in various parts of the United States. Standardization was one of the chief means of securing the rapid construction of these institutions. Difficulties with regard to the negro population were met by the location of an institution in a centre of negro education, conducted under negro leadership.

In considering the future economic use of the institutions to be erected, the Board of Consultants had the experience and co-operation of the National Home for Disabled Volunteer Soldiers. This body deals with the domiciliary care of chronic cases which remain from the Civil War—ex-service men for whom medical care is not the most important factor. Bearing in mind that many such cases will exist in the future, the consultants advised that such institutions for hospitalization as that at Chelsea, N.Y., should in time develop into homes for disabled ex-service men.

Notwithstanding the cumbersome nature of the machinery for co-operation between State and Federal Government, a beginning was made in hospital construction within five weeks of the appointment of the consultants, and in a little over three months plans were ready for 2,500 beds at a cost of 5,285,000 dollars, the consultants advising on the location and type of the hospitals which were to be erected. At this point, however, delays occurred owing to the establishment of the United States Veterans' Bureau and to changes in administration. The Veterans' Bureau was established in August, 1921, and in November a Federal Board of Hospitalization was instituted. Very early there seems to have been some disagreement between the Veterans' Board and the Treasury with regard to the use of surplus supplies for the equipment of the new hospitals. But allotments were finally made in May, 1922.

#### Supply and Demand.

It appears that the consultants were originally faced with an estimated need for 20,000 beds—4,000 for general medical and surgical cases, 8,000 for tuberculous cases, and 8,000 for neuro-psychiatric cases. It was found that no increased provision of beds was necessary in the general medical and surgical group, and that by October, 1922, the demand for beds for tuberculous cases would be satisfied. The only need remaining after that date was 1,800 new beds for neuro-psychiatric cases. The consultants call attention to the fact that a great deal of money was spent during the war for temporary hospitals which had to be abandoned. If the Government had had a Federal plan for its hospital work much that was wasted could have been preserved as permanent institutions to meet the present situation.

The consultants note the interesting fact that New York State and Pennsylvania, the two most populous districts in the country, were the most poorly equipped in Government facilities; but, as the wealthiest states in the Union, they had the best hospital facilities for their civil population. Therefore the provision of additional facilities in their case was left to the last. In connexion with Chelsea, N.Y., it is pointed out that, although sentiment for ex-service men ran high, when any suggestion was made for the erection of a hospital for the tuberculous, local sentiment was largely for any district other than that chosen by the investigators!

As each project was completed it was transferred to the United States Veterans' Bureau for occupancy by patients. An inspection by members of the Consultants' Board led to the conclusion that there is nothing better in the United States for the special care of disabled veterans suffering from tuberculosis and nervous and mental diseases than the institutions which have been provided under Public Act 381. The total expenses of the consultants, with their advisory committee and other experts, exclusive of clerical and office expenses, was 16,000 dollars for two years' work.

#### A Federal Hospital Programme.

The Report of the consultants is prefaced by a series of recommendations for a future programme of Federal hospitalization. It is advised that the subject should be one for continuous study in some Government office in which records should be kept of all hospitals throughout the States, and from which advice should be given with regard to the location, expansion, and equipment of hospitals. The standards for construction, equipment, and personnel should be changed from time to time as knowledge grows and conditions alter. The future economic use of the hospitals when they can no longer be utilized for the purpose for which they were built should be a matter of constant study.

The three purposes suggested by the consultants for hospitals when no longer needed for war veterans are: (a) transfer to the National Home for Disabled Volunteer Soldiers to be used for domiciliary care; (b) transfer to the United States Public Health Service for marine hospital bases; (c) the sale or transfer to the States in which they are located as part of their health and welfare equipment. It is advised, finally, that some plan of co-operation between the Federal Government and the States should be evolved so that the Federal authorities may guide and assist in making hospital practice uniform over the whole country.

THE French Association for the Study of Cancer will hold a congress at Strasbourg on July 23rd and 24th, when the following subjects will be discussed: (1) Experimental production of cancer, introduced by Drs. Bordet of Strasbourg, Fibiger of Copenhagen, Ichikawa of Sapporo (Japan), Pintimalli of Naples, and Murray (Director of the Imperial Cancer Research Fund, London). (2) Local and general reactions of the organism to cancer, introduced by Dr. Rubens-Duval of Paris and Woglom of the Crocker Institute of Cancer Research, New York. (3) Treatment by radium and x rays of epithelioma of the skin and buccal cavity, introduced by Dr. Bayet, Director of the Radium Institute at Brussels, and Dr. Regaud, Director of the Biological Laboratory of the Radium Institute of the University of Paris. The Congress will consist of (1) members (medical practitioners) who will pay a subscription of 60 francs, and (2) associates (medical students, and others interested in cancer, who will pay a subscription of 40 francs. Associates will be entitled to all the privileges of the Congress except the publication. The official languages will be French and English. The list of the papers intended to be read should be sent to the general secretary, Dr. G. Roussay, 21, Rue de l'Ecole de Médecine, Paris, before May 1st.



# British Medical Journal.

SATURDAY, APRIL 21st, 1923.

## MAN'S POSTURE: ITS EVOLUTION AND DISORDERS.

THE course of evolution has at times undergone, as the result of some apparently simple and trifling event, a change of the utmost importance and consequence—a change associated with the sudden opening up of new channels along which the current has flowed with almost torrential violence. Such a change ensued on the adoption of the erect posture, for is it not safe to say that everything which makes us what we are was only then made possible of acquirement?

Ever since the theory of evolution in its modern form was accepted, the adaptation of the human body to the erect posture has been a favourite study with anatomists, and a large number of interesting data, particularly in connexion with the bones, ligaments, and muscles of the body, have been recorded. Until recently, however, all attempts to explain them have been made in the main, if not entirely, on purely mechanical grounds. The discovery of hormones and the demonstration of their influence on growth has thrown a new light on the problem and has led to an extension of interest from the bones and ligaments to the viscera and the nervous system. A stage had been reached when it had become highly desirable that someone should collate the various contributions to scientific literature on the subject during the last century or so, and present the case in a clear, concise, and comprehensive form. Fortunately this has now been done, and by a man of science than whom none is more competent to deal with it. Sir Arthur Keith, whose course of lectures on the evolution of man's posture and the derangements with which it may be associated is concluded in our issue of this week, has not merely made a special study of the Primates, but has kept, as is his invariable custom, in close touch with the physiological and pathological aspects of the subject. No better instance of the happy conjunction of the man and the problem could well be imagined.

While he has treated the subject in a characteristically broad morphological manner, the morphology is deftly interwoven with practical suggestions of the greatest importance, so that it is in no sense academic or obtrusive but yet sufficiently in evidence to prove that it can provide the key to those problems of physiological anatomy on the correct solution of which the scientific practice of preventive and curative medicine alike depends. A knowledge, for example, of the evolution of the foot and of the perineal region can furnish the only safe lines along which to work in preventing or curing derangements of these parts.

It was inevitable that the change from the pronograde to the orthograde position should be associated with considerable disabilities, for the change affected practically every structure in the body to a greater or less degree, and it could scarcely be expected that all would be able to adapt themselves with complete efficiency to the new conditions. As a matter of fact, save in the abdominal region, Nature has been singularly successful in the compensatory measures she has adopted. Nothing, for instance, is more striking than the "simultaneous and harmonious adaptational" contrivances whereby equilibrium is secured or the respiratory act changed from a pronograde to an orthograde type. So delicate and so perfect is the adaptation that there will, we believe, be full agreement with Sir Arthur Keith when he says,

"we must postulate a much more elaborate mechanism controlling developmental processes than any we have knowledge of as yet." What the mechanism is we are left to conjecture, but that it exerts its effect largely through hormones is believed to be more than probable.

In the face of such success in other parts of the body it becomes interesting to inquire why there should be comparatively so signal a failure in the region of the abdomen. The failures here may be classified into those associated with weakness of the pelvic floor, and those connected with the various types of hernia and visceroptosis. As to the first it must be remarked that, whereas the floor is the highest part of the abdominal cavity in the standing pronograde animal, it is the lowest in the standing orthograde animal; in the former animals, again, the root of the tail is depressed and thus acts as a shutter supporting the perineum in any movement associated with an increase in the intra-abdominal pressure; in them, too, the vaginal orifice is a mere chink and is situated posteriorly where the support of the root of the tail is available. The comparative failure to provide an adequately strong pelvic floor in man would appear, therefore, to be due to the existence of several adverse influences. The liability to hernia in the region of the groin is no doubt in part due to defective parietal defences consequent on changes in the shape of the ilium and in the attachment of the oblique muscles of the abdominal wall, but there is probably another factor to be considered—namely, that of visceroptosis, a condition believed to be due to a disturbance of the reflex postural mechanism dependent on sensory fibres from the viscera and motor fibres to the parietal muscles. This mechanism may be in turn controlled by a hormone and be peculiarly susceptible to influences arising from errors of diet.

Perhaps the chief impression we receive from this valuable course of lectures is how very far growth is from being the simple process which it was aforotime thought to be. It is now seen that there is the closest and most intimate relation between the growth of adjacent structures. It appears, indeed, that, in certain parts of the body at any rate, growth affects collections of tissues rather than individual structures. Nor is the subject rendered more simple by the postulation of the influence of hormones, for these after all can only be imagined to act in the manner of a chemical stimulus. The source of the original impulse is still to seek, and must be found in the nervous system or inherent in the actual cells concerned. Although this must be the case the study of the action of hormones is of the greatest practical interest, for their experimental use in stimulating or holding in check the processes of growth is not beyond the range of possibility.

We commend these lectures to our readers with the greatest confidence as furnishing them with guiding principles and stimulating suggestions; the subject is peculiarly obscure, but obviously it has important practical bearings, not only for the surgeon but also for the medical profession at large, and to some extent also for the educationist. In congratulating Sir Arthur Keith on bringing to a satisfactory termination work on which he has been engaged during so many years we would take the opportunity of congratulating him no less heartily on his complete restoration to health.

## THE MEDICAL SERVICE OF KENYA COLONY.

THE health services in the various colonies and dependencies of the Crown, and more especially those in tropical areas, are obviously key services—that is to say, their maintenance upon an adequate basis is an essential condition of economic stability and development—and



any threat to their efficiency is matter for grave concern, not to the individual service or to the medical profession only, but to all who have the welfare of the colonies at heart. That the efficiency of the service depends ultimately upon the class of candidate attracted by the conditions offered is equally true. This is a sufficiently trite text, but unfortunately there are not lacking indications that the sermon is urgently needed. Of these indications the latest comes from Kenya Colony.

The essential facts of the case seem to be as follows. During the last two years the Colonial Government has been contending with conditions of the utmost difficulty and danger. On the one hand, post-war economic problems have been complicated by failure of the rains and consequent famine, and also by peculiar currency difficulties; on the other, development has been hampered by racial animosity and suspicion in the most acute form. Early last year the Colonial Office indicated that a reduction of 50 per cent. in the current estimates was essential to the stability of the colony, and the Bowring Committee of the Legislative Council was appointed to explore the possibilities in this direction. Its recommendations included the abolition of the local allowance to European Government servants, and a reduction in the estimates of the Medical Department of £50,000. The reduction of the local allowance was discussed in detail in a Current Note in the SUPPLEMENT to the BRITISH MEDICAL JOURNAL of June 24th, 1922, and is not for the moment in question, but it may be remarked in passing that the recommendation has not been accepted without modification, and an allowance of 15 per cent. in place of the original 50 per cent. has been conceded for the current year.

The proposals for retrenchment in the Medical Department comprise, according to a statement in the House of Commons by the Under Secretary of State for the Colonies, "the abolition of one post of senior medical officer, eight of medical officers, one of dental surgeon, and a number of other appointments." They "have been framed so as to affect as little as possible the principal centres of population, and they concern mainly the minor stations and those out-stations where other facilities exist or may be made available for medical attention. They have been closely examined by the late and the present Governor, and although the reductions have been effected with great reluctance, the Principal Medical Officer is satisfied that efficiency can be maintained." This statement is worth careful consideration. It discloses a position affecting the welfare of the colony, the interests of existing members of the medical service, and the general conditions of service in the Colonial Medical Services.

In the first place, then, we learn that the efficiency of the service is to be maintained, notwithstanding a reorganization involving not only the abolition of ten medical appointments (the Government dental surgeon is a fully qualified member of the medical staff), but a reduction of ten in the total personnel of the service. To maintain efficiency in face of a reduction of over 30 per cent. in a department not generally considered to be overstaffed would seem to be a surprising enough achievement. When it is further indicated that the localities concerned are the minor centres of population and out-stations, and that alternative facilities for medical attention may be available in these localities, we are even more mystified. Minor centres are not usually those where medical facilities abound. We fear that the explanation of the matter must be sought in a recent enactment (Ordinance 3 of 1922) empowering the Principal Medical Officer to license (for the purposes of private practice in the colony) assistant surgeons and hospital assistants who have completed their term of Government service. These persons, it must be

explained, are not fully qualified practitioners, although they have undergone a course of medical training and held subordinate positions in the service of the colony. The Dominions Committee of the British Medical Association warmly endorsed the protest entered at the time by the local Branches against this introduction of unqualified practice, regulated and licensed by a single Government officer, in place of the Medical Board charged with registration under the Medical Ordinances of 1910. If these are the "other facilities" referred to they can hardly be taken as the equivalent of the facilities withdrawn by abolishing a substantial proportion of the posts held by fully qualified medical practitioners.

Passing from the general aspect of the matter to its effect upon the medical service itself, we find the position equally unsatisfactory. Some at least of the officers affected are known to be men with a considerable period of service to their credit, but not yet entitled to retire on pension. Such medical officers had every reason to suppose that the service offered them security of tenure, and presumably entered into financial and other commitments accordingly. The Dominions Committee of the Association has been informed that they will receive a pension equivalent to that permissible in the event of retirement on medical certificate, and no other compensation. In view of the fact that the current Colonial List shows some twenty-three temporary medical officers in the several East African colonies, it is not, perhaps, too much to hope that the Secretary of State may find it possible to offer them alternative employment in lieu of such compulsory and inadequately compensated retirement. The prerogative of the Crown to determine the employment of a Government servant is of course beyond dispute, but it is not the least disquieting factor in the situation that the Colonial Office has sought to justify the present policy by the argument that the existence of this prerogative precludes the assumption that the appointments in question are permanent. Prospective candidates for the services will therefore be well advised to obtain an official interpretation of the statement in the current Colonial Office memorandum on colonial medical appointments to the effect that such appointments in the East African Colonies are, after a probationary period of two years, "made permanent" if service has been satisfactory. Security of tenure has in the past been reckoned not the least among the attractions of the colonial services, and its withdrawal must affect the quality of the candidates coming forward in the future. The precedent now established may prove detrimental to the Colonial Medical Services as a whole, and not merely to those in Kenya Colony.

The case of the dental surgeon may be mentioned as an illustration of the nature and probable effects of the present retrenchment. The post was created in 1913, and since 1915 dental service has been guaranteed to members of the East African Civil Service under the Code. In that year a Colonial Office subcommittee on dental facilities in tropical Africa recommended the confirmation of the appointment to the medical officer then holding it, and declared that only a very grave emergency could be held to justify taking the Government dental surgeon away from the work properly attached to the appointment and employing him on medical or other work not so attached. Such an emergency did, in fact, arise in the course of the war, and it was not till 1918 that this officer resumed dental work. In 1922, in spite of the prevailing financial stringency, the estimates provided for the extension of the work by the appointment of an assistant dental surgeon and two dental mechanics, but the Legislature refused to vote the money, and accordingly the dental surgeon



has in the interval dealt single-handed with a volume of work which would occupy the time of a staff of four.

It is to be feared—in fact experience dearly bought in similar circumstances elsewhere leaves no doubt—that an attempt to maintain the efficiency of the Kenya Medical Service under the conditions we have described must end in failure, with injurious results to the public health and economic development of the colony. It has been alleged on good authority that official neglect of the public health of the colony must tend to aggravate the political unrest at present existing, and the suggestion is not so far-fetched as at first sight it may seem. We have no detailed information as to the public health conditions in Kenya, but they are known to be primitive, as is inevitable in a new country with a new and changing population. Squalor and disease do not tend to produce a contented people, and a low standard of health saps enterprise. The relation between efficient public health administration and economic progress is direct, and is recognized by statesmen and legislators in this country. We can therefore well believe that the organization of a properly equipped and fully staffed Public Health Department in Kenya would go far towards solving the municipal tangle which persons well acquainted with the circumstances consider to be in part responsible for the racial question which is the cause of much embittered feeling not only in East Africa but in India.

### THE BUDGET.

MR. BALDWIN'S speech on Monday marks another milestone on the road from war finance back to the less disturbed and less sensational conditions usually associated with peace. That we have not yet reached that goal is sufficiently indicated by the inclusion in the estimated revenue for 1923-24 of £40,000,000 from miscellaneous special receipts, and £12,000,000 anticipated from the excess profits duty; the expenditure side of the statement shows an estimate of £73,655,000 for the Ministry of Pensions, a reduction of £16,336,000 on the corresponding estimate for 1922-23, but nevertheless a figure which shows very clearly how acutely Budgets for years to come will be affected by changes arising out of the war, even apart from payment of interest on the war debt.

The magnitude of the realized surplus for 1922-23 has been a surprise. Although Sir Robert Horne suspended the operation of the Sinking Fund in order to relieve the country by reducing taxation, yet, in fact, there was a realized surplus of £101,516,000, which, added to other sums included under the head of expenditure in the original estimate, has enabled the Treasury to issue out of revenue for repayment of debt the huge total of £126,227,000 in a single year. This result is to be attributed to several factors, but the outstanding features of the statement are, first, that income tax (including super tax) produced £50,000,000 more than had been anticipated, and thereby made good the balance of deficiency that would have been incurred on the other items of revenue; and secondly, that the expenditure was £91,404,000 less than the estimate. The existence of such wide variations is a matter for some regret, since the annual Budget debate is one of the few occasions on which Parliament, as a whole, takes an active part in government and exerts real influence not only on national policy but on its detailed development and administration. The departmental estimates form the foundation for the Government proposals and subsequently for the criticisms of the Opposition, and unless the margin of error in the estimates can be narrowed the most vital of all parliamentary proceedings must start from false premisses. Where, as in the

present instance, the actual result is more creditable to the taxpayer and more helpful to the future generation than that which had been anticipated, the pride of the occasion is apt to put a gloss over the danger inherent in unfulfilled expectations, and a word of warning is the more desirable.

Having made this point, however, we hasten to admit that last year was a peculiarly difficult one. The heavy arrears of income tax outstanding at its beginning were likely or unlikely to be received by the Exchequer according to the extent to which industry generally pursued an upward course or remained in the trough of the trade depression; and, in fact, the income tax surplus seems to have accrued largely owing to the slight but general improvement in industrial conditions, which led to the clearing off of outstanding claims to a greater extent than the Treasury felt able to anticipate. On the expenditure side a factor of the utmost importance is the continuance of a high general price level. Departmental estimates for any particular year have to be prepared, discussed, and revised before the close of the previous year, and it is obvious that some price level has to be assumed for the purpose. If the following twelve months witness a general fall, it is clear that an automatic saving on the estimate should result. For this reason it is essential that constant care and supervision should be exercised, and unremitting pressure brought to bear on the departments to ensure that these savings should not be dissipated in performing the duty provided for in a manner different from, even if more effective than, that contemplated in the original estimate. In other words, if the work was expected to cost £1,000 and it is found that it can be done in the way desired for £850, then only that sum should be spent on it. Mr. Baldwin seems to be fully alive to this aspect of the question, and his omission to provide any special margin for Supplementary Estimates was avowedly intended to bring pressure on departments finding it necessary to put them forward to provide for them out of savings elsewhere.

The outstanding feature of the estimated expenditure for 1923-24 is the inclusion of £40,000,000 Sinking Fund for repayment of debt, coupled with an undertaking to increase that provision for the two following years. The wisdom of this step is contested in some quarters, but where the natural bias of mankind is in favour of postponement in such a case as this, the contention that we may reasonably leave the immediate future to take care of itself needs to be buttressed by stronger arguments than we have yet seen. It is impossible to dogmatize on the point, so many tendencies and probabilities enter into the problem, but Mr. Baldwin's action has the merit of courage and deserves to find its justification in success. The measure of the courage required can be found in the fact that the £40,000,000 allocated to Sinking Fund—as against nothing last year—is a greater sum than the surplus of £36,000,000 left, on the basis of present taxation, to be distributed in reduction of the taxpayers' burden. The details of this reduction are set out in our Parliamentary Notes. The sixpenny reduction in the standard rate of income tax is undoubtedly sound, and though there may be some legitimate disappointment in the continuance of the existing sugar duty and also as to the proportions in which the fall in the retail price of beer is to be divided between the brewer and the Exchequer, the relief to the "indirect" taxpayer seems to have been reasonably apportioned. The minor alterations in the postal and telephone rates are welcome, not only in themselves, but as tending to remove a cause of irritation. It is noteworthy that the long-continued protests against the Corporations Profits Tax—a fairly new but by now almost friendless impost—proved successful to the extent



of having obtained a reduction in the future, though the yield for 1923-24 is not expected to be affected thereby.

There remains the question of a tax on betting, which is to be the subject of inquiry by a Select Committee. Judgement must be suspended for the present, until some solution of the problem of administering such a tax is put forward. On theoretical grounds it would certainly seem that a man making a bet can afford to pay a tax as well as another who may prefer to take his pleasure or excitement in attending a taxed entertainment.

Mr. Baldwin's first Budget appears to be sound and reasonable; it strikes us as typically British in its mixture of shrewdness, foresight, and determination, and as one with which its author may be well content.

#### OCTOCENTENARY OF ST. BARTHOLOMEW'S HOSPITAL.

THE celebration of the eight hundredth anniversary of the foundation of St. Bartholomew's Hospital will be held on Tuesday, June 5th, and will be continued on the following days. It will begin, as is fitting, with a service in the Priory Church of St. Bartholomew the Great at 10.30 in the morning. An hour later a pageant will be held within the gates of the hospital. The pageant will consist of five processions—the first one formed by Augustinian canons chanting the ancient hymn used at the foundation of an Augustinian Priory, for it must be remembered that the hospital was under the rule of this religious order for the first four hundred years of its existence. The second procession will illustrate the return of Rahere—the founder of the hospital—from his pilgrimage to Rome. The third procession will show King Henry VIII giving the charter for the refounding of the hospital to the Lord Mayor and citizens of London, and Mr. Arthur Bouchier has promised to enact the part of the King. The fourth procession will show a detachment of the R.A.M.C. with an ambulance such as was used in the great war. The final procession will be formed by H.R.H. the Prince of Wales, accompanied by the treasurer, the chief officers, the medical, surgical, and nursing staffs of the hospital. The processions being ended there will be a luncheon for the delegates and others at the invitation of the Lord Mayor. In the afternoon the Prince of Wales, as president of the hospital, will receive congratulatory addresses in the Guildhall, the addresses being presented by the delegates nominated by the English-speaking universities and colleges. Later in the afternoon a series of tableaux will be shown in the Great Hall of the hospital. The tableaux, illustrating various picturesque events in the long history of the hospital, will be produced by a committee of Royal Academicians under the presidency of Sir Aston Webb, and Sir Alexander Mackenzie, Mus.Doc., will provide appropriate music. There will be a conversation in the evening, when the hospital square will be illuminated. A memorial volume containing a short but well illustrated account of the hospital, past, present, and future, has been prepared. A medal has also been struck from the design made by Mr. Charles L. Hartwell, A.R.A., and it is intended that each delegate shall receive a copy of the book and a medal. The Students' Union of the hospital will reproduce Bartholomew Fair as it was in the time of King Henry VIII. Booths will be erected at which various goods will be on sale, and there will be a charge for admission. The old English sports of quarter-staff, wrestling, tumbling, and acrobatic performances will be shown. A souvenir programme will be sold at the fair. It is illustrated and will contain a short history of the hospital. It is hoped that it may contain contributions from the pen of the Poet Laureate—a former member of the staff of the hospital—and from that of Mr. Rudyard Kipling. There will also be exhibitions of the charters, portraits, prints, books, and surgical instruments which are more especially connected with the history of the hospital. The celebration will continue over the next two or three days of the week, and will be brought to a conclusion by an especial meeting of the Rahere Lodge of Freemasons to

be held in Freemasons' Hall on Friday, June 8th. It is a remarkable testimony to the liberality of the citizens of London and of the Governors that no part of the expense of the celebrations will fall upon the hospital, for the whole cost has been guaranteed.

#### PROPOSED INTERNATIONAL ASSOCIATION OF BRAIN WORKERS.

SOME three years ago M. Henri de Jouvenel, one of the French Delegates to the League of Nations, succeeded in establishing in France a *Confédération des travailleurs intellectuels*. This was the first national association of brain workers and now has 150,000 members; similar associations have been formed in eight other countries. A meeting of representatives of these associations was held recently at the Sorbonne, the headquarters of the University of Paris, with the countenance of the French Government and under the honorary presidency of M. Léon Bourgeois, one of the most universally respected of French statesmen. It was attended also by "observers" from nine other countries. Among the "observers" present were persons nominated by the several British societies, among others the British Medical Association, which was represented by Dr. Gustave Monod. The meeting first of all received communications with regard to the position in the various countries, and after a brief discussion it was decided to found a *Confédération internationale des travailleurs intellectuels*—that is to say, an international association of brain workers. A committee was appointed, consisting of two delegates from each of the eight countries having an organized confederation, and an "observer" from each of the other countries represented; the latter having only consultative privileges. This committee was instructed to take steps to invite those countries which had not already done so to establish associations of brain workers and to draw up a constitution for the international association; the draft is to be submitted to the national organizations and afterwards considered at a meeting to be held in Paris before the end of this year. Dr. Monod informs us that medical societies in France are beginning to join the French confederation. The Association Générale des Médecins de France joined a short time ago, and on April 11th the members of the Therapeutic Society of Paris, a purely scientific body, unanimously resolved to join also. Among the objects the organization has in view is the prolongation to eighty years of the period during which the author has a property in artistic and literary creations, and to extend this principle to scientific workers. With this object it will seek to bring into existence an international code governing the right in intellectual property.

#### INSULIN FOR SALE.

THE announcement made by the Medical Research Council in the memorandum published this week (p. 695), that the quantity of insulin now being made in this country is sufficient to warrant its sale to medical men and hospitals, will be received with interest by the profession, which has been anxious to try the new remedy, and with high hopes by sufferers from diabetes mellitus who have read of the remarkable effects it can produce. The sale is not to be entirely unrestricted, but the conditions proposed by the Ministry of Health are not unreasonable, and are probably necessary at the present stage. The supply of insulin is still limited; moreover, it is a potent agent, and the risks that may attend its administration must be borne in mind. Given to suitable cases of diabetes mellitus and in appropriate doses, its effects upon the sugar in the blood and its excretion in the urine are remarkable, and when given in diabetic coma, at any rate at its onset, highly dramatic. But if imprudently used in diabetes or given to inappropriate patients dangerous symptoms may rapidly be induced. The note prepared under the direction of the Medical Research Council and issued with the remedy by both of the manufacturers and firms which are at present able to supply it states that "while the use of insulin is unnecessary, and therefore not desirable, in the milder cases of true diabetes mellitus, it is



definitely dangerous in cases of the so-called renal glycosuria or diabetes innocens, in which the condition is not due to defective use of carbohydrate, but to failure of the kidney to hold back the normal proportion of glucose in the blood, so that the patient is already in a condition of persistent hypoglycaemia. By still further reducing the blood sugar, insulin will aggravate this condition, and the patient will be abnormally liable to the unpleasant and alarming symptoms ordinarily associated with excessive dosage of insulin," as described in detail in our columns on January 6th (p. 11). The danger of giving too large a dose or administering it not in due relation to the diet is also pointed out in the note, which should be studied along with the papers by Macleod, Banting, and his colleagues, published recently in the *JOURNAL*. Great credit is due to the British firms for the enterprise and skill which have enabled them to produce insulin on a commercial scale within a space of time which, considering the difficulties that had to be overcome, is remarkably short—some three or four months. Not only have they accomplished this, but, acting on the results obtained at the National Research Institute under the direction of Dr. H. H. Dale, they have succeeded in preparing a concentrated solution so that the dose is small—much smaller than at first seemed possible. The excellence of the result, and the rapidity with which it has been attained, afford a good example of what can be achieved by the skilled workers in a commercial laboratory who are inspired and directed by research of the highest and most accomplished order.

#### THE ROCKEFELLER BUILDINGS AT UNIVERSITY COLLEGE, LONDON.

THE visit of the King and Queen to University College and its Medical School to lay the foundation stones of the new obstetrical hospital and the new nurses' home will be paid on Thursday, May 31st, at 3.15 p.m. These two buildings are in Huntley Street, whose northern end is already occupied by one side of the medical school buildings which front the side of the hospital in University Street. Their Majesties will also formally open the new Anatomy Institute of University College, recently erected in Gower Street immediately south of the College quadrangle and west of the Physiological Institute, which also has been enlarged. It was announced nearly two years ago that the Rockefeller Foundation had arranged to give sums amounting together to £1,205,000 to University College and University College Medical School with the aim of forming in London an ideal medical school equipped in all departments on the most modern lines. Of the total amount given to the College the sum of £370,000 was for an Institute of Anatomy and for additions to the staff of that department and certain others. The cost of the site, building, equipment, and library of the Institute of Anatomy was estimated to be £190,000, leaving a capital sum for maintenance of £180,000, calculated to provide £5,000 a year for additional staff in the Anatomy department, £2,500 in the Physiology department, and £1,500 in other departments. University College Hospital fills an island site, so that it is not susceptible of enlargement. The number of beds at the disposal of the Directors of the Clinical Units recently established was considered to be too small and it was not found possible to make proper provision for obstetrics. It was decided, therefore, to take over the space in the nurses' wing and to build a new nurses' home and a new obstetrical hospital. The Rockefeller Foundation arranged to give £400,000 to University College Hospital and Medical School for building and reconstruction and £435,000 for maintenance. The income of this endowment fund is to be used for the furtherance of medical education and research in the Medical School, but a sum not exceeding £16,000 a year is to be applied to the upkeep of the 120 beds allocated to the purposes of the Medical and Surgical Units until such time as money can be otherwise raised, when the income of the endowment will be restored to its original purpose of helping medical education and research. The new buildings for the Obstetrical department it is estimated will cost £110,000, and will provide sixty beds; the

responsibility for their maintenance will fall on the corporation of the hospital, which will have to increase its present income by some £15,000 to £20,000 a year.

#### THE LEGAL PERIOD OF GESTATION.

At a meeting of the Medico-Legal Society on April 17th Dr. T. W. Eden spoke on the medico-legal aspects of the duration of pregnancy. The old obstetricians, he said, had very definite opinions as to the normal length of pregnancy, and paid small regard to the difficulties of the subject; in the Gardner peerage case in 1816 one of the medical witnesses laid it down that forty weeks from conception was the extreme period to which pregnancy could be prolonged. It was English law at present that points of physical resemblance did not constitute evidence which could be received in court. Possibly at some future time reliance might be placed on evidence as to certain reactions of the blood, based on the fact that the characteristics of blood-grouping were transmitted on Mendelian principles. Meanwhile, in legitimacy cases it was necessary to fall back on calculations as to the period of pregnancy. To determine the normal duration of pregnancy was a complex problem, and did not admit of an exact solution. Pregnancy commenced in profound obscurity, and its termination with the birth of the child was frequently not at the end of the normal period, whatever that might be. The difficulty of arriving at the date of fertilization was that, although there might be reasonable certainty that the spermatozoa were in the genital tract, there were no means of ascertaining at what time the egg cell was there to meet them. In cows and mares the variation in either direction from the mean of a number of carefully observed gestations was, in both species, 12.5 per cent. The normal duration of human pregnancy, although variable, was not variable to the same extent as in animals. There were two starting-points for the calculation of pregnancy—namely, the date of intercourse, and the date of the last menstruation. Fertilization was most likely to occur during the week following the menstrual period, but there were opportunities for fertilization at any point in the menstrual cycle, which made this method of calculation very difficult. Some women, moreover, continued to menstruate for two or three months after conception, though many of the instances in which this was alleged to have occurred were not really cases of menstruation at all, but of bleeding from some pathological cause. A number of estimations based on the last menstrual period showed that 15 per cent. of the pregnancies went on to the 39th week, 24 per cent. to the 40th week, and 22 per cent. to the 41st week. Similar calculations from the date of coitus showed that 45 per cent. went on to the 40th week, and if the three weeks were taken (the 39th to the 41st week inclusive) the proportion of pregnancies which terminated within this period was 77 per cent. In common practice 280 days was reckoned from the cessation of the last period, or 274 from the date of the last coitus, but variations up to three weeks might be accounted for by the uncertain incidence of ovulation. Much wider variations were sometimes recorded, even in successive pregnancies in the same woman. One instance was given by Taussig, in which the same woman had pregnancies of 277, 325, and 285 days. Cases in which pregnancy exceeded 300 days from the last menstruation were rare; in Germany it was stated that 6 per cent. of the pregnancies exceeded that period, but in this country the proportion was certainly less, and it was quite possible that racial characteristics were influenced by variations in the period of gestation. The longest pregnancy (331 days), based on calculation from the last coitus, was that which formed the subject of the Gaskill case,<sup>1</sup> and a period of 336 days was recorded in another case in which the reckoning was from the commencement of the last menstruation. On the question how far the length of the gestation process might be judged from the characters of the child when born, Dr. Eden said

<sup>1</sup> For Lord Chancellor Birkenhead's judgement in this case see *BRITISH MEDICAL JOURNAL*, August 6th, 1921, p. 222.



that one medical work quoted Shakespeare as the authority for the statement that a child might be born "full fourteen weeks before the course of time" and reach a lusty maturity, but if the passage (*King John*, Act I) were referred to it would be found that Shakespeare made no such claim, for there was confessed illegitimacy. To the question of Philip Faulconbridge, the bastard—

Therefore, good mother;  
To whom am I beholden for these limbs?  
Sir Robert never help to make this leg—

Lady Faulconbridge replied:

King Richard Coeur-de-Lion was thy father;  
By long and vehement suit I was seduced  
To make room for him in my husband's bed.

The conditions which governed the weight and development of the child were largely unknown, and the same was true of the length, though this was a rather more constant factor. In protracted gestation the weight of the child should be much above the average. In cases in his own private practice in which gestation had been prolonged to from 290 to 300 days the weight varied from 8½ lb. to 12 lb., the average being 9½ lb. Cases which went beyond 320 days were extremely rare, and the facts with regard to them should be closely scrutinized; if the circumstances lent themselves to misrepresentation confirmatory evidence should be sought, and in particular it should be noted whether the weight and dimensions of the child were much above the average. In the course of a brief discussion Sir Bernard Spilsbury said that on examining stillborn children he had found that some of the signs by which maturity was commonly judged were absolutely valueless, and that the weight varied extraordinarily in the full-term child, though length was a rather more constant factor. It had been suggested by some observers that the ossification of the sternum had diagnostic significance, but his *post-mortem* examinations did not support this view. The ossification of long bones, however, especially the lower end of the femur and the upper end of the tibia, was more reliable. Lastly, Dr. Eden suggested that in the living child radiographs of the ossification of the long bones might prove useful in a disputed case.

#### THE TEACHING OF OBSTETRICS AND GYNAECOLOGY.

THE Ministry of Health has issued a report on the arrangements for teaching obstetrics and gynaecology in the medical schools of Great Britain. It has been prepared by Dr. Janet M. Campbell, senior medical officer for maternity and child welfare in the Ministry of Health, as a part of the inquiry she is conducting into the causes and prevention of maternity mortality. A brief introduction, in which the history of the subject is sketched, is followed by a long series of detailed notes on the existing arrangements at a number of medical schools. This, which occupies about half of the bulk of the report, is followed by some general observations, and these again by a discussion on some particular matters, such as ante-natal or pre-maternity clinics, midwifery districts and lying-in hospitals, puerperal infection, ophthalmia neonatorum, and infant welfare. In the observations on the teaching of midwifery the report fairly represents present opinion upon the subject, which has undergone considerable modification within the last twenty years. The recommendations follow pretty closely the decisions reached by the General Medical Council, and include the suggestions that a sufficient number of maternity beds should be provided to enable all students to obtain suitable in-patient practice; and that the department of obstetrics and gynaecology should be a single whole, and not divided—an experiment in this direction made in Edinburgh was abandoned at the first opportunity. It will be remembered that a Memorandum on Medical Education in England, by Sir George Newman, was issued in 1918. We understand that another memorandum by him, dealing with recent advances, is in the press. When it is published we shall have an opportunity of reviewing the whole situation and of recurring to this subject of the teaching of obstetrics and gynaecology.

#### HOSPITAL CONTROL IN THE UNITED STATES.

Two years ago, under circumstances stated in the article published this week (p. 685), the United States Treasury appointed a medical committee to advise on problems connected with the care of soldiers, sailors, merchant seamen, and other persons employed by the Government who had been disabled through service in the war, and especially with cases of tuberculosis and of nervous and mental disease. The report of the committee goes a great deal beyond its reference, and the "consultants on hospitalization," as the committee was called, have based upon the data they accumulated certain "recommendations for future Federal hospitalization" which seem to suggest something very like a State organization of the civil hospital system. The consultants advise that the hospital problem of the United States ought to be the subject of continuous study in an office of the Federal Government, which should keep records showing the situation, size, character, and use of all State, municipal, and civil hospitals. It should also advise on suitable sites for new hospitals, expansion of existing hospitals, standard plans for building, equipment, and personnel, and costs of construction and maintenance. The standards for construction, equipment, and personnel would be changed from time to time as knowledge grows and conditions alter. The office would be guided in the advice it gave by movements of population, functions of government, the future use to which buildings can be put, by transport, medical, and nursing facilities, and by the Federal relation and assistance to State, municipal, and civil health functions; the aim would be to afford uniform care to the citizens of the United States, free from the influence of individual or local interest. The number of hospitals constructed by the United States Government for disabled soldiers and sailors being greater than can be utilized for the purpose, the consultants recommend three methods of future disposal: (a) transfer to the National Home for Disabled Volunteer Soldiers—presumably institutions similar to our Chelsea Hospital—for domiciliary care; (b) transfer to the United States Public Health Service for marine hospital bases especially in the great shipping centres; (c) sale or transfer to the States in which they are located as part of their health and welfare equipment. The evolution of a plan of co-operation between the Federal Government and the various States would, in the opinion of the consultants, lead eventually to guidance and assistance by the Federal authorities in making hospital practice uniform over the whole country. Such is the very large scheme the consultants have tacked on to their recommendations for the care of 20,000 war veterans. They recognize that the intervention of the central authorities in hospital questions, even if limited at the outset to advice, will in the long run tend to uniformity and to the adoption of standardization in construction, equipment, and personnel. We must confess that the views are somewhat depressing, hospitals at the end of the report are somewhat depressing, and in appearance resemble plans for barracks or factories. To economize time in erecting for the disabled hospitals of which there was urgent need, it is probable that standardization was useful, but for less urgent civil needs competition between localities in hospital construction in a Government office healthy. Again, is centralization in a Government office desirable? It is true that there is much debate at present in this country about the overlapping of hospital provision, but it may be asked whether, if such overlapping exists, it will be remedied more effectually through supervision by a Government department or by promoting gradually the voluntary co-operation of institutions. The American consultants recognized the existence of a difficulty in the relation between the Federal Government and the States of the Union. In this country the problem of the relation between county and borough councils and the Ministry of Health is to some extent similar. It is worth inquiry whether under a scheme of State supervision of hospitals in this country some of the minor problems faced by the American consultants would not arise. They considered that a number of psycho-neurotic and neurasthenic type were being wrongly retained in hospital



for treatment. Would it be better in this country that a Government department should inquire into such matters or that the medical staff should be left to discover the best method of treatment by their own observations and by communications published by other observers? It seems not impossible to imagine some such assumption of authority in matters of treatment by a Government department entrusted with hospital supervision; just as in the case of the psycho-neurotics, the consultants advised a "uniform policy of treatment under central control." Again, the influx observed in America of men under State provision into hospital during a period of great depression in trade is suggestive. Even more interesting is the statement of the consultants that in general the civil institutions were much more economical in their administration than the Government institutions. If the Federal Government in the United States of America is on the eve of a great experiment in "hospitalization," it will be interesting to watch the results.

#### FELLOWSHIP OF MEDICINE.

At a meeting of the Fellowship of Medicine held on April 13th at the Royal Society of Medicine a scheme, brought forward by the non-undergraduate hospitals in London, was considered, and it was decided to accept this scheme and take immediate steps to put it into operation. The scheme is devised to meet the needs of two distinct classes of post-graduate students—namely, those requiring short general refresher courses and those requiring advanced courses in the special departments of medicine and surgery. It is proposed to arrange the short refresher courses on the group system, centred in a general non-undergraduate hospital affiliated with certain special hospitals in its neighbourhood, each group making itself responsible for three or four such courses during the year. It is hoped that four, or perhaps five, of these groups will be founded in London. The programme will open with a course at the Prince of Wales's General Hospital, Tottenham, assisted by the special hospitals belonging to the North-Eastern group, from June 11th to 23rd. Further details regarding this course and others to follow throughout the year will be announced. For graduates requiring more advanced instruction it is proposed that each of the special hospitals should undertake two or three courses during the year, and in these it is hoped that specialists from the undergraduate hospitals will be willing to come to the special hospitals on the invitation of the staff and assist in lectures and demonstrations.

#### THE OPHTHALMOLOGICAL SOCIETY'S CONGRESS.

The detailed programme has now been issued for the annual congress of the Ophthalmological Society of the United Kingdom, which will be held at the house of the Royal Society of Medicine, 1, Wimpole Street, W., from Thursday, April 26th, to Saturday, April 28th, inclusive. The President, Dr. A. Maitland Ramsay, will give his opening address at 10 a.m. on April 26th. This is to be followed by papers, by Mr. Treacher Collins and Sir William Lister, on angioid streaks in the fundus oculi; the technique of cataract extraction will be considered by Mr. Affleck Greaves, Mr. Foster Moore, Mr. D. V. Giri, and Mr. Charles Killick. At 2 p.m. a discussion on disorders of the blood and their ophthalmological manifestations will be opened by Sir Humphry Rolleston, Sir Frederick Andrewes, and Dr. W. C. Souter; Dr. A. J. Ballantyne will follow with a paper on retinal vascular disease, and fundus lesions in diseases of the blood. At 5 o'clock the Bowman lecture, on ocular aspects of pituitary body disorders, will be given by Professor George E. de Schweinitz, President of the American Medical Association. The congress dinner will be held that evening at the Langham Hotel. The principal business on the morning of April 27th will be a discussion on the diagnostic significance of proptosis, to be opened by Mr. Wilfred Trotter, Mr. H. Fisher, and Dr. Angus MacGillivray. In the afternoon a clinical meeting has been arranged at the London Hospital; cases and specimens

will be shown and the hospital will be open for inspection. The evening session will be devoted to demonstrations of cases and apparatus and the reading of miscellaneous papers. On the morning of April 28th, after a brief business meeting at 9.30, further papers will be communicated.

#### SIR WILLIAM DALBY MEMORIAL PRIZE.

LADY DALBY has recently handed to the Royal Society of Medicine the sum of £500 to be invested for the purpose of providing a perpetual memorial of her husband, the late Sir William Dalby, who was a well known otologist in London. The trust deed provides that the interest on the capital sum is to be accumulated for five years, when the product, less expenses, is to be awarded as a prize to the person who, during the previous five years, has produced the best original work done or published for the advancement of otology. The prize will be awarded by the Council of the Royal Society of Medicine upon the recommendation of the President and Vice-Presidents of the Section of Otology. The Society has one other similar fund, founded in memory of Dr. R. T. Nichols; under it the proceeds of a sum of £2,200 is awarded in recognition of the most valuable contribution to the prevention of puerperal septicæmia. It has also a Gibson Scholarship to assist medical women in research work. The Society not long ago received a bequest of £500 for an annual Lloyd Roberts lecture. It values very highly certain bequests and gifts it has received for its building and library. Thus its largest lecture room, the Robert Barnes Hall, was founded with a sum of £4,000 to commemorate Dr. Robert Barnes, a famous obstetrician in his day; and the Marcus Beck Laboratory, founded in memory of that beloved surgical teacher; it has also the Marshall Hall Room, by which the library facilities are improved, the Chalmers room, in which the library of the late Dr. A. J. Chalmers is housed, and a library room inscribed to Sir William Allchin. It has also two committee rooms, one to the memory of Henry Louis Florence, and the other to Joseph Toynbee; and finally the Frederick J. Gant bequest of £500 for the purchase of books to enlarge the Gant Library. The charters and by-laws provide that even in the event of the present building being destroyed or given up the name commemorated shall be preserved in any new building by the appropriation to it of a similar room.

#### THE OPHTHALMIC HOSPITAL AT JERUSALEM.

THE thirty-first report for the year 1922 of the committee of management of the Ophthalmic Hospital maintained at Jerusalem by the Order of St. John of Jerusalem shows how much good can be effected by methodical work, even in a country so backward as Palestine, which teems with eye diseases. It is a matter for satisfaction that there should be an up-to-date hospital in its capital for the treatment of these conditions. During the past year a new out-patient department room, which was badly needed, has been built. The Patriarch of Jerusalem has presented a site, and plans for an annex to the hospital to be erected on it are being prepared; at present, however, the cost of building prevents any active work in this direction being undertaken. The report of the warden (the senior British member of the staff) is largely statistical; the number of new cases seen was 12,651, and the total consultations numbered 57,848; the number of in-patients admitted was 1,268, and 2,859 operations were performed. Of new patients more than half were Moslems, a quarter were Christians, 1,393 were Jews, and 8 were of other religions. Of the new cases 1,174 were blind in one eye and 460 were blind in both. It is interesting to note the rapid increase in the number of spectacles ordered for patients; in 1919 spectacles were prescribed in 269 cases in 1920 in 475 cases, in 1921 in 760 cases, and last year in 1,148 cases; ophthalmic surgeons will appreciate the amount of work these figures indicate. Trachoma, of course, forms the chief bulk of the out-patient work, and acute conjunctivitis is



an easy second. Palestine suffers as heavily almost as Egypt from trachoma, and in some districts 97 per cent. of the inhabitants are infected by it; in school children the returns show an average of 74 per cent. for the country as a whole. The hospital is still below pre-war standard; in particular the bedsteads should be replaced by proper English hospital bedsteads; those in use are mostly of the army folding pattern, and all of them saw hard service in the war. An illustration appended to the report shows the hospital and the new out-patient building.

#### BRITISH OTO-LARYNGOLOGISTS IN SWEDEN AND HOLLAND.

THE Section of Oto-Laryngology of the Swedish Society of Physicians has invited a certain number of representatives in this country to deliver in Stockholm lectures on subjects with which their work has been identified. To suit their convenience the meeting in Stockholm has been arranged for Whitsuntide. Mr. Arthur Cheate (London) will lecture on the etiology and prevention of chronic middle ear suppuration, Sir StClair Thomson (London) on cancer of the larynx, Dr. Logan Turner (Edinburgh) on the occurrence of metastatic tumours in the larynx, with the description of a case, and Dr. Brown Kelly (Glasgow) on the significance of certain pharyngeal signs and symptoms. On their way to Sweden, the lecturers have been invited to join in the summer meeting of the Dutch Oto-Laryngological Society at The Hague on May 12th and 13th.

### Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

#### The Budget Statement.

MR. BALDWIN presented his Budget on April 16th in a speech which occupied only an hour and a half and was businesslike and straightforward. He showed that the financial year just closed had steadily got better as it advanced. Home and foreign trade had improved, unemployment, though still grievous, had decreased, and Government securities had appreciated. A good sign was that Post Office Savings Bank deposits, which had fallen in the first three months of last year, had enlarged by more than a million and a quarter sterling in the three months of this year.

The surplus of 101½ million from a total revenue of £914,012,000 was obtained not by excess of revenue over estimate, but by the prompt application of drastic economy. The revenue gave 3½ million more than was anticipated—a fact due mainly to a surplus on death duties of nearly 9 million and on income tax and super-tax of over 50 million, which counterbalanced the failure of revenue under some other headings to come up to expectations. What made the income tax collections especially remarkable was that a huge sum of arrears (over £100,000,000 of income tax and super-tax) had been largely gathered in, and the current collection maintained. The surplus of 101½ million on the balance sheet had already according to law been appropriated to meet maturing liabilities. In regard to savings, the Chancellor mentioned as chief items 27 million on the fighting services, 55½ million on civil votes, and 6 million on the provision made for supplementary estimates.

The dead weight debt on March 31st, 1922, was £7,676,000,000. The corresponding figure at the end of this year was £7,773,000,000, but the increase was only in face value due to the conversion of various war bonds and to the inclusion of arrears of interest due to the United States in the capital of debt. Thus corrected the figures would show an effective reduction of 149 million face value. Moreover, the taxpayer would have saved by the conversion of bond debt £750,000 a year interest and 4½ million in premiums payable on bonds as they matured.

Mr. Baldwin said that in two years there had been a drop of 247 million on the ordinary estimates and of 82 million in special expenditure. He did not intend to provide any special margin for supplementary estimates, but to revert to the pre-war practice of providing for them out of savings elsewhere without upsetting the general total. Last year debt redemption was nominally suspended; Sir Robert Horne reckoned that he might have to borrow in order to maintain the fund which was earmarked for that purpose as regards various war bonds, but this was not necessary. Mr. Baldwin said that he proposed to include in the Finance Bill a clause to give altogether a sinking fund of 40 million this year, increasing it to 45 next and to 50 afterwards—a sum approximating to the yields of the death duties. This would also provide for the sinking fund for the American debt; the policy was essential for sound finance. Unless proper

steps were taken to deal with the National Debt, in time it might be found an intolerable burden. Incidentally, he alluded to the large savings being effected and (as he hoped) to be effected by the conversion of stock to a lower rate of interest. He calculated that, as compared with actual receipts last year, Customs and Excise would give about 6½ million less, motor vehicle duties £929,000 more, estate duties 2½ million less, income tax nearly 35 million less, super-tax over 6 million less, excess profits duty nearly 10 million more, partly on account of arrears, and corporation profits tax a million more. He looked for an increase of a third of a million in the postal service, a fall of a quarter of a million on the telegraph service, and an advance of nearly 1½ million on the telephone service. Reckoning in other figures, he budgeted for a diminished revenue of £61,362,000 as compared with what was obtained last year, and for a total revenue of £852,650,000. With an estimated expenditure of £816,616,000, he was left with a surplus of about £36,000,000.

Before stating his proposals for dealing with this balance Mr. Baldwin announced intended legislation to apply some of the recommendations of the Royal Commissioners of Income Tax to meet evasion. He had selected for the present several of the more important. He should ask that the existing three years of time limit for making the income tax and assessments and surcharges should be extended to six, and that there should be a similar extension for the recovery of statutory penalties, with an increase in the amount of some of the smaller penalties. He should propose a corresponding increase to six years for claim for repayment where no specific time limit was prescribed. He would propose also to rectify the machinery for collecting income tax from certain pensioners and servants of the Crown employed abroad, but chargeable here from time to time when on leave. It was his duty to remember that next year revenue for several reasons might not be so good and to contemplate suggestions for new taxation. In that connexion he would ask the House to appoint a Select Committee to consider taxation on betting.

The first reductions announced by Mr. Baldwin were in postal charges. The rate of foreign letters would be reduced to 2½d. for the first ounce, plus 1½d. as at present for each succeeding ounce, and the rate for imperial letters above the first ounce would be lowered from 1½d. to 1d. an ounce. The inland printed paper rate would in future be 3d. for every two ounces. On the telephone side a reduction would be made of 10s. in the annual rental of ordinary telephone installations, and there would be reductions in the annual charge for extension instruments; the free radius outside the London area would be extended from one mile to one and a half miles from the subscribers' exchange. The fee for local messages from local call offices would be reduced from 3d. to 2d., and there would be minor reductions on short-distance trunk calls. Mr. Baldwin regretted that he could not see his way to reduce the sugar duty. The price was rising in the world market on account of an expected shortage in supplies, and his view was that in these circumstances a reduction in duty, which would lead to an increased demand, would not, at any rate after a short time, benefit the consumer, but would go to the seller. He had therefore turned his attention to commodities mainly produced in this country. He proposed to reduce the beer duty, making a reduction which would allow of the price being lowered by 1d. a pint all round. The duty was assessed on the standard barrel, which meant it varied in accordance with the gravity or strength of the beer. If the duty on the standard barrel were reduced by an amount which represented 1d. a pint on the average, it would mean more than 1d. on strong beer and much less on light. To meet these conditions he thought the best course would be to keep the present duty of 100s. per standard barrel and effect the reduction by giving a rebate on each bulk barrel of beer whatever its strength. He did not intend that the full cost should fall on the Exchequer. He was satisfied that the brewers could afford 4s. out of the 24s. involved. The only qualification to change would be that the full rebate could not be allowed for beers of very low gravity. Table water duty, now levied at 4d. a gallon on sweetened table waters, would be reduced to 2d. a gallon, and the duty of 4d. a gallon on cider would be abolished.

Finally, Mr. Baldwin stated that he had resolved to reduce the income tax by 6d. He believed that the relief in taxation would thus be spread over the widest possible area and a stimulus to trade afforded. The reduction would cost 26 million in a full year. This year reduction, taking effect as from April 6th, would cost 19 million. He recognized, moreover, that the corporation profits tax was not a good tax, and he proposed to reduce the rate from 1s. to 6d. He summed up by saying that all these reductions would cost together £34,150,000 in the current year, and next year about £47,250,000. The final balance sheet for 1923-24 would thus be:

Revenue	...	...	...	£818,500,000
Expenditure	...	...	...	816,616,000
Leaving a nominal margin of	...	...	...	£1,884,000

#### The Payment of Insurance Practitioners.

Sir Kingsley Wood, on April 11th, asked whether the Minister of Health contemplated any alteration in the terms of payment to doctors on the panel lists; and whether he proposed to consult with representatives of the approved societies on the matter. Mr. Chamberlain replied that before the expiry of the present agreement at the end of this year, both the terms of service and the remuneration of insurance practitioners would have to be reconsidered. In reply to the second part of the question Mr. Chamberlain said that the Insurance Consultative Council had already been consulted in regard to the terms of service, and would be consulted in regard



the rate of remuneration. There was no other body representative of all the approved societies, but he should be prepared to receive representations from the principal groups before coming to a final decision.

Sir Kingsley Wood asked whether Mr. Chamberlain was aware that representatives of the medical profession had declined to meet representatives of approved societies to discuss this matter. Mr. Chamberlain replied in the negative. Major Mackenzie Wood inquired whether the Minister thought that the Council represented the approved societies. Mr. Chamberlain answered that it was an elected body.

Mr. Fairbairn asked whether Mr. Chamberlain would undertake to consult the Insurance Committees in the country, who were representative of all sections. Mr. Chamberlain said that did not arise out of the question.

Sir Kingsley Wood inquired the number of doctors on the panel list, and the approximate annual amount they receive for service. Mr. Chamberlain said the total number of insurance practitioners in England and Wales according to the latest return was 12,588. The total payments to them in 1922 amounted to approximately £6,750,000.

**Indian Universities.**—In reply to Mr. Fisher, on April 11th, Earl Winterton stated that at Dacca a residential university on the lines recommended by the Calcutta University Commission (of which Sir Michael Sadler was chairman) was established in 1921 in pursuance of an act of incorporation passed in the previous year. Owing to financial and other difficulties it had not so far been possible to give effect to the proposals of the Commission in regard to the University of Calcutta, but the complex problems involved were receiving most careful consideration by the Government of Bengal. The recommendations of the Commission had been of the greatest value to the authorities responsible for those Indian Universities which had been reorganized or established for the first time as separate universities since the report of the Commission. This was notably the case in regard to the residential universities of a non-affiliating type established during 1920-22 at Madras and in regard to the University of Madras had been

**Pension Assessments for Bronchitis and Asthma.**—Major Tryon stated, in answer to Mr. Cairns on April 12th, that the approximate number of pensions in payment in respect of affections of the respiratory system (other than tuberculosis) was 41,000. The Minister repudiated the suggestion of Mr. Cairns that medical boards took only two minutes in making an assessment. The average time given to cases of re-examination for renewal of pension was more than a quarter of an hour, and to first claims or for final awards the time given was usually over half an hour.

**Pensions Hospital at Sunderland.**—Major Tryon stated, on April 12th, on a question from Mr. Robert Richardson, that owing to decreasing requirements in the northern region, arrangements had been made to close gradually at Sunderland. This step was under consideration of all the circumstances. The departmental medical advisers would remain to provide without delay all necessary treatment. Mr. Richardson hoped that the Minister would consider the large number of men enlisted from the county of Durham who might want to use the hospital in the near future instead of going as far as Gretna to receive treatment. Major Tryon promised to consider the matter. Mr. Lawson asked if he was aware that for four years the hospitals of Durham and Northumberland had not been able to meet the needs of the civilian population and whether he would further investigate this matter before placing even a small number of military cases upon the civilian hospitals.

**Tuberculosis in Sheffield.**—Asked on April 12th whether his attention had been called to the report of the Sheffield school medical officer, in which he stated that tuberculosis was a very frequent cause of ill health among school children, Mr. Wood said the figures would be reviewed with other similar returns. He was advised they were not representative of the country as a whole.

**Medical Services for School Children.**—Mr. A. Bennett inquired, on April 12th, if the Education Department had informed all education authorities in receipt of public assistance that they must no longer give medical service free to children whose parents were above the poverty line. Mr. Wood, in response, assumed the reference to be to Circular 1300 issued on March 16th last.

#### Answers in Brief.

Major Tryon states out of some 600,000 cases which came up for pension reassessment during 1922, it was found necessary to cancel entitlement to pensions on medical grounds in less than one-half of 1 per cent.

According to Mr. Neville Chamberlain, there were in this country on January 1st approximately 84,000 patients in infirmaries, and in the sick wards of other Poor Law institutions there were 9,800 children boarded out, and 32,000 children in Poor Law institutions provided wholly for the reception and maintenance of children. Women inspectors visited 206 infirmaries last year, and the infirmaries were also inspected by the male general inspectors and by medical officers of the Ministry. The superintending woman inspector was selected from the women inspectors, who required to be fully trained nurses.

## INSULIN AVAILABLE IN THIS COUNTRY.

### CONDITIONS OF SALE AND PRECAUTIONS TO BE OBSERVED.

#### STATEMENT BY MEDICAL RESEARCH COUNCIL.

On November 18th, 1922 (p. 991), we published a statement by the Medical Research Council explaining the measures taken in this country for studying the production and properties of insulin and for promoting its manufacture here upon a commercial scale. On November 4th, 1922 (p. 833), we had published a paper by Professor J. J. R. Macleod, in whose laboratories in the University of Toronto the initial experiments were made, giving an account of the physiological and therapeutic effects of insulin; on January 6th, 1923 (p. 8), we published from the Department of Medicine in the University of Toronto and the Toronto General Hospital a report by Banting, Campbell, and Fletcher recording further clinical experience with insulin in the treatment of diabetes mellitus. On February 24th (p. 341) we published another statement by the Medical Research Council to the effect that insulin was being produced, standardized, and used in the treatment of selected patients at certain hospitals in London, Sheffield, and Edinburgh, and that the Council had entered into agreements with certain manufacturing firms in several parts of the country for the manufacture of insulin, retaining in the public interest control of the safety and potency of the product and its sale at a fair price. No royalties are payable to the Council under any of these agreements. The Council was then able to state that rapid progress was being made and that this was due equally to the laboratory investigations at the National Institute of Medical Research, Hampstead, and to the experience, skill, and enthusiasm which the firms had shown in their co-operation with the Council.

#### British-made Insulin Available on a Commercial Scale.

The Council is now able to announce that British-made insulin is being supplied from two sources—namely, the firm of the British Drug Houses, Ltd., in conjunction for this purpose with Messrs. Allen and Hanburys, and the firm of Messrs. Burroughs, Wellcome and Co. These firms, who undertook the manufacture under agreement with the Medical Research Council, have satisfied all the requirements and tests of the Council for authenticity, standard value, therapeutic efficiency, and sterility of the product sold. It is hoped that these sources of supply will be augmented at an early date by three other firms in different parts of Great Britain who are under similar agreements with the Council.

It should be understood that the rapid progress made by these five firms since the end of last November, and the actual achievement of successful and guaranteed supply within a period of little more than four months from the first attempts at large-scale production, have been made in spite of some serious handicaps. The large quantities of alcohol used for extraction brought the manufacture under almost prohibitive restrictions until certain concessions were made by the Commissioners of Customs and Excise, which allowed specially denatured alcohol to be used duty free. The embargo upon the importation of Canadian cattle had greatly reduced the supply of fresh raw pancreas material in this country, and a good deal of improvisation and initiative has been necessary for the effective organization of the available supply of raw material during recent months. The only limit now placed and likely to be placed for some time upon British production is the limitation of raw material available under suitable conditions.

#### Supplementary American Supply.

In the meantime Messrs. Eli Lilly and Co., of Indianapolis, Indiana, working under agreement with the University of Toronto, have been proceeding towards large-scale production since the early summer of 1922. By the courtesy of the university, this firm was able to submit samples of its insulin product to the Medical Research Council in February last for testing. At the end of March Messrs. Eli Lilly found themselves in a position to offer the Medical Research Council a considerable supply of their product for distribution in this country under similar restrictions to those at present governing distribution during a provisional period in the United States and Canada—namely, to approved hospitals and to physicians with approved clinical facilities. In view of the urgency of the demand, the Council cabled for this supplementary American supply, of which the first consignment is expected



to arrive during the present week. It is a remarkable coincidence that the products of large-scale American production should become available here only a few days after the first commercial supply of British insulin.

The Medical Research Council has arranged that the insulin of American manufacture should be distributed by those British firms whose own product is already available or may hereafter become available, and the amount distributed by each British firm will be in proportion to the volume of its own production. Both British and American insulin will be sold here only under that name (except for the addition of marks or brands indicating origin). A maximum selling price has been fixed by agreement with the Council for a short provisional period, and there is a probability of its being reduced at an early date.

#### *Purification, Potency, and Sterility.*

The British firms have adopted a method of purification of the final product worked out by Dr. Dudley at the National Institute for Medical Research. By this method it is possible to get rid of over 90 per cent. of the solid matter in the crude end-product of the original process, and it allows the manufacturers to offer the active principle in the form of hydrochloride in highly concentrated form, freed from accidental irritants and other substances. For the avoidance of improper exploitation of this valuable process provisional application for patent rights has been filed by Dr. Dudley, jointly with the Medical Research Council. It is probable that in the near future the American supplies will be submitted to the same process and offered in the same form. All the supplies now available have passed suitable laboratory and clinical tests for purity, potency, and sterility.

#### *Dose: Biological Test.*

The physiological unitage originally indicated by the first producers of insulin in the University of Toronto has not been retained. By agreement with the University, the American manufacturing firm has made current in the United States a unit having the approximate value of one-third of the original Toronto unit. The Medical Research Council has decided to adopt this smaller unit, so that all the insulin now made available in this country, whether British or American, will be standardized to a common unit value. Every batch put upon sale, of whatever origin, will be biologically tested under the supervision of the Council, and every preparation sold must bear a number corresponding with that of the batch from which it has been drawn.

#### *Distribution and Sale.*

For a provisional period the Council has retained, under its agreements with the manufacturers, control over the distribution of the commercial supplies analogous to that exercised by the University of Toronto over the products of American manufacture. It is clearly desirable, apart from other considerations, that now, and at least until the supply is more than equal to the demand, the available insulin shall be distributed so as to reach those patients whose need is greatest, and so as to be placed in the hands by which it can be administered to the greatest effect and with the least waste. Difficult problems arise here of interest and importance to the public, to the medical profession, and to hospital administrations.

The research work, both in the laboratory and in the wards, which has brought manufacture in this country to its present pitch, and all the connected problems of standardization and further research work, fall properly within the sphere of the Medical Research Council. These medical administrative problems of distribution, on the other hand, have been submitted by the Council to the Minister of Health, within whose responsibility they properly lie. Having regard to the special nature and urgency of the occasion, the Minister has appointed a small committee to advise him upon the subject, composed as follows: Sir George Newman (Chairman), Dr. R. A. Bolam, Sir Walter Fletcher, Sir Humphry Rolleston, Dr. Alfred Salter, M.P., Dr. McCleary (Secretary) (a dress, Ministry of Health, Whitehall).

#### *Conditions of Supply to Practitioners.*

To avoid any unnecessary delay, provisional authority had been given to the firms to distribute insulin to various large hospitals, and the first British made insulin was actually so supplied on April 12th. On the advice of this committee, manufacturers will be directed, during the present period of restricted production, to supply insulin only to those hospitals and to those registered medical practitioners who have proper

facilities and their command for making accurate blood sugar determinations.

Each hospital and practitioner so supplied will undertake to observe the following restrictions upon the use of insulin:

(1) Careful correlation will be made of the diet, of the blood sugar changes, and of the insulin dosage in each case. For at least one group of cases it is known already that the insulin dosage can be reduced progressively with suitable adjustment of diet. This reduction allows economy of insulin, besides the advantage it may bring to the patient.

(2) Insulin will not be given to those whose symptoms can be controlled by moderate restrictions of diet. There should be no luxury use of insulin till supplies are abundant.

(3) It is understood, of course, that in emergency, and apart from the careful correlation just mentioned, insulin will be given to those in diabetic coma or those nearly approaching it, and it may be given to those with diabetic symptoms needing special preparation for some surgical operation.

(4) Care will be taken to avoid the danger of giving insulin to non-diabetic cases (for example, to patients with renal glycosuria).

Hospitals or practitioners desiring supplies for immediate use should apply to one or other of the British firms named above.

It is hoped that at a very early date preliminary communication will be made of the results of the insulin treatment which has been in progress during the past months in the hospitals at London, Edinburgh, Glasgow, and Sheffield, named in the earlier statement by the Council, in order that the experience gained in this clinical research work may be put at the disposal of the profession for its information and guidance.

#### *Cost.*

The present price of insulin prepared by either of the makers is 2s. 6d. a dose of 10 units, which is the average dose. It is a watery solution and is issued in rubber-capped bottles. The British Drug Houses and Allen and Hanburys, which have worked together, supply bottles containing 10 and 20 average doses (the price of the bottle being 25s. or 50s. respectively). Messrs. Burroughs, Wellcome and Co., who have acted independently, supply the solution in rubber-capped phials containing 100 units—that is to say, 10 average doses. The preparation of each firm fulfils the conditions laid down by the Medical Research Council, as explained above.

## THE LATE DR. A. G. SIMMINS.

### AN APPEAL TO THE PROFESSION.

THE deaths from influenza of Alfred George Simmins, M.B., B.S., aged 32, and his wife, within a few hours of each other, have been chronicled, together with a record of his services to his country and his profession, in the *BRITISH MEDICAL JOURNAL* of April 7th.

He was educated at Guy's and Westminster Hospitals, and at the time of his death held posts of responsibility at the Royal Northern Hospital and the Hospital for Sick Children, Great Ormond Street.

They leave three little children, for only one of whom—a boy of 6—some provision has been made. No funds are available for the education of the other two, a girl and boy, aged 4 years and 15 months respectively, and they are left penniless orphans.

At the time of the catastrophe Simmins was making good, but there was an overdraft at his bank as a result of the purchase of his practice, and he was precluded from the ordinary terms of life insurance by albuminuria, the relic of a previous attack of influenza.

Even in these case hardened days it would be difficult to find a parallel to such a combination of misfortunes, and we are proud to believe that our appeal will evoke a generous response from all branches of the profession. A committee is in process of formation, and several generous donations have already been received. Cheques and postal orders should be sent to the Treasurer, Simmins Appeal Fund, and addressed, Royal Northern Hospital, Holloway Road, N.7.

WILLIAM HALE-WHITE. HENRY C. SEaton.  
JAMES PURVES-STEWART. DAVID NABarro.  
G. F. STILL.

The following is a preliminary list of subscribers:

150.—Dr. G. F. Still.  
170 10s.—Mr. L. E. Barrington Ward, Mr. H. Terrell Gray, Sir William Hale-White, Sir James Purves Stewart, Dr. H. C. Seaton, Mr. G. E. Smith.  
210.—Mr. H. A. T. Fairbank, Dr. F. J. Poynton.  
25 5s.—Mr. J. Birt, Dr. R. S. Frew, Sir Alfred Ffrench, Dr. C. B. Heath.  
Mr. T. T. Higgins, Sir G. Arbuthnot Jones, Dr. D. Nabarro, Mr. W. L. Pearson, Dr. H. R. Phillips, Dr. H. Stanton (first donation), Dr. H. Thorsfield.  
25.—Mr. P. G. Dayne, Dr. A. M. H. Gray, Dr. R. Sherrin.  
25 2s.—Mr. A. T. Pitts.



## New South Wales.

[FROM OUR CORRESPONDENT.]

### A PSYCHIATRY CLINIC IN SYDNEY.

For some years past the idea of having a clinic at the Royal Prince Alfred Hospital for early cases of mental disorder has been under consideration. With the advent of Sir John Macpherson as the first professor of psychiatry in the University of Sydney, and the organization of this new department in connexion with the medical school, it has been decided to open an out-patient clinic for the treatment of early mental cases, and Sir John Macpherson is to attend and initiate the work. This clinic will be the first of its kind in connexion with an Australian general hospital, and no doubt it will be of great service in the teaching of medical students. In addition to this clinic at the Royal Prince Alfred Hospital, there is an institution at Broughton Hall, Leichardt, where incipient mental and functional nervous diseases are treated. This hospital contains 100 beds, and patients are admitted without certification. Sir John Macpherson also visits this institution in the capacity of consulting physician. The laboratory of the mental hospitals is at the medical school, which is in close proximity to the Royal Prince Alfred Hospital, so that the clinical and pathological work of the clinic can be well co-ordinated.

### PROPOSAL TO CLOSE A NERVE HOSPITAL.

For several years past the Russell Lea Nerve Hospital has been carried on under the Red Cross Society, and later under the Repatriation Department, as a hospital for cases of nervous and mental weakness among the returned soldiers. Other rest homes and hospitals have been gradually closed down, and the work amongst the returned soldiers has been concentrated at the Prince of Wales's Hospital at Randwick. It was recently proposed to close down Russell Lea also, and transfer the patients to the hospital at Randwick. This proposal has aroused a great deal of comment, and the patients who are at present inmates there, to the number of about forty, have made their wishes known. There is no doubt that this institution is admirably situated; the hospital has large airy wards, a spacious dining hall, with gymnasiums, treatment and recreation rooms; the main building is surrounded by large grounds and is well suited for the treatment of the nervous and depressed soldier. Great stress has been laid on the individual treatment of the patients, and it is said that this could not be carried out at Randwick. In view of the opposition to the proposal it has been decided to defer any action for the present.

### RHODES SCHOLAR FOR 1923.

The Rhodes Scholar from the University of Sydney for 1923 is Mr. R. L. Raymond, who is now in the final year of the medical curriculum, and will graduate next month. This makes the fourth medical Rhodes Scholar from the University of Sydney, Mr. Raymond's predecessors being Drs. H. K. Ward, Howard Bullock, and Granville Waddy. He was educated at the Sydney Grammar School, and after passing his first year in medicine with credit, enlisted for active service, joining the University Company, which, however, was disbanded shortly afterwards on the signing of the armistice. He has passed each of his subsequent examinations with credit. His sporting achievements, mainly on the football field, have been brilliant, and he has entered prominently into the student life of the University.

### UNIVERSITY STUDENTS.

The official figures for the past year show that there were in attendance at lectures 2,965 students, including 706 women. Numerically the medical faculty is still on top, although the number of first year students is declining year by year. The largest years are the present fourth and fifth years, largely due to the fact that these students commenced their course in 1919 and 1920, when the effect of the return of students who had served with the Australian Imperial Force was felt. There are in all 870 students in the Faculty of Medicine, more than 200 above the number in the Faculty of Arts. Only three in the Faculty of Medicine are engaged in post-graduate work.

## Canada.

### CANADIAN MEDICAL ASSOCIATION.

The Canadian Medical Association will hold its annual meeting in Montreal this year from June 12th to 14th. The committee appointed to investigate the advisability of establishing a College of Surgeons in Canada will present its first report at this meeting.

### HONORARY DEGREES.

At the Medical Convocation at McGill University on June 11th honorary degrees will be conferred upon the four following surgeons:

Colonel Sir WILLIAM TAYLOR, K.B.E., because of his distinguished position in the surgical world to-day; his many contributions to surgical literature and the advancement of surgical science; and his service to his country during the great war.

Sir BERKELEY MOYNIHAN, B.C., K.C.M.G., C.B., on the ground of his eminent position as a professional teacher of surgery; his many contributions to the advancement of surgical science, and to the literature of this subject; and his war work as chairman of the Medical Advisory Board.

Sir ROBERT JONES, K.H.E., C.B., in recognition of his position as the foremost orthopaedic surgeon in the Empire; his work in the war as a member of the Advisory Board to the War Office, and a member of the Consultants' Council; and his numerous contributions to surgery, especially military orthopaedic surgery.

Dr. W. J. MAYO, D.Sc., Hon. F.R.C.S. Eng., because of his distinction as a surgeon, his contributions and assistance to medical education and research, and his many contributions to surgical literature.

### INDUSTRIAL MEDICINE.

During the past winter a series of luncheon lectures on industrial medicine was arranged by the governors of McGill University in order to emphasize the value of this important branch of medicine. The complete course was as follows: Industrial medicine, by Dr. B. L. Wyatt, director Laurentide Health Service; Periodic health examination in industry, by Dr. Haven Emerson, Columbia University, New York City; Industrial sanitation, by Dr. George C. Whipple, Harvard University; Industrial health from the standpoint of tuberculosis, by Dr. Linsly Williams, National Tuberculosis Association; The physician in industry, by Dr. W. A. Sawyer, medical director, Eastman Kodak Company.

## Scotland.

### HOSPITALS AND NURSING IN THE HIGHLANDS.

A MEETING, presided over by the Duchess of Atholl, was held last week at Inverness to discuss proposals for co-ordinating the work of the voluntary hospitals in the northern Scottish counties and the relations between the hospitals and various other agencies such as nursing. The attendance was representative of hospital and nursing bodies all over the Highlands. Suggestions were made for the foundation of a federation of the various voluntary institutions, and it was stated that such a scheme had already been carried out in Perthshire. Exceptional difficulties were met in the Highlands, and it was important to further co-operation between the hospitals there in order to safeguard their economic position in the future. The local representatives were instructed to take stock of the position in order to avoid any waste of effort or of bed accommodation, and to consider means of taking joint action when appealing to the public for support. Dr. Simpson (Golspie) said that cottage hospitals might be regarded as casualty clearing stations, but surgical cases which could quite well be treated in them were sent sometimes to the larger hospitals at needless expense. The statement that no scheme of co-operation should be allowed to interfere in any way with the administration of the hospitals by the present administrative bodies was warmly applauded. It was resolved that meetings should be called in Inverness-shire and Ross-shire respectively to discuss hospital co-ordination in these counties.

### HERIOT'S SCHOOL MEMORIAL.

There was unveiled last week in the grounds of George Heriot's School, Edinburgh, a memorial to 470 former pupils who fell in the war. The memorial stands in the centre of



the green slope to the east of the school building and facing the Royal Infirmary; it consists of a graceful column in the form of a Mercat Cross 40 feet high standing on an octagonal stone platform reached by steps. The unveiling ceremony was performed by Lord Provost Hutchison.

#### A MEDICAL DYNASTY.

Dr. A. Maxwell Adams, formerly of Gambia and of Assam, now of Alfreton, Derbyshire, is Dr. Maxwell Adams *quartus*. His great-grandfather, who was (medically) *primus*, lived in Scotland, and not only practised medicine, but also, about eighty years ago, edited a newspaper, and for three years (1847-50) held the non-medical office of chief inspector of poor for the parish of Glasgow, at a time when, after the Irish famine, there was a great influx of Irish from their own land to the West of Scotland, and epidemic typhus and cholera raged almost unchecked. Dr. Adams *primus* did what very few medical men have done either then or now: he kept a regular diary, amounting indeed to an autobiography, and in the columns of a Lanarkshire newspaper his great-grandson has been giving an account of his ancestor's career. Newspaper editing and Poor Law administration were far from sufficient to absorb his energies. He took an active part in a famous succession case in support of an unsuccessful claimant to the Crawford estates and titles in 1828-36. In his Glasgow Poor Law days he waged a constant battle with his local authority, and with the support of the old (at that time the new) Board of Supervision he achieved a great measure of success, winning, incidentally, two lawsuits out of three against the Parochial Board; in the third, though technically defeated, he was complimented by the court on his conduct in a very difficult position, and was not mulcted in expenses. When he had fairly got the better of his nominal superiors, he concluded that he would like an easier life, and they, being glad to get rid of so masterful a servant, acceded to financial terms which met his wishes. Shaking the dust of Glasgow off his feet he resumed practice in Edinburgh, was very successful and spent the last ten years of a strenuous life in comparative affluence and comfort. His present namesake has done well to put on record the story of so interesting and varied a career, and to reproduce it as a neat little pamphlet for private circulation.

## Ireland.

#### SCHOOL MEDICAL INSPECTION.

With reference to the address by Sir James Craig, M.D., to the Teachers' Congress on medical inspection and treatment of school children (see *BRITISH MEDICAL JOURNAL*, April 14th, p. 653), a representative of the *Freeman's Journal* obtained the following statement from the Ministry of Local Government:

"We have read through the paper of Sir James Craig and consider that, generally speaking, it is a very fair statement of the requirements necessary for the development of the public health service. Practically all the matters that have been referred to are at present being examined by the Ministry's experts in these matters, and the Ministry have taken steps to acquaint themselves fully with the conditions of legislation on health matters on the Continent and America. The Ministry share particularly the view of Sir James Craig as to the important rôle to be filled by the county medical officer of health, and consider that the importance of appointing a suitably experienced officer could not be overestimated. As regards the regulations for school medical inspection, these at present include a provision that each committee shall include one manager and one teacher of an elementary school situate in the area of operations. The desirability of close co-operation with the Ministry of Education is fully appreciated, and it is recognized that inspection should be carried out with as little disturbance as possible to the school arrangements. As regards the question of the central authority, it may be observed that the Ministry of Local Government at present includes all the important functions of the Ministry of Health in England. If any further unification is needed it can, no doubt, be easily added in the forthcoming legislation.

"Sir James Craig stated that the Irish people were very far behind any other civilized nation in their attitude and their requirements with regard to public health matters. It is an encouraging reflection, however, that water supplies have been provided for nearly all the important towns. Typhus fever, formerly a great scourge in Ireland, has been practically eliminated, and the mortality from typhoid fever has in recent years been greatly reduced. Within the last four years, when small-pox was prevalent in Glasgow, cases reached Ireland on eleven different occasions, but, owing to supervision at the ports and the effective immediate isolation of

cases, only in one case did the disease spread to a second house. Since the introduction of tuberculosis schemes the mortality from tuberculosis has been reduced from 2.8 per 1,000 to 1.8 per 1,000. Voluntary nursing associations and the activities under maternity and child welfare schemes have reduced infant mortality from above 100 per 1,000 to 85 per 1,000. The Electoral Act and the Local Government (Temporary Provisions) Act have now been passed, and the Minister of Local Government will be enabled to pay attention to the formulation of the Public Health Bill."

## Correspondence.

#### AURICULAR FLUTTER SIMULATING DEATH.

SIR,—In the *Epitome of Current Medical Literature*, par. 302, April 7th, 1923, an account is given of the restoration of two patients whose hearts were said to have stopped beating, and it is stated that they recovered after an intracardiac injection of adrenaline. For a long time I have suspected that in these cases the heart has not really stopped, but has taken on an abnormal rhythm, probably of the nature of auricular flutter. We know that adrenaline is a powerful stimulant, but it must get to the part before it can stimulate it. The mere injection into the heart when standing still would not enable the adrenaline to get to the pace-maker of the heart—that is, the sino-auricular node. That can only be reached by means of the vessels, and in these cases of recovery there can be little doubt that there was still some circulation.

I have the record of a patient who, after running to a train collapsed on getting into the carriage. He was taken out at the next station and laid out in an inn as dead, as the doctor could find no evidence of life. After a couple of hours he recovered. He suffered from other attacks which I recognized as auricular flutter. I was summoned to see him in an attack and this diagnosis was confirmed. In auricular flutter the auricle is beating about 300 a minute, and the ventricle, as a rule, responds only to every second auricular beat, so that usually the pulse rate is one-half the auricular rate. On rare occasions the ventricle may respond to every beat, when the output from the heart is so slight that it cannot be detected by the pulse, while there is an absence of the sounds of the heart.

A classical instance is that of the greatest of clinical observers, John Hunter. Feeling ill, he happened to glance at a mirror and saw his face was very pale. He felt his pulse, and it had gone. He recognized that he was not breathing and had no desire to breathe, so he breathed voluntarily for some time until his pulse was restored. I have always looked upon this as probably a case of auricular flutter.

I think it is Leonard Hill who states that the complete cessation of the circulation for more than one or two minutes irreparably damages the central nervous system, but that the merest trickle of blood is sufficient to prevent this damage.—I am, etc.,

J. MACKENZIE.

St. Andrews, Fife, April 12th.

#### AN OUTBREAK OF RELAPSING FEVER.

SIR,—We wish to place on record an outbreak of relapsing fever observed at Accra during the present month, without for the present entering into the question of its origin.

The first case occurred in an Italian, aged 25, who had been continuously resident in the Gold Coast Colony for two and a half years. He was admitted to hospital with high fever late on March 15th, and very numerous spirochaetes were found in the peripheral blood the next morning. Following close on this case seven others were diagnosed in Africans at the African Hospital. The first of these was admitted comatose and collapsed on March 12th, and diagnosed during a febrile attack a week later. The second was admitted on March 20th, and diagnosed like the first African case a week later. Five more cases occurred, ending with three on March 29th: all these were diagnosed on admittance.

In all cases spirochaetes were demonstrated in the peripheral blood during a febrile attack. The organism corresponds morphologically to *S. duttoni*, and Cox Ingram, at the Medical Research Institute, is carrying out the work necessary to secure the strain. The cases will be recorded at length later.—We are, etc.,

G. E. H. LE FANG, W.A.M.S.,  
A. J. R. O'BRIEN, W.A.M.S.

Accra, March 31st.



## INTRACAPSULAR EXTRACTION OF CATARACT.

SIR,—May I be permitted to correct a slight inadvertence in Lieut.-Colonel Lister's interesting letter (April 7th, p. 612)? The mode of intracapsular extraction selected for the case to which he so generously refers, and in which retro-ocular haemorrhage had to be guarded against, was not Colonel Smith's. That would have been the least suitable since it requires greater pressure upon the globe than any other mode of extraction, and the pressure is followed by rapid relaxation, the effect of which upon brittle blood vessels could not but be dangerous. I have the greatest admiration for Henry Smith's operation in its proper place, and am glad to acknowledge indebtedness for his invaluable teaching, but in my case, cited by Colonel Lister, a different procedure from Smith's was adopted, for the lens was looped out entire by my fine wire loop attached at right angles to a short stem, a mode by which intracapsular extraction is effected without pressure upon the globe.

The case reported was one of four private patients on each of whose remaining eye I practised intracapsular extraction, with good result, after the first eye had been lost, elsewhere, in such good hands that a repetition of the ordinary operation would have presumably invited a similar disaster. The remarkable immunity of intracapsular extraction from post-operative irido-cyclitis makes it, to my mind, the operation of choice whenever the first eye has been lost by anything of that kind, or by needling. After retro-ocular haemorrhage, however, it is not to be recommended, unless, as in the case under consideration, the danger of cyclitis is greater still.—I am, etc.,

ERNEST E. MADDOX, M.D., F.R.C.S. Edin.

Bournemouth, April 11th.

## THE COOLIDGE X-RAY TUBE.

SIR,—I have used the Coolidge type of x-ray tube almost exclusively since the beginning of 1914, and with every satisfaction until recently. I now find that I can no longer depend upon these tubes to carry out the work for which they are designed. It has been the justifiable boast of the makers that these tubes could be so regulated as to give the desired output of a particular type of x-ray. During the past nine months, however, it has been my unfortunate experience to obtain tubes which will not "stand up" against a high voltage current. The reason appears to be that occluded gas is left in the tube which during work becomes hot and so sets free the gas; the tube then takes on some of the characteristics of a "gas" tube, showing green rings around the circumference, and being totally useless for further work until cooled down; even then the same thing happens again as soon as the tube is heated up. This I have found to occur with new tubes and with so called replacement tubes. Previously a standard Coolidge tube would run for one and a half to two hours or longer at a parallel spark-gap of 10 in. and with a current of 10 milliamperes passing through the tube, without causing any trouble or anxiety.

It appears to me that the only way out of the difficulty at present would be to have a certificate from the National Physical Laboratory stating that a particular tube has passed the requisite tests. If all users of these tubes will agree to accept no tube without this certificate, manufacturers will cease to produce anything but the best.—I am, etc.,

W. M. ROBSON, M.D., F.R.C.P. Lond.

Northampton, April 13th.

## VOMITING AFTER DEEP X-RAY THERAPY.

SIR,—The obstinate and most distressing vomiting which so frequently occurs after and often during the prolonged application of deep x-ray therapy, especially when it is applied to the thorax or upper abdomen, has been one of the most trying concomitants of the treatment.

Whatever the cause may be—whether due to direct irritation of the stomach or of the vomiting centre by the changed condition of the blood brought about by the rays—there is obviously gastric irritability, and it seemed to me to be probable that the administration of chloretone would be of benefit. The results, so far, have been satisfactory, and others, practising this form of treatment, may be glad to try it.

I give castor oil the afternoon before the treatment and an enema next morning. The patient takes a light breakfast of tea and toast and butter an hour and a half before coming for treatment, and soon after 10 grains (0.65 gram) of chloretone

is administered. I endeavour to persuade the patient to do without lunch, but, if they feel they must have something, I give a cup of strong soup with a biscuit about 1 p.m.—that is, after about the first three hours—and also I give a further 5 grains of chloretone. About 6 or 7 p.m. a further 5 grains is given, and a drop enema of a solution of the exact saline constitution of the blood. (I have used "normosal," a German preparation, dissolved in the appropriate amount of water.)

Since adopting the above procedure I have treated eight cases:

- One of epithelioma of the larynx (5 hours); no nausea or vomiting.
- One of cervical carcinoma (6 hours); no nausea or vomiting.
- One mediastinal tumour (6 hours); no nausea or vomit ng.
- One malignant prostate (4½ hours); no nausea or vomiting.
- Four scirrhus (7, 6½, 5½, 5½ hours respectively). One patient vomited once during the night after the treatment, the others not at all.

The first case on which I tried the chloretone was one of tumour of the cervical region of the spinal cord, with intense pain. This patient had had morphine and hyoscine for some time before the treatment. I only gave the 10 grains in the morning, and the patient, who had four hours' application of the rays, had no vomiting during the treatment, but did vomit intermittently for two days. Had the chloretone been continued this would not, I believe, have occurred.—I am, etc.,

J. CURTIS WEBB,

Hon. Radiologist, Gloucester Royal Infirmary.

Cheltenham, April 5th.

## THE TRAINING OF NURSES IN COTTAGE HOSPITALS.

SIR,—I would like to draw attention to the training of nurses in cottage hospitals. According to the regulations of the General Nursing Council the teaching and experience of probationers in these institutions is not, and cannot be, recognized for admission to the Register; it is true that there is a clause in the scheme under which two or more small hospitals may work together to furnish the necessary requirements, but under the conditions required this is not, except in very few instances, practicable.

It is unfortunate, for many reasons, that all the training of nurses in our small hospitals should, so far as registration is concerned, be wasted. I have no information of the number of these probationers, but as they serve about 4,000 beds the number must be very considerable. Although they receive no lectures or routine instruction from members of the staff, there can be no doubt that the training is of very real value; it is essentially practical. Their work involves a larger amount of responsibility than is the case in the big hospitals, and allows for a considerable degree of initiative; it is done under the more immediate supervision of the experienced medical staff, who, I feel sure, would confirm my opinion as to the effective value of the teaching.

These hospitals admit probationers at a younger age than the large hospitals; this, I think, is a great advantage—a girl is more teachable at that age, and, although she may then wish to take up nursing as a profession, she may alter her mind if her desire cannot be fulfilled for two or three years. Moreover, if she enters a small hospital, say, when she is 18 or 19, and finds that the work does not suit her or she is not suited to it, she has plenty of time to enter upon some other occupation.

To the cottage hospitals themselves some recognition of their training would be a great assistance, for the difficulty of obtaining probationers has, on account of the conditions now required for getting on the Nurses' Register, become a serious one; if a girl intending to become a nurse knows that two or three years spent at a small hospital will not only fill up the time until she can be admitted to a larger one but will also be counted as part of the three years' training required, she will naturally be more inclined to apprentice herself there than would otherwise be the case.

From the point of view of the larger hospitals themselves the acceptance of this training would mean that there would be a larger recruiting ground from which they could gather nurses; it would, too, provide them with a better opportunity of testing the suitability of and selecting their probationers, who also would be of more use to them than if entirely untrained, and the hospitals would not be troubled as they are at present with so many that are found quite unfitted for the work.—I am, etc.,

Bradford-on-Avon, March 24th.

CHAS. E. S. FLEMING.



## HOSPITAL POLICY.

SIR,—I note that an authority so distinguished and experienced in hospital work as Sir George Beatson<sup>1</sup> commences by expressly defining a voluntary hospital as one "supported by voluntary contributions." Moreover, he insists emphatically upon the necessity of voluntary—by which he means unpaid—service by the honorary staff, despite the fact that in his scheme no less than one-third of the entire expenses of the hospital would be borne by the patients themselves. Clearly, therefore, he has no sympathy whatever with that policy, promoted by Mr. Harman, which would claim for the staff a share in even the smallest individual contribution of the working man. Nor do I picture Sir George adopting the alternative inspiration of that fertile genius, and solemnly demanding of an astonished board of laymen at the Glasgow Western Infirmary that a "token" or "peppercorn" of—shall we say ninnepence?—be for no conceivable purpose or reason annually divided among a staff of fifty-seven.

It is very evident from his letter of April 7th that, although dwelling in Glasgow and profoundly interested in the subject, Sir George Beatson does not even yet the least realize what the policy of Mr. Harman really is. There are many others in a like position. Could any more devastating comment be made upon the notion that this policy was adequately debated in December, 1920, or July, 1921? Plainly in the eyes of Sir George Beatson such a policy as that of Mr. Harman is so repugnant that he cannot imagine anyone would seriously entertain it. Dr. Fleming<sup>2</sup> attributes to me the dictum that, in the extremely unlikely event of the survival of this sickly bantling, which has remained in a condition of suspended animation ever since its premature and precipitate delivery at Newcastle, lay boards must receive payment. Anyone who looks up the reference given in my letter will there discover that Mr. Harman himself took me to task in his most superior manner for venturing to assume that these laymen would, under his revolutionary programme, remain unpaid, and at the same time introduced, in order to illustrate free and uncontrolled volition, that priceless analogy of the British soldier to which I referred.—I am, etc.,

Chichester, April 14th.

G. C. GARRATT.

## ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

SIR,—The kind reference in your issue of March 24th to my questionnaire or skeleton scheme of annual health reports somehow seems to have missed the main point. The principle underlying the scheme may be described by the words "facts reduced to figures, and one figure one line." It was, however, not found feasible to adhere to the formula rigidly. With regard to regulated establishments a separate table is provided for each sanitary district. Further, while meant to be helpful to part-time medical officers of health and individual districts, the system is of most use in the case of a county or combined districts—that is, for compilation purposes—for the query need only be stated once, while the figures for the various districts, being all exactly opposite, can be added up in no time, giving the total for the whole area. The system can be extended to collating the figures for a group of counties—for example, the Welsh group, or the group forming England and Wales, or even larger combinations.

By demanding that every fact (in the form of a figure) should have one line (in a single district), or segment of that line (in a table comprising numerous districts), only facts of sufficient importance to warrant a line will be asked for. There are, however, other advantages, such as the securing of uniformity in presentation, economy in printing (by using stereotype plates), etc., but the proof of the pudding is in the eating, so I shall be pleased to send a copy of annual report for 1921 for a combined area of 20 districts to any medical officer of health on the receipt of six penny stamps to cover postage.—I am, etc.,

E. LLOYD OWEN,

Criccieth, April 10th.

M.O.H. for South Carnarvonshire.

## TREATMENT OF PUERPERAL INFECTIONS.

SIR,—General practitioners like myself must have read Professor Watson's address at Edinburgh (March 24th, p. 505) with a great deal of astonishment. During the last twenty-five years my partners and I have had the care of a very considerable number of cases, and our practice has been never wittingly to allow a piece of placenta to remain in the uterus,

and in case of serious doubt to make a digital exploration, and we have thought that the results have justified this practice. We cannot recall a single case where a piece has been retained and has not given rise to trouble.

Does the professor say that we have been wrong all the time? That we must revise our treatment and, despite our own experience, leave these things to Nature? Again, how large or how small a piece may one leave? Or does it not matter? And when one suspects a retained piece, for how long should one wait for it to come away? (One of us once waited four weeks.) Must the patient stay in bed the whole time? And if the patient should become gravely or fatally ill how should one explain one's inactivity to her friends? Finally, if Professor Watson were looking after the wife of a doctor friend would he himself dare to come downstairs and announce, cheerfully, that he had allowed a piece of placenta to remain in the uterus?

One cannot help wondering whether he has taken fully into account the very large percentage of cases where exploration is done at the time of confinement with a subsequent—I had almost said "consequent"—normal and uneventful puerperium. For in general practice this is the ordinary result even under surprisingly adverse conditions; so much so that one can say that the cases whose puerperium can be expected to give least anxiety are (1) those in whom no vaginal examination whatever has been made, and (2) those in whom the uterus is known to have been left completely empty at the time of the confinement.—I am, etc.,

Penge, S.E., April 10th.

H. H. PHILLIPS.

## ARTIFICIAL LEGS.

SIR,—With reference to the note on the supply of artificial legs, in your issue of March 24th (p. 525), may one be permitted to ask what are the advantages of a "light metal limb" over a "proper wooden leg"?

There are approved artificial legs on the market lighter than "the light metal limb," and the lightest of them all that I have seen is a wooden leg. It is, as are many of the light metal limbs, in point of fact too light for all but a limited number of cases. But the fact that a wooden leg can be made for an above-knee amputation only 4 lb. 2 oz. in weight is a great advance, and it should not be very long before we see a properly balanced artificial limb—one, that is, with a very light foot and ankle and a relatively heavy bucket. We have frequently found that a pensioner in possession of two artificial limbs complains of the weight of one, which upon scaling has proved to be the lighter of the two.

It is to be hoped, therefore, that now that the difficulty of dead weight as applied to artificial legs has been solved by the limb-makers, this question of balance will receive their attention, and it will be an interesting development to watch. The preference for a metal limb would appear to be based on other considerations than these, a discussion of which would be useful.—I am, etc.,

Altrincham, Cheshire, March 21th.

F. A. HOOT.

## INFECTION DURING INCUBATION.

SIR,—Surely it is an established fact that infectivity only begins with the period of invasion.

Once I was able to establish this in the case of mumps. Four pupils slept in one room at a seaside school. A developed mumps and was removed within an hour or two. B, C, and D were isolated in that room. On the twenty-sixth morning thereafter B was taken ill and removed. C and D remained isolated. On the twenty-sixth morning after that C developed the disease and in turn was removed. D did not fall ill and no other cases occurred in that school.

Thus twenty-six days was clearly shown to be the possible duration of the incubation period of mumps, and apparently it was proved that infectivity only began with invasion. I have persistently acted on this presumption in other zymotics and I cannot recall any disasters as the result.—I am, etc.,

London, E.C.

A. OLIVER WARD.

THE Spanish Cross of Commander of the Order of Alphonso XII has been conferred on Dr. Roux and Dr. Petit of the Pasteur Institute of Paris.

THE Congress of the German Dermatological Society will be held in Munich from May 20th to 23rd, when the general pathology, etiology, and treatment of eczema will be discussed. Papers will be read by Drs. Bloch, Kriebisch, Pinkus, and Riecke.

<sup>1</sup> The Scottish Voluntary Hospitals (John Smith and Son, Glasgow).  
<sup>2</sup> BRITISH MEDICAL JOURNAL, March 31st, p. 574, and April 7th, p. 616.



## Obituary.

ARTHUR LATHAM, M.A., M.D. OXON., M.A. CANTAB.,  
F.R.C.P. LOND.,

Physician and Lecturer on Medicine, St. George's Hospital.

WE announce with much regret the death of Dr. Arthur Latham, which occurred on April 13th in a nursing home, after an illness of many months. His loss will be severely felt in several quarters. Latham's opinion on cases of intrathoracic disease, and especially of pulmonary tuberculosis, was highly valued and widely sought, and will be missed by the public and by the profession. The great insurance company to which he was chief medical adviser, St. George's Hospital, and the Federation of Medical and Allied Societies will all feel his loss sorely. The leading part he played in bringing to pass that amalgamation of societies in London which is now represented by the Royal Society of Medicine will never be forgotten. For the first five years of its existence he was honorary secretary to the Society.

At the time of his death Latham held, in addition to the posts alluded to above, those of advisory physician to the Throat Hospital, Golden Square, and to the York Road Lying-in Hospital. In former years he was assistant physician to the Brompton Hospital for Diseases of the Chest, physician to the Mount Vernon Hospital for Consumption, and assistant physician to the Victoria Hospital for Children, Chelsea.

Arthur Latham was born in 1857, his father being the well known physician of Cambridge, Dr. P. W. Latham, who is still alive and active though long retired from practice. The son was sent to school at Fettes College, Edinburgh, where he was recognized as a boy of unusual intelligence, and was also distinguished as a runner and half-back at Rugby football. From school Latham went to Balliol, Oxford, then under the aegis of the great Jowett. His academic career was brilliant; a first class in the final Natural Science Schools was followed by a Radcliffe Travelling-Fellowship, a University Scholarship at St. George's, and a Research Scholarship of the Grocers' Company. During these early years Latham studied at Vienna, Heidelberg, and Berlin, and produced translations of Binz's *Lectures on Pharmacology* and Limbeck's *Pathology of the Blood*. Before his travels he had gained experience of university life at both the ancient English universities. His father at that time held the Downing professorship of medicine at Cambridge, and the son was accordingly entered at a Cambridge college, King's, although already a member of the sister university. Partaking of the education of both places, and meeting early in life the leaders in science at both universities, as well as being surrounded at home by an atmosphere that was both medical and scientific, were advantages that were not wasted on Latham. He imbibed naturally and as a matter of course a large amount of that knowledge which those less fortunately placed gain only by much greater effort. The present writer's earliest recollections of him are at this time, about 1890, at Cambridge, where he seemed to flutter about the work of the students at Addenbrooke's and in the University physiological laboratory like some elegant and interested butterfly that had already culled most of the scent from the fields of knowledge which his contemporaries were laboriously seeking to harvest. Latham always seemed to know more than the rest of us without having obviously learned it. As a matter of fact he was an extremely hard worker at anything which interested him. Gifted, however, with a natural aptitude for detecting essentials he was able to save himself much time which a less intelligent student wastes where it is of little service. Moreover, the natural trend of his mind was scientific, logical, and orderly. In addition, he had an unusual power of rapidly acquiring knowledge, and a good memory.

Latham's hospital career did not disappoint the promise of earlier days, and after holding a house appointment and the post of curator to the museum and demonstrator of pathology he was elected assistant physician to St. George's in 1898. A little later he acted as dean of the medical school for some years. In his early years as a physician he was a close friend of, and was greatly helped and encouraged in his work by, the late Herbert Allingham. It was indeed largely at Allingham's instigation that he entered the competition for a prize offered by King Edward VII for the best essay on the erection of a sanatorium. Gaining the first place in this competition definitely settled the trend of Latham's medical work, brought his name into wide public notice abroad as well as in Great Britain, and may well be regarded as the foundation stone of a success which, nevertheless, all his

friends knew must befall him sooner or later. The way in which Latham worked for that prize was characteristic of his efforts when his interest was aroused by any project. A room in the house where he lived at that time was devoted entirely to the furtherance of his work in the competition. No book or pamphlet that he could bear of or lay hands on that bore directly or indirectly on the subject was absent from this room. Latham gave himself to the work with untiring pertinacity and with the liveliest intelligence. It seemed not so much the writing of an essay as the organization of an exposition of everything that could possibly be worth saying on the subject of the competition. To his friends who understood the method of his work the only surprise would have been his failure to receive the first prize. It was in the same manner and urged by the same fiery spirit of endeavour and determination that in later years Latham did so much to further movements in which he took part. Latham was possessed of qualities which gave him great influence when he took sides in any project or debate. These qualities were courage, initiative, and the gift of lucid and impressive speaking in public. On any committee or like body where Latham served it usually happened that if he formulated a scheme or definitely supported one, that scheme was brought to fruition. It is not possible for a man who had Latham's taste for struggle and argument not to meet with opposition and to make enemies. He did both—without ever losing either his courage in face of difficulties or his inbred courtesy of demeanour in the face of his opponent. His gift for rapidly grasping the essential details of any proposition and for clearly expounding them to others made it seem probable that had the Law instead of Medicine been Latham's choice he would have had at least as great a success. He would have made in many respects an ideal medical member of Parliament. He was greatly interested in the question of the representation of medicine there and it was partly with the view to strengthening this representation and to aiding the present medical members that with one or two others he founded the Federation of Medical and Allied Societies. In his purely professional work Latham was valued as a consultant for the definiteness of his opinion and for his ready reading of character and understanding of human nature. It was through these qualities that many of his patients valued his advice on other as well as on medical matters. Without appearing to be in the least a soft-hearted man he was capable of great attachment, and he performed many acts of charitable kindness to those who needed them. To medical literature Latham's chief contributions were his book on *Early Diagnosis and Modern Treatment of Pulmonary Consumption*, which is in its fourth edition, and a *System of Treatment* which he edited with Mr. (now Sir Crisp) English. Recently he was acutely interested in the relationship between asthma and sensitization to foreign proteins, and was projecting a book on the subject in collaboration with Mr. Frank Coke, and together they had published an account of 270 cases (*Practitioner*, August, 1922). Latham's last illness prevented further work on the book from him.

Some may remember Latham in the future for his cynical comment on or drastic condemnation of their ideas which did not appeal to him. More will remember him for the clear and courageous way in which he upheld movements that he thought right and desirable. Those who knew him well will hold his memory dear for the unselfish devotion which spared and counted no effort where the welfare of those he loved was concerned, for the ready generous and lavish hospitality which he spent upon his friends, and for the zest and sense of humour with which he enjoyed the pleasures and endured the trials of an active life. His was an energetic, aspiring, and restless nature. It was granted to him to achieve much of the great objects at which he aimed, but not to reap the quiet happiness which descends with age on less ambitious spirits.—J. B.

We are indebted to Sir John MacAlister for the following appreciation:

I know that others will be able competently to testify to Dr. Arthur Latham's ability and eminence as a physician, and to his special knowledge of everything relating to pulmonary tuberculosis; but I am glad to be allowed to testify to the valuable work he did for the profession, and for the Royal Society of Medicine in particular in connexion with its amalgamation. Very fortunately for the amalgamation, Sir Richard Douglas Powell, then President of the Society, selected Dr. Latham and Mr. Pendlebury as honorary secretaries of the Organizing Committee literally within a few



days of his receiving my scheme for the amalgamation, and it would be impossible to exaggerate the enthusiasm with which Dr. Latham and his colleagues threw themselves into the work; but neither they, nor even myself, had any idea of the amount of work and worry that this labour would entail—endless committees and innumerable reports occupied over two years of devoted work. They never spared themselves, and I fear often neglected their own professional interests for the sake of the great idea which possessed them. I vividly remember one night (or was it morning?) I had to see them at a critical moment, and, late as it was, found them hard at work on their knees dealing with a mass of papers and reports spread on the floor for easier comparison, as no table was large enough to hold them. Much of the work must have been a tremendous tax on Latham's temper, for points that seemed to be settled were continually being re-raised, until at last he had the satisfaction of having the scheme practically unanimously adopted by the large meeting convened by Sir William Church, Chairman of the Organizing Committee, held in the Royal College of Physicians. But even that did not end his work for the Society. Under its new conditions, when it received the recognition of the late King Edward VII in the form of a supplementary charter, it had to be guided into its new ways; and when the new council, very shrewdly, decided that Dr. Latham and Mr. Pendlebury should be the first honorary secretaries they loyally accepted the duty. Latham's keen brain and zeal proved invaluable, and he stuck to his new post for five years. His tragic and unexpected death makes now impossible what was intended, that he should have received the highest honour within the gift of the Society—namely, to be enrolled as an honorary Fellow of the Society.

JOHN CAMPBELL MACLEAN, M.B., C.M.,  
Surgeon, Victoria Hospital, Swindon.

THE death of Dr. J. Campbell Maclean removes one of the most outstanding practitioners of the West of England. Dr. Maclean was born at Tobermory in the Island of Mull in 1846, and was the son of the Rev. Peter Maclean. He graduated M.B., C.M. at Edinburgh in 1868, and began practice at Swindon in 1869. For forty years he was medical officer for the Swindon and Highworth Union. His sympathy and help were always at the disposal of the poor, and the writer recalls many instances of his gratuitous attention to his old Poor Law patients right up to the end of his career. Of striking and handsome personality, he was to be seen commencing his rounds in an extensive country practice every morning punctually at 9 o'clock, winter and summer alike, and in the London season he journeyed up to town one day every week for the convenience of his county patients. Vigorous in mind and body despite his 77 years, he worked with the spirit of a boy right up to the last, and, although suffering some optical disability after removal of cataract, he availed himself of every opportunity to extend his knowledge and keep himself abreast with the modern developments and technique of clinical medicine. During the pandemic of influenza in 1918, when the medical resources of the town were strained to their uttermost capacity, he cheerfully offered his services to the Great Western Medical Fund Society, and took over a share of their work gratuitously. In recognition of these services he was afterwards presented with a gold watch and chain.

In his younger days Dr. Maclean was an excellent shot, a splendid horseman, and was instrumental in establishing one of the first polo clubs outside Hurlingham. He was a good cricketer, a fisherman, a swimmer, and a yachtsman, but in later years boxing appealed to him most, and he did much locally by his patronage to encourage and foster every form of clean and honest sport. He was singularly modest and unassuming. A charming host and a pleasant companion, he will be remembered by all who enjoyed the privilege of his friendship. A very eminent Freemason, he held Grand Lodge honours in the craft and corresponding rank in the Royal Arch Chapter and Mark Masonry, and in his earlier days he was much in demand at installation ceremonies owing to his knowledge of the work.

Within a week of his death he gave evidence at an inquest and in the evening attended the annual boxing show. On the following day he was suffering from a cold, pneumonia supervened, and, despite the unremitting attention of his colleagues, he passed peacefully away. The funeral took

place on April 6th, in the presence of an immense concourse.

Dr. Maclean celebrated his golden wedding on July 4th, 1921. He is survived by his wife and a daughter.

W. F. J. W.

## Universities and Colleges.

### UNIVERSITY OF CAMBRIDGE.

DR. G. S. GRAHAM SMITH, F.R.S., has been appointed Reader in Preventive Medicine for a period of four years.

The plan for the next final examinations for medical and surgical degrees has now been issued. Part I of the third M.B. examination (surgery, midwifery) begins on June 12th, and ends on June 16th; Part II (principles and practice of physic, pathology and pharmacology) begins on June 13th, and ends on June 20th. The M.Ch. examination will be held on June 12th, 15th, and 16th. The certificates and examination fees of candidates, accompanied by their postal addresses, must reach the Registry by Saturday, May 12th.

### ROYAL COLLEGE OF SURGEONS OF ENGLAND.

A QUARTERLY Council was held on April 12th, when Sir Anthony Bowlby, President, was in the chair.

The President reported that the vacancy in the Court of Examiners would be filled at the next meeting of the Council on May 10th.

**Jacksonian Prize.**—This prize for 1922 was awarded to Mr. Sidney Forsdike, F.R.C.S., B.S., M.D., the subject being "The effects produced by radium on living tissues, with special reference to its use in the treatment of malignant disease." The following subject was selected for the Jacksonian Prize for 1924: "The pathology, diagnosis, and treatment of oesophageal obstruction."

Mr. Douglas Gabell was elected a Member of the Board of Examiners in Dental Surgery.

The following Members of twenty years' standing were elected to the Fellowship: John Howard Mummery, Surgeon Vice-Admiral Sir Robert Hill.

Sir Arthur Keith was elected Vicary Lecturer for the ensuing occasion.

### CONJOINT BOARD IN SCOTLAND.

THE following candidates have been approved at the examination indicated:

**FINAL EXAMINATION.**—*Medicine:* H. P. Sen, Wilhelmnia C. Storrer, Ruby S. Beveridge, Eliazar Gelfer, D. G. Contis, Martha D. Devan, M. N. Gelb, G. A. P. McConey, D. B. Nicol. *Surgery:* C. A. Paulusz, M. N. Gelb. *Midwifery:* T. F. Kelly, Ruby S. Beveridge, C. A. Paulusz, W. E. Haydon, Martha D. Devan, G. A. P. McConey, T. J. Muir. *Medical Jurisprudence:* J. A. McCann, J. S. Whiteside, J. McAuley, Anna G. Laubscher, D. M. Safwat, Eliazar Gelfer, H. V. R. McKinlay, A. W. H. Noble, J. Ryan, L. McLean, Mary C. Semple.

The following candidates, having passed the Final Examination, have been admitted L.R.C.P.E., L.R.C.S.E., L.R.F.P. and S.G.:

J. M. McIntock, Minnie E. McMurray, J. M. Cockburn, R. Lal Chopra, N. J. Laubscher, W. N. Strifling, G. A. W. Wickham-Smith, D. Maximos, D. J. Dubash, E. R. C. Walker, P. G. Bainbridge, W. Paris, J. J. du Pre la Roux, J. H. Murrell, S. J. Reich, D. K. Sabhesan, E. Levine, L. Jaffit, J. J. Mann, D. V. Walpole, J. S. Bizzett.

### CONJOINT BOARD IN IRELAND.

THE following candidates have been approved at the examination indicated:

**FINAL PROFESSIONAL.**—T. A. Austin, A. P. Brown, Josephine A. Carson, M. Cremlin, Victoria E. Davidson, Evelyn S. Delany, J. P. Devlin, D. A. T. Eaton, I. J. Eppol, T. V. Fitzpatrick, S. G. Gilmore, A. J. Harte, M. J. O'Riordan, R. D. Scale, V. F. Walsh.

## The Serbires.

### R.A.M.C.—EXAMINATION FOR COMMISSIONS.

THE War Office announces that an examination for not less than twenty commissions in the Royal Army Medical Corps will be held on August 1st, 1923. Applications to compete should be made to the Secretary, War Office, not later than July 23rd. The presence of candidates will be required in London from July 31st. Prospective candidates can obtain a full statement of the duties and emoluments of the service on written application to the Secretary (A.M.D.I.), War Office, Whitehall, S.W.1.

### AUXILIARY R.A.M.C. FUNDS.

THE annual general meeting of the subscribers to the Auxiliary Royal Army Medical Corps Funds will be held at 11, Chancery Street, W.1, on Friday, April 27th, at 4 p.m., when the financial statement for 1922 will be presented and the officers for the ensuing year elected.

### DEATHS IN THE SERVICES.

Brigade Surgeon Edwin Clement Bentley, Royal Medical Service (retired), died suddenly in London on March 22nd, aged 64. He was educated at St. Thomas's Hospital, and took the M.D. in 1853, and the L.R.C.P. Edin. and F.R.C.S. Eng. ten years later. Entering the I.M.S. as assistant surgeon, in the Company days, in



1859, he became surgeon major in 1873, and retired with an honorary step of rank as brigade surgeon in 1885. The whole of his service was passed in civil employ in Lower Bengal, where he held for many years the important civil surgery of Rajshahai. He was the author of a small work on *The Diarrhoea of Infants in India*, published in 1867. Several members of his family have served in the I.M.S.; the late Surgeon Major C. E. W. Bensley was his brother, Colonel C. H. Bensley is his son, and Lieut.-Colonel C. N. Bensley his nephew.

Lieut.-Colonel David C'aude Kemp, I.M.S.(ret.), died of angina on April 3rd, aged 51. He was born on June 8th, 1871, the eldest son of the late D. S. Kemp, F.C.S., and educated at University College, London, taking the diplomas of L.R.C.P.Lond., M.R.C.S. Eng., and L.S.A. in 1896. He went out to India in 1893 as a special plague officer, and entered the I.M.S. as lieutenant on January 28th, 1899, becoming lieutenant-colonel after twenty years' service, and retiring on October 22nd, 1921. Most of his service was spent in civil employ in Madras, where he was for several years resident medical officer of the Madras General Hospital. He served in the late war, and in 1914-15 was specialist in advanced surgery in the Kitchener Hospital for Indian troops at Brighton.

## Medical News.

THE annual meeting of the Royal Medical Benevolent Fund will be held at the Royal College of Physicians, Pall Mall East, S.W., on Monday, May 7th, at 4 p.m., when the annual report and financial statement for 1922 will be presented and the officers and committee for the current year elected.

A COURSE of lectures on pathological research in its relation to medicine has been arranged for the summer session at the Institute of Pathology and Research, St. Mary's Hospital, W.2. The lectures, which will be delivered in the Lecture Room of the Bacteriological Department of the Institute on Thursdays at 5 p.m., commence on April 26th, when Sir Almroth Wright will discuss the principles of medical research. The lectures are open to the medical profession and to all students in medical schools without fee.

It is announced that Sir Charles Brown of Preston has given £800 to the Harris Orphanage, Fulwood, Lancashire, to which he is consulting physician. In offering the gift Sir Charles Brown said that he was prompted to make it during his lifetime by the desire to add to his own happiness by seeing the benefit which will result to the children. The gift will enable the council to purchase a house in Lytham which has been occupied for some seven years as a seaside home for sick and convalescent children of the orphanage.

DR. MILLAIS CULPIN will give a course of ten lectures on psycho-neuroses at the London Hospital Medical College on Tuesdays and Fridays at 5.15 p.m., commencing on May 1st. The fee for admission to the course is £1 1s.

A DISCUSSION on some problems in the lighting of printing works will be held at a meeting of the Illuminating Engineering Society at the house of the Royal Society of Arts on Tuesday, April 24th, at 8 p.m.

AT the meeting of the Tuberculosis Society to be held on Monday, April 23rd, at 8 p.m., at the Margaret Street Hospital, Dr. A. K. Chalmers, M.O.H. for Glasgow, will read a paper on housing and tuberculosis.

A COURSE of six post-graduate lectures on ante-natal care will be given by Professor A. Louise McIlroy at the London (Royal Free Hospital) School of Medicine for Women, Hunter Street, Brunswick Square, W.C.1, on Tuesdays at 5 p.m., commencing on May 1st. Admission is free to medical practitioners and post-graduate students.

THE Association of Public Vaccinators of England and Wales will hold a dinner at the Hotel Cecil, Strand, W.C., on Friday, April 27th, at 6.30 for 7 p.m.

A SPECIAL course of lectures and demonstrations has been arranged by the London University Extension Board and a committee of the International Society of Medical Hydrology. It will be held at the University, in laboratories in London, and at two of the British spas, from May 29th to June 4th. Full particulars will be announced later.

FROM the statement issued by the India Office on April 13th regarding the prevalence of plague in India it appears that during the six weeks ending March 31st there were 48,041 deaths. The mortality was highest in Bihar and Orissa, United Provinces, Punjab, and Delhi. Special measures have been taken to encourage inoculation and rat destruction in Delhi Province, which is administered by the Government of India, and the population of Delhi are reported to be coming forward readily for inoculation.

AT a meeting of the Association of Economic Biologists, to be held in the Botanical Lecture Theatre of the Imperial College of Science, Prince Consort Road, S.W.7, on April 27th, at 2.30 p.m., Dr. C. M. Wenyon will read a paper on some recent observations on pathogenic protozoa of plants and animals.

THE Automobile Association states that its attention has been drawn by the authorities to the insufficient illumination of number plates on motor vehicles. The Regulations do not prescribe the distance from the car or motor cycle at which the index mark and numbers should be readable after lighting up time, but in their own interests all motorists should satisfy themselves that their lighting arrangements are so contrived that—as required by the Regulations—every letter or figure on the illuminated identification plate is rendered "easily distinguishable."

A COURSE of eleven lectures on the management and feeding of infants and young children will be given by Dr. Eric Pritchard to qualified practitioners at the Infants' Hospital, Vincent Square, S.W., on Mondays and Thursdays at 6 p.m., commencing on April 26th. The fee for the course is two guineas, and those participating are entitled to attend the round-table consultations held by Dr. Pritchard at the hospital on Tuesdays and Fridays, and are also afforded opportunities of visiting the Nursery Training School, 3, Wellgarth Road, Golders Green, N.W., and the Home for Blind Babies, Chorley Wood, on Saturday afternoons at 3 o'clock.

PROFESSOR BORDET, director of the Brussels Pasteur Institute, has recently been presented by the King of Sweden with the Grand Order of the Polar Star.

A COMMITTEE has been formed to make arrangements to celebrate the 70th birthday of the well known Italian parasitologist, Professor Battista Grassi, by the establishment of a "Grassi Foundation for the zoological study of parasitic diseases." Subscriptions should be sent to the *Rivista di Biologia*, 27, Via della Dogana, Vecchia, Rome.

DR. NATTAU-LARRIERE, a well known writer on tropical disease, has been nominated professor in the new chair of colonial studies and pathological protistology at the Collège de France.

## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR OF THE BRITISH MEDICAL JOURNAL, *Aitology*, Westrand, London; telephone, 2630, Gerrard.

2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand, London; telephone, 2630, Gerrard.

3. MEDICAL SECRETARY, *Medisecra*, Westrand, London; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Journal is 429, Strand, London, W.C.2.

## QUERIES AND ANSWERS.

### THE NOTATION OF CORRELATION.

"H." writes: In reading reports such as those issued from the Francis Galton Laboratory for National Eugenics, and some of those published by the Medical Research Council on statistical matters, the ordinary reader is puzzled by some of the mathematical formulae used; for instance, in the Medical Research Council's Report on the relation between home conditions and the intelligence of school children, a subject in which many of us would like to take an intelligent interest, such a statement as that the correlation is  $+0.2027 \pm 0.0815$  is encountered. I gather that there is a direct correlation, but as I do not know what unity is my understanding of the statement is vague.

\* \* The subject was fully discussed and explained in an article published in this JOURNAL of July 13th, 1907 (p. 95), and it is not easy to state the facts and theories briefly. It may, however, be said that perhaps the most graphic way of apprehending the idea of a coefficient of correlation is to take the case of two equally variable quantities,  $x$  and  $y$ . Suppose we plot on a diagram the mean values of sets of  $y$ 's associated with particular values of  $x$ , the mean value of  $y$  when  $x$  is equal to 1, the mean value of  $y$  when  $x=2$ , and so on. Then, if the points representing the mean values of  $y$  lie on a horizontal straight line parallel to the base, clearly  $y$  has on the average the same



value whatever  $x$  is; there is no correlation between  $x$  and  $y$ . But if  $y$  increases as  $x$  increases, the line of means slopes upwards to the right; if  $y$  decreases as  $x$  increases it slopes downwards to the right. The coefficient of correlation under these conditions measures the slope of the line; it is positive in the former and negative in the latter case. When it is equal to unity, either  $+1$  or  $-1$ , the correspondence is absolute: for an increase of one unit in  $x$  there will be an increase of one unit in  $y$  absolutely—all the  $y$ 's corresponding to the given  $x$  will be equal—if the correlation is  $+1$ ; if the correlation is  $-1$ , the decrease of  $y$  will also correspond absolutely to the increase of  $x$ . Of course in many cases the mean  $y$ 's corresponding to given  $x$ 's do not lie on a straight line, then the coefficient of correlation ( $r$ ) is not a completely satisfactory measure of the relation. But even in those cases the coefficient gives some idea of the inter-connection, and must always take an arithmetical value lying between 0 and  $\pm 1$ .

The fraction appended to the coefficient after the sign  $\pm$ , is called its "probable error," and measures its reliability, so far as the reliability depends upon the size of the experience—the number of cases examined. Roughly speaking, unless a coefficient is at least two or three times the size of its "probable error" it cannot be regarded as significant.

The other measure of correlation used in the writings mentioned—the correlation ratio, usually represented by the Greek letter  $\eta$ —is designed to measure correlation when the curve of mean  $y$ 's for different values of  $x$  is not approximately a straight line. It also must take an arithmetical value between 0 and  $\pm 1$ , and is to be thought of in the same way—namely, as an arithmetical measure of the closeness of agreement between the variations of the quantities.

#### DILATATION OF CERVIX.

"D. L."—The results of dilatation of the cervix uteri by tents are probably as good as but no better than those of simple dilatation by graduated metal dilators followed by curettage. If tents are used, very careful precautions must be taken with regard to their sterilization. A good method is to leave them for several days in an ethereal solution (1 in 1,000) of mercury perchloride. It may be advantageous to dilate up to 17 or 18 mm. (17 or 18 Hegar) before introducing the tent, and then to introduce two or even three tents, side by side, leaving them in position for twenty-four to forty-eight hours. An anaesthetic is sometimes necessary for their removal.

#### BACTERIOLOGY OF SEA-WATER BATHS.

DR. J. C. MATTHEWS (Liverpool) writes: With reference to the query by "A. G." (p. 666) I beg to call his attention to the article on the "Bacteria of the Water of Public Swimming Baths," by Professor Ernest E. Glynn and J. C. Matthews, in the *Journal of State Medicine* for 1904 (p. 400). I shall be interested to correspond with him.

#### INCOME TAX.

"ALPHA" asks what expenses are allowable, especially in respect of rent and kindred charges.

So far as a house used both for private and professional purposes is concerned a reasonable proportion of all general charges—for example, rent and rates, heating and lighting, cleaning, furniture renewals, etc.—can be deducted; the proportion must depend on the facts of each case. One-third is usually right in a medium-sized provincial town and one-half where the cost of living in a convenient situation is higher; two-thirds would apply to special sites or where an abnormal amount of accommodation is used professionally. The other surgery is a professional matter entirely, seeing that the residential portion is occupied rent-free by the dispenser, and the whole rent is allowable, including the cost of keeping the surgery clean. Other expenses mentioned are allowable; matters not referred to are telephone charges, stamps and stationery, and upkeep—but not improvement—of the equipment of instruments, etc.

#### LETTERS, NOTES, ETC.

##### EPIDEMIC HICCUP.

DR. E. ARCHER-BROWN (Johannesburg) writes: Under this heading in the *BRITISH MEDICAL JOURNAL* of April 7th (p. 603) appears a summary of the pathology of this strange disease, and mention is made of its frequent association with encephalitis lethargica. Last year, whilst engaged in post-graduate study in Philadelphia, I was much interested in an epidemic of this disease which broke out amongst the students at the Evans Dental Institute. In some cases there was hiccup which lasted for weeks, and several deaths were recorded.

Unfortunately I had occasion to visit the Dental Institute as a patient, and a few days later realized that I had become infected. I awakened one night with violent hiccup; this lasted without

intermission for three days and three nights: sleep and the taking of food were impossible, and the violent periodic contractions of the diaphragm at intervals of one to two minutes were extremely painful. I tried morphine but without relief, and then, recalling that for a similar epidemic in South Africa I had used chloretone with success, I took 5-grain capsules of this drug every hour until sleep was induced. On awakening the distressing spasms had ceased.

From my South African experience I should say that hiccup is often associated with epidemic influenza when it is of evil prognosis.

#### VENEREAL DISEASE PUBLICITY.

THE General Secretary of the National Council for Combating Venereal Diseases (102, Dean Street, Oxford Street, W.1) writes: In the synopsis of the London County Council's Public Health Committee's Report (Venereal Diseases Section) in your issue of April 14th the statement occurs that "the Council [L.C.C.] now carries out its publicity work through its own official channels, and the arrangement with the National Council for Combating Venereal Diseases to undertake such work on its behalf has been terminated. . . ." We find that some misunderstanding has arisen owing to this statement. The publicity work referred to in the L.C.C. report is the press publicity; the propaganda work undertaken by the National Council on behalf of the L.C.C. still continues, and the arrangement has been confirmed for the year 1923-24.

#### DISAPPEARANCE OF RODENT ULCER AFTER ERYSIPELAS.

MR. H. FLECKER, F.R.C.S. (Melbourne, Victoria), writes: With reference to Dr. Grant's case of rodent ulcer (January 13th, 1923, p. 82), where operation was refused and which cleared up after an attack of erysipelas, it would be interesting to know whether x-ray or other treatment had been advised. If not, why not? In the *Medical Journal of Australia* for February 24th last is a description by myself of a very extensive involvement of the nasal cartilages which yielded at once to deep x-ray treatment. This is in accord with similar experiences by Moleworth and Harrison, separately described in previous numbers of the same journal. It seems probable that all rodent ulcers, even when involving cartilage, periosteum, or bone will readily yield to x-ray treatment, provided that rays of sufficient penetration and intensity are employed. This last condition is most important.

#### LILLIPUTIAN HALLUCINATIONS.

THE letter from Dr. F. M. Rowland published in the *BRITISH MEDICAL JOURNAL* of November 18th, 1922 (p. 939), has induced Dr. HENRY P. ELLIOT of Cooktown, Queensland, to send us the following note of his own experience.

"Twelve years or so ago, when in practice at Burketown, N.Q., I went down with a pretty severe attack of malaria, with a temperature round 105° to 106°. I was 'teaching' at the time, taking my meals at the hotel. Friends used to drop in during the night and noticed that I always swept my hands over the sheet when I lay down or changed my position. First I had a nightmare of horses jumping over me, but knew that once they had gone the 'little men' would come, and they invariably did. They were jolly little fellows, an inch or so in height, with tin hats like inverted bowls. (Recollections of Java, Singapore?) They were dressed in vivid colours; blue and yellow were always combined, blue hats and yellow dresses, or vice versa, and red and green in the same way. They ran and played about me, but made no noise, reminding me of ants by their apparently purposeless energy. My one concern was that I might not hurt them, and always brushed them aside most carefully before I moved. The secret slipped out later, and I fell in for a considerable amount of chaff; 'tin hats' evidently then having a meaning which only lately I have heard applied to alcoholics."

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 34, 35, 38, and 39 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 36 and 37. A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 123.

#### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	...
Each additional line	...	...	...
Whole single column (three columns to page)	...	...	...
Half single column	...	...	...
Half page	...	...	...
Whole page	...	...	...

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 61, Strand, London, not later than the first post on Tuesday preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive letters addressed either in initials or numbers.



## An Address

ON

## PANCREATITIS AND ITS ASSOCIATION WITH CHOLECYSTITIS AND GALL STONES.\*

BY

SIR GILBERT BARLING, Bt., C.B., M.B., F.R.C.S.,  
CONSULTING SURGEON, BIRMINGHAM GENERAL HOSPITAL.

It is necessary to recall briefly the anatomy of the parts concerned. The common bile duct and the duct of the pancreas approach each other very obliquely and join in the ampulla of Vater, which opens through the papilla into the second part of the duodenum; a slight sphincteric apparatus surrounds the papilla. It is also necessary to recall that the lower portion of the bile duct is embraced by the head of the pancreas, as is the ampulla; also that the duct of the pancreas is a tube of considerable size, and that there is sometimes a secondary duct of the pancreas of small calibre opening into the duodenum apart from the common orifice with the bile duct.

It has been suggested that fluids may find their way from the duodenum into the bile and pancreatic ducts, but I think this unlikely. If, when the parts are removed at autopsy, the ends of the duodenum be ligatured and the gut filled with coloured fluid, it is not possible by forceful compression of the duodenum to squeeze fluid into the ducts. Important points for remembrance are: that infection may easily spread from the gall bladder down the bile ducts, thence by the pancreatic duct into the pancreas, and that inflammatory processes in the head of the pancreas may compress the ampulla and the terminal portions of the common bile duct and pancreatic duct, producing obstruction to the flow of secretions into the duodenum, causing also some damming of these secretions in the ducts and giving rise to jaundice.

I believe that the dominating factor in practically all cases of pancreatitis is infection from the biliary passages, usually, but not necessarily, associated with gall stones. Thrombosis and other factors, such as the adrenals, may play a part, but the presence of infection is the important matter. It is true that experimental injection of sterile bile into the pancreatic duct may set up an intense pancreatitis, as may the injection of other irritating fluids, but clinically I much doubt if pancreatic inflammation arises in this way. The most favourable circumstance for the regression of bile into the pancreatic duct would appear to be the impaction of a small stone in the lower end of the ampulla, but in four of my cases in which this occurred there was no pancreatitis present. Bearing on the induction of acute pancreatitis two cases of extraordinary interest were published recently.<sup>1</sup> In both cases a round-worm had intruded from the duodenum into the pancreatic duct, setting up in one case an acute haemorrhagic pancreatitis, in the other a less intense condition approximating to the subacute. It is highly probable that the inflammatory condition was induced partly by stasis of pancreatic secretion from the mechanical plugging of the duct, and partly by infective material carried in by the round-worm.

Infection of the biliary passages starts in and from the gall bladder, and is probably an excretory one through the liver. Once infection has arisen it is very difficult to exterminate, even when the gall bladder has been removed and the common duct drained, and one may recall how long-continued infection may be—twenty years or more, for instance, when the organism is the *Bacillus typhosus*.

Pancreatitis may range from an intense fulminating widespread condition which kills in a brief period through a gradually descending scale of intensity to a limited dense patch in the head of the organ, producing symptoms mainly of obstruction to the common duct, difficult to discriminate clinically in some cases from carcinoma, and distinguishable occasionally from carcinoma by microscopic examination only.

It is quite impossible in a brief review to give adequate consideration to these varying and widely divergent pictures presented by pancreatitis. On the survey of a large number of cases of operation for gall stones, it is possible to say that in from 25 to 30 per cent. some degree of pancreatitis is revealed.

## Acute Pancreatitis.

Acute pancreatitis is a surgical emergency with a high but, I do not doubt, a lessening mortality. Never diagnosed in the early days when the condition was first recognized, it is now one of the possibilities always in the mind of the surgeon who is face to face with an acute abdominal emergency which does not conform absolutely to a type, and a correct diagnosis is now made from time to time. In view of the probability that an acute abdominal condition, incompletely diagnosed, requires operative interference, and that acute pancreatitis is one of the things which may be creating the necessity for interference, it is of great importance to secure as accurate a diagnosis as possible, because, whilst in most acute abdominal conditions the time spent in operating should be reduced to a minimum, it is especially true of acute pancreatitis, in which prolonged anaesthesia is very detrimental.

In the diagnosis of acute pancreatitis I should lay great stress on the following clinical points: the pronounced shock of the onset, the severe pain in the back about the lower dorsal region, and usually the localization of the pain and tenderness in the mid-abdomen. Are there any other indications which may help? The presence of glycosuria would, at all events, be suggestive, but it occurs quite infrequently. The diastatic index of the urine should certainly be investigated and Loewi's test should be applied; both, however, should be resorted to as early as possible after the onset of the attack. It is, I think, clear that the diastatic index may be greatly raised in the early hours of the attack and may quickly fall to something like normal. My colleague Dr. Rose tells me that in four recent cases under his care none of the patients had glycosuria, though in two out of three in which the examination was made the diastatic index of the urine was 50.

Dr. Hillier, clinical pathologist at the General Hospital, has been kind enough to make some observations for me in acute abdominal conditions other than pancreatic, to determine whether a raised diastatic index is found in acute conditions not due to the pancreas. He found a normal index in cases of acute appendicitis, strangulated intestine, perforated duodenal ulcer, and so on; in one case of pneumococcal peritonitis the index was as high as 50, but in another similar case it was only 10. The highest index he records was 200 in a case of cholecystitis with perforation of the gall bladder; unfortunately there is no record of the state of the pancreas. My colleague Dr. Russell has been kind enough to place at my disposal a fairly long series of cases of various kinds of diseases in which the state of the diastatic index was investigated. From these no very definite conclusion emerges, but they were practically all cases of chronic disease. What is needed is the estimation of the diastatic index of the urine in all cases of cholecystitis, gall stones, and suspected pancreatitis, and this estimate should be made in the earliest stage of the disease. If this were done, and it takes but a short time to carry out, I believe a real help may be found in a considerably raised index when the pancreas is gravely implicated, and so the most direct and the shortest operative interference would be promoted. Mackenzie Wallis distinctly confirms this view.<sup>2</sup>

What is the fate of a patient who recovers from this grave condition? In the few cases I have been able to follow the patients have had ordinary good health even when masses of pancreatic tissue have been removed. Glycosuria is generally absent in the acute attack, and as far as I can learn does not often follow it. The influence of disease of the pancreas in the production of glycosuria and diabetes is most potent, but I think we must conclude that the islands of Langerhans, or at all events a large proportion of them, escape destruction in acute pancreatitis. I believe this to be true also in the less severe forms of inflammation, for in my own experience glycosuria is uncommon in pancreatitis of the subacute or chronic kind, and if present may be quite transient. We all of us may, when investigating cases requiring operation in which there is no question of gall stones or infection of the pancreas, find moderate glycosuria, and we recognize that other organs may be at fault to explain the failure of metabolism which produces the glycosuria.

Professor Shaw Dunn and Dr. Wynn have placed at my disposal two specimens of diseased pancreas showing that severe destructive changes may occur in the pancreas and yet the islands of Langerhans survive. In the one the pancreatic trouble appears to have begun from calculi in the duct of Wirsung; this was followed by destruction of the whole of the glandular tissue of the pancreas, which is

\* Delivered at the meeting of the Birmingham Branch of the British Medical Association, March 15th, 1923.



replaced by fat, and eventually a malignant growth developed in the middle of the organ. Despite the complete destruction of the gland tissue the islands of Langerhans escaped and can easily be seen in a lantern slide. On only one occasion out of five examinations was sugar found. The second specimen is one of haemachromatosis of the pancreas: the glandular tissue is again badly damaged by fibrosis, but the microscope shows the presence of a large number of the islands; in this case sugar was found *post mortem* in urine in the bladder.

#### *Subacute Pancreatitis.*

I have notes of several cases operated upon for gall stones with subacute inflammation of the pancreas almost merging into the acute form; they differ from the intense cases in that the operations were not emergencies, though enlargement of the pancreas could in some of the cases be determined by palpation; but what led to operation was the diagnosis of gall stones, present in all but one, in which there was only a well marked cholecystitis. Although the diagnosis of gall stones called for operation, features were present in some of these patients with subacute pancreatitis which strongly suggested that the pancreas was involved; in some it could be palpated. The pain complained of in the final attack differed from ordinary gall-stone colic in that it was diffuse, was centred mainly in the mid-abdomen, was persistent, and accompanied by pain in the back in the lower dorsal region; in one patient free fluid was recognized in the abdomen. All of the patients were more seriously ill than those with mere gall-stone colic, in whom there is generally rapid improvement when the acute pain has passed. I note also that there was jaundice in some of the patients and shivering; it is not easy to differentiate between stone in the common duct and infective pancreatitis.

In all the subacute cases of pancreatitis fat necrosis existed—sometimes quite slight, in others extensive; in some a considerable amount of free fluid was found in the peritoneal cavity, slightly brown in colour and with a curious sheen like shot silk; the fluid had a feeble digestive power, and I regard it mainly as a peritoneal exudate provoked by a slight escape of pancreatic secretion into the cavity. In none of these cases was the pancreas incised or otherwise dealt with directly; there seemed no indication, and relief was given only by draining the common bile duct; recovery was usually slow, and I have notes of two cases in which death followed.

In one of these the patient, a man aged 70, upon whom I had operated for stone in the gall bladder, cystic and common ducts (the gall bladder not being removed), there was then no pancreatitis, but the patient afterwards relapsed. At the second operation, eighteen months later, there was no recurrence of stone, but the pancreas was diffusely inflamed and fat necrosis existed. The common duct was drained, but death occurred on the tenth day.

In the other patient, a delicate woman of 60, upon whom I operated for stone in the gall bladder and common duct, the gall bladder was removed; a year later there was severe general pancreatitis, detected by palpation, and slight fat necrosis was found; there was no recurrence of stone. The common duct was drained; a slow convalescence followed, and the patient left the nursing home well and remained so for about two months, when, I am told, the pancreatitis recurred; the organ could be felt very much enlarged, and in a few days part of my incision reopened and purulent stinking fluid escaped. Further operation was refused, and the patient died a few days later, the actual cause of death being described as uraemia with suppression.

For example, my other cases have remained well and, with one exception, free from glycosuria. In the exception there was severe proleucystitis without gall stones and considerable glycosuria for a few days. After operation the sugar disappeared, but three years later sugar again appeared in the urine, and the pancreas appears to be enlarged.

#### *Chronic Pancreatitis.*

In the cases which may be grouped under chronic pancreatitis the disease is usually, though not always, limited to the head, especially to that part which embraces the common duct or ampulla. The condition arises in association either with stone in the gall bladder, in the bile ducts, or in both; but it may undoubtedly exist unassociated with stone and give rise to a train of symptoms indistinguishable clinically from carcinoma of the head of the pancreas, and distinguishable with certainty sometimes, even after the organ has been

exposed, only by microscopic investigation. It is worth bearing in mind that pancreatic calculus may give rise to a limited induration in the head of the organ and be quite as difficult to interpret as those cases in which the biliary apparatus is at fault. One of the real difficulties in operation for stone in the common duct arises from these dense indurations of the pancreatic head obscuring the presence of stone at or near the ampulla; this is the commonest explanation of a stone in the common duct missed at the time of operation. I have just had a vivid reminder of an example of this misfortune in one of my early cases.

I operated in 1904 on a patient for gall stones, found a small contracted gall bladder but no calculi; the gall bladder was excised, and the ducts, which were very patent, were opened and investigated, but no calculus was discovered; there was a small indurated area in the head of the pancreas which I thought explained the persistent jaundice, and as I found that a bougie passed freely from the common duct into the duodenum I concluded that no stone was present, but I was rather uncertain whether the induration in the head of the pancreas was malignant or inflammatory. During convalescence further colic occurred, and I reopened the abdomen and found with great difficulty a small stone in the ampulla.

From this case I learnt one lesson—namely, that a good-sized bougie may pass through the papilla into the duodenum by the side of a calculus in the extreme lower part of the common duct. This reminiscence of the past was brought home to me by the fact that the same patient came to see me for another matter quite recently, when his medical adviser was kind enough to send me all my letters written in 1904.

May I recall yet another mistake, for it is by our mistakes that we learn most?

In a patient who had long been jaundiced and from whom I had removed a single stone in the gall bladder, a very hard mass the size of the thumb existed in the head of the pancreas around the common duct. Fully under the impression that the condition was carcinoma I did cystenterostomy. The patient died from secondary haemorrhage a week later, when necropsy showed that the condition was not malignant but inflammatory.

#### *Yet a third instructive mistake:*

The patient, a male aged 60, deeply jaundiced, wasted, with marked evidence in his stools of failure of pancreatic digestion, with a much distended gall bladder, and a palpable mass in the region of the pancreas, had been diagnosed as suffering from carcinoma of that organ. My own reason for doubting the diagnosis was that the patient had experienced occasionally rather severe attacks of pain almost amounting to colic, and I concluded that exploration was required. At the operation the existence of a distended gall bladder was verified, no stone was found in the gall bladder or bile ducts, but a massive nodular enlargement was felt in the head of the pancreas and was regarded as certainly malignant. The patient died two weeks later, and the necropsy revealed in the middle of the pancreatic mass, quite deep in the surface and about half an inch from the ampulla, a pancreatic stone the size of the tip of the little finger.

If I had incised at the time of the operation I might well have detected this stone, but I was strongly impressed with the belief that the thickening was a growth, and I am always chary of incising the pancreas without very good reason, because of the risk of escape of pancreatic secretion into the abdomen or through the wound, with troublesome digestion of skin, etc. This case is also of interest from the point of view of diagnosis, because it is one of the exceptional cases with deep and persistent jaundice and a largely distended gall bladder not due to malignant disease. If an incision is made in the head of the pancreas great respect should be entertained for the arterial supply through the pancreaticoduodenal vessels. I have seen one fatal duodenal fistula result from the division of these vessels in exploring for stone supposed to exist in a small dense induration in the head.

The last observation I permit myself to add with reference to the condition which occurs not infrequently in jaundiced patients and which is spoken of as catarrhal jaundice and is a result of plugging of the common duct by inspissated bile. I believe the condition which really explains the jaundice is inflammation of the head of the pancreas compressing the common bile duct.



## THE TREATMENT OF DIABETES MELLITUS.

ABSTRACT OF THREE LECTURES GIVEN AT THE  
LONDON HOSPITAL

BY

O. LEYTON, M.D., D.Sc., F.R.C.P.,  
PHYSICIAN TO THE LONDON HOSPITAL.

THE diagnosis and treatment of diabetes mellitus advance rapidly. At comparatively short intervals they need reconsideration. At the present time we recognize that there are some conditions which simulate diabetes mellitus fairly closely and nevertheless may be considered negligible. We also recognize that during the last few years great advances have been made in the original treatment of diabetes mellitus by restricted diet, and that the correct application of present-day methods will arrest the disease in the majority of patients.

No one has been able to frame a satisfactory definition of diabetes mellitus. This is not difficult to understand when we recognize that it, like many other diseases, is a certain deviation from the average and that there is no unanimity as to what is the minimum deviation which is to be termed disease. In order to take an intelligent view on this question an inquiry must be made into the variability of the quantity of dextrose in the urine and in the blood.

Sugar is present in the urine of normal fasting men even when they have not been submitted to any mental or physical strain: the quantity excreted in an hour is in the region of 20 mg., and is not recognizable by the commoner tests for sugar. The quantity of sugar in the urine rises after a meal containing bread and other carbohydrate food, but in all probability this is due to the excretion of unusable sugars and not of dextrose. The administration of 20 grams of dextrose to a fasting man does not lead to any increase in the sugar in the urine, but often 50 grams will do so, raising the excretion to 50 mg. an hour. This slight increase of sugar in the urine, an increase which is not recognizable with Benedict's ordinary qualitative test, has been termed "glycuresis" in contradistinction to "glycosuria." This latter term is reserved for the condition in which a positive result is obtained by one of the ordinary tests for sugar in the urine. The addition of 25 grams of dextrose to every meal may lead to 1.5 grams dextrose being excreted through the kidneys in twenty-four hours. Benedict takes the view that when that quantity is exceeded in the twenty-four hours it is evidence that there is pancreatic insufficiency. His view is far from universal. Some observers state that sugar may be given by the mouth in such quantities as to cause nausea without glycosuria occurring, whilst Woodyat, Sansum, and Wilder injected 63 grams intravenously for four hours (a total of 252 grams) without inducing glycosuria. There is obviously no consensus of opinion on the quantity of sugar causing an abnormal increase of sugar in the urine, although there is an agreement that glycosuria is no sudden event—all gradations occur, from definite glycosuria down to a urine containing 0.002 per cent. For convenience the assumption must be made that glycosuria is present when the urine, mixed with ten volumes of Benedict's qualitative test, reduces the copper on being boiled in a water-bath for six minutes.

The normal quantity of sugar in the blood is no more easily defined than the quantity of sugar in the urine. Every observer should record as many details as possible, although it is probable that some factors still unknown have an influence upon the sugar in the blood. Three main methods of estimating blood sugar are in general use:

**Modifications of Folin and Benedict's Test.**—This is based upon picric acid method, and when heated in alkaline picramic acid. The actual estimation

acid; the blood is deproteinized with tungstic acid, the formed copper solution, and the oxide hour with phosphomolybdic

**Maclean's Method.**—Blood is deproteinized with acid sodium sulphate and dialysed iron; a measured quantity of copper solution containing iodide and iodate is added, the mixture boiled and back-titrated with sodium thiosulphate. Starch is used as an indicator.

The last two methods give similar results, rather lower as a rule than that depending upon picric acid, owing perhaps to the purity of the picric acid not being above suspicion.

The last thousand estimations I have carried out have been with the Folin and Wu method, and 0.2 c.cm. of blood has been taken from the finger; these results influence my judgement, although most of my statements are based upon the observations of others.

The factors determining the sugar in the blood after the ingestion of dextrose are manifold; amongst them the following have been recognized—length of fast previous to administration, emotional condition, rapidity of absorption of dextrose, quantity of dextrose administered, dilution of dextrose.

The quantity of sugar in the blood of the normal fasting man is usually about 0.09 per cent. If 50 grams of dextrose, dissolved in 200 c.cm. of water, be given and the blood taken half an hour later, the percentage of sugar is found to vary from 0.13 to 0.22, but in the majority of cases within ninety minutes it falls below 0.09 per cent.—that is to say, a hypoglycaemia develops. This fall within a definite time and the hypoglycaemia are of greater value in distinguishing the abnormal from the normal than the actual maximum percentage of blood sugar found.

All people do not absorb dextrose at the same rate, and when the motility of the stomach is poor the absorption may be slow, the rise of sugar in the blood slow, and the fall slow; therefore the shape of the curve may not be conclusive; but as a rule even with slow absorption the curve falls because the storing mechanism when started is more than able to cope with the sugar absorbed.

## DEFINITION.

An attempt at a definition may be made now. Diabetes mellitus is a defect in the mechanism the function of which is to store and oxidize carbohydrate, and this makes itself evident by the sugar in the blood becoming excessive.

This sugar seems to be somewhat different from normal blood sugar, as Allen concluded from the fact that dextrose injected into diabetics acted as a diuretic, whilst when injected into normal animals it had no such effect. Quite recently it has been shown that the sugar in the blood of a diabetic possesses a different rotatory value from that in the blood of the normal.

The relation between glycosuria and hyperglycaemia presents many problems. It is true that when the sugar in the blood rises above 0.25 per cent. sugar appears in the urine, and this is not difficult to understand; but sometimes dextrose appears in the urine in comparatively large quantities whilst the sugar in the blood is less than 0.13 per cent. The amount in the blood which just leads to glycosuria is termed the renal threshold for sugar, and is found to vary greatly, not only in different individuals, but in the same individual at different times after food. Based upon my own observations, I should place the average threshold at 0.19 per cent.—the highest 0.23 per cent. and the lowest 0.075 per cent.; but other observers found the range much greater—John states from 0.33 per cent. down to 0.04 per cent.

The height of the threshold is not due to an inherent property in the kidney. Hamburger showed many years ago that the sugar threshold of a frog's kidney could be modified by altering the quantity of sodium bicarbonate in the perfusing fluid, whilst Clarke demonstrated that this was not due to any alteration in the shape of the mesh of the semipermeable membrane of the glomeruli, but to the tubules failing to absorb sugar in certain circumstances. The fall in this power of absorption of the tubules some hours after a meal suggests that the ingredients of the plasma control the threshold. Since we have records of many people who have had sugar in their urine without hyperglycaemia for more than twenty years we must conclude that often this condition is negligible. The fact that occasionally a case of glycosuria develops true diabetes mellitus only leads us to the conclusion that the peculiarity does not protect from diabetes mellitus. Perhaps an appropriate simile exists in the fact that alkaptonuria does not protect from carboluria, but makes the diagnosis a little less simple, just as a low threshold complicates the diagnosis of diabetes mellitus.

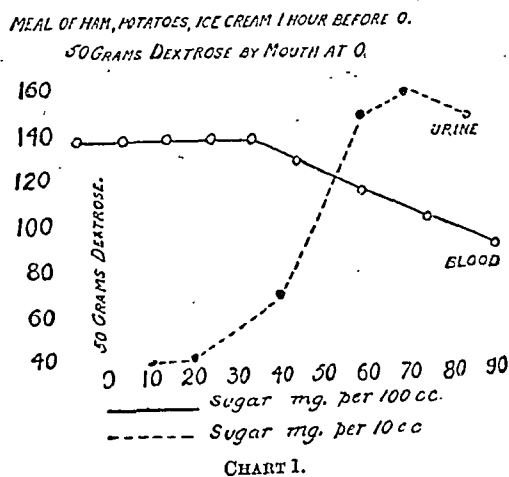
## DIAGNOSIS.

The differential diagnosis between glycosuria without hyperglycaemia and diabetes mellitus is as a rule quite simple, but in doubtful cases laborious. It is my duty, however, to emphasize the fact that no case of glycosuria should be considered negligible until the medical man responsible for its treatment is convinced that his patient is not suffering from diabetes mellitus. The restriction of diet does little harm to

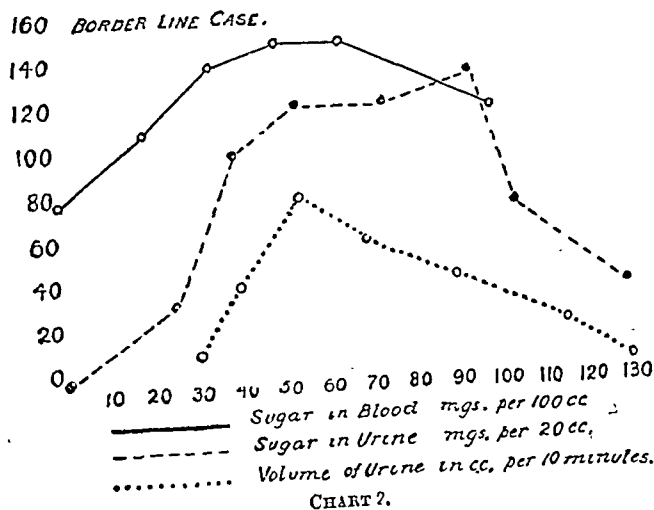


a case of negligible glycosuria, whilst an unlimited diet does incalculable and irremediable damage to a true diabetic.

The method I adopt in doubtful cases is the following: The patient has a sample of blood taken and empties the bladder. He is then given a known quantity of dextrose, the amount depending upon the likelihood of his having diabetes mellitus—the less the probability the larger the dose. Blood samples are taken at intervals of ten minutes and urine samples at intervals of a quarter of an hour for two hours. In the majority of typical cases a striking phenomenon is noted—namely, that the percentage of sugar in the urine rises after the sugar in the blood has started falling. This great delay in the maximum glycosuria seems typical (Chart 1). The hypoglycaemia which follows within ninety



minutes of the ingestion of the sugar rules out diabetes mellitus (Chart 2). It is the border-line case which is difficult



(fall of blood sugar delayed, glycosuria almost coincident with hyperglycaemia, diuresis accompanies hyperglycaemia), and occasionally, as in the case illustrated, the only method of arriving at a conclusion is by leaving the patient upon an ordinary diet and re-examining after an interval of a few months.

Glycosuria with hyperglycaemia arises from other causes than pancreatic inefficiency; it may be due to hyperthyroidism, overactivity of the suprarenals, disease of the pituitary gland, irritation of parts of the central nervous system, and perhaps to certain changes in the liver.

The differential diagnosis may need the use of all the methods at our disposal. Slight hyperthyroidism rarely leads to glycosuria with hyperglycaemia; considerable overactivity of the thyroid increases the basal metabolism and is usually associated with tachycardia, fine tremor, and a moist skin, three signs which do not arise from pancreatic insufficiency. Overactivity of the suprarenal glands may arise from anxiety; usually an increased blood pressure can be demonstrated; this when present does not permit true diabetes being excluded. As far as I am aware, ketosis and a low respiratory quotient do not accompany glycosuria of suprarenal origin.

In disease of the pituitary gland the glycosuria is often intermittent; the relation between sugar tolerance and

changes in the gland is not easy to understand. In some cases of pituitary tumour the sugar tolerance is low, whilst the patient responds well to treatment by restricted diet; in others the sugar tolerance is above the normal. A radiograph of the skull assists diagnosis. The differential diagnosis between pancreatic and hepatic disease may be made by estimating the sugar in the blood after the injection of insulin, or some pancreatic extract which replaces the substance made by the islands of Langerhans. A fall in the sugar indicates that the hyperglycaemia was pancreatic in origin; no distinct change will point to the liver being at fault.

In the past Cammidge has found that the ratio of two substances in the blood—one dextrose, the other a substance which can be hydrolysed into a sugar—is not the same at varying times after food in hepatic and pancreatic disease. Space does not permit my giving details. The fact that insulin by itself does not change  $\alpha, \beta$  glucose into  $\gamma$  glucose without the presence of hepatic extract seems to point towards the possibility of the existence of hepatic glycosuria.<sup>2</sup>

Having arrived at the diagnosis of pancreatic diabetes the patient should be examined with great care to discover any focus of infection. The gums, alveoli, tonsils, antrum, lungs, skin, and urinary tract should receive special attention. Any focus should be dealt with immediately unless a general anaesthetic is an absolute necessity. Local anaesthetics and intraspinal anaesthesia do but little harm, but chloroform, ether, and nitrous oxide should be avoided, because they may, and often do, cause destruction of some of the cells of the pancreas which are still doing some work. In all probability nitrous oxide with 20 per cent. oxygen would prove of but little harm, but since real relaxation can be obtained only when the mixture is administered under pressure we must wait until a philanthropist will supply the funds for a theatre which will withstand an extra half-atmosphere pressure.

The treatment of the patient should not be delayed; often every day is of value. The object of the treatment is to reduce the sugar in the blood to 0.10 per cent. without producing a ketosis or increasing an already existing ketosis; then to find a diet which will not cause the sugar in the blood to rise above 0.15 per cent. at any time.

The only way to arrest the progress of the disease is by ceasing to overwork the pancreas. We have reason to believe that certain forms of glucose in the blood stimulate the pancreas, and if these be present in excess overstimulation which results in progressive deterioration is inevitable. It is true that not every case of diabetes mellitus can be arrested; some are too advanced when they come under treatment; the lives of these must depend upon a supply of insulin. Cases treated correctly may go downhill owing to events against which we do not know how to guard our patients. A patient which may have a second or even a third attack of diabetes mellitus; because he has had one or two he is not immune from further invasions. We are not acquainted with the nature of the toxin which destroys the cells of the islands; the fact that occasionally slight pyrexia accompanies the onset suggests that it may be of microbic origin, but this slight pyrexia is the exception rather than the rule.

The second attack may occur whilst the patient is on a diet which has prevented blood sugar rising above 0.15 per cent. during the previous months or even years; in all respects it simulates the first attack. The symptoms are sudden thirst, polyuria, and glycosuria; these are totally different from those occurring in the cases incorrectly treated when the alteration is insidious, the tolerance gradually diminishing and the glycosuria slowly becoming more frequent.

Another event against which we cannot guard our patients is infection: influenza, pneumonia, whooping-cough, chicken-pox, etc. I have seen all these lead to such deterioration in the pancreases of arrested cases that upon re-estimation the tolerance of the patient I have found that a decision had to be made between death from inanition or ketosis. It is of interest to note that often in these infections the return of glycosuria occurs before the signs and symptoms of the disease are manifest or before the temperature rises. This is not difficult to understand when we remember that the injection of a few million dead microbes into a diabetic will cause a temporary hyperglycaemia.

A third event which may cause advance of the disease is a general anaesthetic, and circumstances may arise which leave no choice—such as malignant disease requiring a large first lumbar segment.



## TREATMENT.

The treatment of the patient should depend upon his age, condition, duration of the disease, and severity of the symptoms. For the purpose of describing the treatment patients may be divided roughly into three groups: (1) Recent acute onset. (2) Acute onset some years ago, or chronic disease of onset. (3) Mild cases, obese but losing weight, often with signs of arteriosclerosis.

Patients belonging to Group 1 should be put to bed and placed upon a beef-tea diet straight away. The risk of ketosis is negligible in quite recent cases. The blood sugar should be estimated after forty-eight hours' fast even if glycosuria persists. I have met at least four cases of true diabetes mellitus with low renal thresholds; glycosuria persisted in these after the blood sugar was normal (0.10 per cent.), and they might have been fasted indefinitely if an attempt had been made to abolish the glycosuria.

If the blood sugar is normal the patient is given 10 grams of carbohydrate in the form of vegetables for two days, and on the third day the blood is taken at intervals after a meal containing 5 grams of carbohydrate given as white bread. If the blood sugar does not at any time rise above 0.14 per cent., the daily diet is raised to carbohydrate 15 grams, with the addition of 15 grams of protein and 15 grams of fat.

After an interval of two more days blood samples are taken following a meal of carbohydrate 10 grams, protein 10 grams, fat 10 grams (carbohydrate given as bread); if satisfactory, the daily diet is raised to carbohydrate, protein, fat, 30 grams of each, and after two days the effect of a meal of 15 grams of each is observed. Provided no hyperglycaemia follows, the diet is raised to carbohydrate, protein, fat, 45 grams of each, for the next two days; then a meal of 20 grams of each is given, and if that is well borne the daily diet is raised to 60 grams of each.

No advance is then made in carbohydrate or protein, but fat is increased 20 grams daily, until the patient is receiving 25 calories per kilogram body weight, provided no ketosis occurs. This allows a suitable diet to be found. The patient should have the blood examined every few days to see that the blood sugar does not rise above 0.15 per cent., and remain upon 25 calories per kilogram for at least a month. After that time the effect of slight increases in carbohydrate may be observed. Undernutrition for a considerable period is advisable, even if the blood sugar remains low, the rationale being that the maximum recovery of the pancreas will occur if it be given the minimum work with the best blood supply.

Fasting may rest the pancreas, but a very long fast probably interferes with its nutrition; we must attempt to steer a course between the Scylla of overwork and the Charybdis of starving the pancreas. The patient may be allowed up after the second week of treatment. Free purging with magnesium sulphate during the first few days of treatment is beneficial to the patient.

If the blood sugar be found to rise above 0.15 per cent. before so liberal a diet be attained an attempt must be made to decide which of the kinds of food is responsible. Now and then we come across patients who are able to take more carbohydrate than fat, although the reverse is the more common. Those who have not met these cases may feel inclined to attribute this to the fact that the energy value of fat is more than double that of carbohydrate, and that it is simply due to the general tolerance of the patient being very low; this is, however, not the explanation, because some can take more energy in the form of carbohydrate than in the form of fat.

This fact confirms the view I have taken for some years, that although the general build and main chemical changes in all men are similar, the differences in their metabolism are not less than the differences in their personal appearance.

The emaciated patient with ketosis must have preliminary treatment before fasting. The fat should be removed from his diet immediately, and after two days of very limited protein and carbohydrate fasting should be ordered for two days. If the blood sugar does not fall to normal in that time two days of a diet of carbohydrate 10 grams, protein 20 grams, should be given, and then the effect of two more fast days observed. Yet a third fast may be tried if the second does not accomplish the desired result. In case the third fast proves unsuccessful the patient should be carefully re-examined for some focus of infection; if none be found a meagre diet of carbohydrate 10 grams, protein 30 grams, fat 20 grams, may be given for fourteen days, and then another attempt should be made to reduce the patient's blood

to normal. When the blood sugar has been normal for twenty-four hours the effect of food is determined in the same way as in the essay on the recent cases. As a rule the tolerance is found to be very low.

The mild cases need not be fasted: a restricted diet reduces the blood sugar to normal. The obese patients are given very little fat until they have burnt the excess in their bodies. The diet is controlled by frequent estimations of the sugar in the blood.

It is an unfortunate fact that at present the work entailed is considerable, because the time after a meal at which the sugar in the blood rises to the maximum is not constant. Obviously it will depend not only upon the type of carbohydrate given, but also upon what food is given along with the carbohydrate. Samples should be taken every quarter of an hour, beginning half an hour after the meal, for one and a half hours. This need be done only when the final diet is being reached.

Perhaps if the blood sugar can only occasionally be estimated it is wiser to make an attempt to find the diet that will just allow the threshold being exceeded, and then arrange a permanent diet which is two-thirds that amount. For this purpose the daily examination of the urine for sugar is useless and most misleading. The urine must be passed at intervals after a meal which should contain five-twelfths of the daily diet. Each specimen should be examined separately. Often the twenty-four hour sample will not contain sufficient sugar to give a positive reaction, whilst several separate specimens show that the threshold has been exceeded for a short time after the meal.

Having determined the correct diet, the patient is told to test the urine from time to time, but on no account to increase the diet, even if there be no sugar. The object of the treatment is not to abolish glycosuria but to arrest the disease. Sherrill has recorded cases in which he has observed that patients whose tolerance has deteriorated whilst on a diet which prevented glycosuria may have the disease arrested by regulating the diet by the sugar content of their blood. I, too, have had many similar cases.

*Treatment by Insulin.*

How far insulin will modify the treatment of diabetes mellitus is not easily foretold. There is very little doubt that it will prolong the lives of those patients who have only a very small fraction of the islands of Langerhans functioning. The history of insulin is fairly well known; I regret that space will not permit me to give details, but only to express my admiration of the work of Banting, Macleod, and their fellow workers. The substance termed "insulin," obtained by fractional alcoholic precipitation, seems to be something other than a ferment, and does not give the protein reaction. That it supplies the substance which the diabetic does not make seems beyond doubt. The diabetic fails to store sugar, as shown by the blood sugar becoming excessive; he fails to burn sugar, as shown by his respiratory quotient being too low. The injection of insulin into a severe diabetic lowers his blood sugar and raises his respiratory quotient.

How it acts needs investigation, but it has been shown that the sugars in the blood of diabetics are not the same as those in the normal individual, and that the abnormal sugars can be converted into the normal by the action of insulin along with hepatic extract.

Insulin is not upon the market in Great Britain,\* although it is procurable in other countries. The dangers of its use are not, in my opinion, fully realized at the moment. An overdose may lead to convulsions, coma, and death; but, since the introduction of a little dextrose acts as a complete and rapid antidote, that danger seems to be almost negligible, provided that everyone into whose hands insulin finds its way is made acquainted with the facts. In my opinion the danger lies in the administration of limited insulin and unlimited food. The simile between the treatment of diabetes mellitus with insulin and of myxoedema with thyroid extract is inopportune. No doubt the activity of the thyroid waxes and wanes as necessity arises, and the individual taking thyroid, however carefully the dose be regulated, is not so well as he who has a normally active thyroid. The variations in the activity of the pancreas in all probability are many hundredfold the variations in the thyroid; the activity seems to be governed by the sugar in the blood, which in turn depends upon the carbohydrate in the food.

\* Since this was written insulin has been placed upon the market and one has had opportunity of confirming the beneficial effects recorded by others.



Man can live fairly comfortably on 30 grams of carbohydrate along with unlimited protein and fat. If a case of severe diabetes be given enough insulin to ensure his utilizing 30 grams of carbohydrate he will escape the symptoms of diabetes mellitus, but his blood sugar will be above 0.15 per cent. during the greater part of the twenty-four hours, which will cause overstimulation of the small amount of pancreas which he still possesses and gradual deterioration. The final stage will be total destruction of the pancreas; then the patient will have to rely for all the sugar-burning material on supplies from the outside. In case these fail, life would be extremely short. This is the danger which should be avoided by strictly correlating the diet with the amount of insulin available from the pancreas of the patient together with that injected.

## REFERENCES.

<sup>1</sup>Winter and Smith: *Journal of Physiol.*, December, 1922. <sup>2</sup>Forrest, Smith, and Winter: *Journal of Physiol.*, March 23rd.

## OBSERVATIONS ON THE INFLUENCE OF INSULIN ON NORMAL METABOLISM IN MAN.

BY

C. H. KELLAWAY, M.D., M.S., M.R.C.P.,

FOULERTON STUDENT OF THE ROYAL SOCIETY.

AND

T. A. HUGHES, M.B., B.Ch., M.R.C.P., MAJOR I.M.S.

(From the Medical Unit, University College Hospital Medical School.)

THE study of the respiratory exchange in diabetic patients and in depancreatized dogs by Banting and his co-workers<sup>1</sup> has shown that the injection of insulin, either alone or combined with the administration of sugar by the mouth, causes a pronounced rise in the respiratory quotient. This rise has been generally interpreted as indicating increased consumption of glucose, the ability to burn carbohydrate being temporarily restored by the action of insulin. Dudley, Laidlaw, Trevan, and Boock<sup>2</sup> have recently failed to find any direct evidence of such an action of insulin in normal mice and rabbits, the diminution of circulating sugar being attended by a profound fall in both oxygen consumption and output of carbon dioxide, although they observed in some experiments a marked rise in the respiratory quotient which evidently could not be attributed to increased combustion of glucose.

So far as we are aware, no observations on the influence of insulin on normal metabolism in man have been recorded, and it seemed worth while to record two such experiments, which Miss M—, a medical graduate, very kindly allowed us to make upon her. We made three series of observations, and on each occasion the subject had no food and only water to drink for the preceding fifteen hours, and during the experiment. She was kept at rest in a bed which was screened off in a corner of a ward. A number of six-minute samples of expired air were collected in a Douglas bag at approximately hourly intervals, some before and some after the injection of insulin. Before the collection of each sample the subject breathed for five minutes through the mouthpiece containing inspiratory and expiratory valves, in order to ensure respiratory equilibrium. Observations of the pulse and respirations were made during this period and during the collection of the sample. A half-hourly record of the rectal temperature was kept throughout the day of each experiment.

The insulin used in these experiments was made under Professor Drummond's direction in the Biochemical Department at University College, and was tested for us by Dr. Babkin. We have expressed the dose used in multiples of the amount required to reduce the blood sugar of a rabbit weighing 2 kilos sufficiently to cause convulsions. The injections were made subcutaneously, and changes in the blood sugar were followed, using Maclean's method for 0.2 c.cm. of blood.<sup>3</sup>

A preliminary experiment in which we took a series of eight samples of expired air, four before and four after the injection of two rabbit doses of insulin, gave the subject the necessary training in breathing and furnished an indication of the amount of insulin which could be used in our later experiments. The fall of blood sugar in four hours after this dose of insulin was from 0.123 per cent. to 0.108 per cent., and there were no significant changes in the metabolism. We give condensed protocols of our two subsequent series of observations.

In both these experiments there was a marked rise in the respiratory quotient associated with the fall in blood sugar

caused by insulin. In Experiment 2 the blood sugar fell from 0.125 per cent. to 0.080 per cent. in one and a quarter hours, and, allowing a quarter of an hour for insulin to be absorbed in sufficient amount to affect the blood sugar, there was a fall of 0.045 per cent. in an hour. If we assume, with Keith, Rowntree, and Geraghty,<sup>4</sup> that the blood volume in man is 85 c.cm. per kilo of body weight, this represents a loss of  $0.045 \times 76 \times 85 = 2.9$  grams of glucose. This is a conservative estimate of the amount of sugar lost from the blood, because the low level of blood sugar was maintained at 0.080 per cent. for the succeeding two hours, which suggests the attainment of an equilibrium between the sugar disposed of by insulin and that which is in all probability mobilized from the liver during the time of its action.

What is the fate of this sugar lost from the blood? Is it consumed, transformed to glycogen and stored in the liver and muscles, or is it transformed to some other complex, such as fat? If it is stored as glycogen, we are left without any

Experiment 2 (Fig. 1). Miss —, aged 26, weight 76 kilos.

Time.	Ventilation per min. in litres.	O <sub>2</sub> per min. in c.cm.	O <sub>2</sub> per min. in c.cm.	Respiratory Quotient.	Calories per hour.	Blood Sugar.	Temperature.	Pulse.	Respiration.
10 a.m. ...	4.35	230.6	174.4	0.756	65.7	0.125	97.4	60	14
11.30 ...	4.23	221.0	166.0	0.741	63.5	—	97.4	63	15
12.30 p.m. ...	Insulin—10 rabbit doses injected.					0.125			
1.45 ...	5.34	270.5	203.5	0.923	65.5	0.080	99.3	71	15
2.45 ...	5.17	229.0	197.0	0.850	67.0	0.081	99	71	17
3.30 ...	4.75	223.3	180.0	0.806	64.2	0.080	—	68	23

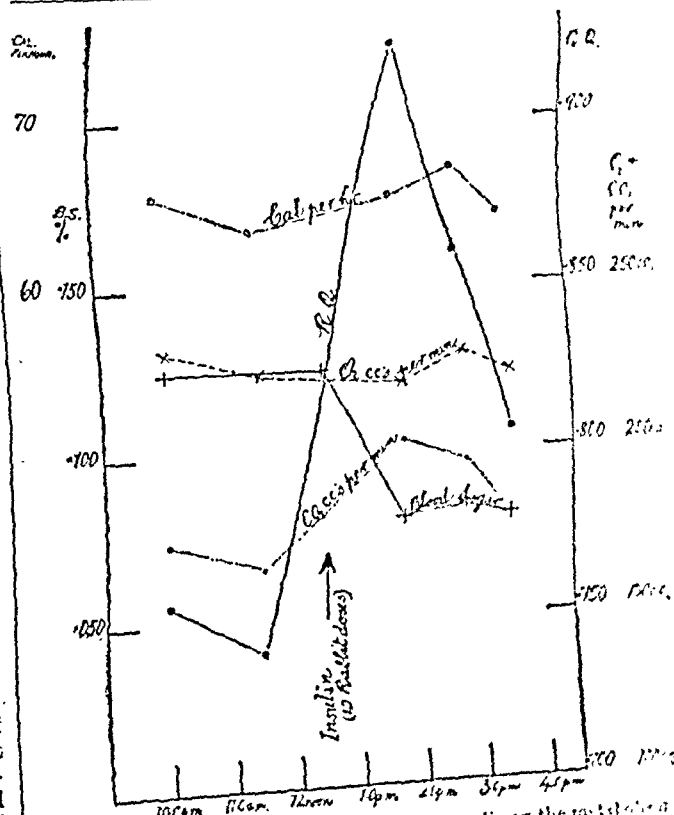


FIG. 1.—The effect of ten rabbit doses of insulin on the metabolism of a normal person weighing 76 kilos. R.Q.—respiratory quotient. Calories per hour calculated from observed oxygen consumption and R.Q. on the assumption that the rise in R.Q. is wholly due to increased combustion of carbohydrate.

At 12.30 ten rabbit doses of insulin were administered. There was a definite increase in the ventilation rate one and a quarter hours later, but the patient showed no symptoms till 2.30 p.m., when she commenced to perspire freely. At 2.45 she complained that her voices were unduly loud and that she was feeling dizzy. The drowsiness increased, "coming and going in waves," as she said. The mental condition became very striking. The blood pressure was normal and there were no neurological signs. At 4 p.m. 50 grams of glucose were given and the symptoms rapidly disappeared.



Experiment 3 (Fig. 2).

Time.	Ventilation per min. in litres.	O <sub>2</sub> per min. in c.cm.	CO <sub>2</sub> per min. in c.cm.	Respiratory Quotient.	Calories per hour.	Blood Sugar.	Temperature.	Pulse.	Respiration.
10 a.m. ...	5.04	222.0	172.8	0.778	63.1	—	99.4°	55	12
11.10 ...	5.47	213.3	164.6	0.772	61.0	0.130	99.6°	60	13
11.15 ...	Insulin—8 rabbit doses injected.								
12.15 p.m. ...	5.67	229.6	193.0	0.867	57.3	0.102	99.8°	73	13-14
2.15 ...	5.90	239.0	200.6	0.839	69.3	0.077	99.4°	70	16
3.30 ...	5.38	227.6	171.6	0.754	64.8	0.089	98.2°	72	13

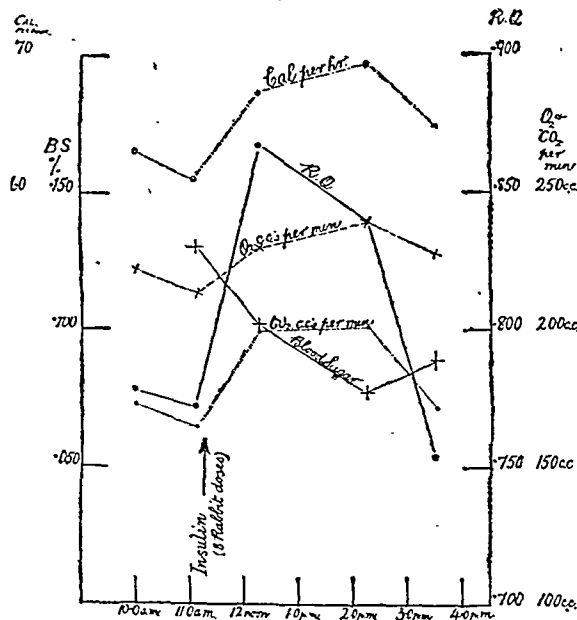
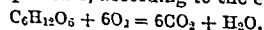


Fig. 2—The effect of eight rabbit doses of insulin on the same subject as Fig. 1. Calories per hour calculated as in Fig. 1.

At 11.15 a.m. eight rabbit doses of insulin were given. There were no symptoms, though the pulse and respiration rate rose slightly, except a subjective sensation of warmth soon after the injection, and a tendency to perspire at about 2 p.m.

explanation of the pronounced rise in the respiratory quotient. We are therefore confined in our consideration to the first and last possibilities. Let us examine the first of these and assume that the glucose is consumed under the influence of insulin.

The combustion of 2.9 grams of glucose would require 2.158 litres of oxygen, and would result in the liberation of a corresponding amount of carbon dioxide, since 1 gram-molecule (= 180 grams) requires for its complete combustion 6 gram-molecules of oxygen, or  $6 \times 22.33$  litres at standard temperature and pressure, according to the equation—



If the glucose lost from the blood were burnt the rise in oxygen consumption per minute should average 36 c.cm. during the hour of the fall. Actually, the increased consumption of carbohydrate would raise the basal metabolic rate of a starving person and cause a still greater increase in the amount of oxygen used. In this experiment there was no significant rise in the amount of oxygen used, and this, together with the rise of over 30 c.cm. in the output of carbon dioxide a minute, suggests that the combustion of glucose plays only a minor part in the production of the high respiratory quotient, and that the principal factor in causing this change is the transformation of carbohydrate to some other complex, with economy of oxygen and liberation of excess of carbon dioxide. The metabolism in calories per hour is calculated in these experiments on the assumption that the rise in respiratory quotient is due to the com-

bustion of additional carbohydrate, allowing a larger production of heat from a given oxygen consumption at a higher respiratory quotient. Even on this assumption, which we believe to be unsound, the greatest increase in metabolism calculated from the observed oxygen consumption and respiratory quotient—namely, 1.3 calories an hour—does not correspond with that calculated from the combustion of the amount of sugar lost from the blood—namely,  $2.9 \times 4.1$  calories = 11.89 calories.

In Experiment 3, in which we gave a smaller dose of insulin, the results do not indicate so clearly the nature of the increase in respiratory quotient. The sugar lost from the blood in two and three-quarter hours was  $0.053 \times 76 \times 85 = 3.42$  grams. The amount of oxygen

necessary for the combustion of this amount of sugar is 2.530 litres, or an average of 24 c.cm. a minute. Although the observed increase in the oxygen consumption does not attain to this calculated value, it affords definite evidence of the combustion of glucose. The disproportion between the observed increase in oxygen used—that is, 2,120 c.cm. (g.p.)—and that in carbon dioxide given out—that is, 3,193 c.cm. in two and three-quarter hours—supports our contention that the rise in respiratory quotient is due in part at least to transformation of glucose into some complex poorer in oxygen, and that the metabolic rate as calculated from the oxygen used and the respiratory quotient is much above its real value.

## REFERENCES.

- <sup>1</sup> Banting, Best, Collip, Hepburn, and Macleod: *Trans. Roy. Soc. Canada*, 1922, vol. 16, Sec. 5, p. 25. <sup>2</sup> Dudley, Laidlaw, Trevan, and Boock: *Proc. Phys. Soc.*, 1923, March 17th. <sup>3</sup> Maclean: *Biochem. Journ.*, 1915, vol. 13, p. 135. <sup>4</sup> Keith, Rowntree, and Geraghty: *Arch. Int. Med.*, 1915, vol. 16, p. 547.

## SOME PROBLEMS OF DIABETES MELLITUS.\*

BY

L. B. WINTER AND W. SMITH.

(From the Biochemical Laboratory, Cambridge.)

NEARLY forty years ago Mering and Minkowski showed that complete removal of the pancreas resulted in a condition of diabetes. Numerous attempts have since been made to prevent the diabetes following on depancreatization by injection of extracts of pancreas. No real success resulted until the great advance made by Banting and Best. It was found that if the acinous tissue of the pancreas was allowed to degenerate after tying of the duct, an aqueous extract of the gland would diminish the excretion of sugar when injected into depancreatized dogs. This tended to explain the failure of previous workers. Presumably the active principle of the islets of Langerhans, which they termed "insulin," was destroyed by some secretion of the acinous tissue.

The discovery, due to Collip,<sup>1</sup> that an alcoholic extract of normal pancreas is effective, has made possible an extensive trial of the effect of insulin on diabetes in man.<sup>2</sup> These workers have treated a large number of cases, with successful results. They establish beyond doubt that injection of insulin, in the majority of cases, stops the excretion of sugar and acetone, and enables the patient to utilize an increased amount of carbohydrate.

The action of the pancreas on carbohydrate metabolism has been the subject of much study. The work of Cohnheim suggested that the pancreatic secretion caused an increased consumption of glucose by the muscles. Levene and Mayer,<sup>3</sup> found, however, that the disappearance of glucose was due to the formation of a disaccharide, and that this formation took place only in concentrated solutions of glucose. If the solution was diluted the disaccharide was hydrolysed, and the reducing power showed that the glucose concentration was the same as at the beginning of the experiment. Though it is difficult to determine the precise bearing of these results on diabetes, they tend to show that the action of the pancreas is to activate some enzyme system—for the addition of pancreas or muscle extract alone to glucose was without effect; only when muscle and pancreas were acting together was any effect observed. Clark<sup>4</sup> showed that the consumption of sugar by the heart was increased when the perfusing fluid was also passed through the pancreas. In a later paper<sup>5</sup> he established the remarkable fact that perfusion of the pancreas

\* Since this was written there has appeared an article by Hewitt (*BRITISH MEDICAL JOURNAL*, April 7th, 1923, pp. 550-591) criticizing some of this work. We propose to reply in detail in the near future.



with a solution containing glucose caused the optical rotation to be diminished, whereas the copper reducing value remained unaltered. He suggested that the pancreas contained an enzyme which was responsible for converting dextrose into another form of sugar, which then could be utilized by the body.

The precursor of lactic acid in muscle has been investigated during recent years by Embden and his co-workers.<sup>6</sup> They have shown that liberation of phosphoric acid accompanies the setting free of lactic acid. We have shown that when muscle is put into rigor the increase of inorganic phosphate may be demonstrated histologically.<sup>7</sup> Embden has isolated from muscle an osazone which is identical with that of the hexose-diphosphoric acid compound obtained from yeast by Harden and Young. While it is uncertain whether the lactic acid precursor or "lactacidogen" is a hexose-phosphate, they consider that such a compound is certainly a component of the molecule which gives rise to lactic acid. Added hexose-phosphate was readily broken down by muscle juice with liberation of lactic and phosphoric acids; added glucose was not converted into lactic acid. Harden showed that the hexose-diphosphate which he obtained from yeast yielded fructose on hydrolysis. Robison<sup>8</sup> has recently isolated from the products of fermentation by yeast juice a hexose-monophosphoric acid compound which gives on hydrolysis a hexose with a lower rotatory power than glucose. The present evidence points to the possibility that a special sugar may be formed in muscle which may readily break down into lactic acid.

#### *The Problem of a Reactive Sugar.*

With the idea that diabetes might be due to decreased formation of a reactive sugar we began in 1921 an investigation into the nature of the normal blood sugar by a comparison of its copper reducing and polarimetric values. For a determination of the latter the blood filtrate must be clear and concentrated to a small bulk owing to the small sugar content of normal blood. It was soon apparent that precipitation of the proteins by the usual methods was insufficient by itself, for on concentration the fluid invariably became turbid, showing the presence of unprecipitated protein. The proteins were precipitated according to the method of Folin and Wu; the filtrate was evaporated to dryness by distillation *in vacuo* at 40° C. The sugar was then extracted with 85 per cent. alcohol; the alcohol was distilled off under reduced pressure and the sugar taken up in a small quantity of water. While this method does not give a pure sugar solution, nitrogen determinations showed that only minimal amounts of such substances as urea, creatinine, etc., were present and the biuret and protein colour tests were negative.

By this method<sup>9</sup> we find that the blood sugar of man and animals has a lower rotatory power than would be given by  $\alpha, \beta$  glucose in equilibrium, the copper reducing value being reckoned as glucose. The polarimeter readings gradually approach the copper value and usually reach it in three days. While the time which elapses between the drawing of the blood and the determination of the rotatory power of the sugar being made is at least three hours, the sugar is in weak acid solution during the whole of this time, and alteration is likely to be reduced to a minimum.

Examination of the blood sugar of diabetics shows that the sugar has a higher polarimetric value than that of  $\alpha, \beta$  glucose. Control experiments, however, showed that solutions of  $\alpha, \beta$  glucose treated in the same manner as the blood filtrates gave slightly higher polarimeter values than those deduced from the copper reducing power. A possible reason for this was advanced, and it was suggested that in diabetes the blood sugar is mainly  $\alpha, \beta$  glucose. In certain cases of diabetes the polarimetric value was so much higher than that which would be given by  $\alpha, \beta$  glucose that we suggested that disaccharides or other substances with a higher polarimeter to copper reducing ratio than glucose might be present. We have obtained further evidence in the support of this view which will be discussed later.

As we have previously stated,<sup>9</sup> the nature of the normal blood sugar must be left undecided, though we hope in the future to obtain more direct evidence of its chemical nature. The facts now available suggest that it is of a reactive nature. The rotatory power is initially low, but tends to increase. Decolorization of  $\text{KMnO}_4$  is at first rapid, and then becomes slower as the rotation increases. The fact that the blood sugar in such a solution as we have obtained decolorizes  $\text{KMnO}_4$  more quickly than a solution of glucose of similar

concentration is of no significance, since many substances especially phosphates, accelerate the oxidation of glucose. It is only when the rate changes from day to day that it is permissible to suggest that a reactive sugar is present. Hewitt and Pryde<sup>10</sup> have shown that a solution of  $\alpha, \beta$  glucose in equilibrium introduced into the intestine of anaesthetized rabbits undergoes a rapid downward mutarotation. On withdrawal from the intestine the rotation increases and rapidly reaches the copper reducing value. Simple filtration was employed to obtain a clear solution. Fluids in contact with living tissues are apt to become contaminated with protein and other substances, especially if the tissues are injured. The differences, however, in the rotations observed are very striking. It was stated that  $\text{KMnO}_4$  was decolorized more rapidly by the sugar solution on withdrawal from the intestine than by Ringer-Tyrode solution or washings from the intestine. This does not dispose of the possibility that there may have been in the sugar solution some substance derived from the intestine which catalytically accelerated oxidation of the sugar by  $\text{KMnO}_4$ . That the phenomenon was not observed with sugar solution withdrawn from the peritoneal cavity does not invalidate this criticism. Indications were obtained that stereochemical changes took place in sugar solutions held in the mouth for a few minutes; the changes were slight, and difficulty in filtering the solution was caused by the saliva. The authors suggest that  $\alpha, \beta$  glucose is converted into  $\gamma$  glucose preparatory to absorption by the intestine. The reaction of the fluid was stated to be slightly alkaline, and the sugar reached equilibrium about twenty minutes after withdrawal. We have found that the blood sugar does not reach equilibrium for two or three days in acid solution. The influence of the reaction of the fluid is being studied, but it must be remembered that if the precipitation is carefully carried out, all but a trace of the tungstic acid combines with the proteins.

Whatever the precise nature of the normal blood sugar may be, the hypothesis of a reactive sugar being formed in the body is gaining ground. In a recent paper Laquer<sup>11</sup> gives the results of an investigation into the problem of lactic acid formation in muscle. He finds that lactic acid arises from glycogen under conditions in which the muscle can form no lactic acid from glucose. He concludes, "Glucose is burnt by muscle not directly, but after conversion into a reactive form. This reactive sugar is produced directly by the breakdown of glycogen."

#### *The Action of Tissue Extracts.*

In an attempt to determine whether tissue extracts could effect a change in the rotatory powers of glucose or fructose *in vitro*, we first examined the blood itself. Hewitt and de Souza<sup>12</sup> and Cooper and Walker,<sup>13</sup> using different methods, had previously stated that an enzyme of this nature is not present in blood. We could find no alteration in the rotatory power of  $\alpha, \beta$  glucose when it had been incubated with defibrinated blood and extracted by the usual method. More recently we have repeated these experiments with the blood of rabbits which have been killed after large doses of insulin, sufficient to cause convulsions. In every case the polarimeter reading was slightly above that obtained from the copper value.

No change took place when extracts of intestinal mucous membrane were used, either with or without the addition of insulin. More successful results were obtained when an extract of liver was employed.<sup>14</sup> When a solution of glucose or fructose was incubated at 37° C. in a jacketed polarimeter tube (2 Dm.) in the presence of liver extract and insulin, the rotation was changed in a downward and upward direction respectively. The presence of insulin was necessary; but insulin or liver extract by themselves were not capable of effecting any change. The influence of inorganic salts on the system was tested; phosphates appeared to have an accelerating effect. The very small quantity of liver extract used precludes the possibility of sufficient glycogen being present to cause error in the determinations. The copper reducing power of the sugar at the end of the reaction was unaltered. The fact that the liver factor is destroyed by boiling, while insulin is thermostable in acid solution, suggests that the function of the latter is to act as a co-enzyme or activator of some enzyme in the liver.

#### *An Effect of Insulin on Diabetes.*

On the supposition that diabetes might be due to diminished formation of a reactive sugar, it seemed interesting to test whether the nature of the blood sugar of diabetics might be



altered after injections of insulin. In conjunction with Dr. Devcreux Forrest,<sup>15</sup> we have investigated this possibility. Six cases were examined—severe and moderately severe. A sample of blood was drawn before treatment and the ratio polarimetric to copper reducing value of the blood sugar was determined. In each case the polarimetric reading was considerably above the copper value. An injection of insulin was then given each day for two or three days, and a second sample of blood drawn. In one case no change was observed; in the others the ratio polarimetric to copper reducing value had been lowered, showing that the blood sugar was more like that of normal persons. We have observed a further very marked difference between the blood sugar of diabetic and normal persons. We find<sup>16</sup> that when the blood sugar of diabetics is subjected to short hydrolysis by weak acid a marked increase takes place in the polarimetric value. The copper reducing power remains almost unaltered. On longer hydrolysis by stronger acid the polarimeter and copper values agree for  $\alpha$ ,  $\beta$  glucose in equilibrium. This phenomenon does not occur with the blood sugar of normal persons. We have not determined what is the sugar complex in diabetic blood which is responsible for this increase of polarimeter reading on hydrolysis. The facts would suggest that a polysaccharide is present which is readily broken down into strongly dextro-rotatory components. In preparing osazones from diabetic blood, we have in certain cases observed crystals other than those of glucosazone. On examining the blood sugar of diabetics after injections of insulin, we find in the case of the patients who have benefited from the insulin, that on hydrolysis the polarimeter reading does not increase above the copper value. In cases which have not had their ratio polarimeter to copper value altered by the insulin, we find that the polarimeter reading does increase, showing that this abnormal sugar is still present.

Though much more work is necessary to provide a satisfactory explanation, these facts are of significance in emphasizing the difference between the normal blood sugar and that of diabetics, and in showing that in most cases the blood sugar of diabetics is more normal after injections of insulin.

#### Action of Adrenaline.

It is well known that injections of adrenaline into animals raise the blood sugar. We have made some experiments to determine the ratio polarimeter to copper reducing value of the blood sugar after the concentration has been raised by injection of adrenaline. Under these conditions the nature of the blood sugar is considerably altered. The initial polarimeter reading is usually higher than the copper value, and it increases on short hydrolysis. The mixture of sugars would appear, therefore, to be similar to that in diabetic blood before treatment with insulin. On preparing phenyl-osazones, crystalline forms other than those of glucosazone have been observed. The amount of adrenaline injected into each animal varied from 0.5 to 1 c.cm. of a 1 in 1,000 solution. While the concentration of adrenaline in the blood must be momentarily far greater than any likely to occur normally, even in pathological conditions, the fact that it will cause a derangement of sugar production in such a way as to simulate the blood sugar of diabetics may not be without significance.

#### Action of Yeast Extracts.

We have made some experiments to determine how far an extract of yeast will lower the blood sugar of normal animals and diminish the symptoms of diabetes in man. The results tend to show that a substance similar to insulin may be obtained from yeast.

The action of the yeast extract on the blood sugar of the fasting rabbit may be seen from the following examples:

Rabbit 1 (weight 2 kg.).			Rabbit 2 (weight 2.5 kg.).		
Time.	Blood sugar.		Time.	Blood sugar.	
10.20	...	0.15 %	11.45	...	0.11 %
10.45, yeast 0.63 mg. per gm. body weight injected	...	0.11 %	12.3, yeast 0.65 mg. per gm. body weight injected	...	0.08 %
12.0	...	0.05 %	2.45	...	0.05 %
2.15	...	0.05 %	5.0	...	0.05 %
3.45	...	0.05 %	6.0	...	0.05 %
5.45	...	0.07 %	7.0	...	0.05 %

The animal went into convulsions; 40 c.cm. of a 10 per cent. solution of glucose were injected subcutaneously. Complete recovery resulted.

Through the kindness of the consulting physicians and staff of Addenbrooke's Hospital, we have been able to test the effect of the yeast extract on diabetic cases. Two cases had

been rendered sugar-free by diet (Graham) before treatment with yeast extract. The others were given injections soon after admission to hospital. An unusually large quantity of protein is allowed by the Graham diet during the early days of treatment; but when the twenty-four hours' urine contained sugar, it was found that the urine passed up to seven hours after the injection was sugar-free, even in severe cases. Of the seven cases examined, five showed marked improvement. Only one injection was given each day, as we had previously found with pancreatic insulin that this was sufficient to cause definite improvement.

In three cases a sample of blood was drawn before treatment with yeast extract and the ratio polarimeter to copper value determined. All had a high ratio; in one case it was unusually high. One of the cases was sugar-free by diet; this, we had previously found, alters only the amount and not the nature of the blood sugar. After several days of treatment a second sample was drawn and the ratio redetermined. In all three cases the ratio had improved; in two the polarimeter reading was definitely below the copper value. In each case hydrolysis showed that no trace of polysaccharide was present. The results appear to be identical with those which we have previously obtained after injection of pancreatic insulin into diabetics. Two cases of long-standing disease showed no improvement from injection of yeast extract or pancreatic insulin. A possible reason for this is advanced in the discussion.

Table of Clinical Experiments.

	Polarimetric Readings on Successive Days.	Copper Value.
L. B. W., normal (100 c.cm. blood) ...	0.07, 0.11, 0.13, 0.14	0.11
L. B. W., after 100 grm. glucose 55 c.cm. blood)	0.4, 0.05, 0.03, 0.09	0.03
L. B. W., after 150 grm. fructose (100 c.cm. blood)	0.05, 0.03, 0.10, 0.13	0.16
Diabetic before insulin (55 c.cm. blood)	0.15, 0.12, 0.11, 0.10	0.03
Diabetic after insulin (85 c.cm. blood)	0.05, 0.03, 0.03	0.05
J. S., before yeast extract (50 c.cm. blood)	0.19, 0.18	0.13
J. S., after yeast (71 c.cm. blood) ...	0.13, 0.14	0.15
S., before yeast (50 c.cm. blood) ...	0.11, 0.09, 0.03	0.05
S., after yeast (65 c.cm. blood) ...	0.09, 0.11, 0.12	0.13
J. M., before yeast (30 c.cm. blood) ...	0.21, 0.15	0.01
J. M., after yeast (40 c.cm. blood) ...	0.17, 0.10, 0.10	0.10

The following are the blood sugar determinations (quantitative) on C. R., aged 11 years. This case received yeast extract only. On one day no injection was given. The blood sugar remained high on this day.

First Day.		Second Day.		Third Day.	
12.45	0.14%	12.30	0.13%	11.0	0.13%
1.0, 50 mg. yeast		12.45, 50 mg. yeast		12.0, 90 mg. yeast	
3.30	0.1%	3.30	0.09%	3.15	0.12%
7.0	0.05%	6.15	0.14%	5.30	0.16%
9.0	0.11%				
Fourth Day.		Fifth Day.		Sixth Day.	
12.0	0.22%	12.0	0.22%	12.0	0.11%
No injection		12.30, 100 mg. yeast		12.30, 100 mg. yeast	
3.0	0.20%	3.0	0.13%	3.15	0.08%
6.0	0.15%	6.0	0.10%	5.30, 10 gm. cane sugar by mouth	
				6.15	0.12%

During the first two days of treatment with yeast extract he was given 1 oz. bread a day above diet. During the remaining four days this was increased to 1½ oz. On the last day cane sugar was given as a precautionary measure. Since this he has been on an adult diet (full Graham), with addition of bread and, as a rule, also potatoes. He has remained sugar-free.

R. This case reacted neither to yeast extract nor to pancreatic insulin. The ratio polarimeter to copper reduction was unchanged. Before treatment: Polarimeter, 0.10; copper value, 0.07. After treatment: Polarimeter, 0.10; copper value, 0.07.

First Day.		Second Day.		Third Day.	
10.30	0.10%	11.0	0.14%	11.15	0.12%
(30 c.cm. blood drawn.)		11.70, 140 mg. yeast.		11.30, 140 mg. yeast.	
11.0, 140 mg. yeast.		3.45	0.12%	1.45	0.11%
3.0	0.10%	6.15	0.12%	6.0	0.12%
Fourth Day.		Fifth Day.			
10.0	0.13%	10.30	0.14%		
10.30, 140 mg. yeast.		11.0, 50 mg. insulin.			
2.0	0.14%	2.45	0.13%		
(42 c.cm. blood drawn.)		6.0	0.12%		



S. The polarimeter and copper reducing values before and after treatment are given above.

First Day.			Second Day.		
9.31	...	0.15%	11.15	...	0.12%
(31 c.cm. blood drawn.)			11.50, 140 mg. yeast.		
11.30, 140 mg. yeast.			3.0	...	0.07%
3.0	...	0.11%	6.0	...	0.13%
Third Day.			Fourth Day.		
11.0	...	0.13%	10.0	...	0.13%
11.35, 110 mg. yeast.			10.45, 140 mg. yeast.		
3.0	...	0.16%	1.30	...	0.03%
			(55 c.cm. blood drawn.)		
			6.0	...	0.14%

#### GENERAL DISCUSSION OF RESULTS.

Two theories of diabetes have been suggested. The first attributes the disease to overproduction of sugar, regarding the pancreas solely as an inhibitory mechanism. The second theory holds that the disease is due to progressive inability of the tissues to utilize sugar; and that in some way the internal secretion of the pancreas enables the tissue cells to grip the sugar and oxidize it. The deficient utilization of sugar in diabetes, as shown by the respiratory quotient and wasting of the tissues, is ascribed by supporters of the first theory to the toxic effect on the cells of the high concentration of sugar, the very excess of sugar offered impairing the power of the cells to oxidize it.

Evidence pointing to a reactive sugar being formed in the body lends powerful support to the second theory. The sugar which reaches the cells contains a lessened amount of a reactive type; the high blood sugar may be explained by regarding the sugar as a mixture of normal and abnormal types. The normal blood sugar is removed by the cells and oxidized, the abnormal cannot be burnt, and is excreted. As the disease progresses the proportion of normal blood sugar becomes smaller, and the continued call of the tissues for an oxidizable sugar causes the blood sugar concentration and the excretion in the urine to become greater.

In a theory of diabetes put forward by Ringer<sup>17</sup> the author suggests that failure to utilize fat and carbohydrate is due to failure to accomplish a glucosidic union between the two molecules, and that the excretion of acetone bodies and sugar may be explained by the fact that they have not been linked together prior to metabolism by the cell. This hypothesis fits in well with the view of a reactive sugar.

The difference in the nature of the blood sugar of normal and diabetic persons is against the overproduction theory; on this theory the diabetic blood sugar should differ from the normal only in quantity. Further, injection of insulin into diabetics alters the nature of the blood sugar, with certain exceptions shortly to be discussed.

That at least two factors are concerned in the change is probable from the experiments on the action of insulin and liver extract on glucose and fructose *in vitro*. The optical activity of the sugar solutions was altered with no change in the copper reducing value. This suggests that the differences observed could not have been due to oxidation of the sugar or removal by some other means. Further, after the maximum change was observed, the rotation tended to revert to its original value; probably some component of the system was being inactivated and destroyed. We hope to make a further investigation on this point with a view to determining the conditions of activity of the enzyme. These experiments afford no indication as to the purpose of the sugar which was formed. Is it a preliminary to the formation of glycogen, or, granting that  $\alpha, \beta$  glucose is formed from glycogen in the body, is it in process of converting this sugar into a reactive form for utilization?

The evidence at present available would suggest that glycogen may yield different sugars under different conditions. While the normal blood sugar has a low rotatory power, the blood sugar of animals after injection of adrenaline approaches that of the diabetic in its nature. In examining the blood sugar of man, we found in one subject, who had no diabetic history, that the sugar had a rotatory power corresponding to the copper value. Possibly nervous influences, the result of the operation of drawing the blood, had affected the normal breakdown of glycogen. Macleod and his co-workers have shown, by a study of the respiratory quotient, that injection of insulin causes an increased utilization of sugar. They have also shown that insulin causes considerable formation of glycogen in the liver of depancreatized dogs. It is possible that the normal blood sugar is a mixture of  $\alpha, \beta$

glucose and a reactive sugar, and that insulin shifts the equilibrium in the direction of increased formation of the reactive sugar, which is then stored or utilized, the latter depending on the need of the tissues for sugar.

When a large dose of insulin is given to an animal the blood sugar falls to a point incompatible with life—the nervous system is affected and convulsions ensue. Banting and Best have shown that these symptoms can be relieved by injection of glucose. We have recently found that rabbits which are in convulsions as a result of injection of insulin (three times minimum lethal dose) may be restored to a normal condition in a short time by injection of adrenaline. A probable explanation is that glycogen is broken down by the liver and sent into the blood.

	Time.	Blood Sugar.
Rabbit, weight 1,800 grams	9.45	0.12 per cent.
Insulin (pancreatic) 0.03 mg.	10.0	
per gram body weight	11.40	0.07 per cent.
Convulsions occurred	12.45	0.05 "
1 c.cm. 1 in 1,000 adrenaline given intravenously	12.50	
Animal normal	1.30	0.09 per cent.
	3.0	0.16 "

In the case of an animal which did not recover following administration of adrenaline, the liver was examined; it was found that a new growth had greatly diminished the amount of normal liver tissue. It is possible that in certain cases of diabetes impairment of some organ other than the pancreas may have occurred. Certain cases of diabetes we have found not to react readily to insulin from the pancreas or to an extract of yeast. Two showed no improvement whatever. Both had had the disease for many years. It is suggested that the liver may have been affected. On the view that the liver contains an enzyme which is concerned with the production of a reactive sugar, gradual inactivation of the enzyme may have taken place to a considerable degree; possibly consequent on deficient formation of the pancreatic hormone.

A point of difficulty arises when it is remembered that the muscles of the diabetic contain glycogen, the heart muscle especially being often abnormally loaded with it. The liver, on the other hand, is usually almost free of glycogen. It is possible that carbohydrate metabolism in muscle may be of a special kind, or, as the powers of the body to metabolize sugar become diminished, that the essential organs are kept supplied with what little reactive sugar is available, to the exclusion of the call of the less essential tissues. On the other hand, the abnormal glycogen content of the heart muscle may point to deficient power of utilization of this sugar. Possibly there may be more than one internal secretion of the pancreas.

Evidence is accumulating to show the delicate balance which exists between the various internal secretions of the body. On these lines may come the explanation of the gradual deficiency of the pancreatic hormone in diabetes. Owing to the very delicacy of the adjustment between the glands, caution must be observed in interpreting the results of injection of large doses of the secretion of any one of them. It is inadvisable, therefore, at the present stage, to theorize too precisely on the manner in which the pancreas influences the carbohydrate metabolism of the body.

#### Summary.

1. The normal blood sugar of man and animals has a lower rotatory power than  $\alpha, \beta$  glucose. It is probably of a reactive nature.
2. The blood sugar of diabetics is mainly  $\alpha, \beta$  glucose.
3. A more complex sugar is also present in diabetic blood.
4. In the majority of diabetic cases injection of insulin causes a change in the nature of the blood sugar. The complex sugar disappears and the ratio polarimeter to copper reducing value is altered.
5. Insulin and liver extract together alter the rotatory powers of  $\alpha, \beta$  glucose or *D*-fructose *in vitro*.
6. Injection of adrenaline into normal rabbits causes the blood sugar to be altered. It appears to become like that of diabetics.
7. An extract of yeast has an effect similar to that produced by insulin, when tested on animals and on diabetic persons.



8. Insulin convulsions in rabbits may be relieved, and the animals restored to normal, by injection of adrenaline.

## REFERENCES.

<sup>1</sup> Collip: *Trans. Roy. Soc. Canada*, 1922. <sup>2</sup> Banting, Campbell, and Fletcher: *BRITISH MEDICAL JOURNAL*, January 6th, 1923, p. 8. <sup>3</sup> Levene and Mayer: *Journ. Biol. Chem.*, 9, p. 97, 1911. <sup>4</sup> Clark: *Journ. Exper. Med.*, 24, p. 631, 1916. <sup>5</sup> Clark: *Ibid.*, 25, p. 751, 1917. <sup>6</sup> Embden and others: *Zeit. f. Physiol. Chem.*, 83, 1919. <sup>7</sup> Winter and Smith: *Journ. Physiol.*, 56, p. 227, 1922. <sup>8</sup> Robison: *Biochem. Journ.*, 16, p. 839, 1922. <sup>9</sup> Winter and Smith: *Journ. Physiol.*, 57, p. 100, 1922. <sup>10</sup> Hewitt and Fryde: *Biochem. Journ.*, 14, p. 395, 1920. <sup>11</sup> Laquer: *Zeit. f. Physiol. Chem.*, 122, p. 26, 1922. <sup>12</sup> Hewitt and de Souza: *Biochem. Journ.*, 15, p. 687, 1921. <sup>13</sup> Cooper and Walker: *Ibid.*, 16, p. 445, 1922. <sup>14</sup> Winter and Smith: *BRITISH MEDICAL JOURNAL*, January 6th, 1923, p. 12. <sup>15</sup> Forrest, Smith, and Winter: *Journ. Physiol.*, 57, p. 224, 1923. <sup>16</sup> Winter and Smith: *Proc. Physiol. Soc. Journ. Physiol.*, 57, p. 31, 1923. <sup>17</sup> Ringer: *Journ. Biol. Chem.*, 17, p. 107, 1914.

## THE ADMINISTRATION OF INSULIN BY INUNCTION.

BY

S. V. TELFER, M.B., Ch.B., B.Sc.

(Institute of Physiology, University of Glasgow.)

DURING the course of recent experimental work in conjunction with Professor D. Noël Paton on the isolation and subsequent testing of insulin the possible methods of administering this preparation formed one of the subjects of consideration. The method of subcutaneous injection of sterilized aqueous solutions of known strength was employed in the determinations of "potency" of the insulin which was isolated from time to time in the laboratory. Hypodermic medication has also been employed habitually in the clinical use of this material. It is obvious, however, that if the drug is to be employed for long periods this method of administration might, in many cases, prove to be a serious drawback.

In considering the possible methods of administration, it occurred to me that the skin surface might be utilized for the absorption of the drug by inunction. The following experiments on rabbits were accordingly carried out, to ascertain primarily if the inunction of a paste in which insulin was incorporated would produce the effects obtained by direct injection of an insulin solution.

Simple ointments of varying strength were made by mixing weighed quantities of crude insulin, isolated from ox pancreas in the laboratory (by the method communicated by Dr. Dale of the National Institute for Medical Research) with small quantities of lanoline and with lard. The abdomen of each rabbit, which had been starved for seventeen hours, was shaved, care being taken to avoid injury to the skin surface, and the insulin paste gently rubbed in over the bare area.

TABLE I.—Inunction of Insulin in Rabbits.

	Weight of Crude Insulin used.	Blood Sugar.		Remarks.
		Time Intervals.	Glucose per cent.	
Experiment 1. Mar. 30, 1923.	0.3 gm. in 1 gms. hydrous lanoline	10.50 p.m. 12 noon 2.30 p.m. 5.0 p.m. 10.0 p.m.	0.152 0.059 0.045 0.056 0.084	Slight twitching of head at 2 p.m., but no convulsive movements.
Experiment 2. Apr. 4, 1923.	0.07 gm. in 2 gms. hydrous lanoline	11.5 a.m. 12.5 p.m. 2.50 p.m. 8.10 p.m.	0.103 0.091 0.031 0.11	No signs evident.
Experiment 3. Apr. 10, 1923.	0.3 gm. in 3 gms. "adepts preparatus"	11.35 a.m. 12.35 p.m. 2.53 p.m. 4.30 p.m. 8.20 p.m.	0.103 0.035 0.052 0.075 0.093	No convulsions.
Experiment 4. Apr. 10, 1923.	1 gm. in 5 gms. "adepts preparatus"	11.45 a.m. 12.45 p.m. 3.8 p.m. 4.10 p.m.	0.112 0.054 0.034 0.02	Animal somewhat collapsed at 3.30 p.m. Convulsive seizures at 4.10 p.m. Recovery. 1 gm. glucose injected. Animal ate green food, but at 6.40 p.m. convulsions occurred again. Recovery after injection of 2 gms. glucose.

TABLE II.—Subcutaneous Injection of Insulin in Rabbits.

	Weight of Crude Insulin injected.	Blood Sugar.		Remarks.
		Time Intervals.	Glucose per cent.	
Experiment 5. Mar. 1, 1923.	0.16 gm. (at 11.15 a.m.)	11.11 a.m. 11.45 a.m. 12.16 p.m. 12.46 p.m. 1.17 p.m. 2.30 p.m. 11.10 a.m.	0.107 0.093 0.077 0.051 0.038 0.013 0.094	Convulsions at 2.30 p.m. 1 gm. glucose injected. Convulsions at 3.1 p.m. 2 gms. glucose i.j. ctd.; recovery.
Experiment 6. Mar. 6, 1923.	0.075 gm. (at 11.25 a.m.)	11.20 a.m. 12 noon 1.0 p.m. 2.30 p.m.	0.162 0.075 0.054 0.051	No convulsions.
Experiment 7. Mar. 12, 1923.	0.067 gm. (at 11.15 a.m.)	11.12 a.m. 11.56 a.m. 12.50 p.m. 1.15 p.m.	0.177 0.073 0.053 0.041	Convulsions at 1.10 p.m. 1 gm. glucose injected; recovery.
Experiment 8. Mar. 16, 1923.	0.027 gm. (at 3.15 p.m.)	3.10 p.m. 4.20 p.m. 5.10 p.m.	0.133 0.018 0.051	No convulsions.

This procedure generally lasted about five minutes. The treated area was then covered with a piece of jaconet, held in position by a bandage. Samples of blood from the marginal vein of the ear were taken for estimations of blood sugar, immediately before and at intervals after the inunction of the paste. The results obtained are collected in Table I. For purposes of comparison the effects produced on the blood sugar of rabbits by subcutaneous injection of various quantities of crude insulin are given in Table II.

In the first experiment (No. 1, Table I) a relatively large amount of insulin was employed, to ascertain if any effects could be produced by inunction. As noted, there was a reduction of blood sugar to 0.045 per cent., though no convulsions were induced during this period. The hypoglycaemia was still pronounced twelve hours after administration. A much smaller amount of material was employed in Experiment 2. The fall in blood sugar was just observable. The hypodermic injection of the same quantity of insulin (Experiment 7, Table II) induced convulsions in another animal within two hours. In Experiment 3 the crude insulin was incorporated in lard. The inunction of the paste induced a very considerable fall in blood sugar within an hour, the period of hypoglycaemia lasting about ten hours. A large excess of insulin was employed in Experiment 4. Soon after inunction the animal became very lethargic, and within an hour its appearance suggested collapse, though there were no convulsions till 4.10 p.m., when glucose was injected subcutaneously. The animal remained in a collapsed condition for some time, but later seemed to be normal, and ate some green food. At 6.40 p.m. it was again in a strongly convulsed state; 2 grams of glucose were injected subcutaneously. At 10 p.m. it appeared to be recovering, but refused green food. On the following morning it had completely recovered and was actively running about. The reduction in the blood sugar was very pronounced in this experiment, and a considerable amount of insulin must have been rapidly absorbed through the skin.

An examination of the results obtained on the subcutaneous injection of crude insulin (Table II) shows that by this method of administration the maximum effects could be produced with very much smaller doses. In Experiment 8 the reduction of the blood sugar to 0.038 per cent. resulted about one hour after the injection of 0.027 gram, while in Experiment 7 convulsions occurred with the fall in blood sugar to 0.041 per cent. two hours after the injection of 0.067 gram.

In reviewing these results the chief conclusion appears to be that insulin can be introduced into the blood stream by means of inunction. This method of administration necessitates the use of much larger quantities of the drug than those required to produce comparable effects by subcutaneous injection. It is worthy of note, however, that in estimating the effects produced account must be taken chiefly of the duration of the hypoglycaemia. A sudden reduction, followed by an abrupt rise in the blood sugar, such as is indicated in Experiment 8, Table II, where a relatively small amount of the drug was injected, indicates a transient effect. The ideal method of utilization would appear to be indicated by a



prolonged period of hypoglycaemia maintained by slow absorption.

The results also suggest that advantage might be taken of this method to utilize crude insulin extracts. At the present time the cost of isolating the drug in a pure and active state for the purposes of hypodermic medication is such as to restrict seriously its application on a large scale. It is possible that more liberal use of cruder materials might with advantage be made by means of injection.

I have to thank Mr. Orr for performing the analyses of the blood.

The work was done under the Medical Research Council.

## A Clinical Lecture

ON

## SUBCUTANEOUS RUPTURE OF THE INTESTINE.

GIVEN AT GUY'S HOSPITAL ON MARCH 7TH, 1923,

BY

R. P. ROWLANDS, M.S., F.R.C.S.,

SURGEON TO GUY'S HOSPITAL.

CONTUSIONS, unlike bullet and other penetrating wounds, do not often cause multiple injuries of the bowel, but the individual lacerations of the intestine and mesentery are generally more severe. For instance, the small intestine is sometimes completely divided. Therefore it is clear that the hope of recovery without operation is more remote, but the operation itself is likely to be less tedious and troublesome.

### CAUSE.

The bowel is most frequently ruptured by a wheel passing over the abdomen, by a squeeze or a crush, a blow or a kick. It may be crushed against the spine or torn from its mesenteric attachments, especially at the junction of movable and fixed parts, such as the duodeno-jejunal junction. Sometimes the reduction of a strangulated hernia has led to rupture of the bowel; a man was admitted to Guy's Hospital recently who had ruptured his own intestine in this way. In the large majority of cases, as pointed out by Massie, the contusion is below the umbilicus; there may be, however, no sign of injury on the surface of the abdomen at first, but a bruise may appear some days later.

### SITE OF RUPTURE.

In an examination of 381 cases, published and unpublished, the site of rupture was as follows:

Duodenum	...	...	...	...	23 cases.
Jejunum	...	...	...	...	157 "
Ileum	...	...	...	...	158 "
Colon	...	...	...	...	43 "

In one-tenth of the cases there was more than one rupture; sometimes the large as well as the small intestine was torn.

### NATURE OF DAMAGE.

As a rule the laceration runs for less than an inch across the axis of the bowel, but occasionally the latter is completely divided or severely bruised. The mucous membrane always pouts; the bowel dilates above and below the rupture, and rapidly becomes inflamed and oedematous. In nearly one-tenth of the cases there are complications, such as rupture of the mesentery or of one or more of the other abdominal viscera. In one-quarter of the cases there is fracture of the spine or pelvis, and sometimes severe injuries to other parts, such as the chest and head. The frequency and severity of these complications contribute very largely to the mortality.

### SYMPTOMS AND SIGNS.

1. *Pain* is the most striking symptom: As a rule it comes on early and is very severe, being described by patients as "agonizing."

2. *Tenderness*.—This is at first local, near the site of the injury, but later it becomes general, as a result of peritonitis.

3. *Shock*.—This is nearly always severe. It occurs, and may even be fatal, very soon after the accident. In some cases it passes comparatively quickly.

4. *Vomiting* is almost always present, often constant and most persistent.

5. *Pulse and Temperature*.—The former is at first slow and weak from shock, then normal and deceptive; later increasingly rapid and weak as a result of peritonitis. Similarly the temperature is at first subnormal, then normal, and later raised.

6. *Rigidity*.—At first this may be local, but it soon becomes general. The abdomen may be flat at first, or even retracted, but later it becomes distended as a result of peritonitis, with effusion and tympanites.

7. *Dullness*.—There is usually shifting dullness in the flanks as a result of effusion. The liver dullness is often greatly diminished from free gas in the peritoneum.

8. *Transmission of Heart and Breath Sounds*.—The heart and breath sounds may be transmitted, through the gas and fluid, over the abdomen, far beyond the natural limits.

9. *Signs of Internal Haemorrhage*.—In many cases the patient is pale and restless as the result of haemorrhage, and examination of the blood confirms the evidence of this grave complication. The face is usually anxious, pale, cold and sweating, and is, in fact, a typical "abdominal facies."

Emphysema of the abdominal wall or of the loin generally implies rupture of the bowel in its extraperitoneal part. When it affects the right loin the ascending colon or duodenum is ruptured; on the left side, the descending colon. Later on, in such cases, a faecal abscess may form in the loin.

As a rule the minds of these patients are unusually active, and they often have a premonition of impending death.

### DIAGNOSIS.

The diagnosis depends a great deal upon an accurate history of a severe abdominal injury. Anyone who has sustained such an injury should be kept under direct observation for a few days, for although there may be no bad signs at first these may rapidly develop. It is of the gravest importance to admit such a case into hospital at once.

Severe pain, tenderness, rigidity, and persistent vomiting following an abdominal injury should make us open the abdomen without delay, although the pulse and temperature and general condition of the patient may be good. It is by operating in the early stages that the appalling mortality of these catastrophes can be reduced.

It is often difficult to distinguish this condition from rupture of the spleen, liver, or mesentery, in which signs of internal haemorrhage and shock are the most prominent. Presence of free gas in the peritoneum, as shown by a tympanitic note, diminution of the liver dullness, and rapid onset of peritonitis, are strong indications in favour of rupture of the bowel; but accurate diagnosis is not so important as a realization of the presence of grave intra-abdominal injury and the urgent need of an operation to set it right.

### TREATMENT.

Death is almost inevitable without early operation, therefore it should be carried out at the earliest possible moment, for mortality increases with delay. The following figures, taken from 376 operation cases collected by Siegel, illustrate this point:

	Mortality.
Operation within 4 hours	15.2 per cent.
" from 5 to 8 hours	41.4 "
" from 9 to 12 hours	63.6 "
" later	70.0 "

The mortality of this series was 51.6 per cent., and is very misleading, because fatalities are so often forgotten and not published.

### Operation.

While preparing for the operation every endeavour must be made to combat shock by warmth, saline or subcutaneous infusions, or, in some cases, by transfusion of blood. Whenever possible spinal anaesthesia or gas and oxygen is chosen.

The abdomen is opened in the middle line, preferably by displacement of the right rectus outwards. The jejunum, being the most likely part to be affected, is at once examined and the small intestine traced downwards to the caecum. In many cases, however, the injured coil comes forwards into the wound directly the abdomen is opened, and gas and liquid escape. If no perforation is found in the jejunum or ileum the duodenum is most carefully examined; in many cases lacerations of the duodenum have been overlooked at the time of operation and have only been found *post mortem*. Lastly, the caecum and colon are examined.



Unless a loop of intestine has been very severely damaged it is not necessary to resect. It is far safer to pare the edges of the laceration and to close it with two continuous sutures of fine linen thread. Linen thread closes wounds in these damaged tissues more effectively and permanently than fine catgut and does no harm. While the surgeon is closing the perforation gauze rolls are passed into the pelvis and flanks to absorb the effusion in these areas. This is a quicker and better method than washing out, and the peritoneum is left dry and less damaged. In late cases a stab wound is made about two inches above the pubis and a tube is inserted to drain the pelvis, but in early cases the peritoneum is completely closed.

#### MORTALITY.

The mortality of this condition is appalling, and is chiefly due to delay and errors of diagnosis. James Berry and Giuseppe<sup>1</sup> have done good service by collecting and analysing 132 cases of rupture of the intestine from contusion, from the records of ten London hospitals, previous to 1908. Of Berry's collection, 84 patients were operated upon, with 67 deaths—a mortality of 80 per cent.; but in 15 the ruptures were not found at the operation; 7 of these were in the duodenum. The surgical registrars of twelve London hospitals collected 44 cases occurring between 1908 and 1912.<sup>2</sup> In 12 of these there was no operation. Of 32 operated upon, 23 died (72 per cent.). Taking these two series together, there were 176 cases, with 116 operations, and a mortality of 77 per cent. It is interesting to note that 60 (or over one-third) of the patients were not submitted to operation. This was chiefly due to their grave condition on admission, owing to delay or the presence of complications.

It is certain that the best results are obtained by quick decision, early operation, and accurate and rapid work at the operation, followed by careful after-treatment.

#### CASE I.

Mrs. T. H., aged 43, had been up to London, and was walking from the station to her home, at 4 p.m. on September 4th, 1922. She was carrying a heavy suit-case, which had hard protected corners, when she was run into from behind by a cyclist. She was thrown violently forwards and doubled up over the case, one of the corners of which injured her in the right hypochondrium, and the cyclist fell on top of her. She crawled to the side of the road in terrible agony and scarcely able to breathe or speak. A doctor was fetched who, however, did not think anything very serious had occurred, and he took her home (four miles) in a taxi. She almost fainted before entering the taxi, but took some sal volatile which made her feel better. She could not sit up or lean back, and especially could not bear to be touched on the abdomen or trunk. Arrived at home she crawled upstairs on her hands and feet, holding her body rigid but shaking all over. She was given a cup of tea, but vomited at once. Dr. G.-J. was called in late that night and found her with a rigid abdomen and very tender in the right flank. Pulse and temperature were normal. She was vomiting a little, but brought up no blood. A diagnosis was made of "bruised ribs and abdominal wall." As the pain was still very great he, at the urgent request of the husband, gave an injection of morphine (1/4 grain), but the following morning it was as bad as ever, and, as he was unhappy about the patient, Dr. G.-J. got me to see her at noon. Although the abdomen did not move well on respiration, I did not think there was sufficient cause for operation, but by 8 p.m. she was much worse. The pulse was 124, and temperature 102°; the abdomen was getting more distended and she was very flushed; the liver dullness had almost disappeared, and the pain was so intense that the patient welcomed the idea of an anaesthetic as she longed for unconsciousness. A diagnosis was made of "ruptured viscus, bowel, or gall bladder," and an operation advised and carried out at once. From the moment of the accident the patient had an acute sense of impending death and the brain was more than usually active throughout, in spite of the pain suffered.

**Operation.**—On opening the abdomen through the right rectus gas at once escaped, also foul, bile-stained pus, of which there was a large amount in Morison's pouch. There was a large collection of thinner sero-pus in the pelvis. This was mopped away, and two rents, large enough to admit the tip of the finger, were found in front at the junction of the first and second parts of the duodenum. There was a narrow bridge between the two rents which I divided. There was no induration of the duodenum nor any evidences of chronic ulceration. Moreover, the mucous membrane pointed, which it never does for a perforated ulcer, because it is adherent at the edge of the ulcer. The large opening was then closed with fine linen thread in two layers, the line of suture being transverse to the duodenum, so that the lumen would not be narrowed. The omentum, above and below the duodenum, was then brought over the suture line. A tube was left in a stab wound just above the pubis and another in the abdominal wall just above the wound. The patient vomited a good deal during the next forty-eight hours, bringing up black vomit; the temperature kept up for a week, and there was considerable suppuration in the abdominal wound and some cystitis. She slowly regained strength, however, and made a complete recovery.

#### CASE II.

A man, aged about 21, in the Officers' Training Corps, at 9 p.m. on December 29th, 1915, was struck in the abdomen by the handle of a handcart. It hurt him very much, but he did not fall and later went home to Woolwich. He did not sleep at all that night, having dreadful pain in the abdomen and vomiting frequently. He was seen by Dr. Baird, who sent him up to Guy's Hospital the following day. On admission he looked ill and anxious; temperature 100°, pulse 110.

**Operation** (December 30th, 5 p.m.).—The abdomen was flat, completely fixed, and exquisitely tender, but it was quite resonant over the liver and in the flanks. He was unable to pass urine, but the bladder was not fully distended, only 6 ounces of clear, high-coloured urine being removed with a catheter. A diagnosis of ruptured small intestine was made, for the signs of peritonitis were much too severe for anything else. Pallor was not very marked. A very long incision was made to the right of the middle line. Pus and gas at once escaped, followed by brownish, very offensive fluid. There was lymph on the coils of small intestine, which I withdrew in order to find the perforation without delay. Ultimately I found a very large laceration, 2½ in. long, across the dilated, oedematous jejunum, high up. The perforation was lying far back in the left flank, near the spleen. I withdrew it, after separating some adhesions, pared the edges, and closed the opening with two continuous fine black threads. Meanwhile, gauze rolls had been draining away the fluid from the flanks and pelvis. There was general peritonitis. A tube containing a wick of gauze was inserted in the pelvis, through a stab wound above the pubis. The main wound was closed completely in layers. The patient was infused throughout the operation. He made a complete recovery.

#### REFERENCE.

<sup>1</sup> *Lancet*, 1903, vol. ii, p. 1143. <sup>2</sup> *Trans. Roy. Soc. Med.*, 1914, vii, 3, p. 96.

### A CASE OF INTESTINAL STASIS.

BY

G. DUNDAS MAITLAND, M.B., B.S., F.R.C.S.,

MEDICAL OFFICER TO OUT-PATIENTS, ROYAL SURREY COUNTY HOSPITAL.

THE case I am about to describe seems to warrant publication more by the multiplicity than by the rarity of the abnormal features it presented. The patient was referred to me by Dr. Cowardin of Guildford with the provisional diagnosis of "colon disease," which was, perhaps, the happiest term that could have been chosen, for the whole of the colon was in a pathological state.

Mrs. W., aged 46, had always been an active woman, and gave a life history free from any abdominal trouble, inflammatory or otherwise, until about five years ago, when she began to be troubled with chronic constipation and colicky pain, which gradually became more persistent; for two years she had had constantly to resort to the use of laxatives, but was often quite constipated for periods of four or five days, generally followed by a few days of diarrhoea. Pain of a colicky nature had for a year been almost constantly present on the left side; it was most severe for about two hours prior to the morning evacuation, which was becoming more difficult.

Considerable quantities of mucus had been passed with the stools for two years, and for some time the stools had taken the form of small, hard, rounded nodules; tenesmus had become a marked feature. She was never sick or visibly distended and melaena had never been noticed. A barium enema was administered and its passage through the colon examined with the fluoroscopic screen. There was no noticeable delay at any point, the opaque material passing round to the caecum in the normal five minutes without any massaging, but there was noticed a very severe kinking of the ascending colon at a point about on the level with the iliac crest; at this point the column of barium was thinned out and, for a time, broken. The splenic flexure appeared in good position, but the hepatic was unusually low. A week later the patient entered a nursing home and a barium meal was administered by the mouth. Four hours later the stomach had emptied and the opaque meal was all collected in the terminal ileum; at eight hours the caecum had begun to fill; at twelve hours the whole of the opaque substance had passed into the caecum and ascending colon.

Fluoroscopic examination showed that the caecum was unusually large and that the ileo-caecal junction was well below the level of the brim of the true pelvis. The ascending colon appeared very short, the hepatic flexure being about the level of the iliac crest.

At twenty-six hours the bulk of the barium was still in the caecum and ascending colon; only a few small pellets of barium were seen in the transverse and upper part of the descending colon down to the level of the kink noticed on giving the opaque enema; but as these all threw small separate shadows, no definite evidence of obstruction at this point could be demonstrated.

The marked general stasis and proptosis of the caecum and ascending colon decided us to advise operation. Through a large paramedian incision the whole colon was explored, working from below upwards. The rectum was normal. The pelvic colon was greatly elongated (about two feet) and lay loose in the cavity of the true pelvis, to the walls of which it was attached by a long loose mesentery which allowed of its being withdrawn freely from the pelvic hollow. The kink seen in the first radiographic examination was a typical "Lane's last kink," being caused by a dense



band stretching from the brim of the true pelvis into the mesentery of the colon; at its attached end it is perhaps best described as resembling the blade of a razor set in the mesentery, the thick back portion being towards the lateral abdominal wall. As it approached the lateral surface of the bowel it became spread out to form a thin sheet, the fibres of which passed actually into the peritoneal covering of the lateral aspect of the colon. It had not contracted sufficiently to tie the bowel at all tightly to the pelvic brim, and there was no external evidence of constriction of the lumen at this point. The descending colon was throughout provided with a loose abnormal mesentery, three to four inches in length at the iliac end, and about two inches as it approached the splenic flexure, which was normally fixed in good high position. The transverse colon appeared normal but sagged rather low in the centre; this probably was partly due to the low position of the hepatic flexure. The ascending colon was greatly dilated; it also appeared to have an abnormal mesentery, but this was not easy to demonstrate because the anterior and external surfaces were invested with an extensive Jackson's membrane spreading from the colon to the lateral abdominal wall. In places this membrane was of the thin diaphanous type usually described, but in others it presented patches and bands of firm glistening fibrous tissue which were strong enough to resist digital separation. The caecum was more grossly dilated; it was entirely within the hollow of the true pelvis, and a large, thickened, chronically diseased appendix lay on the fundus of the urinary bladder.

The caecum was readily withdrawn from its pelvic bed, there being no adhesions in that cavity. A band stretched from the anterior surface of the caecum to the front of the terminal ileum, about two inches from their junction, but this did not appear to be causing any kinking of the latter. Lane's ileal kink was not present, nor were there any gall stones. The stomach was normal in size and high in position; it showed no sign of ulcer or other disease.

As the interest of this case lies entirely in the extensive pathological features present, there can be no purpose served by describing the operative procedures carried out. They were conservative in character, though I cannot help feeling that this was a case in which nothing short of a complete colectomy could be expected to yield any great degree of permanent benefit. I may add that this is one of the very few cases of this type in which I have felt thoroughly convinced that such a drastic operation would have been (in the hands of one accustomed to performing it) completely justified.

The points of special interest in this case appear to me to be: (1) the unduly long and mobile pelvic colon; (2) the Lane's "last" kink; (3) the descending mesocolon; (4) the proptosed dilated caecum and ascending colon with mesocolon; (5) the Jackson's membrane, and its remarkable density; (6) the inability of the caecum and ascending colon to propel their contents as shown by x rays.

In the performance of the operation I was greatly assisted by Dr. C. P. Lankester (Surgeon to the Royal Surrey County Hospital), who had carried out the radiographic examinations which had portrayed the actual conditions found at operation with such accuracy.

## TREATMENT OF STRANGULATED OBTURATOR HERNIA.

BY

A. RENDLE SHORT, M.D., B.S., F.R.C.S.,

SURGEON TO THE BRISTOL ROYAL INFIRMARY.

STRANGULATED obturator hernia must be regarded as a rare condition. The case here recorded is the only one that has occurred in the practice of the Bristol Royal Infirmary, which is the largest hospital in Bristol, in about twenty-five years. It might, however, fall to the lot of any surgeon, in town or country, to deal with the condition. Most of the described cases have occurred in old women. The diagnosis is usually acute intestinal obstruction, as it was in my case at the first time of strangulation, but occasionally there may be pain down the distribution of the obturator nerve, or a deep swelling beneath the origin of the adductor muscles, to suggest the correct diagnosis.

The best account of the anatomy and operative treatment of the condition with which I am acquainted is in Lejars's *Urgent Surgery*, vol. ii. Three types of obturator hernia are described.

1. The bowel may traverse the whole length of the canal, emerging from the anterior aspect, and spreading out in front of the obturator externus and under cover of the pectineus.

2. It may push through the obturator externus muscle, not through the canal with the artery and nerve, and so be encircled by muscle fasciculi.

3. It may burrow into the layers of the obturator foramen beneath the obturator externus muscle, so that that muscle covers it, as well as the pectineus, when an attempt is made to dissect down to it from the groin.

The artery and nerve bear no constant relation to the sac. Usually they are behind the neck and a little to its outer side, but cases have occurred in which the artery has formed a circle around the neck.

It is generally advised that when the condition is diagnosed the swelling should be cut down on from Scarpa's triangle by an incision an inch and a half to the inner side of the femoral artery, the pectineus muscle being either divided or retracted.

My patient, an old woman of 75, came up in March, 1921, complaining of symptoms of acute intestinal obstruction. She had been ill for four days. There was no pain, and no swelling over the obturator region. On opening the abdomen a knuckle of gut was found tightly strangulated in the obturator canal. I reduced it and buried a small gangrenous area by a purse-string suture, but did not attempt to close the canal as she was very ill.

She came up again, sent by Dr. Angell James, in January, 1923, with a recurrence of the condition, this time on the third day. Again there was no pain down the leg and no swelling, but in view of the previous history the diagnosis was obvious. I again opened the abdomen without much difficulty, pulled out the small intestine which was snared in the opening, and ascertained that it was not gangrenous. About half the diameter of the gut was nipped; it was a Richter hernia. The patient was then placed in the Trendelenburg position, and it was found that the hernial canal was about two inches long, of uniform calibre, and just admitted the finger. The position of the vessels and nerve was not identified. I made a small incision over the lower rib cartilage, excised a piece of cartilage corresponding in length and thickness to the capacity of the canal, and inserted it into the obturator canal; by means of a purse-string suture I drew the peritoneum together so as to close the canal over the piece of cartilage, which completely filled it. All this only took five minutes. She made an uninterrupted recovery in spite of her 77 years.

Herniotomy from the groin must surely be very difficult, especially in an aged patient acutely ill. If the bowel lies between the layers of the obturator muscle, it would be more difficult still. Then there is the grave uncertainty as to where to cut to free the strangulation without dividing the artery and nerve. If gangrene is found it will be necessary to open the abdomen to repair it. Difficult surgery is generally dangerous surgery.

It would appear, therefore, better practice, even when the condition is diagnosed, as it was on the second occasion in my patient, to perform laparotomy and use the Trendelenburg position. Perhaps the hernia will be reducible without cutting the neck of the sac; if it has to be cut the surgeon may be able to see and avoid the artery, and even if it be divided there will be no difficulty in securing it. The bowel can be examined for gangrene, and treated if necessary. The only risk is that dirty fluid from the sac may get into the peritoneal cavity; probably a little does so even if the hernia is reduced from without, and it can be guarded against by careful packing and mopping.

As my case shows, an attempt ought to be made, in favourable circumstances, to close the canal, or there will be recurrence. It would be easy to do so by a purse-string suture through the peritoneum, but it is doubtful if that will be effectual when, as in my case, there is an open canal, with firm walls, inviting the peritoneum to stretch and form another sac. The peritoneum is very loose at this point. To close the canal by suture of the obturator muscle is difficult; it will not yield easily and it has to be sewn to bone or periosteum. The nerve might very likely be included and give rise to persistent pain. When the size and shape of the canal is suitable, and the contents not noticeably septic, the introduction of a piece of rib cartilage seems to be quick, safe, and effectual. Cartilage needs a very small blood supply, and can readily unite with fibrous tissue to form a firm resistant mass.

THE late Mr. Joseph Constantine, shipowner, of Northallerton, has by his will bequeathed £1,000 each to the North Riding Infirmary and the Cottage Hospital, North Ormesby, and £500 to the Rutson Hospital, Northallerton.

THE trustees of the estate of Mrs. Constance Armstrong, who bequeathed a large part of her fortune to cancer institutions, have allocated £1,600 each to the Imperial Cancer Research Fund, the Cancer Hospital, Fulham Road, London, the Cancer Charity, Middlesex Hospital, the Liverpool Hospital for Cancer, and the Caird Cancer Ward of the Dundee Royal Infirmary; also £1,000 to be used on behalf of cancer cases at the Royal South Hants Hospital, and £1,500 for the same purpose at the Royal Victoria and Albert Hants Hospital, Boscumbe.



## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### ACUTE OBSTRUCTION BY MECKEL'S DIVERTICULUM WITH SYMPTOMS RESEMBLING APPENDICITIS.

The following case seems to me worthy of record as showing that in acute abdominal conditions a mid-line incision must always be the safest; otherwise, as indeed in this particular case, serious lesions might easily be overlooked.

On September 13th, 1922, W. C., aged 16, was seized at 9 a.m. with severe abdominal pain causing vomiting; the pain lasted for an hour and then ceased. The boy returned to work, but as the pain returned in two hours he went home. The mother obtained medical advice, and the doctor, after seeing the patient twice within four hours, sent him into the hospital as a case of appendicitis for urgent operation. I saw the patient at 9 p.m.; the temperature was 101.4°, and the pulse 88. He had vomited twice, and his bowels had been naturally opened twice during the day. There was much tenderness and rigidity over the right iliac fossa, and for an area of 3 inches diameter about the umbilicus; the rest of the abdomen was fairly soft. At this time the patient did not appear to be suffering much pain, nor was his expression anxious. The symptoms and physical signs pointed to acute appendicitis in an early stage. In operating on women it is usual to open in the paramedian right or median line, having regard to possible complications (pyosalpinx, twisted ovary, etc.), as the incision can be easily enlarged. In this case, however, dealing with a boy, and being, moreover, fairly sure of the diagnosis, I used a "gridiron." On opening the peritoneum a good deal of clear fluid escaped. I pulled out about 3 inches of small bowel which was very blue and congested. Quickly realizing that appendicitis was not the trouble, I closed the first incision and opened in the mid-line. I found acute strangulation of the small bowel by a strong band of adhesions from a Meckel's diverticulum. This diverticulum had a base 1½ inches broad at its opening from the bowel, was 4 inches long, conical, and tapering to a point. From this point extended a band about 8 inches long, which had become attached to the mesentery in two places. Between the two attachments three coils of small bowel had pushed their way and become tightly constricted. Fortunately it was not yet gangrenous, and I was able to remove the adhesions, resect the base of the diverticulum, and sew up the hole in the bowel transversely without soiling the peritoneum. The wounds healed by first intention; the boy made an uninterrupted recovery, and left the hospital on October 6th.

JOHN W. HEERES, M.B., B.S. Lond.,  
Surgeon, the Royal Hospital, Richmond.

#### MENINGITIS DUE TO PFEIFFER'S BACILLUS.

I AM prompted to send the following report by two notes in the BRITISH MEDICAL JOURNAL of March 10th (p. 416, and *Epitome*, No. 210) on cases of meningitis due to Pfeiffer's bacillus.

On February 12th I was called to a girl child of 18 weeks, suffering from what was apparently a simple gastro-intestinal disturbance with vomiting, and slight diarrhoea with green curdy motions. Two or three days later the diarrhoea had given place to constipation, and there was noticeable a peculiar listlessness. The child did not appear very ill, but cried less, and was generally quieter, than is usual in such a case in an infant. Shortly after—I cannot state the exact date—I noticed that the anterior fontanelle was somewhat turgid, but examination revealed no other sign of meningitis.

On February 20th the parents requested a consultation with my colleague, Dr. C. P. Strong, and at this examination there was demonstrable a very slight rigidity of the hamstrings, but no other sign of meningitis. The next day there was no hint of Kernig's sign, but the bulging of the fontanelle was more noticeable, and I observed a slight transient divergent squint, though at the time I thought this was very probably nothing more than the strabismus one so frequently sees in a young baby.

I performed lumbar puncture at 11 a.m. I thick yellow pus—so thick that it was rough noted only pus cells and a few large lymphocytes; no micro-organisms were found, but the examination was somewhat cursory. I sent the pus to the Clinical Research Association, and received two reports—the first to the effect that a very few Gram-negative bacilli were seen in stained films, and the second that these organisms gave the cultural and morphological characteristics of Pfeiffer's influenza bacillus.

The child died on February 22nd—the eleventh day after it had become noticeably ill; it had been apparently almost unconscious for about thirty-six hours.

It is noteworthy that in this case of what was seemingly a primary infection of the meninges by Pfeiffer's bacillus—

1. The onset resembled in all particulars the gastro-intestinal disturbance frequently seen in a hand-fed baby whose meals are regulated largely by the mother's whim or its own cries.

2. The bulging fontanelle was the only persistent sign of meningitis; and, apart from a transient Kernig's sign and a still more transient squint, there were no signs of meningeal involvement. The complete absence of head retraction was particularly noticeable.

Boston, Lincolnshire.

E. N. BUTLER, M.B., B.Ch.

## Reports of Societies.

### CORONERS' INQUESTS: ANAESTHETIC DEATHS.

AN animated debate took place at a meeting of the Section of Anaesthetics of the Royal Society of Medicine on April 20th on the subject of coroners' inquests on deaths under anaesthesia. Dr. A. L. FLEMING was in the chair, and the meeting was attended by representatives of the Medico-Legal Society and the Coroners' Society.

Dr. J. H. CHALDECOTT, who opened the discussion, said that it had been laid down recently by a critic in the lay press that deaths under an anaesthetic belonged to the category of violent or unnatural deaths upon which a coroner was required, under the Act of 1887, to hold an inquest. The speaker maintained, on the other hand, that in view of the attitude of coroners towards other surgical deaths it was not obvious that all anaesthesia deaths were unnatural, and, further, that it would be to the public advantage if inquests were not held on all anaesthesia deaths as a matter of routine. Their work as anaesthetists left them nothing to conceal, and the discussion of this subject was not prompted in the slightest by antagonism to coroners. If it could be shown that the holding of these inquests as a matter of routine added to the safety of the community, it would be for the medical profession to endure in silence any strain or inconvenience which such inquiries imposed. But deaths which occurred from purely surgical complications, even in operations of expediency, were not made the subject of coroners' inquests—a course which he regarded as perfectly right and proper, but which left him wondering why coroners did not exercise the same discretion in the case of anaesthesia deaths. The reason why deaths from surgical shock were not made the subject of inquests was because it was believed that the surgeon performed the operation for the patient's good, and with the patient's consent, and that to undertake the operation was part of his duty as a qualified practitioner. But the same considerations applied to the administration of the anaesthetic.

The only advantage which the present system conferred on the public was the satisfaction which it gave to the friends of the deceased to have things cleared up; the same thing might apply to all deaths occurring under medical treatment when the relatives were dissatisfied, or when information had been given which led the coroner to suspect that there might have been negligence, carelessness, or irregularity. On the other hand, the public was disadvantaged by newspaper reports of inquests, which were read by people who did not realize that the fatalities represented an infinitesimal proportion of the cases in which anaesthetics were administered. The publicity thus given caused patients to postpone necessary operations; it added to their anxiety when the operation at length became inevitable; and it meant a further tax upon the nerves of the medical man in charge, especially if he were a man on the threshold of his career. The anomaly was that if the surgeon and anaesthetist shirked their duty and allowed the patient to die without operation the death would be classified as natural; if they strained every nerve to save the patient, and yet he died on the table, the death would be accounted violent and unnatural. Well might Shakespeare say:

"But is this law?"

Ay, marry, is't; crowner's quest law."

It was difficult to understand why, unless there was *prima facie* evidence of neglect or carelessness, such a death, even in operations of expediency, should be regarded as more unnatural than any sudden death under medical treatment. No wonder that the administration of anaesthetics was the least popular of a doctor's duties.

An aged man died during operation after having been under the anaesthetic for some time; the autopsy disclosed well marked fatty degeneration of the heart. In this case the *post-mortem* examination without a public inquest should have been quite sufficient, whereas the inquest led to a sensational report in the evening papers with the alarmist heading: "Operation Risk:



Heart Disease that Escapes Diagnosis." On the other hand, a death due to the fact that the afferent and efferent tubes of the chloroform apparatus had been transposed was an accidental death, and clearly a case in which an inquest was called for.

It was common knowledge that the mortality following surgical operations was diminishing. But would surgery have shown such steady progress had every surgical death been made the subject of a public inquiry? The effect would have been disastrous and would have hampered progress. Imagine the relative merits of two methods of operation being thrashed out in the coroner's court! Similarly the selection of a particular anaesthetic could not be judged by question and answer before such a tribunal. The impressions conveyed to the lay mind by discussions at inquests on the relative safety of chloroform and of ether were almost invariably misleading. The critical attitude of some coroners towards chloroform was already beginning to cramp the teaching of chloroform administration in the hospitals. An unqualified expression of opinion in court that ether was safe and chloroform dangerous was quite inaccurate; in the hands of some administrators and in the case of certain patients the position might be the very reverse. There could be only two reasons for such inquiries: (1) to find out whether blame attached to anyone for the death; (2) to elicit some clinical fact which might be of assistance in preventing future mortality. The first was the primary function of the coroner's court, but it need not be exercised unless there was ground for suspicion. For the second the coroner's court was the worst possible tribunal. As a positive contribution to the discussion, Dr. Chaldecott suggested that a committee should be set up, under a Government department, which would have power to call for all records—clinical, operative, and post-mortem—relating to deaths under anaesthesia. This committee, which would sit in private, would at the end of each year issue to the General Medical Council a report which would be published in the medical press. Alarmist reports in newspapers would be eliminated by entrusting the inquiry into anaesthesia deaths to such a body, and this very absence of publicity, as well as the scientific competence of the tribunal, would be a safeguard to the public. The interests of the public were really interwoven with those of the profession in this matter, and he believed the public would welcome the reform of the present system, which, however well adapted for inquiry into murders, suicides, accidents, and treasure trove, was quite unsuitable in the majority of cases for inquiry into deaths under anaesthetics.

Dr. A. L. FLEMING pointed out that coroners' inquests might work to the disadvantage of the public. The constant thought of such inquests might lead to the choice of an anaesthetic which, while perhaps more immediately safe, was not ultimately the best for the patient. The risk of death at the table might be slightly lessened at the cost of a higher mortality afterwards.

Dr. HAMILTON BEATTIE gave particulars of two typical cases. One was a case brought into the theatre almost in a moribund condition. On opening the peritoneum the patient collapsed, respiration ceased, and the pulse became imperceptible. Heart massage was applied and adrenaline administered direct into the heart muscle. The heart started again, but immediately after the operation the patient developed Jacksonian epilepsy, had a continuous series of fits, and died within two hours. The coroner did not see fit to inquire into that matter at all, yet that was a case in which an inquiry might have been useful to discover why the patient had been allowed to get into that condition before being referred to the hospital. The other case was one of hopelessly incurable carcinoma of the lower jaw on which the surgeon wished to operate with a view to increasing the patient's comfort and relieving an imminent rupture of the carotid artery. The patient lived only three hours after leaving the operating theatre, and in this case, unlike the other, there was an inquest which, so far as he could see, failed to serve any particular object. There was a necropsy which sufficiently showed the cause of death.

Dr. ZEBULON MENNELL said that there were two classes of deaths under anaesthesia: those due to the anaesthetic, and those due to the disease for which the operation was being performed. At St. Thomas's for the last seven years a subcommittee, appointed by the general staff committee, and consisting of a surgeon, a pathologist, and an anaesthetist, had investigated every death occurring in the hospital under an anaesthetic. The anaesthetist concerned had to answer certain definite questions on a form, which was sent to the members of the subcommittee, who met as soon as possible

to discuss the case. It was astonishing in how many of these cases the death was found to have had nothing to do with the anaesthetic, though there were some cases in which the anaesthetic played the principal part. One necessary precaution to take in all such inquiries was to conduct them in such a way as not to make the house-surgeons, the casualty officers, and the resident anaesthetists more nervous than they were already.

#### Coroners on the Existing Law.

Dr. EDWIN SMITH (coroner for North-East London) felt strongly that the anaesthetist did not as a rule receive appreciation from the public—nor always from the coroner's court—for the extraordinary responsibility and difficulty of his position. A coroner might or might not have an expert knowledge of anaesthetics, and might not be able to put the case fairly before the jury, if there was a jury. Coroners' juries were not always particularly intelligent; one jury returned the verdict "Death due to medical evidence!" But the coroner was bound to hold an inquest by the Coroners' Act, 1887. The comparison between deaths from surgical shock and deaths from chloroform anaesthesia was not a true analogy. If the patient died from inhaling chloroform or ether that was a death from poisoning and must be investigated under the present law. It was not always disadvantageous to have a public inquiry. Suspicious or indignant relatives often were satisfied by the time the inquiry ended, and the anaesthetist sustained his reputation. Investigation by a scientific committee would be useful in some respects, but he had not thought out all its practical bearings.

Dr. H. R. OSWALD (Coroner for Western District of London) said that coroners were by no means anxious to hold inquiries into deaths supposed to be from anaesthesia, but it was their interpretation of the present law that such inquiries must be held. The lines which Dr. Chaldecott had quoted from Shakespeare in derision of the "crown's quest" were put in the mouth of a clown. These inquiries on the whole were advantageous to the reputation of the medical profession and of anaesthetists in particular. If private inquiries only were held, people would have the uneasy feeling that something was being hushed up. He agreed that press reports of inquests would often be better suppressed. In 1922 in his own district 925 inquests were held, and in 25 cases the deaths had taken place under an anaesthetic. In not one of these cases was the anaesthetist to blame, but had it not been proved publicly that the anaesthetist had shown the utmost skill some people might have continued to regard him with grave misgiving. A public inquiry was a greater safeguard than an expert inquiry in camera.

Dr. JOSEPH BLOMFIELD said that the coroners had not cleared away the inconsistency that, while a death under an anaesthetic was regarded as unnatural because poison had been administered, a death resulting a few days later from the application of the knife was not so regarded.

Dr. OSWALD reminded the speaker that the late Mr. Troutbeck, coroner for Westminster, used to hold inquests on all operation deaths, and there was a great outcry about it.

Dr. BLOMFIELD said that it was equally undesirable to hold inquests on all patients who died after the administration of an anaesthetic. The complex nature of the deaths occurring during anaesthesia had already been pointed out; it was often difficult to decide to what exactly death was due, but the coroner's court was not the place in which such a complex scientific problem could be solved. Death might be partly caused by the anaesthetic and partly by the patient's condition or the nature of the operation, or it might be due to some surgical misadventure, or to such a thing as the sudden rupture of a small aneurysm in the neighbourhood of the heart. The coroner's court was not the place in which such things could be thrashed out.

Dr. M. I. FINCANE asked what death certificate could possibly be given in cases of this kind if an inquiry were not held. Was it not one reason for these inquiries that the profession had not arrived at any very definite conclusions with regard to the respective merits, the dosage and so forth, of anaesthetics? That was a matter of public interest. The coroner's court of which he had most experience was a model of scientific and legal inquiry, and the coroner himself was a distinguished lawyer and a medical man. There were many reasons why the present law should not be altered.

#### The Pathologist's Point of View.

Sir BERNARD SPILSBURY said that the anaesthetist had spoken under some misconception. The coroner was not



to act on any notice he received as to deaths occurring during anaesthesia, and unless he was satisfied by preliminary inquiry—as in the nature of the case he hardly could be—that the death was natural, he had to hold an inquest. The object of the inquest was to ascertain whether the deaths were or were not unnatural. In a proportion of cases the deaths were natural. The patients died from their disease, independently of the intervention of surgeon or anaesthetist. Sometimes the occurrence of a pulmonary embolism on operation caused instant death, and the coroner's verdict was "Death from natural causes." If the death was unnatural the conduct of the surgeon, his assistant, and the anaesthetist came under review. There was a class of cases in which death could not be entirely dissociated from the administration of the anaesthetic. The part which the anaesthetic played varied with the case. Sometimes the patient was moribund when the anaesthetic was administered. Sometimes the patient was suffering from acute general peritonitis, or in the last stage of intestinal obstruction, and the surgeon and anaesthetist might well hesitate over any intervention. In these cases the anaesthetic might and probably did play some part, although a minor part, in accelerating the patient's end. There were various classes of cases which might be eliminated from the scope of a coroner's inquiry, but, of course, until the inquiry took place the coroner could not discriminate. A certain number of deaths under anaesthetics occurred in subjects who were apparently in good general health. Here it was very difficult to say that an inquiry should not be held. Sometimes they occurred among children, apparently healthy, brought for some minor operation, such as for tonsils and adenoids. An immediate inquiry was called for in these cases. The effect of not holding an inquiry would be to have letters in the newspapers, presenting the facts perhaps in a perverted form. A private scientific inquiry might do much good and add to the common knowledge, but he was afraid it would never replace entirely the public inquiry in the coroner's court. The disadvantage of the coroner's inquest was not in the inquest itself, but in the newspaper publicity which followed and which often took the form of unfair comment. Some newspapers preferred to satisfy the craving for excitement rather than to serve the interests of truth. He suggested that perhaps the coroner himself might prevent this undesirable publicity by issuing a statement to the press in any exceptional case.

In the course of some further discussion Dr. H. P. CRAMPTON pointed out the difficulty in which the anaesthetist might be placed if, in speaking up in his own defence, he had ever to incriminate the surgeon. Dr. F. S. ROOP thought that the Society ought to make an effort to get the Coroners Act altered; all anaesthetic deaths should be inquired into by a small body of skilled and expert people. Mr. CECIL ROWSTREE discussed the relative responsibility for deaths under operation of the surgeon and the anaesthetist.

At the end of the meeting a letter was read from Dr. F. J. WALDO (Coroner for the City of London and Southwark) in which he said that he failed to see how a death caused by a toxic anaesthetic such as chloroform could be other than unnatural and violent, thereby coming under Part I, Section 3, of the Coroners Act, 1887. He repeated some recommendations which he made in an article in a medical journal fifteen years ago, the effect of which was to maintain or even strengthen the rôle of the coroner in this matter. A letter was also read from Mr. Isaac Bradley (Coroner for Birmingham) pointing out that as the law stood the coroner was bound to hold inquests in these cases, but he thought that the coroner should be given discretion to hold inquests or not, and that in many cases he could satisfy himself by private inquiry.

### THE SURGERY OF THE PROSTATE.

A MEETING of the Cardiff Medical Society was held on April 10th, with Dr. E. E. BRIDGLEY in the chair, when a paper, entitled "The surgery of the prostate," was read by Mr. T. E. HAMMOND.

Mr. Hammond said that the simple or senile enlargement of the prostate was probably due to a perversion of the normal evolution which occurred in the male sexual organs after the age of 45, and corresponded to the sero-cystic disease of the female breast. The trouble to which an enlarged prostate might give rise could be regarded from three points of view: (a) Changes in the tumour itself;

(b) secondary effects on the urinary apparatus; and (c) the symptoms and complications.

(a) Malignant disease might arise in the sexual organs after the age of 45, especially if any abnormal evolutionary condition was present. The enlarged prostate formed no exception, and about 16 per cent. of tumours removed as simple adenomata showed malignant changes.

(b) The obstruction to the outflow of urine led to dilatation of the bladder and later of the ureter and pelvis of the kidney. This gave rise to back-pressure nephritis with retention of urea in the blood, a raising of the blood pressure, and arterial changes. An impairment in the general health and the mental faculties soon followed. This interference with the function of the kidneys constituted a great danger, since uraemia was usually the cause of death.

(c) Difficult micturition was often annoying, and frequency, especially when combined with urgency, might be distressing. When present at night it disturbed sleep and when present during the day it might prevent the carrying out of social duties. The chief complications were acute retention and infection.

As regards treatment, urinary sedatives had a temporary effect on the symptoms, but did not prevent the insidious destruction of the kidney tissue. Extract of the prostate or of the endocrine glands was useless. X-rays and radium had their advocates, but it was difficult to understand why they should have an action on such a deeply situated organ as the prostate when they had failed in similar conditions found in the more superficial organ, the breast. The results claimed were due probably to a failure to recognize the irregular course which so many of those cases ran, for there might be complete remission of symptoms apart from any treatment.

Three methods of treatment were available—(1) the use of the catheter, (2) forage of the prostate, or (3) removal of the prostate.

1. Catheter life was painful, gave only slight relief, and at any time operation might become imperative. It should never be started with the idea of operating later if it failed, for infection of the urinary tract, one of the chief causes of the post-operative mortality, would have been set up. It should be reserved for cases where operation was refused or was contraindicated by some other disease.

2. Forage, the term applied to the formation of a channel through the prostate, had been revived lately through the introduction of the Brown-Bueger cysto-urethroscope and diathermy. It was only of slight value when the lateral lobes were enlarged; but when there was enlargement of the middle lobe alone and the obstruction was localized to the neck of the bladder, the functional result was often good.

3. Suprapubic prostatectomy gave a perfect functional result. The mortality rate was 8 per cent. for hospital patients and 3 per cent. for private patients; such figures could be attained only by regarding the actual operation as but a stage in the procedure and by considering the pre- and post-operative treatment as being equally important. The operation, a major one in men of 65, would always have some mortality; most of the deaths to-day were due to uraemia and the lighting up of a pre-existing infection of the urinary tract, two causes that could be prevented by earlier operation. Against this mortality must be weighed the inconvenience and dangers of the enlargement. The symptoms tended to become worse, and at any time retention and infection might set in.

The open operation as practised by Sir John Thomson Walker was the procedure of choice, but where the general health was not good Mr. Hammond performed the older method. When signs of renal inefficiency were present, revealed by the general condition or by the function tests (of which the best were the blood urea and the urea concentration tests), the prostate should be removed only after preliminary drainage of the bladder. Suprapubic prostatectomy should be reserved for the simple or so-called adenomatous enlargement; it should not be performed where the prostatic symptoms were due to some other affection of the gland, such as malignant or chronic inflammatory prostate.

### Instruments for High Microscopical Magnifications.

Dr. JAMES BEATTY gave a demonstration of new instruments for obtaining high microscopical magnifications. He demonstrated two eyepieces of his own invention which were infinitely variable in power within their upper and lower limits, but they could be usefully employed only if the capabilities of the microscope were thoroughly understood, as no microscope could show anything of smaller diameter than half a wave-length of the light used. The new eyepieces shown were meant to be used only on the critical image, and the merit claimed for them was that a microscopist possessing one or other of them and Nos. 2 and 4 eyepieces (and an extra No. 2 in the case of one of the new instruments) could obtain any magnification whatever producible by eyepiecing from about  $\times 9$  to about  $\times 40$ . By working with the critical image and varying the power of the eyepiece as required within the limits that the image would stand, much of the work at present done with an oil-immersion  $1/12$  in. could be done with a  $1/6$  in., thus avoiding the "messiness" of the oil.



## ABNORMAL FINDINGS IN BLOOD AND EXCRETA.

THE last pathological meeting of the session of the Liverpool Medical Institution was held on April 5th. After the exhibition of specimens and a short discussion Dr. E. CRONIN LOWE read a paper on the significance of abnormal findings in blood and excreta of chronic cases.

Dr. Cronin Lowe showed schemes of general bacteriological and pathological examinations employed in the investigation of obscure cases of various kinds, including bacterial examinations of the various respiratory passages, intestinal canal, and urine. Blood examinations should be cytological, biological, and biochemical, blood urea, uric acid, alkalinity, alkali reserve, and chloride contents being most essential, and to a lesser degree calcium, lipid, and creatinine estimations. Gastro-analysis, alveolar air analysis, with a full faecal and urinary analysis in certain cases, also played an important part in working out the metabolic efficiency or evidence of infection. In the blood examinations the methods of Maclean, Myers, and Fine were chiefly followed. A series of illustrative cases showed that in addition to definite nephritic types and typical glycosuric and diabetic cases there existed a large number of chronic conditions, clinically grouped under many different diagnoses, which showed more or less abnormality either as regards renal or pancreatic function, or both. Maclean's urea concentration test and, in certain cases, the comparative estimation of uric acid in blood and urine, was of value in the diagnosis of early nephritic changes. In cases of intestinal toxæmia Dr. Lowe suggested that the variations in blood and urine of the diastase and sugar contents were related to the degree of hepatic or pancreatic disturbance due to intestinal infection through the portal or lymphatic systems. Such findings were often obtainable in cases that clinically gave no evidence of pathological changes in the digestive complex represented by stomach, liver, biliary passages, and pancreas, thus proving early functional derangement and enabling prophylactic treatment to be commenced before gross pathological damage had been inflicted. Dr. Lowe indicated the value of successive blood sugar estimations after a definite meal in the detection of foci of infection in the body, and this method might be used in controlling treatment. Finally, he insisted that in any chronic case the important point was the presence or absence of an effective resistance. As it was very probable that natural immunity was largely associated with a normal metabolism and endocrine response to infection, the improvement of a deranged metabolism would certainly make for the more speedy recovery of an infected case. In this fact lay the special value of these somewhat extensive pathological examinations.

Discussing the paper, Dr. COOPE spoke of the great need for further work in correlating these tests with the clinical deductions it was permissible to make; Dr. DINGWALL FORDYCE said that pending further work the judgement of clinical experience was still supreme; and Dr. PEMBERTON gave his experience of the variations in gastric hydrochloric acid in cases other than those of gastric origin.

A MEETING of the Bath Clinical Society was held on April 6th, with Mr. W. G. MUMFORD, the President, in the chair, when a discussion was held on indigestion, its varieties and treatment. The discussion was opened by Dr. C. S. FLEMING, from the point of view of the general practitioner. He dealt with the problem of pain, which was so often complained of by patients and so difficult to explain, and also discussed the efficacy of diets and the administration of alkalis. Dr. F. G. THOMSON continued from the standpoint of the physician; he defined the term "indigestion" as a condition involving pain, eructation of gas or sour fluid, and vomiting, and discussed the treatment both by general means and drugs. He pointed out the association of dyspeptic symptoms with oral sepsis, pulmonary tuberculosis, and cardiac disease. Mr. FRASER, who spoke from the standpoint of the surgeon, remarked on the failure to diagnose cancer of the stomach in the early stages. He then dealt with the unreliability of the various methods of diagnosis of the various surgical conditions showing symptoms of dyspepsia. The discussion was continued by Dr. EDE, Dr. MARSH, Dr. MITCHELL, who dealt with duodenal ulcers; Dr. HEATHCOTE, Dr. R. G. GORDON, who dealt with dyspepsia of psychogenic origin; Mr. NIXON, Dr. COATES, and Mr. C. H. TERRY.

## BRITISH CONGRESS OF OBSTETRICS AND GYNAECOLOGY.

### MEETING IN EDINBURGH.

THE fourth British Congress of Obstetrics and Gynaecology was held in Edinburgh at the end of last week. On the first day, April 19th, both the morning and afternoon sessions were given to a discussion on intrinsic dysmenorrhœa. The meeting was held in the hall of the Royal College of Surgeons, and the chair was occupied by Dr. LAMOND LACKIE, President of the Edinburgh Obstetrical Society.

#### INTRINSIC DYSMENORRHOEA.

Professor BLAIR BELL (Liverpool), who opened the discussion, defined intrinsic dysmenorrhœa as the pain due to some inherent abnormality in the structure of the organs of menstruation or in the physiological processes connected with that function. "Extrinsic dysmenorrhœa," on the other hand, denoted the menstrual pain due to the presence of acquired pathological lesions in or in the neighbourhood of the pelvic genital organs.

Dr. Blair Bell analysed 1,000 cases of intrinsic dysmenorrhœa (400 private and 600 hospital); as few of the patients had sought advice because of dysmenorrhœa the records were only of value for the purpose of studying the pathology of the condition. The average age at the time of consultation was 33 and 35½ years respectively; in 46 per cent. and 43.5 per cent. respectively the onset of the dysmenorrhœa was primary, and in 5 per cent. and 6 per cent. secondary.

#### Nature and Frequency.

In intrinsic dysmenorrhœa the pain might be pre-menstrual or intra-menstrual, or both; very rarely was it post-menstrual. The pre-menstrual variety was due either to painful ovulation or to engorgement of an underdeveloped fibrotic uterus. It was rarely severe, was aching in character, and might extend to the sacral region. The intra-menstrual variety was due to uterine colic caused by irregular waves of contraction in an underdeveloped uterus, or to the colic produced during expulsion of intrauterine clots. As there was no standard to measure the severity of pain, individual tolerance was liable to influence any statistical study. He had found intrinsic dysmenorrhœa three times as frequent as extrinsic (50 per cent., as compared with 17 per cent.). Secondary intrinsic dysmenorrhœa was very rare.

#### Period of Onset; Classification of Cases.

Primary dysmenorrhœa might be defined as menstrual pain coincidental with the onset of menstruation; but as girls usually menstruated without pain on the first few occasions it was more convenient to include all cases in which the pain commenced during the first two years after puberty. Among 274 private patients the onset was primary in 67 per cent. and secondary in 7.5 per cent.; among 379 hospital patients it was primary in 69 per cent. and secondary in 9.5 per cent. There were no cases of extrinsic dysmenorrhœa. He classified cases of intrinsic dysmenorrhœa into those showing—

1. Morphological anomalies—namely, (a) underdevelopment of the uterus with normal shape; (b) under or full development with or without underdeveloped ovaries, with a conical cervix and phallostoma; (c) under or fully developed uterus with acute flexions (cochleate uterus); and (d) those showing gross malformations such as double uterus, atresia of cervix or vagina, or accessory occluded uterine cavities.

2. Physiological abnormalities, such as intrauterine clotting of menstrual blood, and excessive exfoliation of the endometrium—membranous dysmenorrhœa.

The importance of pregnancy as a curative factor had been overestimated; only half of his private cases and about one-third of his hospital cases had been cured in this way, though the hypertrophy of the muscle fibres during pregnancy leading to the full development of the uterus played an important part in the cure of certain cases.

#### Clinical Aspects.

A slight degree of underdevelopment of the uterus was probably the most usual causal factor in intrinsic dysmenorrhœa. The ovarian hormone might be capable of stimulating menstruation from an incompletely developed uterus. The length of the uterine cavity measured with the sound was in most cases practically normal. The body, however, might be underdeveloped and the length chiefly due to the cervix; it



the body were of normal size and menstruation scanty it pointed to underdevelopment of the ovaries. In such cases the prognosis was not good. With full development of the ovaries and a moderate degree of underdevelopment of the uterus the outlook was fairly good if the patient were under 20 years old; if over 25 it was only occasionally possible to effect improvement by medicinal means. An attempt should be made to stimulate development of ovaries and uterus by giving 5 grains of whole ovary substance after food three times a day, and 5 grains thyroid substance (B. W. and Co.) at night. If the ovaries were well developed and menstruation normal or excessive thyroid alone should be given. Operative treatment was rarely indicated in this class of case. Derangement of the internal secretions, chiefly of thyroid and pituitary, in early life led to imperfect development of the genitalia. If the disturbance was of minor degree the underdevelopment might not be marked and dysmenorrhoea occurred; if the disturbance was serious amenorrhoea was the usual result. The dysmenorrhoea was therefore the indirect result of thyroid and pituitary insufficiency through the latter causing underdevelopment of the genital organs.

In the uterus with conical cervix and pinhole os dysmenorrhoea was frequently absent. Though the pinhole os might be a bar to conception it was probably only associated with dysmenorrhoea when the uterus was poorly developed. Such cases should be treated by dilatation and posterior division of the cervix, and the administration of thyroid and ovarian substance.

#### *Acute Congenital Flexions (Cochleate Uterus).*

The anterior cochleate uterus was very common, whereas the posterior variety was extremely rare. In the former there was a large quantity of fibrous tissue and in the angle of flexion this tissue was disposed in an intricate interlacing fashion which prevented the anterior wall from developing *pari passu* with the posterior wall, in which the fibrous tissue lay in straight bundles. As a result the posterior wall grew round the anterior and produced this malformation. Dysmenorrhoea in these cases was particularly severe, partly because of the state of underdevelopment with fibrosis and partly because of the interference with the normal peristaltic wave of contraction at the angle of flexion. If the uterus in these cases was well developed dilatation with posterior division of the cervix to increase the possibility of pregnancy was usually sufficient. If it failed anterior hysterotomy should be done. If, however, the uterus was underdeveloped dilatation only relieved partly and temporarily and relapse was inevitable. Anterior hysterotomy should be carried out and followed by thyroid substance. The operation of anterior hysterotomy was described as follows:

The cervix is drawn down with silk threads and the vaginal mucosa with the bladder are separated from the front of the cervix. The anterior wall of the cervix and os internum are divided with scissors, opening the cavity of the uterus. The circular fibres of the cervix retract and the longitudinal fibres are united by interrupted sutures. The flap of mucosa is then replaced and fixed with a few sutures.

Professor Blair Bell deprecated the empirical performance of dilatation, which as a rule only relieved temporarily, and especially dilatation to the extent of division, in which case the laceration of the internal os usually extended into the broad ligament and healed with the formation of scar tissue, which left the patient worse than before. It was much better and safer for the surgeon to look at what he was doing and cut.

#### *Intrauterine Clotting.*

In 1911 he had shown that menstrual blood contained no fibrin ferment; it had been extracted in the passage through the endometrium. His conclusions had been questioned by Whitehouse and others, who contended that the absence of fibrin ferment was due to thrombolytin secreted by the cervical mucosa. When, however, the uterus was removed during menstruation it was not usual to find a clot in the uterine cavity and the blood in a haematometra was unclotted, while amputation of the cervix did not lead to clotting. He was convinced that intrauterine clotting was abnormal and might lead to dysmenorrhoea. In these cases there was free menstruation and often menorrhagia, and the onset of pain coincided with the passage of clots during the menstrual period. He believed the explanation of the clotting to be that, on account of the menorrhagia, the blood passed too quickly through the endometrium to abstract the fibrin ferment. The blood might escape so quickly into the vagina that it did not clot in the uterus; in these cases there was no

dysmenorrhoea, which only occurred if there was intrauterine clotting. Calcium lactate increased the tone of the uterine muscle and decreased the menstrual flow. If it failed dilatation and curettage should be performed in order to remove the thickened endometrium, often present on account of excessive ovarian stimulation. Most cases of secondary intrinsic dysmenorrhoea were due to intrauterine clotting.

#### *Exfoliative or Membranous Dysmenorrhoea.*

Excessive exfoliation of the endometrium did not often give rise to the severe dysmenorrhoea usually ascribed to it. When pain was present it was due to the association of intrauterine clots with membranes which together formed a compact cast. Histologically the cast showed a well defined pre-menstrual decidual reaction of the stroma cells. The menstrual flow was usually profuse, and, the blood being unable to break through the dense decidual barrier, the membrane was stripped off. Treatment should be directed to the control of the menorrhagia usually present and to limitation of decidual reaction. Theoretically calcium salts should restrain the menorrhagia and control the inhibition of fluid by the stroma cells, but in practice this or any other treatment was rarely successful.

#### DISCUSSION.

##### *Results of Operation.*

Dr. R. W. JOHNSTONE (Edinburgh) communicated the results of operation on 575 cases in the practice of Edinburgh operators, of Professor Kynoch of Dundee, and of Mr. Leith Murray of Liverpool. The operation which was practically always performed was dilatation, followed in most cases by curettage. The results were—50 per cent. permanent cures, 33 per cent. relieved, and 17 per cent. total failures. With regard to other methods of treatment, one other operator as well as Dr. Johnstone himself employed stem pessaries, and were both enthusiastic about the results. He preferred the Wylie drain with a small hole in the base, through which a silkworm gut suture could be passed, thus fixing it to the lip of the cervix. If possible, and if the case was perfectly clean, he preferred to keep the stem in for several weeks. Plastic operations found favour with comparatively few, though sometimes the Dudley operation had succeeded where previous dilatation had failed. It was debatable whether the benefit was due to the actual splitting of the cervix or to the latter allowing more complete dilatation of the internal os. No one seemed to have a good word for the Pozzi operation.

Dr. J. E. GEMMELL (Liverpool) defined intrinsic dysmenorrhoea as a functional derangement due to uterine colic produced by a faulty contraction wave in a uterus that was maldeveloped, underdeveloped, and mildly infected. The most frequent pathological complex was probably a functional disturbance in the bipolar action of the uterus, which in the presence of maldevelopment produced abnormal spasm of the internal os; it might be the result of some loss of nervous control acting centrally or to a failure between the longitudinal and circular fibres. As to operative measures, he favoured dilatation of the cervix, to the point of fracture of the circular fibres of the internal os, with curettage, and packing the uterus tightly with gauze, which was left in for forty-eight hours. His results from 350 hospital cases of severe dysmenorrhoea were 44 per cent. permanent cures, 10 per cent. temporary cures (three months to seven years), 30 per cent. relieved, and 16 per cent. total failures.

##### *Effect of Pregnancy.*

Dr. HERBERT SPENCER was not in a position to dispute Dr. Blair Bell's statement that only half the cases were cured by pregnancy. In his experience a large number were not cured but were relieved. He doubted whether any patient was so completely cured by dilatation as to have no pain whatever during menstruation. He did not agree that conical cervix and pinhole os did not cause dysmenorrhoea. He had seen excellent results from Pozzi's operation, and this showed that these conditions did cause pain. He thought the operation of anterior hysterectomy was severe and difficult in a virgin, and saw no advantage in it over the use of the hysterotomy by which the internal os was divided from the inside, or over a so-called "dilatation" by which the internal os was lacerated. No virgin could be dilated beyond 18 mm. without laceration. He had used laminaria tents in a large number of cases, but had now abandoned the method, as one patient so treated got an attack of pelvic peritonitis.

Mr. CHRISTOPHER MARTIN (Birmingham) thought that girls should be brought up on more rational lines; especially should they take more exercise and avoid the use of corsets.



Pregnancy, in his experience, did cure the vast majority of cases when due to uterine causes. The classification of dysmenorrhoeas into intrinsic and extrinsic was not the best. The cases should be classed as intra- and extra-uterine. Appendicitis in childhood was a factor which often gave rise to lesions leading to dysmenorrhoea. Dilatation, with extensive division of the posterior lip of the cervix and suturing the mucosa of the cervical canal to that of the vaginal surface, gave satisfactory results. Anterior hysterotomy would be very difficult to do in a virgin. Drugs were of little use; morphine should be avoided, and alcohol should not be allowed, as he had known cases in which it had led to habitual drunkenness.

#### *The Cochleate Uterus.*

Professor DONALD (Manchester) did not agree with Professor Blair Bell regarding the cause of dysmenorrhoea in the cochleate uterus. In his experience the cervix was small and the body elongated. The pain was probably due to an abnormal endometrium. When curetting the endometrium was often found. Dilatation and curettage gave good results, 82 per cent. being cured or greatly relieved; results were better in cases of acute retroflexion than of acute antelexion. He dilated up to 19 to 20 mm. and used a flushing curette. The intrauterine stem was very satisfactory but required careful observation. It acted by causing atrophy of the endometrium by continual pressure. He did not use tents as it seemed unnecessary.

#### *Results of Treatment.*

Mr. BECKWITH WHITEHOUSE (Birmingham) had included in cases of intrinsic dysmenorrhoea only those in which the pain was so severe as totally to incapacitate the patient and render operation imperative. The number of cases attending the Birmingham General Hospital for relief of menstrual pain had doubled in the last five years. This might be due to psychological causes and part of the aftermath of war. Of 39 patients who had replied to his questionnaire, 10 reported themselves as cured, 22 had been partially relieved, the relief lasting from two months to four years; 7 had no relief at all; dilatation and curettage had been performed in 23 cases, with cure of pain in 6, partial relief in 12, and failure in 5. Division of the posterior lip of the cervix, with curettage, had been done in 6 cases, 2 of which had been cured and 4 relieved for a short time only. Abortion did not seem to relieve the pain, but only a pregnancy that proceeded to term. Marriage relieved the pain in 6 cases out of 14, increased it in 2, and in 6 had no influence. He considered that the passage of clots had very little if any influence on menstrual pain; 50 per cent. of all women habitually passed clots from the uterus into the vagina during menstruation, yet 50 per cent. of women did not suffer from dysmenorrhoea. He did not agree that the arguments set forth by Professor Bell in any way refuted his theories. The composition of the menstrual discharge in the human species could be accounted for on a much simpler hypothesis than attributing to the endometrium any special power of extracting fibrin ferment or fibrinogen. Mr. Whitehouse considered that his theory had the advantage of correlating the facts as observed in the human species with those resulting from investigations in comparative physiology.

Professor R. J. JOHNSTONE (Belfast) said that 90 per cent. of women suffered from more or less discomfort at menstruation, but it should only be called "dysmenorrhoea" if the pain were sufficient to disable the patient even for a short time. He was glad that Professor Blair Bell had swept off the old classification into spasmodic and congestive, and that he had taken pinhole os, conical cervix, and retroversion out of the list of causes, as their association was merely accidental. Childbirth, in his experience, had a greater curative effect than Professor Bell had said. Did he aim at complete disappearance of the pain, or merely at so reducing it that the patient could carry on her occupation with comfort, which was a sufficient test of cure? He hoped that Professor Bell would think as well of his operation of anterior hysterotomy ten years hence as he did now. As regards treatment, the internal os should be dilated and the uterus thoroughly curetted, although he was not in favour of dilating to a very high extent. It was impossible to dilate to over 1 cm. without causing division. He left in an intrauterine pack for three days in order to cause better dilatation of the cervix. He did not use the stem pessary, but had found tents exceedingly useful, and thought their use led to a larger

percentage of cures. He had not found it necessary to use an anaesthetic in order to remove them. They could be withdrawn on the third day without difficulty.

[At this stage the Congress adjourned for lunch, which had been provided by the Edinburgh Obstetrical Society at the North British Station Hotel. The discussion was resumed at 2.30 p.m.]

#### *Prevention and Treatment.*

Dr. T. WATTS EDEN (London) referred to the importance of the "relativity of pain," and said that we should have some standard as to what constituted dysmenorrhoea. The best test was the disablement of the patient from carrying on her ordinary avocation. In his opinion the number of cases of severe dysmenorrhoea was very small. He had had cases watched by keeping them in hospital over one or two menstrual periods. The sister in charge reported on the cases as severe, very severe, etc., and the number of cases suffering from what could be called "severe pain" was extremely small, and very rarely indeed was the pain so severe as to be called "excruciating." All dysmenorrhoeas should really be called intrinsic, which meant "intrinsic to the menstrual process," not merely to the uterus. The uterus, ovary, endocrine, and nervous systems all played a part in the process of menstruation, and dysmenorrhoea might arise from any of these. Matthews Duncan defined dysmenorrhoea as a "disease of the nature of a neurosis in which the spasmodic contractions of the uterus caused great pain." He regarded neuroses as an important factor in causation, and Dr. Eden agreed. The time might come when the cochleate (small ante- or retro-flexed) uterus would be relegated to the same scrap-heap as the pinhole os and the conical cervix. In his experience this type of uterus was exceedingly rare, whereas the antelexed or the ante- and retroflexed uterus was common; but in most cases no local pathological condition could be discovered in the uterus, so that the cause must be outside it and possibly outside the pelvis. Professor Blair Bell had gauged the degree of underdevelopment of the ovary by the amount of the menstrual flow, but other factors were important—such as nutritional condition, occupation, anaemia, nervous disturbances, etc.—and therefore it was not justifiable to say that habitual scanty menstruation meant underdeveloped ovaries and vice versa. We had much to learn regarding the action of the endocrines in menstruation. Dr. Eden said that he had done anterior hysterotomy on twelve occasions and had found it the most difficult operation he had ever tackled, and the result had been no better than those obtained by dilatation. Better attention to the proper physiological development of girls was important in the prevention of dysmenorrhoea. Much benefit would be obtained by attention to general hygiene, attention to bowels, etc., at the time of puberty. Girls should be prepared for the onset of menstruation by careful hygienic measures. There was much need for co-ordinated research on a large scale, especially amongst schoolgirls, regarding the influence of habit of life, amount of work, study, etc., upon the production of dysmenorrhoea. As regards medicinal treatment, he strongly recommended atropine 1/100 grain by the mouth three times daily, given before the period was due, and continued during it till the pain was over. It regularized the functional activity of the unstriated muscle all over the body, including that of the uterus.

Dr. J. S. FAIRBAIRN (London) emphasized the important part played by functional disturbances and by suggestion in the causation of dysmenorrhoea. Civilization prevented reproduction following menstruation as it normally should. Menstruation was talked of as "being poorly," and this suggested illness to the young girl at puberty and later. In St. Thomas's Hospital it had been found that nurses on entering upon their training tended to regard themselves as ill and unfit for duty at the menstrual period, as they had been encouraged to do at home; but after they had found this was not customary they were able to carry on perfectly well. The introduction of anaesthetics had, he believed, diminished the capacity for bearing pain. He thought this psychological element was of far more importance than slight variations in the shape of the uterus, such as those on which Dr. Blair Bell had laid so much stress. Besides, it often appeared that girls, previously healthy, first showed evidence of dysmenorrhoea after an illness or after first coming to town or school. In such cases the shape of the uterus could not have changed. As to treatment, he thought that the suggestive effect of the operation was of more importance than the particular type of operation carried out. He



chiefly dilatation or "divulsion," which did much the same as the anterior hysterotomy described by Dr. Blair Bell.

Dr. HAIG FERGUSON (Edinburgh) believed that practically all cases of severe primary dysmenorrhoea not relieved by general treatment by antispasmodics were associated with underdeveloped uterus (uterus pubescens), generally associated with acute flexions—the so-called cochleate or horse-shoe uterus. The longer the condition lasted the more unlikely was it to be cured. Therefore, in order to get good results, early treatment was desirable. He was inclined to think that underdevelopment of the uterus could be prevented by careful attention to girls at puberty. They should not be pressed too hard, either mentally or physically; women were not well fitted for continuous work; they needed intervals for rest and recuperation, and this was of the greatest importance during the developmental period of their lives. Marriage not followed by pregnancy frequently aggravated the pain. As to treatment, he strongly believed in splitting the cervix in certain cases as an aid to dilatation, not that the splitting in itself was of any great value, but because it enabled thorough dilatation of the internal os to be accomplished without injury. The cervix was afterwards repaired as in Dudley's operation. He dilated with bougies up to No. 12 Hegar, and at the same time stretched the uterine cavity with a Sims three-branded dilator without using the screw. He generally curetted at the same time, but did not think it was always necessary.

Dr. GIBBON FITZGIBBON (Dublin) had long since given up the Dudley operation. He had obtained the best results from dilatation up to a point where there was still resistance and about 2 mm. beyond—about 14 mm. altogether—which resulted in rupture of the circular fibres of the internal os. He thought that pregnancy cured in the great majority of cases of severe disabling spasmodic dysmenorrhoea. Regulation of the general health combined with general tonic treatment should be given a trial before resort was had to operation. He did not think that anterior hysterotomy was desirable.

Professor B. P. WATSON (Edinburgh) laid emphasis upon the importance of putting right any wrong hygienic conditions. There was often a general vasomotor disturbance present, and the pain was of a heavy dragging rather than a spasmodic type. Derangements of the ductless glands were important in causing the condition. In actual severe cases the pain was muscular, and might arise either from irregular contractions of the uterine muscle or from spasm of the muscle surrounding the internal os. Normally the uterus should act in a bipolar fashion, the internal os relaxing when the body contracted. If polarity was absent there was simultaneous contraction of the body and of the internal os. This might account for the sterility, as the internal os failed to relax during spasm. All these cases could be cured by overcoming the spasm of the internal os. He supplemented full dilatation by the glass stem pessary or by packing the uterus with gauze, which was left in for four to five days. Cases in which the pain was due to defective uterine muscle were not cured by divulsion of the cervix, but should be treated by means of thyroid and other general measures. He had found atropine useful.

Dr. BETHEL SOLOVONS (Dublin) said that co-education helped in the normal development of the genital organs. He was surprised to hear that posterior division of the cervix was still done. He had found that it often left a scarred cervix with discharge pouring from it which resulted in lasting sterility. He used metal dilators and tents; the latter often cured where simple dilatation failed.

The CHAIRMAN (Dr. Lamond Lackie, Edinburgh), after summing up the discussion, said that he practically always used a glass stem pessary. It was important to dilate a week or ten days before the period. If there was no pain at the following period the stem was left *in situ* until just before the next period was due. If there was pain at the first period it was removed at once. The results from this method were, he considered, much better than if dilatation alone were used. He thought the operation of anterior hysterotomy was difficult and too severe.

Professor BLAIR BELL, replying to the discussion, said that the operation of anterior hysterotomy was very easily carried out in some cases. He had been doing it since 1905. The circular fibres around the internal os retracted and the longitudinal fibres stood out clearly and could easily be brought together. He defined a cure as *no pain whatsoever*. All others he classed as "improved." In cases of sterility with pinhole os he divided the cervix posteriorly and sutured the

mucous membranes together. Pozzi's operation he had given up as it led to eversion of the mucosa with erosion and discharge.

#### DINNER.

In the evening a dinner was held in the Hall of the Royal College of Physicians. A varied programme of music, vocal and orchestral, was provided, a special feature being the "pipin" in o' the haggis" with due ceremonial, and to the evident astonishment of certain members of the Congress from south of the Tweed. The toast of the King was given by the chairman, Dr. LAMOND LACKIE; that of the visiting societies was proposed by Dr. HAIG FERGUSON, and responded to by Dr. WATTS EDEN and Professor R. J. JOHNSTONE; the Edinburgh Obstetrical Society was proposed by Professor HERBERT SPENCER, and replied to by the President (Dr. LACKIE). A specially interesting feature of the evening was the presence of Dr. BYRON BRANWELL, who entertained the members with some "obstetrical reminiscences." On the motion of Dr. J. S. FAIRBAIRN it was resolved to send the greetings of the Congress to Professor Sir Halliday Croom, who had hoped to be present but had been prevented by indisposition.

(To be continued.)

## Reviews.

### THE MEDICAL ANNUAL.<sup>1</sup>

The appearance of a fresh number of the *Medical Annual* is always an event to be looked forward to, for the summary of the achievements of the year that is past serves as a stimulus to greater efforts in the year that lies before us. And yet, though the impression on the whole is distinctly encouraging, one cannot but experience a feeling of melancholy when, after reading through 500 pages of closely printed matter devoted to the progress in the treatment of disease, one realizes how little is the real advance made, how empirical still are many of our best remedies, how abysmal our ignorance of the etiology of certain groups of pathological affections, and how loose yet is that rapprochement between medicine and science which alone can render possible the perfect comprehension of the ailments of the human body. It is good to be dissatisfied—yes, but it is with our own efforts that we are dissatisfied, not with the *Medical Annual*, which serves as an excellent and inoffensive record of our failure. It tells of strivings of workers at home and abroad to develop fresh methods of diagnosis, sounder indications for prognosis, and more reliable ways for combating the action of noxious agents. Of all these strivings, how many will bear fruit? How many are on the wrong road altogether, are working in a cul-de-sac, are pursuing a phantom, a will-o'-the-wisp, a vain, elusive object whose very existence is merely subjective? These are feelings—involuntary and uncloaked—which arise within us as we peruse a record alike both of man's failings and of his successes.

But it would leave a wrong impression on the mind of the reader if we led him to think that there is nothing of interest or instruction in the volume. On the contrary, there is much of both—so much, in fact, that it is difficult to turn to a single section without finding a tale of endeavour and of some progress in the territory concerned. It would be useless to attempt to review it in the usual way; there is too much, and that too widely diffused over too many subjects, to permit us to convey any adequate idea of the whole. However, we may mention the article on basal metabolism, and the information it contains on a method of examination which is probably destined to play a considerable part in the investigation of the future, and also that on arterial tension by two French workers, describing a new mode of measurement of blood pressure by auscultation. The section on the cerebro-spinal fluid will well repay perusal, and the account of the therapeutic value of puncture of the cisterna magna adopted by certain American workers in preference to the more usual lumbar puncture should be noted. The article on insulin is perhaps not quite up to what one might have expected, considering the importance of this new product of physiology. Part is devoted to the pharmacological assay of the hormone, and part to the clinical results obtained, but very little as to indications

<sup>1</sup> The *Medical Annual*. Forty-first year, 1923. Bristol: John Wright and Sons, Ltd.; London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd. 1923. (Demy 8vo, pp. xevi+630; 101 figures, 45 plates. 2s. net.)



for its use or its actual method of exhibition. There is a very fair review of the treatment of gastric ulcer from a surgical aspect, suitably relieved by an expression of the author's personal opinions on the subject. The discussion of x-ray diagnosis fills several pages, and relates to examination of the intestinal and urinary tracts, lungs, heart, and bones; amongst the accompanying plates there are two very excellent ones of the spine and pelvis as shown by the Potter-Bucky diaphragm. Tropical medicine is well covered by Rogers, and in this connexion it is gratifying to read of Noguchi's success in the treatment of yellow fever by a serum prepared against the *Leptospira icteroides*.

There is much more that we should like to say about the book, but we have said enough to commend it to those not acquainted with previous issues. It is a collection of writings on a wide variety of subjects which should make a wide appeal to every type of medical man; each will find for himself those topics which exert for him that peculiarly individual appeal inseparable from so diverse a thing as human nature.

### A STORY OF DRUGS.

*The Story of Drugs*,<sup>2</sup> by H. C. FULLER, gives a readable account of the processes involved in the preparation of drugs. The collection of wild herbs and the growth of herbs in drug farms are fully described, and a large amount of information is given concerning the trade in crude drugs. The processes involved in the preparation of medicaments on the large scale are also described, with numerous illustrations. In short the book will give the reader a very fair notion of where drugs come from, how they are collected, transported, and how they are prepared for use in medicines.

Interlarded with this general information we were, however, surprised to find a defence of the so-called patent medicine trade in general, and laudatory references to a variety of nostrums, some of which have been convicted for "misbranding" in the law courts of the United States. A certain amount of rather interesting information is supplied regarding this trade in the United States. The capital invested in this industry in 1914 was, it is stated, more than seventy-one million dollars, and in 1919 was probably over one hundred million dollars. The significance of these figures is emphasized by the further statement that in 1914 the capital engaged in manufacturing drugs and chemicals for the legitimate drug trade was only forty-six million dollars. Eighty per cent. of this powerful secret or patent medicine trade is organized in the Proprietary Association of America, and this association in 1915 published an interesting set of requirements to which all products sold by their members were required to conform. The following are some of the chief rules:

"(1) The preparation must be of such character as may reasonably be expected to bring about the results for which it is recommended. . . . Statements regarding therapeutic effects must neither be obviously unreasonable nor demonstrably false. . . .

"(5) The preparation must not be advertised or recommended as a cure for diseases or conditions which are generally recognized as incurable by the simple administration of drugs.

"(6) The package, either as to wrapper, label, or accompanying literature, shall contain no statement in conflict with the misbranding provisions of the Federal Food and Drugs Act."

The last quoted rule contains, of course, the explanation of all the others. In this country the Government makes no attempt whatever to protect the public from quack medicine vendors, but in America any nostrums offending against the above quoted rules would be liable to be declared misbranded and the proprietor to be fined and forbidden the use of the United States postal service.

In order to obtain an idea as to how strictly the Proprietary Association puts its rules into force we looked up in *Nostrums and Quackery*<sup>3</sup> the history of some of the firms selected for special mention by Mr. Fuller in his book.

Dr. Schenck's Pulmonic Syrup, a seventy-year-old remedy for consumption, the secret of which came from the Shawano tribe of Indians, was found to be a wintergreen-flavoured mixture of saccharin syrups, 96.4 per cent. of the solids consisting of sugars. Mrs. Lydia E. Pinkham's vegetable compound for women was found, when analysed for the British Medical Association,<sup>4</sup> to

contain 19.3 per cent. of alcohol and 0.5 per cent. of solid substances. Swift's Sure Specific was sold until 1919 as a cure for "blood poison," and some years previously the claim was made that it would cure cancer; at present it is chiefly recommended for rheumatism, catarrh, malaria, and skin diseases.

These are some of the quack remedies selected by the author for special laudatory mention, and he further makes the general statement that "legitimate proprietary remedies, as they are now offered to the public, are in the main products representing the highest type of the pharmacist's art."

It is very hard to classify Mr. Fuller's book. If it were published by the Proprietary Association of America we should say that it was a piece of very skillful advertising; but why the editor of the Century Books of Useful Science should publish this sort of stuff we find it rather difficult to understand.

### EPIDEMIOLOGY AND PUBLIC HEALTH.

EPIDEMIOLOGISTS have from time to time adopted various classifications of infectious diseases, and that selected by Dr. VICTOR C. VAUGHAN in his book, *Epidemiology and Public Health*,<sup>5</sup> has a great deal to recommend it. He divides the infections into (1) respiratory, (2) alimentary, (3) parenteral, (4) venereal, and (5) local. The first volume of his work is devoted exclusively to respiratory infections. In the second volume he proposes to deal with the remaining infections, and the third volume will be devoted to administrative action having for its object the reduction of these diseases. In the volume now under review each disease is very fully considered. The history, prevalence (seasonal or otherwise), pathology, symptoms, behaviour, mode of transmission, and control are fully and accurately described, so that a very complete picture is placed before the reader. In a work written by American authors and for American readers the references to incidence, morbidity, etc., are naturally from American sources.

In the chapter on whooping-cough an account is given of a method for controlling this disease put into operation in 1913 by the health officer of Chicago. During the first fortnight of the disease the affected child was kept in the house or allowed access to the yard if not used by other children. During the next three weeks the patient was allowed, if accompanied by an attendant, to go into the streets, provided there was fastened on the sleeve of the outer garment a yellow band two inches wide bearing the inscription, "Whooping-cough," in black letters. The use of public conveyances and entry to places of assembly was prohibited. A table (XXXV) giving the number of cases and deaths from the disease in Chicago in the years 1911 to 1918 does not show any falling off in incidence or in the number of deaths as a result of this procedure. The authors suggest that the death rate from whooping-cough might be lowered if children, but only those in good health, after passing their sixth year, were to be intentionally submitted to infection.

Nearly one-sixth of the volume is devoted to tuberculosis, with respect to which the authors hold very definite views, though these are quite in accord with present-day opinions. Although by no means minimizing the necessity for increased activity in preventing infection they emphasize the importance of preventing the development of latent into open tuberculosis. The eradication of tuberculosis, they say, is bound up with the control of other diseases, with improved housing, with better feeding, with education, with the abolition of poverty, and with the slow evolution of the race. The chapter dealing with influenza contains a mass of extremely valuable information concerning the epidemic of 1918-19. From the tables and charts a very clear idea can be obtained of the extent of the outbreak in America. The book is intended to be not only a textbook but a reference work; the index to the contents is quite inadequate and the book the index to the contents is quite inadequate and the bibliographies at the end of each chapter present many noticeable omissions. There is no reference, for example, to Dr. J. C. McVail's writings on small-pox or vaccination or to Sir German Sims Woodhead's contributions to the literature of tuberculosis prevention. These are matters which might have been noticed if it were not for the painstaking thoroughness of the authors evident on other parts of the volume.

<sup>2</sup> *The Story of Drugs*. By Henry C. Fuller. The Century Books of Useful Science. London: T. Werner Laurie, Ltd. 1923. (Post 8vo, pp. 358; illustrated. 15s. net.)

<sup>3</sup> *Nostrums and Quackery*, vol. 1, 1912, and vol. 2, 1921. Published by the American Medical Association.

<sup>4</sup> *More Secret Remedies: What they Cost and What they Contain*. London: British Medical Association. 1912.

<sup>5</sup> *Epidemiology and Public Health*. By Victor C. Vaughan, M.D., M.Sc., assisted by Henry P. Vaughan, M.S., and George T. Palmer, M.D. (three volumes: Vol. I, Respiratory Infections. London: Henry Kimpton, 1922. (Royal 8vo, pp. 423; 83 figures. 45s. net for volume I and sets only. Vols. II and III in preparation.)



## SURGICAL ANATOMY.

THE *Textbook of Surgical Anatomy*, written by Dr. W. F. CAMPBELL of New York, is now in its third edition.<sup>6</sup> We have examined this book with some care because of its evident popularity on the other side of the Atlantic, and we are frankly disappointed in it.

A good book on surgical anatomy must have as its basis a very wide and detailed knowledge of anatomical structure. We note, however, the statement that "the anterior, the middle, and the posterior cerebral arteries, forming three great trunks, inosculate freely in the pia mater and supply the brain. The smaller cerebral arteries neither give nor receive anastomotic branches but form a terminal circulation." The latter sentence is quite correct, but it is incorrect to say that the three great trunks inosculate freely. The "rule" for mapping the fissure of Rolando on pages 56-57 is incorrect. Laryngotomy is referred to as "tracheotomy" on page 180, but is correctly designated three pages later. Few will agree with Fig. 110, which shows the lung contracted and shrivelled in the presence of a pleural effusion, and on page 228 the apex beat is stated to be "at the upper border of the fifth left costal cartilage," which means, if it means anything, that it is in the fourth intercostal space. We note further that the reader is recommended to try to milk a stone in the common bile duct into the duodenum or crush it *in situ*. In Fig. 189 the letter "D" is used to mark the kidney and also the common bile duct. The anterior layer of the perirenal fascia is shown as passing across the middle line to become continuous with its fellow of the opposite side. Though this disposition of Gerota's fascia is commonly given in textbooks, it is incorrect, for the fascia is interrupted in the mid-line by the primitive mesentery. If the other arrangement were that which really existed perinephritic pus might be expected to track across to the opposite side, but in fact it does not.

The book is well printed and clearly illustrated, although anatomical drawings on top of photographs of the living are never, to our view, satisfactory.

## ST. BARTHOLOMEW'S HOSPITAL REPORTS.

THE first quarterly instalment of this year's volume of *St. Bartholomew's Hospital Reports*<sup>7</sup> opens with an interesting historical article, the previously unpublished journal of a visit to Paris in 1664 by Edward Browne, the eldest son of the famous Sir Thomas and sometime physician to St. Bartholomew's Hospital and President of the Royal College of Physicians. The text is reproduced with the original and to the modern eye quaint spelling—for example, "parancleutisis in ascite"—and gives glimpses of some of the contemporary leaders of the Paris school, such as Guy Patin, whom he regarded as "the maddest fellow for a professor that ever I heard speake, but I was much disappointed in my expectation of understanding all hee said by reason hee used the French tongue so much." The journal is introduced by a short account of the author by Mr. Geoffrey Keynes, the secretary of the Editorial Committee and an authority on Sir Thomas Browne. In his article on the correlation of the clinical manifestations and serological types in pneumococcal infections Dr. R. R. Armstrong continues the work which, as Ernest Hart Memorial scholar, he reported in our issue of February 19th, 1921 (pp. 259-262), and now gives the results of the serological classification of 200 strains obtained from every recognizable clinical manifestation due to a pneumococcus during the years 1920-22. Out of 76 cases of lobar pneumonia 41.5 per cent. were due to type and subtypes I, and 41.3 per cent. to type and subtypes II; this substantially agrees with the original American observations, except that the numerical incidence of type III is lower than in the American figures. The remainder of this instalment of the *Reports* is occupied by five lectures given early in 1922 in a course on diseases of the liver; Sir Humphry Rolleston leads off with a general review of the physiology of the biliary secretion, and perhaps rather encroaches on the domain of Sir F. W. Andrewes, who follows with a lucid account of jaundice and its different types. Professor F. R. Fraser deals with enlargement of the liver as a symptom of disease, and illustrates his subject by an analysis of 32 cases. In discussing

jaundice in children Dr. J. H. Thursfield divides the subject into jaundice in infants under 2 years of age and in older children. Like Dr. E. A. Cockayne in 1912 he believes that catarrhal jaundice and acute yellow atrophy belong to the same category, and are both manifestations, though in different degrees, of an at present unknown infection. In the last lecture Dr. T. H. G. Shore gives a good summary of the pathology of acute degenerations of the liver.

## NOTES ON BOOKS.

WE have received a copy of *The Progress Book*,<sup>8</sup> a little illustrated register for recording the stages of the mental and physical development of the child from birth to the 21st year of life. It has been revised and enlarged for Mellin's Food Company by J. J. PILLEY, Ph.D. On a small scale it represents the kind of medical annuals of the individual which has more than once been advocated by the pioneers of the Infant Welfare movement as desirable for every child in the State—a continuous record of health. It comprises weight charts and other details usually afforded in the case papers of the welfare centre and of the school medical service. Such a record would be useful to members of the medical profession, who usually have to rely for information with respect to past health and illnesses on the often inaccurate and always incomplete anamnesis of the mothers or the patients themselves. Among other details are spaces or papers for preserving photographs and for registering increments in weight, the dates of eruption of the teeth, illnesses, and other important events in the life history of the child. The medical profession for their own convenience should encourage parents to keep registers of this kind.

Dr. OSCAR PFISTER, who is the author of a number of well known works on psycho-analysis, has now written a volume entitled, *Some Applications of Psycho-Analysis*.<sup>9</sup> The book deals with psycho-analysis as a psychological method, and with its relation to art, philosophy, child life, war and peace, and missionary work. The longest and most important chapter is that devoted to a discussion of psycho-analysis and philosophy. The author, who is a pastor in Zürich, concludes his consideration of this problem by expressing the hope that Freud's psycho-analysis, although like the philosophy of Socrates it has not created any new system, will give an impulse to fruitful spiritual movements and revolutions.

The desultory reader, especially if he be one of those who when they hear a new book praised read an old one, already owes much to Messrs. Dent, but will admit his debt to have grown heavier when he has made acquaintance with a volume of the *Bedside Library*.<sup>10</sup> Perhaps the word "heavier" is not quite happy, for the volumes are light, but "larger" would be no better, for they are small. A bookmark has been provided, thoughtfully, for the first patient for whom we prescribed the *Life and Death of Socrates* fell asleep at the second page. *The Life and Death of Sir John Falstaff* is more stimulating; two old Shakespeare students had the happy idea of putting together in some sort of chronological order the scenes from the *Merry Wives*, *Henry IV* (1 and 2), and *Henry V* in which the Knight appears. To some of us Falstaff is the most wonderful of all Shakespeare's creations, so alive is he, so very human, so frail in morals, so mighty in body, so witty in excuse, so sententious and so flippant. The compilation is well done, and is embellished by Sir George Radford's essay, reprinted with Mr. Birrell's permission from his *Obiter Dicta*. The publishers will on application supply a list of the volumes, which if in one sense they be dear and not cheap, in another are cheap and not dear.

Messrs. MILLS and POYSER have produced a practical handbook<sup>11</sup> dealing with the administration and management of the property of lunatics, which is clearly written and conveniently arranged. Within the compass of forty pages an account is given of the circumstances under which the property of a lunatic can be dealt with and a full description of the procedure involved. The book should be of great use to the legal practitioners and receivers for whom it has been written.

<sup>6</sup> *The Progress Book*. By J. J. Pilley, Ph.D. London: Leadenhall Press, Ltd. 1923. (64 pp., illustrated.)

<sup>7</sup> *Some Applications of Psycho-Analysis*. By Dr. Oscar Pfister, Pastor in Zürich, Switzerland. Authorized English version. London: George Allen and Unwin, Ltd. 1923. (Demy 8vo, pp. 352. Price 15s. net.)

<sup>8</sup> London: J. M. Dent and Sons, Ltd. Cloth 2s. 6d., limp leather 3s. 6d., each.

<sup>9</sup> *Practice of the Office of the Masters in Lunacy*. By G. E. Mills, O.B.E., and A. H. R. W. Poyser, B.A., Barristers at Law. London: Butterworth and Co. 1923. (Demy 8vo, pp. 40. 7s. 6d. net.)

<sup>6</sup> *Textbook of Surgical Anatomy*. By W. F. Campbell, A.B., M.D., F.A.C.S. Third edition, revised. Philadelphia and London: W. B. Saunders and Co. 1921. (Med. 8vo, pp. 681; 325 figures. 30s. net.)

<sup>7</sup> *St. Bartholomew's Hospital Reports*, vol. lvi, Part I. London: John Murray, 1923. (Cr. 4to, pp. 54; 1 plate. 10s. 6d. net.)



## THE NEW ANATOMY BUILDING AT UNIVERSITY COLLEGE, LONDON.

BY

PROFESSOR G. ELLIOT SMITH, M.D., Litt.D.,  
F.R.C.P., F.R.S.

THE erection of the new building for the Department of Anatomy, which also provides an extension for the Department of Physiology, completes the scheme for the development of the building for the Faculty of Medical Sciences which had long been contemplated. The proposal was first definitely formulated on the initiative of Professor Starling in 1907, and on July 24th of that year the scheme was approved by the Senate of the University and "a committee was appointed to co-operate with the architect, Professor Simpson, F.R.I.B.A., in preparing plans for an Institute of Medical Sciences (including Anatomy, Physiology, and Pharmacology), with a view to the immediate erection of a portion thereof for the Department of Physiology."

The necessary funds for this portion having become available through the generosity of a number of donors, amongst whom may be mentioned Sir W. Gwynne Evans, Professor H. R. Plimmer, the late Dr. L. Mond, and Mr. Thomas Webb, the work on the new institute was begun in March, 1908. The building was completed by May 1st, 1909, and on June 18th it was formally opened by the Right Hon. R. B. (now Lord) Haldane, Secretary of State for War, in the presence of a distinguished company. From the outset the new institute, under the inspiring guidance of Professor Starling, ably seconded by Professor (now Sir William) Bayliss, attracted students and research workers from all over the world, and to such an extent that it soon became apparent that the available accommodation was not equal to the demand made upon it. The erection of the second portion of the projected Institute of Medical Sciences—namely, that to accommodate the department of pharmacology—was rendered possible by the generosity of the late Mr. Andrew Carnegie.

The pharmacology building, which adjoins the Institute of Physiology on the east side, was completed in the summer of 1912, in accordance with plans drawn up by Professor A. R. Cushman, at that time Professor of Pharmacology in the college, and was formally opened on December 4th of that year by Sir Thomas Barlow, President of the Royal College of Physicians.

A site facing Gower Street, adjoining the western end of the Institute of Physiology, was allocated for the third portion of the institute, that to accommodate the department of anatomy, hitherto most inadequately housed, partly in the north wing of the main building of the college, and partly in low buildings at the back of the Birkbeck block. Before funds were forthcoming for the completion of the scheme the great war intervened and seemed to destroy all prospect of immediate fulfilment of this aim. But the college did not abandon hope, for when a new Professor of Anatomy was appointed in 1919 reference was made in the terms of his appointment to the intention of the college to provide a new building for anatomy as soon as the means for doing so became available. Nevertheless, not even the most sanguine member of the college could have anticipated that this confidence was destined to be justified so soon as it was.

If the war seemed to have destroyed any chance of the immediate fulfilment of our plans, it was also responsible for bringing us into closer and more sympathetic relations with the academic institutions and medical men of the United States of America. The Rockefeller Foundation was eager to give some striking expression of American friendship to the British Empire, and was also anxious to enlist the help of British medicine in its great schemes for "the promotion of the well-being of mankind throughout the world."

The Rockefeller Foundation has long recognized how much the well-being of mankind is dependent on the advancement of medical knowledge and on the training of men who can spread the benefits of this knowledge among their fellow creatures, and to this end has spent large sums, not only in the United States, but also in South America and in China, for the establishment of medical schools in which research and the education of medical men should go hand in hand.

At the end of 1919 two representatives of the Rockefeller Foundation—Dr. Wickliffe Rose, general director of the International Health Board, and Dr. Richard M. Pearce, adviser in

medical education to the Foundation—came to Europe to inquire into the methods, problems, and needs of medical education in this country and on the Continent. While in London they were informed of the new developments in medical education which had taken place in this city under the stimulus and with the financial help of the Board of Education. This development consisted in the establishment at several of the medical schools of clinical "units" in medicine, surgery, and gynaecology, which were staffed by whole-time teachers, so that these subjects could be treated like the cognate scientific subjects, the professor being able to devote all his working hours to teaching and research without being obliged to undertake private practice. This innovation especially excited the interest of the representatives of the Rockefeller Foundation since the Foundation had already played a large part in the encouragement and endowment of this system of medical education in America.

The essential feature in this system is the close co-operation between all departments concerned in the medical curriculum. It is recognized that medicine and surgery cannot advance except in association with and assisted by the other departments hitherto regarded as more purely scientific—in particular, pathology, anatomy, physiology, and biochemistry.

At University College Drs. Rose and Pearce found a hospital which had been founded for the express purpose of medical education. They found also active and well equipped institutes for the study of some branches of medical science and definite plans for the completion of a whole scheme of medical education as soon as the necessary funds were available. Thus in the college there was fair provision for physiology, pharmacology, and biochemistry, but no proper facilities for teaching and research in anatomy, embryology, and histology. In the clinical subjects of the curriculum, while medicine and surgery were represented by whole-time professors at University College Hospital Medical School, there was a lack of beds devoted entirely to the work of these units, and the accommodation for research into the chemistry of disease was deficient; there was no adequate provision for scientific investigation and teaching of midwifery and the diseases of women. Plans for the remedying of these gaps in the scheme were ready; the only thing necessary for the realization of the scheme was money. The representatives of the Rockefeller Foundation were impressed with the possibilities of the scheme for the creation of a complete and scientifically equipped school of medicine which had been worked out by the college and hospital medical school and reported favourably thereon to the Rockefeller Foundation. As a result of their report the Foundation decided not only to place at the disposal of University College sufficient funds for the realization of the scheme that was formulated in 1907, but also to provide the additional endowment required to maintain the increase in staff which the scheme entailed. At the same time the Rockefeller Foundation made an even larger gift to University College Hospital Medical School for the promotion of the work of the clinical units.

It is singularly appropriate that the attempt to institute radical reforms in the teaching of anatomy and in the provision of facilities for real research should be made in University College. Paradoxical as it may appear, the reforming zeal of Professor Sharpey at this college twenty years ago had as one of its ultimate results the coupling of anatomical effort in England, and it is proper that the college which created a physiology so vigorous as to take itself the more vital and progressive parts of anatomy should be the institution to right this ancient wrong by restoring to anatomy the opportunities for teaching and research in histology and practical embryology, and for the experimental study of the factors that influence growth and development.

The structure of the nervous system, its development, history and the connexions displayed by degeneration and experiment, are all subjects which should be studied as one connected whole in the department of anatomy; and if the complexities of the nervous system are to have any real functional significance of the arrangements must be described and the effects of damage to the nervous system must be studied not with any pretence of teaching the student clinical medicine but in order to give him some satisfying explanation of a complex and otherwise unintelligible mechanism. It is necessary, then, in any properly equipped institute of anatomy, to provide a neurological department fully equipped



with sets of slides of adult human and embryonic material and of the brains of other vertebrates, and with laboratories for the experimental study of the results of degeneration.

It is an essential part of the work of a department of anatomy that it should carry on experimental investigations of the factors which influence growth and development and of the causation of anomalies and monstrosities. Such researches have led to results of very great importance from the insight they afford into the underlying principles of development as well as in explaining the causation of pathological conditions. The equipment of laboratories for such experimental work is therefore a necessary part of the scheme.

The knowledge of the structure of the living body that can be acquired by the use of the  $x$  rays is becoming increasingly important in the study of anatomy. At present a student is called upon to interpret radiograms long after he has left the department of anatomy, and when his practical familiarity with the arrangement of the structures he is endeavouring to disentangle has grown dim. Obviously the proper time to acquire an understanding of  $x$ -ray appearances is when the student is actually studying the things of which the  $x$  rays cast shadows. But such studies also teach him his anatomy, and are a valuable means of instruction. Moreover, the equipment of a department of radiology opens up a most promising field of anatomical research, which is bound to become increasingly fruitful year by year as the technique of radiography is improved.

The completion of the building for the three closely allied sciences of anatomy, physiology, and pharmacology represents far more than the mere provision of accommodation and equipment for teaching and research in anatomy and of an extension of the physiological laboratories. It is the expression of a far-reaching scheme of co-operation—involving on the one hand the closer correlation of teaching and research in anatomy, physiology, and pharmacology, and on the other the linking up of the work done in the Faculty of Medical Sciences in the college with that done in the Medical School of University College Hospital. Moreover, the new building is a permanent symbol of the bond of sympathy that unites us in a common aim with the medical schools of America and with the Rockefeller Foundation, our great benefactor.

By housing the departments of anatomy (with histology and embryology), physiology, biochemistry, and pharmacology in one institute, with a library and staff room in common, the way has been prepared for a closer co-operation between teaching and research in these subjects than has been possible hitherto. The new anatomy building is linked by means of a tunnel passing under Gower Street with the medical school of University College Hospital, and it is anticipated that this physical avenue of communication will facilitate a freer intercourse between the workers upon the two sides of Gower Street, to their mutual benefit.

The extension of the department of physiology affords ample provision for teaching and research in experimental physiology, and makes it possible for Professor Starling to remain in the college as Foulerton Research Professor of the Royal Society, even though he relinquishes the Jodrell Chair of Physiology and the directorship of the institute which he created.

The Rockefeller endowment has made it possible not only to create a University Chair of Biochemistry but also to increase the accommodation allotted to this subject. It has thus become feasible to effect a reorganization in the teaching of this new and important branch of chemistry, and to provide for the needs, not only of the students of medicine, but also for the training of biochemists, for whom there is a constant demand in research and industry. For these a definite curriculum has been devised based on the fact that a biochemist should be above all a well trained chemist, as well as possessing a scientific knowledge of general biology or of biological subjects. On this foundation is built one or two years' work in the biochemistry department, selected students being given facilities to carry out original investigations during the latter part of the course.

As announced last week, their Majesties the King and Queen have graciously consented to visit the buildings on May 31st, when the foundation stones of the new obstetric block and of the nurses' home connected with University College Hospital will be laid and the new Institute of Anatomy formally opened.

## RECENT ADVANCES IN MEDICAL EDUCATION IN ENGLAND.

SECOND MEMORANDUM BY SIR GEORGE NEWMAN.

[FIRST NOTICE.]

IN 1918 the Board of Education published a Memorandum entitled "Some Notes on Medical Education in England," by Sir George Newman, K.C.B., M.D., Chief Medical Officer of the Board. He is now also Chief Medical Officer of the Ministry of Health, and it is that Ministry which has issued a new Memorandum.<sup>1</sup> It is a document of much importance, and no phase of education in medicine seems to have been omitted. We propose this week to begin an account of its scope and contents, leaving comment to a subsequent occasion.

The Memorandum follows broadly the subjects of the medical curriculum in the sequence in which they are ordinarily taken at the schools, but it has a brief historical introduction dealing especially with the work of the General Medical Council in its developments from 1858 to 1922, and with the institution in 1908 of Treasury grants to universities and medical schools, through the Board of Education in England, and directly by Parliament for Scotland and Ireland. The seven points to which special attention is given in assessing grants are: (1) the number of students, (2) the content and scope of each subject taught, (3) the educational staff, (4) equipment and clinical facilities, (5) the standard and character of teaching, (6) the correlation of subjects and interrelation of laboratory and clinical work, and (7) research work. A University Grants Committee was appointed to take the place of the Board of Education as from 1919, and grants are paid to practically all the fifteen universities in Great Britain.

In dealing with the preliminary sciences the opinion is expressed that chemistry, physics, and biology are fundamental. The centre of knowledge is for ever shifting and "we are in need of a closer association between physics and chemistry on the one hand and biology and medicine on the other." The author expounds the General Medical Council's policy, which is that the elements of these subjects should be taught at the secondary or public schools to the standard of the preliminary examination. Their applications to medicine are to be taught during the medical curriculum, which is so far lightened. Many excellent courses of this nature are now, it is said, established under the regulations, but Sir George Newman urges: "In such advanced courses one primary consideration should be paramount—namely, that proper provision should be made for the concurrent study of English language, literature, and history." More than 250 secondary schools now give advanced courses, but not nearly so many in biology as in chemistry and physics. Six examples of the courses of instruction are quoted from reports by H.M. inspectors. The medical schools will have to supplement any insufficiencies of the secondary schools. Biology is regarded as of special importance—"it is the basis of sociology." The author holds that zoology and botany must continue to be taught separately. It is urged, again, that the teaching of the principles of chemistry should not be allowed to suffer by giving the student too much inorganic chemistry. Finally, as to the preliminary sciences: "When the student enters upon the professional part of his course these subjects must be deeply integrated into physiology, pharmacology, and pathology, and practically applied in his clinical studies."

### Anatomy.

"Anatomy is the foundation of the Science and Art of Medicine": so begins the chapter on that subject. But it became a restricted subject "neither biological in setting nor physiological in purpose." The student was overburdened with detail and could pass examinations only by "cramming." The anatomy was that of the dead and not of the living body—not like that of the Greeks, who learned from athletes in action; it was divorced alike from biology and clinical study. But there was a renaissance in both respects; Harvey was a biologist and John Hunter and the Monroes were surgeons or teachers of surgery. The purpose and meaning of anatomy can only be learned at the same time as its structure.

<sup>1</sup> *Recent Advances in Medical Education in England*. A Memorandum addressed to the Minister of Health by Sir George Newman, K.C.B., M.D., Hon. D.C.L., F.R.C.P., Chief Medical Officer of the Ministry of Health and of the Board of Education, Crown Nominee to the General Medical Council. London: H.M. Stationery Office, Imperial House, King's-way, W.C.2. 1923. 1s. 3d. net.



Anatomy has come back into its inheritance through orthopaedics. Teaching and examination must have regard to the needs of the practitioner, and the General Medical Council recommends that the final examination should include questions on the applications of anatomy and physiology to practical medicine. The knowledge must be accurate and the student must be encouraged to take broad views but not vague views.

#### *Physiology.*

In dealing with the teaching of physiology, which has undergone such enormous expansion, it is pointed out that there are three desiderata: a knowledge of the normal action of the healthy body and its variations; a knowledge of disturbing factors and how to investigate them; and the application of the principles to medicine. Lecturing, which has been overdone, has now been much reduced, and the student needs less if he has been well grounded in biology, physics, and chemistry. From animal physiology in general the student must pass to mammalian physiology and then to human physiology in particular. An important aspect of the subject, emphasized by war experience but essential also for civil industry, is the total efficiency and vital capacity of man, his ability to resist and recover from strain. The student should learn how wide are variations within the normal bodily functions, and to distinguish variation from disease. The science is being taught more adequately than formerly and the teaching is being continued throughout the curriculum—"students are learning to think of disease as disordered physiology." A Scottish branch subcommittee of the General Medical Council has suggested the lines which should be followed in bringing physiology to the student on medicine in respect of circulation, the nervous system, metabolism, the endocrine organs, reproduction and development, and the physiology of childhood. In some schools the student in his second year is being brought to the hospital to study cases illustrative of physiological principles or methods. "An all-round equipment in physiology is perhaps the greatest single need of the medical student." The teaching must be practical, there must be no watertight compartments, no divorce of physiology from pathology and clinical medicine and surgery, and the spirit of research should be cultivated by the personal work and observation of every student.

#### *Pharmacology and Therapeutics.*

It is good for all concerned that every teacher be filled with the importance of his own subject, and the next chapter of the Memorandum begins with a quotation from Professor W. E. Dixon of Cambridge, who writes that "To state that the future of medicine lies in pharmacology may sound fanciful, but it is certain that the most hopeful of all signs of the progress of Medicine of to-day is to be found in the progress of the science of treatment." In recent years the orientation of therapeutics has been changed, first by experimental observations on the active principles of drugs and their effect on animals; secondly, by speculations relating to the chemical structure of the molecule, and the processes of absorption, surface tension and solution; thirdly, by the discovery of the importance of internal secretions—drugs within the economy and extractable for use; and, lastly, by new knowledge of the defensive substances within the body and by the revolutionary developments in serology and immunology. In Great Britain synthetic chemistry has not been widely developed and we have had to rely on Continental laboratories for new anaesthetics, hypnotics (which, it may be interpolated, bring with them their own dangers), vaso-dilators, antipyretics, diuretics, synthetic purgatives, etc. As a remedy the establishment in this country of an Institute of Experimental Therapeutics is urged, to comprise all branches of pharmacology, chemical, experimental, and clinical. Pharmacology "must be explored in conjunction with physiology, with pathology, and above all with therapeutics." The Memorandum after this admonition proceeds to discuss seven aspects of the subject: (1) Vaccines and serology, (2) organotherapy, (3) heliotherapy, (4) electrotherapeutics and radium, (5) mechano-therapeutics, (6) anaesthetics, and (7) psychotherapy. There are also some concluding observations on practical methods of teaching.

Though the percentage of successful vaccinations against small-pox is under the present system 99.4 in the hands of Public Vaccinators, yet Sir George Newman holds that the training of the medical student has become perfunctory and that steps should be taken for its amendment. Knowledge of acquired immunity in general has resulted in a new and powerful means both of diagnosis and therapeutics in respect of typhoid, food poisoning, dysentery, pneumonia, diphtheria,

syphilis, tuberculosis, and other bacterial infections. Another result is the preparation of vaccines and antitoxins for prophylaxis and treatment, whether the means be living or dead cultures, and whether the vaccines be polyvalent or autogenous. Neither the practitioner nor the student can be an expert in such matters, but there should be elementary instruction in the principles of immunity, the methods of preparation of vaccines and serums, the diseases for which they are available, the principles for selection of stock, the time, method, site and doses, the action and reaction, ill effects and risks, and instruction also in the convincing evidence of their value in small-pox, rabies, diphtheria, and typhoid fevers.

Organotherapy is represented by the value of thyroid extract, adrenaline and pituitrin, as means of treatment based upon the principle of compensating defect by extracts from internal secretions. Heliotherapy should also be taught and illustrated by its success in the tuberculosis of children, and generally in the open-air life. Sir George Newman supports the recommendation of the General Medical Council that radiology should be systematically taught, including the differential reading of radiograms. Under mechano-therapeutics come massage and remedial exercises, of which the methods and value should be known to practitioners, though the work needs particular training and experience. Swedish exercises at schools have become universal since the school medical service began. In anaesthetics the General Medical Council recommends that every student have a course of instruction, including experience of their administration in at least ten cases. As to psychotherapy, Sir George Newman writes aptly that "some forms of treatment of mental disease have overflowed their boundaries and invaded the realm of internal medicine." In nervous disorders "its methods are analysis, suggestion, persuasion, or reinstatement of disordered function," but it is not yet a science, and much depends on the "personality" of patient and physician. It is important, however, that the student receive instruction in elementary psychology, perhaps as part of physiology.

The consideration of practical methods of teaching, both in pharmacology or the scientific study of drugs, and in therapeutics or the art of treatment, is prefaced by the observation that practical pharmacy has disappeared from the scheme of training. In Edinburgh there are now two whole time professors, one for either subject, the therapeutics professor being also professor of clinical medicine; attached to the wards is a therapeutic laboratory. At other schools—Sheffield, Oxford, Cambridge, and Aberdeen—there are also special arrangements.

#### *Pathology and Elementary Bacteriology.*

Pathology, it is observed, has developed from a mere means of throwing light on treatment to be an independent science with ramifications into all branches of medicine and surgery, so that practical medicine has become diagnosis, pathology, and treatment, and practical surgery, diagnosis, pathology, and application of the mechanical arts; "the integration has been so intimate that the science has become woven into the warp and woof of the whole texture of medical practice." It began as morbid anatomy, next came morbid histology, then bacteriology, and now there has emerged the pathological physiologist, who studies "disease in the living cell rather than the dead," function rather than structure, to be learned in the wards as well as in the post-mortem room. Stated otherwise it is "the science of morbid processes." It should include elementary bacteriology, morbid anatomy and histology, general and special pathology and their chemistry, experimental pathology, and clinical pathology, all in a setting of comparative pathology. The subject should be spread over two or three years of the curriculum, beginning with elementary bacteriology and pathological chemistry. The professor should be pathologist to the hospital of the medical school, and the hospital should have attached to it an institute to bring together all branches of pathological work; each student should collect material and carry out its examination, should also do several autopsies and compare the results with the clinical phenomena. Conference of all concerned with a case would likewise be held. Each school should have an organization for pathology complete in accommodation and equipment, and there should be co-operation between physiologist, pathologist, bacteriologist and clinician. For absolute completeness a school of comparative pathology—vegetable, animal, and human—is needed, and such a school should be connected with hospital wards and laboratories.

(To be continued.)



## COLLOIDAL PREPARATIONS.

## THE EXAMINATION OF COLLOIDAL SOLUTIONS.

BY

SIR WILLIAM J. POPE, K.B.E., F.R.S., D.Sc., LL.D.,  
PROFESSOR OF CHEMISTRY, UNIVERSITY OF CAMBRIDGE.

A RECENT paper by Professor A. J. Clark (BRITISH MEDICAL JOURNAL, 1923, i, p. 273) contains a discussion of the customary methods for distinguishing colloidal solutions from those of crystalloids and details the results of the examination of a number of colloidal preparations found in commerce. It is stated that the work was carried out at the expense of the British Medical Association, and it may therefore be presumed to carry with it the authority and approbation of this important body; this latter circumstance makes it particularly unfortunate that many, if not most, of the experimental results recorded in the paper are erroneous and misleading, and that, in consequence, the conclusions drawn are unjustified.

The refutation of an error is always a more lengthy process than is its original statement; without discussing detail by detail the sequence of mistakes made in the paper under discussion it will suffice, and the interests of brevity will be served, if Professor Clark's conclusions concerning but one from among the many preparations with which he has dealt are shown to be unfounded.

The solution known as "colloidal ferrum Crookes" contains 0.05 per cent. of iron as a colloidal ferric compound, with about 0.5 per cent. of gelatin and about 3.5 per cent. of glucose, as may be ascertained by any competent analyst; it passes through filter paper without leaving a precipitate, and is faintly alkaline in reaction owing to the presence of a small proportion of sodium hydroxide. Presumably everyone is aware that ferric salts are precipitated by sodium hydroxide unless retained in colloidal solution by some protective substance. The fact that sugars retain ferric iron in colloidal solution was recorded by Thomas Graham in his famous first paper on colloids (*Philosophical Transactions of the Royal Society*, 1861, 151, 183), and has been the subject of much later experimental study. The simple and direct proof that such solutions contain the iron in the form of colloidally suspended particles, which can be seen in the ultramicroscope, is so complete that the colloidal character of these preparations has never before been impugned.

But Professor Clark disregards the effect of the gelatin and the glucose and does not note the alkalinity of the solution, the factors which directly prove the colloidal condition of the iron in the preparation. He observes that the ferric compound passes through a collodion filter and thence concludes that the iron cannot be in a colloidal condition, oblivious of the fact that colloidal filters are in common use for separating fine and coarse colloidal suspensions, the finer readily traversing the filter.

Professor Clark remarks that extravagant statements concerning colloidal preparations have been often recorded, and that much of the "scientific" literature on the subject is uncritical; this is regrettably true so far as the medical literature is concerned, and makes it the more desirable that the British Medical Association and Professor Clark should discountenance the methods of the past and confine themselves to the publication of properly ascertained facts with their logical conclusions. The dangers of not doing so have been eloquently depicted by Dr. H. H. Dale (*Journ. Soc. Chem. Ind.*, 1920, 39, 211 R).

## OBSERVATIONS ON THE ABOVE ARTICLE.

BY

A. J. CLARK, M.D., F.R.C.P.,  
PROFESSOR OF PHARMACOLOGY, UNIVERSITY COLLEGE, LONDON.

I HAVE read the above article by Sir William Pope with surprise. He states of my paper "that many, if not most, of the experimental results recorded in the paper are erroneous and misleading." He does not, however, produce any evidence to show that a single experimental fact stated in my paper is incorrect. It is, of course, contrary to every tradition of scientific controversy to make a sweeping charge like this

without establishing it to the hilt. This is, however, a minor question.

Sir William Pope concentrates his attention on my findings as regards collosol ferrum, and says:

"The solution known as 'colloidal ferrum Crookes' contains 0.05 per cent. of iron as a colloidal ferric compound, with about 0.5 per cent. of gelatin and about 3.5 per cent. of glucose, as may be ascertained by any competent analyst; it passes through filter paper without leaving a precipitate, and is faintly alkaline in reaction owing to the presence of a small proportion of sodium hydroxide. . . . But Professor Clark disregards the effect of the gelatin and the glucose and does not note the alkalinity of the solution, the factors which directly prove the colloidal condition of the iron in the preparation." (The italics are mine.)

Messrs. Crookes, as far as I am aware, have no preparation called "colloidal ferrum Crookes." The substance I investigated was "collosol ferrum Crookes," and I presume that Sir William Pope is referring to this, otherwise his remarks are pointless.

The two statements italicized in the above quotation relate to matters of elementary chemistry. I cannot confirm either of them.

During the past year I have tested six separate bottles of collosol ferrum Crookes bought over a period from January, 1922, until April, 1923; some were bought from retail and some from wholesale chemists. In every instance the solution was acid. To-day (April 19th) I opened two new bottles of collosol ferrum; one bottle had been recently obtained from a wholesale chemist and the other came to-day from Messrs. Crookes's establishment in Chenies Street; the contents of both bottles were acid: the acidity corresponded approximately to N/200 and N/500 acid respectively. Having made these observations and measured the degree of acidity I cannot quarrel with Sir William Pope's statement that I do "not note the alkalinity of the solution."

Collosol ferrum gives all the reactions characteristic of a dilute solution of a ferrous salt—namely, a deep blue colour with potassium ferricyanide which develops immediately, a paler blue colour with potassium ferrocyanide which develops slowly, and no colour with ammonium sulphocyanide. These reactions are totally different from those given either by an ordinary solution of a ferric salt or by a solution of colloidal iron.

As regards precipitate, five out of the six specimens which I have examined left a heavy precipitate when filtered through a filter paper. One of the two bottles examined to-day yields 0.08 per cent. of precipitate on filtration; the other bottle, obtained fresh to-day from Messrs. Crookes, gives no precipitate.

As regards colloidal condition, I showed in my paper that the iron in collosol ferrum, when tested by dialysis, ultrafiltration, or diffusion, behaved exactly as if in true solution. Sir William Pope argues that the iron in "colloidal ferrum" must be colloidal because it is in the ferric state and the solution is alkaline. The iron, however, is in the ferrous state and the solution is acid.

So far as I understand Sir William Pope, the only other evidence he adduces is that the solution shows colloidal particles on ultramicroscopic examination and contains gelatin and sugar. If my interpretation of Sir William Pope's statement be correct, I will leave it to chemists with experience of colloidal chemistry to say what they think of the argument that iron in a solution must be colloidal if the solution contains particles visible under the ultramicroscope, and also contains gelatin and sugar.

Sir William Pope, however, really bases his argument on the alkaline reaction of the fluid. When a person in his position bases an important argument on an elementary fact like this, and one finds that the statement is wholly incorrect as regards six separate samples of the substance under investigation, discussion becomes very difficult.

In the above circumstances it seems unnecessary to notice Sir William Pope's unkind remarks about my methods of research. In my paper I dealt with collosol ferrum Crookes as sold to the medical profession. Sir William Pope has publicly ridiculed me for failing to notice that it is alkaline. I say that it is acid, and that anyone who is in doubt can determine this point for himself with a piece of litmus paper.



## British Medical Journal.

SATURDAY, APRIL 28TH, 1923.

## PITUITARY SECRETION.

ALTHOUGH extracts of the posterior lobe of the pituitary gland are now widely used in obstetrics and in surgery, knowledge of the functions of this gland is still very fragmentary. This is in large measure due to the extreme difficulty of removing the posterior lobe of the pituitary without injuring the anterior lobe or the adjacent portions of the brain. The known actions of pituitary extract are extremely diverse, and this is understandable since the gland is known to yield several active principles. Abel and Rouiller<sup>1</sup> showed that at least two substances were present, one which raised and another which depressed blood pressure. Dudley,<sup>2</sup> in a recent paper, has shown that the substance which raises blood pressure is probably distinct from the substance which causes constriction of the uterus.

Very little evidence has been brought forward to indicate the nature of the relation between the pituitary gland and the genital organs, but Professor W. E. Dixon, in a recent paper,<sup>3</sup> has thrown some light on this question. He has made a series of experiments which lead him to conclude, first that secretion of the pituitary gland is delivered into the cerebro-spinal fluid, and secondly, that this process of secretion can be stimulated by injection into the circulation of either pituitary extract or of ovarian extract. It seems clear, he says, "that ovarian conditions determine the secretion of the pituitary and thus react indirectly on the uterine tonus. Pituitrin is very largely employed in medicine to contract the uterus: its employment would seem to be so far rational that it is the drug manufactured by the body for this specific purpose."

The facts established concerning the functions of the posterior lobe of the pituitary indicate that they are curiously scattered. The internal secretion of this gland appears to be essential to the normal function of the kidney, for injury to the lobe is often associated with diabetes insipidus mellitus, and in a large proportion of cases of this disease the excessive urinary secretion can be inhibited by the administration of pituitary extract. Furthermore, Starling and Verney have recently shown that the isolated kidney secretes very dilute urine, but that the addition of pituitary extract to the perfused blood causes an increase in the concentration of the chlorides. The pituitary is also one of the glands that control the concentration of blood sugar. Pituitary deficiency is associated with increased carbohydrate tolerance, and according to Burn<sup>4</sup> pituitary extract has a stabilizing effect on the blood sugar concentration, for on the one hand it inhibits the hyperglycaemia produced by adrenaline or by ether anaesthesia, and on the other hand it inhibits the fall of blood sugar produced by the administration of insulin.

There seems, therefore, to be a fair amount of evidence that the posterior lobe of the pituitary gland secretes *in vivo* a uterine stimulant and also a substance essential for normal urinary secretion.

This gland contains in addition substances which can raise blood pressure, which can lower blood pressure, and which affect blood sugar concentration. There is evidence that at least three separate substances are concerned in these manifold activities. We have, however, at present

no evidence as to whether these curiously diverse activities are correlated in any way; as far as our present knowledge goes, the association of the different active principles in one gland may be purely accidental.

## VETERINARY LITERATURE DURING THE EIGHTEENTH CENTURY.

THE first instalment of the history of veterinary literature by Major-General Sir Frederick Smith, late Director-General of the Army Veterinary Service, is published in the current issue of the *Veterinary Journal*. He has no difficulty in showing that during the eighteenth century the practitioners of animal medicine were in a state of deplorable ignorance of the pathology and treatment of disease. The books written during the earlier part of this period claimed to give to country gentlemen and farmers sufficient instruction to enable them to be independent of the services of the farrier and cow-leech or cattle doctor—the two classes of men engaged in veterinary practice—and usually promised secret receipts for the cure of the common distempers incident to horses and oxen. Under the titles "Every Man his own Farrier," "The Gentleman Farrier," or some variant of these, they appeared with painful regularity, the writers all dipping for information into the same well of ignorance, and copying without apology from the books of their predecessors. Whereas in the medical profession during the same period there were three classes of practitioner—the physician, the surgeon, and the apothecary; and of the first named it might be said that, though commonly more dependent on ancient tradition than modern science, he was usually a scholar—the lowest and most ignorant in the land were considered suited to follow the veterinary calling; the farrier and cow-leech were, indeed, entirely without education, and dependent as a rule on a book of "cures."

The comprehensive review of the veterinary literature during the early part of the eighteenth century provided by Sir Frederick Smith indicates the grievous suffering which must have been inflicted on animals by the "experts" of that time, of which the following may be given as examples. One author says that "suppression of urine is overcome by passing into the urethra a whale-bone, at the end of which is a knob covered with muslin; the whole is to be thrust into the bladder. If no urine follows, this is diagnostic of disease of the kidneys." The same authority recommends in the treatment of colic a remedy consisting of "four or five hundred wood-lice, dried and powdered, given in a draught." Stiff legs "are to be treated by cutting the nerves of the forelegs, which will be found in the breast." (What was removed was a piece of tendon, which was drawn out at the wound and then divided.) However, Sir Frederick Smith concludes that on the whole the veterinary pharmacopoeia was cleaner than the medical pharmacopoeia, for "in the Dispensatory of the Royal College of Physicians of this period the following are shown among the animal parts employed in medicine: fat of all animals, including that of man, bezoar, cystic calculus (human), flesh of the viper, horn of rhinoceros and unicorn, tooth of elephant and horse, slough of snake, liver of eel, biliary calculus of a jaw of pike, penis of tortoise and stag, huckle bone of hare. There is also shown, as a therapeutic agent, the moss from human skulls!"

The medical profession rendered conspicuous service to veterinary practice during the eighteenth century, both because physicians were called upon to assist the State when cattle plague appeared in this country, and because certain surgeons, from a love of animal or from an eye to business, took an active interest in the treatment of diseases of animals. It was fortunate that

<sup>1</sup> *Journ. of Pharm. and Exper. Ther.*, 20, 45, 1922.<sup>2</sup> *Ibid.*, 21, 103, 1923.<sup>3</sup> *Journ. of Physiol.*, 57, p. 128, March 21st, 1923.<sup>4</sup> *Ibid.*, 57, *Proc. Phys. Soc.*, 38, 1923.



when, in 1714, cattle plague was prevalent, Thomas Bates, F.R.S., surgeon to H.M. Household, was called upon to report upon a disease of cattle affecting dairy stock at Islington and to decide whether it was contagious. He soon convinced himself that the disease was spread not only by the affected cattle but by the attendants, and "he recommended that the entire herd should be destroyed, the owners compensated, the dead cremated, the cowhouses disinfected and left empty for three months." Thus he succeeded in eradicating cattle plague by methods almost identical with those in use to-day. Sir Frederick Smith says that the work of the physicians was marred by their nervous apprehension of loss of dignity in their profession by being engaged in the study of a disease of animals, and they nearly all apologized for debasing their profession, their only consolation being that they had exhibited a good public spirit in time of national peril. On the other hand, a number of surgeons, for whom the social sacrifice was not so serious, came forward and closely identified themselves with veterinary work, and many of them wrote books on the subject, some from actual practical knowledge, others from theoretical acquaintance or conceit. Even the surgeons were anxious about their reputations, for one of them remarks in one of his books that, as a result of "employing his pen so low as to write about horses," he has "now and then had a little dirt" thrown at him. The first school of veterinary science was opened in this country in 1791, and towards the end of the century the medical profession rendered valuable help to their veterinary colleagues through the work of John Hunter, Henry Cline, Sir Astley Cooper, and Dr. Fordyce, while from the ranks of the medical profession during the last years of the eighteenth century were recruited Bracey Clark, William Moorcroft, Delabere Blaine, and Edward Coleman, whose names will live as long as the veterinary profession exists.

## TREATMENT OF DIABETES BY INSULIN AND ITS RISKS.

WE publish this week at page 737 a general summary of the clinical experiences of workers in certain hospitals—eight in number—in England and Scotland who during the last few months have been able to treat certain selected cases of diabetes with insulin prepared under the directions of the Medical Research Council in the laboratories of the medical schools attached to each hospital; recently insulin prepared by commercial firms has also been used by these workers.

As we announced last week (p. 695), insulin is now being prepared on a commercial scale in this country, and the supply has been augmented by consignments from a firm of American manufacturers. It can now be purchased by hospitals and individual medical practitioners who will undertake to fulfil certain conditions. Insulin can only be employed with safety when its effects are tested by repeated examination of the amount of sugar in the blood, and an undertaking to make this estimation systematically is perhaps the most important condition imposed. So far, at each hospital, two or three patients suffering from severe diabetes have been selected and the effects of insulin upon them very closely studied week by week. Except in cases which have already reached the stage of coma, all the patients treated have shown admirable improvement, just as was described by the Canadian workers. The amount of sugar in the blood has fallen rapidly as a temporary result of each injection, and the utilization of fats has been favourably influenced to a very marked degree. The patients have increased steadily in weight and have experienced a sense of greater warmth and energy. Among the precautions found necessary is that

the insulin should be given in relation to the meals and be withheld during periods of abstinence from food. The untoward results of an excessive dose of insulin have been for the most part avoided owing to the care taken to test its effect on the blood and to give it in proper relation to meals. In severe cases very large doses may have to be given, and it is advised that such patients should be treated, for the present at any rate, in institutions, where the diet can be closely controlled and the blood sugar frequently determined. It is possible that in cases under this close observation a smaller dose may prove effective if carbohydrates are excluded. The very striking effect of insulin in diabetic patients who have passed into a condition of coma was observed in several instances; in one, which is recorded at length, a man admitted to hospital on the verge of diabetic coma, just conscious but with extreme air hunger, treatment with insulin was followed by such improvement in his general condition that for the next three weeks he had no glycosuria.

The efficiency of insulin in lowering the amount of sugar in the blood is so great that too large a reduction may be brought about, and a condition of collapse attended by convulsions may then ensue; it is remedied by giving glucose and causing the patient to drink large quantities of fluid; but its occurrence ought to be prevented, and this is one of the many problems which require further investigation. It has long been known that a diabetic patient subjected to an operation may suddenly pass into a condition of coma, and the experience so far obtained tends to show that insulin in this emergency has little effect. The risk is to be avoided by careful preparation of the patient before the operation; dietetic control and the administration of insulin in suitable doses being used together to free the urine from ketones and sugar.

## THE CAMBRIDGE CHAIR OF ANIMAL PATHOLOGY.

THE University of Cambridge is about to make a new departure of considerable interest and importance. As announced recently in our columns, it has accepted an offer made by the Ministry of Agriculture and Fisheries of a capital sum of £30,000 to found a Professorship of Animal Pathology. The Senate has approved regulations for the professorship which fix the stipend at £1,200 per annum, and define the duties of the office as the advancement of the knowledge of the diseases of animals by teaching and research. A board of electors will shortly be nominated, and it is anticipated that the first appointment will be made during the present term, which ends about the middle of June. The professor will be connected with the Special Board for Agriculture and Forestry, and will have his headquarters in an extension of the School of Agriculture, which practically joins the new biochemical laboratory which is being built and presented to the University for Professor Hopkins by Sir William Dunn's Trustees. Professor Langley's laboratory, the Molteno Institute of Parasitology under Professor Nattall, and the low temperature research station under Mr. W. B. Hardy, are all within a stone's throw, and the Medical School is only just across Downing Street. The professor is to hold office in the first case for five years, at the end of which period he will be eligible for reappointment. His first duty will be to prepare plans for his headquarters laboratory at the School of Agriculture; for a branch laboratory, paddocks, animal houses, etc., at the field laboratories; and for staff and for equipment. For these purposes the Ministry of Agriculture has intimated that it will consider estimates up to about £70,000 for the period ending March 31st, 1927. After this date the maintenance of the research institute, of which the professor will be director, must depend either on the provision of further funds by Parliament or on private benefactions. In view of the value of the live-stock industry to the country, the collapse of the



institute in 1927 for lack of funds cannot be contemplated, provided, of course, that the professor and his staff show signs of making good. Although the regulations mention teaching among the professor's duties, it is anticipated that, for the present at any rate, his whole time will be devoted to research, which it is hoped will not be confined to purely laboratory studies. The funds available for the next four years will make it possible to include in the equipment a travelling laboratory for the study of outbreaks of disease in any district where they may occur. A motor ambulance and a compensation fund could also be provided so that certain animals could be transferred to Cambridge for more intensive study. It is thought that the application of such methods may throw light on many disorders of sheep and swine. As the market price of such animals is comparatively small they seldom repay individual attention by the veterinary practitioner. They would, however, amply repay preventive measures founded on accurate study of the outbreaks of diseases to which they are liable. Although the professor will be most directly connected with the School of Agriculture, the financial control of his institute being in the hands of the Special Board for Agriculture and Forestry, Sir Clifford Allbutt's well known advocacy of the joint study of human and animal disease will ensure for him the hearty co operation of the Medical School.

#### THE CALCUTTA SCHOOL OF TROPICAL MEDICINE AND HYGIENE.

This institution was formally opened in February, 1922, although the first classes and research work were commenced about three months earlier; it was not until June, 1922, that the special hospital with over a hundred beds for tropical diseases was in full working order. In the first annual report, that for 1922, the Director, Lieut.-Colonel W. D. Megaw, I.M.S., in addition to giving an interesting account of the post-graduate teaching and hospital work, summarizes in fifty large printed pages the researches of the fifteen professors and whole-time research workers in charge of different sections of the laboratories; he gives a list containing twenty-five published papers and twenty-five submitted for publication: a truly remarkable record for the first year's work. After paying a tribute to the founder, Sir Leonard Rogers, in which he says that the institution is "the most remarkable legacy which has ever been bequeathed by a European to India," the teaching work is described: a six months' course is held in the cold weather months for the school diploma; outside examiners are appointed, and only 19 out of 28 candidates were passed, the standard being very high; a three months' course for a school certificate begins on July 15th, but there were 80 applicants, the numbers in each class limited to 50, including the D.P.H. candidates, who have a nine months' course, with field demonstrations and additional practical teaching in the public health laboratory of Bengal within the school buildings. The lectures are illustrated by numerous lantern slides, epidiascope projections, and cinematograph films, while the clinical material is abundant; over 600 cases of kala-azar, for example, were treated in the hospital and out-patient department in one year. Every patient admitted is investigated by the bacteriological, protozoological, helminthological, serological, and other laboratory departments, the notes being indexed by a whole-time registrar, so that any point under investigation can easily be analysed at short notice. The Calcutta Medical College museum contains some 6,000 specimens and several hundred coloured drawings; the numbers are being added to daily by the whole-time artists and photographers of the college and the new school, but it is already a unique collection of tropical specimens, and in addition a pictorial collection on the lines of the Wellcome Museum of Tropical Diseases is being rapidly arranged on the ample wall space of the entrance hall, stairs, and landings. Altogether the tropical school affords unequalled advantages for a highly practical post-graduate teaching in tropical medicine and hygiene of the most complete kind. The medical staff now numbers thirty-six, including eight

whole-time professors and three part-time lecturers, three whole-time assistant professors, four medical officers of the hospital, seven additional whole-time research workers, three of whom are Indian research scholars in charge of investigations, and five assistant research workers; the heads of the seven additional research laboratories over and above the staff of professors are engaged in investigations on kala-azar, ankylostomiasis, the dysenteries, leprosy, filariasis, beri-beri, and diabetes respectively; all of them also teach in the school in their specialties, while distinguished outside medical men are invited to lecture from time to time. Additional professors of helminthology and biochemistry will, it is expected, be appointed shortly, and money is already in the hands of the Endowment Fund for the construction and equipment of a new leprosy institute opposite the school; this fund, which also finances the seven research laboratories just mentioned, had an income of £8,000 last year and a balance at the end of the year, including investments, of £45,000; almost the whole has been raised by public subscription—a fine testimony to the esteem in which the institution is held in India. A particularly valuable feature of the research work is the cordial co-operation among the staff; a large proportion of the papers are the joint work of two or more departments showing team work at its best. This happy result is mainly due to a system suggested by the founder of having monthly meetings of all the investigators, at which each reports on his previous month's work and his future plans; any difficulties encountered there receive the attention of the whole staff for their elucidation, so that the administrative head can say that he regards himself rather as a "President" than as a "Director" of the school. It is impossible to read this report without realizing how much the splendid start the school has made is due to the wise and tactful administration of Colonel Megaw, backed up, as he himself points out, by a very able and enthusiastic staff. He makes special acknowledgement of his indebtedness to Major Knowles for his splendid work in completing the organization of the laboratories and hospital after Colonel Rogers went home on sick leave shortly before coming under the age retirement rule. Sir Leonard Rogers has every reason to be proud of the good work of his successors, in the selection of whom he was particularly fortunate. How far the work of the Calcutta School will be crippled, if the proposals of the Retrenchment Committee to scrap no less than twelve out of about thirty members of the bacteriological department and to reduce very seriously the medical research funds are carried out, it is impossible at present to judge.

#### CONGRESS OF THE HISTORY OF SCIENCE.

The fifth International Congress of the History of Science met in Brussels on April 8th, and the official opening took place on Monday afternoon, in the presence of the King of the Belgians, in the Hall of the Palais des Académies. There was a large attendance of delegates and members. The History of Medicine formed a subsection, located at the Hôtel Ravenstein. The attendance of members interested in the subject was disappointing, but some interesting papers were read. Among these may be mentioned that by Dr. Wickersheimer (Strasbourg) on "The accusations of poisoning directed against Jews and lepers in the fourteenth century, and their relation to the plague epidemics." At the time of the Black Death the Jews were accused of spreading the disease by poisoning the water in the wells. This statement is to be found in many history books and in 1348 such an accusation was said to have cost thousands of Jews and lepers their lives. Another interesting paper was communicated by Dr. van Scherrenberg (Antwerp) on "Itinerant oculists in the Belgian provinces in the seventeenth and eighteenth centuries." He reminded his hearers that in the Middle Ages ophthalmia was the chosen field of the ignorant practitioner. The study of the eye from an anatomical and physiological point of view had developed to an appreciable degree during the seventeenth



and eighteenth centuries, but its practical use as applied to the treatment of patients had not yet made itself felt. It dawned on the itinerant surgeons of the day that human sufferings, judiciously exploited, might become a source of revenue to them. Printing, which had proved so powerful an agent in the dissemination of new theories, would provide them with an easy means of introducing themselves favourably to the uneducated masses. This propaganda was first carried on by means of short tracts in which the merits of these charlatans were set out in lyrical terms, and at the close of the seventeenth century the first medical advertisements appeared. In the year 1686 an anonymous "Venetian" extolled in the *Courrier véritable des Pays-Bas* the virtues of his balsam for curing fractures. These first advertisers professed to cure cataract, deafness, and the stone, to operate for hernia, to sell wonderful cures for all and every ill, and to supply false teeth and artificial eyes. A paper was read by M. Oscar van Schoor (Antwerp) on "The history of the pill." He said that the pill was one of the oldest pharmaceutical preparations, being mentioned by Hippocrates, Galen, Pliny, and Celsus. The old authors gave little detail with regard to the method of making up the pillular mass and its division into doses. Towards the end of the seventeenth century references were made to the "signet," an instrument for dividing the pillular mass into equal parts; this was the precursor of the modern pill-machine, first described by "Baumé" in his *Éléments de Pharmacie*. The method of gilding or silvering the pills, or by sprinkling them with fragrant powders to help in their preservation, was common in the fifteenth century. In ancient pharmacy, the pills were kept in a mass and were only divided up into doses as required. M. Sevilla of Paris contributed a paper on "Some aspects of Greek veterinary medicine and the posology of opium and a few active 'simples' inscribed in the therapy of horses affected by pulmonary diseases." He made a critical analysis of the therapeutical formulæ written by various Greek veterinary surgeons of the later period in Greek history, on the pulmonary diseases of the horse. He dealt in succession with the internal use of opium and henbane, asafoetida, gum ammoniacum, turpentine resin, sulphur, and sulphuret of arsenic in the treatment of horses suffering from bronchitis, pneumonia, pulmonary emphysema, and asthma. These agents were known even at an earlier period and were used by those who specialized in the treatment of sick horses. Professor Marc Bloch (Strasbourg) contributed a paper on "A confusion of beliefs: Concerning the kings of France, Saint Marcoul, and seventh sons as healers of scrofula." He said that three kinds of miracle-workers were believed to have the power of curing scrofula in France in the old days: kings, one saint (St. Marcoul), and seventh sons—that is, the youngest of seven boys, without girls intervening. Each of these powers, or supposed powers, had its origin in a different belief. The people soon established a common centre for these thaumaturgical powers in spite of their widely different origin. In the fourteenth century the kings of France were accustomed after their coronation to go and perform their devotions at the principal shrine of St. Marcoul, situated at the priory of Corbeny in the diocese of Laon, and they came gradually to consider this saint as the "intercessor" to whom they owed their supernatural gift. Thus saint and king became almost inseparable in iconography; and as to seventh sons, from the seventeenth century at any rate, a mysterious relationship was supposed to exist between them and the royal dynasty. These superstitions existed well into the middle of the nineteenth century.

#### ACADEMIC DRESS IN SCOTLAND.

An interesting question has been raised in a report issued by the Aberdeen University General Council's Business Committee on the subject of academic gowns and hoods. The matter at present affects the M.A. hoods of Aberdeen and Edinburgh Universities, but it has an indirect bearing upon

the academic insignia of all British degrees. It appears that the governors of Gordon's Technical College, Aberdeen, proposed that holders of a diploma of the School of Art in that city should be granted the privilege of wearing a black gown with hood of black lined with white silk (the M.A. hood of Aberdeen and Edinburgh, and incidentally also of Cambridge). A subcommittee appointed by the Aberdeen University Council has gone fully into the matter and consulted the Universities of Oxford, Cambridge, and London as to any precedent for such assumption of academic dress by non-academic bodies. It appears that certain institutions, which are not universities, are entitled by charter or otherwise to adopt academic dress—for example, the College of Organists and the Royal College of Science. It is stated that the origin of academic robes is to be found in the early connexion between the Universities and the Church of the Middle Ages. While the unauthorized use of naval and military uniform is forbidden by special enactment, no such legislation exists with regard to academic or ecclesiastical dress. Tailors, it is said, have been largely the arbiters of style in this matter, and following their own fancy, or the fancies of their customers, they have throughout the centuries been constantly modifying the dress. A good example of this is found, the report states, in our own day at Aberdeen. The undergraduate gown worn by men was fixed by the *Senatus Academicus* in 1860 on the fusion of King's and Marischal Colleges; but when women were admitted to the university certain changes were made in the gown as adopted by women, consisting in lapels, purple epaulettes, and a red fassel on the trencher. This departure, according to the report, was entirely an idea of the robe-makers or of the first woman undergraduate who ordered a gown. The committee thinks it doubtful whether the universities have any legal redress in the matter, seeing that the various designs of hoods are not copyright, and have not been registered under the Trade Marks Act; but it is suggested that some joint action should be taken by the various universities in the matter. The subject, while of considerable practical importance, has its amusing side. If by a play upon words a school of art confers on holders of its diploma the gown and hood of Masters of Arts, there would appear to be possible justification for a pharmacist, for example, dispensing medicines habited in medical gown and hood.

#### A SPECIAL COURSE OF MEDICAL HYDROLOGY.

As briefly announced in our columns last week (p. 703), a course of lectures on medical hydrology for medical practitioners and senior students, supplemented by demonstrations in London and by clinical instruction at Harrogate, has been arranged by the University of London Extension Board in co-operation with a joint committee of the International Society of Medical Hydrology and the Balneological Section of the Royal Society of Medicine. The course will begin on Tuesday, May 29th, and end on Saturday, June 2nd. The University of London will grant a certificate of attendance to those who have attended the whole course, taking both theoretical and practical work. Unless otherwise stated, the following lectures will be delivered at the University of London, South Kensington. On the morning of May 29th Dr. Leonard Hill will lecture on the physiology of cold, light, and heat, and Dr. R. Fortescue Fox on the qualities and actions of medicinal waters. On the afternoon of the same day there will be a demonstration of different forms of baths in the Hydrological Department, Special Surgical Hospital, Ducane Road, Shepherd's Bush, by Mr. H. S. Souttar, Dr. J. Campbell McClure, and Dr. Arthur S. Herbert. On May 30th Dr. R. Fortescue Fox will lecture on the action and uses of baths, Dr. Wilfrid Edgecombe on the treatment of cardio-vascular affections by waters and baths, and Dr. Charles W. Buckley on the hydrological treatment of rheumatism, gout, infective arthritis, and fibrositis. On the same day Dr. Leonard Hill will give demonstrations at the National Institute for Medical Research, Hampstead, on the recording kata-thermometer and other methods of controlling open-air treatment, on methods



of investigating the local action of baths, and on the wind tunnel and moving platform for studying the effect of the cooling power of air during exercise. On May 31st Dr. R. Fortescue Fox will lecture on the applications of hydrology to incipient and chronic disease, and Dr. Rupert Waterhouse on the treatment of nervous disorders by waters and baths. A study tour to Harrogate will begin on May 31st, when members of the course will leave by train from King's Cross at 1.40 p.m.; hospitality will be provided by the medical practitioners of Harrogate. On the evening of arrival a dinner and conference will be held. Next day an address will be given by Dr. J. Campbell McClure and a paper on the Harrogate waters will be read by Dr. David Brown. Demonstrations and short lectures on various bath procedures will be given at the Royal Baths by Dr. Geoffrey Holmes, Dr. Kerr Pringle, Dr. William Bain, Dr. E. Solly, and Dr. J. Liddell. There will also be a clinical demonstration of cases at the Royal Bath Hospital, and a demonstration at the pathological laboratory by Dr. Sinclair Miller and Dr. F. B. Smith. The members of the course will return to London on Saturday, June 2nd. Applications to join the course should be made, and the fee of three guineas paid before May 21st, to Dr. W. Edgecombe, University Extension Department, University of London, Imperial Institute Road, South Kensington, S.W.7.

#### SIR HENRY GRAY.

The profession in the North of Scotland and, indeed, throughout Great Britain will receive with very mixed feelings the announcement that Sir Henry M. W. Gray, K.B.E., C.B., surgeon to the Aberdeen Royal Infirmary, has accepted the appointment of chief of the surgical staff of the Royal Victoria Hospital, Montreal. On the one hand they will congratulate Canada on having obtained his services, and Sir Henry Gray himself on the wide scope which the great McGill Medical School and the splendidly appointed Victoria Hospital will offer him; but on the other they will regret that Scotland and Aberdeen should lose a teacher of such well deserved popularity and a surgeon of so much originality and skill. He was for several years consulting surgeon with the British armies in France, and was afterwards one of the surgeons who most actively seconded the work of Sir Robert Jones as Inspector of Military Orthopaedics during and after the war. In both capacities he added many more to the host of friends he had already won.

#### THE CASSEL HOSPITAL FOR FUNCTIONAL NERVOUS DISORDERS.

The Hospital for Functional Nervous Diseases, founded and endowed by the late Sir Ernest Cassel, two years ago began to receive patients suffering from the affections commonly, if not academically, spoken of as neurasthenia, nervous breakdown, and nervous prostration, who belong to the educated classes but are unable to pay the charges of nursing homes. Both the site of the hospital—Swaylands, near Penshurst in Kent—and the arrangements are admirably suited for this purpose, and the medical director, Dr. T. A. Ross, has an expert knowledge of the mental disorders of the patients who are treated in these attractive surroundings. The first medical report, just issued, shows that there are in addition two medical officers, one of whom is a woman, and that the resident secretary, Major H. B. T. Hume, is indefatigable in providing amusements and distractions, such as dancing, concerts, plays, and outdoor games, for the patients. The period under review is from May 23rd to December 31st, 1921, and deals with 144 admissions and 109 discharges, 20 of the latter being unsuitable for treatment at Swaylands, either because they had organic disease or because their mental disorder was of too pronounced a character to be dealt with in the hospital. At first sight the date of the subject-matter of the report may seem rather remote. The reason is that it was considered impossible to make an estimate of the results of the treatment until the patient had left

the hospital, and had been submitted to the strain of ordinary life for at least six months. Of the 75 patients whose subsequent condition has been ascertained 26 consider that they are quite well, and 23 report that they are very much improved; of the latter some were in the hospital for a short time only, and it should be noted that although patients occasionally lose all their symptoms in a few weeks, such a recovery is apt not to be permanent, and in most instances a residence of two months is advisable. The report contains interesting analyses of the individual cases; among the nineteen patients who did not derive any benefit from the treatment, five came with the idea that one month was all that was necessary to obtain a cure, and did not remain more than five weeks, and six others were after a time found to be unsuitable and were discharged.

#### THE ROYAL MEDICAL BENEVOLENT FUND.

The annual meeting of the Royal Medical Benevolent Fund will be held at the Royal College of Physicians, London, on Monday, May 7th, at 4 p.m. The meeting will be addressed by Sir Thomas Barlow, President of the Fund, the Archbishop of Canterbury, Lord Sumner, and Sir Humphry Rolleston, President of the Royal College of Physicians. The number of new applications for help received by the Fund increases year by year, and in 1922 was nearly double that in the previous year. The Committee of the Fund makes it a rule not to refuse any application from an eligible applicant whose income is less than £80 a year. Owing to the increased number of applicants and the larger grants made necessary by the fall in the value of money, the Fund incurred a deficit of £1,754 last year, and if it is to continue its work increased support in the form of annual subscriptions is urgently needed. The maximum grant to any case in any year is £25. The cases, as those who read the reports in our columns from time to time know, are often most pitiable, and the limited amount the Fund has at its command is something of a reproach to the profession.

#### THE EDINBURGH CONGRESS.

The fourth British Congress of Obstetrics and Gynaecology, held in Edinburgh at the end of last week, was well attended and highly successful. The whole of the two sessions on the first day was occupied by a very spirited discussion on intrinsic dysmenorrhoea, which is reported elsewhere in this issue. The second day was given up to the reading of short papers and the exhibition of specimens; we hope to publish next week an account of these proceedings. On Saturday morning operations were witnessed at the three gynaecological wards of the Edinburgh Royal Infirmary, and in the afternoon the members relaxed the bow by playing golf or making short motor excursions to the beautiful surroundings of Edinburgh. The next congress is to be held in London in 1925 at the invitation of the Obstetric and Gynaecological Section of the Royal Society of Medicine. The chief subject of discussion on that occasion will be the cause and prevention of death from puerperal septicaemia.

The annual dinner of the Indian Medical Service will be held at the Trocadero on Wednesday, June 20th. Tickets and all particulars may be obtained from the joint honorary secretary, Colonel J. J. Pratt, I.M.S. (ret.), 63, Addison Road, Kensington, W.14.

The Oliver-Sharpey lectures will be delivered before the Royal College of Physicians of London by Dr. H. H. Dale, F.R.S., on Tuesday, May 1st, and Thursday, May 3rd, at 5 o'clock on each day. The subject is the activity of the capillary blood vessels and its relation to certain forms of toxæmia.

PROFESSOR G. H. F. NUTTALL, M.D., and Sir W. J. P. have been appointed to represent the University of Cambridge at the ceremonies connected with the centenary of the birth of Pasteur which will be held at Paris and Strashourg in May.



## SOME CLINICAL RESULTS OF THE USE OF INSULIN.

### A REPORT TO THE MEDICAL RESEARCH COUNCIL.

LAST week (April 21st) a brief statement was published in the *BRITISH MEDICAL JOURNAL* (p. 695) of the conditions under which insulin could now be purchased for use in Great Britain; and at the same time reference was made to an earlier paper in the *BRITISH MEDICAL JOURNAL* (January 6th, 1923, p. 8) in which the original Canadian workers had given an account of their clinical experience in the insulin treatment of about fifty cases of diabetes mellitus. The present statement is only a general summary of the clinical experience of workers in certain hospitals in England and Scotland who have already had the advantage of using insulin prepared, under the directions of the Medical Research Council, in the laboratories of the medical schools attached to each hospital.

Latterly samples of insulin prepared by commercial firms have also been used for these clinical investigations, and the results have been found to be identical with those obtained with the products of the various research laboratories. The clinical workers have nowhere attempted the quick treatment of a large number of diabetics. At each hospital they have tended rather to select two or three severe cases of this disease and to study very closely the influence of insulin upon the patients week by week, following out the changes in blood sugar, in respiratory exchange, and in general metabolism, all in great detail with reference to a dietary controlled by precise measurement. The ultimate results of these investigations may throw light upon the metabolic derangements underlying the phenomena of diabetes, and individual papers relating to this work at the various research centres will doubtless appear in course of time. But other physicians wishing to begin the treatment of patients with the insulin that is now available from commercial sources may find some help in an account that presents the general experiences of those who have hitherto been using the product in this country.

### NATURE OF TESTS AND GENERAL RESULTS.

Insulin has been used clinically at eight different hospitals for a period of study of about three months at each. The total number of diabetics treated has been small, less than fifty, and it included only seven examples of coma. Except in the cases of coma the patients have all shown admirable improvement just as was described by the Canadian workers. The blood sugar falls rapidly as the temporary result of each injection, and sugar may be prevented from appearing in the urine even on a diet so generous as to be three or four fold as great as that which the patient could previously tolerate. There is a steady increase of weight together with a sense of greater warmth and energy. The phenomena usually ascribed to deficient metabolism of fats are especially influenced. Acetone vanishes from the breath and aceto-acetic acid from the urine; lipaemia disappears; acidosis and dyspnoea are at once controlled.

It is, however, necessary to insist, by way of caution, that these immediately satisfactory results have been obtained only with insulin. Some other commercial extracts of the pancreas that may at present be bought in the market, for hypodermic or other forms of administration, were tested and found to be totally inert in respect of any power to produce the least fall of blood sugar, even in a rabbit.

No substitute has yet been found for the hypodermic method of giving insulin. The injections have to be repeated at least once each day. They can control all the ordinary phenomena of diabetes, but the effect of each injection is only transient. As yet there is no satisfactory evidence—time has hardly allowed of that—to show that diabetes in its most serious forms can be completely cured by insulin. It may be that the great majority of severe cases cannot hope for more than prolongation of life, with greater strength and ampler dietary, but only at the cost of continuous treatment with insulin.

### INSULIN AND ITS ADMINISTRATION.

The insulin is procured by alcoholic extraction of pancreas from the abattoirs. By a complicated alcoholic fractionation, and other processes of fractional precipitation, the active con-

stituent is obtained in a state of relative purity, and is put up in sterile watery solution with a trace of antiseptic added. Ampoules of solution should be kept in the cold wherever possible. The injection should be made with a fine needle, preferably under the skin of the upper arm. A slight tingling or discomfort may be caused for a few minutes, but no prolonged effects of local irritation or reaction have occurred, and the same place may be used again and again for injections.

The unit dose is not measured by reference to the weight of substance taken into solution, but by determining the volume of final solution required to reduce the blood sugar of a 2-kilo rabbit under standard conditions to about 0.04 per cent., at which level convulsions appear. Three units, as at present defined, produce this effect in a rabbit; or the units may be calculated by observations on mice under similar standard conditions. The average single dose for an adult patient is 10 new style units, but the administration should always be guided by thought in units rather than in the so-called doses.

In a healthy subject, starved previously for fifteen hours and remaining without food, 30 units will cause a fall of blood sugar commencing in less than half an hour and progressing for about three hours. The fall may be from the normal level of about 0.12 per cent. or 0.1 per cent. down to 0.05 per cent., near which level definite and serious features of sugar deficiency are likely to appear. A larger dose of insulin is required to produce this critical fall in the healthy human being, where the liver is full of stored glycogen, than in an emaciated diabetic. In the latter a rapid fall in blood sugar and the development of hypoglycaemic features do occur much more readily. The similarly produced insulin hypoglycaemia in a rabbit is attended by convulsions, coma, and muscular flaccidity. The rabbit remains apparently moribund, and without treatment may die in an hour or two; but the intravenous injection of glucose solution at this stage will in a couple of minutes restore an unconscious and convulsed animal into an apparently normal creature that will probably begin at once to nibble food again. Subcutaneous injection of glucose solution is equally effective, though ten or fifteen minutes are then needed for recovery. The parallel phenomena of insulin hypoglycaemia in the human patient are described later. They can be checked at once by the administration of glucose, but their occurrence should be avoided altogether by carefully attending to the time when insulin is given in relationship to food.

### ADMINISTRATION IN RELATION TO FOOD.

Insulin should never be given during periods of abstinence from food. Glucose reaches the blood very soon after a meal, and continues to do so for two or four hours, varying with the nature of the meal, whether carbohydrate or protein. The effect of insulin lasts for a period up to eight hours, but there is little danger of serious features developing after the fifth hour. Therefore each injection should be followed by a meal in about a quarter of an hour, and fresh food should be given every three or four hours subsequently until the insulin effect has passed beyond such activity as might reduce the blood sugar to a seriously low level. It is obviously safer to give two small doses at fully spaced intervals rather than one large dose daily, and a large dose should never be given in the evening, for serious changes might arise unnoticed during the time of sleep and abstinence from food. One worker found that one unit of insulin could provide for the efficient consumption of 2 grams carbohydrate taken as such in the food of a completely diabetic patient. Protein food contains nearly half its weight of potential carbohydrate, so that the same dose of insulin should provide for at least 4 grams of protein. But the carbohydrate from protein enters the blood much more slowly than does that of carbohydrate food taken directly as such. Moreover, diabetic patients vary greatly in the amount of insulin required to cover the food taken, while even the individual patient may vary from time to time in his needs. It is therefore impossible at present to state the doses of insulin needed in respect of any scale of diet. Each patient must be tried separately with regard to his own individual requirement, and the dosage subsequently watched for possible changes in the amount needed.

### CLINICAL FEATURES OF HYPOLYCAEMIC COLLAPSE.

The results of an excessive dosage of insulin were rarely seen. At two of the centres there was no experience at all of them. Other workers saw them to a moderate degree, particularly in cases where diabetic patients were given



insulin during periods of starvation for the purpose of studying its influence on the standard metabolism.

The reaction, which usually appeared three or four hours after insulin injection, commenced often with a sense of weakness, sometimes associated with free perspiration. Faintness, dizziness, and mistiness of vision were added to this; and the patient might either feel drowsy, as though going quietly under an anaesthetic, or show intense anxiety from the sense of rapidly advancing and overwhelming weakness. The nervous reflexes were simply depressed but not otherwise changed. The blood sugar was then usually down to 0.06 or 0.05 per cent. Prompt recovery in ten or fifteen minutes was easily obtained by giving glucose from 10 to 20 grams, or about 1/2 oz. drunk in 3 or 4 oz. of water. Cases that through lack of proper vigilance might have been allowed to pass into unconsciousness would require subcutaneous or intravenous injections of glucose solution (5 per cent. in normal saline). Milder cases at the onset of collapse can be treated by cane sugar. Glucose is not essential except for intravenous injection.

No fatalities from this cause have been observed in Great Britain, and the experience of the first three months would suggest that the danger from it is slight. That happy result is, however, not to be taken as evidence that the danger is negligible but rather to be ascribed to the close attention that was given daily to these patients and to the repeated measurements of their blood sugar curves. Unnoticed changes in the sugar variation of a diabetic might easily occasion a serious insulin collapse; or the reaction might follow from some quite trivial chance, such as a patient for some reason or other leaving uneaten the meal that was ordered to follow an injection of insulin.

An instance that did occur in one hospital ward recently may be quoted in full, since it illustrates emphatically the great need of care in using this new and powerful method of treatment.

*Case A.*—A man, aged 62, who had suffered from diabetes mellitus for seven years. He was greatly emaciated. He had ataxia of the legs, the knee-jerks were absent; he presented Romberg's signs and optic neuritis. The Wassermann reaction was negative. There was no evidence of cerebral tumour. During nine days after admission the patient was kept on 53 grams of fat, 84 grams of protein, and 107 grams of carbohydrate, in order that his ketosis might improve. This it rapidly did. He retained on the average about 50 grams of carbohydrate, the urine sugar averaging between 50 and 60 grams per diem.

April 4th. The fasting blood sugar was 0.33 per cent. The administration of insulin began, 10 units being given three times a day. Diet consisted of 108 grams carbohydrate, 85 grams protein, and 54 gram of fat. The urine on this date became free of sugar.

April 5th. Thirty units of insulin. At 3 p.m. patient says he has been perspiring since 2 p.m., especially noticeable on the head. He feels rather sick and irritable, but seems quite well.

April 6th: Yesterday's urine was free from sugar and acetone. Usual dose insulin 10 units given at 6 a.m. Patient feels well this morning, but is even more hungry than usual. Feels quite well but rather tired. 1 p.m.: 10 units insulin given. Usual dinner. 2.30 p.m.: The patient got up to shave and wash. He returned to bed about 3 p.m., and felt a glow going all over him and he began to perspire, felt slightly sick and very irritable. At 3.30 p.m. he had a short sleep—he said he had a feeling of apprehension. 3.45 p.m.: The patient awoke in a violent rage, swearing and shouting at another patient in the room for no apparent reason. He was perspiring profusely. Eyes staring. Speech very thick. No twitching. Pulse feeble but not rapid. Whisky 1 oz. in 180 c.cm. hot water given. Patient drank this easily and said he felt better, though he began to feel shivery. Face looked very congested and the veins on temples were very prominent. Pulse improved after the stimulant but patient gradually became more helpless and said he felt "drunk." Saliva dribbling. 4.10 p.m.: The patient cannot hold his head straight (falls to right side), great difficulty in swallowing, the tea coming down his nose. He ate half an egg and a little tea (usual dose of insulin not given). At 4.15 p.m. he was much paler, skin still very moist and cold; cannot speak at all. Unable to swallow. 5.15 p.m.: Patient quite unconscious; incontinence of urine. Blood taken for sugar = 0.09 per cent. Moaning continually, with occasional very loud groans (almost a roar). Cannot swallow glucose prepared. 6 p.m.: Intravenous injection of glucose, 45 grams in 450 c.cm. normal saline solution. 6.5 p.m.: Groaning stopped, and patient opened his eyes and became very restless. 6.10 p.m.: Consciousness regained; dribbling of saliva stopped. Patient began to speak, saying that his throat was sore and he felt very cold. Glucose, 25 grams in 240 c.cm. water, and lime-juice given by mouth and swallowed easily. 7 p.m.: Patient sitting up in bed, feeling well and hungry and much warmer. He remembers nothing from the time when his tea was brought in at 4 p.m. until 6.30 p.m. He remembers the onset of the attack very distinctly, and says he knows he lost all control and was shouting and swearing when the attack came on. He says the irritability seemed to "come over him in waves,"

leaving him with a feeling of nausea. 7.15 p.m., patient ate supper—egg, cauliflower 100 grams, omelette 30 grams, butter 15 grams, 2 cups of coffee, cream 60 c.cm.

April 7th. Patient feeling very much better. On previous day the urine contained 6 grams sugar, although 154 grams carbohydrate, 74 grams protein, and 108 grams fat had been taken in diet.

Since April 8th only small traces of sugar have appeared in the urine, in spite of the diet consisting of between 140 to 150 gram carbohydrate, 78 grams protein, and 150 fat. There has been a steady improvement, blood sugar remaining at about 0.150 per cent., but on a number of occasions there have been signs of hypoglycaemia. These usually occurred in the late afternoon. The amounts of insulin vary between 20 and 30 units per day. It is apparent in this case that symptoms due to hypoglycaemia occurred very readily as during the severe attack the blood sugar had only decreased to 0.09 per cent.

If insulin be given to patients in such amounts as to keep the urine free from sugar the dosage must be frequently checked by blood sugar determinations. And for all cases under insulin treatment glucose or cane sugar must be kept ready at hand, so that a small quantity may be given to the patient as soon as any premonitory symptoms of hypoglycaemia are noticed.

#### SELECTION OF PATIENTS FOR TREATMENT.

The instructions drawn up by the Committee advising the Ministry of Health upon the use of insulin require that there shall be no luxury use of this product until supplies are abundant. Mild cases of glycosuria or diabetes are therefore excluded, and with these would automatically be classed those cases (renal glycosuria) where sugar is present in the urine for three or four hours after food, owing to excessive permeability of the kidney, though the blood sugar is not raised above the normal percentage, and the patient remains otherwise in good health. It is obvious that whenever insulin becomes available for the treatment of mild cases, great care will need to be exercised in the exclusion of such cases of renal glycosuria from insulin administration since they would be likely to show early and dangerous hypoglycaemic collapse.

All ordinary diabetics should, in the first place, be put on a restricted diet with some periods of starvation—as, for example, by the Allen or Graham procedure—and their treatment continued simply in this way on the lines established by workers in the years immediately preceding the introduction of insulin. If the diabetes is not of long standing and the patient not greatly wasted, this treatment would probably suffice, or might need only slight assistance later with insulin. But if the disease is of long duration, with proved excess of blood sugar, and the patient fails after starvation to tolerate any diet of less value than about 1,000 calories in two or three hours, so that strength and weight continued to fall seriously, then insulin should be given systematically.

The cases hitherto treated at the research centres have all been of this severe type. The reasons for this choice were two: In the first place, the supply of insulin made at each hospital laboratory was small, and it was naturally reserved for those patients who were so seriously ill that without the aid of the new treatment they could not have been expected to live many months longer. Secondly, these serious cases, in whom failure of ordinary treatment by dieting over a long period had proved the almost complete decay of the patient's natural mechanism for the proper metabolism of carbohydrates and fats, gave an opportunity for demonstrating clearly and at once in each individual case the powerful effect of insulin against the background of complete diabetes. In or acute cases of diabetes often recover so well during a first course of dietetic treatment without any aid from insulin that it would have been necessary to study a considerable number of them in order to demonstrate convincingly the effect of insulin.

The method of controlling the diet varied in the different centres, and it is needless to discuss the details of each because every physician has developed in the course of his experience in the treatment of diabetes his own individual rules for the construction of a dietary; and there was, in one instance, to which reference is made later (Case C), suggesting that a special arrangement of the proportions of foodstuffs may be combined with the action of insulin in a way as to lead to a sustained improvement in the patient's tolerance of carbohydrate. The general experience is that insulin acted simply as a temporary instrument to enable a diabetic to eat a certain amount more of food than he had previously tolerated without the appearance of sugar or ketones in the urine and without a rise in his blood sugar. Each dose of insulin, therefore, enabled him to



energy out of the food and to increase the reserve stored up in his tissues as evidenced by increase of weight. Only a progressive increase of weight over several weeks was accepted as proof of tissue increase, for there was reason to believe that part of the increase of weight was due simply to increased retention of water in the body.

The following cases are quoted, briefly, to illustrate the doses of insulin needed in severe cases:

**Case B.**—Woman, 56 years old, with steadily progressive and very severe diabetes. During the last eighteen months she had repeatedly undergone dietetic treatment in hospital, at first with immediate success, but ultimately tolerance could not be established on any diet sufficient to maintain life.

After five days' continued starvation, the urine became sugar-free. The subsequent tolerance was of a diet of only 190 calories in twenty-four hours.

By the administration of 60 units of insulin each day she was enabled to tolerate 1,350 calories daily, with 80 grams carbohydrate, and her weight was raised in ten weeks from 5st. 10lb. to 7st. During the day the urine was sugar-free and contained no acetone bodies on this diet; but each morning the blood sugar was over 0.4 per cent., and the urine contained sugar and a trace of ketone from the failure of her own unaided metabolic processes during the night.

**Case C.**—Man, aged 18, with severe diabetes for three years. On a diet of 100 calories, containing 20 grams carbohydrate, he excreted 30 grams of sugar daily. With insulin, about 12 units daily, he could tolerate a diet of 1,400 calories daily, containing 48 grams carbohydrate, the urine being sugar-free and the blood sugar below 0.2 per cent. His weight and strength have steadily increased.

**Case D.**—A very severe case, who had been kept just alive for the two months preceding insulin treatment on a diet of 600 to 800 calories daily. On this he was excreting large amounts of sugar and ketone bodies, and seemed unlikely to survive many weeks. Insulin twice daily enabled such increase of diet to be made that there was a gain of weight of 15 lb. in the first fortnight. He was eventually raised to 2,500 calories with 70 grams carbohydrate, upon which, with slight glycosuria, he was able to return to work while continuing insulin injections twice daily.

The doses in severe cases may be from 10 to 20 or even 30 units twice a day, or a smaller amount divided between three doses. Patients with so grave a form of the disease plainly ought to be treated at first in special institutions, where the diet can be closely controlled and the blood sugar frequently determined. If, after treatment has commenced, only one measurement of the blood sugar is made occasionally, it should be from a sample taken at the same time daily and three hours after the injection of insulin and the consumption of a meal directly related to that injection. With such precautions it may be possible to give enough insulin to keep the urine entirely sugar-free, and that condition would seem to be the ideal aim when hopes of ultimate cure or real amelioration are entertained. The essential principle in the treatment of diabetics by diet control alone has been generally recognized to be the avoidance of hyperglycaemia and glycosuria, so that the intrinsic powers of carbohydrate metabolism may be slowly regained in the long period of comparative rest from overstrain. Insulin ought to aid this rest period. But if insulin is given in such amounts as to prevent the appearance of sugar in the urine, there are no means of estimating the full effect of the dose except by watching the blood sugar. If the latter cannot be done sufficiently often it is probably safer to avoid the danger of hypoglycaemic collapse from too much insulin by reducing the dose to such a level as will just allow the patients a slight glycosuria as a safety gauge. In such conditions the patient will put on weight and recover strength, though on a road that may not be the quickest way to cure.

Real improvement was reported in one case, and here the physician believed that the good result had been attained by the exclusion of all carbohydrate as such from the increased diet under insulin. This method was not tried by the other workers, who had all allowed some carbohydrate food to their patients.

**Case E.**—A man with severe diabetes, which had not yielded to that dietetic treatment some works previously in hospital. On that 360 calories, with 16 grams carbohydrate, he passed from 25 to 30 grams of sugar daily. The blood sugar at 9 a.m. was 0.24 per cent.

He was given insulin, 12 units, each day at 9 a.m. with a meal the first meal being at 6 a.m. The 9 a.m. blood sugar gradually fell to 0.15 per cent. It was then found that three hours after

12 units of insulin the blood sugar had fallen to 0.055 per cent. The daily dose of insulin was consequently reduced to a lower level at 8 units daily. There was no glycosuria for three weeks and only a small amount of ketone bodies persisted.

Subsequently the insulin was reduced to 4 units daily, upon which a diet of 2,000 calories, consisting chiefly of protein and fat with carbohydrate as vegetables, is tolerated without glycosuria and with a blood sugar of 0.11 to 0.13 per cent.

It is obvious that if this dietetic method is proved to be generally applicable there will be a great economy in the use of insulin as well as a better hope of real cure. It is a most expensive method of feeding a patient when carbohydrate is given under the protection of insulin, the latter costing at present nearly 3s. for the control of 30 grams or one ounce of carbohydrate food when eaten by a patient with complete diabetes.

#### THE TREATMENT OF COMA.

Only 7 cases have been treated at the various centres, and they appear to fall into two clinical groups.

##### *Coma in Diabetes.*

First come three cases of coma in diabetes, developing as the result of surgical operations in not very severe diabetics. In all these the blood sugar during the coma was very high, from 0.7 to 0.8 per cent.; air hunger and dyspnoea were not conspicuous clinical features, though unfortunately this was not checked by measurements of the alveolar carbonic dioxide or of the alkaline reserve of the blood; there was but little acetone in the breath and not much aceto-acetic acid in the urine. The cases were therefore of coma with great hyperglycaemia, but not with severe ketosis. No improvement was obtained with insulin, though only in one case was the substance given in sufficient amount to reduce the blood sugar, and it is therefore only in the latter that failure need be admitted. The other two instances should be discarded: in one of them insulin was injected too late when the circulation had practically failed, and in the other the blood sugar of 0.78 per cent. was virtually unaffected by 30 units of insulin.

**Case F.**—A woman of 70, with gall stones but no obvious liver disease, with arterio-sclerosis, and slight diabetes. She passed into coma directly after an operation in which the gall stones were removed. After five hours of coma the blood sugar was 0.79 per cent. Dyspnoea moderate, with faint odour of acetone in the breath and only a slight ferric chloride reaction in the urine. No extensor response or other neurological physical signs.

Insulin was given subcutaneous'y in repeated doses of 30 or more units. Five hours later, after a total of 105 units had been given, the blood sugar was 0.4 per cent. Saline solution had also been given freely. There was absolutely no clinical improvement, and the patient died ten hours later. *Post-mortem* examination was refused. Clinically the condition appeared to be that of simple coma, though other possibilities cannot be rigidly excluded.

##### *Ordinary Diabetic Coma.*

The second group of cases, four in number, was that of ordinary diabetic coma not related to surgical operation, and showing a much lower blood sugar, 0.3 to 0.4 per cent., but greater air hunger, with depression of the alveolar CO<sub>2</sub> and with an abundance of ketone bodies in the urine. Further observations are needed before the contrast suggested between the two groups, of surgical coma in diabetes and of ordinary diabetic coma respectively, can be established. But it is obvious that the patients in the second group showed ketosis rather than hyperglycaemia, and in this group three out of four were improved in a very striking way by insulin.

**Case G.**—A man was admitted to hospital on the verge of diabetic coma, being just conscious, and with extreme air hunger as shown by the big respiratory movements of his abdomen and chest. The blood sugar was 0.33 per cent., a figure often seen in ordinary diabetics while in fair health; but the alveolar CO<sub>2</sub> was 1.1 per cent., a reading so low that in the experience of the physician in charge of the case always meant death within about twelve hours, for he had never seen recovery in any patient with alveolar CO<sub>2</sub> lower than 1.8 per cent.

Insulin, 18 units, was given; and abundance of water (15 oz. hourly), together with sodium bicarbonate 2 drachms by the mouth every two hours for three doses. In two hours the patient began to feel better, and his air hunger was lessening at the third hour. At six hours the blood sugar was 0.11 per cent. and the alveolar CO<sub>2</sub> had risen to 2.7 per cent. The patient recovered and now has a morning blood sugar of 0.15 per cent. on 12 units daily of insulin,



and a diet of 53 grams protein, 105 grams fat, and 16 grams carbohydrate in vegetables. There has been no glycosuria for three weeks.

**Case H.**—A boy admitted in diabetic coma, with air hunger and low bicarbonate reserve in the blood. Insulin given, but no sugar. Death.

**Case I.**—A young woman of 25, in coma, with air hunger, acidosis, and blood sugar of 0.4 per cent. She was given insulin subcutaneously, 10 units every three hours; at the same time fluid was given freely and glucose solution both intravenously and subcutaneously. The blood sugar was thereby raised to the very high figure of 1 per cent. The patient recovered.

The last case (Case I) raises a paradox for discussion. Sugar is sometimes given together with insulin in cases of diabetic coma, with the intention of preventing the comatose state from being further aggravated by hypoglycaemic collapse. Now it appears from the cases quoted that coma may arise when the blood sugar is not unusually high, and also that the patient may emerge from coma though the blood sugar has been raised by added glucose to 1 per cent. On the other hand, a case (Case F) of post-surgical coma with high blood sugar was not improved, though the blood sugar was reduced to 0.4 per cent. by insulin. The percentage of blood sugar, therefore, appears to bear no direct relation to the state of diabetic coma.

It is, however, impossible to neglect a comparison between the states of diabetic coma and hypoglycaemic collapse, the latter being an entirely novel conception that has come into pathological thought as the result of experience with insulin. The hypoglycaemic collapse is caused by the artificial lowering of the blood sugar to half its normal level for health, and it is at once relieved by giving sugar. The brain is therefore as sensitive to the withdrawal of sugar as to sudden diminution in its oxygen supply. It may be that one aspect of the picture of diabetic coma is due to the final inability of the brain cells to consume sugar, even though this food be presented to them in abundance in the blood. Insulin might restore their metabolic power, and their functional recovery might conceivably be aided by artificially increasing for a short time the amount of blood sugar upon which they can commence to feed.

At any rate, whatever the theory, experience has suggested that, in the treatment of diabetic coma with insulin, glucose should be given simultaneously, either by the mouth or by the stomach tube or even intravenously. The insulin can generally be administered by hypodermic injection. In cases of extreme circulatory collapse, it can be used intravenously without danger. In all cases fluid should at the same time be given, but not much in excess of half a pint every hour, so that the patient on recovery from the coma shall not fall into danger of death from pulmonary oedema.

The scanty experiences quoted suggest that post-surgical coma in diabetics is difficult to treat. Obviously, the best way is to avoid its occurrence altogether by careful preparation of the patient before the operation, dietetic control and insulin being used together to free the urine of ketones and sugar. There is no evidence available upon the course of such prophylactic treatment, or upon how the action of insulin may be influenced by the proceedings connected with surgical operations.

Other complications of diabetes, such as sepsis, tuberculosis, or peripheral neuritis, can presumably be influenced by insulin as favourably as they are by ordinary dietetic control, when the latter succeeds in abolishing glycosuria. But on this aspect of the general malady no evidence has been collected, for the first investigations in British hospitals were restricted to simple, though serious, instances of diabetes.

A FUND has been opened in commemoration of the Dutch gynaecologist Hector Treub to support investigations in gynaecology and obstetrics. Subscriptions should be sent to the president of the fund, Dr. C. C. Delprat, 98, Jan Luykenstraat, Amsterdam, or to the secretary, Dr. H. H. van der Berg, 808, Keizersgracht, Amsterdam.

THE French congress of oto-rhino-laryngology will be held at the Hôtel de la Société de Géographie, 184, Boulevard St. Germain, Paris, under the presidency of Professor Jacques of Nancy, from May 7th to 9th, when the following subjects will be discussed: (1) Nasopharyngeal fibromata, introduced by MM. Sébilleau, Moure, and Laurens; (2) radiography in oto-rhino-laryngology, introduced by MM. Reverchon and Worms. Further information can be obtained from the general secretary, Dr. G. Liébault, 216, Boulevard St. Germain, Paris.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

### The Budget Debate.

THE various points of view taken by the different speakers in the debate on the Budget have extended the survey without adding much to the general knowledge. The Chancellor was able, as usual, to point out that much of the criticism directed against the proposals was mutually antagonistic and to claim that he was pursuing the *via media* of safety between the Scylla of excessive taxation and the Charybdis of baseless optimism as regards the necessity of debt repayments. In this connexion the remarks we made last week as to the desirability of the greatest possible accuracy in the Treasury forecasts are very much in point. Mr. Baldwin may have with him the concurrence of general opinion in thinking that a Sinking Fund of £40,000,000 represents a just balance between the two conflicting schools of thought, but if there is ground for the criticism made that the Treasury has been unduly cautious in its estimates of income from taxation—and the arguments in favour of that contention have considerable force—it may well be that the close of the present financial year will show that the Chancellor's path has led him definitely to the debt-reducing side of the controversy. In that case the general body of taxpayers—and the income taxpayer in particular—will have ground for feeling that a more accurate, or less pessimistic, forecast would have lightened his burden, and that a longer continuance of inflated surpluses will necessitate some drastic reconsideration of our financial procedure.

### Parliamentary Medical Committee.

At a meeting, on April 23rd, of the Parliamentary Medical Committee, of which Dr. F. E. Fremantle is chairman and Sir Sydney Russell-Wells secretary, it was decided to appoint a subcommittee of five members to represent to the Minister of Health the desirability of widening the power of access to the first register for existing nurses on terms suggested by Dr. Chapple, as follows:

The Council may accept for registration upon the first register of nurses any applicant who presents—

- (a) A certificate of good character;
- (b) A certificate signed by the matron of a general hospital or by two medical men setting out that the applicant has been in attendance upon the sick in the capacity of a nurse for a period of not less than three years prior to November 1st, 1913; and
- (c) A certificate signed by three medical men (one of whom shall be on the staff of a general hospital) setting out that the applicant has adequate knowledge and experience of medical and surgical nursing, and is competent to attend upon the sick in the capacity of a nurse.

Provided that the Council may require the nurse as a condition precedent to registration to present herself for special examination as to competency and fitness before a medical officer or officers appointed by the Council.

The subcommittee was also asked to suggest to the Government the appointment of a Select Committee to inquire into the dissatisfaction in the nursing profession owing to the failure of the Registration Act to function in a number of respects.

Communications were received thanking the committee for the work it had done in connexion with the Dangerous Drugs Bill.

### Insurance Medical Service.

The Minister of Health stated, on April 18th, that as a result of discussion with the Insurance Consultative Council, it was not now contemplated that any general rearrangement of the insurance medical system would be made. Certain modifications of the terms of services had been recommended by the Council, but these would not involve any substantial change in the present system. No case had, in his view, been made out for a separate investigation of the kind suggested, which would complicate, and so tend to delay a settlement. Sir Kingsley Wood wished to know whether, in respect of the payment to doctors on the panel lists, the Government actuary had advised that at the end of the existing agreements it would no longer be possible for the present payment of 2s. 6d. a patient per annum to be made from the funds of the approved societies; and whether the Minister of Health proposed that any further contributions should be made from State funds in connexion therewith. Mr. Chamberlain said that the Government actuary had given no advice on the matter referred to, subsequent to that contained in his report on the financial provisions of the National Health Insurance Act, 1911. The answer to the latter part of the question was in the negative.

Sir Kingsley Wood asked, on April 23rd, whether the statement of the Minister of Health had been drawn to a committee recently issued by the British Medical Association to deal on the panel lists entitled "Organization of Insurance Practitioners in consideration of, and in the event of, a refusal of the terms offered by the Government for National Health Insurance work," which contemplated a refusal in certain contingencies to carry on the panel service; and whether he would state what action he proposed to take in such a contingency. Neville Chamberlain replied that the communication to which Sir Kingsley Wood had referred was understood to be a confidential circular issued only to insurance practitioners, and he had no personal knowledge of it. Negotiations with representatives of insurance practitioners with a view to the revision of their terms of service



had been begun, and the prospects of a successful issue would not be enhanced by any statement at this stage as to the step the Government might find it necessary to take in a contingency which he had every reason to hope would not arise. Sir Kingsley Wood also asked whether the Government actuary advised in 1922 that at the end of the existing agreements with doctors on the panel it would no longer be possible for the present payment of 2s. 6d. per patient per annum to be continued to be paid from approved societies' funds; and whether he had given any further report or advice since that date. Mr. Chamberlain replied that in reporting on the financial position of the National Health Insurance Bill of 1922 the Government actuary did not give the advice which he merely indicated his opinion (that it should safely be borne) applied strict should not be held to imply that larger or more protracted additional charges could be borne by the societies. No further report or advice had since been received from him on the subject.

Mr. R. Murray asked whether Insurance Committees in England had power, not conferred upon Insurance Committees in Scotland, to pay the expenses of complainers and witnesses attending meetings of Medical Service Subcommittees. Dr. Elliot replied that the position in Scotland was met by the provision made in Article 32 (6) of Medical Benefits Regulations for the holding of local inquiries.

**Liquor Traffic Prohibition Bill.**—Mr. Scrymgeour, to whom the ballot gave the sitting of April 20th for debate on the second reading of his bill for Liquor Traffic Prohibition, presented the case in a speech of an hour and a half. The motion was seconded by Dr. Salter, who, however, said that he did not believe that the machinery or method of the bill were good. He was, he said, more concerned to put before the House the case for prohibition as he regarded it from scientific and sociological standpoints. He claimed some assistance from the course so lately taken by the house in passing the bill to amend the Dangerous Drugs Act. Dr. Salter was emphatic in his contention that prohibition in America has not tended to drug addiction, stating that the official declarations were all in a contrary sense. Finally, in that connexion he quoted Sir Arthur Newsholme, who recently paid a special visit to America in order to inform himself on this particular point, and reported that there was no evidence whatever that prohibition had caused an increased consumption of drugs in substitution to alcohol. Colonel Sir Arthur Holbrook led off the opposition to the bill, quoting *inter alia* the opinion of Sir James Crichton-Browne as to the value of alcohol. Viscount Curzon seconded the rejection. In the course of the debate Dr. Chapple declared himself opposed to the bill, but said he was not opposed to prohibition by local option, because when a small community was ripe for this change he would allow it to make the change without having the liquor traffic imposed on it by votes from outside. Each centre could thus become a demonstration centre. He believed that ultimately prohibition would come by way of the local vote. The bill was rejected by 236 votes to 14.

**Medical Herbalists (Registration) Bill.**—Commander Kenworthy introduced, on April 23rd, a bill "to provide for the registration of medical herbalists"; it is backed by Mr. Mosley and Mr. Linfield; it was given first reading and ordered to be printed.

**Housing Bill.**—Mr. Neville Chamberlain explained the provisions of the Government Housing Bill on April 24th. The proposal is that the Treasury shall give to the local authority a subsidy of £6 per house per year for twenty years, the size of the house to be limited to a maximum of 850 superficial feet in the case of a two-storied house, and 750 for a flat or one-storied house.

**Board of Control.**—The Minister of Health, on April 23rd, informed Mr. Ammon that the committee upon the nursing service in county and borough mental hospitals, appointed by the Board of Control in March, 1922, hoped to report shortly, and the Board of Control did not consider that at this stage it would be desirable to add to its membership. The Joint Conciliation Committee had already been informed that the Nursing Committee would be willing to consider a statement of any views which the Mental Hospitals Association and the National Asylum Workers' Union would desire to put before them. Mr. Ammon further asked whether in view of the fact that the Board of Control had no legislative power and could not enforce their recommendations on the visiting committees, the Minister would consider the advisability of abolishing the Board of Control and transferring its present functions to the Ministry of Health. Mr. Chamberlain said that the powers of the Board of Control and their relation to local authorities and to Parliament were fully considered when the Board was established, and he did not think there were adequate grounds for initiating measures to alter the present arrangement.

**Veneral Disease in the British Army.**—Sir S. Russell-Wells asked, on April 19th, the rates of veneral disease admissions in 1921 and 1922 of the British Army on the Rhine, in Constantinople, and in the United Kingdom; whether there was any difference in the methods of medical prophylaxis adopted, and whether any steps were taken to prevent soldiers attending civil veneral clinics in plain clothes in the United Kingdom. Lieut.-Colonel Guinness replied that the ratios per 1,000 were:

	1921.	1922.
British Army of the Rhine	212.34	213.53
British Army in Constantinople	228.48	81.41
United Kingdom	40.26	31.66

The same methods of medical prophylaxis were followed at each of these commands. As regards the last part of the question, the Ministry said there was no prohibition on the attendance of men at such clinics, but they would probably find medical attendance, whether in plain clothes or in uniform, difficult in practice.

## COCAINE SUBSTITUTES COMMITTEE.

THE Home Office and the Ministry of Health have had under consideration the possibility of the use of substances which might serve the same therapeutic purpose as cocaine, but be free from its deleterious properties. The Minister of Health, after consultation with the Medical Research Council, has appointed a committee "to investigate the comparative value, for the therapeutic purposes for which cocaine is at present used, of various possible substitutes, and the evidence as to risk, if any, of such substitutes becoming drugs of addiction." The committee will consist of:

Dr. J. SMITH WHITAKER, a senior medical officer of the Ministry (Chairman);  
Dr. NORMAN G. BENNETT, surgeon, Royal Dental Hospital, London;  
Dr. R. W. BRANTHWAITE, a Commissioner of the Board of Control;  
Dr. T. CARNWATH, a medical officer of the Ministry;  
Dr. J. H. CHALDECOTT, senior anaesthetist to St. Mary's Hospital, Paddington, nominated by the Anaesthetics Section of the Royal Society of Medicine;  
Dr. H. H. DALE, of the Medical Research Council;  
Mr. T. B. LAYTON, surgeon in charge of the Throat and Ear department of Guy's Hospital, nominated by the Laryngological Section of the Royal Society of Medicine;  
Dr. G. F. MCLEARY, a medical officer of the Ministry;  
Mr. R. FOSTER MOORE, surgeon, Royal London Ophthalmic Hospital, nominated by the Ophthalmological Section of the Royal Society of Medicine;  
Sir WILLIAM HENRY WILLCOX, nominated by the Home Office.  
The secretary is Dr. E. W. ADAMS, Ministry of Health, Whitehall, S.W.1, to whom all communications relating to the work of the Committee should be addressed.

## England and Wales.

### ROYAL PORTSMOUTH HOSPITAL.

At a meeting of the Committee of Management of the Royal Portsmouth Hospital on April 13th, Mr. C. P. Childe, senior honorary surgeon, was unanimously elected chairman of the Committee of Management. Sir Harold Pink, in proposing his election, said that Mr. Childe was a member of the town council, and this year he had declined the office of Mayor because of his work in connexion with the forthcoming Annual Meeting of the British Medical Association to be held in Portsmouth under his presidency. Mr. Childe, in returning thanks after his election, said that he was not absolutely new to hospital administration, as for two and a half years during the war he was administrative officer of the 5th Southern Hospital of 1,000 beds, and this experience had given him some knowledge of the work. Up to July his time would be taken up in preparing for the British Medical Association, and until that time he looked forward to the support of his vice-chairman. He regretted that Sir Harold Pink had vacated the chair, because during his four years of office the hospital had been raised out of low water, and for the first time for many years was now out of debt. The late chairman had also been connected with the War Memorial improvements, which had cost £10,000. Mr. Childe added that he looked upon his appointment with pride, because it was the first time that an executive officer had been called upon to fill the highest position at the hospital. He felt that this was evidence of the good feeling existing between the two departments.

### DR. ARNOLD LYNDON.

Dr. Arnold Lyndon of Grayshott, Surrey, who at the end of last year retired from active practice, has been presented by his friends and patients with a specially made inlaid mahogany bookcase, a typewriter, and a pair of field glasses as a grateful acknowledgement of his many services. The gifts were accompanied by an album containing the names of the subscribers. The balance of the money subscribed has, at Dr. Lyndon's request, been presented to the Grayshott Nursing Association, to form a reserve fund which could be drawn upon when necessary to keep the district nurses' cottage in repair. Dr. Lyndon has long taken an active part in the work of the British Medical Association; he is a member of the Central Council and of several committees and subcommittees, and is a past-president of the Surrey Branch. He is chairman of the Surrey Local Medical and Panel Committee, and a member of the Surrey Voluntary Hospitals Committee. He also served on the Central Medical War Committee.



## LEICESTER ROYAL INFIRMARY.

The 150th anniversary meeting of the governors of the Leicester Royal Infirmary was held on April 18th, when the annual report for 1922 was submitted. During the year 3,809 in-patients were admitted to the Infirmary, and 4,478 to the Children's Hospital, the average number of beds occupied being 255. The average cost per occupied bed was £182, and the average cost per in-patient £11 9s. 10d. In the out-patients' department 41,987 out-patients and 70,461 accidents were treated; in the x-ray department there were 4,872 attendances, and in the orthopaedic department 17,687. Of the new cases attending the venereal diseases department 429 were males and 239 females; 5,345 pathological examinations and reports were made. The total ordinary income of the infirmary for 1922 was £51,510, as compared with £51,104 in 1921; the extraordinary income was £8,275. The total income for the year was therefore £59,785, against £61,111 in the previous year, but the financial position was better than in 1921, owing to the reduction of expenditure brought about by the fall in prices and by the demand for close economy. The net result of the year's working was a deficit of £2,665, as compared with a deficit of £5,981 in the previous year. In response to the £100,000 appeal fund for building improvements donations amounting to £60,000 have been received.

## Scotland.

## PRESENTATION TO DR. BYROM BRAMWELL.

It will be remembered that on the occasion of his 75th birthday last December the many friends of Dr. Byrom Bramwell desired to express in some concrete way the high esteem, respect, and admiration in which he is held by asking him to sit for his portrait. The response to the appeal for subscriptions was so good that it has been found possible to commission Mr. David Alison, R.S.A., to paint two portraits—a larger and a smaller. The presentation will be made at the Royal College of Physicians of Edinburgh on Saturday, May 19th, at 5.30 p.m. The larger portrait is a three-quarter length, sitting, in which Dr. Bramwell is wearing the robes of Past President of the Royal College of Physicians, Edinburgh. The smaller portrait is about half-length, and in this case Dr. Bramwell is wearing the same robes, but the hood of the Royal College of Physicians is replaced by the hood of the LL.D. of Edinburgh University. Sir Humphry Rolleston, K.C.B., President of the Royal College of Physicians of London, and Sir David Drummond of Newcastle-on-Tyne, have very kindly undertaken, at the request of the committee responsible for raising the fund, to make the presentation to Dr. Bramwell; one of the portraits is to be retained by himself, and the second is to be presented to the Royal College of Physicians, Edinburgh, and will be received on their behalf by Sir Robert Philip, President of the College.

## GLASGOW MEDICAL LUNCH CLUB.

A meeting of this club was held on April 19th in Ferguson and Forrester's Restaurant, with the President, Dr. W. L. Reid, in the chair. The members had with them as the guest of honour Dr. J. Stanley White of London, who gave an address on "The ductless glands." Dr. White made good use of the limited time at his disposal, and gave a rapid review of the therapeutic value of the various glandular extracts, referring more particularly, though shortly, to thyroid, parathyroid, pituitary, suprarenal, ovary, and pancreas. Many helpful hints were thrown out in passing for their use, alone or in combination, in certain diseases. These were much appreciated by the members.

## THE EMBELLISHMENT OF PRINCES STREET, EDINBURGH.

The town council of Edinburgh last week considered a report by the city architect for the construction of a terrace promenade on the south side of Princes Street at an estimated cost of £50,000. The general idea of the plan is to construct a retaining wall which would enable the existing pavement to be extended over the breadth of the present unsightly sloping bank of earth leading down to the gardens. The wall would be topped by a handsome balustrade of which the dies would carry ornamental lamp pillars. Towards the broad walk at the base of the wall in the gardens the wall would be pierced at certain points by arched openings to form

alcoves which would provide shelter from the rain. The shelter provided by the wall and its direct exposure to the south would make the broad walk a very desirable promenade for invalids. It is also suggested that a site for the Central which it has been proposed to erect on the lines of that at Westminster should occupy a prominent and central position in the terrace. The existing public statues would be included in the scheme as well as two new statues to be placed at staircases leading down to the gardens.

## Ireland.

## INSURANCE ADVISORY COMMITTEE.

At the first meeting of the newly constituted National Health Insurance Advisory Committee in Dublin, Sir Joseph Glynn, chairman of the Commission, presided, and Dr. W. J. Maguire and Mrs. Dickie, commissioners, were present, with the principal officers of the department.

The Chairman, in his opening statement, explained that an advisory committee had been set up in the early days of the working of the Insurance Acts, but owing to the intervention of the great war and other causes it had fallen into desuetude. As a result of representations made to the Commissioners by approved societies and others, the authority of the Minister of Finance was obtained for the establishment of a new committee, to consist of twenty-five members. The chairman also explained the basis on which representation of the various interests had been fixed, and the scope of the committee's functions. Sectional meetings of the committee would be held from time to time where special interests were affected, and the whole committee would be summoned when general lines of policy were under consideration, or discussions affecting more than one particular interest were taking place. He explained the position created by the passing of the Irish Free State Act, 1922, and the steps that were being taken by the Commission to cope with it. A bill had been prepared and submitted to the Minister, which it was hoped would shortly be introduced in the Oireachtas. Full and detailed instructions would be issued by the Commission to all concerned. He next referred to the question of non-compliance with the Acts in the matter of the stamping of cards. Suggestions were made for tightening up the procedure for effecting compliance. Medical certification was next dealt with, and as a result of discussion thereon it was agreed between the representatives of the approved societies and of the medical profession that they would bring before their respective associations the question of forming a committee of medical men and societies' representatives, who would discuss and submit to the Commission proposals for effecting improvement in the present system. The chairman pointed out, in connexion with medical certification, that it had now become necessary to consider where the financial provision therefor, which was hitherto made from Exchequer funds, was to come from.

The following resolution was adopted on the motion of Dr. Rowlette, seconded by Mr. Hutchinson:

"That this Advisory Committee is of opinion that the administration of the National Health Insurance Acts is hampered by the dissociation of medical treatment—domestic and hospital—from the administration of the Acts, and urges that a system should be established by which adequate treatment would be provided for the classes affected by the Insurance Acts."

The following resolution was proposed by Dr. Rowlette, seconded by Mr. Kevin O'Duffy, and adopted:

"Inasmuch as the financial provision made for medical research by Section 16 (2) (b) of the National Insurance Act, 1911, is no longer available, this Advisory Committee wishes to impress on the Government the desirability of making adequate provision for medical research."

The representatives of the medical profession on the National Health Advisory Committee are Dr. H. J. Rowlette and Dr. T. Hennessy (Irish Medical Secretary, British Medical Association); Dr. M. F. Cox (President of the Royal College of Physicians) and Dr. Horace Law are appointed the representatives of the Dublin hospitals.

## THE MURDER OF DR. P. McILDOON.

An appeal is being circulated on behalf of the widow and young children of the late Dr. Patrick Muldoon of M.M. co. Leitrim, who was recently murdered by armed men.



Dr. Muldoon was dispensary doctor of the Mohill district, and part-time medical attendant to the Free State troops stationed in the locality. His widow and young children are left entirely unprovided for, and it is hoped the appeal will meet with the success it deserves. In the course of the appeal it is stated:

"The poignancy of the sad event is only realized by those who know what his untimely demise means to his afflicted wife, left with a helpless family. Dr. Muldoon had hardly begun his professional life, and his skill, combined with a generous and open-hearted personality, was promising a brilliant career, when his untimely death intervened to cut it short. It is hardly necessary to point out that Dr. Muldoon had not had the time or opportunity to provide for his dependants in the unforeseen circumstances which have befallen. His widow has three children—the eldest only 4 years old—for whom to provide. To his friends, therefore, we appeal with confidence. We know they will show their appreciation of his excellent qualities, and their sympathy with Mrs. Muldoon and her helpless family. To his medical brethren and the general public, to whom Dr. Muldoon was less known, we appeal with scarcely less confidence. Their sympathy has not been denied to his widow, and we venture to think that very many will be glad to take this opportunity of giving that sympathy practical expression."

Subscriptions may be sent to the Very Rev. Canon Masterson, P.P. (Mohill, co. Leitrim), *Treasurer*, Dr. Charles Dolan, or Dr. Thomas Reynolds, M.B. (Ballinamore, co. Leitrim), *Secretaries*.

## Correspondence.

### CUPPING.

SIR,—It is curious enough, as Dr. Gubb remarks, that this mode of minor therapy should be so much oftener resorted to in France than in Britain. An interesting and rather amusing paper could be written about the practice of medicine in the two countries and pointing out the differences in practice arising out of similar theories. In France, if your patient dies from pneumonia, Madame la Concierge will look very severely on you if you have not applied ventouses. Her British equivalent most likely will if you have.

While endorsing Dr. Gubb's remarks as regards the indications of cupping, I rather differ from him on the question of technique. Can "nothing be better" than the kitchen tumbler? For ventousing purposes I would suggest using ventouses. In the short knob projecting from the bottom lies the whole secret of the gentle art of cupping.

Shall we use cotton-wool or spirits? Both. Twist a short bit of wire round a small pad of cotton-wool which is to be soaked and lit. Now clench your left fist. Insert the knobs of three cups between your fingers and keep the cups quite close to your patient's skin, leaving just space enough for your torch. In goes the flame, down comes the cup. I would not allow more than five seconds for the fixation of the three, and twelve cups ought to be applied easily within a minute, a matter of importance when we have to avoid exposure to cold.

With a young lady you will do wisely to abstain from cupping of any description. If the cup has been of any use it leaves a long-standing ecchymotic bruise turning gradually from scarlet to green, which offers a prolonged opportunity of studying the problem of haemoglobin and the blood pigments. Indeed, quite recently a French author has stated that if a cup leaves a purple scar on a pneumonic patient the outlook is favourable, but if a brownish one there is no hope of recovery. Considering the actual tendency towards measurements and the vogue of colour scales, cupping might be the first step towards *prognosimetry*—the art of fixing handicaps!—I am, etc.,

Viehyr, April 22nd.

GUSTAVE MONOD, M.D., M.R.C.P.

SIR,—I was greatly interested to read Dr. Gubb's paper on cupping (April 14th, p. 639), for it recalls to me the episodes of the early sixties, about which era I was a pupil with a cousin in the Edgware Road. A patient had some congestion of the kidneys and cupping was recommended; at that time there was a professional cupper named (if memory serves correctly) Betts; his methods were extremely skilful, for he used a tube filled with some absorbent material which he dipped in spirit, lighted, quickly thrust it into the glass, withdrew it, and then in a second placed it on the required spot; there was thus no danger of burning the skin, and the flesh rose well into the glass; then the scarifier was applied, and the glass readjusted as before. When I joined Dr. Dewes in

1872 I found both cupping glasses and scarifier, and I had them among my armamentaria until I left Coventry. As a rather painful method of abstracting blood it was effective, and, if it did not have a very curative effect on the disorder, its moral influence must have been remarkable and lasting.—I am, etc.,

Eastbourne, April 18th.

MILNER MOORE, M.D.

### BLOOD PICTURE IN SPRUE.

SIR,—Dr. Vincent Coates's interesting article (April 21st, p. 677), on pernicious anaemia with foci of infection in the alimentary tract, deals with some important questions.

I wish here to refer only to Dr. Coates's second case, an instance of sprue. The blood changes recorded are not infrequent in sprue, and the blood may be indistinguishable from ordinary pernicious anaemia and yet recovery occur. I should not consider that the blood picture in this case is of the aplastic type, as Dr. Coates suggests. Polychromatophilia, anisocytosis, poikilocytosis, and nucleated red cells are recorded, and this degree of change in the red cells is too great for aplastic anaemia.

The case which Sir Percy Bassett-Smith referred to at the Medical Society had a colour index of 1 (approximately) with 1,000,000 red cells. This cannot be considered a low colour index in view of the erythropenia.

Not much attention has been paid to the blood changes or to the achlorhydria in sprue, or in chronic colitis, but these points are obviously of importance in the treatment. They are also of interest, as Dr. Coates remarks, in the investigation of pernicious anaemia.—I am, etc.,

London, W., April 23rd.

H. LETHBY TIDY.

### PERNICIOUS ANAEMIA.

SIR,—Dr. Coates's paper in your issue of April 21st (p. 677) seems to call for some comment from the point of view of the haematologist.

I submit that there is no evidence that any of his cases were true pernicious anaemia in the pathological sense. In none were megaloblasts found, and in the autopsy on Case 3 there is no mention of the presence of free iron in the liver or of the essential changes in the bone marrow. If we take as the evidence of pernicious anaemia merely a marked reduction in the number of red cells with a few normoblasts and a colour index above 1, many cases of secondary septic anaemia will be included. I think that Dr. Coates has not excluded this diagnosis in the cases he quotes. To satisfy a pathological diagnosis of pernicious anaemia I submit that there must be the presence of megaloblasts persisting in repeated examinations as well as a marked reduction in the total red cell count and a colour index above 1, and, *post mortem*, at least free iron in the liver and an increase in the area of the red bone marrow with a marked megaloblastic reaction therein.

Doubtless sepsis (for example, from a haemolytic streptococcus) is one of the causes of true pernicious anaemia, but in very many cases, probably the majority, the infection stops short of a lethal change in the bone marrow. To this latter the term "pernicious anaemia" should, I think, be confined.—I am, etc.,

London, W.C., April 21st.

A. KNIVETT GORDON, M.B., B.C.,  
B.A.Cantab.

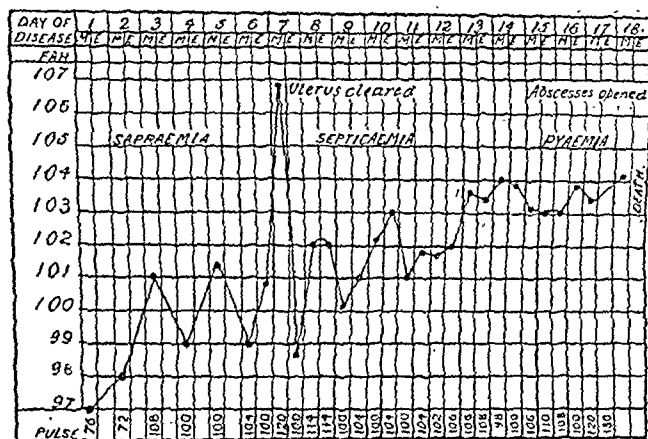
### TREATMENT OF PUERPERAL INFECTIONS.

SIR,—I have read the interesting article on puerperal fever by Professor B. P. Watson—an old fellow student of mine—and must say that his modern views appear to be diametrically opposed to the old teaching of the Edinburgh school. Possibly I did not pay as much attention to the lectures as Professor Watson, but one thing I do remember was the old midwifery axiom, "Leave to Nature—or empty the uterus." On this principle I have always worked with considerable success, and I am afraid I shall continue to do so. Apparently Professor Watson thinks the latter part of the axiom unnecessary.

Professor Watson most emphatically states that on seeing a case of pyrexia after childbirth digital exploration of the uterus is not indicated. Of course, other conditions must be excluded, and this any ordinary man would do; but then, I say most strongly, one should make sure that the uterus is empty. This is especially important nowadays when the certified midwives do almost all the ordinary work, and the practitioner is only called in when something goes wrong, often being sent for on a rise of temperature.



Some few months ago I was casually asked to see a case by midwife, on the fifth day, owing to a slight rise of temperature (101°). I was informed that the patient had influenza (of which there was a case in the house) and required no examination, but just the proverbial "bottle of doctor's medicine." The midwife stated that the placenta was perfect and the confinement quite



normal. Therefore I agreed, but the next day the temperature rose to 106.8°, and I removed with my fingers a piece of putrid placenta as large as my hand—the temperature then falling to normal (see chart). The woman died on the seventeenth day with secondary abscesses and sepsis. I feel sure that could I have removed this source and cause of infection early the woman would have lived.

I have seen this kind of case so often, and, as a rule, the marked recovery after evacuation and thorough cleansing of the uterus is astounding. Every practitioner knows this to be so, especially in incomplete abortions. As students we were shown a temperature chart as an example of a fall by crisis in sapraemia where retained placenta had been removed. Probably Professor Watson has forgotten this chart. My case shows the same thing.

Professor Watson discards the old classification of sapraemia and septicaemia, but Professor Munro Kerr states they do exist clinically as two distinct forms—the one condition being early and due to retained products, whilst the other occurs later on when the infection becomes generalized. He also states that saprophytic organisms lower local and general resistance and permit pyogenic organisms to multiply and gain entrance to the uterine tissues. He advises the removal of debris and repeated intrauterine douches (Fairbairn, p. 592). Bacteriologically organic tissues aid the growth of some organisms—for instance, testis for spirochaetes. Why should not placental tissue act in the same way, helping to form a septic factory?

One of my cows recently calved, appeared to be very ill, and my man informed me that she had not "cleaned" properly. Therefore I encouraged him to try and clear her, which he did with a wisp of straw and a cleaning douche. The immediate recovery of the cow followed. I do not understand why a portion of the after-birth so often gets trapped in man and beast alike.

I quite agree that to scrape the whole of the uterus out with a sharp curette is wrong, and opens up fresh surfaces for infection. But as a rule one's fingers and a gauze swab are sufficient, although a soft blunt flushing curette, a warm douche, or an application of iodized phenol will help in cleansing and purifying the source and culture bed of the bacteraemia. Professor Watson does not agree, and states that retained placenta does not predispose to bacterial infection. But I think no woman can be well with a portion of decomposing placenta inside the uterus, and will often die if left alone. Small bits of membrane do not matter, but placental tissue should always be extracted at once. If retained placenta is left it will provide plenty of work for gynaecologists later on.

I must apologize for writing contrary to the teaching of such an eminent authority; but most practitioners have their own views and practical methods for treating such cases, and Professor Watson invites discussion.—I am, etc.,

Lowestoft, April 4th.

DUDLEY W. BOSWELL, M.D., D.P.H.

#### CONGENITAL HYPERTROPHY OF THE PYLORUS.

SIR,—After reading Dr. Still's paper published in your columns on April 7th it seems worth while to record the after-history of the case which I reported in the *Lancet*, January 10th, 1903. This was, I believe, the first case ever recorded

as having recovered with simple feeding alone, without operation or lavage.

It was an absolutely typical case fulfilling all the diagnostic requirements. The patient is now an Oxford undergraduate; he has just taken second-class honours in Mods., and rows the Torpids. He never suffers from indigestion in any way, and is well grown, strong, and healthy.—I am, etc.,

Shrewsbury, April 18th.

H. WILLOUGHBY GARDNER.

#### PHTHISIS: COMPLETE AND PERMANENT RECOVERY.

SIR,—Fifty years ago this month Dr. Andrew, of St. Bartholomew's Hospital, told me I had phthisis, both lungs were affected, and I must leave the hospital at once, and on his certificate the College allowed the session.

I went to the country, got well, returned to Bart's in October, but relapsed at the end of the session. Intending to winter at Davos I went to Paris, attended the Hôtel-Dieu, and determined to observe carefully the conditions under which I was worse or better, to avoid or counteract the former and live under the latter. By this means I got well in 1876—chest girth increased nearly five inches and vital capacity over 200 cubic inches—and have remained well.

The investigation was continued, and I laid the results before the British Association in 1886-87, and I demonstrated the practicability of the work in 1890-1915 by giving the measurements of 100 cases of chest and lung development, and the results of scientific treatment in 100 cases of phthisis—complete recovery in early cases, recoveries and arrests in cases more advanced, and great relief and some temporary arrest for months or years in cases still further advanced.

This experience is unique in the history of phthisis, and I venture to think it should be placed on record.—I am, etc.,

London, S.W.

GODFREY W. HANBLETON, L.R.C.P.

#### THE TRAINING OF NURSES IN SMALLER AND COTTAGE HOSPITALS.

SIR,—With reference to Dr. Flemming's letter (April 21st, p. 699) the committee of our small hospital considered the regulations of the General Nursing Council for training unsatisfactory, and in consequence some months ago made a reasoned statement to the Ministry of Health upon the subject. But that infant prodigy, the General Nursing Council, appears to have been born with a swollen head and also to suffer from defects of hearing and of vision.—I am, etc.,

St. Albans, April 23rd.

SIDNEY CLARKE.

#### "HICCUP."

SIR,—The note in the *BRITISH MEDICAL JOURNAL* of April 7th (p. 603) on epidemic hiccup surprises me much. During all the years I have been in general practice I have had several cases of intractable hiccup and I am firmly of the opinion that the diaphragmatic spasm is due to rheumatism; for many years I have never failed in curing the most obstinate case within a very short time by exhibiting a few doses of antirheumatic medicine such as 15-grain doses of sodium salicylate without the addition of any sedative. I have never had a case of encephalitis lethargica, but firmly believe that it has the same etiology and would respond to intensive antirheumatic treatment. Of course—as stated in your article—morphine preparations will relieve any spasm, but there is great satisfaction in relieving symptoms by treating the disease causing them.—I am, etc.,

Manchester, April 22nd.

MARTIN J. CHEVREUX.

#### Universities and Colleges.

##### UNIVERSITY OF CAMBRIDGE.

THE following candidates have now satisfied the examiners in both parts of the examination for the Diploma in Public Health:

D. FASU, L. S. CHATTERJI, J. A. J. COPELAND, N. D. DUNCAN, H. H. FINDLAY, A. T. GAILLARD, C. H. GUNARAKA, J. C. S. HILL, S. HUNT, FLORENCE S. KIRK, HILDA J. LALDLOW, F. LOPE, P. R. A. MORTON, L. R. RAY, ANNABELLA A. REID, MARY B. BENTRICE M. SELLAR, Y. SEN, ANNIE F. SOMERFORD.

\* Distinguished in the principles of Hygiene.  
† Distinguished in the application of Sanitary Science.

THE following candidates have satisfied the examiners in the Diploma in Medical Radiology and Electrology:

Part I (Physics and Electrotechnics): M. A. AGA, R. M. BAKER, J. BOWEN, B. L. W. CLARKE, L. R. G. DE OLIVEIRA, M. FRIZEN, S. G. H. T.



W. H. Hastings, J. F. James, M. D. Joshi, Anna T. Kellock, Jane S. Knight, G. J. Luyt, A. G. MacLeod, Margaret J. Moir, H. S. Rajan, A. Ross, W. H. Rowden, Jessie E. Sheret, E. W. Twining, S. B. Warden, E. V. Whitby. *Part II (Radiology and Electrology):* M. A. Add, E. G. Barker, J. E. Bowen, B. L. W. Clarke, H. K. G. Hodgson, J. F. James, Jane S. Knight, H. S. Rajan, W. H. Rowden, J. P. Thierens, E. W. Twining.

#### UNIVERSITY OF LONDON.

The following were successful at the examination for the Diploma in Psychological Medicine, with special knowledge of Psychiatry:

A. C. Hancock, W. D. Nicol.

#### UNIVERSITY OF GLASGOW.

At the graduation ceremony on April 17th the Straits Settlements gold medal for thesis for M.D., on a subject in connexion with tropical medicine or tropical hygiene, was presented to Dr. Thomas J. Mackie; the University Arnott prize for examination in physiological physics to William A. Burnett, B.Sc., and the Asher Asher gold medal (special class prize) for laryngology and rhinology to Mr. Murdo Nicolson.

At the graduation ceremony held on April 21st the following degrees were conferred:

M.D. (with high commendation): M. A. Macintosh (in chemistry), M.B., Ch.B.—J. S. Young, Milloy, H. P. W. Skinner, W. P. Grieve, J. A. Bingl, B. T. Allison, J. C. Anderson, Isobel C. Armstrong, R. Armstrong, R. W. S. Ashby, A. A. Bain, A. Barr, W. P. Blackstock, (Miss) George I. Brodie, J. E. Brown, Henrietta Buchan, J. A. Cameron, J. Campbell, M. A. Cassidy, Isabella P. Crosbie, T. Cullen, W. R. Cumming, T. Dagg, R. A. M. Davidson, W. W. Dawson, Alice M. S. Dewar, W. M. Dinwoodie, I. M. K. Donaldson, J. F. Dunn, J. T. G. Even, G. M. C. Ferguson, Margaret I. H. Ferguson, J. Fine, T. Fisher, W. Fordyce, L. P. Foyer, W. Fraser, Janet M. Gibson, R. E. S. Gibson, Jane T. Gilmour, J. G. Graham, A. Gray, Catherine M. Gray, Miriam Greenberg, J. Hamilton, J. J. Hargan, Jessie H. Harkness, W. M. C. Harrowes, Janet G. Harvey, W. C. Harvey, Irene Higgin, W. Houston, W. M. Johnston, G. MacG. Kay, D. A. Kerr, Elizabeth C. Kerr, Janet B. Kerr, A. King, H. T. Kirkland, Mary D. Lambie, Christina S. Lamont, T. Leckie, J. A. Lister, J. M. Logan, Margaret E. R. Loudon, G. H. Macartney, A. M. Maccallum, J. M. Callum, Margaret S. L. M. Cash (in absentia), J. A. W. M. Cluskie, J. A. M. Crossan, C. M. Donald, C. F. H. M. Fadyen, J. M. Ghee, Janet H. Mackay, B. L. Mackay, Joan D. Mackenzie, V. D. Macfarlane, P. M. K. McKillop, G. M. M. Lellan, Jean D. MacLennan, Doris M. J. McNab, Mary M. Naught, A. MacNiven, Evelyn M. Pherson, A. E. MacIntyre, Dorothy M. MacIntyre, Clara F. Marshall (Mrs. Gerzlen), H. W. Miller, W. B. D. Miller, R. Nisbet, A. O'Hanlon, Henrietta L. Paterson, Mary R. Peden (Mrs. Donald Macalister), F. V. G. Penman, T. Prentice, Annie B. Primrose, D. Rankine, F. Ribeiro, W. J. B. Riddell, R. W. Ritchie, G. G. Robertson, J. M. L. R. C. Ross, T. D. Ross, J. N. Russell, Katharine C. Shankland, Gladys A. G. Sharpe, Grace S. Shirraw, R. G. Simons, R. B. Simpson, A. P. Smith, J. A. Sommerville, R. G. Sprenger, J. M. Stirling, Carolina J. Tessier, Marian Thom, Annie M. Thomson, J. M. M. Thomson, A. Urquhart, V. R. Walker, R. Walkingshaw, Annie Werner, J. Whiteford, R. Wilson, S. R. Wilson, W. Wilson, R. Woodside, A. B. Wright, R. A. D. Wylie, W. L. Young, R. Yuill.

\* With honours.

† With commendation.

## Medical News.

ON the occasion of the formal opening of the Peking Union Medical College, in September, 1921, in the tenth year of the Republic of China, there were gathered in Peking a great number of prominent men and distinguished scientists for the celebration of the event. The President of the Republic was pleased to receive them in audience, and it was a most memorable occasion. A "Jen Shou" (benevolence and longevity) medal has recently been bestowed by the President on the British representatives—Sir William Smyly, Professor R. T. Leiper, Dr. Thomas Cochrane, and Dr. A. J. Armitage—in commemoration of the event.

The London County Council has appointed Dr. Frederick Lucien Golla, physician and lecturer in clinical medicine, St. George's Hospital, to the position of pathologist to the London County Mental Hospitals and director of the pathological laboratory in succession to Sir Frederick Mott. The salary attaching to the position is £1,000 a year, with temporary additions which bring the total remuneration at the present time up to £1,234. Dr. Golla will relinquish his appointments at St. George's Hospital, but will retain that of physician to the Hospital for Paralysis and Epilepsy, Maudsley Vale.

A GENERAL meeting of the Röntgen Society will be held at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, on Tuesday next, May 1st, at 8.15 p.m., when Dr. C. Thurstan Holland will deliver the sixth Sylvanus Thompson memorial lecture. His subject is "X-rays and diagnosis." The annual general meeting will be held on June 5th.

Dr. J. H. MORRIS JONES, J.P., has been elected chairman of Colwyn Bay Urban District Council; since the recent incorporation of Llysfaen within its boundaries, Colwyn Bay has become the largest town in North Wales.

THE Home Secretary announces that as a result of inquiries made in connexion with the investigations into the illicit traffic in dangerous drugs which led to the recent conviction of H. M. F. Humphrey, he has decided to cancel the licences held under the Dangerous Drugs Act, 1920, by the firm of Messrs. Whiffen and Sons, Limited, of Lombard Road, Battersea (also trading under the name of J. A. Wink and Company), and they will not for the future be allowed to buy, manufacture, sell, or have any dealings in the drugs to which that Act applies.

THE fourth intensive course of lectures for general practitioners and senior medical students at the Central London Throat Nose and Ear Hospital, Gray's Inn Road, W.C.1, will commence on May 7th at 4 p.m., and conclude on May 17th. The fee for the course, which will be devoted to diseases of the ear, is one guinea.

A COURSE of ten lectures on ante-natal and post-natal child physiology will be given by Dr. W. M. Feldman in the Physiological Theatre of the London Hospital Medical College, Mile End, E.1, on Wednesdays at 4.15 p.m., commencing May 9th. The course is open to students of the hospital, and medical practitioners are invited to attend.

THE Secretary for Mines has appointed Professor J. S. Haldane, M.D., F.R.S., together with Professors W. S. Boulton, S. M. Dixon, C. H. Lees, and J. F. Thorpe, to be additional members of the Safety in Mines Research Board, of which Sir Edward Troup has been appointed chairman.

THE death is announced of Mr. Edwin Thomas Hall, F.R.I.B.A., well known for his designs of hospitals and sanatoriums. He was joint architect of the new Royal Infirmary, Manchester, and of the Welsh War Hospital, Netley; he designed the Frimley Sanatorium, the South Wales Sanatorium, and the King George Hospital for Wounded. He was consulting architect to St. Bartholomew's Hospital, to the King Edward VII Sanatorium, Midhurst, and to the Leeds General Infirmary.

THE meeting of the University of London for the presentation of degrees at the Albert Hall on Thursday next at 2.30 p.m. will be followed by a graduation service at Westminster Abbey at 5.45, when the Dean of St. Paul's will preach. In the evening the graduates' dinner will take place at the Grocers' Hall. On the previous evening the new graduates will be entertained at dinner by the Guild of Graduates.

THE third series of lectures to students and medical practitioners given by the medical staff of Queen Charlotte's Lying-in Hospital, Marylebone Road, N.W.1, will begin on Thursday, May 10th, at 5 p.m., and end on June 14th.

DR. P. A. MAPLESTONE, D.S.O., who is a graduate of the University of Melbourne, and has until recently been lecturer of protozoology in the Liverpool School of Tropical Medicine, has been appointed Assistant Director of the Research Laboratory at Sierra Leone. Before he sailed last week to take up the duties of his new post he was entertained at a luncheon at which members of the committee and of the staff of the school were present. Sir Francis Danson, the host, said that Dr. Maplestone would find that the foundation of a most useful organization had been laid by Professor Blacklock, who was about to come home on furlough.

PESSIMISTS among criminologists and criminal lawyers prophesied that an effect of the war would be greatly to increase crimes of violence. The statistics published this week for 1921 do not confirm this anticipation; the number of persons tried for violence against the person in 1921 was 966, as compared with 1,107 in 1920 and 1,387 in 1913. There was an increase of offences of burglary, house-breaking, and robbery from 3,984 in 1913 to 4,722 in 1920, but in 1921 there was a decrease to 4,280. The number of charges of bigamy increased from 133 in 1913 to 722 in 1920, declining to 570 in 1921. Indictments for other sexual offences numbered 1,805 in 1913, 1,607 in 1920, and 1,535 in 1921.

A COURSE of eight lectures on nutrition will be given by Professor V. H. Mottram, M.A., at King's College for Women (61, Campden Hill Road, W.8) on Mondays and Wednesdays, April 30th, May 2nd, 7th, 9th, 14th, 16th, 23rd, and 28th, at 4.30 p.m. Attendance at this course is recognized in connexion with the B.Sc. (Honours) Degree in Physiology of the University of London.

THE annual meeting of the Medical Mission Auxiliary of the Church Missionary Society will be held in the Queen's Hall, Langham Place, W.1, on Wednesday, May 2nd. The chair will be taken at 7.30 p.m. by Mr. W. McAdam Eccles, M.S. Tickets of admission can be obtained on application to the Loan Department, Church Missionary Society, Salisbury Square, E.C.4. There will be a small number of reserved seats at 1s. each.

WE regret that owing to a misunderstanding it was announced in our issue of April 14th (p. 663) that Dr. Carl Spengler of Davos had died; the announcement should have been with reference to his brother, Dr. Lucius Spengler. We are glad to learn that Dr. Carl Spengler is still living.



## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.

2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.

3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegram: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegram: *Associate, Edinburgh*; telephone, 4361, Central).

### QUERIES AND ANSWERS.

#### THE UNPLEASANT TASTE OF POTASSIUM BROMIDE.

SIR JAMES DUNDAS-GRANT, in reply to the inquiry in our issue of April 7th, 1923 (p. 616), writes to suggest that the unpleasantness may to a considerable extent be minimized by the addition of a small amount of sodium bicarbonate—say 5 grains to 10 or 15 grains of potassium bromide. For those who are very particular a few drops of liquid extract of liquorice may be added and the mixture made up with equal parts of chloroform water and peppermint water.

#### DUPUYTREN'S CONTRACTION.

"E. M. B." inquires as to the recognized treatment of an early case of Dupuytren's contraction in a man aged 24. We have referred this question to Mr. E. Muirhead Little, whose reply is as follows:

As the pathology of Dupuytren's contraction of the palmar fascia is but imperfectly known there is no certain means of arresting its development. The most hopeful method is by the use of thiosinamin in one or other of its preparations. This cannot be expected to cause the absorption of already organized fibrous tissue, but it may be hoped that it will prevent the deposition of more tissue. The form in which I have used it has been that called iodolysin, sold by Allen and Hanbury, and injected into the general circulation. One ampoule may be used once or twice a week, but the drug should not be continued for many weeks without intermission, as it has a depressing effect. I cannot say, however, that this is "the recognized treatment," the only procedures entitled to that name being operative. Of these that of Adams by multiple small subcutaneous incisions and stretching gives good results in the hands of some surgeons. The alternative method is, of course, open excision. In any case the patient should frequently stretch the fingers himself. The treatment of this condition is not included in the latest published work on orthopaedic surgery by Jones and Lovett. The occupational etiology of the disease is no longer generally held, its symmetrical distribution and the great preference it shows for one finger in particular (the third) as the site of its first appearance, suggest a central origin.

#### INCOME TAX.

"G. E." has been asked by the inspector of taxes for vouchers all for his motoring expenses; it is impossible to comply with this request so far as cash purchases are concerned, and these have been considerable. He also asks whether it is allowable to claim motoring expenses at so much per mile.

\* \* The inspector of taxes has no personal right to call for evidence of expenses, but he can call the attention of the district commissioners to the figures, and they can require evidence in support of an appeal against any assessment they may think proper to make. We therefore suggest that "G. E.'s" best course is to send the inspector what receipts he can find and explain the nature and probable extent of the cash purchases. A mileage rate is of little use for stating the expenditure incurred, as it must be an estimate, and what the statutes require is a statement of the actual facts. It may be of some use in showing the reasonableness of the figures supplied, but obviously very much must depend on the nature of the car and the roads used and on other personal and local circumstances. Assuming there are no special facts, and that the year's expenditure has not been swollen by car renewal, the rate suggested seems perhaps a little high.

#### Car Transactions.

"J. C." bought a second-hand car in 1918 for £255 and replaced it in 1922 by a similar new car. He has claimed to deduct the out-of-pocket expenditure—namely, £300 less £50 allowed for the old car—that is, £250. It appears that of the £240 expended £15—that is, £300—£265, represented an improvement of his professional equipment, and to that extent there was an outlay of capital. No allowance is legally due for such expenditure, and the inspector of taxes is right in claiming to reduce the allowance from £240 to £205.

"G. L. B." bought a car in 1914 for £409 and sold it in May, 1922, for £180, replacing it in April, 1922, by a car costing £195. There is no allowance for "wear and tear" in the assessment of professional profits, but only for the cost of replacement as and when it is incurred. The maximum amount that "G. L. B." can claim is therefore the actual out-of-pocket expenditure—that is, £195—£180=£16. Strictly this is an expense of May, 1922, and would not therefore enter into the computation of the three years' average profits forming the basis of the 1922-23 assessment.

### LETTERS, NOTES, ETC.

#### WHOOPING-COUGH.

DR. W. J. MIDELTON (Bournemouth) writes: I notice Dr. Thomas Carruthers's remarks (April 14th, p. 666) concerning my suggestion for the cure of whooping-cough. At a recent meeting of the Bournemouth Medical Society a colleague said that during two epidemics of whooping-cough, acting on a hint from me, he had used *ol. crotonis* co. with gratifying success. In every case the whoop had disappeared at the end of three weeks from the commencement of the treatment. I again append the formula of *ol. crotonis* co., since I am convinced it possesses decided advantages over *lin. crotonis* B.P.

R. *Liq. epispasticus* B.P. ... .. 5*℥*  
*Ol. amygdal. dulc.* ... .. 3*℥*  
Mix. Allow ether to evaporate; filter; then add  
*ol. crotonis* *mxxl*.

#### LONDON SMOKE.

ONCE upon a time, some forty years ago, there lived at Highgate which then still retained some of the characters of a village, a lady who declared that when a yellow fog drifted up from London she could detect the smell of tobacco smoke in it. To most people the odour is flatly that of coal smoke, which is perhaps always more or less to be perceived in London air. This at any rate would seem to have been the opinion of Edward Jenner, if we may trust a note made by Farington in his diary for 1857 which is being printed in the *Morning Post*. Farington's note is as follows:

"Dr. Jenner observed to Lawrence that He could by smelling at His Handkerchief on going out of London ascertain when he came into an atmosphere untainted by the London air. His method was to smell at His Handkerchief occasionally, and while He continued within the London atmosphere He could never be sensible of any taint upon it; but, for instance, when He approached Blackheath and took His Handkerchief out of His pocket where it had not been exposed to the better air of that situation—His sense of smelling having become more pure he could perceive the taint. His calculation was that the air of London affected that in the vicinity to the distance of 3 miles."

#### A DISCLAIMER.

MR. D. McCRAE AITKEN (London) writes: May I ask the hospitality of your columns to disclaim any responsibility for an article which recently appeared in a daily paper, and to express my regret that the name of Sir Robert Jones was coupled with mine in a manner which neither he nor I could possibly sanction?

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 33, 35, and 38 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 36 and 37.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 167.

### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday preceding publication, and, if not paid for at the time, accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive and post letters addressed either in initials or numbers.



# A Lecture ON CANCER OF THE BREAST.\*

BY  
CECIL ROWNTREE, F.R.C.S.,  
SURGEON TO THE CANCER HOSPITAL.

In at least one-third of the women who develop cancer it arises in the breast, and in that event the patient's average expectation of life is not more than four years unless she is fortunate enough to detect the tumour at an early stage, wise enough to consult a medical man at once, and brave enough to submit to surgical treatment. I do not suggest that even then she will always be cured of her disease—far from it, for recurrences after surgical operation are only too frequent. But it is probably fair to say that 30 per cent. of early cases get no recurrence after radical operative treatment, and it is certainly a fact that in the remaining cases a well planned operation will generally result in the patient being spared the dreadful misery and discomfort of an ulcerating growth in the breast, the ultimate cause of death being secondary deposits in the chest or abdomen, perhaps as long as ten years afterwards.

In order that the present results of surgery may be improved the co-operation of three parties is essential. The patient must consult her doctor at an earlier stage of the disease, the doctor must make a diagnosis at the earliest possible moment, and the surgeon must endeavour to perform the most scientific and most comprehensive operation that the conditions will permit.

The need for the co-operation of the patient is sufficiently obvious to require no emphasis, but how it is to be obtained is not so clear. If it were possible for every woman to learn that cancer of the breast starts as a little insignificant lump that is always at first quite painless, and that operative treatment offers the only chance of eradicating the disease, it is certain that a very few years would show a noticeable improvement in results.

How is this desirable end to be attained? Instruction at school has been suggested, but, even if feasible, would hardly meet requirements, for after all there are other forms of cancer to be considered. But I do think that more could be done during school life in the direction of teaching the elementary anatomy and physiology of the normal body and in emphasizing the importance of seeking medical advice as soon as any departure from the normal shows itself. Another method is the diffusion of information about the early signs of cancer by means of pamphlets, leaflets, etc., as already done by some medical officers of health, and on a more ambitious scale by the Franco-American Cancer League; but this is an expensive business and appeals to much too small a public. We have, however, in the huge circulation of the daily press a vehicle for propaganda that no one can escape, and if one or more of the daily papers were public-spirited enough to devote an occasional half-column to a clear description of the early stages of the common kinds of cancer nothing but good could result.

## EARLY DIAGNOSIS.

But it is to the subject of early diagnosis that I wish to pay special attention to-day, and it is here that the co-operation of the medical attendant is so essential; he is the most important link in the chain, and upon him the fate of the patient largely depends, for it is to him that the doubtful lump is first shown, and it rests with him to decide whether the lump is in fact a lump at all, and, if so, whether it is of any serious consequence.

I see that many textbooks still describe the symptoms of cancer of the breast in the terms I remember as a student over twenty years ago—a hard, irregular mass infiltrating the breast, causing retraction of the nipple, and accompanied by enlargement of the axillary glands.

We need not concern ourselves with such cases as these except, perhaps, to emphasize the importance of never waiting until such unequivocal signs declare themselves. It is the small and insignificant tumours that must engage our attention—they provide most of our difficulties in diagnosis, and these difficulties increase, I find, for I am certainly getting a larger proportion of quite early cases than I did

some years ago. The sort of case I have in mind is a rounded mass, perhaps a quarter of an inch in diameter, movable in the breast, with no enlargement of axillary glands, no retraction of the nipple, and with no available history beyond the description of its accidental discovery the day before.

I am often asked by students whether there is not some one sign in the diagnosis of breast cancer upon which they may pin their faith and so simplify their task. There is, of course, no golden rule, but still there is a symptom which, although it is not of universal application, is of such overwhelming significance that I put it first, and a long way first, in diagnostic importance. I refer to adhesion between the growth and the skin overlying it—not the coarse and obvious infiltration met with in advanced cases, but a much more delicate involvement, resulting in a faint dimpling of the skin which is often of so slight a degree that it may only be visible after careful examination in suitable conditions of light. In its earliest stages it can be made to appear by grasping the breast on each side of the suspicious nodule and trying to push the skin away from the tumour. By then looking *along* the surface of the breast it may be possible to perceive slight irregularity in the contour not hitherto apparent. If this sign be evident—and it nearly always is when carefully looked for—I am convinced that a definite diagnosis of malignancy may be safely made with the utmost confidence irrespective of the presence or absence of retraction of the nipple, alteration in the size and shape of the breast, enlargement of glands, or any of the other classical signs of cancer. One is not likely to be misled by the adhesion of the scar of an old abscess or old operation wound, nor by the infiltration of recent inflammation.

On the other hand, absence of adhesion to the skin does not necessarily indicate that the tumour is benign, for the growth may be too small, or, if the breast be large and fat, the distance to the skin may be too great. In breasts of ordinary dimensions I have seen it present with a mass of growth no larger than a cherry-stone, but in smaller tumours than this it is not perceptible, and I think the difficulties of clinical diagnosis in this range of size are insuperable.

## Mistakes in Diagnosis.

It is worth remembering that when mistakes are made in diagnosis they are nearly always in the same direction. An early cancer, because it is so small, so painless, and so harmless-looking, is thought to be a simple cyst or simple tumour, and is either left alone to await events or at most is locally excised. On two or three occasions I have been asked to perform the radical operation upon breasts from which had been removed small tumours thought to be innocent but subsequently proved to be malignant by microscopic examination.

I have also seen a woman of 30 with metastatic cancer of the spine from whose breast a small "adenoma" had been removed two years previously, and two other patients with metastatic fracture of the femur, both of whom had primary tumours in the breast which they had been told were of no importance.

Tiny cancers, tiny adenomata, and tiny cysts are dangerously alike. Cysts may be excluded by puncture with a hypodermic needle, but I know no way of distinguishing the characters of very early solid tumours, and in these cases it is our bounden duty to excise the mass and determine its nature. A surgeon who has familiarized himself by long training in museum and laboratory with the look and the feel of pathological tissues will generally be able to decide the nature of the case as soon as he has removed the doubtful tissue and cut it across. In a few cases he may find it impossible to come to a conclusion, and in these a microscopic section must be cut.

## Frozen Sections.

I have never been able to convince myself of the value of rapid frozen sections in such cases, for, if an experienced surgeon is in doubt as to the nature of a tissue when he has a piece of it lying in his hand, it is almost certain to prove to be something out of the ordinary, and he is unlikely to get material help from sections prepared and considered by the rapid method. I feel that it is more safe to have the doubtful tissue suitably prepared by more deliberate methods and adjudicated upon in the seclusion of the pathological laboratory. Frozen sections have a very definite value in certain contingencies, but not, I think, in the differential diagnosis of obscure cases.

When faced with a difficult breast case it is always worth while considering the question of probability in relation to

\* Delivered to the Fellowship of Medicine in February, 1923.



diagnosis. Here is an analysis of the last hundred consecutive cases of primary breast disease that I have seen in private practice, and I think you will be surprised to see that I have more cases of malignant disease than all other breast diseases put together.

*One Hundred Consecutive Cases of Breast Disease.*

Malignant—					
Carcinoma	...	...	...	...	58
Sarcoma	...	...	...	...	1
					59
Non-malignant—					
Fibro-adenoma	...	...	...	...	2
Duct papilloma	...	...	...	...	3
Sebaceous cyst	...	...	...	...	2
Tuberculosis	...	...	...	...	1
Chronic abscess	...	...	...	...	1
Galactocele	...	...	...	...	1
Solitary cyst	...	...	...	...	15
Cystic disease	...	...	...	...	1
Chronic mastitis	...	...	...	...	7
Subacute mastitis	...	...	...	...	8
					41

This enormous preponderance of cancer cases is no doubt partly to be explained by the fact that a certain number of them have only been sent to me for confirmation of diagnosis, for, when a woman is told that she has cancer of the breast by one surgeon, she often quite naturally asks to see another in the hope that she may get a different opinion. But in spite of this and other factors which tend in my list to put the cancer incidence too high, the general conclusion is inevitable that cancer is the commonest breast disease, and that a doubtful tumour in the breast, no matter how small and insignificant, is by the law of probability much more likely to be cancer than anything else.

*Mastitis.*

Another point arising out of my analysis that occasions some surprise is the small proportion of cases of chronic mastitis that I see. So much has been written about chronic mastitis that there is apt to be a totally false impression as to its frequency. I admit that it is a matter of some difficulty for me to obtain exact figures as to its relative frequency, for the cases attending my clinic at the Cancer Hospital obviously undergo as much or nearly as much selection as those in my private practice, and any statistics based upon them would certainly underestimate the proportion of cases of mastitis; but none the less I have come to believe that it is a relatively uncommon disease—almost certainly less common than cancer itself. The whole subject of mastitis is admittedly one of great difficulty and is fruitful in controversy; in fact, I am not sure that even yet there is any general consensus of opinion among surgeons and pathologists as to what really are the clinical characters and pathological appearances of chronic mastitis. It appears to me that there is often some confusion between chronic interstitial mastitis and subacute mastitis, although I believe them to be quite separate clinical entities with very different characters.

*Subacute Mastitis.*

Subacute mastitis is characterized by more or less sudden onset and by involvement of one and only one sector of the breast; it is always painful, it is generally unilateral, and it may be caused by such minor injuries as accompany games of golf or tennis or by vigorous spring cleaning. It is much more common in women with pendulous breasts, and is certainly predisposed to by the absence of suitable support for the breasts. It can generally be quickly cured by firm bandaging and the local application of belladonna, and its recurrence may be avoided by wearing a suitable bust bodice. In this disease cyst formation is conspicuously absent.

*Chronic Mastitis.*

Chronic interstitial mastitis, on the other hand, has an insidious onset and severe pain is generally absent; at most there is a slight aching. It is more often bilateral than subacute mastitis; it may affect more than one sector of the same breast, and I think it affects the nulliparous as frequently as the multiparous breast. It is probably closely associated with the involution of the breast accompanying the menopause, but it is often found in younger women.

Cyst formation is a very general feature of the disease, and

the cysts may be large or small, many or few, but it is the exception not to find some cysts, possibly not larger than millet seeds.

If the cysts are numerous and large there is no room for argument about treatment. The breast or breasts should be removed by simple subcutaneous amputation, the nipple and surrounding skin being preserved by carrying the incision along the outer margin of the breast, but great care is necessary to avoid leaving an ugly puckered surface when this method is used. In thin patients I have given up employing it and prefer a straightforward amputation.

*Solitary Cysts.*

But it is quite common to meet with cases where there is but one solitary cyst in the breast. My own practice in these cases is to puncture the cyst and aspirate the contents. This is quite easily done with a serum syringe and hypodermic needle, and the cyst usually collapses so completely that nothing whatever can be felt of it.

It is possible, of course, that such a solitary cyst may be the herald of a general mastitic change which will eventually in multiple cyst formation, and it is true that on a few occasions, after tapping the original cyst, I have subsequently watched the development of universal cystic disease which has required amputation of the breast. But this is certainly not the general rule, for my experience has been that most of my patients have had no further trouble, even after many years. The fluid in these cysts varies from a pale straw colour to brown or green, with perhaps cholesterol crystals floating in it, and all such cases are quite benign. But occasionally it will be found that the fluid is consistently blood-stained, and in these cases the cyst should be removed and carefully examined in case a growth has developed in its wall.

But if the case is simply chronic mastitis without obvious cyst formation, what line must be taken? Does chronic mastitis lead to cancer? Many experienced surgeons think it does. They believe it so firmly that they advise amputation of a breast so affected in order to be on the safe side, as it were. I cannot believe that the evidence is so conclusive as to lead us to offer this advice to our patients, and I strongly suspect that far too many breasts are sacrificed to this branch of prophylactic surgery. We should only allow ourselves to be guided by definite scientific evidence, and what is the evidence? It is stated that a large number of breasts removed for cancer show chronic mastitis as well, and the deduction is too readily drawn that the mastitis caused the cancer. Looked at from another point of view, one might equally well deduce that cancer causes mastitis; and in fact I believe it does—that is to say, I believe that chronic degenerative changes frequently take place in the breast tissue surrounding a malignant growth and that these changes are microscopically indistinguishable from the changes we are accustomed to describe as chronic mastitis.

From a purely pathological point of view the subject is obviously open to considerable discussion, but if we consider it from the clinical aspect the position becomes more clear.

If mastitis is indeed a common precursor of cancer, then we might expect that surgeons of experience would occasionally see patients with cancer whom they had previously treated for mastitis; or, conversely, it might be expected that some of the cases treated for mastitis would ultimately return with cancer. But it may be argued that it is scarcely likely that patients would return to the same surgeon. If this be true, then one ought to see patients with cancer who give a history of having been treated for mastitis some years previously by another surgeon. This has not been my own experience, nor, so far as I can gather, has it been the experience of those of my colleagues with whom I have discussed the question. Of all the cases of cancer of the breast that I have seen I can only find one where there was a definite history of previous mastitis. I saw this patient myself five years ago for mastitis and she returned last year with cancer. One would have expected mere coincidence to have provided more examples than this in any large group of cancer cases, apart altogether from any causal relationship. I am strongly of opinion that the bugbear of chronic mastitis as the precursor of cancer of the breast has been greatly overdone. It has even been suggested that the occurrence of mastitis resulting from intestinal stasis not only goes far to explain the frequency of cancer of the breast, but also explains its



greater frequency upon the left side owing to the fact that this particular type of mastitis appears to develop mainly in the left breast!

#### *Side Affected.*

It is certainly true that all the great collections of figures relating to cancer of the breast appear to indicate that it is more commonly met with on the left side, but the difference is less than 2 per cent. Were it not that this slight disproportion is so constantly reported by all observers, one would imagine it to be a mere coincidence; while, on the other hand, were it really due to any fundamental difference in the cancer liability of the two breasts, one would expect a much greater disproportion. I have often puzzled over this point, but it happened recently that two cases of cancer of the left breast were sent to me in quick succession, in each of which the doctor had accidentally discovered the growth while examining the heart. This must be the explanation of the discrepancy, for the vast majority of the published figures relate to operation cases, and it is, I think, reasonable to suppose that the accidental detection in this way of a small number of left-sided cases which might otherwise reach the inoperable stage without discovery fully accounts for the small apparent difference so constantly recorded. It would appear to be unnecessary, therefore, to fall back upon the left-sided mastitis of intestinal stasis—if there be any such thing—as having any very direct bearing upon the subject of cancer of the breast.

The most casual study of much recent literature relating to the breast and its diseases and minor ailments seems to indicate a fundamental lack of imagination or perspective. One is sometimes asked to believe that a trivial patch of mastitis or the presence of a minute cyst almost necessarily indicates the imminent onset of cancer. As I am not aware that such conditions are always or even generally confined to one breast, are we to be prepared to tell a patient to have both her breasts cut off merely to be on the safe side? We must preserve some sense of proportion and try to recognize that any evidence of the existence of a well defined precancerous condition in the breast recognizable by clinical or pathological methods is not yet established—whether in the shape of mastitis, cysts, or adenomata. I strongly feel that, unless or until we have unequivocal evidence to guide us, prophylactic amputation of the breast for mastitis is a thoroughly bad and unscientific proceeding.

#### *TREATMENT.*

##### *The Radical Operation.*

With regard to the radical operative treatment of cancer of the breast, I do not propose to discuss the details of the actual operation, for you all have many opportunities of seeing it performed and observing the various minor differences of incision, dissection, and technique favoured by individual surgeons; but I may say that, as one who is quite convinced of the value and importance of Handley's observations on lymphatic permeation, I endeavour to plan my operations upon this basis.

Not the least important matter is the choice of anaesthetic, and, after trying all available methods, I have come to the conclusion that for all ordinary cases ether, or a mixture of chloroform and ether, administered by some method which warms the vapour before delivery, seems to give the most satisfactory results; but in feeble patients who are bad risks owing to cardiac or respiratory complications or extreme old age I rely mainly upon local anaesthesia.

Thanks to the skill of my anaesthetists I have never yet lost a breast case from any cause whatever except, of course, recurrence of the disease.

##### *Radium and X-Ray Treatment.*

It is impossible to leave the question of the treatment of cancer of the breast without discussing the value of radium and x-ray treatment.

*Radium.*—With regard to radium there is very little to say, for the results obtained are not worth consideration. This is hardly a matter for surprise when we remember the extent of the area to be treated and the impossibility of obtaining and applying radium in sufficient quantity to influence the disease.

*X rays.*—In x rays, however, there is no question that we have a valuable means of relieving pain, encouraging hope, and prolonging life. They will in some cases promote the

shrinkage of ulcerated masses, and in others will cause the temporary or even permanent disappearance of superficial nodules. I refer now to x rays as produced by the ordinary methods in common use, and every radiological clinic possesses serial photographs showing unmistakable evidence of the value of this form of x-ray treatment in cases of breast cancer.

#### *Deep Therapy.*

During the last two years a new technique has been evolved in Germany dependent upon the use of much more powerful apparatus, which is actuated by much higher voltages and emits a much harder and therefore much more penetrating x ray. It was hoped—indeed it was widely claimed—that this harder type of ray when delivered to the diseased part in appropriate quantities would destroy the cancer cells in their nests, as it were, with no—or at any rate no serious—injury to the surrounding healthy tissues.

As soon as the opportunity offered I arranged to give the method a trial, and about six months ago three cases of recurrent cancer of the breast were carefully selected. They were treated with the latest apparatus under the best obtainable conditions by a radiologist of the greatest ability. In each case the so-called full cancer dose of three hours or so was given, and now at the expiration of six months these are the results:

Case 1 feels better, but numerous skin nodules have appeared in the treated area. There is no improvement in the other local manifestations of the disease.

Case 2 felt strong and well until the treatment, but has suffered intolerable pain ever since it was applied. There is no improvement in the local condition, which in general has progressed except for the shrinkage of a small subcutaneous nodule.

Case 3 is unchanged except for the development of a suspicious nodule in the skin of the treated area.

These cases were done six months ago, and in those days—for events move quickly in the x-ray world—it was hoped that one exposure of three hours or so would suffice. The most that I hear claimed by my radiological friends to-day is that, given early cases of breast cancer free from metastatic growth, good results may be expected from repeated treatment—which is somewhat where we were before Erlangen.

I should like to emphasize the fact that it is only with regard to cancer of the breast that I am expressing my opinions, for my personal knowledge and experience of the results obtained in cancer of other organs is insufficient to form a judgement.

We have had our apparatus at the Cancer Hospital in full work for a few months only, and the tendency has been to use repeated moderate doses spread over an appreciable period of time rather than massive doses administered at a single sitting. However, we ought soon to be in a position to form a definite opinion, and we may find that it is only in certain kinds of cancer that useful results are to be expected from deep therapy. If there is any real analogy between x rays and radium, my experience with the latter would certainly tend to support such a view.

As I have already stated, I think radium useless in carcinoma of the breast, and the same applies to many other forms of cancer; but in certain situations, notably the cervix uteri, it is undoubtedly of the greatest value. Moreover, I find that I am improving my results in the cervix and elsewhere by using smaller quantities of radium but for very much longer periods, the tubes or needles being buried in the growth for days or weeks at a time. But even then there is no regularity in the reaction.

Recent pathological research appears to indicate so strongly a separate specific cause for each form of cancer that it is conceivable that further investigation may suggest the possibility of each form of cancer requiring its own specific remedy and perhaps its own specific wave-length—who knows? It is just possible that we may after all discover that x-ray technique has been developing in the wrong direction, and that the radiologist who is constantly striving after a harder and more penetrating ray is not very different from the surgeon who endeavours to improve his results by employing a longer, a stronger, and a sharper knife.

Finally, let me say that, if I have unwittingly underrated any man's achievements in the field of x-ray therapy, you as members of the Fellowship of Medicine—to whom all doors are open—should have abundant opportunities of correcting my estimate of the present position of deep therapy in the treatment of cancer of the breast.



## BLOOD TRANSFUSION.\*

BY

E. F. SKINNER, M.A., M.B., F.R.C.P.,  
ASSISTANT PHYSICIAN, SHEFFIELD ROYAL HOSPITAL.

THE most obvious indication for blood transfusion is previous loss of blood, and the present revival of the operation is due largely to the brilliant results following this procedure in battle casualties. The shock condition produced by severe haemorrhage is due to two factors: (1) Loss of oxygen carriers, and (2) loss of blood volume; but whereas the latter can be quickly made good by the tissues pouring out fluid, except in those cases where the tissues themselves are drained of their fluids to such an extent that there is none left to replace blood loss, the former is only made good very slowly, and whilst by the injection of suitable solutions into the circulation the deficiency in blood volume can be replaced, the only means of replacing oxygen-carrying capacity is by means of blood transfusion.

Haemorrhages, whether sudden and severe, as in injuries and obstetric cases, or long-continued slight bleedings, equally benefit by transfusion, whilst the clinical anaemias, whether primary or secondary, are improved, and though in the case of the primary anaemias no permanent cure may yet be recorded, almost every observer has been struck with the occurrence of dramatic recoveries. But besides these conditions there are many others where blood transfusion may be of great value—for instance, in seriously ill persons before an obligatory operation the administration of 200 or 300 c.cm. of blood might entirely alter any possible end-result of surgical interference<sup>1</sup>; the terrible mortality of influenza and pneumonia<sup>2</sup> occurring in epidemic form might be lessened, and a number of successful cases have been recently reported from France. In the blood diseases—haemophilia, purpura haemorrhagica, and the like—there is again an obvious indication for blood transfusion, and Graham,<sup>3</sup> in a paper read before the Edinburgh Medico-Chirurgical Society, reported a series of 75 blood transfusions, amongst which were a number of instances of these conditions. Blair Bell<sup>4</sup> advocates its use in eclampsia, whilst Ramsay<sup>5</sup> refers to its gratifying employment in cases of acute nephritis. The employment of transfusion in septicæmic cases is advocated by some authors but deprecated by others, and Lewisholm<sup>6</sup> utters a warning against its routine use in septicæmia, but reports good results in staphylococcal osteomyelitis.

When such a varied list of diseased conditions is studied it is clear that the action of the blood is not the same in each case: that whereas in haemorrhage and anaemia probably the increased oxygen capacity of the circulating fluid is responsible for the benefit, this cannot apply to osteomyelitis, and in this type of case the possibility of "complement" or "antibody" transference must not be lost sight of.

The catastrophes that from time to time were observed to follow the intravenous administration of blood remained unexplained until it was discovered by Landsteiner<sup>7</sup> that when the blood serum of one individual was brought into contact with blood corpuscles from another individual there sometimes occurred a clumping of the corpuscles, with the formation of little conglomerate masses quite easily visible to the naked eye, and at once it was realized that in this phenomenon lay the explanation of these catastrophes—in other words, that there is an incompatibility of bloods of certain individuals, and that two such incompatibles cannot act as "donor" and "recipient" respectively in a transfusion operation, whence it follows that before each such operation the compatibility of the two bloods must be determined.

## Compatibility of Blood.

In 1901 Landsteiner examined a large number of blood serums from the point of view of their property of agglutinating red blood cells, and as a result of his observations he stated that human beings could be divided into three classes according to the agglutinin content of their blood; these classes he called A, B, and C, in which the serum of Class A agglutinated the corpuscles of Class B, the serum of Class B agglutinated the corpuscles of Class A, whilst the serum of Class C agglutinated the corpuscles of both A and B classes (Fig. 1).

Moss<sup>8</sup> in 1910 repeated this work, but found that the groups were insufficient to cover all cases of agglutination; that if in a large number of different bloods the serum of each was mixed with the corpuscles of every other there were

SERUM	CORPUSCLES		
	A.	B.	C.
A.		+	
B.	+		
C.	+	+	

Fig. 1.—Landsteiner's original 3 group classification.

SERUM	CORPUSCLES			
	1.	2.	3.	4.
1.				
2.	+		+	
3.	+	+		
4.	+	+	+	

Fig. 2.—Moss's 4 group classification.

certain exceptions to Landsteiner's grouping, and he found that a four-class grouping was necessary to cover all cases which groups he called I, II, III, and IV—a classification which is still adhered to for convenience and which is shown in Fig. 2.

Moss assumed the possession by the blood corpuscles of his groups of three different agglutinogens, each reacting with a specific agglutinin in the serum of another group, but this explanation is now simplified by an adaptation of Landsteiner's original conception worked out by von Dungern and Hirschfeld.<sup>9</sup>

This view is now known as Landsteiner's law of iso-agglutinins, and it sets forth that there are present in human blood two agglutinable substances, A and B, which react with specific agglutinins *a* and *b*, and that if any one blood contains an agglutinable substance it will contain the agglutinin which reacts with the alternative agglutinable substance; thus a blood which contains A agglutinable substance will contain the *b* agglutinin and vice versa. By the variation of these factors in the blood the four classes are determined and the supposed arrangement may be shown diagrammatically as in Fig. 3.

Group II.	Group III.	Group IV.	Group I.

Fig. 3.—Landsteiner's law of iso-agglutinins (after Hirschfeld).

In the figure the English and American numerical groups are indicated and it will be seen that Group II possesses the agglutinable substance A and agglutinin *b*, Group III the agglutinable substance B and agglutinin *a*, whilst Group IV has both agglutinins but no agglutinable substance, and Group I has both agglutinable substances A and B but neither agglutinin. Therefore Landsteiner's law may be shortly stated thus: "In any blood there are always present agglutinins against the agglutinable substance absent from the same blood."

It is stated that shortly after birth<sup>10</sup> the blood takes up the characters of one of the four groups, and these apparently persist throughout life unchanged. In a personal investigation of this point I have found that at the moment of birth the child's blood may possess an agglutinable substance quite different from that of the mother's blood. Out of 17 such cases investigated this year, in 11 cases the blood of the child contained the same agglutinogens as the blood of the mother, whilst in 6 cases they were different.

## Technique of Agglutination Tests.

The compatibility of any two bloods is shown by the non-appearance of agglutination when the serum of each is mixed with the corpuscles of the other, and by referring again to Moss's table (Fig. 2) it will be seen that by means of the serums of Groups II and III all samples of blood can be grouped according to their agglutinating properties: thus if a sample of blood is mixed with a little serum from a Group II blood and also with serum from a Group III blood, and agglutination occurs in both mixtures, the drop of blood comes from a Group I individual; if, on the other hand, no agglutination occurs in either mixture, then the blood being tested belongs to Group IV; if agglutination occurs with serum II the blood belongs to Group III, and if agglutination takes place in the serum III the blood under investigation is a Group II. With samples of serum from known Groups II and III it is possible to test out quickly any blood, and before a transfusion operation this must always be done. It is found that it is sufficient for practical purposes that the corpuscles of the blood from the donor should not be agglutinated by

\* A Post-graduate Lecture delivered before the Chesterfield Division of the British Medical Association. April 7th, 1922.



the recipient's serum, for though theoretically the donor's serum may agglutinate the recipient's corpuscles this serum is so largely diluted that this does not prove any great danger and need not be considered.

Since the corpuscles of Group IV are agglutinated by no serum of any other group, the members of this group are spoken of as "universal donors," and generally such a Group IV blood is chosen for transfusion purposes if possible.

The testing out of the compatibility or otherwise of bloods is extremely simple, and can be done at the bedside. There are many ways of carrying out the test, but the simplest, and at the same time most reliable, is as follows:

Into a small test tube such as is used for the Wassermann reaction is placed a small quantity of N/10 sodium citrate in normal saline, and four or five large drops of blood, obtained by pricking the finger, are mixed with this citrate solution, giving an emulsion of r.d. blood corpuscles. On to one end of a microscope slide is placed a drop of serum from a Group II blood, and on to the other end of the slide a drop of Group III serum, to each of which is then added a little of the corpuscle emulsion, each mixture being stirred with a smooth glass rod and the slide gently rocked to and fro. If agglutination occurs, it is quickly and unmistakably visible to the naked eye, and appears as a fine deposit resembling brick-dust, the particles of which often gradually get larger and larger as more and more corpuscles are agglutinated, until in some cases there appear a few deep crimson dots floating in clear serum.

Before any blood is used for transfusion it is essential to exclude the possibility of conveying any blood-borne disease, so that a Wassermann reaction should be carried out to exclude syphilis, and a careful history of all previous illnesses obtained; donors should be healthy adult males between the ages of 30 and 40 if possible, and during the next decade the possibility of conveying blood parasites should be kept in mind, in view of the large number of adult men who have been abroad during the war and contracted various tropical diseases—for example, malaria, filariasis, etc. Syphilis is said to have been conveyed by blood transfusion.<sup>10</sup> The previous occurrence in an individual of such conditions as acute rheumatism, trench fever, pneumonia, cerebro-spinal fever, typhoid, etc., should prevent such individual acting as a blood donor from the point of view of danger to the recipient, whilst albuminuria, even though transient, any cardiac debility, or marked obesity in a prospective donor should negative his employment on account of danger to himself.

#### Technique of Transfusion.

When a suitable blood donor has been obtained the actual operation of transfusion presents little difficulty, at any rate if the "citrate method" is employed, and as this method has the outstanding merit of being a "one-man" procedure, whereas the other methods, whether Kimpton's paraffin tube or any of the syringe methods, require skilled surgical team work, it will be the only one described here.

The apparatus required is a large wide-necked bottle capable of holding 700 to 800 c.cm., graduated in 50 c.cm., and provided with a rubber cork with three holes through which pass three glass tubes, the middle one of which is ground and tapered to fit the stem of a small separator funnel. To one of the side glass tubes, A, a length

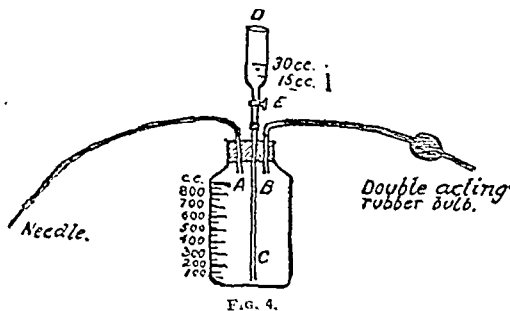


FIG. 4.

of rubber tubing of about 18 inches is attached carrying at its other end a needle with a fairly wide bore (from 1 to 1.5 mm.), whilst to the other side tube, B, is attached a double action bulb giving either a negative or positive pressure. On the centre tube, C, fits the special funnel, which has a capacity of 30 c.cm., and marked on the glass at the half-way or 15 c.cm. level, and provided with a stopcock, E. The apparatus is shown in sketch form in Fig. 4.

After sterilizing the whole apparatus blood is obtained from the donor in the following way. A solution of sodium citrate (3.5 per cent.) is poured into the bottle and allowed to run out through the

needle by simply inverting the bottle, the other tubes being meanwhile stopped by means of short pieces of rubber tube clipped by "bulldog" artery forceps, and after the tube A has been thoroughly flushed the bottle is turned over again, leaving 15 c.cm. of citrate solution in the bottom. The funnel is next placed on the centre glass tube and filled with citrate solution up to the 30 c.cm. mark, the stopcock E being shut and the suction bulb attached to the other glass tube B, the tube A being clipped. The bottle is exhausted to a mild degree and the whole apparatus is ready for use.

The donor, lying down on a bed or table, has the arm cleansed and swabbed with iodine or picric acid, and after the antecubital veins have been rendered prominent by means of a tourniquet, or arm band, the needle is pushed directly into the vein, preferably in a distal direction, though this point is not of much importance, and the tube clip removed. Blood immediately flows into the bottle, and as soon as the 100 c.cm. mark has been reached the tap on the citrate funnel is turned and a further 15 c.cm. allowed to run in, the funnel being again filled up to the 50 c.cm. mark, and as each 50 c.cm. of blood runs into the bottle 15 c.cm. of citrate is allowed to pass in from the funnel. This is better than putting a large bulk of citrate into the bottle first, as one may not always obtain the total quantity of blood counted on. When the blood has been collected and thoroughly mixed with the citrate (the bottle should be kept constantly agitated whilst the collection is proceeding, being also warmed by standing in water at 100° F.), the funnel is detached and a small length of rubber tubing, suitably clipped, is substituted. The suction bulb is replaced by a small piece of tubing and clip, and a somewhat finer needle is substituted for the collecting needle.

The recipient is similarly prepared as to the arm, and generally it is unnecessary to dissect out a vein, though at times in very

collapsed patients this has to be done, so that it is always advisable to have at hand a little local anesthetic, hypodermic syringe, scalpel, forceps, ligatures, etc. The bottle of blood is inverted and a little of the contents allowed to run out of the needle, which is then clipped off, whilst the clip on the middle tube is released to allow air to pass up into the bottle. The needle is then pushed into the recipient's vein, in the proximal direction, and the citrated blood allowed to run in slowly. Gravity is, as a rule, quite sufficient for the purpose, but occasionally a little positive pressure must be exerted, in which case the pressure bulb is attached to the centre tube, and if positive pressure is being used it is as well to have the cork fastened down, as otherwise it will be forced out. In Fig. 5 the bottle is shown in position for the gravitational giving of citrated blood.

The actual amount of blood to be transfused at any one time will depend upon a variety of circumstances, and at present this aspect must be left to the discretion of the operator, as no unanimity has been reached, nor does the amount of citrate solution, within reason, seem to matter practically. This, however, is a point on which further light might be thrown with advantage, as I have seen one case in which unexpected symptoms developed during a transfusion within a few seconds of the blood beginning to flow, symptoms which were repeated four times as, for various reasons, four successive veins were punctured; and it was not until the following day that it was discovered that, owing to a clerical error, the citrate solution was being used in a strength of 30 per cent. instead of just over 3 per cent. The strength of the citrate solution when mixed with the blood in the way described above gives a resulting mixture of about 1 per cent. sodium citrate, and the time taken to infuse 500 c.cm., which may be looked upon as an average amount of citrated blood, should be from fifteen to twenty minutes, a slow transfusion being less liable to produce reactions and symptoms than a rapid one.

The actual amount of blood to be transfused at any one time will depend upon a variety of circumstances, and at present this aspect must be left to the discretion of the operator, as no unanimity has been reached, nor does the amount of citrate solution, within reason, seem to matter practically. This, however, is a point on which further light might be thrown with advantage, as I have seen one case in which unexpected symptoms developed during a transfusion within a few seconds of the blood beginning to flow, symptoms which were repeated four times as, for various reasons, four successive veins were punctured; and it was not until the following day that it was discovered that, owing to a clerical error, the citrate solution was being used in a strength of 30 per cent. instead of just over 3 per cent. The strength of the citrate solution when mixed with the blood in the way described above gives a resulting mixture of about 1 per cent. sodium citrate, and the time taken to infuse 500 c.cm., which may be looked upon as an average amount of citrated blood, should be from fifteen to twenty minutes, a slow transfusion being less liable to produce reactions and symptoms than a rapid one.

#### Reactions.

Certain reactions, however, do occur, and even in carefully tested bloods, where the agglutinin contents seem quite compatible, there is a slight risk which has been stated to be as high as 1 per cent.—a risk at present unexplained. If a reaction occurs it generally manifests itself during the actual operation, the recipient complaining of pain in the chest and difficulty of breathing, which may be accompanied by nausea or vomiting and sometimes the appearance of an urticarial rash and even loss of consciousness, but generally only the first stage of this reaction is seen and if the transfusion is stopped for a few moments and then allowed to proceed more slowly no more trouble is encountered.

Quite frequently, some thirty or forty minutes after the operation there is a "late" reaction, ushered in by a shiver or rigor, which may be slight or severe, accompanied by a mild pyrexia up to 100° F., lasting perhaps for twelve hours, and

\* Messrs. Allen and Hanbury have made a very convenient outfit for me on these lines.



symptoms are more likely to occur if the operation is hurried; the more quietly everything is done and the fewer the number of persons present the better will it be tolerated; at present the method is looked upon as somewhat of a therapeutic curiosity and tends to attract too much attention.

#### Results.

It is as yet difficult to estimate the value of blood transfusion apart from its use in haemorrhagic shock, where its value is incontrovertible, since it is only too frequently resorted to as a last desperate hope. If it is to be of real assistance it must be used much more frequently and early, for its final value will not depend on the cases of gastric ulcer snatched from death, nor the occasional miraculous recovery of the pernicious anaemia patient, but rather on a sound understanding of its rationale and method of action, and such can only be discovered by frequent observations in large numbers of varying conditions. In those conditions where unknown metabolic processes are at work—for example, haemophilia, purpura haemorrhagica, haemorrhagic necrosis, etc.—much might be learned both of the value of blood transfusion, and even of the underlying factors of these pathological conditions, by carefully carried out observations; and, again, its rôle in such chronic infections as tuberculosis might be found to be not entirely useless.

#### REFERENCES.

- <sup>1</sup> Williamson: BRITISH MEDICAL JOURNAL, 1920, i, 603. <sup>2</sup> *Presse Médicale*, April, 1919. <sup>3</sup> Graham: BRITISH MEDICAL JOURNAL, 1920, ii, 820. <sup>4</sup> *Ibid.*, 1920, i, 625. <sup>5</sup> *Ibid.*, 1920, i, 766. <sup>6</sup> Lewisholm: *Amer. Journ. Obstet.*, 1918. <sup>7</sup> Landsteiner: *Wien. Klin. Woch.*, 1901, No. 14. <sup>8</sup> Moss: *Johns Hopkins Hospital Bulletin*, 1910. <sup>9</sup> Von Dungern and Hirschfeld: *Zeit. f. Immunitätsforschung*, 1911, 526. <sup>10</sup> Rendle Short: *Medical Annual*, 1919, 15.

## THE COMPOSITION OF THE GASES IN ARTIFICIAL PNEUMOTHORAX.

BY

LEONARD HILL, M.B., F.R.S.,

AND

J. ARGYLL CAMPBELL, M.D., D.Sc. EDIN.

(From the National Institute for Medical Research, Hampstead.)

ON several occasions during the past year we have had the opportunity to obtain samples of gas from the thoracic cavity in patients with artificial pneumothorax. As our interest was thereby stimulated we carried out several experiments in which we produced artificial pneumothorax in animals—cats, rabbits, and a goat. We studied the composition of the air in the thoracic cavity, using Haldane's apparatus for the analysis of oxygen and carbonic acid. Our observations, although fairly numerous, form but a small contribution to the total, since the previous researches on this subject are extensive. We have made a study of the previous literature and consider that a critical review will be useful, seeing that the conclusions reached by different observers were so varied. As we are at present carrying out a research on the changes in composition of air injected into other body cavities and tissue spaces, and obtaining thereby rather striking results, we feel we are perhaps fortunately placed for a review of the afore-mentioned subject, and attempt herein to bring the different results, previously obtained, into line.

A very early research was that of Davy,<sup>1</sup> who in 1823 studied the gases in a case of pneumothorax. He obtained some of the gas from the thoracic cavity after the death of the patient. It was found that air had passed freely from the lung into the pleural cavity through a valvular ulcerated opening in the upper part of the superior lobe; the valvular opening prevented the air escaping again. Davy found 8 per cent. of carbon dioxide and 92 per cent. of nitrogen in the gas. He carried out numerous experiments on animals, injecting various gases and mixtures of gases—air and carbon dioxide, hydrogen and carbon dioxide, hydrogen and nitrous oxide gas. In the light of modern research, the older observers appear to have been much handicapped as regards the accuracy of their results owing to crude analytical methods. It seems hardly fair, then, to criticize their pioneer work.

Many important researches have been published in modern times. In 1914 Webb, Gilbert, James, and Havens<sup>2</sup> made extensive series of observations, mainly with the object of determining from a clinical point of view the best gas to inject to produce artificial pneumothorax, and concluded that, as Haldane had predicted, little, if any, clinical advantage was

gained by the employment of nitrogen rather than atmospheric air for the production of artificial pneumothorax. Although they did not pay any great attention to or discuss fully the reasons for the changes in the composition of the injected gases, they gave very complete details of the analyses after the injection of oxygen, nitrogen, and air. Their figures for carbon dioxide in the imprisoned gas after many hours varied between 2.64 and 13.59 per cent., and the figures for oxygen varied between 0.41 and 8.66 per cent., except when pure oxygen was the gas injected into the thorax, the figures for oxygen percentage after forty-eight hours being then as high as 24.04 per cent. The remaining percentage, and therefore much the highest percentage, was made up by nitrogen. To quote these authors:

"The oxygen cases are especially noteworthy from the discovery of the large addition of nitrogen which must have diffused into the pleural space. Since blood contains only a small percentage of nitrogen (about 2.4 per cent.), diffusion must take place between alveolar air and pleural space to establish equilibrium. It would, therefore, seem certain that, whatever gas is used for the production of pneumothorax, it does not long remain pure; for Nature rapidly changes it until an analysis yields the equivalent of alveolar air. At our elevation (6,000 feet) alveolar air averages carbon dioxide 6 per cent., oxygen 14 per cent., and nitrogen 80 per cent.

"In general the longer the time between injections the higher the percentage of carbon dioxide and the lower the percentage of oxygen, the former tending to reach 10 per cent., and the latter 1 per cent. to zero."

The second paragraph just quoted contradicts the first paragraph as far as the oxygen is concerned. The first paragraph says the oxygen should be the same as in the alveolar air—that is, 14 per cent.—whereas the second paragraph states that the oxygen tends to reach from 1 per cent. to zero. It is quite obvious that their explanations are not sufficient to cover the variations given in their tables. They carried out an experiment under strictly physiological conditions with two monkeys. The right lungs of two monkeys of equal size and weight were collapsed under ether, one with 125 c.cm. of air and the other with the same amount of nitrogen. Forty-eight hours after positive pressure had been induced in this way the amount of gas still present in the monkey injected with air was 83 c.cm., and on analysis it gave carbon dioxide 8.06, oxygen 4.24, and nitrogen 87.70; whereas the amount of gas still present in the monkey injected with nitrogen was 92 c.cm., and on analysis it gave carbon dioxide 8.52, oxygen 5.61, and nitrogen 85.87. The figures show slight variation, but no conclusion may be drawn from them unless it was known that the lung in each monkey was collapsed to the same extent, or in other words that the circulation was similarly altered in both. These observers appear to have left the gases in the blood out of consideration, but, as has already been stated, the composition of the gases was not their main theme.

The blood gases have been very fully considered by Rist and Strohl<sup>3</sup> in their conclusions. They made a very careful physical study of the volume changes of the gases and of the changes in absolute quantities of the gases in the thoracic cavity following the injection of air, nitrogen, oxygen, and carbon dioxide. They represented these changes by means of graphs showing the variations in quantities and also in partial pressure at definite intervals after the operation for gas. They concluded that several days after the operation for artificial pneumothorax—not complicated by purulent exudate—analysis of the gases contained in the pleural cavity proves that the composition of the gases is the same in all cases. The phenomena which occur after the injection of gas into the pleural cavity, according to these observers, are explained completely by the exchange of gases which takes place in the living body, and which consist of a diffusion through the pleural membrane with rapidity proportional to the coefficient for each gas, and depending on the partial pressure of each gas on each side of the membrane. Equilibrium, they state, is established between the gases of the pleural cavity and the venous blood, and they hold that their graphs show why different results have been obtained at different places before the establishment of this equilibrium. It is well known that carbon dioxide diffuses twenty-five times more rapidly through tissues than does oxygen, and obviously allowance must be made for this and similar physical laws. Rist and Strohl found that after the injection of nitrogen and oxygen the total quantity of gas was increased for a short period, probably owing to the rapid diffusion of over-compressed gas out of the blood; thus is the phenomenon of over-compression explained. Some of our own experiments illustrate very clearly how rapidly the percentage of carbon dioxide rises in



air injected into the thoracic cavity. It was demonstrated in one of Dr. Olive Riviere's patients. He kindly allowed us to withdraw two samples immediately after he had produced artificial pneumothorax with air containing 0.03 per cent. of carbon dioxide. On July 14th, 1922, at 2.59 p.m. 100 c.cm. of air were injected slowly into the thoracic cavity of a boy; at 3.4 p.m. a sample was withdrawn which now contained 0.8 per cent. of carbon dioxide. From 3.5 p.m. to 3.11 another 300 c.cm. of air were injected; at 3.12 p.m. a sample was withdrawn which contained 1.93 per cent. of carbon dioxide (see Table IIb). Grass' obtained similar results.

TABLE I.  
March 27th, 1922. Cat: Urethane.

Time.	Conditions.	Percentage Composition of Air in Thoracic Cavity.	
		CO <sub>2</sub> .	O <sub>2</sub> .
12.50	20 c.cm. of air injected*	—	—
12.53	Sample withdrawn	4.50	19.70
12.54	10 c.cm. of air injected	—	—
2.1	Sample withdrawn	6.10	15.60

\* The composition of the air injected in all cases was approximately 79.93 per cent. oxygen, 0.03 per cent. carbon dioxide, and 79.04 per cent. nitrogen.

We injected 20 c.cm. of pure air containing 0.03 per cent. of carbon dioxide and 20.93 per cent. of oxygen into the thoracic cavity of an urethanized cat (see Table I) and found that after three minutes the percentage of carbon dioxide had risen to 4.50, whilst the percentage of oxygen had fallen only about 1 per cent. In the case of a goat the carbon dioxide rose from 0.03 to 3.56 per cent. in less than eight minutes after the injection of 300 c.cm. of air under local anaesthesia (see Table IIa). We are indebted to our colleague Dr. L. Colebrook for carrying out this operation. The oxygen in this experiment fell only about 1 per cent. in the same time.

TABLE IIa.  
Goat: Local anaesthetic (L.C.).

Time.	Conditions.	Percentage Composition of Air in Thoracic Cavity.	
		CO <sub>2</sub> .	O <sub>2</sub> .
12.19 to 12.22	300 c.cm. of air injected	—	—
12.27	Sample withdrawn	3.56	19.70
12.31	Sample withdrawn	4.45	18.47
12.33	Sample withdrawn	4.74	18.04

TABLE IIb.  
July 14th, 1922. Dr. Riviere's patient—Boy. Local anaesthetic.

Time.	Conditions.	Percentage Composition of Air in Thoracic Cavity.
		CO <sub>2</sub> .
2.59 p.m.	100 c.cm. air injected into thoracic cavity	—
3.4	Sample withdrawn	0.80
3.5 to 3.11	300 c.cm. air injected into thoracic cavity	—
3.12	Sample withdrawn	1.93

Rist and Strohl were justified in excluding cases of pneumothorax attended by purulent exudate. It has long been known that the carbon dioxide percentage rises very high, as much as 11.5 per cent., in pathological fluids. Grass' found that in pneumothorax accompanied by exudate the carbon dioxide percentage was as high as 13.62, whereas in dry pneumothorax it averaged about 6. Pathological processes probably explain some of the high figures for carbon dioxide recorded in gases in pneumothorax. It must also be remembered that in physiological conditions the urine and the bile sometimes contain from 7 to 9 per cent. of carbon dioxide (Strassburg<sup>2</sup>); therefore it is reasonable to conclude that in the tissues where these secretions had formed the percentages must be about the same. Very recently Dunn and Thompson<sup>3</sup> pointed out that 9 per cent. of carbon dioxide must be recognized as a normal figure for the gases in the

stomach. It might be expected, therefore, that the venous blood would sometimes normally contain a fairly high percentage; thus high percentages might be present in cases of pneumothorax, if Rist and Strohl are correct in their conclusion that the composition of the gases in the thoracic cavity depends on the gases in the venous blood. Recently, however, Rist and Strohl's work has been criticized by Dantrebaude and Spehl,<sup>4</sup> who conclude that it is more correct to state that the carbon dioxide percentage in the thoracic cavity depends on the carbon dioxide present in the blood bathing the compressed lung, the blood of which is richer in the carbon dioxide than is the blood in the normal lung, because the compression slows the circulation. They also point out that Rist and Strohl used inaccurate figures for the volumes of gases in normal blood.

Another factor which must be taken into account is whether the pneumothorax is open—that is, whether there is a communication with the outside air or with the air in the lung by means of which air can pass freely into the thoracic cavity. Grass and Meiners<sup>5</sup> point out that this can easily be determined by analysing a sample of gas from the pneumothorax and then drawing out more gas; if there is an opening, fresh air will enter the thoracic cavity as the gas is being removed and the fresh air will thus lower the carbon dioxide percentage in the pneumothorax gas. Undoubtedly such a leakage may explain the very low figures for carbon dioxide given by some observers as being present in cases of pneumothorax.

At this stage we may sum up the position as regards carbon dioxide in the gases of pneumothorax as follows: The carbon dioxide percentage in the thoracic cavity comes into equilibrium fairly rapidly with the carbon dioxide in the blood bathing the compressed lung, unless pathological processes in the tissues of the lung or pleura cause a local increase—or perhaps occasionally decrease—of carbon dioxide; and unless there is a leakage of air into the cavity which will lower the percentage of carbon dioxide.

We consider that the equilibrium is established very rapidly between the injected air and the blood as regards the carbon dioxide. Of course the greater the quantity of air injected the longer the interval before the equilibrium will be established, but even at the latest a couple of hours should be the limit. Henderson and Haggard<sup>6</sup> have shown that after injecting 2 litres of air into the abdominal cavity of a dog equilibrium as regards carbon dioxide content was established in an hour and three quarters. Our own results with gases in the stomach, intestine, bladder, in the thoracic and abdominal cavities, and under the skin (see Table III, A and B) gave very similar results, so that there is no reason to

TABLE IIIa.  
Cat: No anaesthetic.

Time.	Conditions.	Percentage CO <sub>2</sub> under the skin.
11.0 a.m.	400 c.cm. of air injected under skin	—
1.0 p.m.	Sample withdrawn	5.21
2.25	Sample withdrawn	5.00
3.40	Sample withdrawn	5.20
4.10	Sample withdrawn	5.11

TABLE IIIb.  
Rabbit: Urethane.

Time.	Conditions.	Percentage CO <sub>2</sub> in bladder.
12.30 p.m.	25 c.cm. injected into the bladder	—
1.15	Sample withdrawn	5.24
1.40	Sample withdrawn	5.60
2.10	Sample withdrawn	5.80

doubt that equilibrium is established very rapidly in the thoracic cavity—that is, of course, unless the tissues have become much thickened by pathological processes; but an extensive general thickening would be somewhat rare. It has been found that fat renders the diffusion of carbon dioxide slower, owing to low solubility of this gas in fat.



As regards the oxygen percentage in the gas of pneumothorax it is obvious that any leakage in the cavity will raise the percentage, owing to the entrance of air. In view of recent physiological research it seems that, if the gases are left undisturbed in the thoracic cavity, the oxygen percentage falls very slowly and finally becomes very much lower than that of the blood bathing the lung. It probably corresponds finally with the oxygen percentage in the surrounding tissue. In physiological experiments on monkeys Webb and his co-workers<sup>3</sup> obtained fairly low figures for oxygen percentage three days after the last injection of air and nitrogen, the percentages being 4.85 and 3.57 respectively; these figures probably represent the oxygen percentage of the surrounding tissues. They seem much too low for oxygen percentage in the blood of such monkeys. Henderson and Haggard<sup>9</sup> obtained low figures (about 6 per cent.) for oxygen in gas in the abdominal cavity; nevertheless the percentages they found were much higher than those—1 per cent. and less—given by Edkins<sup>10</sup> for oxygen in the stomach cavity.

Our own figures for oxygen percentage in gas in the abdominal cavity of normal animals resemble those of Henderson and Haggard.

Thus on November 3rd, 1922, at 12.30 p.m., 250 c.cm. of air were injected into the abdominal cavity of a rabbit (see Table IV); at

TABLE IV.  
Rabbit: Urethane.

Date.	Time.	Conditions.	Percentage Composition of Air in Abdominal Cavity.	
			CO <sub>2</sub> .	O <sub>2</sub> .
1922. Nov. 3	12.20 p.m.	250 c.cm. air injected	—	—
	3.10	Sample withdrawn	4.67	15.66
Nov. 6	12.10 p.m.	Sample withdrawn	7.01	5.00
Nov. 7	11.50 a.m.	Sample withdrawn	6.42	5.31

3.10 p.m. on the same day the oxygen percentage was 15.66. On November 6th, at 12.10 p.m., the same gas being in the abdominal cavity, the percentage was 5.00, and on November 7th, at 11.50 a.m., the oxygen percentage was 5.31. We also obtained low oxygen percentages in air that had been under the skin of normal animals for some days. Thus air containing 20.93 per cent. oxygen was injected under the skin on February 2nd, 1923, at 5 p.m.; on February 5th, at 1 p.m., the percentage of oxygen was found to have fallen to 3.50 (see Table V).

TABLE V.  
Rabbit: No anaesthetic.

Date.	Time.	Conditions.	Percentage Composition of Air under the Skin.	
			CO <sub>2</sub> .	O <sub>2</sub> .
1923. Feb. 2	5 p.m.	Air injected under skin	—	—
		Sample withdrawn	8.23	3.50
Feb. 5	1 p.m.	Sample withdrawn	—	—
Feb. 7	4.40 p.m.	Air injected under skin	—	—
Feb. 9	2.30 p.m.	—	8.13	3.55

It is possible that the oxygen tension varies somewhat in different tissues and also at different times in the same tissue. Very low figures, resembling those (1 per cent.) of Edkins for the stomach cavity, have been obtained in the gases in pneumothorax, so that in these cases the oxygen percentage in the surrounding tissue may have been the same. Pathological changes in the lungs and pleura, such as thickenings, would probably lower the oxygen percentage in these tissues.

TABLE VI.  
Dr. Pask's patient.

Time.	Conditions.	Percentage Composition of Air in Thoracic Cavity.	
		CO <sub>2</sub> .	O <sub>2</sub> .
Hours. 0	450 c.cm. oxygen injected into left pleural cavity	—	—
48	Sample withdrawn	4.90	15.34

as would also the presence of pathological exudates. Grass<sup>4</sup> found the percentage of oxygen to be about 1 in cases with exudate, whereas it averaged 4 in cases of dry pneumothorax. Previous results, particularly those of Webb and his co-workers<sup>3</sup> and of Rist and Strohl,<sup>5</sup> and our own results, prove

that any oxygen injected was very slowly absorbed by the tissues compared with the rate with which carbon dioxide diffused out from the tissues. Dr. Pask of High Carley Ulverston, kindly allowed us to examine a sample of gas from the thoracic cavity of one of his patients. Two days after the injection of 450 c.cm. of pure oxygen the percentage of oxygen present in the cavity was still about 15 (see Table VI). Similar figures were obtained from patients by Webb and his co-workers.<sup>3</sup>

#### Summary.

1. The carbon dioxide percentage in the gases of pneumothorax appears to approximate very rapidly to that of the blood bathing the compressed lung. The volume of gas introduced in carrying out artificial pneumothorax may thus be increased at first, but not more than about 6 per cent.

2. The oxygen percentage in the gases of the pneumothorax cavity approximates very slowly to that in the tissues bounding the cavity. As nitrogen diffuses out equally, it makes little difference whether oxygen or air be used for inducing artificial pneumothorax.

3. Pathological fluids and tissues usually cause abnormally high percentages of carbon dioxide. Pathological changes probably lower the oxygen content.

4. Any leakage in the thoracic cavity lowers the carbon dioxide percentage, but increases the oxygen percentage in the imprisoned gas.

#### REFERENCES.

- <sup>1</sup> Davy: *Phil. Trans.*, 1823, p. 495. <sup>2</sup> Webb, Gilbert, James, and Havent: *Arch. Int. Med.*, 1914, xiv, 6, p. 883. <sup>3</sup> Rist and Strohl: *Annales de Médecine*, 1920, viii, 4, p. 253. <sup>4</sup> Grass: *Beit. z. Klin. d. Tuberk.*, 1910, xvi, 1, p. 45. <sup>5</sup> Strassburg: *Arch. f. d. ges. Physiol.*, Bonn, 1872, vi, 91. <sup>6</sup> Dorn and Thompson: *Arch. int. Med.*, 1923, xxxi, 1, p. 1. <sup>7</sup> Dastrebande and Spehl: *Comp. Rend. Soc. de Biol.*, 1922, lxxvi, 16, p. 70. <sup>8</sup> Grass and Melner: *Beit. z. Klin. d. Tuberk.*, 1922, li, 2, p. 134. <sup>9</sup> Henderson and Haggard: *Journ. Biol. Chem.*, 1919, xxxvii, 1, p. 71. <sup>10</sup> Edkins: *Journ. Physiol.*, 1922, lvi, 6, p. 421.

## STERILIZATION OF THE UNFIT.\*

BY

R. A. GIBBONS, M.D., F.R.C.S. EDIN.,

GENAECOLOGIST TO THE GROSVENOR HOSPITAL FOR WOMEN.

If in this country the revolutionary suggestion be advanced of sterilizing the mentally defective children and preventing the marriage of those with mental weakness, or those having such a strong family history of insanity as to make it certain that idiots or mentally unfit offspring would result, it is quite evident that strong arguments in its favour must be adduced before legislation could be hoped for.

#### The Increase of Insanity.

On January 1st, 1922, the number of notified insane persons under care in England and Wales was 123,714, an increase of 3,370 on the number on January 1st, 1921. This increase followed one of 3,580 in 1920, and may be compared with the average annual increase of 2,251 for the ten years ending December 31st, 1914—the decade immediately preceding the war.<sup>1</sup> The mentally defective persons under care on January 1st, 1922, numbered 13,810 (males 6,326, females 7,484). Compared with the same date in the year previous this was a net increase of 1,784 patients.<sup>1</sup>

In Scotland on January 1st, 1922, exclusive of insane persons maintained at home by their natural guardians, there were 18,027 insane persons of whom there was official cognizance, including the inmates of training schools for imbecile children, who have not been certified under the Mental Deficiency Act, and of the Criminal Lunatic Department of Perth Prison.<sup>2</sup> The increase over the previous year was 221.

In Ireland on December 31st, 1919, there were 22,578 insane in various district, auxiliary, private asylums and mental hospitals; so that in Great Britain and Ireland there were at the dates mentioned no fewer than 178,129 affected.<sup>3</sup> They does not include all those cases affected mentally who are in sufficiently good circumstances to obviate the necessity of entering a public institution.

As the foregoing shows that there is an annual increase in these numbers, it is clear that there is urgent need to do all in our power to ameliorate this state of affairs. It has been estimated by an eminent authority that there are at present in the United States of America<sup>4</sup> 42 institutions for the feeble-minded, 350 hospitals for the insane.

\* Read before the Westminster and Holborn Division of the British Medical Association on April 12th, 1923. The discussion is reported at page 760.



23,000 juvenile delinquent institutions, 100,000 criminals, and 300,000 insane and feeble-minded.

This same authority estimates that two-thirds of these defective individuals are parents of defective children; this is evidence of the enormous importance of heredity and family history.

#### *Heredity.*

Heredity has been defined by Professor Thomson as "The genetic relation between successive generations."<sup>5</sup> Look defines it as "The transference of similar characters from one generation of organisms to another, a process effected by means of the germ cells, or gametes."<sup>6</sup>

The hereditary substance represented by the sexual pronuclei which fuse together in the act of fertilization Nägeli calls by the name of idioplasm.<sup>7</sup> The resulting germ contains the images of two persons, and is therefore capable of transmitting by heredity their characteristics to the individual developed from it. In Mendel's experiments with the pea he called the character that prevailed *dominant*, and the character that was suppressed *recessive*. He found that a cross between a plant with a dominant character and a plant with a recessive character yielded offspring all resembling the dominant parent as regards the character in question. In the next generation the cross-bred plants were allowed to fertilize themselves, with the result that their offspring exhibited the two original forms, in the proportion on the average of three dominants to one recessive. When the recessives were allowed to fertilize themselves, they gave rise to recessives only for any number of generations.<sup>8</sup> Mendel's interpretation of the important set of facts he discovered was expressed in the theory of gametic segregation:

"The essential part of the discovery is the evidence that the germ cells or gametes produced by cross-bred organisms may, in respect of given characters, be of the pure parental types, and consequently incapable of transmitting the opposite character; that when such pure similar gametes of opposite sexes are united in fertilization, the individuals so formed are free from all taint of the cross; that there may be, in short, perfect, or almost perfect, discontinuity between these germs in respect of one of each pair of opposite characters."

It must be remembered that heredity and environment cannot be studied apart in relation to the development of children, for, however good the heredity may be in the case of a child, it cannot accomplish much without the influence of wholesome environment, which can be of such service in altering or modifying certain tendencies which are inborn. What Sir Frederick Mott calls "the fundamentals of the mind" are begotten with the body, and predetermine character and conduct. This has been demonstrated by Francis Galton's inquiry into the history of similar and dissimilar twins, which proves that dissimilar twins remain dissimilar in mental and bodily characters when brought up in the same environment, whilst similar twins brought up in different environment remain similar in mental and bodily characters. Environment, however, cannot produce mental power.<sup>9</sup> The experience and studies of numerous other investigators have led them to agree with Dr. Goddard's conclusion that two-thirds of all feeble-mindedness is due to heredity.<sup>10</sup> Dr. Barr, chief physician, Pennsylvania Training School for Feeble-minded Children, Elwyn, states:

"The family histories collated in the institutions and hospitals of our land form in themselves a library of tragedies which would convince the most sceptical of the magnitude of race suicide, increasing with each generation. In my individual study of 4,050 cases of imbecility I find 2,651, or 65.45 per cent., caused by malignant heredities, and of these 1,030, or 25.43 per cent., are due to a direct inheritance of idiocy, and 280, or 6.91 per cent., to insanity."

Dr. Paul Bowers, who is superintendent of a hospital for the insane at Logansport, Indiana, has gathered data from a personal examination of more than 5,000 prisoners; he found that the antecedents of 44 per cent. of the examined convicts were psychopathic individuals, who were insane, feeble-minded, epileptic, criminal, or suffered from organic or functional disease of the nervous system.

On the other hand, careful inquiry into the family histories of the progenitors and the collateral members of ancestral stocks will generally show that a child born sound in mind and body is begotten by parents sound in mind and body themselves, whose stocks are free from any neuropathic or physical taint. Some consider that the heredity of mental deficiency is in accordance with the Mendelian laws if mental normality be regarded as the dominant and mental deficiency the recessive character. It has never been known for two mentally defective individuals to become the parents of a normal child.

#### *The Sterilization of Mental Defectives.*

The time has surely arrived when, instead of fostering the growth of the mentally defective, we should seriously consider the important problem of endeavouring to prevent their propagation. This can only be done by the sterilization of those who are definitely unfit to bring into the world healthy children. By the suggestion of sterilization, I do not mean asexualization, which has been practised in many countries for thousands of years. Experience has proved that the quieting of nerves and exaggerated emotional excitement is a primary and necessary factor in developing and training mental defectives, and as they suffer not only from mental and moral debility, but greatly exaggerated sexual impulses, asexualization is often of great service.<sup>11</sup> In ordinary sterilization there is nothing new, for it was known and practised by the Hebrews and Egyptians, in the South Sea Islands, among the American Indians, and in Scotland, on the insane, idiotic, epileptic, and on those suffering from transmissible disease. Plato suggested that the State should marry the best with the best, and the worst with the worst, and that the former should be encouraged to breed freely, while the offspring of the unfit should be destroyed. Aristotle was in favour of allowing children in excess of those required to die from exposure, all deformed children not being permitted to live.

The most frequent cause of congenital weak-mindedness is regarded by many to be neuropathic heredity. The subjects of mental deficiency are classified into idiots, semi-idiots, imbeciles or backward children, and moral imbeciles.<sup>12</sup> The incidence of idiocy among first-born is abnormally great, whilst the last child of a large family is liable to be weak-minded, apparently owing to the mother's nutrition being lowered by frequent pregnancies. Most children who acquire organic disease of the brain during infancy remain mentally defective, and epilepsy is responsible for about one-third of the cases.

Difficult labours are of considerable importance in the causation of mental deficiency, but in collective statistics in regard to these "difficult" labour is frequently accepted solely on the assertion of the mother. These statistics, however, seem to prove that a long labour is more prone to interfere with mental development late in life than forceps extraction.<sup>13</sup>

My own view, as that of others, is that when a child has been definitely pronounced by alienists to be of feeble mind, he or she ought to be prevented from ever having the chance of being a parent. Although this would be done for the advantage of the State, yet it is certainly for the benefit of the child, who, with no idea of responsibility, should be prevented in the future from bringing children into the world to be looked after by others. There is no interference with the sexual functions in the high-grade imbeciles, and moral imbeciles are especially apt to be troublesome.

In 1907 a law was enacted in the State of Indiana for the sterilization of confirmed criminals, idiots, imbeciles, and rapists. Since then other States have passed bills authorizing sterilization, and among them New York, Washington, New Jersey, California, Iowa, Connecticut, Utah, and Nebraska, as well as others. The terms of the Indiana law are:

"Whereas heredity plays an important part in the transmission of crime, idiocy, and imbecility, therefore be it enacted by the general assembly of the State of Indiana that on and after the passage of this Act it shall be compulsory for each and every institution in this State entrusted with the care of confirmed criminals, idiots, rapists and imbeciles, to appoint upon its staff, in addition to the regular institutional physician, two skilled surgeons of recognized ability, whose duty it shall be, in conjunction with the chief physician of such institution, to examine the mental and physical condition of such inmates as are recommended by the institutional physician and Board of Managers. If in the judgement of the Committee of Experts and the Board of Management procreation is inadvisable, and there is no probability of the improvement of the mental conditions of the inmate, it shall be lawful for the surgeon to perform such operation for the prevention of procreation as shall be decided upon as best and most effective. But this operation shall not be performed except in cases that have been pronounced unimprovable."

#### *Prevention of Marriage with the Certainty of Mentally Deficient Offspring.*

In a paper on "Sterility with reference to the State," which I read before the Section of Obstetrics and Gynaecology of the Royal Society of Medicine in March, 1922, I advocated, in order that mentally defective children should not be brought into the world, a State certificate of marriage. This would mean an Act of Parliament, and although one object



I have in view is legal sanction for sterilization of the unfit, yet such a certificate would obviate as far as possible the risk of marriage in persons affected mentally, or infected by the gonococcus, the *Spirochaeta pallida*, or tubercle bacillus. The ordinary family physician could give a certificate of health in the case of the female married for the first time; it would entail no more examination than is necessary for insuring life in any insurance office. The reasons which lead me to urge some such certificate are potent ones. The discovery of the presence of the infective organisms would enable the family attendant to advise the postponement of marriage until health was re-established. Gonorrhoea lessens the birth rate by preventing conception, and is the commonest cause of both absolute and relative sterility in women, the percentage being about 50 of all cases, and about 70 per cent. of the inflammatory infections in women are due to the gonococcus.<sup>14</sup>

It is estimated that syphilis causes about 25 per cent. of stillbirths and abortions, and at least 20 per cent. of the antenatal and neo-natal deaths.<sup>15</sup> This does not include those children with congenital syphilis surviving a month after birth, and who die later from debility, or who grow into delicate, puny children, always requiring extra care and attention. Of syphilitic women about 80 per cent. are married, and of the latter, according to Fournier, 75 per cent. have acquired it from the husband. Statistics regarding ten thousand consecutive labours in each of two American hospitals (the Johns Hopkins and Sloane) show that in the former the stillbirths due to syphilis were 32 per cent. of the total births up to fourteen days after birth, and that in the latter, 9 per cent. of the stillbirths were syphilitic, although all recognized cases of maternal syphilis were refused admission.<sup>16</sup> I do not suggest that men would willingly marry knowing themselves to be diseased, but examination would prove that they are or are not well enough for marriage, which could be postponed.

The strongest argument in favour of this certificate is that it would prevent the union of those with strong tendencies to insanity on either side, or those who showed signs of mental weakness, for they cannot be cured, and their offspring are defective. In the case of those with a strong history of insanity, or in presence of any mental deficiency, the certificate could be granted on the condition that one or both parties should be sterilized. This would prevent the unhappiness following the withholding of a certificate. The certificate would only be withheld in the case of the feeble-minded, or of a strong history of insanity on one or both sides, and in such cases the family physician would be bound to have the opinion of one—or if desired two—alienists. There is no suggestion that every possible care should not be taken with reference to withholding a certificate, for, as such a step necessarily entails an Act of Parliament, stringent regulations to safeguard the individual concerned, as well as the State, would be drawn up.

In some States of America, as already mentioned, sterilization of those mentally affected, as well as certain criminals, is already enforced. Although this is excellent as far as it goes, if sterilization were carried out earlier the vast majority of such persons would not be born. Although syphilis cannot be traced with certainty in Europe before the fifteenth century, it must, like gonorrhoea, have existed amongst the Egyptians from early times, and the reason more attention has not been paid to it until lately may be found in the fact that in former days its treatment was considered, especially by the Roman physicians, beneath their dignity. Although the effects of both the gonococcus and the *Spirochaeta pallida* are frequently terrible, yet, as there is now a possibility of complete cure, they cannot be compared with the appalling calamity of bringing into the world idiots and mentally affected children, whose condition cannot be cured, and who will, we know, if they survive and marry, certainly produce mentally defective offspring.

It is extraordinary how prolific these mental defectives are. Dr. Barr states that the sexual impulses are ever exaggerated, and they reproduce their kind from two to six times more rapidly than normal people. Dr. Bontor mentions a report of fifteen mentally deficient women who produced 116 children.<sup>17</sup>

Experience shows what such children will turn out to be in the future if they survive. They are feeble-minded, and more or less useless in the world, in spite of all the care bestowed on them in the training schools and other institutions in which they are well looked after. Although the cost to the State for the upbringing of these mental defectives is great it would not be complained of if permanent success

followed the treatment. But, as Dr. Stansfield truly says, "the trend of modern civilization, by its Poor Law system and its treatment of the unfit during childhood, tends to foster the growth of this class. The care given to physically and mentally unfit children may reduce the degree of unfitness, but if their improvement is such as to enable them to escape the Mental Deficiency Act they are turned out mental, moral, and physical weaklings, to return to the environment which was associated with the development of this unfitness. This supports . . . is also a strong argument in favour of . . . criminals."

In my opinion sterilization ought to be regarded as a social relief to prevent the advent of mentally defective children. State certificate of marriage will confer a blessing upon our country, for it will ensure the advent of healthy children only. If it became legal to sterilize mentally defective children their survival would be productive of no harm. But even though legislative power be never given in respect of the mentally defective I have said enough upon the *Spirochaeta pallida* and the gonococcus to support the argument in favour of a State certificate of marriage.

#### Method of Sterilization.

Sterilization may be done in the male by vasectomy, a small incision, after the application of cocaine, being made in the scrotum in the situation of the epididymis, the vas deferens isolated, a loop drawn out and divided, and about one quarter of an inch cut from it. The distal end is tied, and the end nearer the testicle left open, so that the secretion from it may be absorbed into the blood, preventing any disorder of metabolism; the contents of the scrotal sac are returned, and the small wound closed. In the female, the Fallopian tubes are divided, and the ends nearest to the uterus tied. The ovarian end of the tube is left open, thus permitting the absorption of the ovarian secretion. Dr. Van Meter makes a small slit through the peritoneal covering of the tube at its proximal end. The oviduct is hooked up and severed at its uterine junction, the severed end reflected on the distal side out through the incision in the peritoneal covering, and the small incision closed with continuous stitches of fine catgut. If there should be the least suspicion of the uterus being unhealthy, the oviduct should be ligatured.<sup>18</sup> Sterilization may also be brought about in both sexes by x rays, but it must be remembered that whereas vasectomy and salpingectomy do not in any way interfere with the functions of the interstitial cells, either in the testicle or ovary, yet the x rays may possibly do so.

I have pointed out the influence of the gonococcus in producing inflammatory affections in women, and the enormous number of infant deaths which are due to syphilis. These two conditions alone, quite apart from the mental and physical sufferings entailed on the parent, are, in my opinion, amply sufficient reasons why the antecedent and present condition of anyone about to be married should be inquired into before granting a certificate of marriage. Sir Frederick Mott says:

"For twenty years I was endeavouring to awaken the authorities to the necessity of combating venereal disease, for it was overwhelmingly proved that syphilis, besides being the sole cause of general paralysis of the insane, which accounts for 15 per cent. of admissions, is also a very frequent and sole cause of mental deficiency and organic dementia. Yet nothing was done until the Royal Commission on Venereal Diseases in 1914."

I have been particular to emphasize syphilis in my appeal for a State certificate, for it is a preventable disease. Everything which can be done to prevent the spread of syphilis will diminish enormously the proportion of cases admitted to hospitals, asylums, institutions for the blind, the deaf, and the dumb, and for mental deficiency due to congenital syphilis.

The authorities who can best give an opinion of real value are those who are superintendents of institutions for the feeble-minded. They assure us that, in spite of all we can do for these mentally defective children, they can never be really cured. As examples of what a man of defective mental type can do, I may quote family histories:

The first was carefully investigated by A. H. Estabrook. The two sons of a mentally defective man married degenerate women, from whom six generations, numbering 1,200 persons, were born, every grade of idleness, viciousness, pauperism, disease, insanity, and criminality, and of the total more than half the women fell into prostitution. By the year 1915 the clan had reached the ninth generation, and increased its evil record. It had numbered 2,820 individuals, half of whom were alive. Although the family was scattered widely over the country and the environment produced no benefit. They still showed the same



feeble-mindedness, indolence, licentiousness, and dishonesty." The cost to the State had risen to 2,500,000 dollars. The one who investigated this family history most justly remarked that this evil might have been averted by preventing the reproduction of the first degenerate.

The second was the striking example of superiority and degeneracy in the well known case of the Kallikak family, published by H. H. Goddard.<sup>21</sup> A young soldier of good stock had a son by a feeble-minded girl, from whom there have descended in a direct line 480 individuals, of whom only 46 are known to have been normal. Of the rest, some are unknown or doubtful, and the others turned out to be feeble-minded, alcoholic, some of the women grossly immoral (mostly prostitutes), epileptics, and criminals. Years later he married a woman of good family, who bore several children, and the descendants turned out well, many of them being distinguished. The two families lived in the same environment.

These two families show what evil can be done from the feeble-minded scattered all over the empire.

In conclusion, I need hardly say that I am fully aware of the opposition my suggestion will meet with in this country, not only on sentimental grounds but on those of State interference with the liberty of the subject, and the possibility of evasions, which would certainly be attempted. Nevertheless, those who seriously consider what is best for the future of our race, in view of the facts I have mentioned, cannot but agree that it ought to be of the highest importance; we should at least endeavour to secure the advent of only healthy children, and as we have the means at our hand we ought to avail ourselves of them and prevent the propagation of the mentally defective.

## REFERENCES.

- <sup>1</sup> Eighth Annual Report of the Board of Control for the year 1921, pp. 7 and 55. <sup>2</sup> Eighth Annual Report of the Joint Board of Control for Scotland, p. 9. <sup>3</sup> Sixty ninth Annual Report of the Inspectors of Lunatics in Ireland for the year ending December 31st, 1919. <sup>4</sup> Paul E. Bowers: Sterilization, *International Clinics*, p. 159. <sup>5</sup> J. Arthur Thomson: *Heridity*, fifth edition, p. 1. <sup>6</sup> R. H. Lock: *Recent Progress in the Study of Variation, Heridity, and Evolution*, 1906, p. 1. <sup>7</sup> Nägeli: *Luciani's Human Physiology*, 1921, vol. 5, p. 292. <sup>8</sup> J. Arthur Thomson: *Heridity*, p. 339. <sup>9</sup> Paul E. Bowers: *International Clinics*, vol. 5, p. 159. <sup>10</sup> Barr: *Some* vol. 51, 1920. <sup>11</sup> *Our Unborn Children*, fourth edition, of the Child, p. 73. <sup>12</sup> R. A. Gibbons: *and Routh: Causes of Ante-natal, Intra- and Neo-natal Mortality*. <sup>13</sup> Amand Routh: *Op. cit.*, p. 8. <sup>14</sup> S. A. Bontor: *Regulation of Marriages by the State*, *Med. Press*, August, 1909. <sup>15</sup> Dr. Knowles Stansfield: *Some of the Causes of our C3 Population*, *BRITISH MEDICAL JOURNAL*, 1921, ii, p. 1022. <sup>16</sup> Stamping out Hereditary Diseases by Sterilization of the Sexes, *Amer. Journ. of Surgery*, vol. 21, 1907, p. 18. <sup>17</sup> The Jukes, in 1915, Carnegie Institution of Washington, 1916. <sup>18</sup> Popence and Johnson: *Applied Eugenics*, p. 159.

## MINERS' NYSTAGMUS.

BY

A. S. PERCIVAL, M.A., M.B., B.Ch.CAMB.,  
OPHTHALMIC REFEREE, COUNTY COURTS 1 AND 2.

In the first report of the Miners' Nystagmus Committee, published last year, we read:

"The Committee have unanimously reached the following conclusions:

- "1. The essential factor in the production of miners' nystagmus is deficient illumination. . . .
- "2. The deficient illumination is due to the low illuminating power of the safety lamps generally used by miners. . . .
- "3. Workers at the coal-face are more affected than other underground workers, and this appears to be due to the unrelieved blackness of the coal and the greater need for accurate vision.
- "4. Distinct signs of nystagmus are present in a large proportion of coal miners, though only in a small proportion do the symptoms ever become so severe as to cause even temporary incapacity for work underground."

With these conclusions I think no one who has practical experience of the disease in the counties of Northumberland and Durham will agree, but of course unsupported assertions are absolutely useless in contesting the point. I have therefore, owing to the courtesy of the Coal Trade Office and of the officials at thirty-two pits in these two counties, obtained some details of 36,232 underground workers during the year 1922, with notes of the character of the illumination and of the average thickness of seams worked at each pit during that year. The numbers are sufficiently large for reliable statistical conclusions to be drawn from them.

The first point we wish to determine from the facts presented is whether in these pits deficiency of light or something connected with coal hewing is the more important cause.

Here what are technically called two attributes are to be investigated, and therefore four independent class frequencies

must be given in order that a valid conclusion may be drawn. (If  $n$  attributes are under consideration, no conclusion can be drawn unless  $2^n$  class frequencies are given, which must be independent of each other.) Of these 36,232 underground workers, 11,383 were hewers and 24,849 were non-hewers; 103 of the hewers and 59 of the non-hewers acquired nystagmus. It is only necessary to compare the proportion or the percentage of the nystagmus cases among the hewers with that of the nystagmus cases among the non-hewers—that is:

$$\frac{103}{11,383} : \frac{59}{24,849} \text{ or } 0.904853\% : 0.237434\%$$

Clearly, if the percentages were equal, nystagmus would be quite independent of hewing; if they were even nearly equal, deficiency of light might be the essential cause of the disease, but we see that the percentage amongst hewers is nearly four times greater than that amongst non-hewers, so we are driven to the conclusion that hewing, or something connected with hewing, is of far greater importance than mere deficiency of light. I have given the percentages to six decimal places when three figures would be quite enough, but I wished to guard against any ambiguity in using less exact figures. If hewing were the only cause of the disease, of course there would be no cases of nystagmus amongst the non-hewers. If both percentages be multiplied by the reciprocal of the greater ( $\frac{1}{0.904853}$ ) we get the ratio 1 : 0.2624.

The difference ( $1 - 0.2624 = 0.7376$ ) gives a sort of measure of the degree of association, where 1 indicates complete association, and 0 indicates that the percentages are equal or that there is complete independence.

There are four other pits, employing altogether 7,452 underground workers; as the details about these are not so complete, for the period is not limited to the year 1922, they are here considered separately. On comparing the proportion of the nystagmus cases amongst the hewers with that amongst the non-hewers we have:

$$\frac{34}{2324} : \frac{20}{5128} = 1.463\% : 0.4179\% = 1 : 0.2856,$$

which gives the degree of association of hewing with nystagmus as 0.7144. When all the cases are added together, making a total of 43,684 underground workers, the degree of association becomes 0.7363.

It is true that the prevalence of nystagmus amongst hewers is noticed in the conclusion (3) of the report, but the explanation given is more than doubtful.

All underground workers are exposed to "the unrelieved blackness of the coal," and "the accurate vision" required by a hewer with a pick does not involve macular vision, but a keen sense of projection from extramacular parts of the retina, as has been so well insisted upon by Dr. Freeland Fergus under the name of alignment. I have examined several miners with macular vision less than 6/24 who have been admitted by their comrades as more efficient coal getters than themselves. In a very dim light macular vision is almost useless, for the fovea is a blind spot, as anyone can prove for himself.

I hold that nystagmus is excited by the long-continued strained position of the eyes in an unusual position. This view is no longer fashionable—chiefly, I believe, because it was found that the incidence of nystagmus was rather less in thin than in thick seams. But in undercutting a thin seam the miner lies on his side while the position of his eyes is rather downwards; whereas in top-holing a thick seam the gaze is directed obliquely upwards, a far more uncomfortable position for the eyes to maintain. Consequently, the greater frequency of nystagmus in thick seams supports the view that the constrained position of the eyes is the important factor in exciting the disease.

Unfortunately, in most cases only the average thickness of the seams worked at each pit has been given me—for example, St. Hilda, 3 ft. to 5 ft. 6 in.—so that it is impossible to draw any conclusions as to the incidence of the disease at 2 ft. and under, at 3 ft., 4 ft., 5 ft., as would have been desirable. In the few cases in which more precise data have been given the numbers are too small for any reliable conclusion to be drawn.

The same difficulty of insufficient data occurs with regard to the character of the illumination. Most of the pits use both oil lamps and electric lamps; in no pit are electric lamps used solely. I have been told that in the Dean and Chapter pit, where Messrs. Bolckow, Vaughan, and Co. had gone to the expense of providing excellent electric lamps to



the miners, the result only was to increase the cases of nystagmus notified. I have no wish to overstress this point, but I think that I have said enough to show that in this neighbourhood all the evidence is against deficiency of light being the principal cause of exciting the disease.

My own view is that there is a predisposition to the disease, that perhaps 5 per cent. of all children born have this idiosyncrasy, and that coal hewing is a very important factor in exciting an active nystagmus. Anyone who has once acquired miners' nystagmus will, after loss of all the symptoms, assuredly acquire it again if he returns to his old employment underground; at least, that is what my experience has taught me. I have seen two cases in accountants who said they always worked in a good light; these are analogous to Snell's ceiling paperer. If this contention be confirmed by others, the patient should never be allowed to go down a pit again, but must be given compensation for a limited period—say twelve months or so—while recovering from his symptoms, to give him time to obtain other employment.

## POSTERIOR GRAVITY DRAINAGE IN EMPYEMA:

### THE STRATEGIC SEAT OF ELECTION.

BY

SIR JOHN O'CONOR, K.B.E., M.A., M.D.,  
SENIOR SURGEON, BRITISH HOSPITAL, BUENOS AIRES.

THE plan herein described has been employed, during the past two years, in a series of cases in the British Hospital, Buenos Aires, by my colleague Dr. Fehilly and by myself, with such uniformly satisfactory results that I think it merits the attention of those who have to intervene in this condition. The reason for its adoption was prolonged failure with other methods to prevent post-operative stagnation of pus within the pleural cavity, as evinced by general symptoms and by the quantity of discharge that always followed changing of tube, which only required a cough or alteration in the position of the patient to prove that the operation had failed to establish immediate automatic evacuation of purulent secretion.

Without wishing to detract from the general value of conclusions formulated on clinical deductions I am satisfied that in this instance surgical reasoning has, for generations, been unwittingly deflected by academic illusions. In the recent edition of Da Costa's *Surgery*, for instance, we find:

"I agree with Hutton that a portion of the sixth rib in the mid-axillary line should be removed. . . . The reasons given by Hutton for the selection of this rib are . . . it is over the portion of lung which expands last. . . . An empyema is drained only partly by gravity, and most of the fluid is really forced out and the cavity is obliterated by lung expansion. . . . If an incision is made anterior or posterior to this point the expanding lung will block the drainage opening, and a pus cavity without drainage will remain in the mid-axillary line. . . . Such an incision permits a patient to lie on his back without making any pressure on the drainage tube."

A few days after the receipt of this new edition, Dr. Fehilly called my attention to the above statements, and after studying them, we went purposely to the wards and examined, in detail, the wounds of five post-operative cases that happened to be under treatment. The result was that, so far as our method was concerned, every line of Da Costa's quotations of Hutton's theories contained a travesty of fact. In four of the cases there was free dependent drainage of a sinus tracking upwards and inwards towards the spine, and in each of these the lung had expanded and air was freely entering the base in the axillary line. In the fifth, the most recently operated on, there was a well defined cavity directly in front of the opening completely shut off from the axillary border of the chest by adherent lung tissue. In each instance there had been prompt defervescence and marked daily decrease in the general symptoms. There was not the slightest reason for suspicion of any secondary pus cavity. The expanding lung did not cause an hour-glass contraction of the sinus, nor had it interfered with drainage in a single instance, and gravity drainage was perfect and in no way affected by dorsal decubitus, which position, by the way, the patients had voluntarily adopted during the first week after operation.

The result of these examinations confirmed previous experience of a method founded on anatomical facts—for example, Cunningham's *Anatomy*, p. 930, Fig. 630—and on x-ray study of the normal living thorax which demonstrated the existence of a distinct potential sinus in the pleural cavity, between the scapular line and vertebra, beneath the

ninth and tenth ribs, formed at the junction of the parietal and diaphragmatic pleura. This, combined with the fact that these patients do not pose in bed in the prone position but invariably assume a supine slope, and that those who have a resection of rib performed for empyema on textbook lines have a tendency to tilt the affected side upwards in order to avoid pressure pain, rendered it obvious that this posterior angle was the strategic site for gravity drainage in general suppurative pleuritis. And personal experience convinces me that the lung expands more rapidly if unhampered by having to force liquid uphill.

It is hardly necessary to add that this seat of election is the ideal one for an encysted empyema between lung and diaphragm, not to mention the ready ingress it affords in cases of suppurating hydatid cysts, abscess of the liver, or subdiaphragmatic abscess, which have perforated the diaphragm on their tracking to a bronchus.

In parenthesis I wish to remark that whenever an abscess or cyst is situated near the posterior surface of the liver posterior drainage should always be adopted; otherwise, as in ill placed thoracotomy for empyema, the "external" sinus or internal flask pocket is certain to remain. When practicable other subdiaphragmatic "collections" should be similarly dealt with. Whenever an exploring needle proves the existence of pus in the chest word is sent to the theatre to prepare at once for operation.

Before commencing local disinfection with the patient's elbow hanging at the side the inferior angle of the scapula is determined by the index finger, and from its tip a line two and a half inches long is traced vertically downwards with a stick of silver nitrate. The lower point of this line indicates the topographical position of the inferior border of the ninth rib, and affords a fixed central point for any form of subsequent incision for the evacuation of "free pus" from the pleural cavity.

Either by the open method is administered, and the patient, with the elbow maintained at the side by an assistant, is carefully rolled over on the table sufficiently to facilitate the insertion of an exploring needle, and (if the result is positive) a four-inch curved incision is made, with its centre at the point above noted. With a few strokes of the knife the skin and subcutaneous tissue are divided, the fibres of the latissimus dorsi (which run upwards and outwards) are separated by a blunt dissector, strong retractors then make a free space for denuding and resecting two inches of the ninth rib, and a touch of a scalpel to the pleura completes an operation which depends on the behaviour of the divided intercostal artery as to whether it will be a one or three minutes' procedure. (N.B.—There must be no hesitation in removing two inches of the tenth rib in the same line if there should be any suspicion of defective dependent drainage.) Two short "gas-pipe" drainage tubes are then inserted into the cavity; these are transfixed with safety pins, under which a thin piece of gauze is packed lightly into the parietal wound, and dry gauze, wool, and a bandage applied. The outside dressing is changed as often as it becomes saturated until the second day, when it is superseded by a four-hourly warm mercury perchloride (1 in 3,000) fomentation, wrung dry. I never apply any form of impermeable tissue with a "perchloride" fomentation, which, by the way, I consider excellent in septic surgical cases. The drainage tubes are also removed on the second day, and two large wisps of silk-worm gut substituted. These wisps are made by doubling twenty strands of silkworm gut and ligating them with a piece of fine silk about half an inch from each end. They afford excellent drainage, do not become foul, and never produce the pyogenic track which invariably accompanies the prolonged use of rubber tubes in wounds.

As soon as the patient can be safely raised into the sitting posture, and subject to no cough supervening, low level trickling irrigation with warm hydrogen peroxide solution (4 tablespoonfuls to a litre of water), followed instantly with warm carbolic lotion (1 tablespoonful to a litre) is carried out three times daily. The "peroxide carbolic" lotion rapidly diminishes smell and, in its own incomparable way, promptly induces vigorous and healthy pale vermilion granulations. The wisps are removed prior to each irrigation, and afterwards reinserted. (It may be well to mention that, to obviate the possibility of these wisps appearing, the sister in charge ties each one, about the centre, with a piece of silk, and passes a safety pin internal to the chest, such cases are treated in the "continuous catheter" method, and are given generous diet with wine, beer, or stout, and meals, with an occasional port wine and egg custard.)







temperature rose suddenly. His bed was tilted, and soon after the temperature fell. The tilting was carried out in three-hour stages for a week, and a week later as he felt well he left the hospital and I lost trace of him.

The patients liked the treatment and would ask to have their beds tilted. I have suggested this treatment in private practice, but an objection raised is that the bed may break.

CHARLES J. HILL AITKEN, M.D.

Kilnhurst, near Rotherham.

## British Medical Association.

### CLINICAL AND SCIENTIFIC PROCEEDINGS.

#### WESTMINSTER AND HOLBORN DIVISION.

##### *Sterilization of the Unfit.*

At the annual meeting of the Westminster and Holborn Division of the Association, which took place, preceded by a dinner, at the Criterion Restaurant on April 12th, Dr. KENNETH HAY presiding, a paper was read by Dr. R. A. GIBBONS on the subject of a State certificate of marriage and the sterilization of the unfit. The paper is printed at page 754 this week.

In the discussion that followed Dr. B. DUNLOP declared himself entirely in agreement with Dr. Gibbons, although he approached the end which Dr. Gibbons had in view by a different route—namely, that of birth control propaganda. Syphilis was, perhaps, the chief factor in causing mental deficiency, and birth control advocates held strongly that the incidence of venereal infection would be largely diminished if celibacy or postponement of marriage no longer widely prevailed. A large proportion of people, especially amongst the better educated classes, were deterred from marriage by the fear of subsequent economic struggle. A rise in the marriage rate would be a very important factor in arresting syphilis. He had been interested in Dr. Gibbons's reference to the relative frequency of deficiency in the case of the first-born; he had discussed this subject with Major Leonard Darwin, who as a eugenicist attributed the higher proportion of defectives—not necessarily mental defectives—among first-born to the risks to which they had been exposed at parturition. With regard to the operations described by Dr. Gibbons, it had been shown by recent investigations that such operations actually resulted in an improvement of the health of the individual, so that the objection on the ground of hardship was thereby met.

Dr. F. HOWARD HUMPHRIS noted that Dr. Gibbons had said that the operations he described did not interfere with the functions of the interstitial cells, either in the testicle or the ovary, whereas  $\alpha$  rays did so interfere. The fact seemed to be, however, that  $\alpha$  rays could bring about sterility while at the same time increasing potency. He quoted a foreign  $\alpha$ -ray worker who had declared that while other tissues were affected by  $\alpha$  rays to the point of actual degeneration, interstitial tissue more or less escaped. This same worker had practised temporary sterilization of husband and wife in alternate months by means of  $\alpha$  rays, and according to the report this appeared to be as practicable a method of sterilization as surgical operation, while it had the advantage that afterwards it could be abandoned if it was thought that, after all, there was no harm in conception being allowed to take place.

Mr. C. E. WALLIS, as one who had been associated for twelve years with one of the largest industrial clinics for the treatment of imbeciles of both sexes, said that it was necessary to distinguish between the confirmed and hopeless imbecile and the improvable imbeciles. He could not imagine anything in the nature of operation upon these latter being tolerated in this country. Even such a trifling operation as vaccination aroused intense opposition in some quarters. But while operation would not be tolerated, it was possible that  $\alpha$ -ray applications, especially if they caused only a temporary sterilization, might be regarded with more tolerance.

Dr. KENNETH DICKSON said that it was very important for medical men to take an interest in these sociological subjects. The bulk of the profession needed converting to the duty of having and expressing an opinion on these matters. An ex-superintendent of the Indian police had told him that on such a subject as the reform of the criminal classes in India the medical men out there had nothing to say, regarding it as a question beyond their concern. But the medical profession was the only united body of men whose opinions on such subjects

were likely to be adopted by the community if they were supported by reasonable arguments. It seemed strange that the greatest propagandist in these sociological fields should be a highly distinguished churchman. Dean Inge would go down into history as one of the philosophers of the present day—one who was judged to be a pessimist only because he refused to prophesy smooth things—and the medical profession would do well to follow such a man in his efforts to educate public opinion.

Mr. A. L. W. WHITEHOUSE reminded the meeting of the various instances of genius allied to insanity or mental instability, and urged that the point of view of the ordinary citizen might be that sterilization would have a regrettable consequence in stopping the supply of Byrons and Samuels Johnsons.

Dr. GIBBONS, in reply, made it clear that his paper had nothing to do with birth control. The object he had in view was to secure the bringing into the world of healthy children, that all about to be married should have a State certificate of health, and if such could not be given marriage should be postponed for the time being. The raising of the age of marriage, of course, lessened fertility. The average number of children to a marriage, supposing the marriage to be fertile for the full child-bearing period, should be ten. Four children to a marriage were necessary to continue the State in view of the fact that some would die before maturity and some would not marry. But the results of the voluntary confidential census among intellectuals showed that the average number of children to a marriage was less than two. This would do away in time with the need for birth control propaganda. Already in France the seriousness of the position was realized and strong action was taken with regard to contraceptives. With regard to the first-born the frequency of defect might be due to difficult labour. He had often found also that the last child of five or six was deficient, apparently because the nutrition of the mother had run down. With regard to  $\alpha$  rays he had been of opinion that powerful  $\alpha$  rays must certainly affect the interstitial cells, though about that, of course, only an  $\alpha$ -ray expert could speak.

## Reports of Societies.

### OSTEO-ARTHRITIS AND RHEUMATOID ARTHRITIS.

A GENERAL meeting of Fellows of the Royal Society of Medicine was held on April 23rd, with the President, Sir WILLIAM HALL WHITE, in the chair. The meeting discussed the question of osteo-arthritis and rheumatoid arthritis.

Sir ARCHIBALD E. GARROD opened the discussion. After a gracious and graceful allusion to the pioneers of the past, he said that these chronic articular diseases formed a very obscure part of medicine. We had lost our way in a labyrinth of cross-classifications and multiple nomenclatures were sure signs of ignorance. The osteoarthritic lesions developed insidiously in old people. Often there was no antecedent acute or subacute arthritis; but osteoarthritic changes might develop from any prolonged or recurrent inflammatory lesion—witness the arthritis of haemophilia. All were familiar with the knee joint trouble of middle aged women. These lesions were quite distinct from infective troubles—these he preferred to class under the heading of rheumatoid arthritis. Immense changes had taken place during the last thirty-five years in their conception both of rheumatoid and osteoarthritic. They were, however, not much advanced in relieving the conditions; indeed, there were still some who did not believe in the difference between the two conditions. There was a decided difference in distribution. Osteoarthritic attacked frequently the end-joints of the hands—joints little affected by the more acute disease. The carpo-metacarpal joint of the thumb was frequently the site of osteoarthritic changes, but was little liable to damage by infective rheumatoid troubles. Sir Arbuthnot Lane had many years ago insisted on wear and tear as an important factor in the cause of osteoarthritic. The speaker believed that it was an important contributory factor, but there must be a predisposing cause. He would call attention to the rare condition of alkaptonuria. In those cases the cartilages of the ear became black with ochronosis the cartilages of the ear became black. These patients showed a very special liability to develop osteoarthritic. Two German observers had reported a family with an alkaptonuric father. Four of the children



suffered from ochronosis and osteo-arthritis; the other four escaped both troubles. There was therefore strong evidence of a special predisposition to the disease. He was tempted to ask, What was rheumatoid arthritis? It was apparently an infective malady; but was it due to one specific infective agent, or was it a disease, like malignant endocarditis, which might be due to a variety of organisms? Sometimes one could find an infective focus, often suppuration around teeth, and removing the focus might lead to the recovery of the patient. But in the majority of cases, search how one would, no definite infective focus could be found. The cases of this type were very many.

Experience had led Sir Archibald Garrod to think that there was a specific disease closely simulated by diseases due to other causes. Such were the arthritis of bacillary dysentery, gonorrhoeal arthritis, and the arthropathy of psoriasis. He well remembered a girl under his care years ago at St. Bartholomew's Hospital. She was a public singer and dancer and suffered severely from psoriasis, with arthritis of many joints. She was apparently completely crippled with rheumatoid arthritis. Under arsenic (also convenient because she suffered also from that curious condition, intermittent hydrarthrosis) she showed great improvement. The psoriasis went away and with it the joints improved. She was able to sing and dance again. Unfortunately the condition recurred. He thought that in this condition there was a perfectly distinct lesion waiting to be investigated. Drugs he did not consider of much value in rheumatoid arthritis. Vaccines were of prophylactic value, but he had never seen recovery follow vaccine treatment alone.

Protein shock gave great relief to patients at the time, but he doubted if the effect was lasting. Treatment at watering-places was valuable later when the subacute stages had subsided and before deformities were established. The same applied to massage of the muscles. Their aim should be to kill off the infection before it did its irrevocable damage to the joints. In osteo-arthritis also drugs were not of much value. He thought that iodides with arsenic sometimes did good to patients just beginning with Heberden's nodes. In hip cases drugs were no good at all. Watering-places with massage and electrical treatment sometimes helped. If he could direct the discussion at all, he would like to ask—

1. What is the difference between osteo-arthritis and rheumatoid arthritis?
2. Is rheumatoid arthritis due to a specific infection or not?
3. What is the real value of modern bacterial knowledge applied to these conditions?
4. What can be done for the patient?

Dr. M. Cassidy feared that the few remarks he would have to make might be regarded as being agnostic or even reactionary. He would begin by expressing his profound conviction that the importance of infective conditions in the etiology of these diseases was at the present time grossly overrated. Particularly was this the case with rheumatoid arthritis. He regarded rheumatoid arthritis as a clinical entity—a somewhat uncommon disease, and one almost entirely confined to women, whom it attacked in early life. In his opinion it was uncommon to find any septic focus, however carefully it was looked for, in a genuine case of rheumatoid arthritis. As a rule these patients had perfect teeth, there was no evidence of intestinal toxæmia, the urine was sterile, and the respiratory tract, tonsils, ears, and genitalia appeared healthy. The fluid aspirated from the joints was invariably sterile; sterile also, he believed, was the synovial membrane itself. Nine years ago Mr. Percy Sargent and he scanned microscopically and bacteriologically small fragments of synovial membrane removed during life from rheumatoid joints. In only one out of fifteen cases was an organism (a streptococcus) recovered, though cultures were made from the excised synovial membrane aerobically and anaerobically in all the usual media. He suspected that their one positive result was a skin contamination. He confessed to being a little sceptical as to whether rheumatoid arthritis was infective at all. There was little in its clinical aspect, apart from the occasional pyrexia, to suggest an infective process. It might run a steady progressive course, with remissions and exacerbations, of thirty or fifty years, with never a visceral complication. Pleurisy, pericarditis, and endocarditis occurred very seldom, and then probably accidentally. The only really common complication was fibrositis, and he was satisfied that not only was there a definite tendency to heredity in rheumatoid arthritis but also that relatives of those patients were

specially liable to fibrositis. He often wondered if both conditions were not metabolic rather than infective, and wished that the biochemists might tear themselves away, if only for a few months, from tests of renal function and blood sugar curves and devote themselves to reinvestigating the metabolism of gout, rheumatoid arthritis, and fibrositis. All that he had said referred to genuine rheumatoid arthritis, the disease as described, for instance, in Allbutt's *System* sixteen years ago by the distinguished opener of the debate. He freely admitted that there was a large group of cases of chronic infective arthritis which might resemble sometimes very closely rheumatoid arthritis at some particular stage in the disease, but rarely throughout its course. In this group an infective focus was often readily demonstrable and its removal often led to cure. But it had been his misfortune to see many cases of rheumatoid arthritis lose all their teeth, submit to a long course of inoculations, and never in his experience was the course of the disease arrested by these measures. What he had said of rheumatoid arthritis held good for many cases of osteo-arthritis. Some cases of this condition were infective, but there were other causes besides infection. Personally he believed that some osteo-arthritic joints were primarily gouty although they had never been attacked by typical acute gout. He remembered two sisters with subcutaneous nodules along the exterior tendons of the hands and feet. Mr. Max Page excised some of these nodules; they contained much uric acid. At the present time both of these sisters were developing osteo-arthritic changes in the knees and other joints. He found it difficult to believe that these conditions were not of gouty origin, though there had never been anything readily resembling acute gout. They were all familiar with the acute onset of osteo-arthritis of the knees, with or without the simultaneous appearance of Heberden's nodes in the fingers, in many women at the time of the climacteric. Surely that must be metabolic rather than infective. Yet these patients, like so many arthritics at the present time, were doomed to become edentulous, and probably also to suffer inoculations.

Dr. F. J. Poynton said that just over twenty years had elapsed since, with Dr. Paine, he had demonstrated the experimental production of osteo-arthritis with a streptococcus obtained from a knee-joint, damaged by osteo-arthritis, of a patient who died by misadventure from carbolic acid poisoning. He thought that since then the importance of infection in these diseases had been more and more recognized. They had shown later two other experimental results: (1) that the same infection in varying virulence might produce various types of arthritis; (2) that a monarticular arthritis might arise from a blood infection. There still remained the difficulty of deciding whether there was a particular disease rheumatoid arthritis or whether it might arise from various infections. It was tempting to believe that just as a particular streptococcus might produce acute rheumatism so a particular staphylococcus might produce rheumatoid arthritis; but whether in human disease any line could be drawn between streptococci and staphylococci was to him doubtful. The various changes in the joints he looked upon as of great practical importance, but as secondary incidents connected as to the prime cause and not in themselves specific. His experience inclined him to believe that the disease was more under control than formerly, and this he attributed in part to the recognition of infection and local foci. The term "local focus," now so often heard, was a fundamental conception, but was dangerous in its simplicity. Very attractive, because sometimes true, was the picture of such a focus discharging infective agents into the system and another showing a cure after removal. The problem in rheumatoid arthritis was unfortunately much more complex and involved one in the great and difficult questions of the behaviour of infections within the body, of the methods of resistance of the body to infection, and the influence of outside factors on the resistance. Could, for example, an apical abscess at the fang of a tooth produce rheumatoid arthritis when it was an almost solitary lesion? How were they to explain the fact that after a septic month had been thoroughly cleansed a rheumatoid arthritis might continue uninfluenced for years? Either the septic month was only an incident, or, if the cause, secondary foci within the body had taken on an active phase. Lack of knowledge of the life history of infection in the body was the obstacle now in the treatment of the disease. It was quite possible to keep removing local foci in a patient who could not bear the strain of active measures and later to discover that the activity of the process was dependent upon factors within the body itself. Unhealthy foci should certainly be



treated, but if we held to the crude idea of a local focus as the explanation of rheumatoid arthritis he thought that cases, of which there were many, in which no foci were apparent might suffer from spasmodic efforts for the removal of suspected foci. Dr. Poynton thought that vaccine treatment was indicated when a micrococcus was isolated in pure or almost pure culture from an obvious local focus, but he thought it would be helpful if a new aphorism could be added to medical literature. It was this: Many cases of rheumatoid arthritis show no definite local focus, but there is no case of rheumatoid arthritis from which a micrococcus cannot be isolated. Did a vaccine isolated from the tonsil, the faeces, the urine, or the nose do service when there were no local signs of disease in these situations? He believed that auto-intoxication from the bowel was the most popular theory of the causation of rheumatoid arthritis. He would treat with care all bowel complaints as they arose, but not from the conviction that they were the cause, but rather the result of the infection. He laid much stress on the treatment of the nervous system. Organotherapy was indicated in cases at the menopause and in cases with severe vasomotor symptoms, but its value difficult to appraise. He had always leaned to curtailing carbohydrates, but Pemberton and his school had carried this line of treatment to considerable lengths, and it was possible we should learn more of the influence of control feeding upon resistance to infection. Local measures were legion. He did not advise radiant heat in cases which were worse in the summer time. He had often noticed relief in hypertrophic arthritis from ionization. His experience of osteo-arthritis of the hip accorded with that of others in the frequency of injury as a factor. In the earlier stages treatment on the lines of tuberculous hip disease seemed to him the most promising. Often these patients, athletic and intolerant, would not wear a splint. Treatment at a spa might do good in these cases provided that the joint could be rested.

Dr. A. F. Hurst called attention to two very constant symptoms of rheumatoid arthritis. There was, during the acuter phases, sweating from the palms of the hands and from the feet; there was an increased pulse rate. He thought that the prognosis was better than some would have them believe. In every case there were infective foci, although often they were difficult to find. He thoroughly believed in the value of x rays in the diagnosis of foci connected with teeth. He cited a case in which a medical student suffered very severely from rheumatoid arthritis. It was thought that he would be crippled for life. At first no lesion of the teeth was discovered. He was sent back to the dentist, and finally a very slight change was detected in one tooth. This was removed. There was a violent reaction. Vaccines were made from the tooth and given to the patient. Again there was a violent reaction. More teeth were removed. The patient was now quite well, and was present that evening. After teeth, tonsils. Many normal-looking tonsils were the seat of infection, but intestine must not be forgotten. Often these cases suffered from achlorhydria, and in these cases large doses of dilute hydrochloric acid did good. Several times Einhorn's tubes had given him organisms from the duodenum, from which it had been worth while to prepare vaccines. While the arthritis was acute, and the joint tender and painful, the affected parts ought to be fixed. Deformity could be prevented by keeping the joints in good position. His treatment was a combination of rest and removal of foci. After the active disease had died out complete ankylosis was rare. Yet often patients remained bedridden. For these, treatment by orthopaedics and psychotherapy was often the best thing. Persuasion, explanation, re-education—all three were necessary. A large proportion of these helpless cripples could, if they would, take up their bed and walk.

Dr. T. S. P. STRANGEWAYS demonstrated pathological specimens to show that there were at least six types of arthritis at present included under the name "rheumatoid arthritis." In order to avoid new names he had provisionally classified these types as follows: (1) capsular, (2) dry, (3) adhesive, (4) rarefying, (5) villous, (6) infective.

In the *Capsular type* the joint changes were practically confined to the capsule of the affected joint. The synovial membrane was not much altered. The capsule itself showed some degree of thickening and fibrosis. The articular cartilage, as a rule, appeared normal, but in the later stages of

the disease it might show atrophy over areas of pressure. The bones of the articulation were normal. This type could be found in both sexes, but was more common in the female sex. The patient complained of loss of strength and feeling of slackness. The joints were swollen, and sometimes were stiff and painful, and often there was a leather-like creaking. Apparent recovery, or great improvement in the symptoms, might take place within a few months of the onset, but a relapse nearly always followed within a longer or shorter period. Although complete recovery might occur, the patient, as a rule, gradually became more and more helpless and crippled.

In the joints of the *Dry type* the characteristic change was the absorption of the synovial fluid which in the later stages of the disease was completely absent. The capsule became atrophied, fibrous, and tightly contracted, gripping the bones of the articulation firmly, and thus causing the articular surfaces to lie in close contact with each other. The synovial membrane was dry and had the appearance of parchment. The cartilage was atrophied from pressure. The bones of the articulation were not altered. This type was seen more commonly in the female sex, and in its early stages it was sometimes diagnosed as chronic rheumatism or fibrositis. There was no swelling of the joints, but as the disease progressed movement became more and more difficult and eventually impossible, and this often led to a mistaken diagnosis of "bony ankylosis." In spite of the close contact, true adhesions between the joint surfaces did not take place, but if the joint was opened the articular surfaces would be found stuck together so that some force was required to separate them.

The *Adhesive type* began with inflammatory changes in the synovial membrane and capsule. These changes were associated with the formation of a vascular granulation tissue which spread over the cartilage and became adherent to it, thus causing vascularization of the perichondrium and of the deeper layers of the cartilage. This was followed by the erosion and replacement of the cartilage by a vascular inflammatory connective tissue which later invaded parts of the calcified cartilage and the bone underlying it. As this inflammatory process spread, vascular adhesions were formed in the joints between adjacent articular surfaces. This acute condition of the joint might persist for months or years, but eventually tended to subside. The inflamed capsule and synovial membrane, together with the newly formed connective tissue and adhesions, gradually became less vascular and eventually were replaced by firm fibrous scar tissue in which development of new bone might occur, leading to bony ankylosis. This type appeared to be confined to the female sex. The patients were thin and wasted, and several joints were usually attacked. They complained of intense pain on movement, but apart from the joint conditions were not in bad health. After several years the disease usually became quiescent, but the patient remained permanently crippled owing to the joint changes.

In the *Atrophic type* the bones in the affected joint were greatly rarefied, and eventually the cancellous tissue was practically replaced by pure fat, so that the bone cut readily with a knife. Accumulation of fat was also present in the muscles and other tissues of the limb, which in extreme cases became so friable and fatty that on forcible extension they broke like a carrot. The capsule, synovial membrane, and articular cartilage were atrophied. In the smaller joints atrophy of the bones might be extreme, especially in the joints of the hands when they had been used, in spite of the joint changes. The carpi were fused together, and after maceration had a lace-work appearance resembling that of white coral. In the early stages inflammatory changes took place in the capsule, and as these subsided bony ankylosis of the larger joints often occurred. In the late stages of the disease the atrophy of the limbs, especially of the hands, was a marked feature. This type appeared to be confined to the female sex, and the patients were usually well nourished and cheerful. There might be a history of exposure, such as sleeping in a damp bed or sitting in a cold train when wet through.

The *Villous type* was seen in both male and female patients who complained of the joints feeling weak and somewhat painful on movement. There was considerable swelling of the affected joints, which felt soft and full of fluid. Although some increase of synovial fluid might be present the swelling was chiefly due to the presence of a number of large villi, some smaller pedunculated villi, which might be seen on the whole of the synovial membrane was covered with them. On opening the joint these villi appeared as soft, white, pinkish outgrowths, and in some cases, especially when the pedicle was long, they were deeply congested. It was in this type that "joint mice" or melon-seeds were sometimes found lying in the joint cavity. As a rule only the larger joints were involved and the condition remained stationary.



formation of warty growths of vascular polypi on the synovial membrane. The cartilage was not much altered, but might show signs of atrophy. The bones of the articulation were normal.

The *Infective type* included a group of cases which were usually diagnosed as rheumatoid arthritis, but in which the arthritis was due to some definite micro-organism. A careful inquiry into the history and a study of the cases would occasionally make it possible to determine the type of micro-organism to which the arthritis was due, but more often it was impossible to arrive at a definite diagnosis. Examples of this type were those obscure forms of chronic arthritis due to the gonococcus, pneumococcus, or various types of dysenteric bacilli, and most observers would include streptococci and staphylococci, but he was doubtful if these two latter organisms were so common a cause of chronic arthritis as was usually thought. Clinically the condition might resemble the adhesive type, but a careful inquiry into the history of onset and progress of the disease, together with a study of the clinical symptoms, usually made it possible to give a provisional diagnosis of infection. This type would, of course, drop out of the above classification when methods of diagnosis improved.

Dr. J. A. GLOVER of the Ministry of Health presented the meeting with some very interesting figures, the results of the inquiry instituted in 1921 by direction of the chief medical officer to look into the large amount of morbidity amongst insured persons ascribed to "rheumatism." In this inquiry a number of insurance practitioners in various parts of the country rendered most valuable aid. By their help it was possible to keep a sample population of 90,000 insured persons under review during 1922. It was also decided as a separate inquiry to ask the regional medical officers of the Ministry to record every case of rheumatic disease referred to them. Diseases were classified under nine heads, of which osteoarthritis and rheumatoid arthritis were two. Standards of comparison were arranged. The following table gives the incidence of the condition.

	33 Regional Medical Officers, examining 27,805 male and 39,130 female patients with all diseases, reported in 1922 the following cases:		19 Insurance Practitioners, of 44 practices, representing a panel of 90,891 (57,993 males, 32,893 females), reported in 1922:	
	Males.	Females.	Males.	Females.
Rheumatoid arthritis	364	805	83	57
Osteoarthritis	640	623	119	71
Gout	28	23	150	3
Chronic joint changes (unclassifiable)	23	43	50	23
Total	1,120	1,494	432	191
Percentage of all rheumatic cases	44	53	24	26

Mr. Glover showed a number of most interesting diagrams illustrating these and other figures. The usual idea that the female liability to rheumatoid arthritis was at least three times greater than the male was, on the whole, borne out by Dr. Glover's figures. He made an interesting point in demonstrating the heavy osteoarthritis attack rates, as regards males, in the north-west (Lancashire division) and the heavy gout incidence in the same sex in the south-west and the south-east. In females the south-east showed a very high rheumatoid arthritis incidence.

## GLANDULAR FEVER AND INFECTIVE MONONUCLEOSIS.

At the meeting of the Section of Medicine of the Royal Society of Medicine on April 24th Dr. H. LUTHERY TIDY discussed the possible identity of glandular fever and infective mononucleosis. Dr. Tidy said that glandular fever was an acute infectious disease, principally occurring in childhood and characterized by enlargement of the cervical glands, which, however, were not painful in spite of their size. A child of 6 or 7 years might have several discrete glands almost the size of an egg. The temperature rose with

the enlarging of the glands, and generally reached about 103° F., falling as the enlargement subsided. Suppuration was extremely rare, and, when it occurred, was probably due to secondary infection. The only serious complication was haemorrhagic nephritis. Convalescence was slow, but recovery was almost invariable, and the mortality might be said to be negligible. During the last two years a number of papers had been published on infective mononucleosis, in which condition there was said to be a high percentage of lymphocytes, even as much as 95 per cent. in a total count of 23,000. The clinical description of these cases of infective mononucleosis was indistinguishable from that just given of glandular fever. In 1921 the speaker, with Dr. Morley, having a case of glandular fever, took a blood count; he could not find any record of a blood count having been taken previously in such a case. The result showed 84 per cent. of lymphocytes in a count of 15,000.

Dr. Tidy had had the opportunity also of observing an epidemic of glandular fever in a school at Epsom, where 24 out of 42 boys reported sick with large glands in the neck and sore throat. In none of these cases did the temperature rise above 103°, and in only three cases above 102°. In no case was there suppuration, and in only one case was the spleen enlarged. The fauces were reddened in a good many of the cases and the tonsils enlarged. Some difficulty was experienced in taking blood tests owing to the fear lest it should be thought that the boys were being experimented on, but blood counts were actually taken in 18 cases, and the results, which he showed to the Section, suggested that an absolute lymphocytosis was a general though not an invariable occurrence in glandular fever, but the lymphocytosis might be very transient, very slow of development, and not always present at the onset of the illness. He believed that glandular fever was a clinical entity, and he emphasized in this connexion the size of the glands and the small changes in the fauces compared with the glandular enlargement. The clinical picture of glandular fever was quite characteristic, and sufficient for diagnosis and prognosis. He believed also that glandular fever and infective mononucleosis were clinically identical.

As for associated conditions, Dr. Tidy continued, whooping-cough might be ruled out, because many of the children concerned had whooping-cough before and since the attack; the same argument applied to mumps. With regard to acute leukaemia, it was quite definite that leukaemia was not infectious; an epidemic of leukaemia had never been heard of. He imagined also that it would be possible to distinguish between the blood changes in acute leukaemia and in this condition. The diagnosis from acute leukaemia was easy, and more usually the medical man who saw a case of glandular fever was inclined to put it down to mumps. Another condition for which it was sometimes mistaken was acute tuberculous adenitis; this mistaken diagnosis might have serious consequences for a youth. As to possible confusion with tonsillitis, the changes in the fauces in glandular fever were characteristically very slight, especially so when compared with the marked involvement of the glands.

### Osteo-arthritis of the Spine.

Dr. CLAUDE GOULDESBOUGH discussed osteo-arthritis of the spine, particularly from the radiological point of view. He commented upon the number of cases sent down with a provisional diagnosis of renal calculus which showed no signs of calculus on examination, but did show osteo-arthritis of the spine. In one year, out of 196 cases collected from the wards and out-patient department of St. Thomas's, all of them with a provisional diagnosis of renal calculus, such calculi were found to be present only in 19, while among the remainder 17 showed osteo-arthritis of the spine. Thus there were nearly as many osteo-arthritic spines as cases of calculus. He discussed osteo-arthritic spines in three categories—two completely distinct from each other, and the third a combination of the other two. The first and most common was distinguished by a spikiness or buttressing of the vertebrae, the region most commonly attacked being the dorsal; the second was distinguished by no extraneous deposits, and showed simply erosion of the discs, affecting the lumbar region. He showed a number of radiographs and drew attention to the excess shadow beyond the outline of the true vertebrae in the first type. The definite edge of the vertebrae was clearly seen, and beyond this the overlying fibrocytic condition.



## NON-OBSTRUCTIVE JAUNDICE.

A MEETING of the Liverpool Medical Institution was held on April 12th, with the President, Professor J. HILL ABRAM, in the chair, when Professor R. J. M. BUCHANAN introduced a discussion on non-obstructive jaundice.

He considered that the distinction should be between jaundice without gross obstructive lesion and jaundice from other causes. He held that the condition was always due, in the last event, to obstruction to the biliary secretion, even in cases where the cause was due to an inflammatory condition of the liver. Professor Buchanan reviewed the differential diagnosis and discussed the value of the Cammidge reaction and of the chemical test introduced by van den Bergh. He discussed the difficulty that arose in the diagnosis between jaundice that was purely haemolytic in origin and forms in which there was some functional derangement in the hepatic cells.

Dr. E. CRONIN LOWE said that jaundice was a symptom arising from derangement of hepatic function from many causes. Among the most common was infection of intestinal origin, the infection proceeding by way of the portal circulation. Mild jaundice could also be demonstrated in the early stages of many infections which were not portal. Van den Bergh's test should prove of value in distinguishing between gross obstruction and catarrhal cellular hepatitis. He had not found absence of post-prandial leucocytosis reliable as an indication of hepatic deficiency. All cases of jaundice without gross obstruction required extensive investigation, which included examination of the gastric, intestinal, and urinary secretions, and also of the blood. When jaundice was traceable to portal infection treatment by a vaccine was of considerable value.

Dr. H. PEMBERTON said that apart from a grossly obstructive type of jaundice which showed acholic stools, bile pigments always in the urine, and an excess of bilirubin (giving the direct van den Bergh reaction), as well as of bile salts in the blood, there was another group to which the term "non-obstructive" had been loosely applied. In this group bile derivatives might be normal or in excess in the faeces, bile pigments might be absent from the urine, but urobilin was often present and in the blood there was a form of bilirubin which gave the indirect van den Bergh reaction, but usually no bile salts. Among the many types which comprised this latter group a subdivision seemed possible into a type presenting mainly haemolytic features and a type presenting mainly primary hepatic inefficiency often. In the differential diagnosis of these types splenic enlargement increased fragility of erythrocytes and urobilinuria often contrasted the first type with the second, in which laevulose estimation in the blood after a test meal might show the abnormal curve of liver inefficiency. As a diagnostic test van den Bergh's reaction did not seem of much value in this matter.

Dr. GORDON GULLAN had seen a typical case of nervous jaundice occurring in a student every time he went up for an examination; the jaundice was very deep and lasted for four or five weeks. Dr. Gullan referred to cases of Hanot's cirrhosis, in which, as well as the jaundice and the great enlargement of the liver, haemorrhages were present under the skin and the mucous membranes; in these cases some bile was also found in the stools.

## Cases.

Dr. J. R. LOGAN read a note on an unusual mineral deposit in the soft tissues of the hands, and showed x-ray photographs.

The patient was a female, aged 60, suffering from a mild degree of Raynaud's disease. The hands and feet were always cold, the former often of dusky-blue colour; dilated veins were visible on the face, ears, and tongue. The mineral deposit was not found in the toes. There were many nodules on the sides and palmar surfaces of fingers and thumbs, in the subcutaneous tissue, not specially near joints. Analysis showed that there was no trace of uric acid, and that the substance giving the dense shadows was phosphate and carbonate of lime.

Mr. ARTHUR EVANS read a note on a case of fracture dislocation of the fourth cervical vertebra.

The patient was admitted to the Southport Infirmary under the care of Dr. Reinhardt Anderson, having fallen from a motor lorry. The injury was followed by definite paresis of both upper and lower limbs with sensory phenomena indicating a lesion of the fifth cervical segment of the cord. There was definite tenderness over the region of the fourth cervical spine. A radiograph showed a well marked fracture dislocation forward of the fourth cervical

vertebra upon the fifth below. Expectant treatment was carried out for a short period, but the patient's condition soon became stationary. He was operated on six weeks from the date of the accident, laminectomy being performed, the spines and laminae of the third, fourth, and fifth cervical vertebrae being removed. The cord at the level of the dislocation was found to be greatly indented in its entire circumference by the laminae of the fractured vertebra behind and in front by the "angulation" produced by the body of the vertebra below the dislocation. The patient made a steady and rapid recovery. Twelve months from the date of his injury he was able to resume his ordinary employment as a mechanic in a motor factory, an occupation requiring not only considerable muscular strength but unusual dexterity of the hands and arms.

## METASTASIS IN MUMPS.

At a meeting of the Brighton and Sussex Medico-Chirurgical Society held on April 5th, with Mr. A. J. HITCHCOCK, President, in the chair, Mr. GEORGE MORGAN read a paper on metastasis in mumps. He gave details of the illness of a boy, aged 13, who, during an epidemic of mumps at his school, developed a right parotitis, followed by arthritis of the right knee, delirium, and urticaria. Subsequently he had acute pericarditis with endocarditis, and the urine boiled almost solid, although no casts were found. Next he had symptoms of mitral regurgitation and a right-sided pleurisy, with morbilliform rash and pain and swelling of the right ankle and an enlarged gland in the right axilla. Jaundice supervened with a temperature and pulse rate continuously high, the pericardial friction and the regurgitant mitral murmur still being manifest. Severe pain and tenderness over the abdomen suggested the possibility of acute pancreatitis, and both knees developed an acute arthritis. Blood cultures were sterile. After a prolonged convalescence the boy made a good recovery.

Mr. Morgan also quoted the case of a man of 26 who, while playing billiards, was accidentally struck by the cue on the left testicle. The organ rapidly swelled up and became very painful and tender, and a few days later the left parotid enlarged and the swelling of the testis became reduced. He then had symptoms of meningitis, with severe headache, vomiting, and photophobia. He was very ill indeed, but ultimately made a good recovery. Mr. Morgan thought that possibly the virus of mumps was in the blood at the time, and that the injury caused it to attack the testicle before the parotid.

THE PRESIDENT, Drs. HALL, NEVILLE COX, ALLEN, LIVINGSTONE, and SIMPSON took part in the general discussion which followed, and Dr. MORGAN replied.

## Urological Diagnosis.

Mr. M. FITZMAURICE-KELLY, in a paper on diagnosis in urinary diseases, remarked that a revolution had occurred in surgical urology in the last twenty-five years, due to the new methods of diagnosis which had been introduced and perfected during that time. These methods were chiefly endoscopic, but radiology and chemical physiology had also contributed to the advance. The chief methods employed were discussed in their relation to the main symptoms of urinary disease, and the importance of a diagnosis, as accurate and complete as possible, before treatment was undertaken, was insisted upon. The speaker entered a strong plea for the more careful and thorough treatment of stricture, aided by the information which could be obtained by the urethroscope. In enlargement of the prostate, the importance of a quantitative diagnosis, with special regard to the intravesical enlargement, was urged, and the diagnosis of post-operative obstruction was discussed. With regard to haematuria, Mr. Fitzmaurice-Kelly emphasized the urgency of cystoscopic examination while bleeding was occurring (so that the opportunity of making the diagnosis should not be lost) and the uncertainty of any inference not based on direct observation. Tests of renal function were of great importance in two classes of cases—those, such as enlarged prostate, where the efficiency was in question, and those in which nephrectomy was contemplated, and the functional value of the presumably healthy kidney had to be ascertained. The speaker expressed a preference for the urea concentration test in certain cases, reinforced by the blood urea test in certain cases, and the latter class, especially where operation was necessary to save life, colour tests, used simply as time tests, were of value.

THE PRESIDENT, and Drs. FIELDEN, MORGAN, FITZMAURICE-KELLY, ORLEBAR, and HALL spoke, and Mr. FITZMAURICE-KELLY replied.



## OCCIPITO-POSTERIOR POSITIONS.

At a meeting of the Manchester Medical Society on April 11th, with Sir WILLIAM MILLIGAN (President) in the chair, Dr. DANIEL DOUGAL, in a paper on the diagnosis and management of occipito-posterior positions of the vertex, described the condition as the most frequent complication met with in obstetrics, and suggested that it was responsible for more damage to mother and child than any other single complication. A diagnosis was practically always possible as the result of abdominal palpation, a method of examination to which far too little attention was paid even at the present time; in fact, vaginal examination, he believed, was still chiefly relied upon for the recognition of obstetric difficulties, and the abdominal method was practised in a very perfunctory fashion, if at all. He thought that the left lateral position of the patient was partly responsible for this, as the abdomen was not readily accessible for examination unless the patient was turned over on to her back, and, rather than disturb her, many were content to neglect the method altogether. In the great majority of occipito-posterior cases it was quite easy to feel the child's limbs occupying the front of the abdomen and the narrow plane of the back lying well out towards one or other flank. On vaginal examination an attempt should be made to recognize the sutures and fontanelles and to ascertain the direction of the pinna of the child's ear. In any case of doubt the patient should be anaesthetized and the whole hand passed into the vagina.

As regards treatment, Dr. Dougall restricted his remarks almost entirely to the following three main lines:—(1) Preventive: Cases seen during pregnancy or early in labour should, he said, be corrected by using the padded binder recommended by Buist (BRITISH MEDICAL JOURNAL, November 12th, 1921, p. 782), or by external manual rotation. (2) Expectant: Where preventive methods were inapplicable or unsuccessful Nature should be given a reasonable time to correct the malposition, and this she would do in 80 to 90 per cent. of cases if there was no interference with her. The condition of the mother and child and the progress of the case generally would decide how long this method was to be continued. It was frequently possible to observe the progress of rotation by inspecting the position of the child's anterior shoulder from time to time. (3) Operative: When previous methods proved unsuccessful the child's head should be rotated bimanually and delivery completed with forceps. It was often an advantage actually to rotate the child's anterior shoulder by placing two fingers of the internal hand behind it. Manual rotation might fail if the head had descended low into the cavity of the pelvis, and then it was worth trying to rotate with the forceps. Lamond Lackie of Edinburgh favoured this method in such cases, but laid stress on the importance of not applying traction until rotation had been completed with the forceps and the latter removed and reapplied. Dr. Dougall believed that it was rarely necessary to attempt extraction with the occiput posterior, and yet a very large number of cases were still treated in that way. It was a common occurrence, in his experience, for many of these cases to be admitted to St. Mary's Hospital after unsuccessful attempts at forceps extraction, the maternal soft parts being seriously lacerated and the children often fatally injured. Rotation and subsequent delivery with forceps were usually carried out with such ease that it must be concluded that the method had not been previously attempted. The reason was to be looked for in faulty methods of examination and failure to recognize the malposition as the true cause of difficulty.

## ETIOLOGY OF TUMOURS.

At a meeting of the Royal Medico-Chirurgical Society of Glasgow held on April 20th Mr. JOHN PATRICK and Dr. J. A. G. BURTON demonstrated four cases illustrating—(1) trauma as a factor in the etiology of sarcoma, (2) the transformation of chondroma and granuloma into sarcoma.

The first case was that of a young miner who sustained a blow on the fronto-parietal region, the resulting effused mass being discovered to be a round-celled sarcoma which had formed in six weeks from the time of injury. The same patient had suffered osteomyelitis of the tibia with formation of granulomata in the skin around the bone wound. These were proved on three examinations to be simple granulomata; after treatment by x rays one of the tumours became altered in appearance, and on microscopic examination was found to be sarcoma.

The second case was that of a boy who had for twelve years suffered from a warty growth on the back of the hand. This was removed by carbon dioxide snow, and three months later a definite subcutaneous tumour was found which was proved to be a spindle-

celled sarcoma. There was also in this case sarcomatous infection of the axillary glands.

The third case was that of a lad who suffered from a tumour of the head of the tibia, which was regarded clinically as sarcoma. Examination on two occasions by microscopic section showed this to be a chondroma. The tumour was extirpated, but growth again took place, and the growth was on this occasion discovered to be a spindle-celled sarcoma.

The fourth case demonstrated was that of a boy of 10 years, who exhibited a swelling in the lower end of the femur, which clinically would be regarded as a sarcoma, but which, when a portion was removed for microscopic examination, was discovered to be a myxo-chondroma. The case was exhibited to the Society as one which would require careful examination from time to time lest sarcoma should develop.

Mr. G. H. EDINGTON made a short communication on exostoses of the long bones. Spongy exostosis, while a well known condition, was, comparatively speaking, infrequent; cases resolved themselves into two categories—the solitary and the multiple exostoses, concerning the latter of which there were frequent mentions in surgical literature. The structure of cancellous exostosis was described and its situation on the affected bone. As regards its origin, he referred to Keith's views on the nature of multiple exostoses—namely, that there is a growth-defect of the membrane enveloping the cartilaginous forerunner of the future bone. The cause of this defect is possibly a disturbance in function of the thyroid gland. Mr. Edington thought that localized defect of membrane might be invoked as the cause of solitary exostosis. He then referred to the clinical manifestations presented by individual cases—namely, deformity, hindrance of function, injury from without, and bursitis—and briefly mentioned the operative treatment of the condition. The communication was illustrated by skiagraphic and photographic lantern slides of cases which he had had under observation.

*Diverticulum of the Bladder.*

Mr. J. MILL RENTON made a short communication on a case of diverticulum of the bladder, and showed the specimen. The patient was a man aged 53, whose urinary trouble followed the spraining of an ankle eight months previously. The bladder on examination reached the umbilicus, and there was no enlargement of the prostate per rectum, but there was obstruction to the passage of the instrument about the neck of the bladder. The urine was highly infected. On opening suprapubically an opening behind the left ureter was found which just admitted the forefinger upwards and downwards in front of the rectum. This diverticulum was separated by blunt dissection, and the neck divided and sutured from the outside of the bladder. Recovery was complete. Mr. Renton made remarks upon previous observations on such conditions, and commented upon the value of cystoscopy. The speaker referred shortly to the operative treatment (1) through the bladder, (2) through the peritoneum, and (3) outside the peritoneum.

Dr. H. E. JONES made a communication on "Glycosuria: a theory of its cause." He described his observations on the activities of the "Californian bees" (also known as the ginger-beer plant), and offered a theory as to the cause of glycosuria.

A MEETING of the Section of Obstetrics of the Royal Academy of Medicine in Ireland was held on April 13th, with the President, Dr. BETHEL SOLOMONS, in the chair. Dr. L. CASSIDY showed a specimen of fibroma of the ovary, removed from a woman aged 54, who had had five children, and whose menopause had taken place eight years previously. Dr. SOLOMONS said that fibromata were found in about 2½ per cent. only of all solid tumours of the ovary. The PRESIDENT showed a specimen of adenomyoma of the uterus, removed from a woman aged 38, who had been married six years and was sterile. At a previous operation a growth the size of a grape fruit, which grew from the left cornu of the uterus and was apparently an adenomyoma, was removed; the uterus was left as the woman was most anxious to become pregnant. She did not become pregnant, and at the second operation an obviously fibroid uterus was found, which was removed with tubes and ovaries, a very small piece of the cervix being left. After operation the patient still complained of pain, and as palpation of the cervical stump caused pain this was removed vaginally. There was no adenomyoma in the cervix, but histological examination of the body tumour showed typical adenomyoma uteri. The case was discussed by Dr. J. S. QUINN and Dr. G. TIERNEY. Dr. GIBBON FITZGIBBON then read the report of the Rotunda Hospital, which was discussed by Dr. L. L. CASSIDY, Dr. TOTTENHAM, Dr. R. J. ROWLETTE, and the PRESIDENT.



BRITISH CONGRESS OF OBSTETRICS AND  
GYNAECOLOGY.

## MEETING IN EDINBURGH.

(Concluded from page 723.)

The morning and afternoon sessions on the second day, Friday, April 20th, were devoted to short papers and demonstration of specimens. The chair was occupied by Dr. HERBERT SPENCER.

*X Rays in Inoperable Cancer.*

Dr. HERBERT SPENCER described two cases of cancer of the body of the uterus with secondary growths in the vulva and vagina, which remain free from recurrence five years and four years respectively after hysterectomy and treatment by  $\alpha$  rays and radium.

*Case 1.*—A parous widow, aged 62, with cancer of vulva and annular stricture of the vagina preventing examination of the uterus. The left vulva and inguinal glands (which were healthy) were excised, and the vagina dilated. The growth was found to be a papillary carcinoma of the uterus; cervix fixed (inflammatory). Radium emanation (108 mg.) was applied to the cavity of the uterus for twenty-four hours; abdominal hysterectomy six weeks later;  $\alpha$  rays to abdomen and vulva. No recurrence after five years.

*Case 2.*—A nulligravida, aged 56, with extensive cancer (adenocarcinoma) of the body of the uterus. Vaginal hysterectomy was performed with galvano-cautery. Four months later an ulcerated growth recurred in the anterior vaginal wall, which was deemed inoperable. Radium emanation (100 mg.) was applied. The growth completely disappeared within three months, and there was no recurrence after four years.

*Chorion Epithelioma of the Fallopian Tube.*

DRS. BETHEL SOLOMONS and E. C. SMITH described a case of primary chorion epithelioma of the Fallopian tube. The patient, aged 40, had been married seventeen years and had eight healthy children, the youngest aged 3 years; there had been no abortions. She was admitted to hospital because of continuous haemorrhage since her last period, which had started three weeks before admission. On the anterior vaginal wall, two inches from the vulva, was a tumour the size of a hazel nut, which proved on removal to be a chorion epithelioma. Laparotomy was performed, and a tumour of the same nature as the vaginal growth was found close to the left cornu of the uterus. The whole uterus and adnexa were removed, but two months after operation the patient developed secondary growths in the lungs, and died. The source of the growth it was impossible to ascertain; the patient had never missed a period, and the corpus luteum was that of menstruation.

*Chorion Angioma.*

Dr. GILBERT STRACHAN showed a specimen of placental chorion angioma. The obstetrical history was unimportant, and the condition was only discovered on examination of the placenta. The tumour was situated at one side of the placenta, was  $2\frac{1}{2}$  inches in diameter, and protruded on the amniotic surface. The uterine surface was not involved. Microscopically it consisted of a number of irregular large spaces filled with blood, and with a myxomatous fibrous tissue between. Dr. Strachan expressed the view that local congestion or inflammation could not explain the condition, and that it represented a purely neoplastic formation.

Dr. R. W. JOHNSTONE showed lantern slides of a similar case described by him in 1914. The tumour was lobulated, and each lobule was covered by exuberant chorionic epithelium, while the tissue between the vessels was myxomatous; the entire tumour therefore was composed of purely chorionic tissue. A distinct kink in one vessel leading to the tumour suggested some obstruction in the circulation as a causal factor.

*Treatment of Urinary Incontinence in Parous Women.*

Professor B. P. WATSON read a paper on incontinence of urine in parous women and its operative treatment. Incontinence of urine, he observed, was often associated with cystocele, but frequently occurred without it. It was observed in parous women, and the cause was a sagging downwards of the neck of the bladder from behind the posterior aspect of the pubis rather than weakness of the sphincter itself; it was produced by overstretching of the pubo-vesical layer of the pelvic fascia by the foetal head during labour. It might be prevented by a timely episiotomy. The operation

he described was similar to that employed by Eden and Lockyer for the radical cure of cystocele, except that the first stitch was placed well out and close to the posterior aspect of the pubis. The fascia was thus brought together over the neck of the bladder; catgut was the suture used. The results showed that out of 48 cases 28 were cured, 16 were improved, and 4 were no better. The paper was discussed by Professor DONALD, Mr. BECKWITH WHITEHOUSE, Professor BLAIR BELL, Dr. EDEN, Dr. HAIG FERGUSON, Dr. FITZGIBBON, Professor LOWRY, and Dr. HERBERT SPENCER. Considerable difference of opinion was expressed as to the nature of the bands seen on the deep surfaces of the lateral flaps. Professor BLAIR BELL maintained that they were not fascial, but composed of involuntary muscle, similar to that found in the utero-sacral ligaments. They should undergo involution after labour, and if they failed to do so incontinence was produced. Dr. FITZGIBBON said that in the cases in which operation failed cystoscopic examination revealed a spot of inflammation at the neck of the bladder. Professor HERBERT SPENCER used silk sutures, and maintained that all cases could be cured by proper operative measures. All the speakers, however, were agreed regarding the preventive value of episiotomy.

*Contraction Ring Dystocia.*

Dr. FITZGIBBON read notes on three cases of contraction ring dystocia. The patients had had 4, 11, and 3 children, and in each the labour was unduly prolonged, in one case for over two days. In one case pituitrin was given, and this probably accentuated the condition, although it did not cause it. In each case the foetus presented by the head, which was free above the brim in two cases and in the third reached the outlet. In one case, although forceps could be applied they could not be placed sufficiently satisfactorily to justify delivery of the head from above the brim, and version was decided on. In the other cases delivery was effected by forceps. In the case delivered by version it seemed at first impossible to pass the hand above the contracted portion of the uterus so as to reach the foetal limbs. In one of the cases delivered with forceps the head was brought over the perineum and in the other down to the perineum with ease, but advance then ceased. The ring in each case was closely applied to the foetal neck while the cervix was widely open and hanging loosely round the head. The ring resisted dilatation for some time in each case but then began to relax, and once this started the relaxation proceeded rapidly and delivery was easily effected—in the case of version and in one of the forceps cases—of living infants. The other case was moderately hydrocephalic. The treatment was practically the same in each case and consisted in the application of a steady dilating force upon the contracted ring, in one case by the passage of a hand between the ring and the foetal body and in the others by bringing the foetal shoulders down against the ring by traction on the foetal head. The ring remained unaltered for six or seven or ten minutes and then relaxed. The condition was closely allied to that found in imprisoned placenta, and the behaviour of the uterus what was to be expected in the case of a muscular organ.

The paper was discussed by Drs. LOCHRANE and SHANNON, Dr. HERBERT SPENCER, Mr. WHITEHOUSE, and Professor LOWRY. Dr. Shannon said that with deep anaesthesia and forceps the child often came away, but not always. In such cases craniotomy followed by version was the best treatment. Dr. Spencer advised cleidotomy followed by the application of a weight. Mr. Whitehouse thought that cleidotomy and version would be difficult to carry out, and did not see how craniotomy could be of benefit. Professor Lowry advised the administration of morphine and chloroform, and that no attempt to deliver should be made for half an hour; premature interference merely stimulated an already irritable uterus.

Professor R. J. JOHNSTONE (Belfast) demonstrated by means of blackboard sketches some uses of the continuous catgut suture in gynaecology.

*Short Papers and Demonstrations.*

*Developmental Intersexuality.*—Dr. F. A. E. CREW (Animal Breeding Research Department, University of Edinburgh) in a paper on this subject, said that abnormality of the reproductive system, in which the external genitalia are of an imperfect female pattern and the internal genitalia consist of paired maldescended testes and a double set of structures (male and female) comprising the accessory sexual apparatus was common among mammals and was usually referred to as tubular partial hermaphroditism. It was suggested that the



condition was the result of retardation in the exhibition of the sex hormone in a male. Normally in a male the sex hormone encouraged the fuller development of the Wolffian ducts, inhibited that of the Müllerian ducts, and guided the growth of the urogenital sinus and genital tubercle into scrotum and penis while controlling the parallel development of the testes and the gubernacular apparatus. In the absence of the directing control of the male sex hormone the Wolffian and Müllerian ducts pursued an equal and parallel development, and the urogenital sinus and genital tubercle continued their undifferentiated growth. Later these structures lost their embryonic plasticity, so that, when the sex hormone was elaborated, they were no longer capable of being affected. What was affected were the secondary sexual characters and the sexual behaviour, so that at the time of sexual maturity the individual had to be regarded as a male.

Dr. HERBERT SPENCER showed a specimen of congenital deformity of the posterior lip of the cervix in a virgin aged 52. The lip was elongated and hypertrophied, so that from base to tip it measured  $2\frac{1}{2}$  inches in length, forming a reddish lobulated tumour which filled the vagina and bulged the intact hymen. There was hypertrophy of the supra-vaginal cervix. Microscopically the tumour consisted of fibrous and muscular tissue covered with stratified epithelium and containing glands lined by a single layer of columnar epithelium. Dr. Herbert Spencer also demonstrated Dr. Butterfield's photo-micrographic attachment to an ordinary camera for taking photographs of microscopic slides without the use of a microscope. Magnification could be obtained up to 35 diameters.

Dr. HAIG FERGUSON showed: (1) A uterus fifteen days after Caesarean section from an eclamptic patient who had died from cerebral haemorrhage. The scar was invisible to naked-eye and even to microscopic examination. (2) An adenomyoma of the posterior vaginal wall simulating epithelioma. (3) Large subperitoneal fibroid with severe intraperitoneal haemorrhage from a ruptured vein on the surface. (4) Adenocarcinoma of the cervix in a nullipara. (5) Utero-vesical fistula plugged by the cervix; a vesico-vaginal fistula had formed during delivery of her sixth child, and after several unsuccessful attempts to close the opening a surgeon plugged up the opening with the uterus. The patient menstruated through the bladder, and by careful hygiene, washing out the bladder twice daily, etc., she had comfort for two years. Calculous deposits then began to form inside the bladder, on the lips of the cervix, and on clots of menstrual blood. These had to be removed every six months. The calculi set up bladder ulceration which resulted in the formation of several small vesico- and urethro-vaginal fistulae. The patient died nine years after operation of an ascending infection of the kidneys and Fallopian tubes.

A lively interchange of views on the best suture material for use in cases of vesico-vaginal fistulae took place between the Chairman and Professor Blair Bell; the former declared that if silver wire sutures were used every case could be cured; the latter that the use of silver wire was a retrograde step and that only catgut was justifiable. He did not claim to cure every case, however, as Dr. Herbert Spencer said could be done if silver wire were used. The silver wire sutures were removed afterwards.

Professor B. P. WATSON showed a uterus with a perfectly healed scar after Caesarean section. The patient had had Caesarean section performed in the South of England three years ago. Convalescence had been febrile, and, fearing the condition of the scar, Professor Watson decided to do a second Caesarean operation, although there was no pelvic contraction; the uterus was removed, leaving the ovaries. The scar had healed perfectly, and no trace of it could be found even microscopically. He had made inquiries regarding the suture material used, and found it had been interrupted catgut inserted through the entire depth of the wound except the mucosa. The wound had then been covered by a Lambert suture. It did not therefore hold that a febrile convalescence was necessarily followed by a weak scar, or that the dictum "Once a Caesarean, always a Caesarean," was always true. Professor Watson then demonstrated Cullen's sign of ruptured ectopic pregnancy in an old scar after an operation for appendicitis. The general opinion of the members was that the sign was of little or no value, the umbilical pigmentation being rarely present, and probably a mere coincidence when it was.

Mr. BECKWITH WHITEHOUSE showed a specimen of cervical fibroid with a vein opening into the cervical canal; severe haemorrhage and collapse had occurred after a fit of coughing;

myomectomy, followed by hysterectomy, was successfully performed.

Dr. O. D. LOCHRANE described a case of endometrial adenoma of the abdominal wall following ventro-suspension three years before. The tumour lay in the right rectus sheath, was more than half the bulk of the corpus uteri, and on section was found to contain a large number of small cystic spaces containing dark fluid blood, lined by columnar or flattened epithelium and surrounded by a stroma-like mantle. The tumour became enlarged and tender during each menstrual period. The body of the uterus was found connected with the site of operation scar by a peritoneal band one and a half inches long. The right ovary was adherent and contained several haemorrhagic cysts. Dr. Lochrane believed that the tumour had arisen from an implantation of endometrial tissue, carried by the catgut sutures passed between the uterus and abdominal wall at the first operation.

Dr. R. W. JOHNSTONE read notes of a case of endometrioma of the posterior vaginal wall associated with "chocolate cysts" of the ovary. The chief symptoms had been intra-menstrual dysmenorrhoea, dyspareunia, and sterility. Several speakers objected to the term "endometrioma" as unnecessary. "Adenomyoma" was sufficient. Mr. WHITEHOUSE related a case exactly similar to that described as "endometrioma" in an appendix scar in a male. Professor BLAIR BELL, however, maintained that the term "endometrioma" expressed the function of the small glands which rest in an endometrial stroma and also menstruate; an adenomyoma did not menstruate, and endometriomata were never found before puberty.

Dr. JAMES YOUNG showed lantern slides of an early ovum calculated to be about fourteen or fifteen days old. The blastocyst showed no projection of mesoderm into the trophoblast, and the trophoblast, unlike the Teacher-Bryce ovum, consisted almost entirely of cells of the Langhans type.

Dr. F. J. BROWNE (Edinburgh) read a short paper on some problems of latent syphilis, and also demonstrated a specimen of congenital absence of the left half of the diaphragm in a foetus.

This concluded the proceedings, and the members were afterwards entertained to tea in the reception room of the Royal College of Surgeons.

## Reviews.

### THE MECHANICS OF THE DIGESTIVE TRACT.

It might be said that the plausibility of a hypothesis varies inversely with the number of suppositions on which it is founded. The fewer the assumptions required to support it, the more likely is it to be correct. The aim of all biologists is to make use of as few hypothetical factors as possible in working out a reasoned explanation of observed facts. History shows frequently how the earlier hypotheses regarding any phenomenon tend to be complicated and involved, and how gradually, as more and more comes to be known of that phenomenon, one by one the unnecessary assumptions are pruned away, till ultimately the whole series of facts is found to be capable of explanation on the basis of one general fundamental law. Simplification is the essence of wisdom. The truth of these remarks is well exemplified in a book by Dr. ALVAREZ, entitled *The Mechanics of the Digestive Tract*,<sup>1</sup> in which he has collected and summarized the numerous contributions he has made during the past few years to the physiological journals. Instead of being content with the vague general concepts of vagotonia and sympathicotonia, instead of invoking the autonomic nervous system as the primary cause of intestinal movements, he has studied the reactions of the actual muscle itself, and has found in it certain properties which are sufficient to explain a large number of phenomena hitherto generally supposed to be dependent on the action of extraneous and more complicated factors.

Evidence is first brought to show that the circular muscle of the intestine is able to contract—and to contract rhythmically—after being deprived of all nerves. The stimulus giving origin to the beat is in the muscle itself. Dr. Alvarez tells us, moreover, that strips of muscle removed from different portions of the small gut show variations in rhythm. For

<sup>1</sup> *The Mechanics of the Digestive Tract*. By Walter C. Alvarez, M.D., George Williams Hooper Foundation for Medical Research, University of California. New York: Paul B. Hoeber. 1922. (Demy 8vo. pp. xii + 192; 22 figures. 3.50 dols.)



instance, the duodenal muscle contracts twenty times a minute, that at the lower end of the ileum only ten times a minute. The ratio of rhythmic contraction in the small intestine varies inversely as the distance from the pylorus. A definite gradation in rhythm is seen on passing down from the upper to the lower parts of the gut. But there are other gradients noticeable besides the rhythmic gradient. On comparing the duodenal muscle with the muscle of the lower ileum Dr. Alvarez has found that the latent period in the former is shorter, that its tone is greater, that its tendency to beat when removed from the body and placed in warm oxygenated Locke's solution is greater, and that its irritability to distension by gases also is greater than in the case of the latter. Further examination shows that the output of carbon dioxide is higher in the duodenum than in the ileum, and that the catalase content of the muscle is likewise greater. There is, in fact, a distinct parallelism between the gradients of rhythmic contraction, production of carbon dioxide, and catalase content. In other words, the metabolism of the upper part of the bowel is more rapid than that of the lower, and there is a graded difference between the two. Stimulate the small gut at any one point, and a wave of contraction spreads out in both directions, but because of the higher resistance of the cephalic segment and the lower resistance of the caudal segment the wave is more marked and travels farther in the downward direction.

All this is physiological. Under diseased conditions alterations in the various gradients arise leading to reversed peristalsis and other disturbances of contraction. It is these—a description of which unfortunately would take too long to give here—which are so interesting from a clinical point of view. Reasoning from ascertained fact the author uses his gradient theory to shed light on the most diverse conditions, such as indigestion, constipation, intestinal obstruction, vomiting of pregnancy, dietetics, the action of drugs, and other subjects which should claim the attention alike of the physician, the surgeon, and the gynaecologist. It is a wide, comprehensive, and illuminating theory. It is advanced in no spirit of dogmatism but with the caution of an experienced scientific worker; and no claim is made as to its finality.

The book will be widely read and widely appreciated. It is both helpful and stimulating. It is provided with an excellent bibliography, containing 456 references to original papers—altogether invaluable to those engaged in research. We will not add more to the list of reasons why it should be read. We recommend it unhesitatingly to all interested in the physiology and pathology of the animal body.

### DISEASES OF CHILDREN.

DR. J. H. HESS'S *Principles and Practice of Infant Feeding*, first published in 1918, has now reached its third edition.<sup>2</sup> It is smaller than many books devoted to this difficult subject, and on that account is somewhat easier to read, though perhaps not less difficult to understand. Dr. Hess is of the Czerny-Finkelstein school; but while still following that teaching and classification, he has in the present edition adopted some new names. He now divides the nutritional disturbances of infants into those unassociated with diarrhoea, those characterized by diarrhoea, athrepsia, and anhydraemia. But these new words are only other forms of Finkelstein's terms, disturbance of balance, dyspepsia, decomposition, and intoxication; and they only add to the artificial complications of the subject. Our real knowledge of dyspeptic infants is at present hidden under a mountain of prodigiously long names, which are worthy of the ingenuity of mediaeval theologians. These names do not accurately describe clinical phenomena, nor do they succeed in grouping them into a satisfactory pathology. As for therapeutics, though the ingenious but hypothetical pathological conceptions introduced by the German schools of Czerny-Finkelstein have strongly influenced treatment, yet it should be recognized that the method is empirical; not the wise and safe empiricism founded on experience and clinical observation, but that which rests on pretty but unsubstantial pathological theories. Dr. Hess gives most careful and detailed accounts of treatment, but does not record a single case illustrating its results; he, indeed, shows two charts, one labelled by decomposition, the other lobar pneumonia complicated by enteritis; but without more clinical details they are of little value. Some chapters are also devoted to rickets, spasmophilia, scurvy, acidosis, and the anaemias of infancy. The

author deals at length with the various theories of origin of rickets, with recent experimental work, with morbid anatomy and chemistry, but very summarily with the clinical features. Fig. 15 is a photograph of "a colored infant" showing marked rickets; Fig. 17 is given as a radiograph of the wrist of the same infant, but the ossification of the carpal bones is of a stage much later than infancy and would indicate an age of at least 5 years. The book concludes with an appendix of formulae and other miscellaneous information.

The book on diseases of children by Professor E. FEER of Zürich was first published in 1911; it has now reached its seventh edition. The author obtained the co-operation of a number of Austrian and German authorities, including von Pirquet, Pfäundler, Finkelstein, Moro, and Meyer. A book entitled a *Textbook of Pediatrics*,<sup>3</sup> founded upon Feer's volume, which was written in German, has now been produced in English by Drs. SEDGWICK and SCHERER. To it there are nine German contributors and fifteen American, and it is not quite clear how far the work of the latter is faithful translation and how much is revision and alteration. The general plan and main divisions remain as in the German book, and as it includes within its nine hundred odd pages a long section on infectious diseases and another on diseases of the skin the book cannot be described as too big for its scope. The number of illustrations is large (262), and some of those in the section of skin diseases are particularly clear and good; on the whole, however, the quality of the photographs is disappointing. There is also a tendency to a too literal translation, resulting in a clumsy form of German-English: for example, "the tendency is familiar" (p. 214); "a form of rheumatic disease coordinial with the joint inflammations" (p. 551); "rheumatism nodosum" (p. 709); "grippal diseases" (p. 699); "a plotic liver" (p. 323). Actual mistakes are also too numerous: on page 505, atheosis should be athelosis; and in the account of rickets there is a reference to *Findley's* observations (Findlay). Throughout the book there is very little said about the teaching and contributions of the British schools of medicine, and the book must be regarded as presenting a German view of the subject. For example, in reference to the vitamin theory of rickets, the following sentence occurs: "While the theories about this factor have formerly been rather vague, American observers in animal experiments, and pediatricians in the central empires, during the food shortage caused by the blockade have added considerable research to this view."

*Feeding, Diet, and the General Care of Children*,<sup>4</sup> by Dr. A. J. BELL, is a book whose title reveals its general character. It is written for mothers and trained nurses, and describes in simple language the rules of infant feeding, the preparation of bottles, the hygiene of the nursery, and so forth. It discusses also the diet of older children, supplying diet lists up to twelve years of age. Other chapters are devoted to very short accounts of the symptoms and nature of the commoner diseases of infancy and childhood. Such a book is apt to recall the old saying that "a little knowledge is a dangerous thing"; and while it could do no harm in the hands of a trained nurse it might not be harmless in those of the average mother. The aim of the book is praiseworthy, and the simple, clear style is well adapted to achieve it.

Dr. WALTER BIRK's book on diseases of infants is a companion volume to that on diseases of children, already noticed. The present volume is the fifth-sixth edition,<sup>5</sup> the first having appeared early in 1914. The book seems popular in Germany, and translations have been published in American, French, and Italian. In trying to explain this success, one is struck by the small size of the book; the physiology and feeding and diseases of infants are dealt with in 275 pages. As it is written expressly for students and practitioners, this brevity gives it an advantage. There are four sections, dealing with the dietetics of infancy, the diseases of the newborn, the

<sup>2</sup> *Textbook of Pediatrics*. Edited by Professor E. Feer, Zürich. Translated and edited by J. P. Sedgwick, B.S., M.D., and C. A. Scherer, M.D., F.A.C.P. First edition in English. Philadelphia and London: J. B. Lippincott Company. 1923. (Med. 8vo, pp. xviii + 917; 72 figures, 42s. net.)

<sup>3</sup> *Feeding, Diet, and the General Care of Children. A Book for Mothers and Trained Nurses*. By Albert J. Bell, A.B., M.D. Philadelphia: F. A. Davis Company. 1923. (Post 8vo, pp. xii + 275; 11 illustrations, 24s. net.)

<sup>4</sup> *Säuglingskrankheiten*. By Professor Dr. Walter Birk. Fifth and sixth editions. Bonn: A. Marcus and E. Weber. 1921. (Demy 8vo, pp. xii + 282; 25 figures.)

<sup>5</sup> *Principles and Practice of Infant Feeding*. By Julius H. Hess, M.D. Third revised and enlarged edition. Philadelphia: F. A. Davis Company. 1922. (Demy 8vo, pp. xvi + 495; 34 figures. 4 dolls. net.)



nutritional disorders of infants, and the diseases of infants. Following the classification of Czerny and Keller, the author divides nutritional disorders into food injuries, infections, constitutional disorders, and congenital defects. As is common in German textbooks, he gives a full description of the exudative diatheses of Czerny. This section is well done, and the principles of treatment are fully explained without excessive detail. The section dealing with diseases of infants is perhaps abbreviated to a dangerous point; but there is an adequate account of congenital syphilis, and also of the common respiratory disorders of infants. The description of nervous diseases is pressed into six pages, and is quite inadequate.

### TREATMENT OF FRACTURES.

THE ninth edition of *The Treatment of Fractures*,<sup>6</sup> by C. L. SCUDDER, has recently been published. The book is now so well known that it is no exaggeration to say that it is the standard American work on the subject. Since the appearance of the eighth edition in 1915 an enormous number of cases of fracture have been under treatment as the result of the war. Experience gained from these cases has to a certain extent modified surgical procedure, for the principles of treatment are the same in civil as in military surgery. It has come to be generally recognized that a fracture is not only a lesion of bone, but may also be associated with injury to the skin, muscles, blood vessels, nerves, and to joints in the neighbourhood of the fracture, as well as to the several viscera protected by bony structures. Treatment to be efficient must be directed not only to procuring accurate union of fragments, but to the restoration of the surrounding soft parts. Perhaps some of the outstanding advances in the treatment of fractures may be summed up as follows: The need for immediate operative treatment on all cases of compound fracture, with removal of damaged tissues and efficient fixation. The proper treatment of shock. The acknowledgement that the indirect and direct traction principle is capable of correcting shortening in fractures of long bones, and that the cases in which direct fixation by the use of metallic sutures and plates is indicated are relatively few. The necessity for the early active movements of joints contiguous to the fracture. The value of active as distinguished from passive movements of joints. And lastly, the absolute necessity for x-ray examination of fractures both before and during treatment.

Throughout his work Dr. Scudder pays attention to the prognosis in the various forms of fracture, and a clear guide is given as to the probable period of disability. The book is most admirably printed and fully illustrated, with x-rays, diagrams, and photographs which greatly add to its value.

Cases of so-called simple fracture are often dreaded by the general practitioner and surgeon alike, and the result is frequently highly unsatisfactory from the patient's point of view. The book under review should prove of real help in the treatment of these difficult problems, and can be strongly recommended.

### ST. MARY'S HOSPITALS, MANCHESTER.

THE *History of the St. Mary's Hospitals, Manchester*,<sup>7</sup> prepared by Dr. J. W. BRIDE, is based on an analysis of the early registers showing the obstetric work of the hospitals. In the course of that undertaking he learned much of interest concerning the early history of the institution, and decided to make it accessible to others. The result is a concise, clearly expressed account of the hospital since its foundation. It contains chapters on the administration and management of the institution and its gradual development, with a series of short biographies of twenty-one former honorary physicians and surgeons. A list of all the honorary members of the staff who have been connected with the hospital since it was first established is given in an appendix. Within the limits to which he has confined himself Dr. Bride has done the work well and, as far as we can judge, accurately. The present charity, known as the "St. Mary's Hospitals," consists of a handsome modern building with 121 beds adjoining the Royal Infirmary, devoted exclusively to gynaecology and diseases of children, and another equally modern building

of 58 beds with 50 babies' cots for the reception of maternity cases, situated more in the centre of the town. It was formed in 1904 by the amalgamation of the old St. Mary's Hospital for women and children with the more recently established Southern Hospital, also for women and children.

The older institution, known since 1854 as St. Mary's Hospital but originally designated "the Manchester Lying-in Hospital," was founded by Mr. Charles White, F.R.S., in conjunction with his son Thomas and his friends Drs. Edward and Richard Hall in the last decade of the eighteenth century, a century prolific in the establishment of medical charities, which have survived to the present day. It is interesting to note that with the exception of St. Bartholomew's at Rochester, dating from 1078 A.D., and the Bath Mineral Water Hospital, from 1610 A.D., the eighteenth century opened apparently without any provincial hospitals. Addenbrooke's Hospital, Cambridge, was founded in 1719; between 1735 and 1750 six more came into being, and by the end of the century the number had been increased by thirty-one more, of which ten were established in the last decade. St. Mary's Hospital, opened in May, 1790, was in point of age the second lying-in charity in the provinces; the Newcastle-on-Tyne Maternity Hospital was established in 1760 and the Liverpool Maternity Hospital in 1796. Its first habitation was a small house, from whence it was transferred to more commodious premises, and in 1855 to a building especially erected for the purpose in Quay Street. Finally, the present building in Whitworth Street, now used for maternity cases only, was opened in 1903. The development of the hospital presents some points of interest. It was originally designed for lying-in patients only; a considerable number were admitted for their confinements, but most were attended at their own homes. The scope of its work was gradually altered; fewer and fewer cases were admitted as in-patients, until in 1816, partly from inadequacy of funds and other reasons, all patients were attended at their own homes. Coincident with this diminution in the maternity in-patients there was developed an out-patient department for "all diseases peculiarly incident to women, and to children under two years." Some years later in-patient accommodation was provided for difficult maternity cases and also, with the advance of gynaecology, provision for diseases of women in general. Amongst the twenty-one short biographies of former members of the staff the first place is naturally given to Charles White, the founder of the hospital, a remarkable man and a picturesque figure; lack of space, and no doubt the fact that his career has been amply treated elsewhere, have prevented Dr. Bride from doing full justice to him. He was 62 years of age when he founded the hospital; he had long been distinguished as a general surgeon, and, as an obstetrician, had revolutionized the management of lying-in women. Without a knowledge of the conditions of life at that period, it is difficult to appreciate the originality to conceive, and the energy and force of character required to enforce, the line of treatment he introduced.

In this connexion it may help a little to remember that White must have worked under conditions and in surroundings similar to those depicted by Hogarth, for they were contemporaries, though Hogarth died in 1764, when White was 36. In 1752 White had been instrumental in founding the Manchester Royal Infirmary and was an active member of the staff for thirty-eight years, when, owing to a dispute with the board of management, he resigned and took part in the founding of the maternity hospital.

Dr. Bride does not make any adequate reference to the Southern Hospital, which was an integral part of the present St. Mary's Hospitals. It was established about 1866, through the exertions of Dr. John Thorburn, a man of great public spirit and high repute, who was Professor of Obstetrics and Gynaecology at the Owens College, which became later the Victoria University of Manchester. It was founded as a hospital for diseases of women, including maternity cases, and children. On the death of Professor Thorburn, Dr. W. J. Sinclair became the leading surgeon there, and when he succeeded to the professorship of obstetrics and gynaecology the hospital became closely identified with the university. In 1893 the David Lewis Trustees offered £70,000 to build a new joint teaching hospital on a site near the university, on the condition that the two institutions were amalgamated and that the university participated in the control of the new hospital. The scheme fell through, owing to the inability of those concerned to come to a satisfactory agreement, and the money was used to found the David Lewis Epileptic Colony at Sandalebridge, Cheshire. Ten years later, conditions having

<sup>6</sup> *The Treatment of Fractures, with Notes upon a few Common Dislocations.* By C. L. Scudder, M.D. Ninth edition, revised. Philadelphia and London: W. B. Saunders Company, 1923. (Roy. 8vo, pp. 749; 1,252 figures, 42s. net.)

<sup>7</sup> *A Short History of the St. Mary's Hospitals, Manchester, and the Honorary Medical Staff, from the Foundation in 1790 to 1922.* By J. W. Bride, M.D. Manchester: Sherratt and Hughes, 1922. (Cr. 8vo, pp. 132; 10 plates, 6s.)



altered, the amalgamation was successfully carried out with other funds. All these matters are briefly noted in the book in a manner that excites interest and makes the reader wish that the author had been a little less concise. We would especially have liked to know more about Dr. Clay, the Father of Ovariectomy in this country.

#### ABDOMINAL PAIN.

DRS. WILLIAM BRAMS and ALFRED LUGER, who have translated Professor NORBERT ORTNER's book on *Abdominal Pain*,<sup>8</sup> state that the teachings of Bamberger, Neusser, and Ortner are presented in it. We regret that they are not expressed more clearly, though we suspect that the translators are in some measure to blame. The headings of the chapters are well chosen—diffuse abdominal pain, localized abdominal pain, epigastralgia, pain in the right hypochondrium, and so forth—but the promise of orderly information held forth is not fulfilled in fact; there is too much repetition and too much confusion. There are a few good points—such, for instance, as the fact that in intestinal colic pain is of a wave-like character, rising to a maximum and then subsiding with more or less complete relief until the next wave comes. In biliary and urinary colic, on the other hand, the pain is continuous, perhaps for hours, with only slight variations in intensity. On the whole only a skilled clinician will gain anything from the book, as only such a one will know how to separate the plums from the vast amount of pudding in which they are embedded. An extract from page 51 will give an idea of the author's catalogue-like method. He is speaking of the abdominal crises of tabes, and goes on to say "such crises may be due to causes other than tabes—as, for instance, spinal lues, syringomyelia, multiple sclerosis, myelitis, diabetes, Basedow's disease, tuberculosis, syphilis, neoplasms, actinomycosis of the intraspinal roots, chronic morphinism, disease of the coeliac plexus, pancreatitis, lesions of the lesser curvature of the stomach or of the cardia, retroperitoneal glands, and aneurysm of the abdominal aorta."

#### SURGERY.

THE appearance of the fourth fascicule of *La Pratique Chirurgicale Illustrée*,<sup>9</sup> by VICTOR PAUCHET, brings out in many ways the contrast between English and French methods. The volume is well got up and there are numerous illustrations depicting the minutiae of each step in the operations. It deals with a variety of subjects. For example, M. Pauchet tells us that he treats recurring dislocation of the shoulder-joint by excision of a portion of the lax posterior part of the capsule. The arm is abducted to a right angle and the skin incision is made in the axilla along the line of the neurovascular bundle, which is retracted forwards. For a surgeon possessing the necessary anatomical knowledge the operation is said to be simple. The author accepts the view that adenomata of the breast and chronic mastitis are due to chronic intestinal stasis. In all doubtful cases of malignancy he strongly advises local excision followed by microscopical examination; the radical operation, should it then be found necessary, being deferred until a later date. He considers this step essential, not only for establishing the diagnosis, but also the prognosis. What happens to the lymphatic spread following this intervention, should the tumour be malignant, is not discussed, and the method can be hardly said to be an advance on that of rapidly cutting a section by means of the freezing microtome and examining it at the time of the operation. The radical operation recommended follows the usual lines, except that the incision does not go so low; mention is not made of the lymphatic spread along the rectus sheath. He considers two applications of radiotherapy before operation useful. Of cases of duodenal ulcer treated by gastro-enterostomy he says that 70 per cent. are completely cured, and that 30 per cent. suffer from after-trouble, including hæmorrhage, perforation, and jejunal ulcers (5 per cent.). Catgut is used throughout in the form of three rows of sutures. A transverse incision is advocated as giving good approach and a means of exploring the gall bladder, appendix, and looking for signs of stasis. In an article on the biliary tract its physiology and its relations to the pancreas, as well as the formation of gall stones, are discussed; the gastric content was found to be normal in the majority of cases of gall stones. For carcinoma of the

caecum right hemicolectomy with end-to-end anastomosis is performed. For carcinoma of the rectum he advocates permanent colostomy followed in fifteen days by the application of radium and in six weeks by excision of the lower bowel by the abdomino-perineal route. For fibrous contraction of the rectum temporary colostomy is performed followed by perineal excision and reconstitution of the bowel. This is no doubt the ideal method, but the author does not say in what percentage of cases it is possible.

#### NOTES ON BOOKS.

UNDER the title of *Puerperal Sepsis and its Prophylaxis* Dr. THORP, the Assistant-Medical Officer of Health for Sunderland, and Borough Medical Officer for Maternal and Child Welfare, has summarized a good deal of clinical knowledge of the condition named, and indicated the treatment he has found useful in his official practice. The most valuable part of his short book is the section on prophylaxis, especially as bearing upon the management of maternity homes. His recommendations include the daily inspection of the fingers of the midwives and pupils by the matron, and he emphasizes the doctrine that the value of soap and water is much greater than that of antiseptics for the hands. "Too much reliance is placed upon the perfunctory use of antiseptics by pupils and midwives, sufficient time for action of these being rarely given." He might have added also that the strength which most skins can tolerate is quite inadequate for the purpose of the destruction of organisms. It is high time that this fetish of a bowl of 1 per cent. lysol or other similar solution should be abolished. The author says:

Surgical obstetrics should never be carried out without an anaesthetist. It is impossible to administer chloroform and to apply forceps and remain sterile.

There is room for more specialists in midwifery in great industrial areas. Too often surgical procedures of grave import have to be undertaken by practitioners with little experience and with less liking for the work and with totally inadequate help.

A very much improved training of midwives is required, with particular supervision of the training afforded in small maternity homes.

The above quotations may suffice to indicate the lines upon which Dr. Thorp deals with this question of prophylaxis; their value, and indeed the value of the whole pamphlet, is enhanced by its being written by one who is not himself an obstetric specialist. We trust it will have a wide circulation, as a perusal of it cannot fail to be helpful and instructive alike to medical practitioners, public health officials, and nurses.

The fourth quarterly volume of *International Clinics*,<sup>10</sup> edited by Dr. HENRY CATTELL of Philadelphia, in collaboration with several distinguished members of the profession in America, the British Isles, and Canada, contains a number of illustrated clinical lectures and original articles dealing with medical welfare work, nutritional problems, clinical medicine, surgery, and pediatrics. In an article on diphtheria Dr. Parker Hitchens of Washington at once gives an estimate of the value of the Schick test; he found that the percentage susceptibility to infection between the ages of 1 and 2 years was 70, and that there was a gradual decline to 15 per cent. over the age of 10 years. In cases where the test is positive and there is a history of definite exposure, an immediate injection of antitoxin should be given. In other circumstances the injection of toxin-antitoxin mixture as a prophylactic measure has been of the greatest value in raising immunity. He states that the annual number of deaths from diphtheria in America was formerly 80,000. Since the use of antitoxin the number has fallen to 20,000, and by the routine application of the Schick test the number should, he thinks, be further reduced. The method should, he thinks, be more widely used for dealing with carriers in schools and children's hospitals.

A German version, apparently much shortened (but it has no table of contents, no index, and no list of illustrations), of Dr. PARKES WEBER's book, *Aspects of Death*, has been prepared by EUGEN HOLLÄNDER under the title *Der Tod als Bild*.<sup>11</sup> The illustrations selected for reproduction are well printed and the book in its German form makes a very agreeable appearance. The full English edition was reviewed in our columns of July 1st, 1922 (p. 16).

<sup>8</sup> *Puerperal Sepsis and its Prophylaxis*. By Eustace Thorp, M.P., L.R.C.S., L.R.C.P., and L.F.P.S.G., D.P.H. Bristol: John Wright & Sons Ltd.; London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd. 1922. (Cr. 8vo, pp. 48; 6 charts. 2s. 6d. net.)  
<sup>9</sup> *International Clinics*. Edited by H. W. Cattell, A.M., M.D., F.R.C.P. Vol. iv. Thirty-second Series, 1922. Philadelphia and London: J. P. Lippincott Co. 1922. (Med. 8vo, pp. vi + 312; illus. 422, 12 plates.)  
<sup>10</sup> *Des Todes Bild*. Von Frederick Parkes Weber, M.A., M.D., F.R.C.P., F.S.A., bearbeitet von Eugen Holländer. Leipzig: F. Vieweg & Co. 1923. (Demy 8vo, pp. 247; illustrated.)

<sup>8</sup> *Abdominal Pain*. By Professor Norbert Ortner of Vienna. Authorized translation by William Brams, M.D., and Dr. Alfred P. Luger. New York: Rebman and Co. 1922. (Post 8vo, pp. 362. 5s. 6d.)

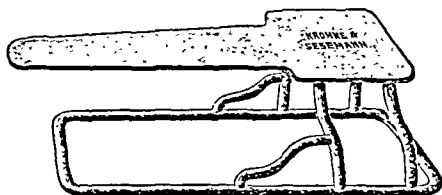
<sup>9</sup> *La Pratique Chirurgicale Illustrée*. By V. Pauchet. Fascicule IV. Paris: O. Doin. 1923. (Imp. 8vo, pp. 247; 307 figures. Fr. 25.)



## MEDICAL AND SURGICAL APPLIANCES.

*A Pelvic Support for Plaster Bandaging.*

MR. E. MUIRHEAD LITTLE, F.R.C.S. (London), writes: In the applications of plaster-of-Paris to the pelvic region and upper parts of the thighs, as in the treatment of congenital dislocation of the hip, or after operations upon the hip-joint and upper end of the femur, a good support is a desideratum. Such a support should interfere as little as possible with the application of bandages; the part included by them should be as small and thin as possible, and it should be easy to remove the support after the application is complete. The appliance shown in the accompanying illustration



represents an attempt to fulfil these conditions. It was made according to my design for use at the Royal National Orthopaedic Hospital some ten years ago, and has been in general use ever since. The one size of support can be used for almost any sized patient, including infants and adults. The smaller the patient the smaller the part of the support included in the plaster. The whole of a small child's trunk can be supported by it, but in the case of an adult sandbags or some other prop under the shoulders are necessary. Having proved the usefulness of the appliance by a long trial I feel justified in recommending it to all surgeons who may have to apply gypsum to the pelvic region. I am indebted to the makers, Messrs. Krobne and Sesemann, for the illustration.

*The Disinfection of Water-Closets.*

The practice of disinfecting water-closet pans is considered by some persons as entirely unnecessary, for they maintain that if the fittings are properly fixed and the contents of the pan are speedily discharged down the soil pipe with a good flush of water disinfection must be superfluous. On the other hand there are many who will not be satisfied unless a disinfectant in some form accompanies each flush from the cistern. For the use of these an automatic appliance called the Lewbart Disinfecter has been devised, which is fixed on the wall, and arranged that each time the contents of the pan are flushed, five drops of a concentrated disinfectant are poured into the pan and soil pipe after the flushing is completed. The disinfectant container, it is stated, requires refilling about every three months. It is claimed that the apparatus, which costs 35s., can be fixed by an unskilled person. It is obtainable from the Lewbart Manufacturing Company, Ltd., 2 and 3, Norfolk Street, Strand, London, W.C.2.

## RECENT ADVANCES IN MEDICAL EDUCATION IN ENGLAND.

## SECOND MEMORANDUM BY SIR GEORGE NEWMAN.

*[Second Notice.]*

## THE CLINICAL STUDY OF MEDICINE AND SURGERY.

SIR GEORGE NEWMAN begins this section of his Memorandum by affirming that "the purpose of the medical curriculum is the training not of specialists but of general medical practitioners," but complete knowledge of the science and art cannot be attained in five years, and if this be attempted "the curriculum becomes too heavy and the student is overfed for his size." At his school and hospital the student must be taught clinical methods and the clinical habit, including methods of examination, elucidation of subjective symptoms, laboratory tests, case taking, and record keeping. The Medical Council's new scheme is designed to prevent the student from dropping a subject so soon as he has passed in it; the basal subjects will be continued in their application throughout the course. And the student must learn to treat persons as well as diseases: work, sleep, exercise, dietary, recreation, and so forth, have all to be thought of; also public facilities in the way of clinics, dispensaries, hospitals, etc., have to be borne in mind. When he begins practice he is in a new world, with 60 per cent. of the deaths due to half a dozen conditions, and a third of his insurance patients suffering from bronchitis or dyspepsia, another third from minor injuries, lumbago, debility or anaemia, local sepsis, or the

like; there are also defects of the organs of special sense, and notifiable diseases.

A discussion of a minimum standard of competency is illustrated by references to surgery summarized under eleven headings, too long to set out here. The British course of clinical study is set forth by quoting the new regulations of the General Medical Council as officially summarized; the "British method" is described as consisting of (a) clerks and dressers, (b) bedside teaching, (c) clinical lecture demonstrations, (d) clinical teaching in the out-patient department, (e) clinical work in various special hospitals, and (f) junior house appointments. Sir George Newman holds that "it is the pursuance of this system of clinical study which has made English medical education the most practical in the world," and that the Medical Council's action "cannot fail to fortify it and make it more nearly universal."

The chief needs of clinical study are held to be three: "First, the inspiration of all clinical study by science; secondly, an increasing opportunity for the student before qualification to undertake responsible practice under supervision; and thirdly, the permeation of clinical work with a preventive spirit." The author considers that the introduction of the student to the bedside, either under the old apprenticeship system or in the medical school, notwithstanding its common sense, "has brought with it a certain measure of routine and habit which has led to some failure to establish his practice (which has been static) upon his science (which has been progressive)," with the result that "a false antithesis has become current between the scientific man and the practical man." Clinical teaching, it is said, may be so didactic and matter of fact as to fail to awaken mental endeavour, and may be "standardized to the lowest mentality of the student group rather than to the highest." But the teacher should also be leader, "and the students must bestir themselves and climb up after him." Especially in the out-patient department there is risk of "spotting" cases rather than apprehending them. The case, it is insisted, "must be explored by science, system by system, symptom by symptom." Practitioners "may not, it is true, always be able to practise their profession with this degree of completeness and penetration, but they will by this method of education have learned the scientific approach." This the practitioner may acquire "by observation of signs and symptoms with his own eyes and ears and hands and understanding; then by the uses of instruments of precision; then by directly recording his results; then by experience." The duty of the teacher to train himself in teaching is next insisted on, and it is asked, "How many medical professors have given serious study to the science and method of education?"

In considering clinical experience under supervision it is observed that students have increased more quickly than hospital beds, and that tuberculosis, cancer, and syphilis are often sent to special hospitals, thus restricting the practice in the hospitals of the medical schools. Also, more beds are needed now owing to increased study requirements. Towards overcoming these difficulties more use may be made of hospitals hitherto unconnected with schools—ordinary voluntary and Poor Law hospitals; likewise there are the new clinics of local authorities, sanatoriums, dispensaries, infant welfare centres, and venereal disease clinics, school clinics, and so forth. Lastly, as in Ireland, fourth and fifth year students might have three months' stay in hospitals, half the time attached to the medical wards and half to the surgical.

## UNIVERSITY CLINICS (CLINICAL UNITS).

Sir George Newman, who attaches much importance to these clinics, gives an interesting historical survey, and enumerates the component parts of a university clinic as follows:

- (a) An adequate whole-time and part-time staff.
- (b) The control of wards (50 to 100 beds).
- (c) A proper
- (d) Ample
- (e) Adequate

He holds that the new recommendations of the General Medical Council express precisely the desired developments, so that "the entering student shall be better furnished for the medical course, and that the contributory sciences shall be integrated." The purpose of the university clinic is teaching and the advancement of learning. The question of whole-time staffing is considered, and various alternatives are discussed, the opinion being reached that in this country the head of the clinic would be permitted to undertake such degree of outside private practice as would not interfere with

<sup>1</sup> Recent Advances in Medical Education in England. A Memorandum addressed to the Minister of Health by Sir George Newman, K.C.B., M.D., Hon. D.C.L., F.R.C.P., Chief Medical Officer of the Ministry of Health and of the Board of Education. Crown Notice to the General Medical Council, London: H.M. Stationery Office, Imperial House, Kingsway, W.C.2, 1923. 1s. 3d. net. (The first notice was published last week at page 723.)



his official duties. As to the rest of the staff the objective would be

not only the "setting apart of one or more whole-time clinicians for educational work, but the best method of creating a team of clinicians who are also laboratory workers, in a unit, under the leadership of a professor who has control of beds, laboratories, and out-patient department, with adequate provision as regards time, equipment, and teaching ability, in order that the clinical education of the student may be directed along lines that will produce the best treatment for patients and the advance of knowledge."

The subject of university clinics is further discussed under the headings of study in the ward, teaching in out-patient department, laboratory work, and auxiliary equipment. Then the present position in this country is considered, and it is said that "the organization is not a new invention, but is the natural development of the English system of clinical teaching," which development may well be allowed to proceed naturally and gradually. Three years of it are held to have shown substantial improvement both in teaching and in treatment of patients; more time and supervision is devoted to students, more work is done by clerks and dressers, and there is less spoon-feeding. The methods and spirit of research are essential in the routine of the university clinic, which is a training school for its staff in the art of teaching. "Lastly," writes Sir George Newman, "the university clinic is integrating medicine," and education is no longer in watertight compartments. The dangers of an unsuitable director are recognized, but as they receive their appointment from the university that body has its remedy.

#### OBSTETRICS AND GYNAECOLOGY.

The fact that 60 per cent. of confinements are now attended by midwives increases the proportion of difficult cases left to the medical profession, and at the same time the midwife is bound to call in a doctor to every complicated labour. Yet a committee of the Royal Society of Medicine reported in 1919 that while "the systematic instruction given is, generally speaking, satisfactory, and is in the hands of obstetric physicians," unfortunately "the practical instruction leaves very much to be desired, and in some respects merits emphatic condemnation." The main defects were reported as want of beds and of ward teaching, but great improvement had followed the establishment of midwifery wards at certain hospitals, though the teaching was still insufficient. The committee recommended the establishment of obstetric "departments" in some of the larger teaching hospitals with existing maternity wards, and new "centres" in outlying districts of the metropolis, for instruction of medical students apart from pupil midwives, and for ante-natal, natal, and post-natal work. Though additional provision has been made it is still insufficient, and out of over 5,000 beds in the twelve London teaching hospitals there are only about 150 for midwifery and 300 for gynaecology. Poor Law institutions should be used to supplement these, and the claims of the medical student for teaching should come before all others. Sir Francis Champneys reported to the General Medical Council in 1920 that many women trained for the Central Midwives Board examination never practise as midwives, and in about twelve years the cases allotted to such women for training amounted to no fewer than 356,420; at present, indeed, only 22 per cent. of trained midwives actually practise as such. In the provinces increased provision of maternity homes has been made, but most of it is used for pupil midwives. General organization, however, is being improved at many medical schools, and the progress of ante-natal work advocated and illustrated by the late Dr. Ballantyne in Edinburgh has advanced the practice of preventive medicine.

Sir George Newman sketches a scheme of obstetric teaching, and in accord with the General Medical Council advises that each medical school should have available a complete obstetric department, in which senior as well as junior officers should teach, the courses of instruction including obstetrics, diseases of women, and pediatrics, with due integration of the earlier subjects of the medical curriculum with obstetrics. A syllabus of the course is outlined under lectures, demonstrations, clinical teaching, and maternity district work. The clinical teaching should include ante-natal clinic, labour wards, lying-in wards, infant welfare centres, gynaecological wards and operating theatre, out-patient department, and female venereal department. Midwifery should be taught at the bedside just as medicine and surgery are, and records kept of work done. In his report to the General Medical Council, Sir William Smyly, who inspected for the Council the final examinations in these subjects, advised that a clinical

examination should be required wherever possible, and the Council has recommended that "in midwifery, where a clinical examination is not held, the duly attested record of the work done by the candidate in clinical midwifery must be presented to the examiners for assessment in the final examination."

#### PREVENTIVE MEDICINE IN MEDICAL PRACTICE.

Sir William Osler wrote:

"When the thoughtful historian gets far enough away from the nineteenth century to see it as a whole, no feature will stand out with greater distinctness than the fulfilment of the prophecy of Descartes that we could be freed from an infinity of maladies, both of body and mind, if we had sufficient knowledge of their causes and of all the remedies with which Nature has provided us. Sanitation takes its place among the great modern revolutions—political, social, and intellectual. Great Britain deserves the credit of the first practical recognition of the maxim *salus populi suprema lex*."

The foundation knowledge required for preventive medicine is in three departments—the natural history of disease, the cause and circumstances of disease, and the effect of environment. Though in recent times the laboratory has played a great part, it is the general practitioner who laid the foundations—Harvey, Sydenham, Mead, Fothergill, Heberden, Huxham, Baker, Withering, Jenner, Lind, Thackeray, and Taylor of Penrith. In the work of all of them prevention and cure were associated, though engineers, analysts, and administrators are agents in its communal applications; even to-day "much of the actual investigation and differentiation is falling to the medical practitioner."

The application of the scientific method to the control of infections intimately concerns the practitioner, and includes (a) study of causes, and early diagnosis; (b) prompt application of prophylactic methods, such as serums and vaccines; (c) notification; (d) isolation and treatment; (e) disinfection when necessary; (f) detection and control of "contacts" and "carriers"; and (g) the adoption of special methods varying in different diseases.

The sphere of preventive medicine extends beyond infectious diseases. There also come within its scope abortion, miscarriage, stillbirths, much infant mortality, children's disorders, such as ophthalmia, rickets, dental decay, and malnutrition, and many diseases of skin, eye, ear, nose, and throat, and among adults much physical impairment due to causes in large measure preventable—rheumatism, dyspepsia, constipation, bronchitis, anaemia, and various others. In surgery, asepsis is a preventive measure, and prevention applies to various conditions both in children and adults, including industrial surgery.

For such reasons the General Medical Council recommends "that throughout the whole period of study the attention of the student should be directed by his teachers to the importance of the preventive aspects of medicine." It is to be a pervading influence. The kind of knowledge needed for the practice of preventive medicine includes personal hygiene of body and mind, a grasp of the etiology of disease, an appreciation of the place and purpose of hygienic environment, and a realization of the effects of social evolution.

"What has been the medical effect of industrial revolution or the introduction of steam? of elementary education and religious liberty? of the improvement of roads and transport? of the rise and fall of wages and the cost of living? of the importation of meat and corn? of the growth of the towns?"

Nothing can indicate better than these questions the breadth of outlook of the author of the Memorandum, and the answers he gives to some of them are stimulating. After consideration of ways and means for giving effect to the Medical Council's policy of permeation of the whole curriculum by the principle of prevention, the chapter ends with the following forecasts:

"As the National Health Insurance Service becomes established it will prove an effective instrument of preventive medicine, for, by its means, the patient will be brought into the doctor's hands at an earlier stage, and in due time the doctor will have the preventive attitude and method of instruction of medical students. Direct instruction of medical students in preventive medicine or lectures should not be overlooked as being overweighted with public health."

#### SPECIAL SUBJECTS ASSOCIATED WITH MEDICINE.

**Pediatrics.**—The General Medical Council has placed pediatrics foremost among special subjects, and the Memorandum urges that every medical school should have a



department of pediatrics, that a definite period of time—say, three months—following obstetrics should be allocated to child study, and that the subject should be included in the final examination. "Systematic pediatrics (as taught in America) and child welfare (as practised in England) should be associated together, for they are mutually complementary and interdependent."

**Psychology and Psycho-pathology.**—The requirements of the general practitioner in this branch of knowledge are a clear account of modern psychology, a concept of the unconscious mind, the worth of self-study of normal psychological phenomena, and of deductions from study of abnormal but not insane patients as bearing on therapeutic measures. He must be prepared for emergencies and for diagnosis of the chief forms of mental disease and defect, and for certifying under the several Acts. It is important that mental inefficiency and impairment be prevented, or be detected as early as possible with a view to effective treatment. All this needs training by a course of instruction and clinical work, first in a mental hospital and then in an out-patient clinic. The curriculum, it is suggested by Sir George Newman, should consist of five to ten lectures in normal psychology, preferably in the physiology course; half a dozen explanatory discourses in abnormal psychology, concurrently with clinical work in mental disease; ten or twelve systematic lectures on mental disease, also concurrently with clinical work and demonstrations at a mental hospital; and a series of demonstrations in the out-patient clinic for mental disorders at a general hospital. Medical schools are not yet sufficiently equipped for proper instruction, but advantage should be taken of the special schools for mentally defective children.

**Ophthalmology.**—Eye affections are so common from birth onwards that this is not properly a special subject. By stages the General Medical Council has come to require, in the new curriculum, instruction in diseases of the eye, refraction, and the use of the ophthalmoscope—requirements which have been in great measure forestalled at many medical schools, though uniformity of instruction and examination has been lacking. The licensing bodies are at present organizing courses.

**Veneral Disease.**—The 190 clinics now established for free treatment are available for the education of students. The subject is compulsory, and as an example of a course of instruction a scheme suggested by experience at the St. Thomas's Hospital clinic is set forth in the Memorandum. It includes bacteriology, pharmacology, demonstrations, lectures, and clinical work. The value of ante-natal treatment for both mother and child should be impressed on the student.

**Dental Education.**—Sir George Newman presents a lucid sketch of the facts and considerations which have gradually but inevitably led up to the new dental curriculum and the new *Dentists Register*, as well as to the penal prohibition of unregistered practice. The aim of the Council in the new scheme is to provide "a minimum curriculum without impairing the standard of efficiency." The revised curriculum is given in full in the Memorandum, and it is affirmed that "dentistry may now become, for the first time, an organized instrument and means of preventive medicine." The new *Register* includes 13,000 names.

#### PUBLIC HEALTH.

As long ago as 1863 the British Medical Association urged the General Medical Council to consider the qualifications required for holding office in what has now developed into the public health service of Britain. The Medical Act of 1885 conferred on the Council the power to register such qualifications, and recognition was given to certificates or diplomas which had already been granted by licensing bodies. Later there came the statutory requirement that for some offices such diplomas were to be essential, and so, under rules issued by the Council, the organization developed. The rules have now been revised and strengthened, and, so altered, take effect as from the beginning of 1924. They are based on the Council's agreement with the dictum of Dr. Bruce Low in his report of his inspection of the D.P.H. examinations throughout the United Kingdom, that "it is of national importance that weak or unsuitable candidates should, as far as possible, be kept out of the Public Health Service of the country." The scope of study includes maternity, infant, and child welfare,

tuberculosis, venereal disease, occupational and food-borne disease. The candidate is required to work with a medical officer of health for not less than six months, and "must go and see and learn the practice of the branch of medicine he has chosen to follow;" also he will not be allowed to obtain his diploma until a minimum of two years after his qualification in medicine, so that there shall be at least an opportunity for some development of maturity of thought and outlook, in whatever department of study and practice the interval be spent, whether in a laboratory, a hospital, a dispensary clinic, or sanatorium, assistantship in general practice, or other medical occupation. The new rules are quoted in full in the Memorandum, and it is pointed out "that Part I is analogous to the intermediate sciences in the medical curriculum, and Part II to the clinical art of applying these in practice."

#### CONCLUSION.

Sir Clifford Allbutt wrote in 1919: "It is revealed to us that Medicine has come to a new birth . . ."; it has changed "from a craft of tradition and sagacity to an applied science of analysis and law; from a descriptive code of surface phenomena to the discovery of deeper affinities; from a set of rules and axioms of quality to measurements of quantity." After the mediaeval centuries of darkness, Sir George Newman writes, "the new day dawned in 1543, when Vesalius published his *Fabrica* at Basel and Copernicus his famous book at Nuremberg on the revolution of the planets round the sun;" and the Memorandum goes on to give a rapid sketch, mentioning the introduction of the stethoscope and the beginnings of physiology, pathology, anaesthesia, bacteriology, protozoology, immunology, asepsis, internal secretion, and cardiology. "The representatives of medicine and science have thus come to the aid of the nations, to the succour of the human race." Within our own time we have seen the advance of public medicine, the organization of research, the growth of medical and surgical treatment, and the reform of medical education. The training of the physician affects the well-being of the State, but he is also the trusted confidant of his patient, and on this ground his education and his function must be individualistic. The inspiration of reform is the prevention of disease. "Curative medicine and remedial surgery must have immediate priority, but the ultimate goal is prevention." The future of medicine in England depends not merely on proper training to obtain a registered qualification, but "upon continued education after graduation." Four requirements are emphasized in the conclusion, and may be condensed thus:

(a) The necessity of integration in the medical course and avoidance of overburdening the student with details, so that he may "reflect and comprehend and grow." The teacher should be an *educationalist* and realize this.

(b) Clinical study must remain the sheet-anchor of education. Instruments and apparatus should be only supplementary to observation by the organs of sense; final judgment should depend on acumen and competence.

(c) The load of examinations should be lightened, notwithstanding the good purpose and competency of examiners; "the system remains a shackle upon medical education," and the student's course is standardized not by love of learning, but by the prescription of the examining body. In 1922 the General Medical Council resolved that "In the regulations for the several examinations it should be provided that examiners, in assessing marks, be empowered to take into account the duly attested work done by the candidate throughout his course of study in the subject of the examination."

(d) Post-graduate courses are necessary to keep the practitioner informed of new medical knowledge and its applications. In London a central scheme is necessary for the graduates of the twelve schools, and for medical men from the colonies and foreign countries. Other countries have much to learn from us and we have much to learn from them.

Financial assistance from the Treasury to medical education is justified, and the Memorandum contains evidence of its wise and economic use. Notwithstanding all that has been accomplished, the author of the Memorandum holds that the present reform movement in medicine is only at its beginning. No doubt he is right, and his own present contribution to the movement will, by informing the profession and the public of what is being done and what is being aimed at, give new and very valuable stimulus to the progress of which he makes himself the chronicler.



# British Medical Journal.

SATURDAY, MAY 5TH, 1923.

## SYPHILIMETRY.

Our Paris Correspondent referred a few weeks ago (p. 652) to a system of controlling the effects of anti-syphilitic treatment devised by Dr. Vernes and described by him in a series of communications to the Académie des Sciences. He has in Paris an Institut Prophylactique, where a large number of cases are dealt with, and, as our correspondent mentioned, a public appeal has been launched in France, with very influential support, to defray the cost of adding to the prophylactic institute a teaching establishment where medical practitioners can make themselves acquainted with the details of the method Vernes recommends. It should be said that the method does not command universal approval in France and has not been generally adopted by syphilologists and pathologists. Indeed, recently, a number of syphilologists issued a counter-manifesto criticizing the grounds upon which the appeal is being made. The method has been briefly mentioned in our columns,\* but it has not hitherto attracted much attention in this country, and an account of it may be of interest.

In the first place it is to be observed that the limitations of the Wassermann test are well known and are particularly felt when it is desired to know how far a given course of treatment has gone towards eradicating syphilis. Attempts to solve the problem have been made; for example, Weichardt, in his epiphannin test, and Ascoli in his meiostagmine test, made use of the alteration in surface tension of certain substances which occurred when mixed with syphilitic serums. Others, notably Sachs and Georgi, Meinicke, Kolmer, and Dreyer and Ward (Sigma test), have relied upon the flocculation which occurs when syphilitic serum is added to organic extracts in correct proportion.

In Vernes's test suitably diluted "péréthynol" (an alcoholic and ethylene dichloride extract of horse heart) is used, and the flocculation produced is measured. The péréthynol is so prepared that when mixed with distilled water under a given set of conditions a colloidal suspension is obtained of definite uniform opacity. This suspension is adjusted to give no flocculation with a normal serum and varying degrees of flocculation with a syphilitic one, the amount of flocculation being proportional to the intensity of the infection. In order to measure the degree of flocculation he originally added pig serum, which interferes with the flocculation of a péréthynol-syphilitic-serum mixture, and in doing so loses another property it possesses—namely, the power to dissolve sheep's red corpuscles. The measure of haemolysis is therefore inversely proportional to the original flocculation, so that no haemolysis indicates a strong reaction, and complete haemolysis no reaction between the tested serum, the péréthynol, and the pig's serum. More recently he has adopted the method of measuring the flocculation directly by an opacimeter, thus dispensing with the pig serum and the red cells. A reading is taken by comparing the amount of light cut off by the opacity of the fluid (female venereal serum and péréthynol) and that by the bedside just as medicine is in distilled water). The kept of work done. In his report

difference between the two is read off on a scale and referred to a table which gives the weight of precipitate in milligrams per cubic centimetre. This method promises a much more exact means of measuring flocculation than the naked eye or hand lens commonly employed in other flocculation tests. The instruments for measuring and delivering the various quantities of the reagents, and for their preparation, and, above all, the optical instrument for estimating the amount of flocculation, are models of ingenuity, but the cost of the installation of the apparatus for the performance of the test must militate against its adoption, except where very large numbers of tests are to be made.

Vernes claims that the direct measurement gives a far wider range than the indirect. The diagnosis does not depend on a single test but on the curve which is plotted out from the degrees of reaction discovered in a series of tests. Vernes claims that by his test the patient's progress can be measured accurately and cure determined eventually with complete certainty.

If, following arsenical treatment, the patient is going to relapse serologically the relapse occurs usually from the second to the fifth month, rarely during the sixth, and very rarely during the seventh. If there has been no reaction in serum on eight monthly tests following suspension of treatment and if it is negative also in the cerebro-spinal fluid the patient may be considered permanently cured. Vernes states that in a very large number of cases, extending over a long period, he has never seen an exception to this rule. Children conceived by parents who satisfy these conditions have never in his experience shown clinical or serological evidence of syphilis; moreover, a person who has fulfilled them may contract syphilis anew.

Dr. Vernes does not appear to employ any unusual remedy, but insists that it is the rhythm of the treatment rather than the amount which is of importance, though he does not make clear exactly what he means by rhythm—that is, how he decides on the amount and spacing of his doses of arsenobenzol. The treatment is controlled by the test, and when the serum has been brought to give no flocculation with péréthynol a test is carried out each month; if the reaction tends to return more treatment is indicated.

Though, as has been said, syphilimetry has attracted little attention in this country, a certain amount of work on it has been done in America, notably by Cornwall and Aronson. The former reports the results of comparative Wassermann and Vernes tests on 232 serums and 130 cerebro-spinal fluids. The tests on serums agreed in 68 per cent., the balance of 32 per cent. being in favour of the Wassermann in 25.5 per cent. and in favour of Vernes in 6.5 per cent. Of the 130 cerebro-spinal fluids the results agreed in 80 per cent.; of those disagreeing the balance was in favour of Vernes in 16 per cent. and of Wassermann in 4 per cent. More recently in France cases have been reported in which the Vernes test was positive in non-syphilitic cases and negative in florid secondary cases. At a meeting of the Société française de Dermatologie et de Syphiligraphie on November 9th, 1922, Leredde reported three cases of undoubted active syphilis in which the Vernes test was negative, and his evidence was supported by Ravaut, Gougerot, Flaudin, and Pinardo.

If syphilimetry is all that its author claims for it, it is certainly very attractive; but in view of the above, and until the test has been confirmed by a number of well qualified observers over a considerable period of time, it must be accepted with caution.

The need for caution is confirmed by the terms of the manifesto to which we have already referred; it was signed by a large number of leading syphilologists and was published in the Paris newspapers evidently as an appeal for further work.

\* See to be found in the *Atlas de* review of which appeared in the *Ann. Med. (Paris)*, 1921 (p. 857). The optical method has been described by Vernes in



The manifesto states that the signatories consider it their duty to call the attention of the public to certain points. The first is that the method of diagnosis called flocculation is not new, is not superior to other methods of sero-diagnosis of syphilis, and even appears in a number of cases less sensitive and trustworthy; secondly, it is pointed out that it is an established practice to follow the evolution of syphilis by the study of serological reactions and to judge the effects of treatment from them, but that it is neither possible nor safe to measure the degree of syphilitic infection numerically. The signatories also consider it imprudent to assert that syphilis has been cured because the flocculation test and other laboratory controls remain negative for eight months. Their general conclusion is that the prophylactic institute is applying neither a new method of diagnosis nor methods of treatment superior to those employed by other doctors.

### THE PSYCHOLOGY OF DREAMS.

THE substance of a series of lectures delivered by the late Dr. W. H. R. Rivers at Cambridge and elsewhere has been published in a volume entitled *Conflict and Dream*.<sup>1</sup> It is fortunate that the manuscript of these lectures was left in a form which made it possible for Professor G. Elliot Smith to prepare it for publication; otherwise the psychologist would have been deprived of a thoughtful contribution to one of the most obscure problems of mental life. The pleasure of reading this particularly clear and interesting book on dream psychology must inevitably be tinged with regret that the author did not live to continue investigations so full of promise.

Study of his own and other persons' dreams led Rivers to accept, though with important modifications, Freud's scheme of the processes by which the dream is produced. He makes this scheme the starting point of his discussion, and subjects Freud's theory to criticism from various points of view. The essential and most original feature of Freud's teaching is that dreams as a whole have a meaning, and that their psychological origin can be traced with certainty and precision by means of his psycho-analytical technique. Such a view is in striking contrast to that previously held by most psychologists—namely, that the dream is an anarchical and chaotic revival of memory images to which no meaning can be ascribed. Though some dreams are difficult to explain causally, the view that they are motivated by unconscious tendencies, as are the thoughts and actions of waking life, would appear to be reasonable, in spite of the seemingly meaningless character they present. The same forces which impel the individual into ceaseless mental and physical activity during the day may be assumed to seek expression, and to control the thought processes, during sleep. Dr. Rivers accepts this view without hesitation, but arrives at the meaning or latent content of the dream by a method which differs from that utilized by Freud in his interpretations. In an interesting chapter he criticizes the method of free association as an instrument for elucidating the meaning of the dream. He does not question the value of the psycho-analytic technique as a method of diagnostic value, but he doubts whether the thoughts reached by the process of free association have necessarily taken a part in determining the dream.

When Dr. Rivers began to analyse his dreams he discovered that as soon as he became awake he was already having, and had for some time been having, thoughts about a dream, the dream itself being still clearly in his mind. He regards this unwitting or partially unwitting

method of analysis as one especially likely to lead one to the real thoughts and emotions forming the latent content of the dream. By following this procedure he found that the dream images merged by insensible gradations into waking thoughts, and the solution of the dream came in a more or less spontaneous way. Dr. Rivers felt that the interpretations given by Freud were forced and arbitrary, and his own investigations led him to criticize Freud's dream formula as unduly simple and as an inadequate expression of the relation between the manifest and latent content. Basing his view on the personal study of dreams, a number of which are described in this volume, he suggested, as an alternative to the wish-fulfilment theory, the hypothesis that the dream is the solution or attempted solution of a conflict which finds expression in ways characteristic of different levels of early experience.

The essential difference between this hypothesis and Freud's is the stress laid on recent conflicts in the motivation of the dream. According to Dr. Rivers, while the structure of the dream is infantile and primitive, it is determined by adult interests; putting the matter in very simple language, it may be said that the opposing impulses and troubles of daily life continue to preoccupy the individual during sleep, though expressed in a disguised, grotesque, and fantastic form. On the other hand, though Freud recognizes that recent, superficial, and conscious wishes take their part in the dream, he considers that they do so only in so far as they are associated with a primitive, infantile, repressed tendency of which the individual is normally unconscious. From the standpoint of Freud the dream is to be regarded as the distorted expression of a primitive impulse seeking only its own ends; he holds that the process of dream-making involves no intellectual operations, has no constructive value, is non-creative, and reaches no conclusions. Rivers, on the other hand, regarded the dream processes as more allied to the thoughts and behaviour of waking life. He found that dream thoughts are primarily concerned with the external situations of daily life; the tendency to harmonize conflicting interests, to develop new and useful combinations of images, and to find solutions, he regarded as characteristic of the dream consciousness as it is of the waking. He describes a number of dreams in which he detected evidence of a constructive process, and suggested that the dream may be capable of solving or helping to solve practical problems which may be presented in the course of daily life, and, though in symbolic and fantastic form, may express conclusions better than those reached in daily life. He explained the superiority in this respect of the state of sleep to the waking life on the hypothesis that during sleep the conflict between opposing impulses is free and open. One impulse is not thwarted by another as when awake; both have equal play, so that the imagination can apply itself without restraint to finding a solution of the conflict.

This theory of the dream as the solution or attempted solution of a conflict he applied to the elucidation of the difficult problem of the affect in dreams. Briefly, the view taken is that the different degrees of painfulness of the affect depend on different degrees in which the dream forms a successful conclusion; in dreams accompanied by no appreciable affect a satisfactory solution of the conflict upon which they depend has been reached, but where the solution of the dream is completely unsuccessful there is an affect of a highly painful kind. Rivers was in agreement with Freud that the effect of transformation of the latent content is to diminish the affective aspect of the conflict, and that where there is considerable transformation there is little affect; but he did not accept the explanation of this transformation—or, as Freud prefers to call it, distortion—by reference to

<sup>1</sup> *Conflict and Dream*. By W. H. R. Rivers, M.D., D.Sc., LL.D., F.R.S. With a Preface by G. Elliot Smith, F.R.S. London: Hogarth Press, Trench, Trubner, and Co., Ltd. 1923. (Pp. xi+195. 12s. 6d. net.)



the agency of the censorship. He supposed that the relaxation of higher mental levels during sleep permits earlier levels of mental activity to function, and thus, though the dream is concerned with recent conflicts and external situations, its structure is primitive, regressive, and infantile.

Rivers in these lectures gave only brief consideration to the relation of dreams to pathological mental processes, myths, and the products of artistic activity. Here he touched on very big problems, and was only able to deal with them in a cursory manner. He believed that in mental disorder, as in dreams, the importance of early experience has been greatly exaggerated by Freud and his followers, and he ascribed considerable pathogenic significance to recent conflicts in the production of abnormal mental states. Except in a limited number of cases this view would scarcely seem to harmonize with the facts of clinical experience. If it were generally applicable the psycho-neuroses would be much more amenable to treatment than is actually the case, and it is doubtful whether any but the mildest cases are the outcome of superficial conflicts and external difficulties, though such factors, no doubt, have a certain influence in provoking more pronounced episodes of inadequacy in habitually neurotic persons.

In an interesting and important lecture on symbolism and dreams Rivers subjected Freud's theory of universal symbolism to criticism. Freud believes that the fundamental and perennial interests of mankind re-create afresh out of individual material stereotyped symbols, and that, while many of these symbols cannot be interpreted by the method of free association, their meaning can be supplied from a knowledge of myths, folk-lore, and primitive beliefs. The arguments advanced by Rivers against this view are based on a study of his own dreams, in which he shows that symbols have a variable interpretation, and on his ethnological researches. The latter led him to believe that no systems of symbolization are of universal distribution, and that the so-called innate symbolism is the result of a common tradition so prevalent that it influences every member of the community, and becomes, perhaps at an early stage of his life, part of the furniture of his mind. He was thus led to the conclusion that the tendency to symbolize certain thoughts by means of the same symbols, or by symbols having a close similarity to one another, is not instinctive but acquired; it is part of the "social heritage." His views on this subject have been expressed more fully elsewhere in various papers, and it is to be hoped that these also may be collected in a book.

#### COUNTRY LIFE AND COUNTRY DOCTORS.

MR. LLOYD GEORGE—who has the knack, if we may use the expression without offence, of putting into words thoughts which other people are beginning to formulate—enumerated in his address to young liberals at Manchester last week certain matters in which the English and Welsh, if not the Scots, were wasteful. One was waste of health and its attendant energy by bad housing, about which, in large towns at least, there is little room for doubt; another was waste of coal, and it is certainly wasteful to pollute the air by turning tons of combustible material into it, but this probably was not what he was thinking of. Another was the waste of brain power for lack of education, about which until he will define the meaning of education in this connexion there is room for two opinions; and the fourth was the wasteful misuse of land. He quoted Lord Ernle for the assertion that Belgium raised five times as much to the acre, and Germany twice as much, as Great Britain. Mr. Lloyd George, true to the political doctrine by which he has often preached before, believes that a change in the laws would be a remedy. But it is strange that the laws

Great Britain has been able to breed the best cattle, sheep, and pigs in the world, as is proved by the prices given by foreign buyers for pedigree animals. He went on to say that the population on the land is diminishing decade by decade, whereas in other countries—he mentioned Belgium, Denmark, France, Holland, and Germany—it is increasing. To consider whether the last clause is strictly accurate or not would take us too far, but there is no doubt that our rural population is decreasing, and we are glad that a leader of Liberal political opinion should have so quickly come in to endorse and reinforce the thesis Dr. Williams-Freeman so ably maintained from a particular point of view in the brilliant little essay published in the SUPPLEMENT on April 21st. The country doctor is friend and helper through all the countryside; he suffers with the rural community, and it suffers in its dearest interests and in its efficiency through the handicap under which he works. Mr. Lloyd George was the father of the Insurance Act, which worked something like a social revolution; it was impossible to foresee all its effects, but its most ardent advocates did not assume that its working would not disclose defects. We feel sure that Mr. Lloyd George at any rate did not. Will he not look into this matter of the plight of the country doctor, and use his great influence to see that justice is done to him and to the country people among whom and for whom he works? No great sum is needed, and the coffers of the Insurance Commission are perhaps fuller than some would have us believe.

#### THE OPHTHALMOLOGICAL SOCIETY'S CONGRESS.

THE annual congress of the Ophthalmological Society of the United Kingdom was held under the presidency of Mr. Maitland Ramsay, of Glasgow, on April 26th, 27th, and 28th. There was a large attendance of members and many interesting papers were read. The proceedings opened on Thursday, the 26th, at the Royal Society of Medicine. After the President's opening address, Mr. Treacher Collins and Sir William Lister each contributed a paper on that interesting and somewhat rare condition of angioid streaks in the fundus oculi. Then followed papers by Mr. Aspley Greaves and by Mr. Foster Moore upon their results of cataract extractions by Barraquer's method. Since Barraquer first published an account of his method its value as compared with older and more tried methods has been much discussed. In the afternoon a discussion on the disorders of the blood and their ophthalmological manifestations was opened by Sir Humphry Rolleston, Sir Frederick Andrewes, and Dr. W. C. Souther. At 5 o'clock there was a large gathering to hear Professor George E. de Schweinitz deliver the Bowman lecture on "Certain aspects of pituitary body disorders mainly exclusive of the usual central and peripheral field defects." Professor de Schweinitz held the large audience spellbound by his oratory. The lecture was illuminated by the results of much careful anatomical research of the pituitary body and its immediate anatomical relations, and contained many interesting suggestions as to the various probable and possible ways by which the optic nerve fibre might be involved by irregularities of the anatomical, physiological, and pathological conditions of the gland. This year's Bowman lecture will take a very high place in the records of this famous institution. The members dined together in the evening at the Langham Hotel. On Friday morning a discussion upon the diagnostic significance of proptosis was held. It was opened by Mr. Wilfred Trotter, Mr. Herbert Fisher, and Dr. Angus MacGillivray. Many members took part in the later stages, and the chief divergence of opinion appeared to be with regard to the treatment of those cases of proptosis which were due to arterio-venous communications in the cavernous sinuses. Papers by Mr. Holmes Spicer on "Secondary corneal opacities"—a subject particularly his own—and by Mr. Williamson-Noble on "Macular changes in thrombosis of the central retinal vein" followed. In the afternoon a clinical meeting was held at the London Hospital, where cases of interest were shown. In the evening a long list of papers and demonstrations had been arranged. They were of



interest and covered every line of thought and research in ophthalmology. On Saturday morning, after the business meeting had been held, the proceedings opened with a paper by Dr. Angus MacGillivray on "Enucleation of the eyeball under local anaesthesia." This paper produced much discussion and reminiscence from the members of the society. Mr. Leslie Buchanan followed with a paper on a new subjective visual phenomenon connected with neuralgia. Papers by Mr. Percival Hay on the working distance of patients with moderate and high myopia after correction; by Mr. Humphrey-Neame, on the results of further investigations on the passage of arsenic into the aqueous humour after intravenous injections of novarsenobenzol in rabbits; by Mr. Inglis Pollock on a case of pseudo-glioma; by Mr. Lindsay Rea, on ocular syphilis, with special reference to the treatment of interstitial keratitis; and by Mr. Alexander, on a theorem generalizing the optical problems of ophthalmoscopy and skiascopy, followed. The proceedings then terminated.

#### ACUTE SYMPTOMS AFTER GASTRO-ENTEROSTOMY.

SEVERE acute symptoms after gastro-enterostomy are usually explained by mechanical obstruction of the jejunum distal to the stoma. But that similar severe toxic symptoms may follow gastro-enterostomy without such obstruction is shown by three cases investigated by Haden and Orr,<sup>1</sup> who argue that an intoxication of the same nature as that elucidated by G. H. Whipple in intestinal obstruction may occur when impediment to the outflow of the contents of the blind duodenum allows toxic substances to be formed in a part of the intestine where absorption is rapid and complete. The symptoms and the changes in the blood and urine observed—namely, very high non-protein nitrogen and a well marked increase in the nitrogen excretion by the kidneys—were identical with those in intestinal obstruction. Renal insufficiency appeared to be ruled out, and the increase of the non-protein nitrogen in the blood and of the urinary nitrogen was ascribed to breaking down of the body protein by the toxin. One case showed well marked alkalosis and the other two, in which this investigation was not undertaken until the acute stage of the intoxication had passed, presented a high normal level. In the two cases in which the urinary chlorides were examined there was a very striking suppression of chlorides in the urine, the plasma, and the blood as a whole, which resembled that observed in pneumonia and ascribed by Whipple to the influence of a protease intoxication. This metabolic change was obviously closely related to the alkalosis, and might be due to fixation or utilization of the chlorides in the process of protein destruction, the sodium ion being thus free to combine with  $\text{CO}_2$  and to circulate as sodium bicarbonate with the production of alkalosis. It is possible that the utilization of chlorides in the process of protein destruction is protective, and that the administration of a sufficient amount of chlorides to keep the blood chlorides at the normal level may be effective in combating the intoxication. The authors have started an experimental investigation on dogs to determine the part played by the chlorides in these intoxications, and their results as bearing on practice may be anticipated with interest.

#### ESTIMATION OF SUGAR IN BLOOD.

THE memorandum of the Medical Research Council published on April 21st (p. 695) announcing that insulin was available for purchase stated that the manufacturers will be directed during the present period of restricted production to supply insulin only to those hospitals and to those registered medical practitioners who have proper facilities at their command for making accurate blood-sugar determinations. Consequently each hospital and practitioner supplied will be required to undertake, among other things, to make a careful correlation of the diet, of the blood-sugar changes, and of the

insulin dosage in each case. In this connexion we would call attention to a paper in the current number of the *Biochemical Journal* by Dr. E. G. B. Calvert, who describes a method of estimating the amount of sugar in blood which he has found rapid and reliable. He claims that the number of manipulations has been reduced to a minimum, and that the method is, therefore, particularly valuable in routine clinical work. It is founded upon the methods of Polin and Wu and Mackenzie Wallis and Gallagher. The amount of blood required can be obtained from a single prick of the finger and is greater than can conveniently be obtained by the blotting paper hitherto in general use. The blood is collected in a small platinum capsule of special design, the weight of which is known and remains constant. The capsule with the contained blood is weighed on a torsion balance, and capsule and blood are at once dropped into a short wide test tube containing distilled water, with which it can be completely mixed by a few turns of the test tube. As in other methods, the power of glucose to reduce an alkaline solution of copper is utilized. By the addition of phosphomolybdic acid to the cuprous oxide so produced a clear deep-blue solution is obtained, any unreduced copper being at the same time decolorized. The depth of colour is a measure of the amount of reduction, and consequently of the percentage of sugar present. This estimation has hitherto been made by comparison in a colorimeter with the depth of colour similarly produced from a solution of glucose of known strength. Dr. Calvert has replaced the standard solution by glass discs of the same shade and colour as the solution. A curve of correction for copper reduction is provided, and by its use an appreciable if not considerable error in the estimation of sugar is eliminated. It is claimed that the accuracy of the method is high, as the fullest use is made of the blood available, and that the method is so simple that estimations for several blood curves can be made concurrently.<sup>1</sup>

#### A JOURNAL OF HELMINTHOLOGY.

WE have received the first number of the *Journal of Helminthology*, which is being edited by Professor R. T. Leiper, and published from the Helminthology Department of the London School of Tropical Medicine. The subscription price for the annual volume containing five parts is 25s. The journal will appear bi-monthly and is primarily intended to provide for the prompt appearance of original papers and other communications written by the staff and associated workers of the various sections of the Department of Helminthology. The first number, which bears the date March, 1923, contains about forty-eight pages. Dr. A. J. Hesse writes on the development of *Bunostomum trigonocephalum*, a common nematode parasite of sheep; it is a close ally of the ankylostome, but Dr. Hesse shows that it is not capable of invading the host through the skin. Dr. G. M. Ververs contributes two articles. The first deals with the lung flukes (*Paragonimus*); a study of the cuticular spines and the size and shape of the eggs leads him to agree with the conclusions of Ward and Hirsch, that there are several species of this genus hitherto regarded as variants of *P. westermanii*. A series of figures shows that there are many variations in the internal organs, so that no specific characters can be based upon them. On the other hand, the cuticular spines are remarkably constant in the various species. It would appear probable that more than one species occurs in man. Dr. Ververs's second contribution deals with a number of new parasitic worms found in British Guiana during the visit of the Filariasis Commission in 1920. A study of considerable interest to those engaged in fur breeding in this country forms the basis of a paper by Dr. Goodey and Mr. T. W. M. Cameron, M.R.C.V.S., who have investigated the structure and life history of *Ascaris columnaris*, a common parasite of the skunk. This parasite has grown to be so extraordinarily prevalent on the

<sup>1</sup> Haden, R. L., and Orr, T. G.: *Bull. Johns Hopkins Hosp.*, Baltimore, 1923, xxxiv, 28-30.

<sup>1</sup> Information as to the cost of the apparatus can be obtained from A. Gallenkamp and Co., 19, Sun Street, Finsbury Square, E.C.; the coloured glass discs are supplied by Messrs. Baird and Tatlock, Cross Street, Hutton Garden, E.C.



ranches for skunk rearing started in this country just prior to the outbreak of the war as to have become a serious economic factor. The presence of the parasite appears to give rise to serious deterioration in the fur and produces fatal results when present in numbers. We congratulate the editor on having broken with the fashion of illustrating scientific papers by photographs and on presenting his readers with good line drawings, which are clearer and more informing.

#### EFFECTIVE RATES OF INCOME TAX.

A WHITE PAPER just issued by H.M. Stationery Office consists of tables which should be of interest to income tax payers. They show in the case of (a) single persons, (b) married couples without children, and (c) married couples entitled to the allowance for three children, the amount of income tax (including super-tax where the total income exceeds £2,000) payable on certain incomes, and the effective rates charged in the £, for the years 1922-23 and 1923-24. The proposed reduction in the standard rate of income tax (from 5s. to 4s. 6d. in the £) for the later period automatically involves a reduction from 2s. 6d. to 2s. 3d. in the £ in the rate of income tax chargeable on the first £225 of an individual's taxable income—that is, the actual income less the allowance in respect of earned income and less the personal allowances and deductions. The following figures show the amounts payable by married couples entitled to the allowance for three children on "earned" incomes ranging from £500 to £3,000, and the effective rate of tax (on incomes up to £250 there is no charge):

Actual Total Income.	Charge for 1922-23.		Proposed Charge for 1923-24.	
	Amount.	Effective Rate.	Amount.	Effective Rate.
£ 500	£ s. d. 16 17 6	s. d. 0 8	£ s. d. 15 3 9	s. d. 0 7½
1,000	118 2 6	2 4½	106 6 3	2 1½
2,000	343 2 6	3 5	208 16 3	3 1
2,500	505 12 6	4 0½	453 16 3	3 8
3,000	680 12 6	4 6½	621 6 3	4 1½

In the case of incomes exceeding £2,000 the above figures include super-tax as well as income tax.

#### M.O.H., CAPE TOWN.

THE South African mail this week brings two announcements regarding the Health Department of Cape Town. The *Cape Argus* of March 17th publishes an article on the forthcoming retirement, at his own request for reasons of health, of Dr. Alfred Jasper Anderson from the post of medical officer of health. Dr. Jasper Anderson arrived in Cape Town on October 1st, 1901, to take up the duties of first medical officer of health of the Cape Town Council; during the previous ten years he had been medical officer of health for Blackpool. With the unification of the Peninsula municipalities in 1913 he was appointed medical officer of health for the larger Cape Town area. The following summary of figures pays an eloquent tribute to his work in South Africa. In 1901 the European death rate was 17.1 per 1,000, and the coloured death rate 37.6. In 1915 the rates were 15.6 and 23.5. The infantile death rate among Europeans has declined during his tenure of office from 136 per 1,000 to 98.3. Although retiring from his association with the municipality, Dr. Anderson will continue to live in Cape Town. The *Cape Times* of March 28th reports a deputation from the Western Province Branch of the British Medical Association to the Cape Town City Council, in regard to the proposed division of the work of the Health Department into two sections. The deputation was introduced by Dr. C. M. Murray. Dr. Darley Hartley explained that in the Branch's opinion separation of the duties hitherto under the medical officer of health into two branches, curative and preventive,

would be detrimental to the public health. The Branch took no exception to this division so far as executive functions were concerned, but felt strongly that the ultimate administrative control should be with the medical officer of health, for the keynote of public health was unity of direction. The resolution he quoted from was adopted unanimously by a meeting of sixty-one members of the Western Province Branch. Dr. Moffat, who followed, spoke of the importance of maintaining one administrative head of all the health departments. The Mayor, in reply, pointed out that the Council last December decided to combine the office of medical officer of health with that of superintendent of the Infectious Disease Hospital; if that decision was to be reversed a unanimous rescinding resolution would be necessary. Dr. Abdurahman, Chairman of the Health Committee, argued against the views put forward by the deputation. The Mayor informed the members of the deputation that their views would be considered by the Council, and the interview closed. Subsequently Dr. T. S. Higgins, who for the past ten years has been medical officer of health for the borough of St. Pancras, London, was appointed to the post of M.O.H. Cape Town.

#### INFANT WELFARE CONFERENCE.

THE National Association for the Prevention of Infant Mortality and the National Baby Week Council are jointly organizing a conference on infant welfare to be held at Carnegie House, Piccadilly, on Monday, Tuesday, and Wednesday, July 2nd, 3rd, and 4th, under the presidency of the Right Hon. Neville Chamberlain, M.P., Minister of Health. The conference will coincide with the National Baby Week celebrations organized by the same bodies. Business will begin at 10.30 a.m. on July 2nd with the President's address, after which a discussion on "The causal factors of infant mortality up to 1 year of age (ante-natal, intra-natal, and post-natal) and their prevention" will be opened by Drs. Eardley Holland, J. S. Fairbairn, Eric Pritchard, and R. C. Jewesbury. In the afternoon the subject of maternity homes and their relation to maternal mortality from childbirth will be introduced by Dr. W. Allen Daley. On the morning of July 3rd Drs. W. G. Willoughby and Mabel Brodie will open a discussion on the scope, staffing, and administration of maternity and child welfare centres; in the afternoon the question, "Is it advisable in urban areas to combine the functions of the health visitor with those of other officers of local authorities?" will be debated; openers, Drs. E. W. Hope and F. Wynne. The morning of July 4th will be given up to a discussion, opened by Dr. Rhoda Adamson, on the maternity resolution passed by the Washington Convention, 1919, and the afternoon to housing in relation to infant welfare. During the conference visits will be made to a number of maternity and child welfare institutions of various kinds in London. Copies of the programme and information regarding fees may be obtained from the honorary secretary, Miss J. Halford (Carnegie House, 117, Piccadilly, W.1). The two organizations arranging the conference are sections of the National League for Health, Maternity and Child Welfare, of which the chairman is Dr. G. F. Still. The League acts as a co-ordinating body and a central clearing house for information. It has a lending and reference library, and is the publishing department for most of its sections. The work of five societies is thus carried out in one office with an interchangeable staff.

#### INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE, 1925

At a meeting of the permanent committee of the International Society of the History of Medicine held at Antwerp on April 11th it was decided to hold the Fourth International Congress of the History of Medicine at Geneva, Switzerland, during the third week of July, 1925. The following officers were elected: *President*: Dr. Charles Greene, Cambridge. *Secretary-General*: Dr. A. de Peyer, Geneva. *Général Dufour*, 22. *President of Honour*: Sir Denis



Power, London. *Vice-Presidents of Honour*: Dr. Edward B. Krumbhaar, Philadelphia, U.S.A.; Dr. Tricot-Royer, Antwerp; Dr. J. G. de Liut, Gorinchem, Holland; Dr. Charles Singer, London; and the President of the Medical Society of Geneva for the year 1925.

#### INDUSTRIAL FATIGUE BOARD.

THE third annual report of the Industrial Fatigue Research Board, dealing with the year 1922, has been published (H.M. Stationery Office, 2s. net). The duty of the Board is to suggest problems for investigation, and to advise upon or carry out schemes of research referred to it by the Medical Research Council; to promote better knowledge of the relations of hours of labour and of other conditions of employment, including methods of work, to functions of the human body, having regard both to the preservation of health among workers and to industrial efficiency. The Board was instructed to seek the co-operation of industries in the fullest practical application of the results of this research work to the needs of industry. The report gives an account of the work of the Board and its several committees during the year. The inquiries fall under three general headings—general investigations, inquiries into industrial problems, and researches in various selected subjects. The bulk of the volume is made up of a series of individual reports, including two by Dr. H. M. Vernon, one on atmospheric conditions and efficiency, and the other on future investigations in the pottery industry.

### Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

#### *Dangerous Drugs (Amendment) Bill.*

THE Earl of Onslow, on April 25th, moved the second reading of the Dangerous Drugs and Poisons (Amendment) Bill in the House of Lords. He explained very briefly the provision, pointing out that people who committed purely technical offences were insured against the risk of the heavy penalties, because it was provided that no proceedings for an indictable offence should be instituted without the consent of the Attorney-General or the Director of Public Prosecutions. There was no discussion, and the bill was committed to a committee of the whole House.

#### *Colonial Medical Services.*

Dr. F. E. Fremantle asked, on April 25th, whether there is at the present time any difficulty in securing suitable candidates for the vacancies in the Colonial Medical Services, more especially those in the West Indies; what steps, if any, the Under Secretary for the Colonies had taken and proposed to take to secure action in the direction recommended by the report of his predecessor in respect of the medical services in the West Indies; whether, pending amelioration of conditions of service along the lines recommended in the report the Colonial Office proposed to continue recruiting for these services in this country; and, if so, what steps were being taken to advise intending candidates of the difficulties with which they would have to contend if they took up these appointments? The Under Secretary for the Colonies (Mr. Ormsby-Gore) said that there was no serious difficulty in securing suitable candidates for vacancies in the Colonial Medical Services, except as regarded appointments in West Africa and a few other posts for which it was possible to offer only small salaries. Effect had already been given to many of the recommendations regarding the medical services in the West Indies made by the President of the Board of Education when he was Under Secretary for the Colonies, but financial exigencies had prevented the realization of some of his proposals. There was no ground for thinking that the conditions of service in the great majority of the Colonial Medical Services were not satisfactory. Recruitment for these services was being continued in this country, but had been discontinued in the case of a few posts at low salaries in some of the poorer colonies. As full information as possible with regard to the terms and conditions of service was given to all intending candidates.

In reply to a further question by Dr. F. E. Fremantle, Mr. Ormsby-Gore said that the incidence of disease and the rates of mortality in some of the West Indian Colonies were capable of considerable reduction with great economic advantage. The Colonial Governments had given much attention lately to medical and sanitary matters; several had appointed committees of inquiry, and several had lately reorganized their public health services. In this work the Colonies were hampered by commercial depression and by the indifference of sections of the public which did not yet fully realize the profound importance of the community with the public to progress.

Dr. Fremantle asked, on April 30th, whether the Colonial Secretary had under consideration any proposals for ameliorating

the conditions of medical service in the Windward Islands; and whether he was aware that the conditions had been the subject of memorials from the Grenada Medical Service since 1919. Mr. Ormsby-Gore said that the decision would be reached at an early date, but he was sorry to say that the financial position of the Windward Islands was such as to restrict the possibilities of improvement in the conditions of the medical service.

Dr. Fremantle asked which colonies, and how many individual medical appointments, were affected by the discontinuance of recruitment in this country in the case of certain medical posts at low salaries; how these appointments were now filled by the several colonies; and what were the medical qualifications and nationality of the successful candidates for such posts. Mr. Ormsby-Gore said the question whether a medical appointment should be filled from this country was frequently decided only when a vacancy occurred, and that accordingly it was not possible to state definitely how many individual appointments were affected, but the number was probably between a dozen and a score. The appointments concerned were some of those in the Windward, Leeward, Bahamas, Turks, Caicos, and Cayman Islands. Most of them were filled by local West Indian candidates of British nationality possessing qualifications obtained in the United Kingdom or Canada. It appeared that there were only two medical men in the islands in question whose qualifications were foreign. Dr. Fremantle inquired whether the reason these posts were filled by persons holding American degrees was that the conditions of service were not such as to attract those with British qualifications. Mr. Ormsby-Gore replied that he believed those two doctors with American degrees were British West Indians.

Dr. Fremantle asked whether the Colonial Secretary was still, in the words of the Wood Report, always hampered in recruitment for colonial medical appointments carrying rights of private practice by the absence of sufficient data as to the value of such practice; if so, what steps had been taken by his department to give effect to the suggestion for removing this defect.

Mr. Ormsby-Gore said the value of a private practice must vary in accordance with individual capacity, and such information as the collector of the value of the appointment. The passage of this point was referred to the colonial governments concerned for their observations and no specific reply had yet been received. No difficulty had been encountered in the case of any appointment to these colonies since the date of the report. He believed that all that was done was to tell candidates in round figures what the private practice brought in to the previous occupant of the post.

#### *Pensions and Pensioners.*

The Pensions Minister stated, on April 26th, that the total number of awards declared to be final during the twelve months ended March 31st was approximately 246,000. In about 123,000 of the cases in which the final award was at the rate of less than 20 per cent. the men were previously in receipt of a conditional pension. He was unable to say in what proportion of these cases the disability was permanent, but only in a minority of not more than one-third of the whole number was the disability certified to be of indeterminate duration, and in most it was a minor injury in a final or stationary condition. The number of final awards in four-year cases in the year ended December 31st, 1922, was 54,600. The number of these cases which were at the rate of 20 per cent. or upwards and under 20 per cent. respectively was not at the outset especially recorded, but for the period for which a record was kept recommendations in favour of permanent pension were in the proportion of six to four recommendations for award of less than 20 per cent. The proportion of the former class showed a steady increase. A great proportion of the permanent pensions which were made "statutory final" were four-year cases. The average duration of final weekly allowances was about 80 weeks. The total number of men under home treatment with allowances is 7,215, and the total number of pensions and final weekly allowances is 707,000.

The Pensions Minister has said, in reply to a question, that in support of a claim made long after a man's discharge, that a disability from which he was suffering was connected with his service, the best evidence was evidence, whether medical or other, sufficient to establish the existence of the disability since discharge. But while this had always been pointed out by the Ministry in its instructions as an ordinary (though not by any means absolute) requirement, it had been clearly laid down that there were cases of latent disease which might not manifest themselves until very long after discharge, but might nevertheless be reasonably held to have been present before that date. The list of diseases of that class was drawn up on the advice of the highest independent medical authorities with the object of indicating that in the case of these diseases specially long periods after discharge could be allowed for the first known manifestation of the disease in order to establish continuous history. The following is a list of the diseases: Pulmonary tuberculosis, twelve months; general paralysis of the insane, eighteen months; subacute infective endocarditis, two years; diabetes, six months; aneurysm, one year; chronic granular kidney occurring in a man under 45 years of age, two years.

Major Tryon has stated also that reduction in the accommodation of the Ministry's hospitals would naturally follow on the decrease in the demand for in-patient treatment for pensioners. A considerable number of out-patient clinics had been established at convenient centres, and were administered by the Ministry, by civil hospitals, or by the British Red Cross Society on an agreed basis.



**Board of Control.**—Mr. Neville Chamberlain informed Mr. Ammon, on April 25th, that the total gross cost of the Board of Control for the financial year 1922-23 was approximately £470,236, less appropriations-in-aid (fees for licences, etc.) £7,756. The gross cost included grants-in-aid to local authorities and voluntary institutions £408,791, cost of State institutions for mental defectives £26,795, salaries and expenses, etc., of head office staff, £34,650.

**Deaths from Small-pox.**—In reply to Mr. Scrymgeour, on April 18th, Mr. Chamberlain said that 24 of the 27 deaths from small-pox in England and Wales last year occurred in the outbreak of virulent small-pox in London and the neighbourhood, and that in this outbreak the fatality rate was 23.7 per cent. in the case of vaccinated persons, and 60 per cent. in the case of unvaccinated persons. The age of the youngest vaccinated person who died from small-pox was 43. Seventy-two cases, of which 23 proved fatal, were nursed at the Metropolitan Asylums Board Hospital at Dartford between July 1st and December 1st, 1922.

**Accidents at Woolwich Arsenal.**—In answer to Sir Kingsley Wood, on April 23rd, who raised a question on the closing of the hospital at Woolwich Arsenal, Lieut.-Colonel Guinness said that an officer of the R.A.M.C. was always available by day and by night, and adequate facilities existed for the treatment of cases of injury pending their removal to hospital. Injured employees requiring in-patient treatment would in future be taken to the Royal Herbert Hospital, about a quarter of a mile distant. Apart from the Arsenal ambulance, always available in working hours, arrangements had been made with the Metropolitan Asylums Board for the immediate supply by day or night of fast motor vehicles. These would be drawn in the first instance from the Brook Ambulance Station close to the Royal Herbert Hospital. In the event of a very serious accident additional ambulances could at once be called up from neighbouring stations. The London County Council ambulances were also available. In his opinion the arrangements which had been made were satisfactory.

**Illness from Vaccination.**—Mr. Robert Young asked, on April 23rd, whether, seeing that the operation of vaccination was in many cases enforced, the Minister of Health would see that where untoward results ensued compensation for loss of health and employment wages would be paid, seeing that vaccination was *prima facie* in the interests of the community. Mr. Chamberlain said that the Vaccination Acts did not provide for the compulsory vaccination of adults, and he was advised that there was no statutory authority for the payment of compensation out of the rates in the circumstances referred to.

**Heart Cases and Dentures.**—Major Tryon, on April 19th, informed Mr. Becker where there was no dental disease due to war service but the extraction of teeth was recommended by the Pensions Department as a necessary part of treatment for an accepted disability, it was the practice to supply artificial dentures when necessary in the interests of a pensioner's health. In regard to a statement by Mr. Becker that a man undergoing treatment provided at the National Hospital for Diseases of the Heart, had had his teeth removed as part of the treatment, and the Ministry had refused to supply him with false teeth, Major Tryon said he understood that the need for artificial dentures had not been established in this case, but he was making further inquiries. Mr. Becker asked whether the Minister was aware that a large number of ex-service men had their teeth removed to assist heart treatment and had not had the money to buy dentures. Was the hospital supposed to supply these teeth, though getting only a capitation of 3s. per head? Major Tryon thought he had dealt with the point.

**Mentally Defective Children.**—Lord E. Percy informed Mr. C. Wilson, on April 19th, that the latest statistical information as to school accommodation for mentally defective children was contained in Appendix F of the report of the Chief Medical Officer to the Board of Education for 1920. In 293 areas for which data had been tabulated there were approximately 28,000 children reported as mentally defective in the category of "feeble-minded." This total included children under the local combined authority. The total accommodation provided in certified special schools for educable mentally defective children was over 16,000. As to the number that still required to be specially examined by school medical officers, Lord E. Percy said that his only information was from the medical officers themselves.

**Choice of Disinfectants.**—Mr. Chamberlain informed Mr. Becker, on April 18th, that he had no evidence to show that disinfectants totally devoid of bactericidal action were sold to the public. But he was aware that, judged by certain tests, disinfectants sold might differ considerably in their bactericidal power. As at present advised, he was not prepared to adopt the suggestion that a test should be required. Advice as to the choice of disinfectants for particular purposes could generally be obtained from the health officers of local authorities.

**Fee for**—Sir J. Remnant asked, on April 18th, whether the Minister of Health had been drawn to the representations of the Society of Medical Officers of Health, the British Medical Association and others relative to the inadequate charges authorized by the Ministry for the bacteriological examinations of the various grades of milk under statutory rules and orders, necessitating as it did the services of a skilled bacteriologist and the provision of the necessary material. Mr. Chamberlain said he had received the representations. He was advised that the work was of a routine character and that the cost per sample should not exceed the amount which had been suggested where

arrangements were made at the laboratory for dealing with the considerable volume of samples which might be expected to result from the scheme of milk grading.

**Nurses' Registration.**—In reply to a question as to the alleged growing resentment amongst registered nurses on the ground that the authority of the General Nursing Council for England and Wales had been usurped by medical men the Minister of Health said there was no evidence of any such feeling in the nursing profession, and the marked increase in the number of recent applications for admission to the Register seemed to him to negative the suggestion. The nurse members form two-thirds of the council, and it was within their power to control the selection of the committee. He understood that the chairman of three out of six standing committees were doctors, but he had no information on the other points, and was not prepared to make representations on matters wholly within the discretion of the council. In reply to another question Mr. Chamberlain said that an examination syllabus (Schedule 2) for the general part of the Register would be approved subject to two small modifications accepted by the council. The syllabus would form part of the rules and sufficiently indicated the subjects in which the candidate was required to be trained. The council had decided to make the syllabus of training advisory only as was allowed under Section 3 of the Act.

**Education Department Medical Service.**—On inquiry by Sir Joseph Leigh on April 20th Lord Eustace Percy stated that the promised co-operation between the Education Department and the Ministry of Health is now effective. The number of medical officers engaged exclusively at the Board of Education is seven.

**Health and Unemployment Insurance.**—Major Boyd-Carpenter, on April 17th, stated the total cost of administration of National Health and Unemployment Insurance per person relatively as follows: National Health Insurance, 6s. 8d.; Unemployment Insurance, 7s. 1d.

**Patent Medicine Stamp Duty.**—Major Entwistle asked, on April 17th, whether according to the constitution placed by the Customs and Excise Department upon the provisions of the Patent Medicine Stamp Duty Act, 1812, makers of chemical preparation sold under a fancy name, by not claiming proprietary rights, were able to avoid the incidence of the *ad valorem* Patent Medicine Stamp Duty. Major Boyd-Carpenter replied that the question whether any particular medicine was liable to stamp duty depended upon a number of considerations. If particulars of the case in mind were furnished to him he would have the matter looked into.

#### Answers in Brief.

The Minister of Health has stated that the Village Settlement Scheme for tuberculous ex-service men recommended by the Barlow Report of 1918 was under consideration, and would be discussed with representatives of the British Legion at an early date. The Hospitals Commission has distributed £421,023 of the Parliamentary grant of £500,000 in aid of the voluntary hospitals. The Commission has not yet made any recommendations as to the necessity for any future grant, or for the continuance of some central body to act as a link between the local voluntary hospital committees.

The general question of the salaries of health visitors is receiving the consideration of the Minister of Health. The Minister of Health has stated that the results of treatment and research in the leper asylums in India were being carefully studied in his department and would be discussed at the forthcoming international conference on leprosy at Strasbourg, at which this country would be represented by a medical officer of the Ministry.

The Parliamentary Under Secretary, Home Office, has stated, in reply to a question, that a bill to consolidate and amend the law relating to coroners is in preparation. He was unable to say when it would be introduced.

In reply to a question with regard to the arrangements for persons under remand in prison for mental observation and report, the Parliamentary Under Secretary, Home Office, said such persons were usually put into the prison hospital, but if the accommodation did not allow they were placed in cells provided for this purpose, and were supervised by the hospital officers. These cells were gated, and it was found by experience that they were the most suitable. They were located in special parts of the prison where few persons passed. The extension of the Birmingham scheme (as regards segregation and observation) to other prisons would involve structural alterations and the expenditure of large sums of money.

The number of ex-service men who have received a Government grant to enable them to finish their education at universities or colleges of similar standing in Great Britain is approximately 19,850, of whom up to the present about 10,110 have obtained a degree or diploma.

The number of persons in England and Wales in receipt of Poor Law relief on March 31st, 1923 (including lunatics in asylums) was approximately 1,439,000.

Four prosecutions have so far been instituted under the Debtors' Act, 1921.

The Minister of Health will at an early date discuss with the British Legion the question of village settlements for tuberculous ex-service men.

So far as the Colonial Office is aware no general opinion has been established in Iraq. In 1923 an attempt was made to control the opium traffic by local monopolies, but this had appeared to need regulation, and there is no reason to suppose that the High Commissioner is to furnish a report.



## X RAYS IN DIAGNOSIS.

## THE SILVANUS THOMPSON MEMORIAL LECTURE.

THE sixth annual Silvanus Thompson memorial lecture was delivered by Mr. C. THURSTAN HOLLAND, D.L., Ch.M., honorary consulting radiologist to the Liverpool Royal Infirmary, on Tuesday, May 1st.

After a reference to his predecessors—Rutherford, Bragg, Hill, Bayliss, and Lodge—he paid a worthy tribute to the memory of Silvanus Thompson, his work, and his position amongst physicists.

Mr. Holland took as the subject of his lecture, "The influence of  $x$  rays on diagnosis." Speaking of the Röntgen Society—the oldest of all the  $x$ -ray societies in the world—the lecturer said it had never been possible to draw a hard and fast line between the purely medical and the purely scientific, and that the society existed, to some extent, in order to bring together all interested in the study of  $x$  rays so that mutual benefit might result. The co-operation of physicists, manufacturers, and radiologists was practically an essential of advance.

*Early Days.*

He related how in December, 1895, Röntgen first published the details of his discovery, in a short paper which was remarkable for its lucidity and completeness. In February of 1896 the lecturer had seen some of the early attempts of Sir Oliver Lodge "to take radiographs," the subject being a boy with a pistol bullet in his wrist. After several failures a successful radiograph was obtained; the exposure was one and three-quarter hours, and, as the lecturer characteristically remarked, "Providence alone is to be thanked that no  $x$ -ray burn followed."

Mr. Holland then gave an account of his early experiences in  $x$ -ray work. He said: "At the end of May, 1896, I was the proud possessor of a 3-inch spark coil, six Grove cells, and a tube without an anticathode." They survived only a few days, being replaced by accumulators and a Jackson focus tube. At this very early date "Professor Herbert Jackson made possible by this one tube improvement all the beautiful radiographs which we see at the present time."

Mr. Holland then gave an account, with illustrations, of his own work in the early days of radiography, done with an apparatus which cost £30, including the tube. He related that as early as October 2nd, 1896, two boys with coins in the oesophagus were examined; the coins were found and removed. One of the coins had been in the throat for just over a year. The child had been treated for tuberculosis, and had been to many specialists and health resorts. Within a few weeks of the removal of the coin his cough and all his other symptoms had entirely disappeared. Mr. Holland cited this as "one of the first great  $x$ -ray triumphs of diagnosis." He related how in November, 1896, he examined his first chest case, and in December "my notebook reports that a stomach case was examined, and that the exposure given was one hour."

He gave many examples of the trials and troubles in the early days of radiography, and of how these were successfully overcome. Mr. Holland believed that the influence of  $x$  rays as regards accurate diagnosis was even yet not altogether realized, and proceeded to trace the development of radiography in the investigation of the various systems of the body.

*Diseases of Bones.*

He first dealt with the bony skeleton, and showed how from the very first all conditions affecting it had been recognized as a "fair field for  $x$ -ray diagnosis. . . . The demonstrations of fractures, dislocations, and of disease and abnormalities as they affect bones is such an everyday  $x$ -ray necessity that it has altogether ceased to be a wonder, and the examinations are made as a matter of course." The lecturer emphasized the value of radiography in injuries adjacent to and affecting joints in the demonstration of cracked fractures of bones in injuries to the small bones of the hand and foot, and showed how the accuracy of diagnosis, wholly impossible in the pre- $x$ -ray days, had a great influence on final results.

The results of  $x$ -ray examination of bone conditions became of greater and greater importance as experience increased; there was no disease affecting bones, whether intrinsic or extrinsic, which did not, in its course, give rise to some  $x$ -ray

change from the normal. In many cases in which the clinical diagnosis was doubtful, the  $x$ -ray findings became conclusive. He showed, however, that one unfortunate result of this universal application of radiography was the tendency, more particularly in out-patient departments, to rely to such an extent upon the  $x$ -ray diagnosis that the cases were not properly examined by the student; he emphasized the importance of a thorough clinical examination in addition to the  $x$ -ray examination.

*Foreign Bodies.*

He then proceeded to deal with the methods of detection and localization of foreign bodies, paying a just tribute to the work of the late Sir James Mackenzie Davidson.

*Diseases of the Urinary Tract.*

The lecturer dealt next with the urinary tract. The modern surgery of stone in the kidney and ureter had been the direct result of  $x$ -ray diagnosis; the first kidney stone shown, and later removed by operation, was reported by Dr. MacIntyre of Glasgow in July, 1896. Mr. Holland gave his own experience in this branch of the work, and stated that at the present day "radiography is the only method of examination which can be relied upon to demonstrate the presence of stone in kidneys or ureters. All other diagnostic methods are merely assistant to  $x$  rays in the interpretation of doubtful shadows. Radiography is the stand-by of physicians and surgeons. By showing the size, shape, and position of a stone it will often decide the question of medical or surgical treatment. . . . The salient feature of radiography is not the showing of the shadows of those stones—that is an easy matter; it is the difficulty, indeed sometimes the impossibility, of making an accurate differential shadow diagnosis. He gave several examples of exceptional cases, and spoke of the use of the opaque catheter and the injection of an opaque solution into the ureter and kidney. It has been the custom in Liverpool at the Royal Infirmary for many years to place almost implicit confidence in the  $x$ -ray examination, be it positive or be it negative: at the same time always remembering that in the negative cases the possibility of a small uric acid stone must be borne in mind; and also that in a certain number of cases which show suspicious shadows only, errors of interpretation must occasionally occur, which, in some cases at any rate, are not preventable. . . . Exploratory operation for kidney stone is a thing of the past: this is the triumph of  $x$  rays in the diagnosis of stone."

*Thorax: Pulmonary Tuberculosis.*

In dealing with the examination of the thorax by the  $x$  rays Mr. Holland showed how the present position had not been established without a somewhat bitter fight. He said: "It has taken time to convince the majority of physicians that radiography can disclose with accuracy what cannot be detected by auscultation and percussion; but fact after fact disclosed by  $x$  rays—striking pictures of pathological conditions, quite unsuspected—occurring day after day, could not be pushed upon one side, and it is now admitted by most physicians that gross intrathoracic lesions may be present which are not diagnosable by the ordinary method, but which  $x$  rays reveal at a glance in a most dramatic manner." He gave numerous instances of such cases.

The subject of pulmonary tuberculosis was carefully reviewed, and the lecturer gave his definite conclusions:

1. The clinical diagnosis of pulmonary phthisis is in many cases a mere matter of conjecture, one which is not proven by physical signs, and one on which the history of the case has a very significant bearing.
2. That in many cases—and I emphasize the many—in which physical signs are reported to me as being entirely or almost entirely absent,  $x$  rays disclose a condition of such extensive disease that at the first sight it seems incredible.
3. That in any case of recognized lung tuberculosis the  $x$ -ray examination will inevitably reveal more than the most skilled clinician without  $x$  rays can arrive at.
4. The negative value of a properly conducted  $x$ -ray examination is of the very greatest value.

*Gastro-intestinal Tract.*

The historical aspect of the  $x$ -ray investigation of the gastro-intestinal tract was briefly outlined. The lecturer proceeded to describe the triumphs of radiology in the differential diagnosis of oesophageal and gastric conditions. The influence of  $x$  rays in the diagnosis of intrinsic and extrinsic diseases affecting the oesophagus was discussed, and the



question of the x-ray diagnosis of gastric ulcer dealt with. The lecturer entirely agreed with the statement of Sir Berkeley Moynihan that "in the diagnosis of gastric ulcer it has pride of place, in competent hands it is far more accurate than any other method of diagnosis, clinical or chemical, or than all other methods combined." Mr. Holland, in speaking of gastric ulcer, stated that he had seen over 200 cases of hour-glass stomach of every possible variety. Very few had been diagnosed previous to the x-ray examination. The importance of x-ray examination in all cases of chronic dyspepsia was emphasized, and many illustrative cases were given. He concluded his lecture with a word of warning. He thought that in teaching hospitals a little too much is at present being asked from radiologists. They were often expected to make a diagnosis from the x-ray examination alone; this he considered was not fair, and not calculated to advance either the art of radiology or that of medicine.

#### Conclusion.

X-ray examination was one method used for arriving at a correct diagnosis, and although it was both dramatic and final in many cases in others it was to a large extent influenced in its reading by a knowledge of other facts. "Students are being taught to rely too much upon the x-ray departments for their diagnosis, and are neglecting to develop to its full the art of observation and deduction so wisely used by their ancestors."

X rays, he went on to say, have crossed the paths of medicine in every direction, and wherever they have crossed those paths they have left behind beacons of light.

### THE IMPORTANCE OF EARLY DIAGNOSIS IN PULMONARY TUBERCULOSIS.

It is a very favourite occupation of enthusiasts in personal and general hygiene to calculate the annual number of deaths which might be averted if only more enlightened principles could be inculcated into the people and a higher standard of sanitation be realized in their environment, as, for instance:—To what extent the infantile mortality might be reduced if a perfectly safe milk supply could be ensured? What would be the effect on the longevity of the workers were certain factory defects removed? How many lives would be saved in tropical countries if the tsetse fly could be exterminated or the mosquito banished beyond the confines of man? And so on. A very interesting and inspiring pursuit, and one which, by appealing to the imagination of the enlightened, has probably provided a considerable stimulus to the carrying through of valuable reforms in the prophylactic treatment of disease.

The publication by the Medical Research Council of a report on tuberculosis in insured persons accepted for treatment by the City of Bradford Health Committee<sup>1</sup> might well engender an attempt on the part of some of the more speculative members of the community to estimate the yearly saving of lives in the British Isles if all patients developing pulmonary tuberculosis could be diagnosed in the early stages of the disease. Though tempted to give way to a similar impulse ourselves, we feel it better to direct our activities into a more didactic channel, and to give a brief account of the results which have been obtained by Dr. Vallow in the treatment of the poorer social classes affected with tuberculosis at Bradford. In the years 1914-16 the number of persons accepted by the Health Committee for treatment of pulmonary tuberculosis was 584 (342 men and 242 women). These figures comprised patients in all stages of the disease, and were not selected in the way that patients for sanatorium benefit usually are. For the early, and the more hopeful of the moderately advanced cases, sanatorium treatment was adopted; for the advanced cases hospital treatment was given as a preventive measure; and for certain other cases domiciliary treatment was provided. Added to this, the after-care of discharged institutional patients was effectively attended to by health visitors and others, and extra food and clothing were provided for such cases as required it.

Owing to the fact that Bradford forms a complete civic unit, the following up of the patients and the ascertaining of the number of deaths which occurred has been comparatively easy—so much so that only 3.9 per cent. of the patients have

been lost sight of. The statistics collected with regard to their after-history have been completed, yielding information for an average of five years in the case of those patients who survived. The classification adopted was similar to that of the Association for the Study and Prevention of Tuberculosis in America, with certain differences to be noted later. The results of a careful analysis of the figures show that of 204 Stage I cases only 3.4 per cent. died; of 158 Stage II cases 55.1 per cent. succumbed; and of 222 Stage III cases the mortality was no less than 99 per cent. If the actual deaths amongst the Stage I cases be compared with the expected deaths amongst the general population of England and Wales—calculated by multiplying the "exposed to risk" by the ratio of mortality for the approximate ages according to the English Life Table No. 8—it is found that the patients in this category enjoy a practically normal after-lifetime. A comparison of the Bradford figures with those of the Midhurst report (Spec. Rep. Series, No. 33) shows that the Stage I cases in the former series do rather better, the Stage II cases much the same, and the Stage III cases, for obvious reasons, very much worse.

These, quite briefly, are the results obtained. There are one or two points to be noted. First, as regards classification. Though the standard adopted was similar to that employed at Midhurst there are certain differences. For instance, in the Bradford Series Stage I cases were restricted to those showing very limited signs confined to not more than one lobe, whereas in the Midhurst series slight infiltration of both apices was permitted. Again, in the former series, to qualify for Stage III a patient had to show extensive signs in three or more lobes, while in the latter series extensive infiltration or consolidation in one or more lobes was required. This means that on the Bradford classification a patient might have disease of the whole of the left lung, and be absolutely moribund, and yet, since only two lobes were affected, he would have to be relegated to Stage II. True, it is unusual to find such extensive disease in one lung without at least some trouble in the opposite one, yet such cases do occur—as all those familiar with artificial pneumothorax treatment will admit. These differences do undoubtedly detract from the value of an exact comparison between the Bradford and Midhurst figures. Again, in calculating the mortality rate, in the Midhurst series all deaths were counted—no matter from what cause—while in the Bradford series, it appears—though the author does not give very definite information on the point—that only those dying from pulmonary tuberculosis were included. Lastly, it is unfortunate that no classification based on the presence or absence of tubercle bacilli in the sputum was made in the Bradford cases.

Leaving aside these points, however, there is a big fundamental fact which stands out pre-eminent—namely, that patients developing pulmonary tuberculosis who are diagnosed in the early stages of the malady, who receive adequate sanatorium treatment, and who then return to their work in the industrial town in which they primarily contracted their disease, enjoy, for all practical purposes, a normal after-lifetime. This is a fact, and amidst the tangled skein of conflicting opinions regarding the treatment of phthisis it is a fact to be firmly grasped. It is a fact which should serve as a guide in the subsequent attitude of the health authorities towards the prevention of tuberculosis. It is a fact which should stimulate every medical practitioner to do his best to recognize the disease before it is yet too late. It is a fact which all those who oppose the present sanatorium treatment of pulmonary tuberculosis have got to face. And it is a fact which should give encouragement to all those whose endeavours have been directed towards providing a rational treatment for the disease—a treatment, moreover, which comprises not merely a few months' rest and training at an institution, but which recognizes the importance of enlisting the help of the social workers so as to ensure the prolonged after-care of the patient and the provision of the best hygienic conditions which the circumstances will allow.

There has been published in *The World's Health* (a monthly review issued by the League of Red Cross Societies) an account of the conference of Oriental Red Cross Societies, held at Bangkok, Siam, towards the close of last year. The conference was presided over by Sir Claude Hill, director-general of the league, who together with Dr. Malcolm Smith acted as delegates of the British and Australian Red Cross. Dr. Norman White represented the League of Nations, Dr. M. E. Butler the Rockefeller Foundation, and Dr. W. W. Peter the Council of Education in China.

<sup>1</sup> Medical Research Council, Special Report Series, No. 75, His Majesty's Stationery Office, London, 1923. *Tuberculosis in Insured Persons Accepted for Treatment by the City of Bradford Health Committee.* By Harold Vallow, M.D., D.P.H. (Pp. 18. 6d. net.)



## England and Wales.

### PSYCHOLOGICAL MEDICINE AND RESEARCH AT BIRMINGHAM.

SIR FREDERICK MOTT has taken up his new duties as honorary director of the pathological laboratories of Birmingham City Mental Hospitals, and gave the first of a series of lectures on body and mind at the university on April 26th. Principal C. Grant Robertson, who presided, said that in 1919 Sir Charles Hyde generously founded a lectureship in psychotherapy; a single lecture had been delivered each year by a different lecturer. When, mainly through the instrumentality of the vice-chancellor, Sir Gilbert Barling, negotiations with the Asylums Committee resulted in the provision of funds for research work, the annual lectureship had been converted into one in morbid psychology tenable for three years, and this post had been accepted by Sir Frederick Mott, who, in addition to giving general supervision of the laboratories at his weekly visits, would give a course of lectures. It was hoped that the scheme for research in mental diseases would eventually be extended, and that other public authorities of the Midland area would join and would contribute to its funds and to the facilities for study. Sir Frederick Mott said that he had hoped that another university would have adopted a scheme similar to that instituted in Birmingham, but in this he had been disappointed, and London was without a university school such as had been established in Birmingham. In foreign countries the university would always be found associated with a mental hospital, and a great part of the valuable work coming from Germany in neurology and psychology had been due to that association. There the professor of psychology at the university was nearly always superintendent of the mental hospital.

### BRITISH HOSPITALS ASSOCIATION.

The annual conference of the British Hospitals Association will be held in Sheffield on May 31st and June 1st, under the presidency of the Hon. Sir Arthur Stanley. The first business of the conference will be to consider the reference from the last annual meeting concerning the establishment of a central fund for the provincial hospitals. Mr. H. J. Waring, F.R.C.S., Vice-Chancellor of London University, will then deliver an address on "The future of voluntary hospitals from a medical viewpoint," which will be followed by a discussion. In the afternoon there will be a discussion on modern hospital administration, in which Dr. S. S. Goldwater, of Mount Sinai Hospital, New York, will take part. A reception will be held later in the afternoon at the town hall by the Mayor of Sheffield and Sir Henry Hadow, Vice-Chancellor of Sheffield University, and in the evening there will be an official dinner to the delegates at the Royal Victoria Hotel, with Sir Henry Hadow in the chair, and Lord Onslow, chairman of the Voluntary Hospitals Commission, as the principal guest. On the following day the business meeting will be held. Hospital finance will thereafter be discussed; an opening statement will be made by Sir Napier Burnett, Lord Hambleton will give an address on hospital finance in its relation to approved societies, and a discussion will follow. The Master Cutler, Mr. R. W. Matthews, will give a luncheon at the Cutlers' Hall to the speakers and the council of the British Hospitals Association and other leading members of the conference. In the afternoon arrangements have been made for visits to the different hospitals and convalescent homes in the neighbourhood. Official programmes for the conference will shortly be obtainable from the regional secretary, Mr. S. R. Lamb, Sheffield Joint Hospital Council, St. Peter's Close, Sheffield.

### THE CARE OF THE INSANE IN LONDON.

In a report presented to the London County Council on April 24th the Mental Hospitals Committee discussed the conclusions of the Ministry of Health Committee which recently investigated Dr. Lomax's charges against asylum administration. Of the ten mental hospitals belonging to the London County Council, three—Hanwell, Colney Hatch, and Banstead—date back for about ninety, seventy, and forty years respectively, and in their older parts do not conform to modern ideals. The Committee states, however, that classification of patients, which is more readily carried out in modern buildings, is the rule in all the London mental hospitals so far as structure permits. At each hospital a deputy medical superintendent relieves the medical super-

intendent of certain executive duties. The medical superintendents meet the assistants every morning in consultation. Every opportunity is afforded for patients to have private interviews with members of the medical staff. The charges made by Dr. Lomax with regard to prescribing and administration of medicines have no applicability to the London mental hospitals. Facilities exist at all the hospitals for hospital and surgical treatment, and the services of specialists are obtained when considered necessary. The Committee is satisfied that no patients who are fully recovered are detained, but has some doubt whether patients may not be too readily discharged on the application of friends. Every effort is made by up-to-date treatment to bring about recovery. Employment in suitable cases, as well as amusement, is provided, and therapeutic occupation is being considered. With regard to those criticisms by Dr. Lomax for which the Departmental Committee said there was some ground—namely, the number and training of assistant medical officers, the number and training of nurses, and the monotony of diet—the London County Council Committee states that at all its large mental hospitals there is authority to employ, in addition to the medical superintendent, eight medical assistants, many of whom possess a special diploma in psychological medicine; it is a condition of the Council's nursing service that nurses shall train for and obtain the nursing certificate of the Medico-Psychological Association before taking rank as staff nurses; improvements in dietary are being considered, and authority has lately been obtained to make certain meals more appetizing. It is agreed that in classification some account should be taken of home conditions and surroundings, though the mental state of the patient is the chief factor upon which classification must be decided. It is agreed also that preference in future appointments should be given to candidates possessing a diploma or degree in psychological medicine, and that it is desirable that superintendents shall have held a general hospital appointment. Seclusion, it is thought, requires a more precise definition by the Board of Control (a recommendation to that effect was agreed to by the Council), but at the same time the Committee is satisfied that there is no abuse of seclusion at the London mental hospitals. The organization of after-care work needs to be considerably strengthened and extended; and the Committee concurs in the opinion that the provision of facilities for the early treatment of incipient mental disorder without certification would be of great value to the community. In this connexion reference is made to the Maudsley Hospital. The Committee concludes its report by stating that it is anxious that the natural concern of the friends of the patients in its charge (over 18,000) should not be aggravated by groundless apprehensions as to their treatment.

## Scotland.

### EDINBURGH SUMMER POST GRADUATE COURSES.

The syllabus of post-graduate courses to be given at Edinburgh in July, August, and September has been issued. These courses were first given in 1906, were repeated annually till the outbreak of the war, and were resumed in 1919. Though the organization of the various courses and the numbers of graduates attending them have not yet reached the high-water mark of 1913, the present year's syllabus shows a marked advance upon that of any year since the war.

The first course this year is in obstetrics and gynaecology. It will last four weeks, will begin on July 16th, and will comprise clinical midwifery (one hour daily at the Maternity Hospital), clinical gynaecology (two hours daily in the Royal Infirmary), child welfare and ante-natal clinics, and demonstrations of obstetrical and gynaecological pathology. The fee for this course is ten guineas.

A special course on diseases of children will be held from July 30th to August 10th. It will consist of clinical demonstrations on the common and important medical and surgical conditions of infancy and childhood, supplemented by eight lectures on special subjects. Preventive medicine in relation to childhood is also included in ante-natal clinics, child welfare clinics, dental clinics, and venereal disease clinics. The fee for this course is six guineas.

A general medical course, lasting four weeks (from August 13th to September 8th) will fill up practically the whole day from 9 a.m. to 4 p.m. The examination of the



various systems is taken up by members of the Royal Infirmary medical staff as follows: Circulatory system, Dr. W. T. Ritchie; respiratory system, Dr. Fergus Hewat and Dr. H. Whitridge Davies; renal and alimentary systems, Dr. R. A. Fleming and Dr. John D. Comrie; nervous system, Professor Edwin Bramwell; ductless glands, Dr. John Eason; blood, Dr. A. Goodall. There are also clinics upon general medical diseases, infectious diseases (Dr. Claude Ker), dermatology (Dr. Cranston Low and Dr. F. Gardiner), diseases of the eye, diseases of children, venereal diseases, and tuberculosis; as well as demonstrations of medical anatomy, medical side-room work, *post-mortem* examinations, morbid anatomy, and medical radiology.

A general surgical course will run concurrently with the medical course and occupy the same hours daily. The following departments of surgery will be taken up individually: General surgery, Mr. John Fraser; surgery of the kidney, Mr. Henry Wade; abdominal surgery, Mr. Chiene and Mr. Wilkie; venereal diseases, Mr. David Lees. There are also surgical and gynaecological operations and surgical clinics in the Royal Infirmary and Royal Hospital for Sick Children, and demonstrations on surgical anatomy, surgical pathology, and surgical radiology.

A set of special lectures on subjects of general medical and surgical interest have been arranged for those attending the two last-mentioned courses, and include—

Surgery of the large intestine, by Sir Harold Stiles; Diagnosis of biliary infections, by Mr. Wilkie; Estimation of renal efficiency, by Dr. J. D. Comrie; Labyrinthine and intracranial complications of middle-ear suppuration, by Mr. J. S. Fraser; Common disabilities of the foot, by Mr. John Fraser; Mechanism of certain cranial deformities, by Mr. D. M. Greig; The Schick reaction and diphtheria immunization, by Dr. C. B. Ker; Sensitization phenomena in diseases of the skin, by Dr. R. Cranston Low.

During the period of the general courses the following special courses may be attended, at hours to be arranged, by those desiring to do so: Diseases of the Blood, Vaccine Therapy, and Physiological and Biochemical Methods in Clinical Medicine. It is also pointed out that during the summer term (May to July), before the ordinary post-graduate courses begin, there are numerous courses suitable for graduates—namely, Medical Entomology and Parasitology, Diseases of Tropical Climates, Psychology and Experimental Psychology, Neurology, Chemical Physiology, Tuberculosis, Clinical Therapeutics, Venereal Diseases, Surgical Pathology, and Diseases of the Nose, Throat, Ear, and Larynx.

Application for enrolment or for details of the courses should be made to the Secretary, Post-Graduate Courses in Medicine, University New Buildings, Edinburgh.

#### GLASGOW: CLINICAL MEETING.

The clinical meeting of the Glasgow and West of Scotland Branch of the British Medical Association was held in the Western Infirmary on the afternoon of Tuesday, April 24th, and tea, through the kindness of Dr. D. J. Mackintosh and the managers, was served in the conservatory on arrival. The clinical demonstrations commenced at 4 p.m. and continued until 6.15. They proved most interesting and instructive, and embraced an unusual number of rare conditions. At the close of the demonstrations very hearty votes of thanks were, on the motion of the President of the Branch, Dr. G. Douglas McRae, accorded to the managers and Dr. Mackintosh, and to the medical and surgical staffs, for the trouble they had taken in providing such an interesting and educative programme. The attendance was 115. Thereafter an adjournment was made to the Grand Hotel, where dinner was served under the chairmanship of Dr. G. Douglas McRae. The guests present were Dr. John Stevens (Chairman, Scottish Committee), Dr. J. R. Drever, Scottish Medical Secretary, and Mr. Andrew S. Barr. After dinner and the toast of the King, the Chairman called on Professor Stockman to present the Association prize of £10 to Mr. Andrew S. Barr for the best essay of 5,000 words sent in by students of the Glasgow medical schools on the diagnosis and treatment of jaundice arising from obstruction of the larger bile ducts. The toast of the Branch was proposed by Dr. Drever and responded to by the Chairman. Other toasts followed. During the evening a varied programme of songs and stories was carried through, which added greatly to the enjoyment of the fifty

## Ireland.

### SUPERANNUATION ALLOWANCES.

THE Ministry of Local Government (Irish Free State) has addressed a letter to the Dublin Corporation with regard to the superannuation allowances for its officials; it will be of much interest to medical officials, who either have recently retired from the public services or are about to do so. In the course of the letter it is pointed out that the principles to be observed in granting pensions are:

(1) Pension should run from the date on which employment definitely ceased.

(2) Normally 1/60th for each completed year of service, with a maximum of 40/60ths.

(3) No pension for employees of less than 60 years of age, or with less than the period of service prescribed by statute, except—

(a) In cases of permanent incapacity if the statutory period of service has been completed, but the age of 60 has not been attained.

(b) In specially meritorious cases the nominal rate may be increased by the addition of extra years' service not exceeding one-third of the service, but subject to a maximum of two-thirds.

(4) In the case of wage-earners distinction must be drawn between substantive wages and additional war wages, and in the case of salaried officials in regard to bonus. An addition to the pension calculated on the bonus may be allowed subject to half-yearly revision in accordance with the cost of living scale.

If preferred, the Ministry would agree to 75 per cent. of the current cost of living, bonus being included in the substantive salary for the calculation of a fixed pension. No emoluments in the shape of overtime or extra duty pay, or other casual remuneration, are to be regarded as pensionable.

(5) Pensions to be calculated according to statute on the average of the wages of the three preceding years, or on the remuneration at the time of resignation.

### ROYAL ACADEMY OF MEDICINE IN IRELAND.

The centenary of Pasteur was celebrated by a meeting of the Academy of Medicine in Ireland at the College of Physicians. Sir Arthur Chance was in the chair, and an address on Pasteur was delivered by Dr. William Fearon, Sc.D. Among those present were Dr. M. F. Cox, President of the College of Physicians; Sir William Wheeler, President of the College of Surgeons; the Most Rev. Dr. Bernard, Provost of Trinity College; and Sir William Thompson. The first ceremony, however, was to confer the honorary fellowship of the Academy on Professor E. Hastings Tweedy. Dr. T. P. C. Kirkpatrick formally presented Professor Tweedy, who, he said, had won both for the Academy and himself an honoured name throughout the world. As Pasteur had taught how to prevent and cure hydrophobia, so Ernest Tweedy had taught how to control that almost equally terrible disease eclampsia, which too often killed both the mother and her unborn child. In the long roll of Irish physicians no name ranked higher than that of Ernest Tweedy. The announcement was received with acclamation.

The Chairman, in making the presentation, said that in one branch of the medical art Dublin held the foremost place; her fame in obstetric medicine was known all over the civilized world. By his original and very valuable investigations, his lucid teaching and his public work, Dr. Tweedy had advanced and maintained the reputation of the Dublin school of medicine. For that they owed him a debt of gratitude, and now they were trying to pay a little of their debt by conferring upon him the highest honour and distinction within the power of the Academy to give; to emphasize the dignity, the presidents of both colleges were present. He hoped that the ceremony would be a happy augury of the time when, strife and destruction over, Irish men, with their destinies in their own hands, would commence the work of reconstruction. In that work the medical profession would have a heavy responsibility; while the work appertaining to legislative change fell upon other shoulders, there were many problems which could only be solved by the best brains in their profession.

Professor Tweedy, in the course of his reply, said that he fully appreciated that the Academy of Medicine had conferred upon him the greatest honour within its power and having said that he felt that ambition required no further stimulus. If the honour could be enhanced it had been enhanced by allowing it to fall upon the day on which the Academy celebrated the centenary of one of the greatest scientists of his time, Louis Pasteur.



## South Australia.

[FROM OUR CORRESPONDENT.]

### MEDICAL LEGISLATION.

THE last session of the State Parliament was happily barren so far as medicine and the allied professions are concerned, nor have all the eggs laid by the legislative goose in former years yet been hatched. The Venereal Diseases Act of 1920 may almost be considered a "dud," for the Regulations under the Act necessary to put it into force have not yet been gazetted, possibly have not yet been drafted. Medical reformers and legislators who so eagerly demanded legislation seem, nevertheless, to be satisfied. In medical circles, however, a determined attempt is being made to have some reform of the maternity bonus. It is generally recognized that it does no particular good to mother or baby, but this, curiously enough, was never suggested by the Labour party, at whose behest it became law, after being turned down by their caucus a few months previously; it was undoubtedly a political bribe. It now costs Australia about three-quarters of a million a year, and the force of the argument (prophetically advanced many years ago by Dr. Hone) that the money might be spent to greater advantage by providing pre-maternity clinics and making a real attempt to lessen neonatal and infantile mortality is beginning to be appreciated.

### THE UNIVERSITY AND MEDICAL SCHOOL.

Two handsome bequests have been made for the benefit of the medical school—one of £30,000 by the late Mrs. Marks and the other of property worth at least £20,000 by the late Miss Keith Sheridan, the daughter of an Edinburgh M.D. who came out to Adelaide many years ago, not to practise medicine, but as a journalist. The University Council is considering the relative claims of research and of the foundation of additional chairs, or of medical units, but no plans are yet matured. To justify the devotion of some portion of this income to research, it may be mentioned that Professor Brailsford Robertson has succeeded in manufacturing in the Biochemical Laboratory a preparation of insulin the efficiency of which has already been proved by Dr. De Crespigny in some of his cases.

In the medical school there are no important changes, nor on the staff of the principal hospitals, but there is quite an influx of returned post-war graduates, who besides their military decorations bring with them the F.R.C.S. Eng. or the M.R.C.P. Lond.; it is hoped that openings may be found for their energies. Sir Joseph Verco leaves this week to represent the University at the octocentenary of St. Bartholomew's Hospital, where he was a distinguished student.

### THE BRITISH MEDICAL ASSOCIATION.

The Branch flourishes and increases in numbers. It is eagerly expecting the advent of incorporation, so that arrangements may be made whereby it can become possessed of the British Medical Hall. The limited company which owns the property has declared a dividend for the first time, and it is hoped that it may be handed over to the Branch some day free of mortgage. The Listerian oration this year was delivered by Dr. Rothwell Adam, the Emeritus lecturer on obstetrics and gynaecology in the University of Melbourne. The indebtedness of obstetrics to Lister was admirably brought out, and the address was much appreciated. The President of the Branch this year is Dr. T. G. Wilson, the lecturer on gynaecology at the University.

## India.

### DINNER TO SIR TEMULJI B. NARIMAN.

SIR TEMULJI B. NARIMAN, Sheriff of Bombay, was the guest of honour at a dinner on March 13th given by members of the medical profession in Bombay to celebrate his golden jubilee as a medical practitioner. Major-General W. E. Jennings, Surgeon-General to the Government of Bombay, was in the chair, and some seventy-five medical men, representing the different communities, took part in the celebration. General Jennings presented Sir Temulji Nariman with a silver salver, on which the names of his medical colleagues were to be inscribed.

### MILITARY MEDICAL SERVICES.

From an announcement made in the Indian Legislative Assembly, on March 16th, it would appear, according to the *Pioneer*, that the Government has under serious consideration the proposals made by the Escher Committee for the future organization of the military medical services. The Committee recommended that the post of Director of Medical Services should be held alternately by an officer of the Royal Army Medical Corps and the Indian Medical Service. Mr. Burdon said that acceptance of this recommendation would prevent the amalgamation of the appointments of the Director of Medical Services and the Director-General of the Indian Medical Service. The Inchcape Committee apparently considered the possibility of this amalgamation, but found it impracticable as a means of securing economy. Mr. Burdon said that the Director of Medical Services could not give the time required to discharge the duties of the Director-General of the Indian Medical Service in addition to his own.

### SURGERY IN MYSORE.

The report for 1921 of the Krishna Rajendra Hospital, Mysore, shows that work of a high standard, particularly in surgery and gynaecology, is being carried out in that hospital. During the year 2,845 in-patients and 56,754 out-patients were treated, while 1,048 major operations and 594 minor operations were performed on in-patients, and 779 minor operations on out-patients. Notes on a number of the more important cases are included in the report, and some of the accounts of extensive gynaecological procedures show that excellent results were obtained. Dr. Mahomed Usman, superintendent of the hospital, deserves commendation for the good work done under considerable difficulties.

## Correspondence.

### COLLOIDAL PREPARATIONS.

SIR,—In view of the conflicting statements made by Sir William Pope and Professor Clark as to the properties of certain preparations professing to be of a colloidal nature, it may be worth while to give my own experience with a sample of "collosol ferrum." This was bought at Messrs. Martindale's, and the price paid was five shillings for four ounces. It was a clear liquid of a slightly brown colour, such as a very weak colloidal solution of ferric hydroxide would have, although tests by dialysis—to be referred to presently—suggested that the colour had another source, possibly the glucose which Sir William Pope states to be present. Glucose, unless chemically pure, usually gives brown solutions.

The solution was strongly acid—10 c.cm. required 3.1 c.cm. of N/10 sodium hydroxide to neutralize it to phenolphthalein. Thus it was even more acid (about N/30) than the specimens examined by Professor Clark; and, one would imagine, not very satisfactory for intramuscular injection. Ferric hydroxide can, of course, exist in an alkaline solution, provided that a protective agent is present. In acid solutions the sugar and gelatin are superfluous. It is interesting to note that ferric chloride solutions remain slightly acid even when shaken with freshly precipitated ferric hydroxide.

In the next place, my sample of "collosol ferrum" gave a deep blue colour with potassium ferricyanide, a faint blue with the ferrocyanide, thus agreeing with those of Professor Clark. It gave also a precipitate with silver nitrate and nitric acid. A preparation which I made for class purposes in Graham's manner by shaking a dilute solution of ferric chloride with freshly precipitated and washed ferric hydroxide in excess, gave no reaction with either ferricyanide or ferrocyanide, which is the normal behaviour. If such a solution is precipitated by sodium sulphate and filtered, the filtrate gives no colour with thiocyanate. The ferric ions present are in such low concentration as to be undetected by this delicate test. It is well known that a trace of ferric chloride is necessary for the stability of these sols, but it is present in the non-ionized state, adsorbed by the particles of ferric hydroxide.

But the presence of ferrous or ferric ions does not exclude the possibility that there might be iron in the colloidal state in addition. To test this I submitted the "collosol ferrum" to dialysis against water through a membrane of parchment paper. After two days, equal volumes of the solutions inside and outside the membrane were treated with hydrochloric



acid and zinc in the usual manner, in order to convert any ferric salt present into ferrous chloride and to dissolve any in the colloidal state. Both solutions became clear and nearly colourless, and gave no reaction with thiocyanate. On addition of ferricyanide both became deep blue, and I was unable to detect any difference in the intensity of the colour. If there had been any indiffusible iron in the original preparation, the contents of the dialyser would have contained more total iron than the dialysate. I am bound to conclude that if there was any iron in the colloidal state in the original solution it was only in extremely minute amount. In connexion with Sir William Pope's remarks about the variety of dimensions of the pores in ultra-filters, it is only fair to remember that Professor Clark tested his membranes with congo red, and that my parchment paper was known to be impermeable to this dye, whose particles are too small to be resolved by the ultra-microscope.

As to the presence of particles visible under the ultra-microscope, I have in another place called attention to the fallacy of this test unless account is taken of the concentration of the solutions. It may be to the point here to mention that I found a colloidal solution of the acid of congo-red which contained only one part by weight in about 200 of water had to be diluted 1,300 times before the particles were sufficiently far apart to be seen separately and counted. "Collosol ferrum" ought to be crowded with particles when diluted 130 times. The appearance of a large number in the undiluted state could be accounted for by a trace of colloidal material. It is scarcely necessary to remark that the apparent close packing of the particles is due to their actual size being far less than it seems to be, owing to the large diffraction rings.

Since, as Graham showed, one of the properties of colloidal ferric hydroxide is precipitation by sodium sulphate it would have been possible to make a further test of "collosol ferrum" if protectives had not been added unnecessarily. As it is, however, the absence of a precipitate might be attributed to the presence of sugar and gelatin and would not prove the absence of the colloid.

If the iron were in the colloidal state in this preparation a bottle of four ounces would only contain a single dose, as pointed out to me by Professor Cushty. It is true that claims are made that remedies in the colloidal state are greatly more effective than in true solution, but the evidence is very doubtful, and in any case "collosol ferrum" contains little or no colloidal iron. It is a somewhat costly preparation at five shillings the dose, whatever its nature.

I take it that in the particular case of iron the therapeutic object is to avoid the astringent action of the ionized salts on the stomach. Now these are absent in solutions made in Graham's manner and probably also in the commercial "dialysed iron." But I have not tested the latter.

For purposes of intravenous or intramuscular injection, if such modes of administration of iron are really necessary, it would seem advisable to possess solutions of neutral or slightly alkaline reaction. So far as I am aware, these are only stable in the presence of rather high concentrations of alkali. But this might be overcome by appropriate inert protectives, such as sugar. Sir William Pope reminds us of Graham's observations on this point.

As to the controversy which has excited this lengthy letter, I can only conclude that if Sir William Pope's "colloidal ferrum Crookes" is another name for "collosol ferrum," the preparation which he had in his hands was a different one from those sold to the public. That sold to me was similar in its properties to those tested by Professor Clark.—I am, etc.,

W. M. BAYLISS.

London, N.W.3, April 28th.

SIR,—Sir William Pope does me the honour of quoting my name in support of the dignified rebuke which, in your issue of April 28th, he administers to my friend Professor Clark. There are many, no doubt, who have deplored Professor Clark's display of that modernist, scientific spirit, which is so insidiously undermining the reverence for authority, at one time the sure foundation of medical belief. To all such it is a real encouragement to see your columns opened once more to a statement like that of Sir William Pope, made with such calm resistance to the challenge of presumptuous experiment.

But Professor Clark, alas! is rebellious and unrepentant. He still questions, on the strength of his own experiments, the accuracy of a statement which, as Sir William Pope points out, "has never before been impugned." Could scientific

presumption go further? Alas! it could. Sir William Pope states that a solution is alkaline; Professor Clark dares not only to assert that it is acid, but to suggest that the question can be settled by a vulgar appeal to litmus paper.

Let us hope, Sir, that Professor Clark, and the British Medical Association which has too thoughtlessly encouraged him, will see the error of their ways, and will abandon such attempts to assert the authority of the experimental method against that of innumerable assertions and advertisements, and, now, of a pronouncement *ex Cathedra Chemica Cantabrigiense*.—I am, etc.,

London, N.W., April 28th.

H. H. DALL.

#### SPACE JUDGEMENT WITH ONE EYE.

SIR,—The very interesting article on monocular and binocular vision by Dr. T. Stewart Barrie, read at the Glasgow Meeting (BRITISH MEDICAL JOURNAL, December 30th, 1922, p. 1260), together with the discussion thereon, opens up a wide view of a subject on which hitherto there has been much misconception. Ophthalmologists and others possessed of binocular vision have laid great stress on the necessity of its possession in order to obtain a stereoscopic effect with its consequent advantage in the judgement of distances and relative positions in space of objects seen. This view appears to have been reached mainly by testing persons who were accustomed to binocular vision by occluding one eye.

As Dr. Stewart Barrie rightly points out, however, people who have long been accustomed to monocular vision have really got the stereoscopic sense, and are as accurate in judgement of distances for ordinary purposes as those with binocular vision. He instances the common fact that a man with one eye can drive a motor car through a crowded street with as much ease as a man with two eyes.

In the next sentence he states that "aviators, for example, should have binocular stereoscopic vision." It is this last sentence in which he appears to me to be inconsistent. Surely the requirements in stereoscopic vision and in the accurate judgement of distances and positions on the part of a motor driver in crowded traffic are far greater than those of an aviator. In any case, it seems to me exceedingly difficult, on any theoretical considerations, to suppose that the parallax or convergence due to the eyes, being some six centimetres apart, could be sufficient to aid appreciably in the judgement of distances when the eyes are situated in an aeroplane travelling at a high rate of speed. Some months ago I had to examine an air pilot who had been flying during the war and subsequently, and who had experienced no difficulty in his spatial judgements, although he only had monocular vision. He had a convergent concomitant squint, seeing 6/5 with the fixing eye and 6/36 with the squinting eye. He appeared to have perfect judgement for distances, and to be in every way fitted for the flying for which experience had already demonstrated his fitness. The only doubt in my mind lay in the fact that he had only one useful eye, and consequently no "spare part" in the event of an accident to the one good eye. The regulations would class him as unfit because lacking in binocular vision—not because lacking in a spare part.

Now when a person with binocular vision has one eye occluded, his spatial judgements, at any rate for near objects, are interfered with. This is not the case with the possessor of a perfectly alternating strabismus who is accustomed to using either eye with equal facility. Can one avoid the conclusion that the unattainable ideal in an aviator would be to have a perfectly alternating divergent strabismus, thus giving a wider field of view with a perfect spare part?

It is a question of a different sort when we come to the requirements of stereoscopic vision at very close range, such as ophthalmic surgery. At this range the accommodation effort should help largely—perhaps as much as the convergent effort—in forming a judgement. Eminent surgeons, as far as I know, are of the unanimous opinion that binocular vision is necessary for an ophthalmic surgeon. It would be interesting to learn whether this opinion is the result of experience with students and others who have for long been accustomed to monocular vision, and whether they consistently err unfavourably with those possessing binocular vision, and also whether other causes of clumsiness than the lack of binocular vision had been excluded. It would, of course, be necessary to exclude those who have binocular vision at ordinary range but weak convergence and fusion for near objects. Bishop Harman, in stating his experience with strabismic



not mention whether he had investigated the matter carefully or whether it was merely a general impression derived from his large experience.—I am, etc.,

Brisbane, March 14th.

E. O. MARKS.

### INSULIN AND DIABETES.

SIR,—In a letter which appeared in the *BRITISH MEDICAL JOURNAL* of November 18th, 1922 (p. 997), I ventured to predict that the optimistic forecasts then being circulated in the press as to the curative properties of insulin in diabetes would not be fulfilled, and that its true sphere of usefulness was likely to be limited. I have since had the opportunity of putting the treatment to a practical test in a number of cases of various types with insulin prepared in my own laboratory, and the results obtained have tended to confirm the conclusions I arrived at on theoretical grounds. From the articles which appeared in your issue of April 28th it would seem that the experience of other English workers has been similar to mine, for, although it is evident that insulin is capable of reducing the sugar content of the blood in all forms of hyperglycaemia, it is not a "cure" for diabetes in the popular sense of the term—that the patient is able to resume an unrestricted diet after a course of treatment. In the large majority of cases the beneficial effects of insulin are only temporary, ceasing when the injections are discontinued; in a small proportion a permanent improvement in metabolism appears to result, but in my experience these are cases in which the hyperglycaemia and glycosuria are dependent entirely, or almost entirely, upon a functional deficiency of the internal secretion of the pancreas.

As a means for tiding diabetics over crises which are frequently uncontrollable by other methods of treatment, or for ensuring a maintenance diet in severe cases where the power to metabolize carbohydrate is permanently lost, insulin is invaluable, but for the average patient treatment with insulin under present conditions is a will-o'-the-wisp, reliance upon which usually ends in disappointment.

I am interested to see that the observations carried out by Drs. Kellaway and Hughes have led them to the conclusion that insulin improves metabolism by a transformation of carbohydrate into some other complex, with economy of oxygen and liberation of excess of carbon dioxide, for my own experiments, conducted along entirely different lines, have suggested that when insulin is injected the diminished sugar content of the blood which results is associated with an increase in the hydrolysable carbohydrate and deposition of glycogen in the tissues.

It is suggested by Dr. Leyton in his paper that a differential diagnosis between pancreatic and hepatic disease may be made by estimating the sugar in the blood after an injection of insulin, a fall in the sugar indicating a pancreatic origin for the hyperglycaemia, while no distinct change will point to the liver being at fault. Seeing that insulin reduces the sugar content of the blood even in normal animals in proportion to the dose, it would be interesting to have a full account of a case in which "no distinct change" was produced in the blood sugar by a full injection, and the reasons for concluding that the hyperglycaemia was of hepatic origin.

It is unfortunate, in my opinion, that the Medical Research Council have seen fit to adopt a unit of measurement for insulin differing from that originally described by its inventors, as it will lead to endless confusion and call for very careful distinction between doses given on the English and Toronto bases.—I am, etc.,

London, W., April 30th.

P. J. CAMIDGE.

### TREATMENT OF PUERPERAL INFECTIONS.

SIR,—Dr. Dudley W. Boswell takes issue with me on my views regarding the above. He finds that I have departed from the teaching which he and I received in Edinburgh from Professor A. R. Simpson. Than my old chief there was no more up-to-date teacher of midwifery. But twenty years ago knowledge of infective processes was not so advanced as it is to-day, and I am sure that Simpson would have been the last to claim that his teaching on any subject was to be the final word for all time.

The case which Dr. Boswell quotes, where death followed removal of a putrid piece of placenta during the febrile period, absolutely supports my contention. According to his chart the patient suffered from sapraemia until the intra-uterine interference was carried out; after that from septicaemia and pyaemia, and finally died.

May I quote a similar case coming within my knowledge? Some seven years ago a patient was admitted to my ward with a high temperature, fetid vaginal discharge, and obviously very ill. She had had a premature labour seven days before. The cervix was patulous. Blood cultures were taken daily for the next six days and were negative. On the seventh day after admission I was tempted to explore the interior of the uterus with my finger and remove some debris. The temperature, as in Dr. Boswell's case, fell and remained normal for about twelve hours and then rose higher than before. Blood culture, taken twenty-four hours after the interference, was positive for streptococcus, and blood infection persisted till the time of her death four days later.

Dr. Boswell does not mention that he took blood cultures in his case, but evidently, from the way in which his chart is worded, he believes that after his interference a blood infection was present.

It is just such cases as his, and the one which I have quoted, which make me feel so strongly that the interior of the uterus should not be interfered with in the presence of fever.—I am, etc.,

Edinburgh, April 30th.

B. P. WATSON.

### VENOUS PULSATIONS AND VENOUS TRACINGS.

SIR,—The article by Dr. Harrington Sainsbury on venous pulsations and venous tracings, published in the *BRITISH MEDICAL JOURNAL* of April 14th, seems to me a valuable contribution to the subject. I am glad that he emphasizes the importance, frequently so little appreciated, of the sphincter action of the auricular fibres at the junction with the great veins when the auricle contracts.

In my thesis for the M.D. Paris in 1896 I wrote:

"Si les veines ne se trouvent pas protégées contre l'action de l'oreillette par une valvule, elles se trouvent cependant protégées par une action sphinctérienne très efficace, et, à mon avis, il n'est pas plus difficile de comprendre comment l'oreillette propulse son contenu dans le ventricule, que de comprendre comment une laktière, lorsqu'elle ferme la main, fait écouler le lait du pis de la vache."

In the *BRITISH MEDICAL JOURNAL* of April 13th, 1912, in an article on the genesis of the venous pulse, I maintained the same view, and also suggested that the wave  $\alpha$  was probably an inertia or shock wave, due to the sudden arrest of the venous blood stream by the contracting sphincter. In fact, the contracting sphincter not only arrests the flow, but nips the adjacent veins, and must throw back the contents of the diminished lumen, thus aiding incidentally the formation of the wave  $\alpha$ .

In a leaden water pipe the sudden closing of a water tap at the end evokes a thud, which gradually swells and finally bursts the tube behind the tap. Screw taps are now generally used to avoid this. Were the tube elastic it would make a wave  $\alpha$  an inertia, or shock, or ballistic wave, and the closed tap would negative any theory of its possible regurgitant origin.

Dr. Sainsbury seems to have difficulty in attributing the wave  $\alpha$  to the mere advent of blood. He writes:

"Behind the block, and proceeding backwards from it, the blood would gradually accumulate. Can we see here the development of any wave (justly so named) within the veins by the smooth afflux under the low pressures of health?"

I maintain that the veins producing the wave  $\alpha$  are not dilated merely by receiving a "smooth afflux" of blood. They have to dilate, as I wrote in 1912, "till the dilatation is sufficient to absorb the inertia of the venous column."

One cannot push a candle through a door panel, but it is possible to shoot it through. Motion is as important as material. An incompressible venous column, suddenly arrested at its head, would resist the arrest by dilating the side walls of the containing vessel near the point of arrest. The dilatation would not be by a smooth afflux, but by a light hammer blow near the sphincter, heaping the blood up locally, and sharply dilating the adjacent venous walls; thus starting the wave, which along the jugular is finally recorded as the wave  $\alpha$ .—I am, etc.,

Mentone, April 21st.

D. W. SAINWAYS.

### AURICULAR FLUTTER SIMULATING DEATH.

SIR,—In the *JOURNAL* of April 21st (p. 698) Sir James Mackenzie refers to two very important cases of restoration of the heart beat following upon intracardiac injections of adrenaline, this after cessation of heart beat and respiration for periods of four minutes and three and a half minutes



## Obituary.

SIR SHIRLEY MURPHY, K.B.E., F.R.C.S.,  
Formerly M.O.H. London.

We regret to announce the death of Sir Shirley Forster Murphy on April 27th, at the age of 74. He had been in failing health for some time, but the immediate cause of death was influenza and bronchitis.

Shirley Forster Murphy was born in 1848, educated at University College School and Guy's Hospital. After qualifying M.R.C.S. in 1870 he set about acquiring experience in various directions with a view to fitting himself for what he seems to have regarded from the first as his life's work. He was for some years resident medical officer at the London Fever Hospital and also worked for a time as an officer of the Metropolitan Asylums Board, thus acquiring clinical experience of infectious diseases which served him in good stead. He became Assistant Director at the Animal Vaccine Station and was always specially interested in any question relating to small-pox or vaccination. He was for some years Medical Officer of Health in St. Pancras, there gaining knowledge of housing problems and of sanitary conditions generally, of which he made such good use in later years.

For a time he acted as the first honorary Medical Officer of the Mansion House Council on the Dwellings of the Poor, and already in these early years he was asked to undertake special inquiries, for example, into the sanitary condition of Southend and into outbreaks of infectious disease by the Local Government Board, and he also took part in a housing inquiry for the Home Office. He was particularly interested from the outset in various branches of work in connexion with public health outside his ordinary official activities; for instance, he formed a close friendship with Mr. C. S. Loch, the secretary of the Charity Organization Society, and was especially familiar with the work of Miss Octavia Hill and with that of the Rev. Samuel Barnett at Whitechapel. He was, moreover, appointed lecturer on Hygiene and Public Health at St. Mary's Hospital.

Throughout his life he was intimately associated with the Society of Medical Officers of Health, of which he was one of the secretaries and in 1891-2 and again in 1904-5 the president. In his first presidential address to the Society he said the beneficial results which were then accruing, from the activities of medical officers of health, were such as to convince people that this was work which should be assisted and not hampered. It is interesting, in the light of this observation, to compare certain average rates for the first three and the last three years of the 22 years during which the author of the statement was County Medical Officer. The death rate from all causes declined from 20.1 to 14.6; the death rate from the principal epidemic diseases fell from 5.57 to 2.98; and the infant mortality from 152 to 113 per 1,000 births. It was always his aim to secure the co-operation of his colleagues the medical officers of health. As he said, in 1905, soon after he was for the second time made president of the Society, speaking of his London colleagues, "My association with them has always been a pleasure. I have received their assistance, their kindly criticisms, and at all times their good will." He often spoke, too, of the cordial sympathy and support he received from the medical department of the Local Government Board, from the Chief Inspector of the Home Office and from the Superintendent of Statistics at Somerset House.

Soon after he qualified, he became a member of the Epidemiological Society and from 1877 to 1889 acted as one of its secretaries. In his arduous duties in connexion with this Society and the Society of Medical Officers of Health, he always relied largely upon the assistance of Lady Murphy. One of his earliest papers for the Epidemiological Society was on "Sanitary administration of dairy farms," in 1888. When he became president in 1894 he delivered an address on the Study of Epidemiology, in which he first made reference to the remarkable "August depression" exhibited by the notifications of scarlet fever and diphtheria in London. The "notch" in the seasonal curve of these two diseases

specially observable when consideration was limited to the school ages, and this phenomenon led to special study of the question as to how far "school influence" was operative in promoting the spread of these diseases. In the session 1887-8 he read a paper on "Seasonal variations in age distribution and fatality," and followed this up in the session 1899-1900 by another paper on "Seasonal variations in the age distribution of deaths in certain diseases." One of his latest contributions was a paper on the "Variations in the age-incidence of mortality" read in March, 1897.

He served at one time or another on several departmental committees and, either as witness or member, in connexion with Royal Commissions. He managed to learn a great deal about the behaviour of epidemic diseases in all parts of the world, and, as his friend Sir Arthur Whitelegge once observed, it was always a wonder to those who knew him how he contrived to keep himself abreast of all the latest work at home and abroad. Sir Arthur Whitelegge added that he suspected that Lady Murphy acted as a worthy helpmate in this, as in all other respects. His name was well known to epidemiologists and public health workers all over the world and he was always at the disposal of any foreign visitors and ever ready to give them every help in his power.

He was elected a Fellow of the Royal College of Surgeons of England in 1899, and he became vice-president of the Royal Sanitary Institute and of the Royal Statistical Society; he was awarded the Jenner medal by the Royal Society of Medicine, and the Bisset Hawkins medal for distinguished service to the public health by the Royal College of Physicians. In association with Sir Thomas Stevenson he edited Stevenson and Murphy's *Treatise on Hygiene*.

His wide outlook and early training and experience in so many branches of public health and epidemiology were no doubt largely responsible for the fact that in 1889 the first London County Council appointed him as its Medical Officer of Health. In the early days of the Council the question of the clearance of insanitary areas, which had been brought prominently before the public at the time of the Housing Commission, of which the late King Edward VII was a member, occupied a great deal of his time. He obtained detailed personal knowledge of the insanitary areas in the County of London, and devoted a vast amount of work to the study of these areas in co-operation with the local medical officers of health with a view to effecting clearances; he gave evidence at the numerous housing inquiries which were held during the succeeding years by the Home Office or the Local Government Board. The question of London water supply was the subject of a Royal Commission of Inquiry, in the early nineties, and the London County Council, on Sir Shirley Murphy's advice, had surveys made of the rivers Thames and Lee and their tributaries, with a view to evidence as to pollution being placed before the Commission. He was always impressed with the fact that the death rate from water-borne diseases in London (which was supplied with river water) did not compare unfavourably with the corresponding death rate in Glasgow (which obtained a pure lake supply brought from a long distance); and it was partly due to his general attitude on the question that the policy ultimately adopted was that of improving the existing river supplies and not embarking upon the ambitious project of going to Wales. He was always, however, concerned to see that steps were taken to obviate danger from flood water, and that full consideration was given to perfecting the arrangements for storage and filtration.

He had to do with framing by-laws relating to dust and refuse removal, to offensive trades, and to cottages and seamen's lodging houses in London. The operation of by-laws relating to house and trade refuse brought about great amelioration as regards fly prevalence. It had been the subject of comment by visitors from America and Continental cities to London that there should be no flies in the curtilage of houses or within the town of London, except in the case of decomposing materials.

Prevalences of infectious diseases were also a subject of his consideration. The outbreak of diphtheria in 1899-1900



Hamburg in 1892 caused much apprehension in this country, and, as a matter of fact, four cases of undoubted Asiatic cholera actually occurred in London in the summer of the following year, but the disease did not spread. The small-pox of 1893 and 1901-2—more particularly the latter—smouldered to some extent among common lodging-house inmates, and this led to a scheme, for the early diagnosis of small-pox cases generally, being elaborated by Shirley Murphy, and ultimately to the appointment of a special medical expert for this purpose. The particulars with regard to all doubtful cases were circulated by Sir Shirley to his colleagues in the different parts of London and in immediately surrounding areas. A number of milk outbreaks of scarlet fever occurred during the years when Sir Shirley Murphy held office, and prompt stoppage of the infected supply of milk was always secured by him. In 1894 he prepared a memorandum on diphtheria prevalence in London which stimulated further research into this question.

The nature of some of the various special reports included in his annual reports may be illustrated by reference to a few of them. The First London Life Table was prepared on the basis of the Census figures of 1891-1900, and published in 1901. Numerous reports on the sanitary conditions of various London districts were made year by year. In 1894 he reported on Enteric Fever in relation to water supply, and on an outbreak of Scarlet Fever in Blackheath, also on the Disposal of House Refuse and on Disinfection; in 1895 on London By-laws generally; in 1896 on prevalences of Diphtheria; in 1897 on By-laws as to Houses let in Lodgings; in 1898 on the Preparation and Sale of Food, on Provision of Public Slaughterhouses, and on Mortality in relation to overcrowding; in 1901 on Experiments on Disinfection; in 1902 on Accommodation for Women in Common Lodging Houses; in 1904 on Watercress; in 1905 on the conduct of the businesses of fried fish sellers, fish curers, and marine store dealers; in 1906 on Inspection of Food by riparian authorities; in 1907 on Cerebro-spinal fever; in this and the two following years, on nuisance from flies and vermin; and in 1909 on an outbreak of Scarlet Fever and on Pulmonary Tuberculosis.

From 1904 onwards night censuses of homeless persons in London were taken every February; they were found of great use by the Local Government Board, and largely contributed to provision being made to prevent accumulation of poor persons on the Thames Embankment in the winter months.

In 1904 he was knighted. Soon after his retirement from the office of Medical Officer of Health for the County of London the war broke out, and he at once volunteered for military service. He was placed in charge of the sanitary service of the London area, and entered upon his work as Lieutenant-Colonel R.A.M.C.(T.F.) at the Horse Guards. In 1919 he was created K.B.E. in recognition of these services.

In recent years he served on the London Insurance Committee, and acted as representative of the Government at congresses in America, and as Deputy Chairman of the Trade Board for the Fur Trade in Great Britain. In 1920-21 he was Master of the Society of Apothecaries, with which he had long been associated. In 1921 he was nominated by the Ministry of Health as a manager of the Metropolitan Asylums Board.

He married, in 1880, Ellen, daughter of the late Henry S. King, and sister of Sir Henry Seymour King, K.C.I.E. The deepest sympathy will be felt for Lady Murphy and her two daughters.

W. H. HAMER.

Sir Shirley Murphy was long a member of the British Medical Association; he was secretary of the Section of Public Medicine of the Annual Meeting in Belfast in 1884, vice-president of the Section at the meeting at Leeds in 1889, and president of the Section of State Medicine in 1901, when the Association held its Annual Meeting at Cheltenham.

A largely attended memorial service was held at the Church of St. Martin-in-the-Fields on the morning of Tuesday, May 1st.

#### A. E. BROSTER, L.R.C.P., M.R.C.S.

We regret to record the death at Exmouth of Dr. A. E. Broster, who practised for many years in Wirksworth. Arthur Erdswick Broster was born in 1854 and received his medical education at University College Hospital Medical School. He was house-physician to University College Hospital and afterwards resident medical officer to the National Hospital for the Paralysed and Epileptic. He took the diplomas of L.R.C.P. Edin. and M.R.C.S. Eng. in 1877, and in that year served as surgeon to the Red Cross in the Russo-Turkish war. Soon afterwards he settled in Wirksworth, Derbyshire, where he was greatly esteemed both for his character and his medical attainments. He was medical officer of health for the town for over thirty years and was a J.P. for the county of Derbyshire.

We are indebted to Sir THOMAS BARLOW for the following short tribute: I knew A. E. Broster well, as a student, a resident, and as a fellow practitioner. He was a good all-round doctor—good from start to finish. I saw many of his patients from the Derbyshire dales with him. His statements about his cases were models—terse, accurate, complete, with no essential omitted. He was modest, but he knew his job, was resourceful, and he could hold his own. It was a privilege to meet him, to hear his North Country speech and note his quiet humour. He was very humane and the staunch friend of every one of his patients. May there never be a lack of doctors like him on the English countryside!

The death of Dr. REES MORGAN of Newport (Mon.) took place somewhat suddenly on April 11th, although he had been in ill health for two years. He was born in 1855 at Llandovery, Carmarthenshire, and was educated at Llandovery College, and afterwards at Edinburgh and Glasgow. He obtained the L.R.C.P. and S. Edin. in 1884. His first three years of practice were spent at Treherbert, whence he removed in 1887 to Llandilo. There he carried on a very successful practice for ten years, but was obliged to relinquish it owing to a bad breakdown in health. A trip to South Africa and a short residence there completely restored him, and on his return he resided for a time at Bexhill. In 1899 he went to Newport, where, by his painstaking and self-denying work, he gained the confidence of a large clientèle, which he retained until his retirement two years ago. During the war Dr. Morgan's labours were greatly increased owing to the depletion of the medical profession and undoubtedly his unremitting toil shortened his term of life. He leaves a widow, three daughters and two sons—one of whom, Dr. Glyn Morgan, succeeds him in the practice. He was a member of the British Medical Association and of the Newport Medical Society and generally attended local meetings of the profession, but took no part in public work. A COLLEAGUE (S. H.) writes: Dr. Morgan was a man of very quiet and unassuming disposition, simple in his tastes and habits; his ready reading of character and understanding of human nature, together with a broad sympathy, made him popular with a large circle of friends. He performed many unostentatious acts of charity to the needy. Among his professional brethren he was highly respected; he was straightforward and honest and was never known to do a mean or unkind act. He leaves behind him a record of work well done and a sweet memory in the minds of his numerous patients and friends.

Dr. GEORGE FRANCIS RHODES of Huddersfield died on April 15th, aged 64. He received his medical education at the University of Edinburgh and the London Hospital and graduated M.B., C.M. Edin. in 1887. He had served as ophthalmic assistant at Middlesex Hospital, clinical assistant at Royal London Ophthalmic Hospital and senior house-surgeon to the Huddersfield Infirmary. In 1893 he succeeded his father in the appointment of medical officer of the North District and public vaccinator of the Central District of the Huddersfield Union, and only recently resigned owing to ill health. Dr. Rhodes was a member of the Huddersfield Division of the British Medical







## SOCIETY OF APOTHECARIES OF LONDON.

The following candidates have passed in the subjects indicated:

**SURGERY.**—R. Caplan, L. A. Daly.  
**MEDICINE.**—W. E. Farnham, B. Hart, L. D. A. Hussey, W. J. Jameson.  
**FORENSIC MEDICINE.**—B. Hart, L. D. A. Hussey, W. J. Jameson, I. Lipman, S. Thompson.  
**MIDWIFERY.**—C. M. John, I. Lipman, M. McW. Lopez, H. MacLachlan, O. Simandres, S. Thompson, R. A. Walker.

The diploma of the Society has been granted to Messrs. L. A. Daly, L. D. A. Hussey, M. McW. Lopez, and R. A. Walker.

## Medical News.

THE dinner of the Medical Society of London to commemorate the one hundred and fiftieth anniversary of its foundation by Lettsom in 1773 will be held at the Hyde Park Hotel on May 15th. Lord Dawson of Penn, President of the Society, will be in the chair, and H.R.H. the Prince of Wales has signified his intention of being present. Arrangements have been made to seat 350 persons, and a large and representative gathering is expected.

As we announced lately, a feature of the celebration of the eight hundredth anniversary of the founding of St. Bartholomew's Hospital will be the revival after nearly one hundred years of the great City Fair of London, Bartholomew Fair. The fair originated in the permission given to Rahere by Henry I to hold a cloth fair to assist the erection and maintenance of the hospital he was building on the site where it now stands in Smithfield. The students of St. Bartholomew's Hospital to-day have selected the Tudor period as being the one which perhaps illustrates Bartholomew Fair at its zenith, and the revels, contests, and sports which characterized the fair at that period will be reproduced this year. The Lord Mayor of London, in conformity with ancient custom, will open the fair, and the old ceremonies connected with this civic event will be reproduced. It is thought that many would like to contribute goods to be sold at this revival of an old scene, and gifts will be welcomed; they should be addressed to the Matron, St. Bartholomew's Hospital, E.C.1, and marked "Bartholomew Fair."

SIR THOMAS BARLOW will preside at the annual meeting of the Royal Medical Benevolent Fund to be held at the Royal College of Physicians, Pall Mall East, S.W.1, on Monday next at 4 p.m. The chairman will be supported by Sir Humphry Rolleston, President of the Royal College of Physicians, Sir Anthony Bowlby, President of the Royal College of Surgeons, and Sir William Hale-White, President of the Royal Society of Medicine. Addresses will be given by the Archbishop of Canterbury and Lord Sumner.

Among the honorary degrees which Glasgow University proposes to confer at the graduation ceremony next month is the LL.D. upon Sir Walter Fletcher, M.D., F.R.S., Secretary of the Medical Research Council, and Dr. W. C. Lusk, Professor of Clinical Surgery in New York University.

We have received a copy of the first number of a new quarterly magazine entitled *Ambulance*, which is intended to be a link between people at home and abroad who are interested in such subjects as first aid, hygiene, and the national health. The first number contains several interesting short articles, including one on the origin of ambulance work, by Sir James Cantlie, and another on the use and abuse of tourniquets, by Dr. W. Salisbury Sharpe. The periodical is well printed and has an effective cover design. It is published at the College of Ambulance, 56, Queen Anne Street, W.1; the annual subscription is 2s. 6d., post free, and single copies cost 6d., post free 8d.

The next session of the Dental Board of the United Kingdom will be held on Wednesday, May 9th. At the opening of the business at 2 p.m. the Chairman, the Right Hon. Francis Dyke Acland, will deliver an address.

The forthcoming reprint of the *British Pharmacopoeia*, 1914, will contain a slip showing the corrections made in this sixth issue.

The sixth session of the Health Committee of the League of Nations was attended among others by the new member, Dr. Nocht of the Hamburg Institute of Tropical Diseases, Dr. Cummings, Surgeon-General of the United States Public Health Service, and Dr. Semyasho, Health Commissary of Soviet Russia. Nineteen countries were invited to take part in an exchange of sanitary staff—namely, Austria, Belgium, Canada, Czechoslovakia, Denmark, Finland, France, Great Britain, Greece, Hungary, Italy, Jugoslavia, Norway, Poland, Rumania, Russia, Spain, Sweden, and the United States.

PROFESSOR GEORGE R. MURRAY, D.L., M.D., has been appointed to represent the Victoria University of Manchester at the ceremonies connected with the centenary of the birth of Pasteur which will shortly be held in Paris and in Strasbourg.

H.R.H. PRINCESS MARY, VISCOUNTESS LASCELLES, has promised to present the prizes and certificates to the students of the London (Royal Free Hospital) School of Medicine for Women on Saturday, June 2nd. The school has scholarships of the annual value of £1,010, which in the next session will be awarded. Full particulars and forms of entry can be obtained from the Warden and Secretary of the school, 8, Hunter Street, Brunswick Square, W.C.

The annual meeting and dinner of the Metropolitan Police Surgeons' Association were held at the Holborn Restaurant on April 26th, with Dr. Kennedy, the retiring president, in the chair. Amongst the guests present were the Right Hon. W. C. Bridgeman, M.P., Home Secretary, Sir Charles A. Ballance, K.C.M.G., chief surgeon to the Metropolitan Police, Sir Bernard H. Spilsbury, Dr. Cassidy, physician to the Metropolitan Police, Dr. Sanders, M.O.H. for West Ham, and Mr. Forrester Clayton, alderman of the Middlesex County Council. An enjoyable musical programme was given after dinner by Mr. Herbert Cave, Miss Edythe Barnard, and Mr. Webb.

THE Aberdeen University Club, London, is holding its sixty-ninth half-yearly dinner at Gatti's Restaurant on Thursday, May 17th, when Professor J. Arthur Thomson will take the chair. The honorary secretary is Dr. W. A. Milligan, 11, Upper Brook Street, W.1.

A MEETING of the West Kent Medico-Chirurgical Society will be held at the Miller General Hospital, Greenwich, on Friday, May 11th, at 8.45 p.m. The President, Dr. W. H. Payne, will deliver his presidential address. A smoking concert will follow, to which lady guests are invited.

THE North-East London Post-Graduate College has arranged an intensive course at the Prince of Wales's General Hospital, beginning on June 11th and lasting fourteen days. It will include lectures and demonstrations on clinical methods and cases, and work in the wards and special departments.

THE annual dinner of the Federation of Medical and Allied Services will be held at the Langham Hotel, Portland Place, W.1, on Wednesday, May 23rd, at 7.15 p.m., with the President, Sir Berkeley Moynihan, Bt., K.C.M.G., in the chair.

THE St. Bartholomew's Old Students dinner will be held on Wednesday, June 6th, at 7.30 p.m., in the Merchant Taylors' Hall, Threadneedle Street, with Mr. H. J. Waring in the chair. The honorary secretary is Sir C. Gordon-Watson.

At a meeting of the Central Midwives Board for England and Wales on April 26th, Sir Francis Champneys presiding, two penal cases were heard, judgement being suspended for reports in three and six months. The principal business dealt with subsequently included the appointment of the Approvals Subcommittee and the reading of a letter from the Ministry of Health stating that the Minister approved for the purposes of the apportionment of contributions from local supervising authorities the balance of £5,280 lls. shown against the Board in the financial statement for the year 1922. The lists of lecturers and of institutions, homes, and midwives at which and under whom pupil midwives may be trained were submitted by the secretary, and approved for the year ending March 31st, 1924.

NORWOOD SANATORIUM for the treatment of inebriety and drug addiction has succeeded so well that its directorate has been compelled to seek elsewhere to found a second institution for the same purpose and to be run on similar lines. After much search a suitable mansion was discovered near Wickham Market in Suffolk. Rendlesham Hall, with its surrounding park of 270 acres, was bought, and on May 1st was opened as a home for patients suffering from inebriety or addicted to drugs. The resident medical officer is Dr. Walter Asten. On April 27th the Hall was inspected by a party of medical men and women and others interested in the subject. The mansion is magnificently situated in the midst of wooded country. Its own gardens are unusually beautiful. Every modern convenience necessary for the cure of the disease and the pleasure of the guests has been installed. Much credit should be given to Miss Dunn, the lady superintendent, for the very tasteful way in which the house has been furnished. Inquiries should be addressed to the resident medical officer, Rendlesham Hall, Woodbridge, Suffolk. At the conclusion of the visit Sir Sydney Russell-Wells, Sir Humphry Rolleston, Dr. Jane Walker, Sir Robert Armstrong-Jones, and others expressed their keen appreciation of the new institution and of the work of its directorate.

MESSRS. ADAM HILGER, LTD., have produced a modification of their optical sonometer and have applied to it the name Low-Hilger audiometer. It is a sensitive optical hymnograph designed to record the pressure variation caused by sound waves.

THE Lord Mayor will preside at the 113th annual festival of the City of London Truss Society, which will be held at the Great Eastern Hotel, Bishopsgate, on Tuesday next, May 8th, at 7 p.m. The Society is a useful institution, and the trusses it supplies are prescribed by the surgeons who give their services to it.







## Observations

ON

## THE AUSTRALIAN FAUNA AND MEDICAL SCIENCE.

BY

WM. COLIN MacKENZIE, M.D., F.R.C.S., F.R.S.E.

(From the Australian Institute of Anatomical Research, Melbourne.)

## INTRODUCTION: FUNCTIONAL ANATOMY.

SPEAKING generally, the medical graduate has little concern with that department of biology which we term "applied zoology," or better, "applied comparative anatomy." Yet for the study of causation, without which no true advance can be made or principles enunciated, an intimate knowledge of applied comparative anatomy is essential, since by its means the student is brought into contact with numberless experiments on the part of Nature which are calling for explanation—experiments which represent the functional struggles through which the human body has been evolved. As we admit an evolution of structure so must we admit an evolution of function. A recognition that structure is a response to function is all-essential to those engaged in the practice of medicine.

One physiological structure does not originate another—one physiological structure does not cause the atrophy of another—as Elliot Smith has stated.<sup>1</sup> Both are dominated by functional needs. The teaching of zoology needs complete reorganization; it should be dominated by the needs of those whom it really most concerns—the general medical practitioner.

## FUNCTIONAL STUDY IN AUSTRALIA.

In the Australian Commonwealth are to be found, still living in their natural state, members of the two oldest orders of mammals—namely, monotremes and marsupials, corresponding to life on this planet many millions of years ago. They are examples of living embryology. Through them man is enabled to explore his past.

In one order (Marsupialia) are to be found a carnivorous mammal with no caecum, one (koala) with a caecum 8 feet long, and one (wombat) with a vermiform appendage resembling our own. To study these mammals from the point of view not only of structure but function in relation to medical science the Australian Institute of Anatomical Research has been founded in Melbourne, and receives an annual subsidy from the Government of Victoria. The Government has also reserved at Healesville—a mountain town about forty miles from Melbourne—an area of nearly 600 acres, 80 of which have been converted into a great wire-netting cage. Here, for example, the platypus, echidna, and koala can be found living, though under observation, in their natural state. The psychology of an animal like the echidna, with its richly convoluted brain, is well worthy of study. Kinematographic records are being made to study, for example, the movements of the blue-tongued lizard, which has a small leafed cerebellum, and whose limbs are used for propulsion rather than for support, with those of the platypus, whose cerebellum is more mammalian in character and whose limbs are used for support as well as for propulsion. Unfortunately, these animals are becoming rapidly extinct, and at the request of those interested the Federal Government of Australia has recently placed an embargo on their exportation. The embargo and the Research Reservation at Healesville represent a recognition by both Federal and State Governments that this great biological field belongs primarily to the medical practitioner.

## DUCTLESS GLANDS: NORMAL OR TYPE STRUCTURE.

In defining abnormal or pathological structure in man a knowledge of the normal or physiological is essential—in other words, we need type specimens as a basis for comparison. As the members of the Australian fauna are, like man, classified amongst mammalia, and as alcohol and syphilis need no consideration, W. J. Owen, histologist to the Institute, and I have during the past ten years been engaged on a histological investigation of all the organs of both monotremes and marsupials, so as to obtain the normal types with which human preparations could be compared. All our preparations are now available to students of histology. As an example I may cite the parathyroids.

Both the British and American medical student is told that they are composed of "columns of cells," which description may mean anything. The description of fresh specimens of these in the platypus is as follows:

"The gland is definitely lobulated—the interlobular connective tissue containing the larger vessels and nerves. The ground substance of the gland consists of a fine connective tissue reticulum with an enormous number of capillary vessels embedded in which blood cells are easily demonstrated. This capillary network is characteristic of the parathyroid gland. The secreting or epithelial cuboidal cells may be isolated or grouped; but they do not form alveoli. Colloidal material is not present."

In connexion with the ductless glandular system of the Australian mammals is to be found not only every gland so far described in man, but also glands not so far found in man. Are these glands really present in us? If not, is their absence physiological or pathological? In the monotremes we have failed to define tonsillar tissue, and in these the vocal cords are not present as in man. The tonsils are defined in the marsupial, and would appear to be associated with the evolution of the vocal cords in mammals. In the great Australian iguana the spleen is an insignificant structure swung on the mesogaster. In the "lowest" mammal, the platypus, with an increased blood temperature and the evolution of a diaphragm, the great omentum has appeared, the spleen has enormously enlarged, and its two lobes spread out in the abdominal cavity. It is of little purpose to discuss the uses of the spleen till we have solved the functional impetus that has introduced this change. The adrenals in the platypus, and especially in the carnivorous thylacius, are relatively large organs. In the eucalyptus-leaf-eating koala and phalanger the opposite obtains. Frequently in the phalanger, and occasionally in the koala, the right adrenal may be absent. What is the cause of this disappearance? Is eucalyptus extract from the leaf taking the place of adrenal secretion? In atonic bowel conditions such as prolapse, or in disease of the adrenals, the use of eucalyptus oil would seem to be worthy of trial. Furthermore, the medullary portion of the gland in the phalanger, in contradistinction to that of man, is greater in amount than that of the cortex, and in the platypus there is neither cortical nor medullary differentiation.

The fact that the two glands corresponding to the normal thyroid in other marsupials resemble in the kangaroo and wallaby lymphoid structures will come as a surprise to most physiologists. An examination of a series of 120 fresh glands showed that it was not common to find colloidal vesicles in these structures. The structure is chiefly composed of lymphocytes, and the Institute has specimens showing a further stage of replacement in which fibrous tissue is present without lymphocytes—the whole forming an interesting study on the mode of disappearance of organs.

In these animals, to whom thyroid secretion would not appear to be an essential, we have failed to find any enlarged parathyroids. In fact, it is questionable whether they are present. If a dissection of the neck and thorax of the adult platypus be made we find (based on an examination of 80 animals) the following constant ductless glands. On each side of the commencement of the trachea is a small parathyroid. In the thorax on the right of the aortic arch is a somewhat oval body about 1 cm. long; it is present in both male and female, and is a tubular type of epithelial gland without a duct system. It was first demonstrated by W. J. Owen and myself in 1918. Owing to its close relation with the constant thymus gland we have termed the body the parathymus gland. About the origin of the great vessels from the heart is a reddish body 2 cm. long—thyroid gland—whilst spreading on the ventral surface of the pericardium is the thymus gland, often 0.5 cm. thick. This animal, like the feebly muscular Tasmanian devil, but unlike man and the strong and muscular wombat, retains a well developed thoracic thymus throughout its adult life. Surely this is the most important factor in connexion with the physiology of the thymus—its necessity to the adult platypus and Tasmanian devil, and its absence even in the pouched specimens of wombat.

In addition, the male platypus has a large pair of Cowper's glands, 2.25 cm. long, and also three other large pairs of glands not so far described in man. One of these is the crural or poison gland, the secretion of which is carried by a duct to each leg spur. Another is a vesicular gland placed in the shoulder region in both the male and female platypus. This is much larger in the male than the female, and may weigh 8 grams. Here we have been unable to demonstrate a duct



system. The third gland stretches across the back of the animal in both male and female. It is mainly salivary in character, but in addition well defined tubular ductless areas can be demonstrated. These two latter pairs of glands were described by Owen and myself in 1918. It may be truly stated that mammalian endocrinology is yet in its infancy.

#### The Genito-urinary System.

The prostate gland first makes its appearance in the marsupial. In this mammal it reaches its greatest develop-

ment, and here its function should be studied. It is not found in either the platypus or echidna (Monotremata). In the Australian phalanger (*Trichosurus*) it may be 8 cm. long, 5 cm. in greatest width, and nearly 4 cm. thick. Arthur Thomson's statement that only in man does the prostate completely surround the urethra is erroneous—in fact, in the marsupial the prostate gland as such cannot be dissected from the channel contained within it.<sup>2</sup> The prostate is composed of glands of the compound tubulo-alveolar type with numerous columnar-cell lined ducts. In the platypus or echidna (non-prostatic) the penile urethra is a sex and not a urinary channel. In the marsupial (prostatic) the urethra is both a sex and urinary channel. The seminal vesicles have not made their appearance at this stage of mammalian evolution, which is probably explained by the existence of a breeding season. During the breeding season in both monotremes the breast tissue is well developed in the male, but in spite of the absence of development of the

prostate there is no instance of mammary development in either the male platypus or echidna. In the adult platypus the testes are large, freely mobile, and intra-abdominal. In the marsupial they have escaped from the abdominal cavity, possibly to avoid dorsal fixation for a future erect position, which is already apparent in connexion with the pancreas and duodenum.

In the kangaroo, wombat, and koala, with well developed cremasters acting as stays over the inguinal region, the internal abdominal ring is patent, and a free communication exists from the peritoneal cavity to the tunica. In other words, the kangaroo, with comparatively lax abdominal contents and able to leap 27 feet, has a hernial sac, yet no instance of "hernia" has been recorded amongst macro-podidae. In the Tasmanian devil with a poorly developed cremaster, the internal ring is closed—Nature has cured the hernia. In the platypus a well defined pair of Cowper's glands are present, opening by a duct for each into the sex penile urethra. A pair of well developed Cowper's glands are also present in the marsupial. They are older structures than the prostate. The Cowperian secretion is poured into a sex urethra, the prostatic secretion into a urino-sex urethra.

Is the almost complete disappearance of Cowper's glands in man, compared with the marsupial, physiological or pathological? In addition to Cowper's glands two pairs of large glands are also met with in the marsupial in the urethral region. They resemble in structure the shoulder glands mentioned in connexion with platypus.

A study of the female system throws light on Nature's method of unification of the Müllerian ducts, and hence on abnormalities in the female genital system. In connexion with the ovary of the wombat, especially the right, a firm

distinctive body is noted externally, which on section is seen to be enclosed in a well defined fibrous capsule and presents the typical structure of a corpus luteum. This body has been found well defined at each extreme of pouch development of the embryo. There is no record of distinctive placental development in the wombat. In the Tasmanian devil there is a direct branch of the vagus into the broad ligament. What is the functional impetus that expels the embryo from the uterus within thirty days in such a powerful animal as the wombat,

and necessitates placental development with prolonged retention of the human embryo? The echidna, with its richly convoluted cerebral cortex, is born in the egg stage.

#### THE COLON, CAECUM, AND GREAT OMENTUM.

##### (a) The Two Primary Types of Colon.

The mammalian colon, from the platypus up to man, may be primarily considered under two types. In one, which is best demonstrated in the Tasmanian devil, we have the whole intestine from the pylorus onwards (157 cm. long) swung on a dorsal mesentery.

(Fig. 1.) Of this, 22 cm. is colon and the remainder small intestine, and at the junction of the two a well defined direct branch of the right vagus is present. The dorsal mesentery at its attachment measures 7 cm., and of this 5.5 cm. is mesocolon—that is, the peritoneal fold on which swings the colon—the remaining 1.5 cm. corresponding to the root of the mesentery, the fold on which swings the small intestine. There is no caecal development, no pyloric relationship of colon, no develop-

ment of colon on the mesentery. This is the "ileal"

intestinal tract of Metchnikoff and Lane.

In the other type, which is best demonstrated in the Australian koala, we have also the large intestine swung on its mesocolon, whose long "attachment" is traced along the dorsal abdominal wall. (Fig. 2.) In addition, however, this dorsal abdominal wall is brought into relation with mesocolic or primitive colon is brought into relation with the pyloric region of the stomach by a firm band—mesial fold—1.5 cm. long and 1 cm. broad, and there is a development of a new colon (on the right of the band), which measures 150 cm. long, and a caecum which may reach 240 cm., both swung with the small intestine on the mesentery.

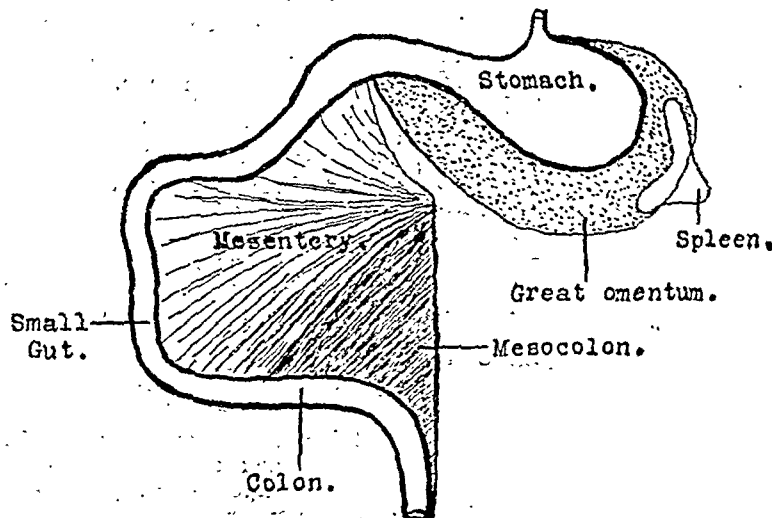


Fig. 1.—Plan of gastro-intestine in Tasmanian devil.

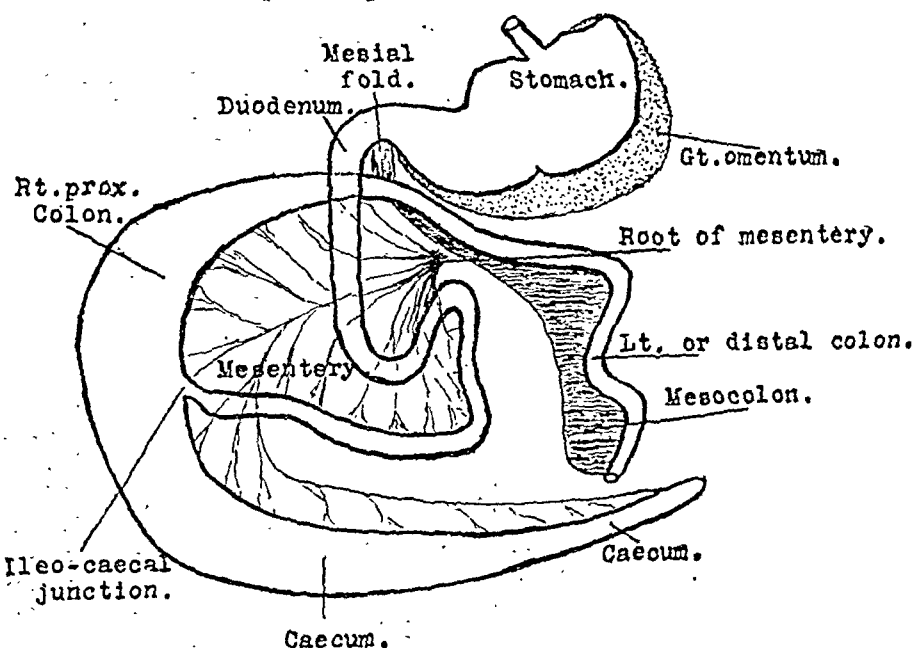


Fig. 2.—Plan of gastro-intestine in Australian koala.



(b) *Caecal Varieties.*

From the great caecum of koala all grades of caecal development can be studied down to the appendage met with in echidna and wombat. Where we have "pyloric hitching" of colon so we have the attempt at caecal and colon development on the right. The vermiform appendage in wombat resembles that of man and the anthropoid apes, except that in some districts in Victoria it has evolved further towards complete disappearance than in man. Studies of these are interesting sidelights on the mode of disappearance of organs. The wombat is a root and vegetable eater, its diet resembling that of early man.

(c) *Origin of Great Omentum or Splenic Mesentery.*

In both the primary types of intestines the spleen is well developed and free, being swung on its own special fold or great omentum. These together with a complete diaphragm are mammalian characteristics. The development of great omentum (lesser sac) is primarily correlated to the relatively great splenic development seen in the "lowest" mammal (platypus) in which the right ventral process of the spleen may reach 15 cm. in length. This is in marked contrast to the insignificant spleen and absence of great omentum noted not only in the smaller lizards but in the giant iguana of Australia (Reptilia). Although in Australian mammals the lesser sac formed by the great omentum is well defined, together with Winslow's foramen, it has no connexion with the colon.

(d) *Dorsal Fixation: the Erect Posture.*

Compared with the intestinal mobility of koala the modifying factor to produce the arrangement seen in man has been

the erect posture with its call for dorsal fixation. Experiments in simplification of the right colon towards the more human type, as first seen in lemur monkeys, can be studied in rodents. This new right colon with its large and small caeca, appendices, coils, and loops, can be well designated "the experimental colon." There are two regions from which fixation of the colon begins—namely, at the pyloric relationship (mesial fold) and in the region of the spleen. In the latter region dorsal fixation of spleen and pancreas are the initial factors, since they are connected with the colon by a fold—the left lateral—of which the lienorenal fold in man is the remnant.

Fixation of the descending colon and sigmoid begins at the splenic region, all varieties of this being seen, and as a rule the sigmoid is not fixed dorsally, being swung on a portion of the old mesocolon. Fixation of the right, ascending, or mesenteric colon and its mesentery begins at the pyloric relationship and spreads downwards, and in man the fixation of the caecum is still incomplete.

The sequential grades of this can be studied in the lemur, platyrrhine and catarrhine monkeys, and anthropoids up to man. The fixation of the colon (part of the primitive colon with its mesocolon) between the pylorus and the spleen begins opposite the pylorus and extends to the left. This is the transverse colon of man. Fixation is effected partly by shortening of the mesocolon, but mainly by the attachment through physiological adhesions of the great omentum to the colon and mesocolon. This is the second function of the great omentum and the reason of its retention in higher

types. The best animals for the study of the grades of this are kangaroo, baboon, and anthropoid apes. The transverse colon and its mesocolon are not primary boundaries of the mammalian lesser sac. They become connected with it in a purely secondary way. Much of the anatomy of the lesser sac, including the diagrams, might be conveniently forgotten.

## HUMAN.

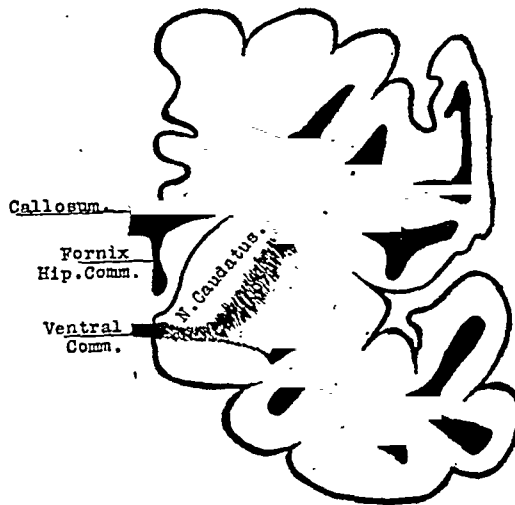


FIG. 3.—Plan of commissures in human brain. (Compare Figs. 4, 5, and 6.)

(e) *The Two Parts of the Human Colon.*

The human colon consists of two divisions only: (1) From the ileo-caecal region to the pyloric region, where we have a direct vagal connexion, is right, proximal, or mesenteric colon. This includes caecum and appendage, ascending colon, and hepatic flexure. It is the new or "experimental" colon. (2) From the pyloric region to the mid-sacrum in the pelvis is left, distal, or mesocolic colon. This is the old or primitive colon, and includes the portions known in man as transverse colon, splenic flexure, descending colon, iliac colon, and pelvic colon. The classification of diseases of the colon should have reference to affections of one or other division.

## THE MAMMALIAN BRAIN.

A medical student attempting to learn the human brain without a knowledge of the brain of lower mammals is comparable to an architect's apprentice who receives his first lesson at Westminster Abbey instead of at a cottage. In these days of psycho-analyses and hinterlands the brain student has to remember that for practical purposes brain structure is the register of brain function. Functions, both sensory as well as motor, have followed along simple sequential paths, which can be traced. Disease destroys these functions, sensory and motor, in the reverse order.

Re-education for recovery must follow the lines of the acquisition of function. Little importance is usually paid to the human hippocampus. Compared with that of the monotremes and marsupials it is almost a relic. What functional struggle has caused so much disappearance of this structure in higher mammals? How many students associate the fornix with hippocampal disappearance? In learning the corpus callosum, which is not present in the Australian mammals, how often do we reflect on the functional impetus that has called it into being? Why is it such an important structure in man and the ventral commissure so insignificant? The functional history of these three commissures—the callosum, fornix, and ventral—is correlated to the functional history of the cerebral hemispheres in man. (Fig. 3.)

If a transverse section be made through the brain of the Australian stump-tailed lizard (Reptilia) where the right and left portions are connected, we find that each can be regarded as a cylinder, the ventro-lateral wall of which is thickened to form the striatum or efferent ganglion. This is connected with its fellow of the opposite side by a well defined bundle—the

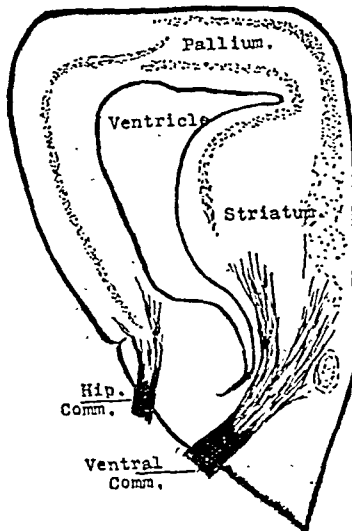


FIG. 4.—Section through brain of the Australian stump-tailed lizard.

striate or ventral commissure. The remainder of the cylinder is narrower and is connected mesially with the opposite side by the dorsal or hippocampal commissure. This portion is pallium, and the dorso-mesial portion of it is known as hippocampus. (Fig. 4.)

If a similar section be made through the brain of an Australian mammal the same plan prevails and the same commissures are present, although the ventral or striate is



much larger than the dorsal or hippocampal, and is the great connecting commissure between the two hemispheres. The striate body has increased in size, and additional cortical or projectional tissue has been added in response to functional needs, such as limb developments, into which processes from the ventral commissure are noted. A distinct process of this is traced dorsally above the hippocampus. (Fig. 5.)

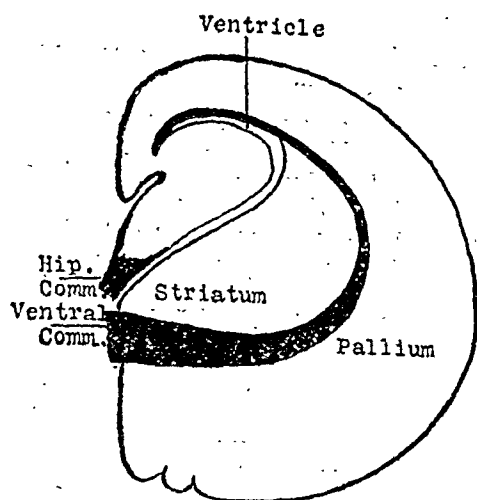


FIG. 5.—Section through brain of platypus.

to join with its fellow of the opposite side to form the corpus callosum. If a similar section be made through the brain of a "higher" mammal such as the rabbit, we find a corpus callosum continuous with the ventral commissure present—the hippocampus and hippocampal or dorsal commissure are well defined, but the ventral or striate commissure has atrophied as in man. (Fig. 6.) It is now no longer the great brain commissure. The advent of the callosum in the rabbit is not associated with hippocampal atrophy. This atrophy when it occurs is

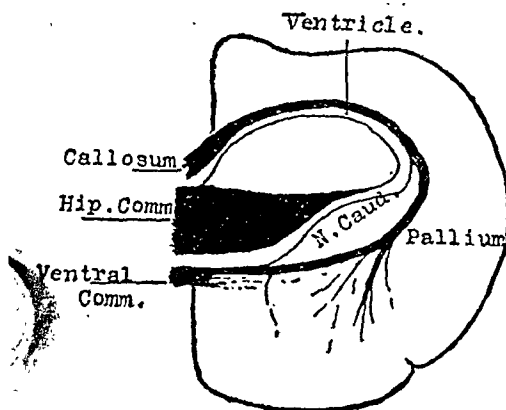


FIG. 6.—Section through brain of rabbit.

not mechanical, but functional. Elliot Smith's statement that "in all mammals possessing a corpus callosum the hippocampus persists in an unchanged state only so far as the splenium of the corpus callosum" is not borne out by an examination, whether histologic or macroscopic, of the rabbit's brain. I draw attention to this because the rabbit is the mammal most frequently used for structural demonstrations to medical students. The brain of the rabbit, like that of the platypus, is devoid of convolutions; on the other hand, the brain in the echidna is richly convoluted and might be almost described as a miniature human brain. Why is there no necessity to connect the richly convoluted cortex of one side with the other in the brain of the echidna, and a necessity in the poorly developed cortex of the rabbit? Studying correlations, in the rabbit we have placental development and retention of the embryo *in utero*, whilst the echidna is an egg-laying mammal.

The production of the next generation is more certain in the rabbit than in the monotreme. The statement of Bainbridge and Menzies, that "the cerebral hemispheres are relatively larger in man than in any of the lower mammals," is not borne out by a study of this monotreme.<sup>1</sup> In all the above sections the sensory afferent ganglion or thalamus has to be divided. The necessity for functional specialization, that has resulted in its almost complete division as seen in man, has not yet arisen. The two motor striates are older than the two sensory thalami. Amongst the marsupials the thalamus reaches its greatest development in the powerful muscular wombat. Relatively the corpora quadrigemina are better developed in the marsupial than in man, though in the monotremes the posterior pair are poorly developed, as was pointed out by Meckel and Sir Richard Owen. In spite of the richly convoluted brain of the echidna its cerebellum is more primitive than that of the marsupial or higher mammals.

Nearly a century ago there was published from St. Thomas's Hospital a small volume on the brain, clinical, pathological, and physiological, based on comparative anatomy. It was the work of Samuel Solly, the friend of Astley Cooper, Charles Bell, and Marshall Hall. Through them Hunter's influence is apparent in its pages. It stands as a model of what such a work should be, and is worthy of a reissue.

#### CONCLUSION.

In this paper I have endeavoured to draw attention to the importance of this great biologic field and to indicate a few of the problems on which work is being conducted at the Anatomical Research Institute in connexion with the Australian fauna.

The importance is not academic but practical, and the elucidation of the numberless problems presented in monotremes and marsupials—anatomical, physiological, and pathological—must affect every department of medical science. No mention has been made of the heart, stomach, eye, larynx, or muscular system, which should all be considered from the same standpoint. As the basis of orthopaedics is muscular, and dependent on the law of muscular function that "the particular functions of any muscle are the result of the evolutionary history of that muscle," it follows that a knowledge of comparative anatomy, both structural and functional, is essential for the orthopaedic surgeon. The treatment of poliomyelitis, the greatest factor in the production of human deformity, is the immediate one, and follows definite comparative lines.

Disease is an attack on function as well as on structure—perhaps more on function. The effect on function—for example, in disease of the central nervous system such as poliomyelitis—may be out of proportion to the actual attack on structure. A cell may be capable of performing numerous functions which are not necessarily all liable to attack, or in the same proportion. Disease of an organ, interfering with its functions, does not necessarily mean interference with all its functions, and any biological system that takes no account of the evolution of function is, so far as medical practice is concerned, only a shibboleth. The teaching of zoology should be dominated by the needs of those whom it really most concerns—the general medical practitioners.

Again, the question of tissue regeneration is one concerning which we at present know very little. When an abdominal wound is closed the union is a pathologic fibrous scar, not a true regeneration of muscle, skin, and fascia. Why have skin and muscle lost this power and the uterine mucosa retained it? The lower we descend in the animal scale the greater the power of regeneration, and this is greater in cold than in warm blooded animals. The Institute has specimens in marsupials of amputation stumps (after trapping) in which the line of union is not discernible. How important for an operating surgeon to obtain a more rapid and more complete union of divided tissue! "Cure" of a diseased joint is not necessarily followed by restoration of function—the ideal.

One cannot help feeling that round the question of ductless glands lies the possible solution not only of cell stability but of cell regeneration. The empiricism that at present surrounds much of our treatment of ductless gland affections is traceable largely to the methods by which we have obtained our present knowledge—namely, the results of disease, surgical interference, and experiments on animals, not only domesticated, but taken indiscriminately from different orders. The association of the four glands in the adult platypus—namely, thyroid, thymus, parathyroid, and parathyroid—is surely not without its significance, especially in the treatment of spastic affections of children, where thymus is particularly indicated. It is regretful to state that within a very short period, with increased settlement, many of our important mammals will have disappeared in spite of a rigid State protection. They vanish never to be recalled, and take their functional secrets with them.

#### REFERENCES.

- 1 Catalogue of the Royal College of Surgeons Museum, Vol. 2. The Nervous System, p. 161.
- 2 BRITISH MEDICAL JOURNAL, January 7th, 1922.
- 3 *Essentials of Physiology*, 1922.
- 4 Publications of the Australian Institute of Anatomical Research: *The Comparative Anatomy of Australian Mammals*, Vol. 1, p. 4. *The Structure of the Parathyroid Glands. The Larynx in Marsupials and Monotremes. Further Observations on Some New Marsupial Ductless Glands.*



## Observations

ON

## THE PATHOGENICITY AND TREATMENT OF FLAGELLATE DYSENTERY.

BY

HAROLD E. WHITTINGHAM, M.B., CH.B. GLASG.,  
D.P.H., D.T.M. LOND.,

WING COMMANDER, ROYAL AIR FORCE MEDICAL SERVICE.

For the past four years there has been a determined attempt on the part of the Ministry of Health to prevent or limit certain infectious diseases which have become a real and great danger to the community as a result of the demobilization of the services. The Public Health (Pneumonia, Malaria, Dysentery, etc.) Regulations, 1919, have made these and certain other diseases notifiable, and definite power to deal with such diseases has been given to medical officers of health.

It is with flagellate dysentery that these remarks are concerned. The definition of dysentery in Article I (1) F of the Regulations reads: "The expression 'dysentery' includes amoebic and bacillary dysentery." Other forms of dysentery such as flagellate, are not notifiable, and thus there is no attempt to safeguard the public against them.

A survey of the literature of the flagellate dysenteries leaves the mind of the reader in a turmoil as to their pathogenicity or otherwise. Few writers in the past have admitted that the presence of flagellates in the bowel is anything but a mere coincidence when found along with dysenteric symptoms. Other observers would credit only *Lambia intestinalis* with pathogenic effects on man and still leave *Trichomonas intestinalis* and *Chilomastix mesnili* in the "mere coincidence" group. The opinions of a few authorities on the pathogenicity of *Lambia intestinalis* may be quoted with advantage.

Hurst (1918)<sup>1</sup> states regarding "Sometimes, however, recurrent attacks of dysentery, with the passage of large quantities of mucus containing enormous numbers of flagellates, in such cases the organism is probably the cause of the symptoms. The diarrhoea, which may persist in cases of dysentery after treatment with emetine or antidyenteric serum, is probably sometimes due to additional infection with lamblia, which is not cured by these means."

In the Memoranda on Medical Diseases in the Tropical and Sub-tropical War Areas, 1919,<sup>2</sup> the opinion of the vast majority of workers at that date reads: "The only one which is possibly pathogenic is *Lambia (Giardia) intestinalis*, whose habitat is the small intestine, and which is said sometimes to induce a persistent and troublesome diarrhoea."

Manson (1921)<sup>3</sup> states: "Lambia infection is associated at times with a type of recurring diarrhoea accompanied with abdominal discomfort and the passage of bile-stained mucus. . . . Relapses of a periodic type tend to occur. . . . Symptoms are thought to be due to the mechanical action of the parasite. . . . Many kinds of treatment have been tried without success."

Wenyon remarks (1915)<sup>4</sup>: "In other cases there occur at intervals attacks of diarrhoea with the passage of mucus in which lamblia are to be found in enormous numbers, so much so that the whole microscopic field is packed with them. After recovery from such an attack the stools become normal again and only encysted forms are to be found. The occurrence of repeated attacks of this nature with a certain degree of abdominal uneasiness preceding the attacks and the passage of such extraordinary numbers of flagellates, especially in the mucus, leads one to suspect that *Lambia intestinalis* may produce sufficient to justify us in regarding it as a parasite of the small intestine as glands of the small intestine as

the pathogenicity of the intestine, yet no good evidence to prove in man is pathogenic, but that to show that most and probably all of them are harmless."

Phillips (1915)<sup>5</sup> observes that "the evidence brought forward that they [faecal flagellates] are pathogenic is not very conclusive, but in the case of *Lambia intestinalis* is more convincing." The same author quotes a large number of cases recorded by such observers as Darling, Mathis, Meyer, Fairise, and Jaunin. These observers record cases of lamblasis leading to ulceration and even to perforation of the gut. One case ended fatally after perforation (Fairise and Jaunin).

Except for this latter case, the general opinion, especially in the tropics, seems to be that *Lambia intestinalis* is a harmless parasite of the bowel, or of minor pathological significance.

During the past four years there has been exceptional opportunity of thoroughly overhauling men who have returned from overseas suffering from dysentery, diarrhoea, enteritis, general debility, and neurasthenia. The failure to

find any obvious reason for their unfitness led to a routine investigation of these cases. Eventually, in an endeavour to get to the bottom of all such cases, the following routine examination was adopted in the Central R.A.F. Laboratory, London:

1. Thorough clinical examination.
2. Blood culture and blood smears for parasites. Blood count and agglutination tests for indirect evidence of certain diseases, such as chronic protozoal infections, sepsis, tuberculosis, enterica, dysenterica, undulant fever, etc.
3. Wassermann reaction for syphilis.
4. Faeces examination for bacterial, protozoal, or helminthic infection.
5. Urine for albumin, blood, casts, and parasites.
6. Sputum, especially for tuberculosis.

The examination of blood films, faeces, and sputum was performed for ten consecutive days in all cases; if any part of the examination cast suspicion on the diagnosis further tests were carried out. It should be mentioned that the stools were examined as passed normally as well as after purgation with calomel and magnesium sulphate. The latter procedure ensured a good evacuation of the bowel and minimized the chance of missing parasites inhabiting the upper bowel. The whole stool was immediately sent to the laboratory, and special attention was paid to the toilet paper, because mucus was often found on this when not present in any other portion of the motion. In this manner 716 cases have been investigated, with the results shown in Table I.

TABLE I.

Organism.	Cases in which Present.	Percentage.	Cases of Pure Infection.	Percentage.
<i>Entamoeba histolytica</i> ...	68	10	32	5
<i>Entamoeba coli</i> ...	34	5	18	3
<i>Iodamoeba bütschlii</i> ...	30	4	12	2
<i>Endolimax nana</i> ...	6	1	2	0.3
<i>Lambia (Giardia) intestinalis</i> ...	57	8	22	3
<i>Trichomonas hominis</i> ...	8	1	4	0.5
<i>Chilomastix mesnili</i> ...	14	2	6	1
<i>Tricercomonas intestinalis</i> ...	8	1	3	0.4
Helminths ...	12	2	10	1
Bacillary infections ...	10	1	8	1
Total number of cases in which the above organisms were found in the faeces	183	25	—	—

Many of the cases showed a mixed infection of flagellates and other intestinal protozoa or helminths with other diseases, such as malaria, syphilis, and enterica. Out of 716 cases examined, one or more types of the above enumerated intestinal organisms were found in 183 instances (26 per cent.). In 117 of these only one type of organism was found. As is shown in Table I, no abnormality could be found in 35 of the cases beyond the presence of flagellates in the bowel. Thus a prolonged investigation regarding symptoms and treatment was made of 22 cases of pure lamblia infection, 4 of trichomonas, 6 of chilomastix, and 3 of tricercomonas.

## PATHOGENICITY.

The pathogenicity of an organism is best studied by macroscopic and microscopic examination of the organs forming its habitat, and especially of any lesions produced. Short of this, the only method applicable is to prepare careful laboratory and clinical evidence. In "flagellosis" the opportunity of obtaining material at operation is small; the same holds good for post-mortem material. The writer has been forced to draw his conclusions from evidence obtained during the life of the patients.

Preparatory to discussing the symptoms of flagellosis it is well to note the chief intestinal flagellates and their habitats. They are as follows (the authority is given in parentheses):

1. *Lambia* or *Giardia intestinalis*. Duodenum or small intestines. (Lamb, 1860.<sup>6</sup>)
2. *Trichomonas hominis*. Large intestine and ileum. (Wenyon, 1920.<sup>4</sup>)
3. *Chilomastix* or *Tetramitus mesnili*. Large intestine (Wenyon, 1920<sup>4</sup>); small intestine (Boeck, 1921<sup>7</sup>).
4. *Tricercomonas hominis*. Large intestine.
5. *Tricercomonas intestinalis*. Large intestine to caecum. (Da Fonseca, 1917.<sup>10</sup>)



The symptoms to which attention is drawn in flagellosis are: recurrent attacks of diarrhoea and colic, passage of mucus and perhaps blood (ulceration), thickening and tenderness of certain areas of the bowel, a blood picture showing slight leucocytosis accompanied by a distinct relative increase of the large lymphocytes with at times an eosinophilia and neurasthenia.

Dobell and O'Connor (1921)<sup>6</sup> state that "flagellates are found more often in persons with diarrhoea than in healthy persons for the simple reason that the stools of the healthy persons are seldom examined." A detailed examination over a period of several years of the faeces of healthy and unhealthy persons has convinced the writer that flagellates occur far more frequently in the bowel of the unhealthy than in the healthy; flagellates are not found in the faeces of more than 5 per cent. of apparently healthy persons. This means that flagellates are not normal inhabitants of the bowel.

It is agreed that the finding of an abnormal organism in the bowel of a neurasthenic person in no way proves its pathogenicity, but it is folly to explain away any abnormal symptoms that may develop in that person as nervous in origin; should an attack of diarrhoea supervene it is labelled as nervous and no attempt is made to discover the cause of the neurasthenia. As is well known, chronic infections are apt to cause a series of symptoms termed neurasthenia; should this occur a vicious circle may be set up.

No one can say that recurrent diarrhoea is a normal condition in man, nor are such flagellates as *Lambia intestinalis*, *Tricomonas hominis*, and *Chilomastix mesnili* normal inhabitants of the bowel. When a case of recurrent diarrhoea is subjected, as detailed above, to a careful examination for a possible cause of the malady and none is found, except the presence of some flagellate, there is at least a strong suspicion of its pathogenicity.

Most of the cases of flagellate infection recorded here had a history of recurrent diarrhoea. The stools passed by patients with a lamblia infection were often distinctive. The motions were pulsatious, pale, and had a peculiar mousy odour—quite unlike the diarrhoeic stool usually met with in Great Britain. During the past two summers, while investigating patients suffering from phlebotomus fever in Malta, some cases were noted where the premonitory symptoms of that fever were diarrhoea and colic. In practically all of these

some intestinal protozoon was found in the faeces, while in those which did not show these symptoms such a finding was exceptional. *Lambia intestinalis* was the protozoon most frequently found, then *Entamoeba histolytica*, and lastly *Trichomonas hominis* and *Tetramitus mesnili*. Of the total number of cases of phlebotomus fever roughly 20 per cent. showed these symptoms, associated with the presence of a protozoon in the gut. This percentage of cases of diarrhoea and colic closely coincides with that observed in phlebotomus fever by other workers.<sup>10, 11</sup>

This contention as to the pathogenicity of some flagellates is further strengthened by the frequent passage of mucus containing large numbers of flagellates. In some instances microscopic examination of this mucus showed the presence of large masses of epithelial cells amongst which were entangled numerous lamblia or other flagellates. At times some of the lamblia were seen attached by their sucking discs to these "intestinal" epithelial cells. Thus certain flagellates appear to exert a physical or chemical action on the intestinal mucosa. The effect may be simply an increased stimulation of the mucous glands, or a more intense action leading to epithelial desquamation or even actual ulceration of the mucosa, as is evidenced by the passage of blood mixed with the mucus. The latter condition was particularly noticed in two cases of trichomonas infection when the bloody mucus passed per rectum contained large numbers of these organisms; on palpation of the abdomen a distinct thickening of the bowel was felt in the region of the splenic flexure in both cases, and also in the sigmoid flexure of one.

Attempts have been made to ascertain the tissue invasion power of intestinal flagellates. Wenyon (1915<sup>4</sup> and 1920<sup>8</sup>) and others have made histological sections showing these flagellates filling the gland acini and invading the mucosa of the bowel. In one case at least this invasion seems to have occurred *ante mortem*. This power of invading the tissues is proved in the case of animals by the culture of a trichomonas from the blood stream of a gecko suffering from a trichomonas lesion of the intestine (Chatton, 1920).<sup>11</sup>

Wenyon (1920)<sup>8</sup> has reported the invasion of the mucosa of the whole extent of the large bowel and the lower portion of the small intestine by *Trichomonas intestinalis*. In the

present series of cases the occurrence of jaundice in a patient suffering from a pure trichomonas infection points to the possibility of a higher habitat in the intestine. No other cause for the jaundice could be found. The trichomonas disappeared under the routine treatment described below. After five weeks the case relapsed; the jaundice and trichomonas returned together. The condition disappeared after a further course of treatment, and up till now, three years since treatment, there has not been any return of the jaundice, nor on periodic examination have parasites been detected.

Many of the cases of pure intestinal flagellosis investigated showed a distinct relative and absolute increase of the large lymphocytes in the peripheral blood stream. The objection so often made to the fallacy of blood counts was checked as far as possible by the fact that the blood counts of all the cases of disease and the controls were collected by a constant method, with the same instruments and between 9 and 10 a.m. daily. A point of interest was the occurrence of a varying degree of eosinophilia (5 to 8 per cent.) in some of the cases most troubled with flagellates. The percentage of eosinophiles returned to normal with the disappearance of the flagellates from the stool. Careful examination of the patients for several weeks before, during, and after treatment failed to reveal the presence of any other cause for the eosinophilia. According to Gulland and Goodall (1914)<sup>12</sup> intestinal irritation produces an eosinophilia. The occurrence of eosinophilia in flagellate dysentery further supports the theory of intestinal irritation in that condition.

Finally, chronic irritation of the intestinal mucosa is liable to lead to neurasthenia. This irritation may be either of a physical or chemical nature, and akin to the action of intestinal nematodes. Consider for a moment the structure and function of the intestine and its relations to the central nervous system. There is a certain store of nervous energy which is more or less the common property of the whole nervous system. This store may be drawn upon by any of the spinal, cerebellar, or cerebral arcs. Stimuli and their appropriate responses passing along these arcs gradually use up the available nervous energy. In health, sleep comes to restore this lost energy. Normally a person should start the day with 100 per cent. of nerve energy. Imagine the physical irritation set up by millions of flagellates whipping away in the gut, and, in the case of *Lambia intestinalis*, often attached to the epithelial cells lining it, or the chemical irritation produced by the effete substances thrown off by these flagellates. By one or both of these means unconscious messages are sent along the sympathetic nerve tracts, and all night long there is a leakage of the nerve energy which should be reserved for the coming day. Depending on the degree of the physical or chemical stimuli set up, the patient may awake with only 75 or 50 per cent., or less, of the normal amount of nervous energy required for the work of the day. There is no feeling of refreshment. Work is started, and when only three-quarters or a half is done, definite signs are seen of loss of nervous energy and tone.

There is irritability and want of concentration, and any extra pressure of work causes confusion. The term "flat spin" is very appropriate whether the work is that of flying or otherwise. How often do the subjects of chronic dysentery or malaria show irritability, want of concentration, and a long train of so-called minor and unimportant symptoms. In fact the condition is glibly termed "neurasthenia." Much time is often wasted in trying to restore the nervous equilibrium, but nothing is done to cure the disease which has produced these symptoms. Work is gradually decreased in amount and quality. The whole nervous system loses tone. Vasomotor symptoms such as lassitude, flushings, syncopal attacks, giddiness, and irritability are marked.

Symptoms such as the above are serious enough on terra firma where any mental errors may be corrected by others, but their importance is increased considerably in the case of the air pilot. A little delay in the reaction time may mean a serious crash. The sooner the condition is diagnosed the more likelihood there is of a cure. The earliest manifestations of neurasthenia are readily made apparent by the elaborate modern physiological tests to which air pilots are subjected from time to time (Flack, 1920<sup>13</sup>). The diagnosis does not end here—the cause must be investigated, for unless efficient treatment is given a proper cure will never be attained. Enough has been said to show that any chronic disease is a great danger to health, and that the so-called non-pathogenic infection, flagellate dysentery, is really pathogenic.



## TREATMENT.

Many of the cases under treatment harboured more than one type of parasite in their bowel. The habitat of these various parasites has been shown to differ, therefore an attempt was made to devise some form of treatment that would suit all or most cases of chronic protozoal or helminthic infection of the gut. With this end in view the contents of the alimentary tract were reduced to a minimum by putting the patient in bed for three days and placing him on as light a diet as possible. Thus it was hoped that more or less complete absorption of the food given would occur. At the same time sodium bicarbonate was given thrice daily in 15-grain doses. This treatment was repeated for three days, the idea being to clear away any mucus coating the internal surface of the gut, for the flagellates have been proved to be frequently embedded in the gland acini of the intestine. The clearing of mucus from around the head of any helminths present was also attained in this manner. In order to clear the intestines further of their contents and thus allow the specific drugs to exercise their maximum effect on the parasites lodged in the wall of the gut, a 3-grain dose of calomel was given at bedtime on the third day, and 2 drachms of magnesium sulphate administered at 8 o'clock the following morning. When the bowels had moved thymol was given in three 30-grain doses. This was given in cachets (15 grains in each cachet was found to be a convenient amount to swallow), two cachets hourly for three consecutive hours—usually at 9, 10, and 11 a.m. At 12 noon a further dose of magnesium sulphate was given to clear the bowel of the excess of thymol and diminish the risk of thymol poisoning. No food or drink was allowed from bedtime the previous evening until the thymol treatment had been completed. When the bowels had operated actively after the second dose of salts, a cup of tea without milk and a piece of dry toast was given. At tea-time an ordinary plain tea was allowed and chicken diet for dinner. At bedtime that evening emetine bismuthous iodide powder (E.B.I.), 1 grain in a gelatin capsule, was given, the following evening E.B.I. 2 grains, and thereafter for ten consecutive days the dose was increased to 3 grains. Thus a total of 33 grains of E.B.I. was administered.

During the fortnight following the thymol treatment high lavage of the colon was performed on alternate mornings with a solution of quinine sulphate in water (10 to 20 grains of quinine to the pint). For this purpose a rubber catheter was inserted into the rectum for a distance of ten to twelve inches and the quinine solution ( $\frac{1}{2}$  to 2 pints) run in gently by gravitation. The patient lay on the left side during the administration, and on withdrawal of the catheter was requested to lie flat on his back for five minutes, thereafter on the right side for another five minutes. In this manner a good lavage of the colon was obtained. This lavage was found most valuable in clearing away lumps of mucus containing large numbers of free forms of trichomonas and chilomastix. (Such lumps of mucus are often held up by the folds of the large intestine.) The rapid removal of large numbers of free flagellates must materially aid their final eradication by reducing the number of proliferating organisms.

After this course of emetine bismuthous iodide the stools were examined daily for at least three weeks, a purge being given at least once a week, and if the findings were negative during that period the patient was encouraged to lead a normal life, alcohol not being forbidden. If there was no return of the intestinal parasites during the next three days the patient was discharged from hospital and put on a tonic pill containing iron, arsenic, strychnine, and cascara. Monthly examinations of the stool were done for three or four months after discharge from hospital.

In the case of relapses an interval of seven to ten days was allowed after the first course of E.B.I. before a second course of thymol and E.B.I. was administered. During the interval salol, 10 grains, was given thrice daily to act as an intestinal antiseptic. In a few cases of lamblia infection salol had a distinctly beneficial action.

Only in a few cases was a third course of treatment given, as it was found that those cases which did not respond to the above treatment were practically incurable. These cases were put on salol, 10 grains thrice daily for a fortnight every month, and given colon lavage twice weekly. This treatment was continued for three months, the patient meanwhile doing light duty.

The results of the above treatment have been very satisfactory. At least 50 per cent. of lamblia infections have been cleared up according to the standards laid down, all the trichomonas cases except one have recovered, and two of the chilomastix cases have relapsed. (See also Barlow, 1916.<sup>11</sup>) This strenuous treatment has given results very comparable to those of E.B.I. in *Entamoeba histolytica* infections. In this latter infection, under the systematic lines of treatment laid down by Dale,<sup>15</sup> Low,<sup>17</sup> and Dobell,<sup>5</sup> quite a number of chronic cystic carriers fail to clear up; the percentage of cures is certainly less than 75. Dobell and O'Connor (1921)<sup>5</sup> criticize the treatment of flagellate dysentery thus: "The appearance of flagellates or their cysts in the stools of infected persons is frequently very irregular. We have numerous records showing that the stools of infected persons may be 'negative,' on microscopic examination, for considerable periods of time; and this is true of persons undergoing no treatment whatsoever." This statement is admitted, but it applies with equal force to infection with *Entamoeba histolytica*.

During 1918, in conjunction with Major O. H. Gotch, late R.A.F. Medical Service, twelve cases of protozoal infection of the gut (*Entamoeba histolytica*, trichomonas, and lamblia) were treated with novarsenobillon ("914"). The drug was administered intravenously, and a series of four to six injections given in each case. The first dose was 0.45 gram, the second 0.6 gram, and the remaining doses 0.75 gram. In no case was there any improvement of the intestinal condition.

## CONCLUSIONS.

The object of this paper is to emphasize the following points:

1. Flagellate dysentery is a pathogenic condition which, if allowed to persist, will eventually undermine the health of the patient and cause neurasthenia.
2. Certain cases are simply "carriers," as are some cases of *Entamoeba histolytica* infection. This in no way proves their non-pathogenicity. Such "carriers" are a great source of danger, inasmuch as they may infect others, especially in a military service where they are likely to be drafted overseas.
3. Contrary to what is usually stated, flagellate dysentery may be cured in at least 50 per cent. of cases. Stress is laid upon the advisability of the combined treatment by purgation, thymol, emetine bismuthous iodide, and lavage of the colon.
4. All cases of recurrent diarrhoea or neurasthenia for which no cause can be found, and in whom flagellates can be detected in the stools, should have a course of treatment as outlined above.

## REFERENCES.

1. Hurst, A. F.: *Medical Diseases of the War*, London, 1918, p. 154.
2. *Memoranda on Medical Diseases in the Tropical and Subtropical War Areas*, 1919, p. 69.
3. Manson-Bahr, P.: *Manson's Tropical Diseases*, London, 1921, p. 473.
4. Wenyon, C. M.: Observations on the Common Intestinal Protozoa of Man: their Diagnosis and Pathogenicity, *Journ. Roy. Army Med. Corps*, 1915, vol. xxv, p. 630.
5. Dobell, C., and O'Connor, F. W.: *The Intestinal Protozoa of Man*, London, 1921.
6. Phillips, L. P.: *Amoebiasis and the Dysenteries*, London, 1915.
7. Lambl, W.: Beobachtungen und Studien aus dem Gebiete der pathologischen Anatomie und Histologie (Loschner u. Lambl). Aus dem Franz Joseph-kinder-Spitale in Prag, 1 Theil, Sect. xiii (6), *Zur Pathologie des Darms*, 1860, p. 365.
8. Wenyon, C. M.: Histological Observations on the Possible Pathogenicity of *Trichomonas intestinalis* and *Chilomastix memili*, *Journ. Trop. Med. and Hygiene*, 1922, vol. xxiii, p. 125.
9. Böeck, W. C.: *Chilomastix memili* and a Method for its Culture, *Journ. Exper. Med.*, 1921, vol. xxxiii, p. 147.
10. Da Fonseca, O. O. R.: Sobre os flagelados parasitos (5a Nota previa) *Brasil-Med.*, 1917, vol. xxxi, p. 417.
11. Chatton, E.: Culture indéfinie d'un *Trichomonas intestinalis* du cobaye, essais de purification, action morphogène des milieux sur la membrane ondulante, *C. R. Soc. Biol.*, 1920, vol. lxxiii, p. 69.
12. Gulland, G. L., and Goodall, A.: *The Blood: A Guide to its Examination*, Edinburgh, 1914, p. 79.
13. *Medical Problems of Flying*, Special Report Series, No. 53, Medical Research Council, 1920.
14. Barlow, N.: Studies on Trichomonas, *New Orleans Med. and Surg. Journ.*, 1916, vol. lxi, p. 299.
15. Dale, H. H.: Treatment of Carriers of Amoebic Dysentery, *Lancet*, 1916, No. 11, p. 185.
16. Dale, H. H., and Dobell, C.: Experiments on the Therapeutics of Amoebic Dysentery, *Journ. of Pharmacol. and Exper. Therap.*, 1921, vol. x, p. 399.
17. Low, G. C., and Dobell, C.: Three cases of *Entamoeba histolytica* infection treated with Emetine Bismuth Iodide, 1915, *Lancet*, No. 11, p. 313.
18. Birt, C.: Phlebotomus Fever in Malta and Crete, *Journ. Roy. Army Med. Corps*, 1910, pp. 142 and 233.
19. Doerr, R.: *Das Pappalacifer*, Leipzig, 1909, p. 101.



## EFFECTS OF EXCESS OF CALCIUM ON THE SKELETON.

BY

V. KORENCHEVSKY, M.D.

(From the Department of Experimental Pathology, Lister Institute.)

In my previous communications (1921-22) I determined the influence of a normal diet (N diet) or a diet deficient in fat-soluble factor (-A diet) upon the composition and structure of the skeleton of rats. These diets contained 0.25 to 0.26 per cent. Ca (about 0.4 per cent. in air-dry diet). This amount of calcium was acknowledged to be sufficient but not excessive, being rather near to the border-line of the physiological requirements of the organism.

There is a form of rickets induced solely by a deficiency of calcium in the diet—"rickets from calcium starvation." This is completely cured by the addition of calcium salts to the diet. Other forms of rickets develop on diets containing a sufficient amount of calcium, and the ingestion of even excessive amounts of lime salts is not usually followed by a complete cure. In Orgler's (1911) opinion the increased introduction of calcium is useless, as the capacity to deposit calcium in the bones is lost during the active stage of the disease. Grosser (1920), however, found that considerable retention occurred in rickety children when the calcium was introduced subcutaneously in the form of a glycerophosphate.

The question is, to which of these two groups of rickets do the affections of the skeleton, obtained by me (1921-22) in rats by means of -A diet, belong? It is also an interesting question whether, and to what extent, it is possible to increase the calcium content of the skeleton of a normal animal kept on the normal (N) diet used by me by the ingestion of large quantities of calcium.

For the purpose of solving these questions I conducted seven experiments. They were conducted on 39 rats, belonging to seven litters. The technique of the experiments was, on the whole, similar to that used by me in my previous experiments. The rats were fed on the same basal diets: (1) normal (N), containing a liberal amount of fat-soluble factor; (2) deficient in this factor (-A). The different conditions introduced into the present experiments, and clearly seen from Table I, were as follows: (1) In diets N2, N3, -A2, -A3, the amount of calcium was increased by the addition of  $\text{CaCO}_3$ , and (2) the normal diet of some rats contained as the source of fat-soluble factor butter only, without any cod-liver oil (NB).

TABLE I.

Diet.	Percentage of Fat in Fresh Diet.	Amount of Calcium in Fresh Paste.	Amount of Calcium in Air-dry Diet.
NB	11 per cent. butter	Per cent. 0.26	Per cent. 0.4
N1	8 per cent. butter + 2 per cent. cod-liver oil	0.25	0.4
N2	Ditto	0.52	0.8
N3	Ditto	0.77	1.18
-A1	10 per cent. cottonseed oil (no fat-soluble factor)	0.26	0.4
-A2	Ditto	0.52	0.8
-A3	Ditto	0.77	1.18

In all of the above diets about 0.5-0.51 per cent. phosphorus was present in fresh paste and about 0.77 per cent. phosphorus in the air-dry diet. The amount of calcium in the different diets was determined by McCrudden's method, that of phosphorus by A. Neumann's method. Shipley, Park, McCollum, Simmonds, and Kinney (1922) consider the optimum calcium content in air-dry diet about 0.67 per cent.; in their opinion, about 0.4 per cent. phosphorus represents the minimal content on which optimal development can take place. For comparison with the figures of these authors, my figures in Table I, "in air-dry diet," should be used.

Details of the experiments are shown in Tables II to V. The average consumption of food per diem by the different litters of rats was as follows:

	NB.	N1.	N2.	N3.	-A1.	-A2.	-A3.
Litter 638 ...	STIM. 17	STIM. 17	STIM. 17.5	STIM. 20	STIM.	STIM.	STIM.
Litter 640 ...	—	24	18	—	—	—	—
Litters A, B, C ...	15	18	16	15	10	12	11
Litter 689 ...	—	—	—	—	—	—	6.7
Litter of rats 701-705 ...	—	—	—	—	11.5	13	14

In some cases it was observed that the average consumption was greater when the food contained a greater amount of calcium.

## Results of Chemical Investigation.

An examination of the figures in Tables II to VI shows the following:

TABLE II.

Changes in the skeleton of two litters (638 and 640) of rats kept on normal diets. Litters 638 and 640 aged at the beginning of diet 19 and 41 days respectively; final age, 101 and 110 days; duration of feeding, 61 days.

No. of Rat.	Diet.	In Dry Bone.	No. of Rat.	Diet.	In Dry Bone.
638 A...	N1	Ca % 22.0	638 D...	N2	Ca % 23.5
638 B...	"	22.8	638 E...	"	23.7
640 A...	"	22.3	638 H...	"	21.8
Average ...		22.4	640 B...	"	22.0
638 G...	N3	23.6	Average ...		23.0
638 K...	"	22.8			
Average ...		23.2			

TABLE III.

Changes in the skeleton of three litters (A, B, and C) of rats kept on normal diets. Litters A, B, and C when put on diets, aged 22, 24, and 26 days respectively; final age—82, 84, and 86 days; duration of feeding—60 days.

No. of Rat.	Diet.	In Dry Bone.	No. of Rat.	Diet.	In Dry Bone.
668 A...	NB	Ca % 21.3	666 A...	N2	Ca % 21.2
675 B...	"	21.3	673 B...	"	21.4
692 C...	"	21.3	680 C...	"	21.6
Average ...		21.3	Average ...		21.4
655 A...	N1	21.2	657 A...	N3	22.6
672 B...	"	21.4	674 B...	"	21.4
686 C...	"	21.7	681 C...	"	22.5
Average ...		21.4	Average ...		22.2

TABLE IV.

Changes in the skeleton of rats taken from the same three litters, shown in Table No. 3 but kept on -A diet.

No. of Rat.	Diet.	In Dry Bone.	No. of Rat.	Diet.	In Dry Bone.
669 A...	-A1	Ca % 11.2	671 A...	-A3	Ca % 13.1
676 B...	"	15.8	678 B...	"	11.2
683 C...	"	14.8	685 C...	"	11.9
Average ...		13.9	Average ...		11.9
670 A...	-A2	16.7			
677 B...	"	17.7			
684 C...	"	15.3			
Average ...		16.6			



TABLE V.

Changes in the skeleton of rats 701-705, kept on -A diet. Litter, when put on diet, aged 27 days; final age, 65 days. Duration of feeding, 49 days.

No. of Rat.	Diet.	In Dry Bone.	No. of Rat.	Diet.	In Dry Bone.
Normal rats of same age	N 1	Ca % 20.5	703	-A 2	Ca % 18.7
701	-A 1	16.9	704	-A 2	17.7
702	-A 1	16.9	Average		18.2
Average		16.9	705	-A 3	17.5

TABLE VI.

Changes in the skeleton of litter 689 of rats kept on -A 3 diet. Litter 689, when put on -A 3 diet, aged 24 days; final age, 65 days; duration of feeding, 41 days. Mother kept on the same diet -A 3 during lactation.

No. of Rat.	Diet.	In Dry Bone.
Normal rats of the same age	N 1	Ca % 20.4
689 C	-A 3	13.2
" D	"	14.2
" E	"	12.5
" F	"	12.8
Average		13.2

**Normal Diet NB, without Cod-liver Oil.**—As is seen from Table III, when butter alone was used as a fat-soluble factor in the diet, and when the calcium content in fresh diet reached about 0.26 per cent, the calcification of the skeleton did not differ from that in rats fed on the same diet but with cod-liver oil substituted for part of the butter ration. The result was the same even when the calcium content in the latter diet was doubled (N 2 diet, see Table III). That is to say, some samples of butter, even when bought in winter, may contain such an amount of the antirachitic principle that even the addition of cod-liver oil to the diet does not increase the calcification of the skeleton.

**Normal Diets, N 1, N 2, and N 3, with Cod-liver Oil** (Tables II and III).—In these normal diets, containing butter and cod-liver oil as sources of the fat-soluble factor, the increase to double (N 2) or treble the amount (N 3) resulted either in no increase whatever in the calcium content of the skeleton, or in the calcification of the latter being increased very slightly (within the limits of physiological fluctuations).

**Diets Deficient in the Fat-soluble Factor.**—Among all the rats fed on such diets there was not a single case where the increase of calcium from 0.4 per cent. (in air-dry diet) to 0.8 per cent. (-A 2 diet), and even to about 1.2 per cent. (-A 3 diet), could restore the calcium content of the skeleton to the normal.

A great increase of calcium in the skeleton, in connexion with its increased content in the diet, was observed only in one litter (A, Table IV); but even in this case, as compared with the corresponding normal rat 667 A, in rat 671 A (on -A 3 diet) the calcium content of the skeleton was 27 per cent. less in fresh bone and 16 per cent. in dry. I came across a similar decrease in the calcification of the skeleton of rats kept on -A diet in other experiments (Korenchovsky, 1922, 3, p. 83). In another rat (670 A) from the same litter A, the calcium deficiency in the skeleton as compared with the normal rat 666 A was still more marked, being 31 per cent. (fresh bone) and 21 per cent. (dry bone). Besides this, in connexion with litter A it is necessary to mention the following. This litter was obtained from a dealer, and not reared in the Lister Institute, as was usually the case in my experiments. The diet of the mother rat during lactation, and of the young until weaned, was deficient in calcium (kitchen refuse, bread). This would explain the low calcium content of the skeleton of rat 669 (Table IV) of this litter on -A diet, such as I have never observed in rats fed on a normal diet during lactation, and which occurs only when the mother's diet during lactation is deficient in calcium or fat-soluble factor (Korenchovsky, 1922, C). In that case it is quite comprehensible that the ingestion of larger quantities of calcium caused a more rapid increase in the calcium content of the skeleton to the level

observed in rats on -A diet. The special experiment conducted by me and described elsewhere (1922, C, pp. 105-108) shows this very clearly.

In the case of four rats (677, 678, 684, 685) of litters B and C (Table IV), with an increased amount of calcium in the diet -A 2 and -A 3, the fluctuations of the calcium content in the skeleton kept within limits frequently observed in different rats of the same litter. For instance, in rat 678 on -A 3—that is, with the greatest amount of calcium—the calcium content in the skeleton was lower than that of rats 676 and 677 of the same litter, fed on -A 1 and -A 2 diets respectively.

In litter of rats 701 to 705 (Table V) there was slight increase in the calcium content of the skeleton of rats kept on -A 2 and -A 3 diets as compared with that of rats kept on -A 1 diet. These rats were born from a rat kept during pregnancy and lactation on a diet rich in fat-soluble factor. Therefore, owing to a congenital store of fat-soluble factor in their bodies they continued to grow fairly well, notwithstanding -A diet during the experiment. On autopsy they were found to be fat, well nourished, and with no signs of any macroscopical lesions in the skeleton. It is possible to suggest that some amount of fat-soluble factor, stored in the body of these rats, had enabled them to assimilate a larger, although not normal, amount of calcium when fed on diets containing an excess of calcium.

In contrast to this experiment was a cross experiment with litter 689 (Table VI) in whom the storage of fat-soluble factor was reduced to a minimum by feeding their mother rat during lactation on diet deficient in this factor, although rich in calcium (-A 3 diet). Notwithstanding the presence of an excess of calcium in diet -A 3 the calcium content of the skeleton of litter 689 was strikingly decreased (about 50 per cent. in fresh bone and about 35 per cent. in dry bone, below normal).

These two experiments indicate that even in the case of abnormally lowered calcium assimilation in rats kept on diets deficient in fat-soluble factor the degree of this assimilation depends upon a more or less complete exhaustion of the fat-soluble factor in the organism. Apparently an excess of calcium in the diet could be followed by slightly increased, although far from normal, assimilation of calcium, if the fat-soluble factor is not completely exhausted in the organism.

#### Histological Results.

Histological structure of the skeleton of rats kept on N B, N 1, N 2, and N 3 diets was normal and similar in all cases. I have mentioned in my previous communications that the ribs of rats kept on N 1 diet sometimes show slight concave flexure of the costo-chondral junction. I have observed this same feature in the ribs of some rats kept on normal diets containing a double or treble amount of calcium. Rat 682 on NB diet, which contained the smallest amount of calcium and no cod-liver oil, showed the most classical picture of normal skeleton.

In the experiments with litters A, B, and C (Table IV) the structure of the skeleton of rats on -A 2 diet was similar to that of rats kept on -A 1 diet. I described this picture several times. In rats of the same litters, kept on -A 3 diet, the histological changes in the bones were less pronounced, but these changes always vary on -A diet. In any case, the double amount of calcium (corresponding to McCollum's optimum amount of calcium in rat's food) had no influence on the structure of the skeleton. In these experiments histological changes in the bones of litters A, B, and C were found to be typical of late rickets—that is, without increase of the proliferating cartilage with some osteoporosis. This type of late rickets, slight or very slight, was also found in rats 701 to 705 (Table V). In litter 689 (Table VI), kept on -A 3 diet, but with an exhausted store of fat-soluble factor, moderately severe rickets was found. In these rats proliferating cartilage was two to four times more than normally increased, calcium deposition in the zone of provisional calcification was deficient, and the bones were as well osteoporotic. Therefore, the results of histological investigation were completely analogous to those of the chemical analysis and showed the importance of the exhaustion of fat-soluble factor from the organism in the development of rickets.

On the basis of the results of the experiments described above I think it possible to draw the following conclusions:

1. Butter bought in winter may contain a considerable amount of the antirachitic principle.

2. When the amount of calcium in a normal diet containing 8 per cent. butter and 2 per cent. cod-liver oil was increased



two or three times the calcification of the skeleton was either not increased at all or only slightly.

3. The ingestion of even very large quantities of calcium did not cure the rachitic calcium impoverishment of the skeleton of rats on a diet deficient in the fat-soluble factor.

4. When the exhaustion of the fat-soluble factor in the body of rats is not complete, an excess of calcium in diets deficient in fat-soluble factor may in some cases slightly increase the amount of calcium in the skeleton, though never sufficient to make the calcification normal.

5. On the basis of the data of the chemical and histological examination, the skeletal affections in rats on —A diet must be classed in the group of rachitic affections, which develop even with an excess of calcium in the diet.

## INTUSSUSCEPTION SUPERVENING ON CONGENITAL STENOSIS OF THE ILEUM.

BY

W. TURNER WARWICK, M.A., M.B.CAMB.,  
F.R.C.S.ENG.,

ASSISTANT SURGEON TO MIDDLESEX HOSPITAL.

CASES of intussusception as the result of congenital constriction of the small intestine form a group often emphasized in textbooks, but records of such cases are comparatively infrequent. In a series of 400 cases of intussusception at the London Hospital, Perrin and Lindsay<sup>1</sup> found only two due to this cause. According to Leichtenstein<sup>2</sup> intussusception as a result of congenital stricture is uncommon, as the dilated hypertrophied proximal segment is not easily invaginated into the small empty distal portion. The following case, therefore, seems of sufficient interest to record. I am indebted to the late Mr. T. H. Kellock for permission to publish it.

A boy aged 11 years returned home from school on June 30th, 1922, complaining of pains in the abdomen. On the 1st of August he was brought to the hospital by his mother, who stated that he had been vomiting; the sickness and pain continued throughout the night; next day the vomiting ceased though the pain persisted, becoming more severe at night. His condition became progressively worse, vomiting recurred, and he was admitted to the Middlesex Hospital on July 3rd. He was a tall thin boy of poor muscular development; his face was pale, drawn, and anxious, the tongue dry and furred, the lips and teeth were crusted. The temperature was 97°, pulse 124, respirations 28. The abdomen was distended and tender, especially in the lower part, and showed no movement on respiration. In the centre of the lower part of the abdomen was an indefinite swelling dull to percussion. No note was made as to visible peristalsis.

### Operation (by Mr. Kellock).

A right paramedial incision, 4 inches long, was made below the level of the umbilicus. The peritoneum was injected, and the cavity contained much blood-stained fluid. The distended and engorged small intestine which presented was followed down until the cause of the obstruction was reached in the lower ileum. This proved to be an intussusception. The greater part of it was reduced, but a portion some 4 inches long was irreducible, and showed gangrenous patches. Resection of this part was performed, and, as the patient's condition was bad, anastomosis was effected by a Murphy's button. The abdomen was closed except for a small gauze drain.

On the evening of that day the temperature rose to 99.4°, the pulse and respiration rate being 140 and 28. His condition remained critical for some days. Removal of the gauze drain on the fifth day released a discharge with faecal odour. By the eighth day the general condition showed slight improvement, but a fistula, freely discharging intestinal contents, had developed. The Murphy's button was not recovered until the twenty-eighth day. The escape of intestinal contents slowly diminished and the surrounding skin, which had been reddened and excoriated, began to heal.

The patient was discharged to a convalescent home seven weeks after the operation, with the fistula practically closed. His general condition was very satisfactory. He is now completely recovered, has put on weight, and looks robust and well.

The grant of the Medical Research Council and the hospitality of the laboratories of the Lister Institute have enabled me to carry out this work, and to them my thanks are due. I wish also to express my sincere gratitude to Professor C. J. Martin for his continuous support in this investigation, and to Miss M. Carr for her assistance in chemical analyses.

### REFERENCE.

- Grosser, P. (1920): *Zeit. f. Kinderheilk.* 53, p. 141. Koronchewsky, V. (1921): *BRITISH MEDICAL JOURNAL*, ii, p. 547. Idem (1922, a): *Arch. Ped. Med. Journ.*, 115, p. 612. Idem (1922, b): *Journ. Path. and Bact.*, 25, p. 1. Idem (1922, c): *The Etiology and Pathology of Rickets from an Experimental Point of View*, Rep. Ser. Med. Res. Council, No. 71. Sherry, L. F., Park, E., McCollum, E., Simmons, N., and May Kinney (1922): *J. Hopkins Hosp. Bull.*, 33, p. 215. Orgler, A. (1910): *Monatsh. f. Kinderheilk.*, 10, p. 373.

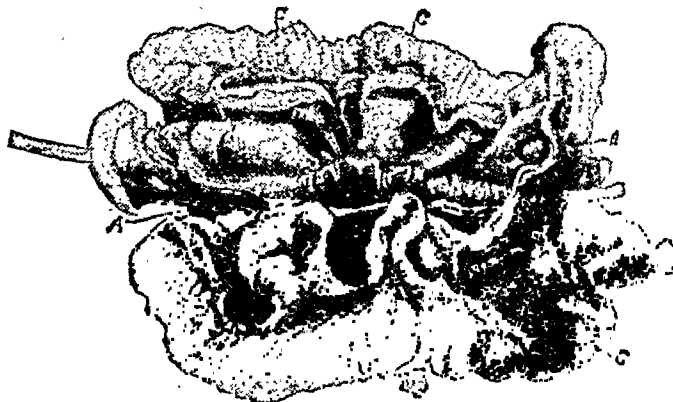
### The Specimen.

Examination of the specimen removed showed a pure enteric intussusception. When the two outer coats were divided longitudinally it was found that the intussusception had commenced by the invagination of a portion which was the seat of a congenital stricture into the part below. The stricture was over 2 inches in length, and the lumen of the gut at its narrowest part was not more than an eighth of an inch in diameter. The wall of the gut at the stricture is not much thickened, the external diameter being about a quarter of an inch. A nodule about the size of a hazel nut, which was incorporated in the wall of the gut, appeared to be the most advanced point of the entering layer; it was an effusion of blood into the tissues, probably secondary to the intussusception.

The whole specimen showed the congestion and ulceration usual in cases of intussusception of some days' standing.

The different ways in which a marked congenital stricture of the ileum may affect the life and health of an individual are well shown in the notes on three specimens in the Middlesex Hospital museum. Bland-Sutton,<sup>3</sup> who applies the name "imperfiorate ileum" to such deformities, has illustrated two of the specimens in his article in the *American Journal of the Medical Sciences* and in his book on tumours. In the first

specimen, which shows the condition to which he gives the name "septate ileum," the lumen is interrupted 36 inches above the ileo-caecal valve by a perforated diaphragm which reduces the diameter of the channel to a quarter of an inch. Externally a slight constriction marks its site. This septum had caused no symptoms, and was found post mortem in a man, aged 62, who had died from myocarditis and emphysema. The second specimen shows complete interruption of the ileum in an infant; the patient was under the care of Sir John Bland-Sutton, who diagnosed the condition and operated; death occurred, as it almost



The specimen removed at operation. (From a drawing by Miss D. Clephan.) The outer and middle layers have been opened up to show the congenital stricture. The most advanced point, B, shows the peritoneal surface; this on C, ulcerated or gangrenous portion.

invariably does. Only two cases are recorded in which an infant with complete stenosis in this region has recovered. In both of these the lesion was single, and it was possible to perform entero-anastomosis. When the condition is multiple death has so far invariably been the result. In many cases, according to Clogg,<sup>4</sup> even where the lesion is single, the lumen beyond the occlusion is either blocked with inspissated mucus or so narrow that the passage of meconium along it is still prevented.

The third specimen, recorded by Leopold Hudson,<sup>5</sup> was obtained post mortem from a boy aged 8, who died of peritonitis; until twelve months previous to his death the boy had been perfectly healthy and free from abdominal trouble. The specimen shows a segment of gut situated 38 inches above the ileo-caecal valve, so narrow for a length of three-quarters of an inch that it barely admitted a probe. This stenosed segment connected a hypertrophied and distended proximal portion of small intestine with a distal part apparently normal. A small perforation had occurred just above the narrow segment, causing a fatal result. The autopsy revealed an intussusception considered of an invaginated nature, formed by the invagination of the upper loop into the lower for a distance of approximately 2 inches.

Sir Arthur Keith<sup>6</sup> collected and grouped specimens of congenital strictures and occlusions of the alimentary tract of congenital



or obscure origin found in the museums of the Royal College of Surgeons and various medical schools. The total number of specimens was 86: the jejunum or ileum was affected in 15 (those having an associated Meckel's diverticulum were not included). Sir John Bland-Sutton has found that these stenosing abnormalities of the ileum are associated with the obliteration of the stalk of the yolk sac, and are sometimes complicated by a persistent Meckel's diverticulum.

Keith also collected from the same museums a total of 95 cases of Meckel's diverticulum, in 27 of which marked constriction or narrowing was found in the neighbourhood of this abnormal structure. The constrictions were of two kinds—those due to pressure or traction of the mesentery of the diverticulum as it crossed the ileum, and those due to irregular growth or expansion of the Meckelian loop of the ileum, the last part of the ileum to be differentiated off from the yolk sac. Of the 95 preparations, intussusception was present in 3, but whether any of these were due to constriction, as distinct from the diverticulum, is not stated.

Meckel's diverticulum is said to be present in 2 per cent. of all individuals. Since the rarer specimens showing a secondary lesion are likely to have been preserved at the expense of the more common ones, it would appear that intussusception associated with Meckel's diverticulum is somewhat rare. In the collection of Perrin and Lindsay, enteric intussusceptions form less than 7 per cent. of the total, and Meckel's diverticulum is responsible for 5 of these.

Bland-Sutton has pointed out how often congenital constrictions are found where embryonic diverticula occur. In the duodenum the common congenital occlusion is caused by a septum just above the entry of the bile duct, and is probably associated with the outgrowth of the embryonic buds of the liver and pancreas. In this situation, therefore, it occurs at the junction of the two different morphological parts of the alimentary tract, the foregut and midgut. In the ileum, stricture occurs most commonly in close relation to the site of a Meckel's diverticulum. It is not easy to see how this explanation accounts for all the occlusions of the ileo-jejunal segment.

The following cases illustrate the varieties of deformity that may occur in that region:

Keith's series include 3 cases of multiple stenosis (in 2 the jejunum was affected, in 1 the ileum), 1 case of complete occlusion just above the ileo-caecal valve, and 1 case in which continuity was interrupted just at the valve. In the 6 other cases of jejunal stricture of his series the deformity varied from local narrowing to complete absence of a segment of gut and mesentery.

Rock Carling<sup>7</sup> records a case of stricture just below the duodeno-jejunal flexure. Morley<sup>8</sup> describes a case of occlusion at the ileo-caecal valve.

The theories advanced in explanation of the strictures have been admirably expounded by Clogg, but the more important points may be recalled.

### 1. Relation to Diverticula.

Meckel's diverticulum can, according to Leichtenstern, occur at varying points along the jejunum and ileum. He gives cases in which a single diverticulum has been found near the mid-point of the ileum, at the ileo-jejunal junction, and even in the jejunum. Crymble<sup>9</sup> records a case of persistent vitelline duct connected with the appendix. Lamb<sup>10</sup> records cases where diverticula were seen in the jejunum (14 cases) and in the duodenum (7 cases).

More recent authorities state, however, that many true diverticula in the upper part of the ileo-jejunal segment are associated with accessory pancreatic buds. The relation of these diverticula to stenoses and occlusions has not yet been worked out. It is possible that, as in the development of the normal pancreatic buds, conditions which permit the formation of septa may be present. However, I can find no reported cases of developmental septa or constrictions in relation to such diverticula.

### 2. Relation to Proliferation of Mucous Membrane.

Tandler,<sup>11</sup> who first pointed out that the duodenal lumen in the human embryo of 30 to 60 days is more or less completely obliterated by proliferated epithelium, suggests that a similar epithelial occlusion may exceptionally be found in all parts of the embryonic intestine. Keibel,<sup>12</sup> in an embryo of 11.5 mm., found that the epithelium of the lower part of the intestines blocked the lumen in two places, but did not observe similar conditions in other specimens.

Although occlusion by septa, and even narrowing of the gut, might be accounted for by the persistence of this

obliteration of the lumen, it is not easy to attribute absence of a segment or absence of the mesentery to this cause. The narrowing which occurs in the duodenum when a septum is present merely indicates that development has stopped at an early period, without explaining the cause.

### 3. Failure in Evolution of the Intestinal Tract.

The jejunum, ileum, and proximal part of the colon are all developed from that portion of the midgut which overlies the yolk sac in embryos up to the end of the third week. It is possible, therefore, that strictures are brought about by irregular closing of this portion, but if such irregularities occurred, congenital dilatation of this segment might be expected to exist more commonly. It seems more likely that strictures arise during the subsequent elongation of the midgut and hindgut. Certainly irregularities occur in this process.

In Abernethy's case of a boy aged 12 the small bowel was only 2 feet in length, while the colon measured 4 feet.

Sir Alexander MacCormick<sup>13</sup> reports a still more remarkable case of a well developed man of 28 who had always had good health except for periodic attacks of vomiting. At an exploratory operation the stomach was found to fill the entire abdominal cavity, and to reach down to the pelvis. The small intestine was represented by a short segment 6 inches long, reaching from the duodeno-jejunal flexure to a caecum situated in the left hypochondriac region. No appendix was found, and a modified colon followed the course of the portion of the normal large intestine distal to the splenic flexure.

Failure in development of a small segment would give all varieties of stricture from mere narrowing to complete absence of a portion of gut with its mesentery. Certain factors have to be considered in relation to this lack of development.

(a) *Vascular Anomalies.*—Arrest of growth of the intestines, according to Jaboulay, depends upon vascular lesions—for example, embolism and thrombosis of the mesenteric vessels. It is easy to see that such lesions would cause such abnormalities, but proof of the statement is difficult. The same effect might be produced by congenital vascular defects, by dragging on the vessels by adhesions, or by pressure of tumours upon them. Davis and Poynter<sup>14</sup> found small lumina and sclerosis in the arteries of the segments affected in a case of multiple atresia of the jejunum.

(b) *Peritonitis* has been widely accepted as a cause of congenital stricture. Tubercle and syphilis provide the majority of such cases, but other forms are said to exist. The focal effect necessary for the production of single stenosis (the 'commonest type') is unusual in any such infection of the peritoneum.

### 4. Mechanical Causes.

(a) *Blocking of the lumen* by means of mucous plugs has been described as a cause of intestinal obstruction in infants, sometimes in relation to narrowing of the lumen, sometimes with a normal lumen. Its occurrence is rare, and the condition has little or no claim to consideration as a general cause of stricture.

(b) *Adhesions* formed in development or as a result of peritonitis are said to cause congenital strictures, either by compression of the gut by bands or by dragging on the vessels of the mesentery. They may also initiate a volvulus.

(c) *Volvulus* is believed to account for some cases. Morley attributes his own case to this cause, and suggests that it may explain Waterston's<sup>15</sup> case also.

It must be remembered that the intestines undergo a complete counter-clockwise turn in passing from the foetal to the adult position. The stalk of the vitelline duct has usually disappeared before rotation commences. If, however, involution of the duct fails, so that attachment to the umbilicus persists, the possibility of a clockwise strain at the point of attachment of Meckel's diverticulum must be borne in mind. A specimen of a Meckel's diverticulum retaining its umbilical attachment is illustrated by Evans.<sup>16</sup> The same possibility is present whenever a peritoneal band attaches the foetal gut to the anterior abdominal wall at an early stage. The question arises as to whether a case of multiple congenital stricture may have arisen from multiple volvuli.

Volvulus, when present, is usually clockwise, but many turns are present. It may be that it is a continuation of the process started as above, but there is no proof of such an origin. It may equally well have arisen in a more haphazard way at an early stage, or the volvulus may be a secondary factor in a gut already the subject of atresia.

The theory that congenital constrictions arise from torsion might account for those cases in which there is irregularity



or absence of the mesentery; it does not, however, account for those specimens which show mere narrowing, but no suggestion of torsion, and no disturbance of an orderly vascular arrangement. It can only play an occasional part in the formation of intestinal abnormalities.

(d) *Intussusception* was undoubtedly present in the constricted portions found in the cases examined by Braun and Chiari,<sup>16</sup> but again the normal anatomical arrangement of the vessels present in many cases of simple narrowing is against this as a universal cause.

In considering the recorded cases of congenital stricture of the ileo-jejunal segment two points are striking: First, that the segment may be affected in any part of its length by single or multiple constrictions, which, when considered as gross anatomical lesions, resemble one another closely, and in their difference in degree tend to form definite steps in a series. Secondly, that these apparently similar conditions have been credited with widely divergent origins.

The causes given above in the mechanical group do not apparently occur sufficiently often to disprove the possibility of their being associated lesions—secondary developments in portions of gut already malformed. It is difficult, therefore, to avoid the conclusion that there is some common primary etiological cause underlying all these lesions.

The two factors that would appear to account for the majority of these cases are: deficient evolution of the intestinal tract and excessive involution of the vitelline duct, but the details of the processes underlying these departures from the normal are at present little understood.

## REFERENCES.

- <sup>1</sup> Perrin and Lindsay: *Brit. Journ. Surg.*, 9, 43, July, 1921. <sup>2</sup> Leichtenstern: *Zimmern's Cyclopaedia of Medicine*, vol. vii, 477. <sup>3</sup> Bland-Sutton: *Tumours, Innocent and Malignant*, 1922; *Amer. Journ. Med. Sci.*, 1889, vol. 98, 457. <sup>4</sup> Clogg: *Lancet*, 1904, ii, 1770. <sup>5</sup> Hudson: *Trans. Path. Soc.*, vol. xl, 1889. <sup>6</sup> Keith, *BRITISH MEDICAL JOURNAL*, 1910, i, 301, 376. <sup>7</sup> Rock Carling: *Ibid.*, vol. i, 435. <sup>8</sup> Morley: *Brit. Journ. Surg.*, 9, 46, July, 1921. <sup>9</sup> Crymble: *Ibid.*, 9, 304, 1921. <sup>10</sup> Lamb: *Amer. Journ. Med. Sci.*, 1893. <sup>11</sup> Tandler: *Archiv. Jahrb.*, 1900, Bd. 23, 187. <sup>12</sup> Keibel and Mall: *Human Embryology*, 1912, 325. <sup>13</sup> Waterston: *Journ. Anat. Surg., Gyn., and Obst.*, vol. 7. <sup>14</sup> Davis and Poynter: *Prager med. Woch.*, 1888. <sup>15</sup> Evans: *Lancet*, 1915, i, 1217.

## OPTIC ATROPHY.\*

BY

R. E. WRIGHT, M.D., B.Ch., MAJOR I.M.S.,

SUPERINTENDENT, GOVERNMENT OPHTHALMIC HOSPITAL, MADRAS.

"OPTIC ATROPHY" is a term applied to a pale condition of the disc when some or all of the fibres of the visual path as they pass through the foramen sclera are degenerated. Pallor does not always mean atrophy, but when associated with a permanent defect in the visual field it probably represents atrophy. The cause of pallor is not always very obvious; in some instances it is determined by emptiness of capillaries at the disc; in the grey pallor of tabes it is difficult to say what the coloration is due to; in post-papillitic pallor the fibrous tissue elements decide the whiteness.

In a degeneration of the nerve such as is met with in tabes or disseminated sclerosis there is a wasting of the nerve elements due to constriction by the proliferation of the supporting structures with the minimum of inflammatory change. In this type of case the neurone is affected in the course of its axis-cylinder process. Should the neurone be affected at the cell level—that is, in the retina—the axis cylinder undergoes degeneration, which may produce a very similar picture as, for instance, in alcohol-tobacco combined poisoning.

A direct compression of the neurone between the disc and the lower visual centres (for example, pituitary enlargement) gives rise to a simple degeneration which takes place fairly rapidly towards the retina as well as towards the brain. A different picture results from a stasis at the nerve head, produced by pressure of cerebro-spinal fluid, such as occurs in brain tumour. Here there is much swelling of the supporting tissues; the pressure affects the neurone, but not for some time, and, although inflammatory products are not in evidence, the subsidence is attended by proliferative changes of the glial and endothelial elements; formation of fibrous tissue and compression of the nerve elements ensue. In neuritis the fluid in the subarachnoid space round the nerve may not be under increased pressure, but there may be an inflammatory condition of the meninges clothing the nerve and of the pial

septa with vasculitis and cellular changes. Here the subsequent proliferation is marked and perivascular proliferation leads subsequently to marked contraction of the vessels. Even in a simple occlusion of the central artery, where the neurone suffers from sudden deprivation of nutrition and death at the level of the retina, there is a perivascular proliferative change at the disc productive of fibrous tissue. The amount and distribution of the fibrous tissue give a clue to the cause of the atrophy, and the appearance of an atrophic disc is determined by the relative changes which take place in nerve element, interstitial tissue, and vessels respectively. It may be an advantage to think of the general causation under three heads:

1. Initial damage to the neurone itself (parenchymatous).
2. Initial damage to the supporting tissues, with or without oedema or inflammatory exudate, followed by secondary damage to the neurone (interstitial).
3. Initial interference with the blood supply with secondary damage to the neurone (vascular).

Of all the causes of atrophy, congested disc is chief. It is of two main distinct types (different in method of production but very similar in ophthalmoscopic appearance), frequently referred to as papillitis and papilloedema. Both are associated with redness and swelling; but the one is active, the other passive. If a localized inflammation takes place sufficiently far back along the nerve the disc may not show any change, but this is not very common. With these points in mind, I show a rough tabular grouping of different types of optic atrophy, giving in brackets some of the common terms used in the books to designate different types. There is, of course, much overlapping in such a grouping and it cannot be regarded as accurate, but from a clinical point of view it may be thought useful.

## Types of Optic Atrophy.

1. Optic atrophy following direct damage to neurone by pressure or selective poisons, including subinflammatory increase in interstitial elements, excluding inflammation and oedema.
  - At the level of the retina: Methyl alcohol, alcohol, and tobacco; diabetes. (Axial atrophy; partial atrophy.)
  - At the level of the papilla and pars arteria centralis: Glaucoma; tabes, insular sclerosis. (Simple atrophy; spinal atrophy; primary atrophy; genuine atrophy; tabetic atrophy; grey atrophy; non-inflammatory atrophy.)
  - At the level of the orbito-cranial portion of nerve and tract: Pituitary diseases; insular sclerosis; tabes; fracture; hydrocephalus; carotid pressure. (Simple atrophy; secondary atrophy; descending atrophy.)
2. Optic atrophy following damage to neurone through post-inflammatory or post-oedematous change in supporting tissues.
  - At the level of the retina: Retinitis pigmentosa; retinitis (syphilitic) and choroiditis (renal). (Consecutive atrophy; ascending atrophy.)
  - At the level of the papilla and pars arteria centralis: Syphilis; renal disease; brain tumour; oxycephaly, etc. (Post-neuritic atrophy; post-papillitic atrophy; secondary atrophy.)
  - At the level of the orbito-cranial portion of nerve and tract: Acute true retrobulbar neuritis; periorbititis; orbital cellulitis and abscess; nasal sinusitis; influenza; encephalitis; acute infective diseases. (Secondary atrophy.)
3. Optic atrophy following damage to neurone and supporting tissues by deprivation of blood supply.
  - At the level of the retina: Arterio-sclerosis (with and without high blood pressure; embolism of central artery; quiniae. (Retinitic atrophy.)
  - At the level of the papilla and pars arteria centralis: Retrobulbar growth (?); haemorrhage into sheath; disease of central vessels (?).
  - At the level of the orbito-cranial portion of nerve and tract: Vascular disease.

The commonest variety of optic atrophy which we meet with in India is the post-neuritic atrophy of syphilis. Although a post-neuritic atrophy apart from the papil oedema and papillitis of cerebral tumour or meningitic disease may not be thought very common, in Madras there is no doubt that our most frequent atrophy is one which follows a mild insidious bilateral neuritis, which in no way resembles a papilloedema, inasmuch as all that can be seen during the neuritic stage is an almost flat dull-red disc with perivascular disc changes. Colonel Kirkpatrick laid stress on this variety during the period of his superintendency. In 284 cases of optic nerve diseases collected between 1914 and 1918, of which he took careful notes, syphilitic neuritis preceded this atrophy in by far the greatest number of cases. Of 58 cases of optic atrophy admitted to the wards in 1919 he states the bulk was syphilitic. The mildness of the neuritis and its insidious progress to a post-neuritic atrophy with a white

\* Abstract of an address delivered to the Madras Branch of the British Medical Association on February 5th, 1923.



disc, narrowed vessels, and an ill defined edge, induce one to think that the process is a localized perivasculitis of the nerve in the region of the papilla. The large vessels at first are normal; then the nasal arteries show white sheathing and narrowing, as also do the veins, until blindness eventually sets in with complete atrophy. There is no evidence of serous meningitis or cerebral symptoms. The fields usually show a generalized contraction for form and colours. It is very important to recognize these cases in the beginning, as they respond fairly well to mercury in the early stages. It is our custom to avoid arsenical preparations. I have on several occasions seen much harm done by the injudicious administration of large quantities of novarsenobillon and similar products.

In the atrophy of glaucoma one may get a pallor of the disc which I have often seen mistaken for simple atrophy. There are some cases in which a diagnosis is not at first clear. It may be a partial simple atrophy with the slightest cupping of the disc associated with giddiness, pain in the head, and other symptoms pointing to cerebral trouble. A careful perimetric investigation ought to disclose the true nature of such a case. The enlargement of the blind spot, as determined with the Elliot scotometer, and the nature of the contraction of the field will dispose of such conditions as are likely to give rise to bilateral simple atrophy. In addition, the peculiar features of glaucoma, such as intermittent increase of tension, help in making a diagnosis.

We must distinguish between ordinary renal disease and albuminuria arising during pregnancy. Ordinary renal disease, and in particular chronic interstitial nephritis, gives some of the most striking examples of papilloedema. As a rule the papilloedema is associated with retinitis, but there are certain cases in which this is not so, and here it becomes a matter of considerable difficulty to diagnose the condition from the papilloedema of brain tumour because certain of the pressure symptoms are very similar. We do not very often see optic atrophy which is the result of such nephritic cases because these patients commonly die not long after the establishment of the condition. This is not so, however, with the type of cases met with in connexion with pregnancy. Here one sees numerous cases of papillitis which apparently settle down altogether after the termination of the pregnancy. There seems to be much confusion about the signs and symptoms associated with the toxæmias of pregnancy, and the eye condition does not help in elucidating the mystery. All one can say is that from time to time, not very commonly, one sees post-papillitic atrophy, either partial or complete, with a history of onset associated with pregnancy, parturition, or the puerperium.

To the chemist and pharmacologist perhaps the most interesting group of atrophies is that associated with toxic neuritis (commonly called retrobulbar), in which the damage is directly to the neurone itself. A large group of substances is known to give rise to the disease called "toxic amblyopia," which is frequently associated with temporal pallor of the disc and true atrophy. It is unnecessary to quote the list at length: methyl alcohol, tobacco, ethyl alcohol, quinine, lead, carbon bisulphide, light arsenates are all included.

Last year we had a case in which a man had a "swig" of methylated spirit and was blind the next morning. By the time we saw him, some weeks later, there was complete optic atrophy. It would have been very difficult to tell from the appearance of the disc what the type of atrophy was; it might readily have been mistaken for the white disc and thread-like vessels of an old case of post-neuritic atrophy.

Quinine, although used in such enormous quantities in India, is in our experience rarely productive of atrophy. The effects of quinine on the eye seem to depend more on idiosyncrasy than dosage (provided the dosage is within medicinal limits). Some time ago, when the arylarsenates were more used, definite damage was done to the optic nerves. Fortunately tobacco does not as a rule produce atrophy; the vision usually returns to normal when the poison is cut off.

I turn now to some atrophies, both simple and post-papillitic, of surgical interest. The characteristic atrophy of pituitary enlargement or tumour in the neighbourhood of the pituitary body is of a simple, so-called secondary descending type. It is as a rule partial, and irregularly developed on either side; the characteristic feature in many cases is the peculiar field; there are no signs of brain tumour—that is to say, the ordinary pressure symptoms and papilloedema are absent. The appearance of the disc together with the peculiar field and x-ray investigation generally establish the diagnosis.

Most brain tumours produce an atrophy subsequent to papilloedema. It is sometimes very difficult to differentiate between the papilloedema of brain tumour, renal disease, and serous meningitis, such as might, for instance, occur in syphilis. Another rare but interesting type of case from a surgical point of view which is frequently associated with an optic atrophy of a post-papilloedematous type is oxycephaly.

From the point of view of public health I will briefly refer to a type of atrophy that we sometimes observe but know very little about. It appears in certain schools and similar institutions; the sequence of events is as follows:

The young patient is sent to the hospital for glasses because the vision is poor. We find that there is a definite drop in the visual acuity which is not accounted for by the condition of the discs. We also observe mild neuritis. As a rule the condition improves with food, tonics, and cod-liver oil. Associated with the condition very frequently is angular stomatitis. Certain cases of this group go on to a partial optic atrophy with general contraction of the fields. We have not been able to detect central scotoma, although at first sight one would expect to find central scotoma if the cases fall into the group of toxic amblyopias. It may be that the condition is purely one of nutritional disturbance.

Unsuitable and insufficient food with secondary alimentary disturbance is, I cannot help thinking, the big factor in many of our common pathogenic states—vascular degeneration, early senility, cataract, diabetes, etc.

A very interesting group of cases which form a potential source of optic atrophy is that associated with diseases of the nasal accessory sinuses and teeth. To save time I omit disease of tonsillar and otitic origin from the group. Neuritis, supposed to originate in infected sinuses or apical dental abscesses, has attracted much attention in the last few years. These cases are not only of peculiar interest to the throat, nose, and ear specialist and the dental surgeon, but also to the bacteriologist, who has taken a considerable part in their elucidation. It is stated in authoritative works that over 50 per cent. of nasal sinus trouble shows optic neuritis, and again that half the cases of unilateral optic neuritis are of nasal origin. Large numbers of papers on this topic have been published during the last three years, and Onodi's dissections show how nasal sinus disease may affect the nerve because of its contiguity. For the most part the cases we see are direct extension of inflammation to the cellular tissues of the orbit or through the large venous anastomoses which connect up the sinuses with the orbit. These are of course usually unilateral. Abscess of the orbit is quite common here, especially in children. It is very frequently mixed up with other conditions, and on this account many children lose their eyes from subsequent atrophy because the pus is not evacuated in time. The majority of cases of unilateral acute proptosis in children is due to abscess (this is not so in adults).

Local extension by venous or lymph channels may also take place from dental foci via the pterygoid plexus and the periosteum; but, apart from those cases in which there is an obvious local extension, a definite bilateral papillitis may sometimes be observed at the disc in which one must consider not only a local process originating in both nerves posteriorly (for example, posterior sinus disease), but also the possibility of a blood stream infection—the so-called focal infection.

A recent case showed a bilateral neuritis associated with considerable contraction of the fields and sectoral changes in the colour fields in which the only obvious cause was apical abscess. On removing the several teeth involved there was an immediate drop in the vision, which not only pointed towards the true cause, but taught one to be careful about stirring up extensive foci of infection. It would probably have been better to remove one tooth at a time.

As regards the reality of the connexion between apical abscess and eye disease, Benedict's work illustrates the way in which investigations in this field are dependent on the co-operation of bacteriologist, radiologist, dentist, nose specialist, and ophthalmologist.

Last year we had several very satisfactory cases in which drainage of infected sphenoidal cells was attended with clearing up of a neuritis. Here I must sound a note of warning to those who are unfamiliar with exploratory procedures of the nasal sinuses. Cushing, in a paper published in 1920, emphasizes the danger of these operations in the hands of the unskilled. My experience of a number of cases has been that, if there is obvious disease of the accessory sinuses associated with bad drainage, the smallest operation compatible with good drainage should be performed. The very gross cases of purulent sinusitis which are not uncommonly met with in Madras are to my mind more frequently



associated with globe trouble, such as unilateral scleritis and uveitis or cellulitis. If there is no obvious disease the smallest exploratory procedure compatible with an accurate diagnosis is indicated. I have seen no bad results from a careful extension of the sphenoidal ostium downwards, and at least it precludes retention in this all-important space. Indiscriminate cutting operations in the nose are without doubt almost as criminal as is a wholesale extraction of teeth on account of a suspected focal infection.

There are so many points in connexion with optic atrophy which interest the physician that it is difficult to pick out types for discussion. As regards general paralysis, it has been suggested to me by an eminent mental specialist that general paralysis is often missed in India. In this city I rarely see it. In the following two cases there was practically complete loss of vision in association with extensive central nervous system syphilis of a congenital type.

In one the partial atrophy is of a decidedly post-neuritic type, in the other it is of a primary or simple type. In the first case there was extensive neuritis and extensive paralysis. When we first saw this boy he was blind except for perception of light. Colonel Elwes, first physician, General Hospital, kindly took over the case. The patient is now able to see perfectly well and can get about. He has contraction of the fields, a slight degree of optic atrophy, but gets 6/5 central vision in each eye. He has a certain amount of spastic paralysis of the limbs, he is slightly deaf, has not had interstitial keratitis, but has the characteristic teeth.

In the other case the atrophy is of a simple variety, there has never been papillitis, the gait is of a spastic type, reflexes are increased, and vision is markedly reduced. The teeth are not in any way typical, but the two other members of Hutchinson's triad are present—the deafness and remains of an interstitial keratitis.

Finally, I mention the association of optic atrophy with the meningitides of childhood. We very frequently see double optic atrophy in children, either simple or post-papillitic, and as often as not we get a history of fever or fits preceding the onset of bad vision. The history is unreliable, and as in this hospital we do not come in much contact with the diseases of children, I would be very glad to obtain the views of general practitioners or physicians on the subject of meningitis occurring in children in which recovery takes place but which is followed by optic atrophy.

## DIPHTHERIA CARRIERS.

BY

LIEUT.-COLONEL F. W. SUMNER, M.D. CANTAB.,  
F.R.C.S. EDIN.,  
INDIAN MEDICAL SERVICE.

An outbreak of diphtheria occurred at a school in Simla in March, 1922. Eight cases occurred from March 14th to 23rd: they were all from the same source of infection—a boy who arrived from Karachi in March suffering from diphtheria; the others were direct contacts.

Sporadic cases occurred on the following dates: May 19th, 1; July 3rd, 1; July 7th, 1; September 9th to 19th, 4. There were 15 cases in all with one death (case of May 19th).

The interest in this outbreak lies in the question of carriers and what factors go to make "healthy carriers" as apart from "disease carriers." By the former I mean those who have shown no symptoms of the disease, and yet who have present in their throats diphtheria bacilli; by the "disease carrier" I mean those who have had a definite attack of diphtheria and have entirely recovered except that throat swabs still show the presence of diphtheria bacilli.

In this outbreak the whole school of 200 boys were given, in March, prophylactic injections of diphtheria antitoxin, and, later, as cases occurred, all contacts were given further prophylactic injections.

In the first batch of 200 there were roughly 5 per cent. who, after some days, developed mild anaphylactic symptoms (rashes and painful joints); after the subsequent injections this percentage increased to roughly 10 per cent., with rather more pronounced symptoms, but nothing of the nature of anaphylactic shock, nor, indeed, any such symptoms as to cause a moment's anxiety.

On May 20th examination for "disease carriers," by taking three consecutive daily swabs instead of the usual one from each of the eight cases who had recovered from diphtheria, showed one to be an intermittent carrier. On the occurrence of the cases in July a further examination of these cases, the three being increased to six consecutive daily swabs,

showed that six out of the original eight were intermittent carriers: these were duly segregated.

On September 9th, after two months' interval, another sporadic case occurred; all possible disease carriers—on the six day test—had been segregated; there was no other known source of infection. The health officer and I decided that it would be to the interest of the boys, in the presence of this unknown source of infection, to advise the governors to close school; we were of opinion that the school drains had nothing to do with the infection.

I decided to examine the throats of all the schoolboys and also the menial establishment with their families, and to mark down for bacteriological examination all those who had reddened throats or large tonsils. There were 59 such cases; one was an ambulatory case of mild diphtheria, both tonsils being covered by a creamy membrane; he was unaware that he was ill; his throat swab was positive; he had the signs and symptoms of a mild diphtheria. Of the remaining 58 cases 50 per cent. proved to be carriers. A few of the remaining 141 boys were examined as these had to remain behind for an examination, the remainder returning to their homes.

Thus one may say that of the 200 boys 15 contracted diphtheria, and out of the remainder (*plus* 14 of these) 80 were examined and 40 found to be carriers. Some 250 prophylactic injections of diphtheria antitoxin were given.

What are the facts of this condition of things? The drains had been the same for twenty years and no such epidemic had occurred before; the source of infection was the boy from Karachi; prophylaxis had been done on a large scale; an injection of diphtheria antitoxin neutralizes some or all of the toxins of any diphtheria bacilli present and thus prevents more or less the symptoms of diphtheria arising, but does not kill the germs that may be present—diphtheria bacteriolysin would be necessary for that purpose, but is not available in India.

We are driven to the conclusion that prophylaxis is a two-edged sword. We must, on the outbreak of diphtheria, give prophylactic injections to all contacts, but where antitoxin only is used it behoves us to be on the look-out for a crop of diphtheria carriers as a result. A recent bacteriological examination<sup>1</sup> carried out at the Royal Hospital for Sick Children and the school clinics, Liverpool, on a series of tonsils removed at that hospital, showed that in 30 per cent. diphtheroid bacilli were present. It is very probable that there is quite a considerable percentage of the public at large who are diphtheroid carriers.

From a clinical point of view there are three types of cases of "sore throat": (1) Where the clinical manifestations of a diphtheritic throat are present and where the bacteriological report is positive. (2) Where the clinical manifestations of a diphtheritic throat are present but where the bacteriological report is negative. (3) Where there are no clinical manifestations of a diphtheritic throat and the bacteriological report is positive.

Classes (1) and (2) must both be regarded as diphtheria and treated accordingly. It is of interest that of the 15 cases of diphtheria which occurred during this outbreak there were two pronounced negative bacteriologically, and one of these was the only fatal case of the series; there was no error in technique in putting up the throat swab or delay in incubation of a smear from it.

As regards class (3) it is possible and probable that such cases are merely some inflammatory condition of the nasopharynx, and the bacilli found are non-pathogenic and non-causative of the condition; clinically there were several such cases in this series, which were nevertheless looked on and treated as diphtheritis.

### REFERENCE.

<sup>1</sup>N. Wall: The Bacteria of the Tonsils and Adenoids, BRITISH MEDICAL JOURNAL, November 25th, 1922, p. 1025.

THE Gifford lectures delivered in the University of Aberdeen in 1921 and 1922 by Dr. E. W. Hobson, F.R.S., Sadlerian Professor of Pure Mathematics in the University of Cambridge, will be published in a volume this summer by the Cambridge University Press. In the lectures an attempt was made to settle the relation of "that complex of knowledge and ideas which is denoted by the term Natural Science" to religion and philosophy at the present day. The author has examined the historical development, aims, and true characteristics of the various departments of natural science, and arrives at the conclusion that many men of science have exaggerated our dependence on natural science in our general outlook on the world and in present-day thought.



## Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

ACUTE AMOEBIC DYSENTERY IN A MAN WHO  
HAD NEVER BEEN OUT OF ENGLAND.

ALTHOUGH cysts of *Entamoeba histolytica* have been found in a small percentage of cases in persons who have never been out of England, yet acute amoebic dysentery is very rarely seen. Dobell says: "I do not believe that more than 10 per cent. of persons who become infected with *Entamoeba histolytica* ever suffer to any appreciable extent from their infection; and I think it very probable that even this is much too high an estimate." A few cases of acute amoebic dysentery occurring in persons who have never left England have, however, been recorded. Marshall in 1912 and Worster-Drought in 1916 each described a case.

A. C., transport driver R.A.F., aged 19, lived in a village in Dorset. He joined the R.A.F. eighteen months ago, and was stationed at Uxbridge, then at Manstone (Margate), and finally at Lee-on-Solent.

Neither he nor any of his family has had dysentery. He was well till February, 1922, when diarrhoea commenced. He did not report sick. Two days after returning to his home on holiday (August 6th) he first noticed blood and mucus in the stools, and these became more frequent and were attended with considerable pain. He was admitted into the Royal Victoria Hospital here on November 7th, 1922. As he did not respond to any treatment, Dr. Turton, the house-surgeon, sent me a freshly passed stool for examination on January 12th, 1923. This was of the consistency of pea-soup, of a deep brown colour, and almost homogeneous. In it I found numerous active amoebae, many of which contained several red blood corpuscles.

Films were made subsequently from small blood-stained masses, and were fixed whilst wet with corrosive sublimate and alcohol, with and without the addition of acetic acid. They were stained with iron haematoxylin, Mann's methyl blue, and eosin, and with Giemsa's stain. Many of the amoebae contained red blood cells, and the nucleus had a delicate achromatic membrane lined with chromatin granules, and had a small spherical karyosome in the centre.

Having made quite certain of the nature of the disease, Martindale's capsules of emetine bismuth iodide (gr. iii), once a day, were given for twelve days. All the patient's symptoms, which had been in existence for eleven months, ceased, the stools became solid, and he gradually regained his strength.

Numerous examinations were subsequently made, but no cysts of amoebae were found.

I can only conjecture that his infection was from *Entamoeba histolytica* cysts of some carrier in the R.A.F.

ALFRED C. COLES, M.D., F.R.S. Edin.

Bournemouth.

## AIR-BALL IN TRACHEA.

The following account of a case of death from asphyxia may be of interest.

A. S., aged 6 years, was brought to the Metropolitan Hospital dead on the evening of March 5th, 1923. There was a history of the child having swallowed a toy balloon some few minutes previously. The lips, face, and finger-tips were intensely cyanosed.

The necropsy revealed that the balloon was lying in the trachea, at its bifurcation, and that the mouth-piece of the balloon was projecting into the right bronchus. The position of the balloon was such that any attempt by the victim to expel the balloon would have resulted in air from the right bronchus passing into the balloon and inflating it.

JAMES I. LYONS, L.M.S.S.A.,  
Casualty Officer, Metropolitan Hospital.

## COLLOID ARGENTUM IN RUPTURED PERINEUM.

It often happens in midwifery practice that, in spite of every care and attention at birth, the torn perineum refuses to heal after being sutured. For this reason I desire to bring to notice my experience with colloidal argentum.

Recently I had a bad forceps case with a rigid perineum; early rupture of the membranes took place; the perineum was torn from the fourchette to the sphincter ani (but not involving it); there was also a lateral tear into the left labium, which bridged across the head in its descent and required cutting before the head was born.

Several sutures (silkworm gut) were used, but all had to be taken out on the third day as they had become sodden. I told the nurse

on the following day to paint the raw surfaces with equal parts of "Oscol" argentum and distilled water night and morning, and I then put in three catgut sutures. A fortnight after the date of labour the surfaces had come together and the patient was able to get about.

It is more than five years since I first used a similar preparation in a case accompanied by gonorrhoeal vaginitis and obtained satisfactory results. Since then I have used it in cases where stitches have failed owing to septic changes, or had become absorbed before the perineum was healed; in some cases I inserted fresh catgut sutures as late as the fifth or seventh day after labour. In every case I have had complete satisfaction. Instead of having a glazed surface when the torn perineum has failed to unite after primary suture, by simply applying the colloidal argentum it has produced raw bleeding surfaces, which have knit together very quickly.

It may be argued that the torn surfaces would probably have healed without any applications, simply because they were kept clean; but I do not think that catgut sutures inserted, for the second time, a week after (as has happened in a case of mine) would have done their work so well.

D. MONTAGUE B. SNELL, M.R.C.S., M.R.C.P.

Nottingham.

## BRONCHOPNEUMONIA IN A CENTENARIAN.

A CENTENARIAN is rather a *rara avis*, so that the following notes on a lady of 103, who recovered from a moderately severe attack of bronchopneumonia, may be of interest.

Mrs. C. had been bed-ridden for some years as a result of an injury eight years ago, but had retained her memory and mental alertness; she had enjoyed good health until March 1st, 1923, when she contracted a chill.

I was called to see her on March 7th; she was flushed and restless, and suffering from a harsh, dry cough with short, rapid respirations. The temperature was 103°, the pulse 140, and the respirations 44. There were sordes on the tongue and lips. Examination (which was superficial, owing to her condition) revealed harsh rhonchi all over both lungs, with an area of diminished resonance, crepitations, and some bronchial breathing in the left base in the axillary line.

For six days her condition was critical, then defervescence gradually set in, and by the end of a fortnight convalescence was fairly established.

On April 5th, however, senile gangrene began in the right foot and four days later the patient died.

F. ARNOT BEARN, D.S.O., M.C., M.D.

Strathpeffer, Ross-shire.

## SYPHILIS INCONTINUIT IN SCHOOL CHILDREN.

The following three cases of accidental acquired syphilis, which were recently seen at Cardiff School Clinic, are recorded as pointing to the prevalence of this condition in children and the possibility of the disease being overlooked:

A boy, aged 13, was brought by his sister who said he had ringworm. On further questioning she stated that he had sores between his legs and that there had been a sore there some three months previously for which ointment had been used. On examination he was found to have very marked syphilitic alopecia, anal condylomata, and general adenitis. The Wassermann reaction was positive and well marked.

A boy, aged 13, was reported as suffering from impetigo and ringworm and had been treated as such for some weeks. There was a somewhat indefinite history of a sore on the tongue four months previously. At the time of examination alopecia was very marked, and there was a serpiginous scaly rash on the scalp, trunk, and limbs, impetigo in places, especially on the scalp, and general adenitis. The Wassermann reaction was positive and well marked.

A boy, aged 12, according to his mother, had had chicken-pox (? pustular syphilide) a week or ten days earlier, and was now suffering from ringworm and sores on his body. On examination he showed a copper-coloured squamous syphilitic resembling psoriasis, impetiginous areas on scalp, alopecia, general adenitis, and ulceration of the mouth and left tonsil. The Wassermann reaction was positive and well marked. The mother remembered the boy having a sore in his mouth and swollen glands in the neck some months ago.

All the cases cleared up rapidly after a course of novarsenobenzol injections and grey powder at the venereal disease clinic.

The source of infection was not definitely traced in any of these cases, although the home condition of one of the boys was very unsatisfactory. The superficial resemblance which the cases bore to ringworm, impetigo, and psoriasis diverted attention from the possibility of secondary syphilis, and it was only after a more complete examination that the true nature of the disease was established.

H. SHEASBY,  
Assistant, Cardiff V.D. Clinics.



## Reports of Societies.

### MANGANESE IN CHEMOTHERAPY.

At a meeting of the Dermatological Section of the Royal Society of Medicine, with the President, Dr. H. G. ADAMSON, in the chair, Mr. J. E. R. McDONAGH read a paper on manganese as a chemotherapeutic agent. He said that clinical experience with arseno-benzene led him to believe that the drug did not attack the *Leucocytozoon syphilidis* directly, but indirectly through the protein particles in the plasma. Seeking an explanation of the action of chemotherapeutic drugs he came to the conclusion that metals acted as catalysts in the oxidase reaction and non-metals as catalysts in the reductase reaction; further, that metallic preparations increased the number of protein particles and augmented their negative charge, while non-metallic preparations caused the protein particles to agglutinate and diminished their electric charge; in short, that metals acted as conductors of electricity and non-metals as condensers. Micro-organisms behaved in varying degree as condensers; thus among coccogenic bacteria the staphylococci were the most feeble, and of protozoa the *Leucocytozoon syphilidis* was the most potent. Conduction increased the number of the protein particles, diminished their size, hastened their movement, and augmented their negative charge. This meant that the expanse of surface exposed to the parasites was increased enormously and the additional negative charge enabled the protective substance to turn the tables on the parasites. If the parasites lost sufficient negative electricity they underwent lysis and were destroyed. All the immunity tests were based on the electrical relationship between the protective substance and the micro-organisms. As the conductor action of metals varied much, and as the nature of a metallic compound influenced its conductor effect, tests were devised to determine the degree of dispersion that could be produced, and several compounds were tried, first in simple and then in complex infections. Some idea of the conductor action of a metallic preparation could be judged by its ability to accelerate coagulation. Conductors parted with their electrons, and these, when taken up by Gram-positive micro-organisms, changed them to Gram-negative; the better the conductor the more rapid the change. Conductors raised the suspension stability of the blood and increased the percentage of blood-sugar in the plasma. Condensers diminished the number of particles and caused them to increase in size and agglutinate; retarded coagulation; made Gram-negative micro-organisms Gram-positive; and caused a fall in the percentage of blood sugar. The most suitable conductor was manganese, which in its colloidal hydroxide form was useful in the simplest infections. With the hope of finding a preparation equally beneficial in streptococcal and gonococcal infections he experimented, and found manganese butyrate the most efficient. In simple infections the degree of conduction required was not great, but there must be no condenser action. A 1 per cent. solution of manganese butyrate fulfilled these requirements. Of this preparation never more than three injections should be prescribed in any one course. In his experience two injections sufficed, and these should be injected intramuscularly in 1 and 1.5 c.cm. doses respectively, with three or four clear days' interval between them. Manganese butyrate was valuable in boils, carbuncles, erysipelas, whitlows, lymphangitis, and lymphadenitis, and useful in acute gonococcal urethritis, abscess formation, epididymitis, and in gonococcal septicaemia if given early. In septic conditions, including tonsillitis, quinsy, and even rhinitis, manganese butyrate should be given a chance before an incision is made. If prescribed in time the lesion would abort, while if pus had already formed a single injection would bring it to a head. The pus should be evacuated through a small incision, and dry dressings and not hot fomentations applied. In operations on septic bones and joints manganese butyrate expedited healing.

Dr. H. G. ADAMSON (President) confessed to great difficulty in following Mr. McDonagh's arguments clearly. Many of his theories were not supported by sufficient evidence, but he (the President) was not really competent

to offer any material comment, and he would be glad to hear remarks from others, particularly from those more conversant with biochemistry. On the practical side he congratulated Mr. McDonagh on having obtained in the long list of cases of different types of coccic infection the good results with manganese butyrate which his theories had led him to expect. He hoped these good results would be confirmed by the experience of others, and that manganese butyrate would prove to have the value in the treatment of lupus vulgaris which was predicted for it.

Dr. A. M. H. GRAY said he did not pretend to understand the elaborate experiments Mr. McDonagh had made in this research. His own experience of manganese had not been so favourable as that of Mr. McDonagh. He (Dr. Gray) found that in a case of boils which responded well to manganese almost miraculous results could be obtained from one or two injections, and, on Mr. McDonagh's advice, he had never given more than three injections, at two or three days' interval. But he had often found that some weeks afterwards there was a relapse, and then, at that stage, the giving of more colossal manganese produced no benefit. That occurrence did not seem to fit in with the explanation Mr. McDonagh had given. He was interested to hear from Mr. McDonagh that colloidal manganese contained no peptone, because he had assumed that one was not dealing with the effect of manganese at all, but with protein shock, which had a great effect on lesions of that type, but generally failed to bring the result off a second time.

Dr. HALDIN DAVIS said that Mr. McDonagh had once more given the profession a remedy of considerable value, as he had done when he introduced collosol manganese, which he (Dr. Haldin Davis) had used a good deal and with gratifying results. Having listened to Mr. McDonagh he was quite prepared to admit that manganese butyrate was probably a very useful remedy; but he failed to follow the arguments by which he supported his theory of the action of this drug; Mr. McDonagh employed a terminology entirely his own. He used the terms "condensation" and "dispersion" to denote some electrical change in the blood and tissue fluids, but he had not indicated how he measured the electrical changes thus adumbrated. He had said that a change of an electrical nature had in one direction caused a quicker coagulation of citrated plasma, while a change in another direction caused a diminution of the blood sugar. He (the speaker) was unable to follow the correlation between those changes and the postulated electrical phenomena. His opinion was that Mr. McDonagh very likely had found a useful remedy, but the discovery had really been made by the old method of trial and observation, and that its action was by no means due to electrical changes, which had never been actually demonstrated to be caused by its administration.

Mr. H. FINKLESTONE-SAYLISS summarized the results of treatment by manganese butyrate at the London Lock Hospital.

Mr. McDONAGH, in his reply, said that it had never been suggested to use manganese butyrate in lupus vulgaris. The clinical results with the butyrate were much superior to those with the hydroxide, especially in gonorrhoea. As for the criticisms of his paper, these could not be answered without reiterating what he had just read. No words had been coined, and the subject was extraordinarily simple, as he believed most would find when reading the article at leisure. He believed he was the first to find out that arseno-benzene did not attack the syphilitic micro-organisms directly, but indirectly through the protein particles in the serum.

### PELVIC ADENOMYOMATA.

A MEETING of the Obstetrical and Gynaecological Section of the Royal Society of Medicine was held on May 3rd, with the President, Dr. T. WATTS EDEN, in the chair. Dr. ARCHIBALD DONALD read a paper on the clinical aspects of adenomyomata in the female pelvic organs. He suggested that it was necessary first to get clear on the question of terminology. An adenomyoma was a tumour composed of glandular and muscular elements. The glands were lined by columnar cells, and were surrounded by, or rested on,



unstriated muscle cells and a stroma of small cells. The name "endometrioma" had been suggested. It were better not to use the term, since it implied the acceptance of a theory as to the mode of origin of the growths. Nevertheless there was no doubt that in some cases the elements in adenomyomata behaved like those in the endometrium. Sometimes the "cystogenous tissue" took on a decidua reaction during pregnancy, and in many cases the spaces were filled with altered blood—the result of haemorrhage during the menstrual periods. Other writers, again, believed that adenomyomata of the recto-vaginal space were the result of inflammation, and the strange term of "adenomyositis" had been invented.

Adenomyomatous growths were not confined to the female pelvic organs. They had been found in the intestinal canal and in the umbilicus. In the pelvis they were found in the uterus, the round ligaments, Fallopian tube, ligament of the ovary, the ovary, and recto-vaginal space. They might be present in only one of these positions, in more than one, or even in all six simultaneously. Probably the order of frequency was: ovary, pouch of Douglas, and less commonly the other structures, including the uterus.

He wished to make some remarks on the infiltrating ovarian cyst with tarry contents. Frequently these cysts were associated with adenomyomatous growths in the recto-vaginal space. They were situated on the back of the broad ligament, were often bilateral, never attained great size, possessed powers of infiltration or dissection, but were not truly malignant. They contained somewhat thick viscid contents of a tarry or chocolate-brown colour. These were now recognized—and the microscope confirmed the finding—as adenomyomata of the ovary, and it seemed probable that in some cases adenomyomata of the pouch of Douglas were derived from them, just as warty growths of the peritoneum were caused by a rupture of a papilliferous ovarian cyst.

Turning to the clinical side, the lecturer described 16 cases which had occurred in his practice in 1922. The youngest patient was 23 and the oldest 47. None had reached the menopause. Two were single. Of the 14 married patients 5, or nearly one-third, had never been pregnant. Of the 9 remaining, 5 had had one or more miscarriages. These figures seemed to indicate a relation between adenomyoma and sterility and abortions. The symptoms of adenomyomata were dysmenorrhoea, pain or pressure in the rectum, and dyspareunia. Dysmenorrhoea was the most common. It was usually most acute during the first day or two of the period. Profuse haemorrhage at the periods was complained of in 7, or nearly half the cases, but there was reason to believe that it was not a symptom of adenomyoma (unless the growth was in the uterus), but was due to some other coexisting condition of the uterus. The physical signs were: (1) Hard or irregular swelling or nodules felt through the posterior fornix. The nodules were generally not much bigger than a pea and might be smaller. (2) Indefinite resistance at one or both sides of the uterus, and sometimes definite enlargement of the ovary. (3) Retroposition of the uterus and limitation of mobility. Sometimes only one of these signs was discovered. Very acute dysmenorrhoea beginning before the onset of the period or during the first day, and often coming on some years after establishment of the periods, was very suggestive. Pressure on the rectum and acute dyspareunia were also important.

The operations performed varied in severity.

In 12 cases panhysterectomy or subtotal hysterectomy, with dissection of adenomyomatous growth from the pouch of Douglas or rectal wall.

In 1 case removal of one ovary and dissection of nodules from uterus and rectum.

In 1 case removal of fibroid by myomectomy, separation of rectum, and dissection of small adenomyoma from the rectal wall.

In 1 case removal of tarry ovarian cyst.

In 1 case dissection of recto-vaginal growth only.

He believed that adenomyomata were much commoner than was generally thought. Cases were often taken for pelvic inflammation or infected ovarian cysts. The ordinary blood cyst of the ovary was not adherent and was filled with normally coloured clotted blood or with fluid not having the viscid consistence of the contents of the tarry cyst. At operation the existence of adherent cystic ovaries

with viscid tarry coloured contents was present in 75 per cent. of cases. Adhesion of the rectum to the lower part of the uterus and the obliteration of the pouch of Douglas was practically always present in recto-vaginal adenomyoma, and after the adhesions were separated, if there was not found a distinct mass, the hard, round, little bodies could be felt.

The diagnosis before operation was not very difficult. The indefinite swelling on each side of the uterus indicating tarry ovarian cysts, the retroposition and limited mobility of the uterus due to adhesions of the rectum, or the hard irregular mass or round nodules, like gunshot, were all suggestive if not conclusive. Severe dysmenorrhoea was also very suggestive.

With regard to the type of operation necessary, he believed that when both ovaries contained tarry cysts and there was a mass or some nodules in the recto-vaginal space a panhysterectomy was indicated. So was it when only one ovary was diseased, but there was a large mass uniting rectum and uterus. If one ovary only was affected and there were merely small nodules in the pouch of Douglas, removal of the affected ovary and dissection of the nodules after separation of the rectum might suffice; but afterwards a careful watch was necessary. The conservative method applied still more to those cases where only one or two nodules were found in the recto-vaginal space.

Dr. H. R. SPENCER did not think the large cysts such as had been described were always adenomyomata of the ovary. Sometimes they were corpus luteum blood cysts.

Dr. HERBERT WILLIAMSON questioned the wisdom of leaving small pieces of the growth adherent to the rectal wall when complete removal would necessitate opening the rectum. He thought the growth would recur if in part left. He strongly advocated the use of x rays and radium in these cases.

The PRESIDENT thought that the reason there seemed to be no trouble with this condition at the menopause was that at that time the growth retrogressed.

Mr. L. P. PUGH afterwards read a paper on ovarian disease in cows.

## CEREBRAL TUMOUR.

At a meeting of the Section of Pathology of the Royal Academy of Medicine in Ireland, held in the Royal College of Surgeons on April 20th, with the President, Dr. W. D. O'KELLY, in the chair, Professor BOXWELL described a case of brain sarcoma.

The patient, a boy aged 4½ years, was admitted to hospital, suffering from convulsions. After a hot bath he recovered. Later on, he was brought back, suffering from another attack of convulsions; this time a hot bath did not cure him, and he had to be given chloroform. Before the attack of convulsions, the child had been very lively, very talkative, and rather precocious for his age. While in hospital, he vomited any solid food, and had severe headaches. When spoken to, he would answer intelligently, but his cerebration became slow and he would not answer for a considerable time after he had been spoken to. His pulse remained at 90, blood pressure 80, and temperature normal. The cerebro-spinal fluid was examined. It was under considerable pressure, but contained no cells. Later, he could only just tell light from darkness, and before he died he was absolutely blind. He died after eight weeks in hospital. The brain showed an extensive cellular infiltration extending under the pia. This consisted of round cells apparently sarcomatous, and he believed that he could trace their origin from the choroid plexus of the fourth ventricle.

Professor Boxwell added that he had called this case one of brain sarcoma, though he thought it might be a case of endothelioma.

The PRESIDENT remarked that the fact that the illness lasted only eight weeks was specially interesting. Dr. T. T. O'FARRELL could not see any connexion between the small tumour in the roof of the fourth ventricle and the main tumour. He had carefully examined the sections which Professor Boxwell had brought down, but he could not see any connexion between the two tissues. He would like to know if the question of chloroma had been considered, and what was the colour of the tumour before it went into formalin. Dr. J. T. WIGHAM said that it looked to him as if the cells in this tumour were very like those covering the choroid plexus, and that it was quite possible that Dr. Boxwell's suggestion of origin was correct. If that was so the tumour



might easily be endothelial in origin, although the cells were like those of a round cell sarcoma. Professor BOXWELL, in reply, said that the tumour was perfectly white in colour.

#### Two Unusual Cases.

Sir JOHN MOORE read notes on (a) a case of pneumonia with untoward sequelae; (b) carcinoma ventriculi, with unusual secondary developments.

The first patient, a girl aged 18, was admitted to hospital on January 1st, 1923. She had been ill for five weeks, suffering from what was stated to be pneumonia, which had started suddenly. This illness had apparently told severely on her, as on admission she was very thin and pale. She had a persistent cough, and sputum was brought up in abundance. On examination, Sir John Moore decided that it was a case of acute pneumonia which had failed to resolve, and that the outlook pointed to either pulmonary abscess, or supervening tuberculosis. The sputum was examined three times for tubercle bacilli, but each time the report was negative. A Widal test was carried out, and also proved negative. An exploratory puncture in the dull area over the base of the left lung was made twice, but without tapping any collection of fluid. The liver was greatly enlarged. Towards the end of January, the patient's condition became critical. She steadily lost strength and flesh. The lower limbs became anasarctous, and severe pain set in in the right thigh, apparently due to thrombosis, which finally extended up to the inferior vena cava. The breath and sputum were fetid. On February 20th a pleural friction rub was detected over the base of the right lung. The temperature became subnormal on February 24th, and remained so till the death of the patient, on February 27th. At necropsy the findings reported were: Abscess in (a) liver, (b) spleen, (c) left perinephric region, (d) lower lobe left lung. Oesophagus, liver, left lung, left kidney, all adherent to diaphragm. Pus from the liver abscess contained long chains of streptococci. Tubercles were found in the liver, which was extensively infiltrated with fat.

The second patient, a woman aged 56, was admitted to hospital on March 3rd, 1923. She was extremely emaciated, and wore a look of great physical suffering. She had been complaining for nearly a year of gnawing pains over the upper part of the belly, which was very tender on pressure. The pains at first were of a shooting character, but later were of a dull and gnawing character, and kept her awake at night. She was also suffering from loss of appetite, vomiting, constipation, and costiveness. Some months before admission she began to lose flesh rapidly, and during the first nine days in hospital she lost two pounds. Any attempt to take food brought on sickness, and she vomited frothy stuff, and, on two occasions, blood. Her pulse rate was persistently quick, 100 to 120, respirations 24 to 26, and temperature usually subnormal. On examination, a tumour in the lower part of the epigastrium, near the middle line, was found, and enlargement with hardness of the inguinal glands. A diagnosis of carcinoma of the stomach was made, and the case was pronounced to be inoperable. A screen examination of the stomach and duodenum was made, which confirmed the diagnosis. The patient lived until March 25th, when she collapsed suddenly, and died quickly of haemorrhage into the stomach. The *post-mortem* findings were: When the peritoneal cavity was opened, there was an escape of a large quantity of clear, straw-coloured fluid. The falciform ligament was greatly thickened, and was hard and nodular. The gall bladder was adherent to the duodenum. The pyloric end of the stomach was firmly bound down by dense adhesions. The spleen was closely adherent to the greater curvature of the stomach. The peritoneum had a number of nodules scattered over it, and there were several enlarged, hard glands in the mesocolon. The liver was rather small, but showed no secondary nodules. The stomach was small, the wall was hard and thickened. On opening, the stomach was found to be full of blood. In the posterior wall, near the pylorus, was a large, crater-like ulcer, with a fungating growth in the centre of it. The diaphragm was studded throughout with secondary growths, some of which were the size of a shilling.

Dr. BAREND VIVIER demonstrated the specimens. There were two abscesses in the first case, one in the liver, and the other in the base of the left lung penetrating the diaphragm and involving the spleen and left kidney.

Dr. T. T. O'FARRELL inquired as to the origin of the sepsis in the first case, and if a blood culture had been done. He also asked if the oesophagus was quite normal, because sometimes foreign bodies were found in the oesophagus and gave rise to conditions like those described. It would be interesting to know what the source of infection in this case was, and if it was a primary focus.

The PRESIDENT said that, regarding the first case, he was satisfied that there was no tuberculous lesion in the lungs, and he was inclined to think that this was not an ordinary case of tuberculosis, on account of the absence of tubercle bacilli in the sputum, but that the tubercles in the liver were a subsidiary chance infection. The second case was extremely interesting. He thought that haemorrhage in such a case was uncommon. The freedom of the liver from any growth was a point of importance.

Mr. HENRY STOKES said that, regarding the first case, before the needle was put into the patient's chest, she was  $\alpha$  rayed. There was, at that time, no pleural effusion, and, according to the  $\alpha$  rays, any abscess must have been small. It had certainly not penetrated the diaphragm.

Sir JOHN MOORE, in reply, said that in the first case no blood culture had been made. He had not looked for any evidence of actinomycosis. He was of opinion that this was really originally a case of pneumonia, and that the infection took its origin in a very seriously damaged left lung. The second case he looked upon as undoubtedly one of ulceration of the stomach, and he thought that this accounted for the illness up to a comparatively short time before death. The fact that cancer of the stomach often supervened on an ulcer was demonstrated in this case.

Dr. T. T. O'FARRELL read notes on cases of (a) cylindroma of parotid region; (b) adeno-sarcoma of kidney; (c) basal cell cancer of neck.

#### GASTRECTOMY FOR PRECANCEROUS ULCER.

A MEETING of the Surgical Section of the Royal Academy of Medicine in Ireland was held on April 27th. Sir WILLIAM I. DE' COURCY WHEELER, who was in the chair, showed a specimen (with  $\alpha$ -ray photographs) of total gastrectomy for precancerous ulcer of the stomach, and discussed the opinions of Rodman, McAuley, and others on the subject.

The patient was a woman, aged 60, who had a history, extending over fourteen months, pointing to a gross gastric lesion. A gastric ulcer was tentatively diagnosed, but was not definitely confirmed after  $\alpha$ -ray examination. On opening the abdomen a deeply excavated ulcer, about the size of a shilling, was discovered on the posterior wall, at the cardiac end. The edges were raised and hard, and the glands around the lesser curvature were enlarged. The age of the patient, the induration of the ulcer, and the nature of the glands at once suggested that malignant change had taken place, and, in any event, it was felt that such an ulcer in an elderly woman should be considered precancerous. Total gastrectomy was performed; de Martel's clamps were used to overcome the technical difficulties of the operation. A loop of jejunum was anastomosed to a fringe of tissue held by the clamp immediately at the oesophageal opening. The specimen showed an ulcer which macroscopically appeared to be malignant, but repeated microscopical sections showed no evidence of malignant change. There was some necrosis, with thrombosed vessels and an unusual amount of inflammatory reaction in the submucous coat.

Sir William Wheeler said that, apart from the generally accepted view that gastric ulcers predisposed in a large number of instances to the development of cancer, it was clear that a type of ulcer existed which would become malignant with almost absolute certainty, and should be treated by the most radical operative procedures. MacCarty in his study of precancerous conditions viewed this question from a histological point of view, but it was not possible to say by microscopic sections that cancerous cells not then present would not be present at a future date. The patient made an admirable recovery and now prefers solid to liquid food.

Dr. T. G. HARDMAN, who had made the  $\alpha$ -ray examination of the patient, showed the films. When an opaque meal was given, a very definite filling effect was shown on the lesser curvature in the recumbent position, but was not present when the patient was in the upright position. Consequently a tentative and not an absolute diagnosis of ulcer was made.

Mr. H. STOKES thought that no other operation than total gastrectomy could have been done.

Mr. W. PEARSON said that the patient made an excellent convalescence. He thought that there had been very little choice of what to do. An alternative to gastrectomy was gastro-enterostomy. He had performed gastro-enterostomy in one such case in which the ulcer felt indurated and the glands were enlarged, and in which it was utterly impossible to attempt excision; the result had been satisfactory; gastro-enterostomy should not always be looked upon as a useless procedure in cases of ulcer in the cardia.

Mr. C. J. MACAULEY considered that unless the surgeon was absolutely convinced that the ulcer was malignant, it was too radical to take out the whole stomach. Though he congratulated the President on the successful way in which he had carried out the operation, yet he felt that this case might have been dealt with by other means.



## Reviews.

### A TEXTBOOK OF DERMATOLOGY.

DR. ROBERT MACKENNA has produced a textbook of dermatology<sup>1</sup> distinctly above the average. It is quite reasonably comprehensive; we have not noticed any important omissions, while properly enough the commoner diseases are given a greater proportion of space than the rarer conditions. The reader is also materially assisted by the plan here adopted of employing type smaller than that used for the main body of the text for the less important conditions. Another good feature is the provision of tables of the diagnostic points of difference for the more important diseases which are liable to be confused with one another—for example, between syphilis and psoriasis, ringworm and alopecia areata, scarlatina and scarlatiniform erythema, and so on. These tables will be very helpful to the general practitioner in enabling him to make up his mind in doubtful cases. The general practitioner will also be glad to know that the subject of treatment is much more fully dealt with than in many dermatological textbooks and in a much more sensible manner. Full prescriptions are given in most instances and detailed directions for carrying out local treatment. Dr. MacKenna is fully alive to the important part x rays now play in the therapeutics of the skin, but we feel that he might with advantage have provided some general directions as to the type of apparatus best adapted for work in this field and some notes as to the technique. He does, indeed, give some of the points which must be taken into consideration in carrying out the Kienböck-Adamson method of epilating the scalp for ringworm, but he omits to state that the distance between the centres of the irradiated areas must be five inches; if the distance be less there is too much overlapping and consequent danger of an overdose. If the directions given by Dr. MacKenna be followed, in the case of a child with a very small head, the irradiated centres will be too close to one another, while on the other hand, if the child has an abnormally large head, the centres will be too far apart, so that there may be insufficient overlapping of the areas, and hence some portions of the scalp will not receive an adequate dose, and the hair will not fall.

The attitude of the author towards new work is praiseworthy. He is evidently prepared to test any new method of treatment which appears to him to offer a reasonable prospect of yielding satisfactory results. For example, he has tried vaccine treatment for ringworm (with the assistance of O. de Jong), and reports that the use of a vaccine produced from ringworm culture prevents the development of fresh areas of infection and reduces the duration of treatment when reliance is placed upon ointments alone. On the other hand, Dr. MacKenna remains critical in the face of investigators who claim the discovery of dermatological panaceas; he is quite alive to the importance of the phenomena of focal infections and sensitization to foreign proteins in the explanation of dermatoses; in fact, he devotes a chapter to the discussion of these interesting subjects, but he exercises caution in accepting them as an adequate solution of the many etiological problems presented by the various erythemata.

Another useful feature developed by the author more extensively than we have noticed previously is the provision of diagrams or charts of the body showing the sites commonly affected by some of the commoner eruptions—for example, scabies, psoriasis, and lichen planus.

Altogether Dr. MacKenna has produced a very useful and practical work, which is the more valuable because it is written in clear and racy language, and is full of details evidently drawn from the author's own extensive experience of dermatology. Occasionally he makes use of a happy and graphic metaphor, but he avoids laboured attempts at facetiousness, which are apt to become somewhat irritating. The illustrations are numerous and practically all original: the reproductions of photographs of cases under the care of the author and his late colleague, Dr. Stopford Taylor, are very good photographs, and in almost every case bring out clearly the points it is desired to illustrate. Dr. MacKenna has avoided the lure of the coloured plate, which may occasionally indeed be brilliantly successful, but which in

practice is usually unsatisfactory. Dr. MacKenna's manual, which is of reasonable size and weight, deserves commendation and recommendation.

### THE PHYSIOLOGY OF THE LIVER.

PROFESSOR G. H. ROGER, the distinguished Dean of the Faculty of Medicine of Paris, has been a life-long worker on the functions of the liver, and has made more than eighty contributions on this subject, dating from 1886, when, under Bouchard's inspiration, he began his series of publications on the antitoxic or protective action of this gland. He is therefore in a good position to give a broad review of its functions in health and disease, as he has done in his monograph, *Physiologie normale et pathologique du foie*.<sup>2</sup> The scope of the subject is enormous and attended with much difficulty, and the author frankly admits that the vast bibliography has not been completely covered; this is perhaps specially noticeable to English-speaking readers, for the author is not always familiar with our names and work—for example, in discussing the nerve supply of the biliary tract he refers to the conclusions of Brainbridge and Dole, and does not mention Meltzer's law of contrary innervation of the gall bladder and Oddi's sphincter at the lower end of the common bile duct, or Rous's work at the Rockefeller Institute on the secretion of bile and the function of the gall bladder. It is, however, natural that this volume should be rather a summary of an investigator's own extensive work and a correlation of it with existing knowledge than the encyclopaedic review of a critical compiler. Professor Roger is, of course, thoroughly familiar with the most recent work of the Paris school that has done so much for hepatic pathology, and constantly quotes it. As professor of experimental and comparative pathology in the University of Paris he is specially well equipped to deal with the pathological conditions of hepatic functions, and he constantly applies the results of experimental research in the laboratory to bedside practice.

After discussing the question as to the existence of jaundice due to the formation of bile pigment in parts of the body other than the liver, Professor Roger concludes that the extra-hepatic formation of bilirubin is as yet too uncertain to be regarded as definitely established. His caution is also shown with regard to the mechanism of the production of urobilin, for after tabulating five hypotheses the decision as to the correct one is left open. Provisionally three forms of jaundice are recognized—namely, obstructive, haemolytic, and that due to disordered function of the liver cells; the first includes emotional icterus due to spasm of the ducts; haemolytic jaundice is subdivided into that depending on fragility of the red blood corpuscles and that caused by changes in the liver, spleen, or other haemopoietic organs. In some instances the disordered action of the liver cells may be an excessive production of bile, as in Hanot's cirrhosis and possibly in spirochaetosis icterohaemorrhagica; in others the constituents of the bile are passed into the blood instead of the bile channels. In the section on the metabolism of fat reference is made to Professor J. B. Leathes's work and to Roger and Binet's observations on the process they call lipodieresis; fats are so acted upon by the blood and tissues as to lose their specific characters and be destroyed; in the liver and lungs this change is ascribed to a ferment lipodierase, the first modification being a transformation of saturated into non-saturated fatty acids. The glycogenic and antitoxic functions of the liver are fully discussed; and the volume, which brings together the author's work in a convenient form, can be recommended as a useful source of reference.

### CAUSES AND CONSEQUENCES.

*Causes and Consequences*,<sup>3</sup> by Sir BAMFYLDE FULLER, is a collection of essays covering a very wide field of thought. There are in all sixteen chapters and an introduction, and a random selection from the titles will indicate the very diverse character of the essays making up the book: "Liberty," "Ultimate facts in economics," "Vocabulary and grammar," "Logic," "Auto-suggestion," "The foundations of morality," "Amusement." It will be at once apparent that each of these subjects—and this applies to the whole of the collection—demands nothing less than a book for its adequate treatment; they are subjects which have been written about

<sup>1</sup> *Diseases of the Skin*. By R. W. MacKenna, M.A., M.D., B.Ch. Edin. London: Baillière, Tindall, and Cox. 1923. (Roy. 8vo, pp. x + 450; 166 figures, 21s. net.)

<sup>2</sup> *Physiologie normale et pathologique du foie*. By G. H. Roger. Paris: Masson et Cie. 1922. (Med. 8vo, pp. 391; 16 figures, Fr. 22.)

<sup>3</sup> *Causes and Consequences*. By Sir B. Fuller, K.C.S.I., C.I.E. London: J. Murray. 1923. (Demy 8vo, pp. x + 231. 12s. net.)



by many people, and it is difficult for the reader to bend his mind to Sir Bampfylde Fuller's highly individualistic angle, since the process involves the conscious repression of masses of pre-existent ideas. This sacrifice having been made, one can walk with the author without coming to blows, although he is very often exceedingly provocative. As example we will quote from the chapter on auto-suggestion:

"Actions and utterances are commonly stimulated auto-suggestively by ideas of them. (But, having thought of a line of conduct, we may follow it automatically, being unaware of the movements that execute it in detail.) In speaking, the ideas which occur to us bring with them ideas of the words which signify them, and these ideas stimulate utterance associatively. The succession is so rapid that we may not catch it, and may imagine that we have thought in words and not in ideas that recalled them. It may be possible to think in words when thought is a memorial repetition. But intelligent thought must be in ideas, for there is nothing in words that can establish intelligent connexions through the unification of samenesses" (p. 78).

This quotation well illustrates the author's tendencies. Whether you agree with him does not matter. If you like him it will be because he has so obviously pursued his own line of thought and is quite fearless in expressing it. If you do not like it, it will be because the utterance lacks the authority of the specialist. But this is begging the question, because the attractiveness of the book lies in the fact that it enshrines just what Sir Bampfylde Fuller thinks about this and that.

Of all the chapters the most successful, from the lay point of view, are those on "The laws of the mind" and "The brain as a laboratory." They should be read consecutively, since the latter is a development from the former. They are clear in thought and in expression, but they require a certain amount of psychological knowledge for their digestion. From the professional standpoint the author does not appear sufficiently to embody the modern work of the experimental and physiological psychologists. The chapter on "The development of art" begins well: "There is a fragrance about art which seems to shield it from analysis." But, having by this sentence jeopardized the life of the whole essay (and if it had been written "the fragrance which is art defies analysis" the essay would have been stillborn), he justifies what follows by saying that: "The spirit of criticism is, however, not dismayed by the impalpable, and the appreciation—or depreciation—of works of art has become a very prominent feature of current literature." Quite so. And how much of it is fruitful? Certainly Sir Bampfylde Fuller carries us no nearer to the burning heart of the matter. "Rhythm," he says, "is not essential to music. The turns and cadences of Indian village chants are as rhythmless as a bird's song." Later in the same paragraph: "The rhythm unit of music is, of course, the bar." There the weakness of his position stands revealed. The Indian chants and the bird's song have no rhythm because they have no bars. Let Sir Bampfylde go to the early English polyphonic writers, and he will find the most free and flexible and natural rhythm, but he will find no bars in the original scores. Bars are a relatively late convention. The true rhythmic unit is the note, from which it follows that music without rhythm is no longer music. Nevertheless, in spite of its defects, and frequently unjustifiable dogmatism, the book merits attention, for it is the work of a man of wide experience, keen observation, and a truly remarkable versatility.

### THE CLINICAL LABORATORY.

So varied is the technical equipment demanded in the routine of the pathological laboratory to-day that a critical selection of the riot of available methods must be welcome. Such a book is *Clinical Laboratory Methods*, by Professor R. L. HADEN.<sup>4</sup> An American publication, it is almost unnecessary to report that the "get up" of the volume—paper, print, and illustrations—is altogether admirable. Equally superfluous is the comment that the subject matter is up to date with the voluminous literature and that the equipment required of such a laboratory is extensive. A little more than half the book is devoted to chemical procedures related to the examination of body fluids, whilst the remainder contains a useful summary of well proved serological, bacteriological, and histological technique amply described. A chapter describing the handling of the colorimeter, the calibration of volumetric apparatus, the preparation of standard reagents, and like laboratory routine will prove not the least useful part.

<sup>4</sup> *Clinical Laboratory Methods*. By R. L. Haden, M.A., M.D. London: Henry Kimpton, 1923. (Med. 8vo, pp. 254; 69 figures, 5 plates. 18s. net.)

The author has been severely selective in presenting only one method for each quantitative determination and has thereby avoided any critical survey of alternative methods. While we may be tempted to regret that he who has given us so excellent a volume does not give us more, we acknowledge that his way is the true economy. And who shall quarrel with his selection where most methods are empirical and so few will survive a decade?

### PHYSIOLOGICAL CHEMISTRY.

*Practical Physiological Chemistry*,<sup>5</sup> by W. W. TAYLOR, and *A Laboratory Handbook of Biochemistry*,<sup>6</sup> by P. C. RAIMENT and G. L. PESKETT, emanate from the medical schools of Edinburgh and of Oxford respectively. Each is avowedly based on the practical course in this subject which the authors have elaborated for their own classes, and we looked, therefore, for such a welcome break with the conventional treatment as might warrant publication. Instead we find the same material presented in the same traditional sequence. Into one hundred pages are compressed the ill assorted collection of tests and estimations of urine, blood, and digestive processes which has too long usurped the place of a real introduction to a knowledge of the part chemistry plays in living processes which is the true biochemistry. The sad truth is—and these publications form a welcome opportunity for renewing the protest—that instruction in this aggressive branch of science is cribbed and cabined by the confines of out-of-date examination syllabuses. These the teacher dare not ignore. The inevitable outcome of illogical curricula is recourse to cramming methods, and the less laborious form of cramming would appear to be to provide the student with a book into which is gathered every operation likely to be encountered in his examination to the exclusion of a connected consideration of fundamentals. The limits of the pocket are such that there is not room even for a practical treatment of the pitfalls which surround the simplest operations, and the worker whose tests will not "go right" will find no help here, whilst the brief statement of such theoretical considerations as are necessary to bind together the patchwork of experiment has led inevitably to many loose and misleading statements.

In spite of all we have said we still believe that these books will be good friends to the candidate in those hectic days before the examination, and—our sympathies being all with the harassed medical student—we will be content to suggest that, with these latest additions to the list, have we not now enough of this sort of book?

### ULTIMATE PROBLEMS OF LIFE.

HUMAN life has often been described as a vicious circle without purpose or aim—a movement from death unto death. Progress thus becomes an illusion, since every advance returns to the point of departure and ends in death. Some such view is presented in a new way by Professor SIGMUND FREUD in an interesting essay, the English translation of which is entitled *Beyond the Pleasure Principle*.<sup>7</sup> The essay is admittedly speculative, and the author describes the development of his central theme as "the exploitation of an idea out of curiosity to see where it will lead." His aim, he says, is to show that contrasted with the life-sustaining instincts there exist still more fundamental "death-instincts" which are directed towards regression and the reinstatement of earlier conditions. He dwells on the universal tendency of organic life to return to the inorganic out of which it originally developed, and maintains that the final goal of all organic striving is to return to the ancient starting point which the living being left long ago. His argument, based upon a number of psychological data, is reinforced by biological considerations. The psychological views expressed in this essay involve some modification of those previously held by Professor Freud. But as he observes at the conclusion of his book, "Only such 'true believers' as expect from science a substitute for the creed they have relinquished will take it amiss if the investigator develops his views further or even transforms them."

<sup>5</sup> *Practical Physiological Chemistry*. By W. W. Taylor, M.A. D.Sc. London: E. Arnold and Co. 1922. (Cr. 8vo, pp. 71. 4s. 6d. net; interleaved 5s.)

<sup>6</sup> *A Laboratory Handbook of Biochemistry*. By P. C. Raiment, B.A. Oxon., M.R.C.S., L.R.C.P., and G. L. Peskett, B.A. Oxon. London: E. Arnold and Co. 1922. (Cr. 8vo, p. 112; 2 figures. 5s. net.)

<sup>7</sup> *Beyond the Pleasure Principle*. By Sigm. Freud, M.D., LL.D. Authorized translation from the second German edition by C. J. M. Hubback. London: The International Psycho-Analytical Press. 1922. (Roy. 8vo, pp. 90. 6s. net.)



### DISEASES OF THE EYE.

It was obvious when the first edition of PARSONS'S *Diseases of the Eye* appeared in 1907 that we had in it a textbook for the student and junior practitioner which would become popular, because it contained exactly what was needed; nothing of importance had been omitted, and the opening chapters on physiology, elementary optics, and the neurology of vision—subjects which many students find rather burdensome—were so clearly written as to be easily intelligible to all. The book has now reached its fourth edition.<sup>6</sup> The text has been revised and some additions have been made; that the book nevertheless is no larger appears to be due to the use of a smaller print than in the last edition; matters of rarity are still treated as before in yet smaller print.

A chapter on preventive ophthalmology and one on the hygiene of vision are new and serve to drive home lessons which are touched upon in the sections on ocular disease. Two new coloured plates and some new figures appear in this edition. The appendix contains, among other matters, a very complete list of the requirements of the public services.

We have always considered this textbook as the best of the smaller handbooks in this or, indeed, in any other language; the new edition strengthens this opinion.

### IN THE MIDST OF MISERY.

It is often asked by laymen why more doctors do not commit their experiences to paper, meaning those intimate glimpses of human life unadorned which it is the medical man's peculiar privilege to obtain. The answer is not far to seek. Given the necessary literary power, any busy practitioner could gather sufficient material for a book out of a single day's work. But who would be interested in it? Only fellow practitioners of a like mind, but without time or ability to write. To the layman it would be only half intelligible; what he wants is a pure humanist version of the unique situations to which a doctor has special access by virtue of his calling.

Thinking that the Gaul, with his smaller measure of reticence, would do these things better than the Anglo-Saxon, we opened *Milieu de Misères*,<sup>7</sup> by S. COURGEY, with lively anticipation. Here is a passage at the beginning of Chapter VI: "On entering I see a woman in a large bed with black hangings. Her uterine cancer, recto-vesico-vaginal fistula, with consequent sciatica, do not give rise, however, to excessive suffering. She lies on her bed and her features give no indication of her terrible malady: Inoperable, she has been many times in and out of hospital." This passage illustrates the whole question at issue. The woman, with her inoperable carcinoma, is the very centre and core of the picture which the author proceeds to paint, yet the full significance of his very vivid description of her can only be perceived by a medical mind. Nevertheless anyone interested in humanity, whether lay or medical, will find these medico-social notes illuminating and interesting. They are sheer realism, no attempt being made to convert the situation to the uses of art, and as such must be commended, for their author is clearly a man of wide experience and ripe wisdom, and he has set down fearlessly what he has seen. The ravages of alcohol, of tuberculosis, all kinds of social evils and complaints fall within his comprehensive view. Fortunately the narratives are not disfigured by any comments; they are allowed to speak for themselves, the author reserving his conclusions for a separate chapter at the end of the book. Here he reveals himself as a deep thinking sociologist.

The book is written in French which presents no great difficulty.

### NOTES ON BOOKS.

A SECOND edition of the *Grundriss und Atlas der Speziellen Chirurgie*, by Professor Dr. GEORG SULTAN, is in course of publication. The first part<sup>8</sup> deals in the main with the surgery of the head, neck, thorax, spinal column, and central

nervous system; it contains some 40 coloured and 245 black and white illustrations. Many of the latter show such advanced stages of disease that they could more profitably be dispensed with, since for teaching the student the art of early diagnosis they are valueless. The teaching on the whole is very much the same as ours, but from the student's point of view more classification and subdivision would be welcome in order to emphasize main points and prevent waste of time in foraging through long sentences and clumsy paragraphs. Two tables for localizing signs and symptoms of lesions of the brain and spinal cord are useful. In operating for epithelioma of the tongue splitting of the cheek is recommended, and for growths far back, instead of Syme's operation, splitting of the lower jaw through the gap of the extracted canine tooth. The approach is made by means of an oblique incision extending from the angle of the mouth downwards and outwards to the point where the facial artery crosses the mandible. In discussing exophthalmic goitre attention is called to the fact, pointed out by Kocher that in the differential blood count the percentage of lymphocytes increases at the expense of the polymorphonuclear cells. In advanced cases the polymorphs fall as low as 35 per cent., whereas the lymphocytes increase to 65 per cent. There is sometimes also an actual diminution in the total white count. Leucopenia has also been observed in cachexia thyreopriva.

A book by M. LOUIS SATOW on *Hypnotism and Suggestion*<sup>11</sup> has been translated into English by Mr. Bernard Miall. The author produces evidence that methods of influencing others and producing trances have been known in all ages, and he gives an account of hypnosis from the remote past until the present time. The main purpose of this book, however, is to show what the author believes to be the baneful influence of suggestion in paralysing the capacity for reasoned thinking. He considers that the suggestive forces which proceed from dogmatic religion, the governmental policy of force, and economic greed have been instrumental in holding the credulous masses in subjection, and the book contains an extremely bitter and biased attack on religious institutions and education. While M. Satow regards it as a difficult task to free mankind from superstition, ignorance, and intellectual servility, he considers there is one excellent method—namely, "the complete and final renunciation of all belief in another world, and the training of mankind, from youth upwards in an atmosphere of free, unprejudiced, critical, scientific thought" (p. 228).

In *New Clinical Methods for the Examination of the Heart*<sup>12</sup> Dr. LUTEMBACHER gives a careful description of the mechanical and radiological methods commonly used in diagnosis. He excludes graphic methods in spite of their importance and interest, because it is a lengthy and difficult matter to obtain a good tracing, and its interpretation requires a certain amount of experience. All, however, should be able to interpret the polygram and the skiagram, and it is to their interpretation rather than to the technique required to obtain them that the text is devoted. The first chapter treats of the anatomy and physiology of the bundle of His, and is illustrated by excellent photographs. The chapters that follow contain a careful and exhaustive consideration of polygraph tracings of normal and abnormal hearts. Clinical features are touched upon only to show the connexion between the tracings and the various forms of arrhythmia met with in patients. The chapters on radiography offer an equally lucid explanation of the phenomena visible with x rays. Each morbid condition is illustrated and excellent diagrams show exactly where and why the heart has departed from the normal in every case.

The *British Goat Society's Year Book for 1923*,<sup>13</sup> in addition to articles dealing with goat breeding, milk production, and other matters connected with goats, contains the following papers of scientific or medical interest: developmental intersexuality in the goat, by Dr. F. A. E. Crow, of the Animal Breeding Research Department, Edinburgh University; sterility in goats, by Mr. H. Stainton, F.R.C.V.S.; the application of indirect calorimetry to goats, by Dr. H. E. Magee, of the Rowett Institute, Aberdeen; and goat's milk for children, by Dr. William Ker Bell.

<sup>6</sup> *Diseases of the Eye*. By Sir John Herbert Parsons, C.B.E., D.Sc., F.R.C.S., F.R.S. Fourth edition. London: J. and A. Churchill, 1922. (Crown 8vo, viii+66; 21 plates, 326 figures. 19s. net.)

<sup>7</sup> *Milieu de Misères*. By S. Courgey. Paris: A. Maloine et Fils. 1922. (Crown 8vo, pp. 240. Fr. 6.)

<sup>8</sup> *Grundriss und Atlas der Speziellen Chirurgie*. Von Professor Dr. G. Sultan. I Teil. Zweite umgearbeitete Auflage. Munich: J. F. Lehmann. 1922. (Crown 8vo, no. viii + 333; 245 figures, 40 plates.)

By Louis Satow. Translated by Bernard Cawlin, Ltd.; New York: The Macmillan Co. 1922.

<sup>12</sup> *Les Nouvelles Méthodes d'Examen du Cœur en Clinique*. Par R. Lutembacher. Paris: Masson et Cie. 1921. (Demy 8vo, pp. 165; illustrated. Fr. 20 net.)

<sup>13</sup> *The British Goat Society's Year Book for 1923*. Compiled and issued by the Honorary Secretary, Thomas W. Palmer, 5, Featherbed Street, London, E.C.3. (Demy 8vo, no. 117; illustrated. 1s. 6d.)



## OCULAR ASPECTS OF PITUITARY DISORDERS.

BOWMAN LECTURE BY DR. DE SCHWEINITZ.

THE Bowman lecture to the recent annual congress of the Ophthalmological Society of the United Kingdom was delivered by Dr. G. de SCHWEINITZ, of Philadelphia, President of the American Medical Association. The lecture consisted of a discussion of certain ocular aspects of pituitary body disorders mainly exclusive of the usual central and peripheral hemianopic field defects.

The lecturer opened with a tribute to the memory of Sir William Bowman, and spoke also of his distinguished predecessors in the lectureship. He thought that although the disorders of the pituitary body had received much attention in this country and elsewhere, certain aspects were still worthy of further consideration.

*Anatomy.*

The first part of the lecture dealt closely with the anatomy of the pituitary region, and detailed the results of investigations made by Dr. Parsons Schaeffer, Professor of Anatomy at the Jefferson Medical College, Philadelphia. Elaborate *post-mortem* examinations and dissections, studied and discussed with the lecturer, led them to the conclusion that many misstatements had been made, particularly with regard to the relation of the optic chiasma to the chiasmatic sulcus. They found direct relation to hold in but 5 cases in the 125 bodies examined. The relations of the chiasma to the sphenoidal sinus, the diaphragma sellae, and the hypophysis itself were examined, and it was evident that in the large majority of cases the chiasma lay so directly over the diaphragma that pressure from growth of the pituitary body of sufficient size would bear upon the crossing chiasmatic fibres. The distance between the chiasma and the diaphragma was found, however, to vary from a potential space to several millimetres, and this factor, combined with the variable thickness of the diaphragma, made it apparent that very considerable enlargement of the pituitary body might be necessary before pressure could be assigned as the cause of visual field changes.

Finally, the vessels of the arterial circle of Willis were considered, and the lecturer showed how the anterior cerebral arteries may become "pressure cords" on the chiasma or optic nerves as the result of crowding from below. Pressure from these or other vessels might account for the production of field defects.

*Possible Production of Toxins.*

While the anatomical conditions might thus readily account for many of the visual field changes, through pressure or traction, or both, upon the optic chiasma, some changes, more especially the scotomata, central or paracentral, seemed to need some other explanation. The lecturer suggested as a more likely factor the elaboration of toxins from the enlarging gland; if they did exist they might reasonably be expected to attack primarily the more highly specialized fibres of the macular bundle. The possible line of attack of such toxins was considered and the lecturer then turned to the many observations made on the visual field changes, emphasizing how frequently the "typical" defects varied. The absence of bitemporal hemianopsia too often diverted attention from the pituitary region, more especially as lateral homonymous hemianopsia was far from "very rare" in disorders of the hypophysis. The various forms of scotomata were reviewed and the similarity between them and those resulting from such lesions as toxic amblyopia and tabes dorsalis was pointed out. Careful plotting of these defects was necessary in differential diagnosis, though the possible association of tabes dorsalis with pituitary disorder had to be borne in mind. The patient often applied for relief from failing vision only in the later stages of the disease, when the visual acuity of one or both eyes had much declined.

*Pituitary Headache.*

Dr. de Schweinitz drew attention to the "pituitary headache" as a conspicuous symptom, showing how it was often less intense than that of other intracranial lesions and less associated with nausea and vomiting. The varying

structure of the diaphragma sellae must play a part in the intensity of the headache, but the lecturer urged the necessity for more general recognition of the pituitary headache as an aid to early diagnosis. Such headache might exist for a long time before any other change, and much time might be lost if the headache were treated along wrong lines, being readily attributed to an error of refraction, gastric disturbance, etc. The possible association between migraine and pituitary disorder was not held to be likely.

*Pregnancy and Menstruation.*

Dr. de Schweinitz spoke next of the physiological enlargement of the pituitary body in pregnancy, and showed from his own observations and those of others that it frequently gave rise to contractions in the temporal visual field. With the return of the pituitary body to its normal size the full field was regained, but repeated pregnancies might leave a permanent defect. In no case had a scotoma been found with or without hemianopsia, and the lecturer suggested that this gave support to the theory of a toxin causing scotomata, no toxin being produced in association with the physiological enlargement of the gland in pregnancy. Objections might, he said, readily be raised to such a suggestion, but they did not eliminate it from consideration as one of the possible causes. After double oöphorectomy similar changes took place in the visual fields but were permanent. No changes in pituitary function were found, and it was suggested that, as in pregnancy, the enlargement was sufficient to cause pressure or traction upon the optic chiasma but insufficient to produce general signs of changed function. The recognized tumefaction of the pituitary body at the menstrual periods could be assigned as the cause of the hemieranias, scintillating scotomata, and transient hemianopsias sometimes observed.

Some persistent types of headache, associated with various physical signs, at about the age of puberty suggested a pituitary disorder, and though such cases showed no contraction on the temporal sides of the visual fields the lecturer considered it worthy of note that relative central scotomata could be demonstrated. The optic nerve head showed congestion, and this again suggested the presence of a toxin, the change differing from that in which only physiological enlargement was presumed.

*The Pituitary in Toxic Conditions.*

The state of the pituitary body in various toxic conditions was discussed, and though the lecturer disagreed with the suggestion that methyl alcohol blindness depended on any pituitary lesion he made some interesting remarks upon tuberculous lesions of the gland, which he said are not infrequent and might have a bearing upon such manifestations in the eye. The interesting condition of hereditary optic nerve atrophy (Leber's disease) might, he thought, be the result of a temporary disturbance in the pituitary, whereby a toxin might be formed which damaged the nerve as a whole or its most delicate part—the papillo-macular bundle.

*Diagnosis.*

Dr. de Schweinitz called attention to the infrequency with which papilloedema was found, and to the peculiar waxy pallor of the nerve head, which had often been described. The x-ray appearances of the sella turcica were considered, and the lecturer laid stress on the fact that the pituitary body might be considerably enlarged without x-ray evidence of change in the sella turcica.

*Treatment.*

The treatment he considered under three heads—glandular therapy and medicinal treatment; radiation (with x rays and radium); and operative treatment. Striking results were shown of glandular therapy with thyroid and pituitary extract, alone or combined with mercurial treatment. Even when syphilis could be reasonably excluded the mercurial treatment appeared to give valuable help to the gland extract. He believed that radiation, held in high esteem by some, aided in the control of recurrence after operative treatment.

It might be a nice point to decide how long such measures should be used before resort to surgical treatment.



The lecturer spoke strongly of the necessity for frequent charting of the visual fields; it was a far surer guide to the state of affairs than repeated x-ray examination of the sella turcica.

Throughout Dr. de Schweinitz illustrated his findings and statements with excellent plates, both of the anatomical relations and of the visual field changes.

## VOLUNTARY HOSPITALS AND MEDICAL STAFF FUNDS.

THE part of the hospital policy of the British Medical Association which seems to promote most discussion, and may perhaps find most difficulty of acceptance by the staffs of certain hospitals, is that dealing with the formation of medical staff funds. It seems well, therefore, that an attempt should be made to set forth the origin and development of the proposal, to describe the present position of the matter, and to summarize the views of the various parties in the controversy.

There can be little doubt that the question of the payment of members of the staffs of voluntary hospitals arose in consequence of the increasing intervention of the State in the treatment of disease. Thus in 1908 the Representative Meeting adopted the principle that "the services of the profession should not be given gratuitously to patients who are maintained by public funds." In 1914 the Association's model scheme for the treatment of tuberculosis was approved by the Representative Meeting, and in that scheme a suggestion for the formation of a special fund, with hints regarding mode of distribution, was included. As a result of the Report of the Royal Commission on Venereal Disease in 1915, the Council of the Association formulated a series of recommendations, including the following: that the services of all members of the medical staffs of hospitals engaged in carrying out the treatment should be paid for by the State or local authority; that special staff funds should be formed; and that certain methods enumerated might be used in the disposal of these funds. These recommendations were passed at the Annual Representative Meeting in 1916.

In the meantime the war was increasing enormously the responsibility of the State for medical treatment; and the voluntary hospitals had undertaken the treatment of soldiers and sailors suffering from diseases or injuries connected with the war. In 1917 the Report of Council extended the recommendations with regard to payment to a staff fund in connexion with tuberculosis and venereal disease, and advised their application to voluntary hospitals treating patients maintained by public funds, leaving to the staffs their voluntary status as regards purely charitable work. At the Representative Meeting at which these proposals were approved it was agreed that the question of payment for the treatment of discharged sailors and soldiers should be referred to the Council.

Between 1917 and 1918 negotiations took place with Mr. Barnes, the Pensions Minister, and three members of the British Medical Association were appointed to the Advisory Committee formed by the Ministry of Pensions. The British Hospitals Association practically adopted the policy of the British Medical Association; and in January, 1918, as the result of discussion between the Ministry of Pensions and London hospital staffs, a memorandum of arrangements was issued in which financial acknowledgement of the work done by hospital staffs for the Ministry was agreed to. The Representative Meeting in 1918 adopted the recommendation of the Council that the financial acknowledgement in the respect of discharged sailors and soldiers should be two guineas a case, or 10 per cent. of the amount paid to the institution for the maintenance and treatment of the patient. A proposal of the Council in 1919 that this remuneration should not be less than 25 per cent. of the payments to the larger hospitals, and not less than 15 per cent. of the payments to the smaller hospitals, was rejected by the Representative Meeting, which passed a resolution that when the treatment of soldiers and sailors for diseases or injuries connected with the war was undertaken at voluntary hospitals, the medical staff should be adequately remunerated. In 1920 the Council again advised that not

less than 25 per cent. of the payments to hospitals should be handed over to the staff, this time in the case of all hospitals; and on this occasion the Representative Meeting adopted the recommendation.

So far we have indicated the effect of Government assumption of responsibility for treatment upon opinion in the British Medical Association and amongst hospital staffs. But at this point another factor comes into prominence. As pointed out in the Cave report, until the year 1913 the voluntary hospitals in London were able for the most part to meet their expenditure out of their receipts. With the war came a steady increase in the cost of provisions, fuel, drugs, etc., and a growing demand for an increase in salaries and wages, so that expenditure grew faster than income. The withdrawal in 1919 of many military patients, for whom a Government grant had been received, accentuated the difficulties of the hospitals. Consequently, in 1920 the governing bodies of many of the voluntary hospitals, in searching for means to increase their income, had adopted various methods for obtaining from patients, either individually or through their societies or otherwise, contributions towards their maintenance in hospital. These contributions were the more easily forthcoming owing to the high rate of wages which had prevailed during and after the war, and the consequent disappearance of a large number of the necessitous poor.

Other and less important factors in raising the demand for staff funds were the difficulty experienced by the younger members of the staffs of hospitals in making both ends meet (especially when hospital work was coming to occupy more and more of their time), and the fact that in many districts in England representatives of the working classes had obtained seats on the governing boards of voluntary hospitals, and had promoted contributory schemes in which a definite return in the way of hospital treatment was expected as a result of these money contributions.

In consequence of these developments the Council of the British Medical Association called a conference of the honorary medical staffs of voluntary hospitals with more than 50 beds, at the house of the Royal Society of Medicine on December 21st, 1920. It was attended by 138 representatives. At this conference it was agreed that persons who were not necessitous should make contributions towards their maintenance in hospital; that paying patients, who paid more than full maintenance, should arrange their fees for treatment with their medical attendants in the hospital; and that in connexion with certain classes of patients "staff funds" should be established. Thus it was at this conference apparently that the resolution with regard to staff funds which has come to be known as the Leicester resolution was carried. The terms of this resolution are:

"That in the event of decisions being taken which would lead to patients paying in part or in whole the hospital maintenance fees, either individually or by some contributory method, or with the addition of rate aid or State aid, or by a combination of two or more of these methods, a percentage of all such payments should be passed into a fund which can be allocated in any manner which each honorary medical staff may determine."

At the Representative Meeting held in Newcastle in 1921 the Council, after calling attention to the final report of the Cave Committee appointed by the Minister of Health to inquire into the financial position of the voluntary hospitals, advised the adoption of the Leicester resolution. This was carried with the addition of a sentence excluding from the scope of the resolution those patients for whom voluntary hospitals may happen to provide accommodation as paying patients, who therefore pay more than their actual maintenance charges, and by whom fees for professional services should be payable directly to the doctor. The Representative Meeting disagreed with paragraph 50 of the final report of the Cave Committee on Staff Funds, passing the following resolution:

"That this meeting disagrees with the following paragraph 50 (pp. 31-2) of the Report of the Government Committee on Voluntary Hospitals, and maintains that the essence of the voluntary hospital system is the independent and voluntary management and that this is in no way related to the conditions of service of the medical staff:

"50. In connexion with the grants by public authorities it appears desirable to refer to the practice which obtains in some hospitals of carrying a proportion (from 10 per cent. to



20 per cent.) of these grants to a staff fund which is placed at the absolute disposal of the honorary staff. In some of these hospitals, as at St. Bartholomew's, at the Royal Infirmary, Manchester, and at the Radcliffe Infirmary, Oxford, the fund has hitherto been applied by the staff to such purposes as the purchase of expensive apparatus or books, and the support of young practitioners taking up special branches of work; but in other cases the fund has been divided among the staff. The practice is supported by the British Medical Association on the ground that patients sent by a public authority are in the position of paying patients and that in the fees paid for such patients the medical practitioner is entitled to share. On the other hand, the honorary staffs of some hospitals are unwilling to share in such a fund; and two distinguished physicians expressed the view that if the medical staffs came to be subsidized to any substantial extent 'the bottom would drop out of the voluntary system.' It should be remembered also that, although the services of the staff are honorary, they obtain a valuable return in the form of medical and surgical experience and the enhanced reputation which accrues to a member of the visiting staff of a great hospital. If the system of carrying a percentage to a staff fund is confined to cases where the full cost of maintenance and treatment is paid by or on behalf of the patient, not much objection can (we think) be taken to it; but any extension of the practice beyond those limits appears to us to endanger the future of the voluntary hospitals."

The adoption by the Representative Meeting of the Leicester resolution led the Council of the Association to call a conference of the staffs of London voluntary hospitals to discuss further action with regard to the formation of staff funds. This conference met at 429, Strand, under the chairmanship of the late Sir James Galloway, on November 16th, 1921. Eight of the large teaching hospitals were represented. The Leicester resolution was approved by 23 votes to 21. The representatives of St. Thomas's Hospital, having received no instructions, did not vote. On March 22nd, 1922, a further conference of voluntary hospital staffs in England and Wales was held at the Wigmore Hall, with Sir James Galloway as chairman. Objections to the formation of staff funds were raised by the representatives of various hospitals, both provincial and metropolitan; but the Leicester resolution was ultimately carried by 85 votes to 23.

In the meantime the Council of the Association had elaborated its hospital policy, and this was presented to the Representative Meeting at Glasgow in 1922. Considerable difference of opinion was manifested with regard to the proposals for the formation of staff funds, and an amendment was proposed in the following terms:

"That in the event of decisions being taken which would lead to patients (other than patients referred to in Sections IX (a) and (b)) paying in part or in whole the hospital charges (1) when such payments are in any part made by rate aid or State aid, and (2) where such payments in other cases are of an amount exceeding the cost of hospital maintenance and accommodation, such charges shall be considered to include payment towards maintenance and treatment, and a percentage of all such payments should be passed to a fund which is at the disposal of the honorary medical staff of that hospital."

This amendment was carried by 64 to 55; and as it was thought that the majority requisite to make it the policy of the Association could not be obtained, further discussion led to the passing of a resolution:

"That it be an instruction to the Council to reconsider the terms of the policy of the Association expressed by the A.R.M. 1921, Minute 236 (i.e., the Leicester resolution), and to report what, if any, modification may be desirable to meet any possible inequities that may arise from its operation."

In September, 1922, the Hospitals Committee considered this decision and resolved to recommend to the Council:

"That income derived from gratuitous contributions, existing assets, endowment funds, and the like, are not liable to assessment for Medical Staff Fund purposes, but all payments made for hospital benefit (other than payments made by private patients referred to in Section IX (a) and IX (b)) are in fact payments towards all the services of the hospital, whether medical or ancillary, and therefore a percentage of such payments should be passed into a fund which is at the disposal of the honorary medical staff of that hospital. Small payments of individual patients not recoverable from third parties may be assessed in a nominal percentage only as a token recognition of the policy enunciated."

On October 25th, 1922, the Council approved this recommendation, which is to be submitted to the Representative Meeting at Portsmouth in July.

To sum up the present position, the British Medical Association has elaborated a hospital policy; included in this

policy is the proposal to establish a special staff fund to be at the disposal of the medical staff of each voluntary hospital, and it has been suggested that to this fund there should be passed a percentage of all sums received from or on behalf of patients (other than private patients) towards the hospital costs. When the Representative Meeting at Glasgow declined to accept this proposition in its entirety, the question was referred back to the Council with a view to meeting inequities; and the Council has now resolved that such inequities are met by assessing small payments of individual patients in a nominal percentage only, using such assessments as a "token recognition" of the principle that all payments made for hospital benefit (other than those of private patients) are payments towards all the services of the hospital, whether medical or ancillary. It does not appear that this principle has been accepted by the majority of hospital staffs; and it is not clear that the Representative Meeting of the Association has accepted it in so many words. But it appears to be fundamental to the whole question at issue.

Passing now to the views which are held by the various parties to the controversy, it appears that at one extreme there is the whole-hearted supporter of the principle that all payments to hospitals by and for patients (other than private patients) are payments towards all the services of the hospital, medical and ancillary. Such a one holds that there is no justification for exploiting the doctor in the case of a person who is able to contribute to the hospital charges. He considers that the principle should be carried to its logical conclusion, that all such contributions should be assessed in a percentage for the staff fund, and that only necessitous persons should receive gratuitous services from the medical staff. In his view the assessing of such percentages does not, or need not, interfere with the voluntary nature of a hospital. At the other extreme is the man who desires to continue intact his gratuitous services at voluntary hospitals. He fears that by assenting to the proposition of a staff fund he will alter his status at the hospital—will become to some extent a paid servant of the institution. Moreover, he is in doubt whether his acquiescence in the proposal may not lead to the ultimate abandonment of the voluntary principle in hospital management. Between these two extremes there are many shades of opinion. Thus most members of hospital staffs probably feel that the State and the municipality have no right to expect gratuitous treatment for patients for whom they are responsible. Others adopt the same attitude towards employers, approved societies, contributory schemes, and so on. Others, again, feel that a distinction should be drawn between maintenance and treatment, and would only agree to contributions to staff funds where the payments by or for the patient exceeded the cost of maintenance.

It will have been noticed that in stating the various views on the formation of staff funds the question of the preservation of the voluntary system in hospital management arises. In the interim report of the Voluntary Hospitals Commission recently issued by the Ministry of Health the following definition of a voluntary hospital is given:

"An institution (other than an out-patient dispensary) managed by a responsible committee and wholly or mainly supported from voluntary sources (including income derived from endowments or investments), the object of which is to provide medical or surgical treatment of a curative character; an auxiliary institution (such as a convalescent home) being eligible for assistance (i.e., from the Commission) only in so far as it increases the facilities of hospitals from which it receives patients."

And in the earlier part of the paragraph containing the definition the Commission states: "We were clearly of opinion that voluntary management by a responsible committee was an essential condition." These words may be held to support the view of the British Medical Association, which maintained that the essence of the voluntary hospital system is the independent and voluntary management, and that this is not necessarily related to the conditions of service of the medical staffs. On the other hand it is to be noted that the Voluntary Hospitals Commission has not so far considered the question of medical staff funds; and its statement that a particular method of management is an essential condition does not exclude the possibility of other conditions, less essential perhaps, but yet calling for consideration. The point is one of the issues in the discussion.



## THE CAMBRIDGE SCHOOLS OF PHARMACOLOGY, BIOCHEMISTRY, AND PHYSIOLOGY.

At the invitation of Dr. W. E. Dixon, F.R.S., the Section of Therapeutics and Pharmacology of the Royal Society of Medicine paid a visit to Cambridge on Saturday, May 5th.

A party of about twenty arrived in the morning and first visited the department of pharmacology, where Dr. H. W. C. Vines gave an account of a chemical method he had devised for standardizing parathyroid extract. Dr. T. S. P. Strangeways showed a series of cultures of living tissues *in vitro*, and gave a short account of researches he was pursuing with these cultures. By the courtesy of the authorities of Emmanuel College, lunch was provided for the party in the college hall.

### *The Physiological Laboratories.*

In the afternoon the party visited the physiological laboratories, where Professor Langley demonstrated a series of sections of nervous tissues and nerves.

Mr. J. Barcroft showed the party round the section of the laboratory devoted to the study of blood gases. Mr. Barcroft and his co-workers have devoted continuous attention to this subject for many years, and it was very interesting to see the refinement and perfection of technical detail and of organization which has been attained in this work. In one room was a large oxygen chamber in which any desired tension of oxygen can be produced and maintained, and in which a man can live if necessary for weeks. Another room was organized for the analysis of the blood gases in small samples of blood, and was filled with ingenious mechanical shakers and stirrers, which obviate almost entirely the tedious and wearisome hand manipulations usually associated with this class of work.

Mr. Barcroft's technique is devised largely with the aim of measuring the blood gases, using a minimal quantity of blood. An interesting contrast was provided by Messrs. Hartridge and Roughton, who showed arrangements for handling blood by the gallon, and a simple and effective apparatus by means of which the gases could be removed completely from large volumes of blood and excessive frothing avoided.

### *The Biochemical Department.*

The party next went to the Balfour Laboratory, where Professor F. G. Hopkins showed them round the biochemical department. This department is housed in old buildings, which have been adapted to serve as laboratories, and illustrates very clearly the truth that the value of the work turned out by a department depends upon the men in it and not upon the buildings which they occupy. The building is packed with research workers, and from it has come some of the most important recent discoveries made in biochemistry. The work of Winter and Smith was naturally of particular interest to the visitors. These workers have recently shown reason to believe that the sugar in normal blood is different from the sugar occurring in diabetic blood, and are now engaged in the isolation of insulin from yeast, as mentioned in their paper published in these columns on April 28th (p. 711). This research is still in progress and promises results of the greatest importance to clinical medicine.

Professor Hopkins gave a short account of the numerous other lines of research that are being conducted in the building. These researches are largely directed towards the elucidation of problems of cell metabolism, and in particular towards determining the nature of the oxidative processes that occur in cells. A short demonstration was given of the reactions showing the presence of glutathione, the tissue catalyst recently discovered in the department.

### *The Pharmacological Department.*

The party finally returned to the pharmacological laboratory, where a demonstration was given by Mr. Goody of the action of a sulphur compound, allied in structure to mustard gas, which produced acute oedema of the lungs when injected intravenously.

Dr. O. Inchley demonstrated the action of a constant current in the passage of strychnine into rabbits, and gave a short discourse on the effects produced by ioniza-

tion, showing clearly that the electric current could drive drugs through the skin, but that as soon as they reached the underlying tissues they were taken up by the general circulation, so that the effect produced by the drug was essentially the same as that of a hypodermic injection.

Dr. M. B. R. Swann gave an account of some unpublished researches upon the action of x rays upon plain muscle, both *in vivo* and *in vitro*. This concluded a long and interesting programme and a vote of thanks was moved to Dr. W. E. Dixon by Dr. W. Langdon Brown, the president of the Section.

### *The Linacre Lecture.*

Many of the party stayed to hear Sir Archibald Garrod deliver the Linacre lecture on "Some Glimpses of the Higher Medicine." Its main thesis was that a large number of diseases were due to slight individual variations in metabolism, and that the old ill defined conception of diathesis could be replaced by the conception of chemical individuality. The whole lecture stressed the great and increasing debt that medicine owes to biochemistry, and therefore formed a singularly fitting conclusion to a day spent visiting the pharmacological and biochemical departments.

This account of the day's entertainment is of necessity largely a catalogue of events, but perhaps the most important benefit of the visit was the opportunity it gave the visitors to realize upon how large a scale and with what keenness research upon the chemical functions of the body in health and in disease is being conducted at Cambridge. There is no doubt that work upon these lines will serve in the future as the foundation of a new and greater science of medicine.

## THE STUDY OF FATIGUE IN INDUSTRIES.

THE publication of the third annual report<sup>1</sup> of the Industrial Fatigue Research Board was briefly mentioned in our columns last week (p. 779), and attention was called to the objects which guide the activities of the Industrial Fatigue Research Board. The report covers a period of fifteen months and outlines the results obtained up to the end of 1922. The serious industrial depression, which characterized the whole of the period under review, seriously handicapped the work of the Board, partly because the industrial atmosphere was unfavourable for the introduction of novel ideas and methods, and partly because employers' and workmen's organizations have been so fully engaged with urgent economic problems that they had little opportunity of giving the necessary consideration to any schemes submitted. Moreover, the variations in industrial conditions caused by short and irregular hours have introduced disturbing factors which have notably affected the progress of some parts of the work. On the other hand, that part of the Board's work which is unaffected by conditions of trade, in particular laboratory research, has actually expanded and definite results have already been secured which may eventually have an important bearing on industrial occupations.

### *Investigations and Researches.*

The Board has aimed at the simultaneous prosecution of two separate lines of investigation—namely, research on fundamental points conducted in the laboratory, and inquiry based on observation of actual working conditions conducted in the factory. The former method may be said to show the effect of some known cause, whilst the latter suggests the cause of some known effect. Although at first the Board adopted certain selected industries as the field for investigations, it has recently taken as its objective the study of certain general subjects, not confined to any one industry but of common interest to all, following up each subject along lines which experience showed to be most promising and dealing with it both by field investigation and by laboratory research.

### *General Investigations.*

Grouped under this heading are reported investigations on the optimum length of spell, accident causation, machine design, and sickness incidence and mortality. Widely divergent practice exists in different industries in regard to the

<sup>1</sup> Third Annual Report of the Industrial Fatigue Research Board. Medical Research Council. 1923. (2s. net.)



division of the working day, and the Board has decided to start an extensive investigation to ascertain the best length of spell, and the best arrangement of rest pauses, for industrial occupations of different types—from the heaviest manual labour to monotonous work involving mental rather than muscular effort.

The study of the personal factor in accident causation is undoubtedly of great importance in connexion with prevention, and the Board is conducting an inquiry by statistical and psychological methods with the object of determining—

1. How far a characteristic ratio between notifiable accidents and accidents of all kinds exists for different selected occupations.
2. The correlation of accident incidence with experience, age, and sex.
3. The extent to which special susceptibility to accident exists.
4. The primary causes of such susceptibility.

A report recently published by the Board deals with accident causation from its personal aspect; it embodies the results of two investigations—one on the relation of temperature, etc., to accident incidence, and the other on the relation of accuracy of movement to speed and duration of work.

In the design of machinery and plant full consideration is not always given to the requirements of the prospective operator. Ease of working is one of the first essentials to be taken into account in the manufacture of such articles as typewriters and motor cars, but often, where the necessity is less obvious, the manipulative side of design seems to have been somewhat overlooked in favour of the strictly mechanical side, and the Board is now considering the initiation "of a rather close inquiry into the question of design in the case of certain types of machine, in order to ascertain whether any principles can be evolved indicating the proper relationship of machine to operator."

Under the supervision of the Committee on Industrial Health Statistics an inquiry has been begun into the relative incidence of mortality, particularly mortality from phthisis, upon the residents in rural districts, and members of the same families, who have migrated to industrial towns and are engaged in particular occupations. This is being carried out at present in the diocese of Chelmsford.

#### *Industrial Investigations.*

On the advice of the Home Office the Board has made some investigations into the cotton trade, limiting its inquiry in the first instance to the weaving section; some of the results have already been published. The principal inferences which may be drawn from these researches are summarized in the report as follows:

- "1. The productive efficiency in cotton weaving is both high and uniform, though differences naturally exist as between the different classes of cloth manufactured.
- "2. Short time tends to have a depressing effect upon productive efficiency.
- "3. During the pre-breakfast spell, in a two-break day, the productive efficiency is about 2 per cent. lower than during the other two spells.
- "4. The reaction of the worker to his working conditions is masked by the predominance of the mechanical factor. When this is eliminated by calculation his working capacity is seen to undergo a gradual decrease, both throughout the day and throughout the week.
- "5. The atmospheric conditions in humid cotton and weaving sheds are sometimes such as to involve working under physiological disadvantage. This is shown by the fact that above a certain limit of wet-bulb temperature the efficiency tends to fall, notwithstanding the more favourable effect on the yarn itself of the higher temperature and humidity. The cooling power of the air in humid sheds appears to be abnormally low, especially during summer, and experiments in the best method of overcoming this are very desirable.
- "6. Efficiency often tends to fall under a system of artificial lighting as compared with daylight, the reduction varying in amount from 11 to 5 per cent. according to the fineness of the work involved.
- "7. The initial rise and final fall in efficiency discernible in the daily work curves are not due (as is sometimes alleged) to extraneous causes, such as lateness in starting, etc., but are of subjective origin, and represent a real quickening up and slowing down.

"8. Productive efficiency in weaving is more dependent upon physical factors, such as variations in the yarn, quality of the size used, etc., than upon the variations in working capacity on the part of the operative."

#### *Pottery Industry.*

In 1920 the Board accepted an invitation from the National Council of the Pottery Industry to participate in an inquiry dealing with the construction and ventilation of drying stoves in potters' shops: the results are chiefly of technical interest, suggestions being made for preventing or reducing the escape of hot air, and on the relative importance of temperature and ventilation in the drying of ware.

#### *Laundry Industry.*

The results obtained by the study of the laundry industry reveal the facts that the atmospheric conditions in laundries compare unfavourably as regards temperature and cooling power with other industries investigated; the interpolation of short rest pauses into spells of moderate length appears to have a beneficial effect; there appears to be a lowering of working capacity in the afternoon compared with the morning, and this effect becomes more pronounced during periods when a ten-hour day is substituted for a nine-hour day; there is no evidence that laundry work, when conducted under reasonably good conditions, is detrimental to health.

Investigations are at present being carried out in the glass industry, latch and lock industry, and post office work.

#### *Researches.*

In a series of researches on the rate of recovery after exercise, Mr. H. Lupton has shown that in the case of horizontal walking and running below a certain speed the oxygen consumption increases approximately as the square of the speed; above this any increase in speed is not accompanied by an increase in oxygen consumption, the limiting rate of oxygen consumption being probably determined by the maximum capacity of the lungs and heart to supply oxygen to the tissues. On taking muscular exercise the body "goes into debt" for oxygen to an extent depending on the severity of the exercise, and most of the deficit is recovered within a few minutes of the cessation of the exercise.

"At the beginning of exercise an oxygen deficit is set up, and this is maintained until the recovery period which immediately follows cessation of the exercise. For rates of energy expenditure below the limit set by the capacity of lungs and heart, the total excess oxygen during recovery is equal to this deficit produced at the beginning of the exercise, such deficit increasing with the speed but remaining constant for any given speed, however prolonged the exercise. Hence such exercise from the point of view of the muscular machine might be kept up indefinitely. For rates of working beyond the limit set by the capacity of lungs and heart the deficit of oxygen increases with the time. In other words, lactic acid accumulates until exhaustion ensues. The limiting speed varies with the individual, being in the neighbourhood of seven miles an hour for horizontal running."

Tests for physical efficiency carried out at Guy's Hospital have shown that the "pulse ratio" (that is, the ratio between the pulse rate for the two minutes following exercise and the pulse rate at rest) is a good indication of physical fitness in the case of mild muscular exercise, but that this does not hold good for more severe exercise, such as running a mile.

Other researches being carried out by the Board include the study of the effect of rest-pauses and change of posture, the effect of atmospheric conditions, muscular control, motor capacity, accuracy of movement, monotony, coloured inks and papers, and the legibility of type.

Part II of the report contains five personal contributions from investigators working for the Industrial Fatigue Research Board. Mr. E. Farmer discusses "Some considerations concerning technique." Miss May Smith writes on "The use of the sample in investigation," and Mr. S. Wyatt contributes "Some observations on industrial conditions, with special reference to cotton weaving." Dr. Vernon is the author of two articles, one on "Atmospheric conditions and industrial efficiency," and another dealing with "Future investigations in the pottery industry." Mr. H. C. Weston contributes a note on machine design in relation to the operative.



## British Medical Journal.

SATURDAY, MAY 12TH, 1923.

### MEDICAL EDUCATION IN THE MELTING-POT.

SIR GEORGE NEWMAN has done a public service in issuing at the present juncture a memorandum on recent advances in medical education in England. A summary of his essay has been given in our last two issues (April 28th, p. 729, and May 5th, p. 771).

The rapidity with which the present conception of medical education has been evolved may be considered remarkable. For the first questionings whether the system of medical education in England was keeping abreast of the times we need not, for the present purposes, go back further than to the final report, published in 1913, of the Royal Commission on University Education in London, which discussed some questions and principles which are not peculiar to London. The Commission, in summarizing its conclusions, said: "The complex nature of the science of medicine and its dependence for assistance upon other branches of science necessitate co-operation, and the special organization of a professorial department, in order to enable the professor to carry on research successfully, and also to give scientific instruction in the subject. The kind of hospital organization known as the 'hospital unit' appears to us well fitted for attaining this end. It consists of:—a professor with the control of wards; an out-patient department; assistants nominated by the professor with a view to complementing his own knowledge and affording him the special assistance he requires to carry on research in the direction in which he is interested; and, finally, laboratory accommodation in close proximity to the wards, not only for the service of the wards, and the examinations and procedures connected with the diagnosis and treatment of the cases, but also for the purposes of research."

The Royal Commission recognized that there would be difficulties in the way of appointing a sufficient number of professors, but thought that some of the work might be done by the assistants to the professors and that some of the senior assistants would probably be exceedingly well qualified for this purpose. It added that this plan would give the opportunity of calling in the more experienced assistance and co-operation of members of the profession in active practice, and that this would be of advantage both to them and to the students. The financial difficulty was smoothed when Parliament agreed to make a substantial increase in the annual grant to universities and institutions of university rank. The University Grants Committee, appointed in 1919 to administer the grant, gave attention, among other subjects, to the question of clinical units, and grants for this purpose have been made.

The General Medical Council was brought into the matter of reform in medical education rather by a side wind. At its session in May, 1918, it instructed its Education Committee—in terms of a resolution submitted by Dr. J. C. McVail and Professor Elliot Smith—to inquire and report on the question whether the teaching of preventive medicine ought not to be further systematized. Sir George Newman's

first memorandum was issued at the end of July, 1918, and during the following winter the conclusions of a series of discussions at the Edinburgh Pathological Club were formulated by a Committee, of which Professor Lorrain Smith was chairman, and published in the *Edinburgh Medical Journal*. The Education Committee of the General Medical Council prepared an elaborate set of questions which the Council approved and sent to the medical schools; the questions were of such a nature as to foreshadow a policy the chief feature of which would be that the whole medical course in the schools should be permeated by the spirit and principles of prevention, beginning even with the preliminary sciences and continuing through the clinical courses and into the final examinations. The questions were numerous and searching, and when the replies received from the schools were considered it became obvious that the time had arrived for reviewing and revising the whole medical curriculum. This has now been done, and the new curriculum has been in force since the beginning of the present year.

But Sir George Newman's memorandum is much more than an exposition of the Medical Council's new scheme. He emphasizes clearly and vigorously his own views on the outstanding requirements of medical education. In the recent literature of local and central administration the term "co-ordination" is often to be found, and has been used to express the desire for effective and economical relations between old and new spheres of work. Co-ordination does not mean amalgamation, but harmonious and mutually helpful co-operation, so that there shall be neither hiatus nor overlapping. Sir George Newman, however, says little about co-ordination but a deal about integration, by which we take him to mean something more than co-ordination. The dictionary meaning of integrate is "to render entire or complete; to put or bring together (parts or elements) so as to form one whole; to combine into a whole." A very fine ideal as applied to medicine in all its aspects—prevention, treatment, and scientific research; an ideal, indeed, difficult of attainment, but to be attained if we are convinced of its necessity.

Many will look first for what Sir George Newman has to say about the clinical unit, of which so much has been heard since the London Royal Commission reported ten years ago. It is fully discussed in two chapters, and there is logical significance in the order, the one on the chief needs of clinical study, and the other on university clinics (clinical units). All will agree that the needs of clinical study as they develop must be met, and that the manner of meeting them must be such as to bring their teaching to a university standard, but the clinical unit is only a means to an end; the exact plan by which the end is attained is a minor matter provided it be elastic enough to adapt itself to varying needs of the time, present and future, and of place. We want new methods, but not a violent wrench with the past; we must seek to retain all the good in the old system of medical education in Great Britain, and to strengthen it where—especially in England—changing conditions have discovered weaknesses in the machinery. This doctrine Sir George Newman develops at length, with many historical references, apt quotations, and plans for the future, the whole pervaded with a sublimated sort of common sense.

Thus while he writes "one fact is both certain and universal—the claims of clinical teaching and the need for adequate equipment for such teaching have advanced in such a way, and to such a degree, as to make



reorganization absolutely necessary," he goes on to point out that "such reorganization may well take different forms, but it must provide opportunity for effective teaching in the clinical as in the intermediate subjects." The university clinic has two purposes—the provision of education of university standard in the clinical subjects for all students, and the advancement of learning. In developing the second point Sir George Newman writes: "It is the goal of medicine which here must be striven for, it is the sum total of knowledge applicable to the betterment of man's physical estate which must be synthesized. The ordinary dispensary treats the case; the University Clinic does the same, but out of the case it should draw a liberal education and provide for the sounder and fuller treatment of all similar patients, for it should so think and work as both to train the student and extend the frontiers of knowledge and of life." Then he comes to the issue presented by the practical application of the doctrine thus enunciated, and, we believe, generally accepted. "Much expenditure and educational attention have been devoted to the sciences of anatomy and physiology, but the clinical subjects have not, until recently, received their due. All too often they have been left to the chances of incidental teaching by an honorary hospital staff, unable to devote itself principally to teaching and research. Incidental teaching of clinical subjects cannot uniformly be of university standard."

As to the details of the plan along which the university clinic is to work he keeps an open mind. There was an attempt, made by well-meaning persons unacquainted with the history of the system of medical education which has grown up in this country during the last hundred years or more, to assert that it was all wrong, that we must have a clean cut, and start afresh on a plan they prescribed. Sir George Newman has freed himself from doctrinairism, if ever he was affected by it, and frankly confesses that the aim may be reached in several different ways, though he adds a caveat to the effect that "longer experience may modify opinion, and especially so when the existing clinics have trained competent leaders for whole-time posts." Nevertheless he sees and frankly sets out the defects of the whole-time plan as applied to the clinical subjects; some of them may be diminished, as the opinion just quoted suggests, but others are inherent. It has never been strictly carried out in Germany, Austria, Switzerland, or France, and is not spreading in America, from which it came to us. Another plan which is working there in some places provides the whole-time professor with special wards and consultation rooms, where he treats private patients, the fees being paid to him direct or to the governing board of the hospital, which has an equitable arrangement with him. Another method of solving the practical problem is that by which a part-time professor or teacher has whole-time assistants, to whom some of the professorial duties are assigned; the practical application of this method at Leeds was described in our columns last year.<sup>1</sup> Yet another method permits the clinical professor to undertake outside private practice to an extent which will not interfere with his duties as head of the university clinic. "Such restriction may take various forms, either on a time basis or in respect of the character of the practice undertaken. An example is the Regius Professor of Clinical Surgery at Edinburgh." Sir George Newman's view is that of the four types of solution the English medical schools will be most likely to favour the last here mentioned. The real objective is

to find "the best method of creating a team of clinicians who are also laboratory workers, in a unit, under the leadership of a professor who has control of beds, laboratories and out-patient department, with adequate provision as regards time, equipment, and teaching ability, in order that the clinical education of the student may be directed along lines that will produce the best treatment for patients and the advance of knowledge." We come round, therefore, to something very like the French plan when that is worked by the best men under the best conditions.

The essay is the primary concern of those engaged in medical education or in any way responsible for it, but it can be read with interest by the practitioner as an exposition of the trend of present-day thought, and will be of value to the newly entered student by giving a broad conception of the meaning of the curriculum, of why the subjects are linked together in a particular order, of the bearing of every one of them on all the rest, and of the ultimate objective of the whole, which is not merely to pass the examination required for a registrable qualification—a condition unfortunately imperative in this imperfect world—but to learn how to prevent and cure disease throughout his professional life. To that end he will continue to study after graduation, when he will no longer be pestered by examinations and examiners, but will have for his sole aim the understanding of the problems of health and disease, and the application of his knowledge and experience to the welfare of those who commit themselves to his care.

## INDUSTRIAL FATIGUE.

EVOLUTIONARY adaptation of man to modern industrial conditions can hardly be expected to go further without damage to the race, and the imperative necessity of adapting the machine and the environment to the man is beginning to be better understood. So specialized and standardized have the processes in many trades become that the workers perform exactly the same actions in exactly the same way hour after hour and day after day, carrying out a routine whilst breathing often a moist or dusty atmosphere in an ugly building reverberating with the ceaseless clank of machinery. Increase of production has been the chief aim of our industrial age, and to obtain the maximum increase with the minimum expenditure of money the man of to-day has been trained to a degree of monotonous mechanical efficiency which rivals that of the complex machines he tends.

The amelioration of the artificial surroundings of the factory or workshop promising greater comfort to the worker, and improvement in the design of machinery to eliminate causes of accidents and to diminish risks to health, are objects which, from hygienic and philanthropic motives, have been the care of public health legislation. They are now being studied by employers of labour with a view, as is assumed, to increased production—a motive which occasionally arouses suspicion in the powerful organizations of the workmen, who fear that it may be only a fresh means of exploitation.

This atmosphere of mistrust is probably quite unwarranted, since adaptation of the machine to the individual, if successfully achieved, will benefit both employers and workmen, and the establishment of the Industrial Fatigue Research Board, whose objects are entirely disinterested and whose aims are purely scientific, has been a move in the right direction. It is an impartial authority in which both parties may have confidence. A detailed note on the Board's third annual report will be found at page 819, but we may here pick

<sup>1</sup> BRITISH MEDICAL JOURNAL, 1922, vol. 1, p. 21 (general principles) and p. 834 (detailed plan).



on three examples of the services it is capable of rendering. In the weaving of certain kinds of cotton cloth moisture is injected into the air of the room. Objection has been taken to this practice, which is trying to the workpeople, especially during the hot summer months, and several committees of inquiry have sat. Evidence has been given to them to the effect that work of the type of weaving is carried out under disadvantageous conditions when the wet-bulb temperature in the sheds exceeds a limit variously given as 70° or 75° F. At temperatures approximating to these the body temperature of a worker tends to rise as work proceeds, and two recent reports to the Board have shown that "in cotton weaving the time taken by the weaver to deal with each breakage increases, within limits, as the wet-bulb temperature rises, and that in the kindred process of fine linen weaving efficiency falls to a marked degree when the wet-bulb temperature reaches 73° F." Thus amelioration of conditions in this respect is in the interest of the industry. Again, it has been found that in the weaving both of silk and fine linen the effect of even a good system of artificial lighting, as compared with natural lighting, is to reduce productive efficiency by about 10 per cent. The causes of accidents, broadly considered, form another matter of great interest, and some controversy has arisen as to the relative importance of fatigue and speed of work as factors in accident incidence. Dr. Vernon's researches indicate that speed of work is the more important factor, since the output curve and the curve giving hourly accident incidence usually correspond closely; this view is confirmed by the fact that no increase in accidents is observed at the end of a spell of work, when fatigue would naturally be expected to manifest itself.

Much may be expected in the future from a study of the design of machinery in relation to the convenience of the operative. The shape, size, and position of levers and hand-wheels, and the power required to operate them; the height of the working plane, the area which has to be kept under observation, the extent to which the operative may be required to reach both in the horizontal and vertical directions, and the number of controls, together with the order in which they are managed—all these are problems demanding investigation. Adaptation of the machine to the individual will result both in increased production and greater comfort for the worker.

### NURSES' REGISTRATION.

THE Nurses' Registration Act of November 1st, 1919, laid upon the General Nursing Council the duties of forming a Register, regulating the conditions for admission thereto of such nurses as were already in practice, and of prescribing the training and regulating the examinations which should be conditions of admission for the future. Parliament gave no indications as to the admission of nurses already in practice, termed in the Act "existing nurses," except that they should have been in bona fide practice for at least three years before November 1st, 1919, "under conditions which appear to the Council to be satisfactory for the purposes of this provision and have adequate knowledge and experience."

The first Council was an appointed body. It was charged to form a scheme for the election of sixteen members on to the second Council. The second Council, formed of sixteen elected and nine appointed members, came into existence this year.

In admitting nurses to the Register the Council has required hitherto that all general nurses should have

undergone at least one year's training in some general hospital. Under this term have been included small cottage hospitals. If training was to be required the conditions could hardly have been more lenient. But about a year ago complaint was made that competent nurses were being excluded by this requirement. The Council made several attempts to satisfy this complaint, but it is obliged by the Act to consult with the Nursing Councils of Scotland and Ireland, as well as to obtain the approval of the Minister. Each proposal made by the Council up to the present was blocked either by one or the other of these authorities. At present a proposed rule of the Council that nurses in practice before 1900—after which date hospital training became the acknowledged custom—should be admitted on evidence of competence alone, is before the Minister, and if approved by him will lie on the table of the House. It is to this rule that the Committee of Medical Members of Parliament is reported to object. Their intention, it has been announced, is to propose an amendment admitting all nurses who have been three years in practice before November 1st, 1919, without requiring any hospital training, and substituting therefor testimonials of competence and an examination by the Council. It seems to us somewhat doubtful whether the latter would be made satisfactory.

The Nursing Council has also been engaged in drawing up regulations for the future. Under this head are included the approval of hospitals for training schools—obviously a difficult and invidious task—the drawing up of syllabuses relative to training and examination of every branch of nursing, and the arrangements and regulations necessary for holding simultaneous quarterly examinations at various centres throughout England and Wales. This latter is a complicated piece of business.

The scheme which was adopted for the election of the existing Council was subjected to certain criticisms in the House of Commons, and on March 14th Major Barnett proposed a large number of amendments, although only one of them raised any point of principle. The scheme for election provided that six of the eleven representatives of the registered nurses should be past or present matrons. Major Barnett's suggestion was that the registered nurses should elect eleven nurses to represent them, and that they might or might not be matrons. This, he said, followed a precedent set in Scotland. All the amendments were passed by the Minister of Health to the Nursing Council for consideration and report. It must be remembered that this Council has two main functions—the regulation of the education of nurses and the maintenance of a satisfactory register. In view of the importance of the functions of the Council in relation to education it may be doubted whether it would be justifiable to leave its constitution wholly to the chances of an open vote.

The first volume of the Register, issued as ordered by the Act as soon as possible after July 21st, 1922, contained 6,000 names. By November 24th the electorate had risen to 12,000, and about 3,000 more have been added since then. It seems, therefore, as if nurses were registering in good numbers.

### THREE PIONEERS.

THE grave in which Sir Shirley Murphy was laid to rest last week in Brookwood Cemetery is within a few yards of those of two men to whom he was bound by close ties of friendship and who were equally eminent with him in the sphere of public health—Sir George Buchanan and Sir William Henry Power. It is said that the burial-place of Sir Shirley



Murphy was selected by Lady Murphy so that he might rest near his old friends. It was a fine thought. When these three were in their prime the number of medical men devoted to the practice of sanitary science and preventive medicine was a mere fraction of the total so occupied in the present day. Two of the three were at the head of the public health service in England, while the third was in a similar position for the greatest municipality of the British Empire. Buchanan—eager, a man of action, fretting against the bars of the prison in which, even when he had attained the highest office open to him, a man who gave himself to public health was then confined. Power—reserved, taciturn, contemplative with patience to wait on events, the progress of which he seemed to believe could not be hurried, only directed. Shirley Murphy—genial, ready to give himself freely, pouring out facts, opinions, questions, which his retentive memory had stored or his rapid mind was formulating. He had a great opportunity; the consciousness that he had risen to it made happy the mellow years of his retirement. These three now sleep their long sleep together under the shade of the firs in the great cemetery which retains more of nature and owes less to art than the long roadways of well-trimmed plots which compose the ordinary burying places of great urban populations.

#### THE ROYAL ACADEMY.

AN exhibition of pictures, such as that at the Royal Academy of Arts, may offer matter of interest from a medical point of view because it contains portraits of medical men and women; or from time to time because a medical man exhibits a work of art found worthy of acceptance by the hanging committee; or because—and this is not very infrequent—an artist has introduced into his picture, consciously or unconsciously, the representation of some physical abnormality or disease. In any case the artist is commonly concerned with two subjects upon which medical men can claim some measure of expert knowledge—namely, anatomy and colour. This year's exhibition at Burlington House does not appear to contain many works by doctors; but we noticed a water-colour painting, "In a Chelsea Studio" (No. 768), by Dr. Cecil W. Pilcher. In each of the other directions, however, there is more matter for comment. In Gallery I there is a very good portrait (No. 31) of Sir Malcolm Morris in a characteristic attitude, by Mr. Walter W. Russell, A.R.A. The portrait (No. 129) of Miss Aldrich-Blake, M.S., M.D., is perhaps the best by Sir William Orpen in this year's exhibition. Mr. Edwin A. Ward exhibits a somewhat ordinary painting (No. 230) of Sir William Church, which is, however, a very good likeness. The charcoal drawing (No. 1027) of Sir Alfred Rice-Oxley, the ex-Mayor of Kensington, by Mrs. L. Anning Bell, is of average merit, but a poor likeness. Amongst the sculpture there is a bust (No. 1361) of Professor D. Greig, F.R.C.S., by Mr. George D. Macdougald, a model (No. 1365) for the obverse of the Lister memorial medal, by Mr. Charles L. Hartwell, A.R.A., and a medallion (No. 1370) of Dr. William Harvey, by the same sculptor. Sir George Frampton exhibits a bronze bust (No. 1465) of Sir John Bland-Sutton. With regard to physical abnormalities, the attention of the medical visitor will be caught very early by the unpleasant corpse-like flesh colour of the two figures in Mr. Glyn Philpot's "Little Dancer" (No. 15). Why two apparently living beings should be represented with such complexions is an enigma. Against such a travesty may be set the flesh painting in "The Entombment" (No. 2), a picture in the primitive style, in which Mr. David Poynter has attempted with success to reproduce a corpse-like colour in the dead Christ—an unusual effect. Mr. Maurice Greiffenhagen's diploma work, entitled "The Message" (No. 454), raises the question whether the painter really admires enlarged thyroids, or whether his representation of such an abnormality is due to the influence of Rossetti. There is another

picture in which the abnormality is also to be detected. The examination of an exhibition of pictures from the stand-points of anatomy and colour might be a fascinating pursuit. We have heard it said that art schools would do well to confine their attention mainly to these subjects, and to leave art to be evolved by the artist. Certainly the exhibition does not want in examples of the need for closer study both in anatomy and in colour. Thus the greens in many of the landscapes and other pictures are suggestive of defect in colour vision. Take for example "Before the Ruined Abbey" (No. 259), with its spinach-like grass, by Mr. Sydney Lee, A.R.A., or "The Birth of a River" (No. 666), by the same artist, depicting, apparently, a glacier of lifeless green surmounted by a cap of dirty snow; and compare these with the greens which have accomplished their purpose in Mr. Algernon Talmage's "Morning After Rain" (No. 140) and Mr. Edward Buttar's "Wiltshire Downs" (No. 234). In No. 564 Mr. William T. Wood combines astonishing greens with trees in which the foliage resembles the painted shavings used in toy farmyards, and the wood is impossible. In "The Sisters" (No. 258), by Mr. W. G. de Glehn, A.R.A. elect, the anatomy of the neck and shoulders of the sister in pink is defective, and the suprasternal notch resembles a pit. In the background of Miss Ethel Walker's "The Invocation" (No. 627) there is a row of figures, of which that on the extreme right shows marked deformity of the hip. It is difficult to believe that in the pursuit of "line" in drawing greater satisfaction is to be derived from deformity than from health. "Tilty Church" (No. 137), by Mr. George Clausen, R.A., is defaced by a cloud with the anatomy of a bolster. The so-called pictures of the year, such as Mr. Wyllie's "Port of London" (No. 213) and Sir William Orpen's strange picture, which to many spectators is merely horrible, "To the Unknown British Soldier in France" (No. 190), present no particular medical interest. Mr. Edward Chappell's "Over the Hills and Far Away" (No. 267) and Miss Barbara Shiffner's "With 'The Grove'" (No. 668) are amusing because of the yellow carpet of sunlight spread out for a herd of cows in the one case, and the numerous green carpets for various patches of animals in the other; but that our criticism may end on a note of praise we would call attention to Mr. L. Campbell Taylor's "Priscilla" (No. 489), a work in the older Dutch spirit, to "Mischief" (No. 637), by Miss Helen Mackenzie, which is firm and good, and to the "Lady and Gentleman" (No. 646) by Mr. Alfred R. Thompson.

#### THE ANTIRABIC INSTITUTE IN BAGDAD.

AT a meeting of the Section of Tropical Diseases and Parasitology of the Royal Society of Medicine on Monday, Lieut.-Colonel A. E. Hamerton described the work of the antirabic institute at Bagdad. He said that in the tropics it had been usual to establish antirabic institutes in the temperate climate of hill stations, often far removed from the endemic areas of the disease and the centres of population, but it was often necessary to treat rabies on the plains where torrid heat prevailed. The use of carbolized vaccine was, he believed, the best method; it had stood the test of many independent investigations. The standardized glycerinated vaccine of Phillips, as used in the United States, seemed ideal for non-tropical climates, but apart from the difficulty of obtaining pure glycerin in the dusty atmosphere of a Mesopotamian town, contact with glycerin under these conditions rapidly killed the virus and presumably affected the vaccine. Rabies in dogs and hydrophobia in man had been recognized by medical practitioners in Bagdad long before the British occupation, and early in the war a good many cases of canine rabies were detected by the members of the army medical and veterinary services in Iraq, and the men who had been bitten were sent for antirabic treatment to the hill station at Kasauli. As the army, with its following of pet dogs, increased, and it became



known that a dog bite, real or spurious, meant the transfer of the victim from the infernal regions of Iraq to the delectable mountains of Hindustan, there seemed to be some likelihood that the forces would be seriously depleted. There was no doubt a good deal of malingering, but cases of hydrophobia had occurred, and it was not considered safe to disregard any instance of reputed dog bite. During 1919 a remarkable series of cases of hydrophobia occurred in a refugee camp near Bagdad. A rabid jackal attacked 46 prisoners; 28 of these were sent to Kasauli, but the journey was long and five of them died; of those not sent eleven died of hydrophobia in the army hospital. An antirabic institute was established in Bagdad by the military authorities, and the good result of the early vaccine treatment thus made possible was exemplified in some well authenticated cases. An Arab sheikh and his daughter, who had been bitten by a wolf, attended the laboratory at Bagdad and received treatment; eight other persons who were bitten at the same time refused to attend. Four months later the sheikh and his daughter were alive and quite well, while all the other persons had developed hydrophobia and had died. It was impossible to stamp out rabies in a tropical country because jackals, wolves, and, in East Africa, hyenas provided a natural reservoir for the virus. The first cases which occurred in a district should be biologically proved, and if the attack was unquestionably rabies, then more cases were to be expected, and due precautions should be enforced. As the preparation of a fixed virus was tedious and expensive it was convenient to obtain the strain from one of the Pasteur institutes already established, but the virus was exceedingly delicate, and during transit in a hot climate might be killed. In Bagdad it was necessary to send the virus from Kasauli in live rabbits which were successively inoculated. During the period of intense heat the virus seemed to lose its strength, and the animal died, not on the ninth or tenth day after inoculation, but on the twelfth or thirteenth. Each patient treated at Bagdad received a dose of 5 c.cm. of the vaccine over a period of fourteen days; the dose was given intracutaneously rather than subcutaneously. The needle was sterilized in hot oil between the inoculation of each patient. At the conclusion of the course the patient was given a stamped addressed postcard and requested to inform the director of the institute of the state of his health three months later. During 1921 the carbolyzed vaccine was used for 137 people in Bagdad, and down to May, 1922, when Colonel Hamerton left Iraq, no case of hydrophobia nor any unpleasant after-effects had occurred among those treated. The work of the institute had been continued by the civil medical administration, and only one case of hydrophobia had been reported among those who had come for treatment, a man who refused to continue the course, and received only four inoculations instead of fourteen. The cost of an antirabic institute in the tropics, if there was a well equipped laboratory already established for general bacteriological work, was trifling. The initial cost of instruments and of rabbits and rabbit hutches was from 1,100 to 1,200 rupees, and the recurring expenditure, chiefly remuneration of additional staff, 100 rupees a month.

#### THE ASSOCIATION OF PUBLIC VACCINATORS.

THE annual meeting of the Association of Public Vaccinators of England and Wales this year was an occasion of special interest, because it marked the twenty-fifth year of its existence. The activities and usefulness of the Association during these years were indicated in a summary of its history circulated among the members with the annual report. Dr. A. E. Cope, honorary secretary and treasurer, and a former president, gave an address on a quarter of a century of vaccination and its lessons. He referred to the

great value of the work of Dr. S. Monckton Copeman, as outlined in his Milroy lectures delivered in 1898—the year of the birth of the Association of Public Vaccinators. Dr. Cope dealt with the histology of small-pox and cow-pox, and observed that the essential difference appeared to be that in small-pox the amoeboid body found in both entered on a sexual phase and invaded the cell nucleus. The country had been remarkably free from small-pox during the past twenty-five years, but the disease had by no means disappeared. Small-pox had assumed different types, attributable to variations in the source of infection. In the epidemic of 1901-2 the London visitation was severe in type, having been imported from the East; in the provinces the strain was mild and came from America. Standardized calf lymph was now available in unlimited supplies, thanks to the excellent work done at the National Vaccine Establishment. There should be uniformity in the technique of vaccination, and parents should be instructed definitely regarding the after-care of the child. Dr. F. W. Brookes of Lambeth was in the chair, and it was unanimously resolved to invite Dr. A. G. Wells, one of the oldest members of the Council and honorary auditor of the Association, to become president for the ensuing year, but the meeting heard with regret that Dr. Wells was unable to accept the honour. Thereupon Dr. Brookes consented to serve for another year. He was in the chair at the annual dinner, at which, after the loyal toast and that of the Association had been duly honoured, Dr. Arthur Drury proposed the health of the visitors. The Association, he said, had always been happy in the choice of guests, and that evening was specially so. Dr. McVail's classic *Vaccination Indicated* had been an inspiration, and had provided the speaker with much ammunition during the twenty-five years in which he had been actively engaged in the defence of vaccination. The valuable researches of Dr. S. Monckton Copeman and his processes for the production and storage of glycerinated calf lymph had entirely changed the work of public vaccinators and rendered it more satisfactory. They had with them also that evening Dr. W. McConnel Wanklyn, whose work in connexion with small-pox and whose publications were well known. To Dr. C. Courtenay Lord (British Medical Association), Dr. James Neal (Medical Defence Union), Dr. Horner (*British Medical Journal*), and Dr. Pinkerton (*Lancet*) Dr. Drury extended a hearty welcome on behalf of the Association. In responding to the toast, Dr. J. McVail said that there was present a greater personification of knowledge of the art of vaccination than could be found in any part of the globe. The science of vaccination was personified in Dr. S. Monckton Copeman. He regarded it as a duty of the Association to instruct public vaccinators, and indeed the whole profession, in regard to the detail of vaccination. Small-pox always taught the lessons of vaccination without any equivocation. There was now more emergency vaccination and more vaccination of adults, and as the circumstances were not the same as with infants, every endeavour should be made to prevent the occurrence of "bad arms." A committee should produce a report of all the difficulties encountered. A single "bad" case was advertised by those who decried vaccination. Many years ago the British Medical Association issued a pamphlet on vaccination; it might be revised and brought up to date. He congratulated the Association on having the services of Dr. Drury to deal with the controversial aspect; if there was one man in the country who could bowl over the antivaccinator in controversy it was he. Dr. McVail went on to maintain that there had never been compulsion in this country. The law had been weakened, and it was therefore more imperatively necessary to educate the public. Dr. Copeman, who also replied, recounted some amusing experiences in a racy speech. He urged members of the Association to visit the National Vaccine Establishment. No fewer than eleven millions of tubes of glycerinated calf lymph were issued



## WORK OF THE FRIENDS' RELIEF COMMITTEE.

during the war. He concluded with some practical hints concerning the vaccination of adults. The health of "The President" was proposed by Dr. E. Climson Greenwood (first president of the Association), who met with a hearty reception, and duly acknowledged.

## THE WORK OF THE FRIENDS' RELIEF COMMITTEE.

The ninth report of the Friends' Emergency and War Victims' Relief Committee describes its work in France, Russia, Austria, and Poland during the year ended March 31st, 1923. In France the emergency maternity hospital established at Châlons-sur-Marne in December, 1914, has been replaced by a permanent building given by English and American Friends with the aid of some French donations; it has been handed over to a local committee to carry on, and is intended to serve as a memorial of the work of the Friends for France. Two ante-natal consultations and two consultations for infants are held weekly. As to Russia, it is hoped that it will prove possible to discontinue the famine relief work immediately after the next harvest. The deplorable conditions existing in the district of Buzuluk were described in the report for last year. The population cared for then was about 454,000; it had been reduced by last summer to about 336,000, "or, in other words, in an area roughly the size of Yorkshire and Lancashire, every third person had died." Before the last harvest about 257,000 people were being fed; at the harvest the number dropped to 65,000; later on it rose again to 103,000, and would, it was anticipated, increase to 150,000. Help has been given both by gifts of clothing and by the introduction of agricultural machinery. The health conditions, it is stated, have materially improved, although malaria has been rampant. Under the direction of the Committee's medical officer, Dr. M. D. Mackenzie, an epidemic hospital at Buzuluk has been reopened, and ten other hospitals have received equipment and food to enable them to begin their work again. The feared epidemic of cholera did not occur, but cholera vaccine sufficient for 100,000 persons was distributed to the local doctors. A sanitary guard has been established at Buzuluk station to watch for cases of typhus, and a bacteriological laboratory has been set up. Russian doctors have taken a responsible share in the work, and arrangements have been completed for them to carry it on after the mission leaves, as is intended, during this summer. The confidence in Austria, restored by the determination with which the League of Nations scheme for financial reconstruction is being carried out, will, it is hoped, enable the commission in that country to be withdrawn this summer. The mission has continued its care of tuberculous, rachitic, and under-nourished children by subsidizing their maintenance in homes. The difficulty of obtaining fresh milk for children and sick people in Vienna has been met by establishing a system by which cows are imported and handed over to farmers in the neighbourhood of Vienna who undertake to deliver stated quantities of milk daily for a period of eight months, until the cow has paid for herself in milk and so belongs to the farmer. Over 1,000 cows have been disposed of in this way. The quantity of milk distributed daily in April, 1922, was over 4,000 litres. Special milk in sealed bottles is supplied to 2,000 infants, and since last summer children's institutions have been supplied with fresh milk at one-third of the market price. This accounted for 1,500 litres, and about 4,000 more were delivered daily to individuals, including 1,000 to patients from tuberculosis dispensaries. During February, 1923, about 7,000 litres were distributed daily to children and tuberculous patients. Altogether some 14,000 persons in Vienna and the provinces were daily receiving milk from the mission's cows. All this, of course, meant a big organization; there were 47 distributing centres in Vienna. The Committee, as we understand, intends to close its mission in Poland this summer, after three years'

work. Welfare centres have been established in several towns, and are now being administered by Poles, as is also the school of gardening at Dykainow.

## THE INDUSTRIAL COLONY IN THE TREATMENT OF TUBERCULOSIS.

The spring meeting of the Border Counties Branch of the British Medical Association was held on April 20th, at Englethwaite Industrial Colony, by invitation of the Cumberland County Council. A tour of inspection of the Colony was made during the afternoon, special attention being paid to the poultry farm, the joinery shop, and the other branches of industry in which the patients are engaged. Afterwards an address was given in the recreation hall by Dr. P. C. Varrier-Jones, of Papworth Industrial Colony, Cambridge. Dr. W. Scott, Ruthwell, Dumfries, president of the Branch, being in the chair. Dr. Varrier-Jones said that Papworth was the pioneer institution of the kind in England. Beginning in temporary work as a tuberculosis officer he sat at a desk, and to one patient he would recommend "a light job," to others "a generous diet and plenty of cream." Quite suddenly, one day, he was told that what a patient desired from his doctor was hope, and he thought over again the advice he had given to his patients. If a light open-air job existed, there must be light wages at the end of the week, and he found that he had been advising men to do something which, if coupled with good wages, did not exist. He began to wonder whether it would be possible to give a man an opportunity of living under conditions in which disease, partially arrested in a sanatorium, could continue to be arrested during the remainder of his days. In Cambridgeshire the assistance of the friendly societies was invoked, and the institution at Papworth begun in quite a small way. It had to be realized that the ordinary working man was not nowadays a craftsman—the craftsman's days were over, for an "engineer" now minded a machine, and a "bootmaker" did only six inches of separate sewing to a boot which went through seventy to be subsidized, but this subsidy was an insurance by the community against infection. Public opinion was with the Papworth scheme, and tuberculosis was there treated right down to its very base in the home. The wives and families of the men were there, but so far there had not been one case of infection.

## THE THIRD JUBILEE OF THE MEDICAL SOCIETY OF LONDON.

As already announced, the 150th Anniversary Dinner of the Medical Society of London will be held at the Hyde Park Hotel on Tuesday, May 15th. The principal guest will be the Prince of Wales. The toast of "Medicine and the Medical Society of London" will be proposed by Mr. Lloyd George and responded to by the President, Lord Dawson of Penn. The toast of "The Sister Professions and the Guests" will be proposed by Sir John Bland-Sutton, F.R.C.S., and responded to by the Lord Chief Justice (Lord Hewart) and by the Minister of Health (Mr. Neville Chamberlain). Fellows and their guests will pass through the grill room entrance and will be received by the President at 7.30. It is requested that at 7.45 Fellows and their guests will take their places at the dinner tables in order that the audience may be seated before the arrival of the Prince of Wales. The history of the Medical Society has often been told. It was founded by Lettsom with Dr. John Millar as president and Lettsom as treasurer. The first meeting was held in May, 1773. Two years later Lettsom succeeded to the presidency, and there can be no doubt that it was mainly through his influence and generosity that the Society survived, the only one of many founded about that time. It is



interesting that among the guests at the dinner next week will be a member of the Lettsom family. Dr. John Fothergill, though not a member of the Society, was a friend and patron of Lettsom, who in 1784, soon after Fothergill's death, founded a Fothergillian gold medal in his honour; the family will be represented at the dinner by Dr. Fothergill. Among other guests are the presidents of the Royal Colleges of Surgeons of England and of Ireland, of the British Medical Association, of the Royal Society of Medicine, and of the Royal Academy; the Minister of Health, Professor Sir Clifford Allbutt, and Professor Sir Archibald Garrod, the Bishop of Birmingham, Sir John Goodwin, Sir William Leishman, together with Sir Alfred Yarrow and many other representatives of science.

#### THE HOSPITAL POLICY OF THE ASSOCIATION.

We publish this week at page 835 a letter from the Chairman of the Hospitals Committee of the Association, and at page 817 a short history of the events which have brought the discussion of hospital policy to its present position. The correspondence has served a useful purpose by enabling the protagonists to put their divergent views before the profession in their own words, but it cannot profitably be continued. The next, if not the final, word is with the Representative Meeting at Portsmouth in July, which will have before it the report on the subject embodied in the Council's annual report published in the SUPPLEMENT of April 28th.

THE Association of Surgeons of Great Britain and Ireland met in London on the last three days of last week; Mr. Raymond Johnson presided. The Association does not permit publication of a report of its proceedings, wisely no doubt, in order to encourage freedom in debate and frankness in criticism. On Saturday morning demonstrations were given at the Royal College of Surgeons by Sir Arthur Keith, F.R.S., and Professor S. G. Shattock, F.R.S.

THE Croonian lectures before the Royal College of Physicians of London will be given by Professor J. B. Leathes, F.R.S., on the subject of the part played by fats in vital phenomena. There will be four lectures, which will be given at 5 p.m. on Tuesdays and Thursdays, beginning on June 7th.

THE annual oration before the Medical Society of London will be given on Monday next, May 14th, at 9 p.m., by Dr. J. Walter Carr, who has taken for his subject "Life and Problems in a Medical Utopia." The guests will be received by the President, Lord Dawson of Penn., at 8.30, and the lecture will be followed by a conversazione.

KING GEORGE V, when Prince of Wales, was an honorary Fellow of the Royal Society of Medicine. We announced some time ago that the Prince of Wales, having consented to accept the honorary fellowship, had been duly nominated and unanimously elected. On May 4th, at St. James's Palace, he received the diploma at the hands of the president, Sir William Hale-White, who was accompanied by the honorary secretaries, Dr. A. M. H. Gray and Mr. Girling Ball, and the secretary, Sir J. Y. W. MacAlister.

Among those upon whom the University of Cambridge will shortly confer honorary degrees are Dr. W. H. Welch, director of the School of Hygiene, Johns Hopkins University, Baltimore, and Dr. J. T. MacCurdy, formerly of the same university, but now lecturer in psychopathology in the University of Cambridge.

## EXCHANGE PROFESSORS.

### VISIT OF SIR HAROLD STILES TO BOSTON.

AN interesting precedent has been established by the recent visit of the Regius Professor of Clinical Surgery at Edinburgh University to Harvard to act temporarily in the place of Professor Harvey Cushing. Sir Harold Stiles, who has just resumed his regular duties in Edinburgh, carried out for the last fortnight of the Harvard session the teaching in clinical surgery at Boston and the duties of surgeon to the Peter Bent Brigham Hospital in that city. The system of "exchange professors" has been in vogue at the Harvard School for eight years, and while Sir Harold Stiles was in temporary occupancy of the Chair of Surgery, Professor Connor, from Cornell University, New York, acted for a fortnight as "exchange professor" in Medicine. The practice is one which presents great opportunities of new experience both to professor and students, and it is hoped that Edinburgh University may show reciprocity by welcoming an American professor for a short period to one of its chairs.

The Harvard Medical School presents some interesting contrasts to the Edinburgh system. In the first place the number of students is limited to 120 entrants in each year. A further process of selection is exercised by means of a preliminary science examination; the early science subjects are studied apart from medicine, and after the examination in these is passed the medical course proper lasts four years. In addition to this at Harvard the entrants for medicine are selected from those holding degrees of the best recognized universities in the States.

As regards facilities for clinical study, Boston is particularly favoured by the large number of well equipped hospitals in the city. This is largely due to the fact that all classes of the community have recourse to hospital for treatment and that the hospitals are well supported by the charges levied on the more affluent patients using them. The Peter Bent Brigham Hospital contains 226 beds, and here the surgeon-in-chief and physician-in-chief respectively are Professor Harvey Cushing and Professor Henry A. Christian of the Harvard Medical School. The Massachusetts General Hospital has 358 beds and the Boston City Hospital 1,209 beds. Between these three general hospitals the students are apportioned for clinical study and instruction and there are some ten affiliated special hospitals for infectious diseases, mental diseases, diseases of the eye, diseases of the ear and throat, diseases of children, etc., where students may take the elective courses to be mentioned later. As examples of the extent of equipment it may be mentioned that the teaching staff of professors, assistant professors, instructors, etc., on the active list of the Harvard Medical School numbers 102, and that in the Boston City Hospital, besides the ordinary pathological and x-ray laboratories, there are special laboratories for the study of haematology, of asthma, of pneumonia, of renal function including nephritis and diabetes, of physical therapeutics, and of immunology.

The method of whole-time appointments, towards which there was at one time a movement in America, is not carried out at the Harvard Medical School. The surgical staff of the Peter Bent Brigham Hospital consists of the surgeon-in-chief, Dr. Harvey Cushing (who gives special attention to surgery of the nervous system); the surgeons, Dr. David Cheever and Dr. John Homans; the urological surgeon, Dr. William C. Quinby; and the surgeon for out-patients, Dr. Elliott C. Cutler; in addition to their ordinary hospital duties they have their private cases in the hospital also. They are assisted by associates and by five resident surgeons who live in the hospital; their ultimate intention is to specialize in surgery, and they hold the appointments indefinitely but usually for a period of several years. Lastly there is a group of six recently graduated house officers who take the case histories, help at operations, and in the case of the two juniors, colloquially known as "pups," attend to routine examinations such as that of the blood, urine, etc.

A few words may be said next as to the means of mutual instruction practised by the staff: it forms a feature much more distinctive of American than of home hospitals. A strong effort is made to unify the staff by the utmost



possible amount of co-operation and co-ordination. Thus all its members, visiting and resident, meet daily at lunch in the common room. On one day in each fortnight the whole surgical staff go to the medical side of the hospital, where there is held a two-hour clinic and open discussion upon the borderland cases which have previously been carefully worked up; and on a day in the intervening weeks the process is reversed and the medical staff receives a clinic in the surgical department. A similar arrangement is made at intervals between the staff of the Peter Bent Brigham Hospital and that of the Children's Hospital, which is also a department of the Medical School. Every Monday the radiographer spends an hour in demonstrating to the assembled staff the radiograms produced during the preceding week; and a similar critical demonstration is held once a week in the pathological department. All these meetings in a well equipped hospital have the inestimable advantage that the hospital affords post-graduate instruction to the staff as well as constituting a teaching centre for students.

Finally there are some striking points in the curriculum for students at Harvard differing from the course of study usual on this side. There is a general disposition to recognize that the duty of a medical school is in the first place to turn out men who will be efficient general practitioners, while at the same time it holds out the possibility of wider qualifications to those who desire and are able to assimilate them. It is admitted that for the average student the medical course has been made too full, so that too little time has been available for self-education. Accordingly the 1,300 hours of compulsory study previously demanded in each academic year at Harvard have been reduced to 900 by a process of cutting down all round. For example, in physiology 230 hours are now requisite instead of 320 as before, and of these only 30 hours are spent in attending didactic lectures. Demonstrations and "talks" to sections of the class have to a large extent taken the place of didactic lectures. At the same time overlapping of different departments is prevented by prescribing a syllabus for each, so that histology, for example, is included in the subject of anatomy, and the physiology of digestion is relegated to the department of biological chemistry. The saving of hours which has been effected enables some 15 per cent. of the best men in each year to take out special "elective" classes, and these men are encouraged at a later stage to specialize in the departments to which they have devoted special study.

A feature of the Harvard clinical teaching which deserves consideration elsewhere is the "intensive" system. This consists in taking the students in small sections of six at a time; they spend the whole working day for a limited period of a few weeks at clinical medicine or clinical surgery as the case may be, and then make way for another section of the class.

A word may be said in conclusion as to the way in which the Peter Bent Brigham Hospital is supported, since this is typical of the American general hospital. Of the patients treated in hospital during 1922, 58 per cent. were paying patients, by which is meant that they paid the regular rates, not necessarily the full cost; 20 per cent. paid something, but not full rates, and 22 per cent. made no payment. Private patients are divided into two classes—those who can afford to pay full charges, and those of small means for whom the schedule of charges is lower. A statement by the Superintendent may be quoted: "If it were not our custom to ask all patients to assist the hospital by paying what they can, we should be unable to do nearly as much for them as we now do. How important this is may be shown by the following figures, that of the total sum expended in 1922, only 35 per cent. was received from the income of endowed funds. The other 65 per cent. was collected from the patients, and no hardship whatever placed upon them."

The Mackenzie-Davidson memorial lecture will be delivered by A. W. George, of Boston, Mass., at a joint annual meeting of the Röntgen Society and the Electro-therapeutic Section of the Royal Society of Medicine, to be held at the Royal Society of Medicine, 1, Wimpole Street, W.1, on Thursday next, May 24th, at 5.30 p.m. The subject selected for the discourse is the pathological gall bladder. A dinner will be held the same evening at the Langham Hotel at 8 o'clock.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

### Mental Treatment Bill.

SECOND READING DEBATE IN THE LORDS.

#### Statement for the Government.

THE Earl of Onslow moved, on May 3rd, in the House of Lords, the second reading of the Mental Treatment Bill which was introduced as a result of a conference arranged last year by the Board of Control of chairmen of visiting committees, medical superintendents of mental hospitals, and a number of specialists; the conference decided to ask the Government to introduce legislation permitting treatment without certification in institutions approved by the Board of Control. At present the law as to lunacy might be divided into three definite parts. The first dealt with detention to prevent lunatics injuring themselves or other people; the second was devised for humane and proper treatment of such patients; and the third to secure their property against fraud or misappropriation. The Lunacy Law did not deal exhaustively with cure, the reason perhaps being that scientific knowledge of treatment was not sufficiently advanced when the principal Act was passed. The importance of this aspect of the matter was made evident in the fact there were now 120,000 certified lunatics in 172 institutions, costing £6,000,000 a year. To these were added 22,000 fresh cases every year, of whom 32 per cent. were discharged as recovered. Besides certified lunatics there were 150,000 feeble-minded persons and, in addition again, a percentage of the population (some people said as high as 10 per cent.) was dull and backward mentally. Lastly there were the cases of neurasthenia and psychoneurosis. All this constituted a serious drain on the nation's capacity, and much of it was preventable by careful watching and early treatment. As the law stood it was, at least, very difficult to provide for treatment of incipient mental disease without certification, and there was a strong feeling against certification if avoidable. This led to delay in proper treatment until too late.

The chief purpose of the bill was to provide that a patient suffering from incipient mental disorder might be received for treatment without certification. Such course had been taken for many years in Scotland, and in this country, under the Act of 1890, voluntary boarders had been allowed in private licensed houses. The desire, of course, was to surround the proposal in the present bill with every possible safeguard against misuse. First of all the institution in which the patient was to be received must be approved by the Board of Control and under frequent inspection by that body. Secondly, there must be a recommendation from two doctors. Thirdly, no patient could be admitted unless it was at his own request—a voluntary request. There were many cases of incipient mental disease in which the persons were incapable of volition; before such a person could be admitted, the recommendation of the two doctors would have to be countersigned by a justice of the peace, or a minister of religion personally acquainted with the patient but not related to him, and the person signing this document must have seen the patient and have satisfied himself that he was incapable of volition. A similar procedure was required in the case of minors, and, of course, in addition the consent of the parent or guardian must be obtained. One at least of the doctors must be a medical man approved by the Board of Control. The patient would go into the institution at first for a maximum period of six months, which might be extended for another maximum of six months. If he were not recovered within a year, the ordinary provisions of the law would apply, but at any time during the year he might leave the institution by giving forty-eight hours' notice, or he might be discharged by the superintendent or by order of the Board of Control.

Lord Onslow next touched upon the places which would be provided for the treatment of such patients. Under Clause 1 (3) county and borough councils, acting through their visiting committees, would be able to receive patients into their own institutions. Under Clause 4, visiting committees should be able to arrange for general hospitals to receive patients of this kind, these bodies working in conjunction with the committees. If this could be done, great advantage to patients might ensue by getting them away from contact with certified cases, and it would enable all the resources of medicine, other than those provided especially for mental disease, also to be at the disposal of the patient. The patient could, moreover, be received in registered hospitals which were mostly charitable foundations or licensed houses which were otherwise known as private asylums. Another provision of the bill enabled visiting committees to provide out-patient treatment for persons suffering from mental disorder. They would be at liberty to do this either in institutions under their own control, or by arranging for it to be done in general hospitals in the same way as they



would be empowered to arrange for in-patients. An outdoor clinic for nervous and mental cases was already established at the Radcliffe Hospital, Oxford, with the greatest possible success. No difference was made between nervous and mental patients. They all went to the same hall for treatment. It had been found that patients and their friends were much more ready to come to a clinic of this kind than to a separate mental hospital. The bill would also authorize visiting committees to make provision for the after-care of patients. It had been found that many discharged as cured broke down again unless carefully and kindly looked after in subsequent months.

Despite the advance made in knowledge of mental disease during the last quarter of a century, many of the causes of mental illness were largely unknown. Therefore in Clause 2, Subsection (5), provision was made for more systematic research, and for the expenditure of public money on research undertaken with the approval of the Board of Control. The bill involved the extension of the functions of the visiting committees, and it was therefore proposed that a portion, not exceeding one-third, might be persons who were not members of the council. This was the principle adopted in regard to education committees and some others, and was designed to enable the committees to co-opt experts, and to get the services of people willing to give a large part of their time to such work. At least two members of these visiting committees would be women, and power was given to the committees to carry on their duties jointly with other authorities. The expenses of visiting committees were to be defrayed by the local authorities. The cost of maintaining cases treated for incipient disease would not be a charge on the Poor Law. The cost would fall on the general fund and not on the boards of guardians.

The Mental Deficiency Act of 1913 greatly increased the amount of visiting and raised the number of commissioners to eleven. At present there were seven commissioners, one a woman who, being neither a lawyer nor a doctor could not pay statutory visits. In the view of the Ministry of Health, many of the visits and work now done by the commissioners could be undertaken by the inspectors. It was proposed to limit the number of commissioners to eleven, and to allow the rest of the work to be performed by inspectors.

#### Discussion.

Lord Buckmaster, while welcoming the bill, was not certain that its provisions would be fully effective. In the early stages of mental disorder there was peculiar, almost insane, resistance to any form of treatment or control. Consequently, he should be surprised if, when people had been recommended and had been placed under control by virtue of this bill, the forty-eight hours' notice were not given very speedily, and the whole benefit derivable broken down. There should, he thought, be greater power for the treatment of these cases—with proper safeguards. If persons were suffering from infectious diseases there was power to isolate them in the interests of the community. He thought that somewhat similar power might be given here; in his opinion the time had come when the whole question of the propagation of the mentally weak and unsound should be the subject of full investigation, and he wished that the Government would have the courage to appoint a Royal Commission on the subject.

The Bishop of Worcester warmly commended the bill. He thought that as the term "mental hospitals" replaced "asylums" the fear of treatment in such places would be relieved. Dr. Pearce paid a tribute to the medical staffs of these homes and he went on to deplore the effort made in certain sections of the press to cover them with abuse.

Earl Russell, in supporting the bill, commended the provision for expenditure of public funds upon after-care. In regard to the need for the main proposal in the bill, a distinguished alienist had said to him "our treatment in lunacy is just about as sensible as if we did not begin to treat a patient for scarlet fever until he was in the peeling stage." He shared the view of Lord Buckmaster that the benefit of the bill was liable to loss from the forty-eight hours' notice. He suggested that discharge should be subject to an order of the Board of Control. They were a public body and could have no pecuniary or personal interest in the detention of anyone.

The Earl of Onslow, replying, expressed pleasure at the reception given to the bill. He was unable to say anything at present on the appeal made to him against the forty-eight hours' qualification, for to remove it would be taking a very considerable step. He promised, however, that all amendments should have full attention.

The bill was then read a second time.

#### National Health Insurance Finance.

Sir Worthington-Evans inquired, on May 2nd, what were the amounts of the Reserve Value Contingency Fund and the Control Fund, respectively, at the end of 1921, and against what liabilities each of these funds had been accumulated; and whether any part

of them was available for medical benefit or to supplement payments made to the panel doctors.

Mr. Chamberlain said that there was no fund called the reserve value contingency fund, and it was assumed that reference was made either to the Reserve Values (Apportionment) Account, or the Reserve Suspense Account. The Reserve Values (Apportionment) Account was applied in accordance with the provisions of the Insurance Acts in discharging the liabilities of the Minister to approved societies in respect of reserve values created under the Acts, and could not be applied to any other purpose. The amounts carried to the account were periodically apportioned among approved societies, but at the end of 1921 there was a balance of some two million sterling in the account not apportioned pending determination of the precise amount of reserve values to be created under Section 16 of the Act of 1920. The net amount standing to the credit of the Reserve Suspense Fund at the end of 1921 was approximately £389,000, but this was merely a provisional balance pending completion of adjustments for the purpose of giving financial effect to the changes of membership that had occurred since the date of the last valuation. When these adjustments had been carried out, it was anticipated that the balance would be negligible. The Reserve Suspense Fund was constituted of the amounts transferred from approved societies and from the deposit contributors' fund on the cessation of insurance by members of societies and deposit contributors as the case might be, and had to be applied, as far as it was sufficient, to provide the reserve values required in respect of persons coming into insurance, and of deposit contributors becoming members of societies. The amount of the central fund at the end of 1921 was approximately £2,000,000. The central fund was established under the National Health Insurance Act, 1918, for the purpose of meeting the residual part of any deficiencies at valuation remaining over (after the available contingencies funds of the societies concerned had been exhausted) in cases where the joint committee were satisfied that the deficiency was due to an abnormal rate of sickness attributable to certain specified causes, or to any other special cause beyond the control of the society or branch. By the Insurance Act, 1922, the fund was liable to make good to the benefit funds of approved societies seven-ninths of one-third of the sums paid out of those benefit funds towards the additional payments in respect of the cost of medical benefit and the expenses of administration of medical benefit provided for by that Act up to the end of 1923. Having regard to the existing liabilities of the fund, it could not be regarded as in any respect available for any other purpose.

**Combined Public Health Appointments.**—Mr. Gavan Duffy on May 7th asked whether the Minister of Health, before sanctioning the appointment of a medical officer of health for the urban district area of Frizington, Cumberland, would consider the recommendation of the medical officer for the county of Cumberland that several small urban areas should be combined under one full-time medical officer. Lord Eustace Percy, for Mr. Neville Chamberlain, said that no formal request had been received, but the Minister had tried to arrange for such appointment by agreement. Having been unsuccessful, he did not think it practicable to object to the district council's proposal to appoint a part-time officer, but such officer had been required to give a written undertaking to resign the appointment in the event of a whole-time officer being appointed. Mr. Gavan Duffy asked if the Minister was aware that the doctor nominated for the appointment did not live at Frizington, and Lord Eustace Percy said that if information to this effect were given inquiry would be made.

#### Answers in Brief.

The proposal to amalgamate the naval and military hospitals at Hong Kong has been rejected by the Admiralty, and also by the committee appointed by the late Government to deal with the possibility of amalgamating the Services common to the Navy, Army, and Air Force.

Uncertified deaths in 1922 numbered 5,487.

The total amount of the grants paid to Scottish local authorities in the year 1922-23 in aid of their expenditure in the treatment of tuberculosis was £289,998 15s. 6d. The provision made in the 1923-24 estimate of the Scottish Board of Health shows no reduction on that figure; the amount provided for payment of grants in 1923-24 is £290,000.

The Minister of Health had undertaken carefully to consider the question of including in the next bill to amend Health Insurance Acts a clause to enable insured persons, no longer employed, between the ages of 65 and 70, to remain entitled to medical benefits on payment of a weekly contribution sufficient to cover the cost of that benefit.

In reply to a question on May 2nd, the Minister of Health said that he was unable to state that the sporadic outbreak of small-pox in the North Midlands had been arrested. Probably the infection was introduced from abroad, but no definite evidence was available. Memoranda upon the steps requisite to be taken on the occurrence of small-pox had recently been issued by the Ministry to all sanitary authorities and boards of guardians throughout the country. He did not think it practicable to take any other steps to guard against further outbreaks.

Mr. Ponsonby has elicited the information that no representations arising out of the discussion in the House of Representatives last January have been made to the British Government by the United States Government as to the necessity of limiting the production of opium to the amount actually required for medicinal and scientific purposes.

The Minister of Health has stated that he hopes shortly to reach a final decision as to the establishment of additional tuberculosis settlements such as those at Papworth Hall, Cambridgeshire, Barrowmore, Cheshire, and Preston Hall, Kent.



## ROYAL MEDICAL BENEVOLENT FUND.

THE annual meeting of the Royal Medical Benevolent Fund was held at the Royal College of Physicians on May 7th, under the presidency of Sir THOMAS BARLOW.

The CHAIRMAN said that the objects of the Fund were twofold: firstly, to provide annuities for necessitous practitioners who had passed the age of sixty, and, secondly, to give emergency grants to medical men and to their widows and orphans who were in urgent need. In addition there was the very important Guild, founded by Lady Tweedy and managed by ladies, which helped materially in the investigation of claims and in the raising of funds. During the year under review 168 annuitants had each been allotted a sum of £20—not a large amount, but it was hoped later to be able to increase it to £26. During the war and subsequently a special fund had been raised to help patriotic doctors who, in army service, had sacrificed a considerable part or even the whole of their practices. Most of the £30,000 which had been raised had now been expended, but the Fund was still under obligations with regard to charges for the education of children of the medical men concerned. In 1922 the income of the general fund from subscriptions was £3,503, and the expenditure in grants £4,966. The income from investments was £4,166, and the annuity expenditure £4,458. The total deficit was thus £1,754. The demands had been very heavy, and the number of new applicants nearly double that of previous years. The total number relieved was 483. Although the Fund was mostly maintained by medical men, he looked for some help from the intelligent lay public who realized the obligation of the community to the medical profession.

The ARCHBISHOP OF CANTERBURY said that he was genuinely grateful for the privilege of speaking for those outside the profession. Members of the general public had comparatively rare opportunities of expressing their sense of the value of the services rendered to the whole community by doctors. Politicians, soldiers, and sailors gained applause on various occasions of public interest and importance, but he did not know of a single instance in which medical men had received a cheer. Those who had intimate acquaintance with members of the profession were aware of the hardships the war had brought to many of them. Men returned after years of service, having contributed splendidly to the common good, to practices diminished or disappearing. He could bear witness from his personal experience to the way in which service of the highest possible skill was given in medicine and surgery for the alleviation of suffering quite freely as a matter of public spirit and kindheartedness. Such services were quietly rendered and quietly received, and from the very nature of the case the public did not hear of them. He felt that many of the lay public would desire to repay in some way the debt they owed to the profession. The Fund showed the need to be obvious and provided the channel.

LORD SUMNER (Lord of Appeal), in seconding the motion, said that there were two things the public hardly realized with regard to medical men—namely, that the profession was not a rich one, and that it was a profession in which very few opportunities were given to the average man of successfully using to the best advantage such money as he had. The life of a doctor in a manufacturing district, for example, always appeared to him to be one in which the maximum of dreariness and drudgery was charged upon a man whose labours demanded—and, once he had thought, entitled him to—the maximum of relaxation. It was a life in which very often there were only two earthly sources of consolation, the one the consciousness of good work done, and the other the family life. If, however, that family life was clouded by the knowledge that should any illness befall the breadwinner it would go very hard with his dependants, it was a very sad thing, which more generous public support for the Fund would help to remove.

SIR HUMPHRY ROLLESTON said that whereas Churchmen remained uncontaminated by the sins they made war on, and legal luminaries were too wise to engage in litigation on their own account, members of the medical profession were liable to in- from their patients, and were, therefore, relatively little but hope and energy to support them, often had to leave off without having made

adequate provision for retirement was only too clearly shown by the cases that came for relief to the Fund. As practitioners they were bound to make an appearance of greater prosperity than the bank book would justify, and the contrast between their apparent prosperity in life and the condition of widow and children afterwards was painful. Only one-tenth of the profession in Great Britain subscribed to the Fund, and he was sorry to say that London was far from taking the lead, only 7 per cent. of the members of the profession subscribing.

The Annual Report and Financial Statement (summarized in the Chairman's remarks) were adopted, and on the motion of Dr. HERBERT SPENCER, seconded by Sir DYCE DUCKWORTH, Sir Thomas Barlow was re-elected President, Sir Charters Symonds Honorary Treasurer, Dr. Newton Pitt Honorary Secretary, and Dr. Arnold Chaplin Chairman of the Case Committee. The Vice-Presidents, Committee, and Auditors were also re-elected, and on the motion of Dr. O. LANKESTER a vote of thanks was accorded to the Press, and especially to the Editors of the *Lancet* and the *British Medical Journal*, for publicity given to the Fund during the year.

## THE SPAHLINGER TREATMENT.

THE search for an infallible remedy for the treatment of tuberculosis is as alluring to-day as was ever the quest for the philosopher's stone. It has been pursued intensively for well over a hundred years and yet many would still subscribe to Laënnec's pessimistic statement that the "cure of tuberculosis is not beyond the powers of Nature, but it must be admitted at the same time that Art possesses no means of attaining this desirable end."

Every week some new preparation or nostrum is brought to the notice of the medical profession, but on trial proves to be the fairy gold of medication turning to ashes in the morning.

Men of science have been equally led astray and, like Sir Walter Raleigh, have brought vain news of an Eldorado for the victims of tuberculosis. Many of us can recall the high hopes that were raised by the announcement of Koch's tuberculin and of Marmorek's serum, hopes that at first appeared to be fully justified by the successful treatment of a few cases.

At the present time the medical profession has to consider the problem of M. Henri Spahlinger's method of treatment, and in view of the experiences of the past it is not surprising that hitherto its leaders have suspended judgement on the matter. It is equally true that many of those who have visited M. Spahlinger's laboratory have recognized in him an enthusiastic and serious worker, whose claims demanded and have obtained consideration at the hands of experts in tuberculosis either acting independently or as the advisers of the health authorities in various countries. We last referred to the matter three months ago (February 10th, 1923, p. 252), when we stated that inquiries into the nature and results of M. Spahlinger's methods had been made both by the Red Cross Society and by the Ministry of Health, and added that we had reason to believe that the methods were looked upon as interesting and the results, though hitherto on a very small scale, as encouraging.

With regard to the action of the Ministry of Health in the matter we gather that from the beginning such statements as M. Spahlinger has published in England and France have been carefully noted by the Ministry; in 1920 special medical inquiry was made and all the testimony then available was considered; this evidence included clinical reports from physicians practising at Geneva, Montana, Hamburg, and London.

In 1922, through the courtesy of M. Spahlinger, a medical officer of the Ministry was enabled to visit the Bacterio-Therapeutic Institute, Carouge, Geneva, and to examine certain cases of tuberculosis, treated by the method. The conclusions arrived at were that although it is not yet possible to express an opinion upon the scientific value of M. Spahlinger's work from the bacteriological standpoint inasmuch as the details and the technique adopted in the preparation of serum and vaccine remain undisclosed, the clinical results already obtained in Switzerland and in England warrant further investigation. We are informed that the cases examined by the medical officer included examples of lupus,



tuberculous glands, and bone and joint tuberculosis, in addition to pulmonary tuberculosis. The histories were well authenticated; in the pulmonary cases tubercle bacilli had been present in the sputum and some of these cases had been in an advanced stage and their condition regarded as hopeless prior to the initiation of M. Spahlinger's treatment. Radiological evidence also was forthcoming in a number of the cases; it showed the conditions before and after treatment by M. Spahlinger's preparation. Making every allowance for the fact that a certain proportion of patients suffering from tuberculosis got well under any conditions, the complete or partial arrest of active and extensive disease produced in these cases in a short period of time after the administration of M. Spahlinger's remedies and remaining permanent through several years' observation appears to be a striking contribution to the evidence for the efficacy of the treatment.

The Ministry, through unofficial channels, intimated to M. Spahlinger that with his consent it would be prepared to appoint a committee of recognized medical experts who would watch the results of his method of treatment in a number of cases to be selected by a physician nominated by M. Spahlinger and who after due trial would report on the value of the treatment. It was understood that M. Spahlinger would not be required to divulge the technique by which the serum and vaccine are prepared.

This offer lacked nothing on the side of generosity, but, unfortunately, M. Spahlinger did not accept it. M. Spahlinger makes a "complete" serum and a "complete" vaccine, but it would seem that in 1914 he had practically exhausted his supply of both. Since that date he has continued the preparation of partial serum in small quantity and it has been used for the treatment of a few cases. The preparation of the complete serum is stated to be a long and complicated process, and it would appear that at present M. Spahlinger can assign no definite date for the production of the serum in large quantities for general use or even for the purposes of an experimental investigation such as that proposed by the Ministry of Health. The offer made is, we understand, still open. No later than March 21st last the Minister of Health, in reply to Dr. Watts in the House of Commons, stated that he was most anxious to encourage further trial of the remedies in this country as soon as supplies were available.

We understand also that M. Spahlinger has exhausted his financial resources in the prosecution of his researches and that pecuniary embarrassments still further delay the production of his long awaited preparations. The British Red Cross Society, mindful of the interests of ex-service men, has interested itself in the matter, and we understand that some time ago it made M. Spahlinger an offer of financial assistance under certain conditions.

We have heard—a preliminary notice to this effect was indeed made some months ago—that an influential movement is on foot to issue in this country a public appeal for funds which shall relieve M. Spahlinger of his financial disabilities. We have very little doubt that should it be found possible to make a satisfactory arrangement with M. Spahlinger, sufficient money would become available in this country alone, and there is reason to believe that some of the Dominions also would be willing to make contributions.

Should the financial disabilities from which M. Spahlinger is now suffering be removed, we would urge him, not only in his own interests, but in the general interests of humanity, to submit the first supplies of the serum and vaccine when obtained to a scientific tribunal whose decision, if favourable, would rank him indisputably among the great benefactors of mankind and which would lay open a great avenue of hope to those enrolled in the company of the Captain of the Men of Death, as Bunyan phrases it.

We would emphasize our belief that the world is ripe for the discovery of a successful method for the treatment of tuberculosis. Following on the labours of Koch and others, workers of repute are engaged in attempting to solve the same problem as that to which M. Spahlinger has devoted his gifts and fortune. Already results have been achieved in the serological investigation of tuberculosis which are full of promise. M. Spahlinger must not delay to bring forward scientific proof for the considerable claims he has advanced. It may be remembered that Adams was forestalled in his mathematical discovery of the planet Neptune by Le Verrier.

## Victoria.

### THE FIRST AUSTRALASIAN CONGRESS OF THE BRITISH MEDICAL ASSOCIATION.

THE medical profession in Australia has learned with pleasure that it is the intention of the President of the parent Association to be present at the first Australasian Congress of the British Medical Association, which is to be held in Melbourne from November 11th to 17th. Sir William Macewen is assured of a hearty welcome, and it is hoped to induce him to open the new Anatomy Department in conjunction with the University Council.

An exhibition of trade products, including medical and surgical instruments, books, drugs, foods, and other articles of direct interest to the medical profession will be held in the new Anatomy Department of the University of Melbourne during the Congress. Exhibitions from Great Britain will be particularly welcome; a special feature is being made of this section of Congress activities. Intending exhibitors from Great Britain should put themselves in communication with Dr. B. L. Stanton, Children's Hospital, Pelham Street, Carlton, Melbourne, as soon as possible, and should allow a period of about twelve weeks for the dispatch and receipt of letters. Cable messages to Dr. Stanton will, of course, secure prompt attention.

### THE WAR MEMORIAL OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION.

A very beautiful memorial in bronze has been executed by the sculptor, Mr. Webb Gilbert, to the order of the Victorian Branch of the British Medical Association, to commemorate those members who laid down their lives for King and country in the war. Pending the erection of a new building for the local branch of the Association, this memorial is to be placed in the new Anatomy Department. The unveiling of this beautiful masterpiece of art will be one of the special features of the Congress to be held in November; the site selected is naturally the best in the building.

### THE UNIVERSITY OF MELBOURNE.

Dr. W. A. Osborne, Professor of Physiology, has returned to Melbourne after a study leave of absence in America and Great Britain.

The number of first year medical students entering the University continues to fall; it is now little more than a third of the entries in 1919, which was the maximum year. Coincident with this decline in the numbers there has been a great advance in the efficiency of University teaching. Changes in the curriculum—namely, an examination in anatomy and physiology at the end of the second year—a slight increase in the fees, and a lengthening of the whole curriculum, have probably tended to reduce the entries but have enhanced the University's efficiency. The imposition of an examination in anatomy and physiology in both second and third years has been welcomed by both students and staff; the former recognize the newly introduced second year examination as an inducement to work and as making the work of the third year somewhat easier, and the latter are assured of an enhanced degree of efficiency all round.

## Scotland.

### HONORARY DEGREE OF DOCTOR.

At the statutory half-yearly meeting of the General Council of the University of Edinburgh, Principal Sir J. Alfred Ewing, K.B.E., presiding, the chief item of business was a discussion on the report of a subcommittee appointed to inquire into the regulations under which the degree of Doctor was granted. The council approved of the report on the following heads: (1) That every graduate should have the right to proceed to the degree of Doctor in his own faculty under appropriate regulations, including the degrees of D.D. and LL.D. (2) That a graduate with honours or distinction should be permitted to proceed to the degree of Doctor within a shorter time than the holder of an ordinary degree. (3) That the minimum time which



must elapse after graduation and before examination for the degree of Doctor should be the same in all faculties; and that a reasonable minimum for graduates with honours was two years and for ordinary graduates three years. (4) That an approximately uniform standard should be aimed at for the degree of Doctor in all faculties. Other recommendations of the committee, upon which no opinion was expressed by the Council, were that degrees of Doctor should be given *honoris causa* to persons eminent in the subject of the particular degree, as well as by examination; and that in the case of persons who merited honour from the University, but who could not claim distinction or ability to pass examination in any faculty, no degree should be given but these persons should be admitted "Honorary Fellows of the University." It was decided to ask the councils of the other Scottish universities to send representatives to a conference on this matter.

#### CARE OF THE FEEBLE-MINDED IN SCOTLAND.

At a meeting held last week, under the auspices of the Edinburgh Women Citizens' Association, an address on the permanent care of the feeble-minded was given by Dr. R. D. Clarkson, medical superintendent of the Royal Scottish National Institution, Larbert. Sir H. Arthur Rose, chairman of the General Board of Control for Scotland, who presided, said that this was one of the most important matters before it at the present time. Owing to the position of the national finances the Lunacy and Mental Deficiency Act of 1913, which was a statutory instrument of very great value, had been kept back from full fruition; but as soon as more freedom was given this particular work would receive the most sympathetic attention from the Treasury. Dr. Clarkson in the course of his address said that when he was appointed medical officer of the Institution for Mentally Defective Children at Larbert thirty years ago the general public took very little interest in the matter, but since then there had been a great change. Interest began in the schools, because defective children were a hindrance to their normal fellows. Social workers had also found that mental defectives played a great part in producing the problems with which they had to deal. He urged that all mental defectives should be registered, and should never be allowed to pass altogether out of control; also that farm-colonies should be established for them on the lines of one already started at Sandlebridge. At the close of the meeting the following resolution was unanimously passed: "That this meeting of Edinburgh citizens desires to express its earnest conviction that the time has come for immediate steps to be taken for the provision of homes throughout the country for the permanent care of the feeble-minded after school age." It was agreed to send a copy of this resolution to the Prime Minister, the Secretary for Scotland, the Board of Control, and the local members of Parliament.

### Ireland.

#### WOMEN'S NATIONAL HEALTH ASSOCIATION.

The annual meeting of the Women's National Health Association of Ireland was held at Ely House, Dublin. The Marchioness of Aberdeen and Temair presided, and said that it was intended to hold a conference during the coming autumn to which representatives of public bodies and voluntary associations interested in public health would be invited. The condition of the country, she said, had made it somewhat difficult to carry on the work of their branches, but good reports had been received from outlying districts. She submitted reports from Valentia Island, Waterford, Cork, Limerick, and Clare, all of which spoke of good welfare work being done.

Dr. Alice Barry submitted a report on the working of baby clubs and welfare societies in the city of Dublin. The mortality rate during the last year amongst children was 116 per 1,000, as compared with 163 per 1,000 a few years ago. Through the babies' clubs they had distributed 12,666 gallons of milk at an average price of 5d. a quart. The following resolutions were unanimously adopted:

(1) That the Council of the Women's National Health Association, feeling that there is urgent need for co-operation between the different bodies giving relief in the city of Dublin and in Ireland generally, request the Civics Institute to call a conference representing the different organizations, official and voluntary, interested in the subject, to discuss plans and form schemes whereby such work could be placed on a more satisfactory basis.

(2) That the Council approve of the principles and basis of the Children's Charter and direct the Sub-Executive Committee to examine its provisions with a view to adapting them to the needs of the children of Ireland, and to draw then the attention of the Free State Government to the Children's Charter with the request that it be adopted as the Government's policy regarding the position and claims of the children.

#### ST. ULTAN'S INFANT HOSPITAL, DUBLIN.

The foundation stone of a bacteriological laboratory, presented to St. Ultan's Infant Hospital, Charlemont Street, Dublin, by the Celtic Cross Society of Chicago, was laid last July by Mrs. MacWhorter, president of the society. The building, which is up to date in every particular and fitted with the most modern appliances, is now complete and was formally opened a short time ago. Miss Griffin, chairman of the Hospital Board, called upon Dr. W. M. Crofton to perform the opening ceremony and presented him with a golden key. One of the earliest patients admitted to the hospital, a sturdy lady of three years, presented Mrs. Crofton with a bouquet. Dr. Crofton made a short speech. Sir Edward Coey Bigger also spoke. Subsequently those present were entertained to tea by the board. In the evening of the same day a Pasteur celebration was held in the College of Physicians, when the president, Dr. M. F. Cox, was in the chair. Dr. Crofton gave a very interesting address on Pasteur, his life and work, and on some modern followers of his teaching. A vote of thanks to the lecturers was proposed by Dr. Ella Webb, chairman of the St. Ultan's Medical Board, and seconded by Dr. Kathleen Lynn, vice-chairman. The company were then entertained to tea, during which a short programme of music was gone through.

### England and Wales.

#### THE X-RAY DEPARTMENT OF THE MANCHESTER ROYAL INFIRMARY.

The new x-ray department of the Manchester Royal Infirmary, formally opened by Sir Humphry Rolleston last November during the joint meeting of the Röntgen Society and the Electro-therapeutic Section of the Royal Society of Medicine in Manchester, is now an important part of the hospital as an institution for the treatment of patients and the teaching of students.

When the Infirmary was opened in 1908 the accommodation provided for x-ray work was in the basement premises. The new department is now housed on the ground floor and there is sufficient space to allow each section of x-ray work to be conducted in its particular room. The money for the equipment was found by the generosity of a private donor. The protection of the walls—a matter of considerable importance—has been obtained by using commercial barium sulphate mixed with cement; it has been found quite satisfactory and very much cheaper than sheet lead. At present there is a surgical waiting list of about 1,000 patients, a large proportion of whom pass through the x-ray department before operation. In view of this high figure freedom from breakdown is essential, and Coolidge tubes working from transformers were installed as giving the highest reliability of output. The demonstration room is one of the features of the department. It is the teaching section and is provided with a lantern and viewing boxes and is used to demonstrate cases that have been previously examined in the screening room. In the screening room is a couch that can be tilted and is of assistance when palpating coils of intestine. A useful accessory is a Pirie retinometer, a device with three luminous points, the smallest of which should be visible before beginning to screen a patient. In the deep therapy department is one of the German outfits, and an English-made apparatus of the oil-immersed type. In the dark room the new Thorne-Baker green glass



has been fitted, which gives a plentiful slightly green light, which is apparently safe though it looks dangerous. It is a pleasanter light and has replaced the red lights previously in use.

A medical officer's room is provided where other members of the hospital staff may discuss their cases with the radiological staff. An office with a comprehensive filing and indexing system and plate-viewing room are other features of the department, and there is a workshop, fully equipped with tools for both wood and metal work, where minor repairs can be made. All the x-ray work is to be done on films, and an apparatus for making reduced prints (from wet negatives if necessary) is being fitted. All the cables for the department pass through two large switch boards and the connexions can be altered as required to balance the load equally between the two stations from which the department obtains its power. The work of installing the apparatus was entrusted to Messrs. Watson and Sons of London, and the new department may be regarded as a model of a modern x-ray equipment arranged to serve a large general hospital with an extensive out-patient practice. The department is probably the finest in the country and reflects the greatest credit on all those concerned in its establishment and equipment.

#### NEW MATERNITY HOSPITAL, LIVERPOOL.

An appeal for £100,000 was launched at a representative meeting at the Town Hall, Liverpool, on March 25th. The late Sir William Hartley gave £25,000, and had not the great war intervened the hospital would have been completed by this time. The present maternity hospital is utterly inadequate for the accommodation of patients and to meet the requirements of medical students. It originated in 1796 as a ladies' charity to provide attendance upon lying-in women in their own homes. In 1841 the Liverpool Lying-in Hospital was established, and in 1869 these two establishments were amalgamated. Under the Emeritus Professor of Obstetrics—Dr. Henry Briggs—during the past thirty-eight years the conjoint charity was developed to the great advantage of the medical students, whose practical training in midwifery was placed on a sound basis. Ante-natal care will become a department of midwifery and will be kept in view along with the post-natal treatment of the child. Infantile mortality has shown a great decrease in the last twenty years, but the mortality of parturients has remained the same. It is anticipated that a well equipped and properly staffed maternity hospital worthy of the city will reduce the maternal mortality. The number of lying-in women treated was 205 in 1894 and 1,200 in 1921. In addition to Sir William Hartley's donation, £7,000 have already been promised.

## Correspondence.

#### THE "UNIT" OF INSULIN.

SIR,—Dr. Cammidge, in your issue of May 5th (p. 787), expresses the opinion that "it is unfortunate that the Medical Research Council have seen fit to adopt a unit of measurement for insulin differing from that originally described by its inventors." Dr. Cammidge has not informed himself adequately, and his statement may contribute to that confusion, the possibility of which he rightly deplores. The unit has been changed, but not by the Medical Research Council; the change was made by the Toronto Committee, and the American firm working under their immediate authority. American insulin was to appear on the British market coincidentally with the first public offer of the home-made product, and uniformity could only be obtained by adopting the new unit, now current in all parts of the American continent. There is a minor inconvenience entailed, for those who had already in use a privately made supply, tested on the old basis. They have to bear in mind the fact that approximately three units of the current commercial product should correspond to one unit of what they had tested by the original Toronto indications. But Dr. Cammidge will, I think, agree that this is a small consideration compared

with that of the necessity for a world-wide uniformity of measurement, now and for the future.—I am, etc.,  
H. H. DALE.

Department of Biological Standards, Medical  
Research Council, May 7th.

#### THE EXAMINATION OF COLLOIDAL SOLUTIONS.

SIR,—Professor Clark, in his recent note (*BRITISH MEDICAL JOURNAL*, 1923, p. 731), is decidedly uncritical. He remarks that the colloidal ferrum Crookes which he has examined is very feebly acid in reaction, although mine was very faintly alkaline: at this point he ceases experiment and does not proceed to make his solutions feebly alkaline and then note whether the iron is precipitated. The iron is not thrown out of solution when the solution is made distinctly alkaline; this is one of the indications that it is in the colloidal state, and involves a simple test which he might readily have made. The addition of a minute amount of sodium hydroxide, sufficient to convert an N/300 acid solution to an N/300 alkaline solution, is required for the reversal of the reaction. My conclusion thus stands that colloidal ferrum Crookes is a preparation of a colloidal iron compound of the sugar type described by Graham in 1861.

Let me offer another simple demonstration of the colloidal state of the iron in the solution under discussion. The components capable of forming colloidal particles are the gelatin and the iron: the gelatin is present in the proportion of about 0.5 per cent. A gelatin solution of this concentration, examined in the ultra-microscope, shows a low concentration of very sluggishly moving particles; it shows a faint Tyndall effect—that is to say, a beam of light thrown through the solution appears as a but faintly illuminated track. On diluting the 0.5 per cent. gelatin fifty times, proportionately fewer but still sluggish particles are observed in the ultra-microscope, and the Tyndall effect is almost absent. The influence of the gelatin, as concerns the Tyndall effect—and this may be observed by anyone—and the ultra-microscopic appearances can thus be evaluated; the only other colloidal factor involved is the iron. Colloidal ferrum is so densely packed with colloidal particles as to be almost opaque to the beam of light which produces the Tyndall effect or is used in the ultra-microscope; but on diluting it fifty times a solution is obtained which shows the Tyndall effect very strongly, and gives in the ultra-microscope field a dense assemblage of colloidal particles in intense Brownian agitation. This result, the minute effect of the gelatin having been observed and allowed for, leaves it beyond doubt that iron in the colloidal state is responsible for the appearances noted.

It should be remarked that colloidal ferrum is a negative colloid—that is, the colloidal particles are negatively charged—whilst the colloidal iron solutions obtained by dialysis of ferric solutions or by prolonged boiling of ferric acetate solutions are positive colloids. The two types of colloids show very different properties, and, when mixed, mutually precipitate each other; thus, on mixing colloidal ferrum with a dilute solution of dialysed iron, practically the whole of the iron in both solutions is thrown out as a gelatinous precipitate. This is a further striking demonstration that the iron in colloidal ferrum is colloidal.

Although colloidal ferrum gives no colour directly with ammonium sulphocyanide, it gives the characteristic red colour with this reagent after addition of sulphuric acid; the colloidal ferric iron thus does not react with the sulphocyanide until it is actually dissolved in the sulphuric acid.

Professor Clark, whilst flying in the teeth of providence by his inadequate methods of showing that many well known colloidal solutions are not colloidal, expresses indignation at my statement that many, if not most, of the experimental results recorded in his earlier paper (*BRITISH MEDICAL JOURNAL*, 1923, i. p. 273) are erroneous and misleading; he complains that I produce no evidence to show that a single experimental fact stated in his paper is incorrect. I will rectify the omission, if one it be. He has told us that he finds a total of free and combined iodine in colloidal iodine aqueous (Crookes) of 0.04 per cent., and is supported in this by the analyst selected by the *BRITISH MEDICAL JOURNAL*. My analyses show that the solution contains almost exactly five times this percentage of iodine;



methods of work which lead to four-fifths of the iodine present being lost in an analysis provoke unkind remarks. But I do not agree that I have publicly ridiculed Professor Clark; I have merely shown that he has been led, by a too superficial study, to cast unfounded aspersions upon the characters of a number of thoroughly reputable colloids.

I add to the proof a note on Professor Sir William Bayliss's remark (BRITISH MEDICAL JOURNAL, 1923, p. 786) that collosol ferrum, diluted one hundred and thirty times, should appear to be crowded with colloidal particles; this is the case, both with the acid and the alkaline solution. Comparative observations made on 0.5 per cent. gelatin and collosol solution, each diluted one hundred and thirty times, indicate that these colloidal particles can only consist of a colloidal iron compound.

Dr. Dale's delicious sally will bear rereading when it is agreed that intelligent experiment proves what presumptuous experiment has denied—namely, that collosol ferrum contains an iron colloid. *Olim meminisse juvabit.*—I am, etc.,

Cambridge, May 3rd.

WILLIAM J. POPE.

We have referred this letter to Professor Clark, who writes:

SIR,—Sir William Pope in his first letter stated that collosol ferrum must be a colloidal preparation because it was alkaline and the iron was in the ferric state. This was an unfortunate argument because in the first place collosol ferrum is acid in reaction and the bulk of the iron is in the ferrous condition, and in the second place it is perfectly easy to make a dilute mixture of non-colloidal iron and gelatin which will give all the reactions for ferric salts, but which is not precipitated by moderately strong alkali. Sir William Pope's facts were wrong, and even if they had been right his argument was worthless.

I did most of the experiments described in Sir William Pope's last letter more than a year ago; it was Sir William Pope who stressed the importance of the reaction of collosol ferrum; I knew that the point was of no value as regards proving the colloidal or non-colloidal character of collosol ferrum; on the other hand, I thought the point of great value as a simple test of the care and accuracy with which Sir William Pope had prepared the strange attack he directed against me.

He says that the sample which he tested was alkaline, but it is certain that the vast majority, if not all the samples of collosol ferrum on sale are acid in reaction, and if Sir William Pope had taken the trouble to test a proper range of samples he would have saved himself from making a rather ridiculous mistake by basing sweeping conclusions on an atypical sample. As it is, his first letter consists of a rather unpleasant mixture of violent criticism and elementary mistakes. The facts stated in his second letter I believe to be correct, but some of the deductions are absurd.

I have dealt with the deductions regarding the reaction of the fluid. As regards ultra-microscopic examination, collosol ferrum is a turbid viscid fluid which usually deposits a considerable precipitate; naturally it is crowded with ultra-microscopic particles, but evidence is needed that these particles are composed of iron. Moreover, I am not prepared to say that no trace of colloidal iron is present; what I have said is that any fraction of the iron which may be in colloidal form is too small to be demonstrated by the usual tests of dialysis and ultra-filtration. As Sir William Pope states, it is quite true that collosol ferrum precipitates dialysed iron, but he has previously stated that the collosol contains 0.5 per cent. of gelatin, and he must surely know that gelatin precipitates dialysed iron, and that therefore this test is no proof that the collosol contains colloidal iron.

Sir William Pope finally turns to discuss my work on collosol iodine. I found that this substance contained one-quarter of the advertised amount of iodine, and was so surprised that I got the British Medical Association to have an independent analysis performed. This was done by Mr. Tickle, County Analyst for Devonshire, and his results agreed exactly with my analysis. While this work was proceeding, Messrs. Crookes apparently revised their ideas concerning the iodine content of collosol iodine, for while the label on the bottle still stated that it was an 0.2 per cent. solution, they stated in their literature that it contained

0.05 per cent. of colloidal iodine. Nearly three months after the publication of my paper Sir William Pope discovers that now this preparation contains 0.2 per cent. of iodine free and combined, and takes this as evidence that both I and an experienced analyst had independently made an identical series of gross errors in an extremely simple piece of chemical analysis. The analyses given in my paper stated correctly the composition of collosol iodine at the date when they were performed. I do not suggest that Sir William Pope's recent analysis is incorrect, but obviously it does not prove that the previous results were incorrect.

I am unwilling to take up space in the BRITISH MEDICAL JOURNAL with a personal matter, but I feel it is in the public interest to protest against the tone which Sir William Pope has seen fit to adopt in this controversy. At the request of the British Medical Association I examined certain commercial preparations, and some of the facts observed did not agree with the claims advertised.

Sir William Pope, for reasons unstated, has taken violent exception to my daring to criticize these commercial preparations, and has attacked my work with a violence that is unusual in scientific literature. Fortunately for me, the inaccuracy of his facts rendered Sir William Pope's attack ineffective.

Sir William Pope has stated that many if not most of my experimental results are erroneous, and that my methods are uncritical and inadequate. I do not claim infallibility, but Sir William Pope has not yet shown that a single one of my experimental results is incorrect.

Surely Sir William Pope must realize that sweeping charges like the above must be either fully substantiated or withdrawn.—I am, etc.,

London, W.C., May 8th.

A. J. CLARK.

#### CATGUT OR SILVER?

SIR,—With reference to your report of the proceedings of the British Congress of Obstetrics and Gynaecology held in Edinburgh, I beg to be allowed to amplify and so make clear the allusion to the "lively interchange of views on the best suture material for use in cases of vesico-vaginal fistulae" between Dr. Herbert Spencer and myself. I am sure no one more than Dr. Spencer would regret a misunderstanding in the matter.

I stood up for the use of catgut in surgery generally, as well as for vesico-vaginal fistulae in particular, as opposed to the sole use of silk, and in the case of vesico-vaginal fistulae of silver wire, advocated by Dr. Spencer. I confessed, as any honest gynaecologist must, that occasionally I had failed to close a high vesico-cervical or vesico-vaginal fistula at the first attempt—sometimes after others had tried—although I had succeeded at the second or, in one or two cases, at the third attempt, and that when I had failed I blamed myself and not the suture material. Dr. Spencer retaliated by saying that he had never failed to cure any case with silver wire; and the impression left on the Congress was that he had cured every case at the first attempt. This, indeed, is what your report—a perfectly accurate one—would lead anyone to suppose. Yet, although it appears that there would be no point in Dr. Spencer's statement unless he had meant this, I do not believe it possible that he intended to convey such an impression. I call attention to this misapprehension not to discredit Dr. Spencer in any way, but to prevent a false idea gaining acceptance through a misunderstanding of what Dr. Spencer meant when he said he had never failed to cure a case (that is, in the end)—namely, that silver wire may be looked upon as a corrective for imperfect technique in these difficult cases.—I am, etc.,

Liverpool, May 5th.

W. BLAIR BELL.

#### THE INFLUENCE OF INTESTINAL BACTERIA UPON THE THYROID GLAND.

SIR,—I make no claim to be the first to suggest that the intestinal bacteria interfere with the supply of amino-acids to the tissues, including the ductless glands. This was pointed out as early as 1905. Mr. Slesinger (April 14th, 1923, p. 659) in 1913 mentioned tryptophane as a possible precursor, not of thyroxin, as his letter seems to suggest, but of "the pigment in Addison's disease"; further comment is unnecessary, except to mention that the thyroid gland,



much less its active principle, was not even mentioned in his article. In an article, which I have ready for publication, I hope to throw some doubt on the supposition that tyrosin is the precursor of adrenaline.

Professor Kocher pointed out the dangers of giving iodine internally in quiescent goitre; I get good results with kerol, and I never give iodine now.

In conclusion I should like to remind optimistic surgeons that they have not yet convinced many eminent physicians (and a few surgeons) of the striking results of operative treatment of exophthalmic goitre.—I am, etc.,

Cardiff, May 2nd.

D. J. HARRIES.

#### SEPTICAEMIC INFECTION FOLLOWING OPERATIONS FOR APPENDICITIS.

SIR,—Mr. Herbert H. Brown in the *BRITISH MEDICAL JOURNAL* of April 7th, 1923, gives very interesting and instructive details of several cases of fatal septicaemia which have followed operations for acute appendicitis during the latter half of the first week, following acute clinical symptoms. I await with considerable interest further evidence of the value of the prophylactic serum of *B. coli* and *Streptococcus faecalis* he has had prepared.

As is pointed out in his article, the importance of the condition depends on the presence or absence of an effective bacterial immunity or resistance, and, as it is impossible to guess at the existence or absence of such, I would venture to suggest that considerable help may be obtained from a simple blood count estimation for evidence of an effective leucocytosis.

I have been in the habit of accepting such findings as indicating that prophylactic stimulation of further antibody response will probably be obtained from vaccine inoculation, particularly of the detoxicated variety, which doses may be repeated at twenty-four hour intervals. On the other hand, a low total count as regards white cells, or an actual leucopenia associated with an absence of relative increase of eosinophiles, I have considered contraindicates vaccine therapy in an acute case, but it suggests that help from serum therapy is possible.

The brunt of acute appendicular infectiveness, apart from lymphatic infection, must necessarily fall upon the portal system, which carries a large volume of infected blood by means of the portal vein to the liver. It is of special interest to note that Griffiths' very clearly points out the importance of such portal infection, as a cause not only of hepatitis, but also of pancreatitis. The type of cases that Mr. Brown so clearly cites seem to suggest this process.

I have for some time, in a somewhat empirical manner, suggested that vaccine or serum therapy in cases of acute abdominal infection should be reinforced by the administration of both bile and pancreatic extract, thereby enhancing the digestive metabolism of two most important organs, whose functional efficiency in an acute abdominal infection must frequently be very gravely embarrassed. So definite has been the result in several rather similar cases to those which Mr. Brown details, that I have ventured to write these points in case they may be of interest to others when confronted with this condition.—I am, etc.,

E. CRONIN LOWE, M.B.E., M.B., B.S.

Liverpool, April 13th.

#### STERILIZATION OF THE UNFIT.

SIR,—Dr. R. A. Gibbons believes that legislation for (1) eugenical sterilization and (2) marriage by State health certificate is "to be hoped for." There are good reasons why such legislation should not be hoped for. It is unlikely to come about, and it is undesirable that it should come about. The American mania for social legislation which so attracts Dr. Gibbons may better serve as a warning than as an example. It is strange, moreover, to find a member of the medical profession asking to have his present freedom controlled by the caprices of ignorant lay opinion.

Dr. Gibbons is ill informed concerning the evidence he brings forward. The Indiana law which he quotes at length became a dead letter in 1909, two years after it was passed,

<sup>1</sup> *Lancet*, February 10th.

and was finally declared "unconstitutional" in 1921; so also that of New Jersey. There never seems to have been any such law in Utah. That of New York was repealed in 1920, and quite time; "the history of this law," we are told, "is a record of incompetency and discredit; it has set back eugenical progress in the State's institutions more than ten years." But Kansas has sought to make up, for here a law was passed which would enable Dr. Gibbons not only to operate by law, but also to be fined one thousand dollars if he operated otherwise than by law, and, further, to be sent to prison for thirty days should he fail, or neglect, or refuse, to operate. This is the logical result of sterilization by law. Should Dr. Gibbons desire to emigrate to Kansas he will find further particulars in the latest and most authoritative work on this subject, Dr. Laughlin's *Eugenical Sterilization in the United States*, published last December by the Psychopathic Laboratory of the Municipal Court of Chicago, whence it may probably be obtained by qualified applicants.

In his thirst for sterilization laws Dr. Gibbons fails to make clear that they are quite unnecessary. There is nothing to-day to impede the spread of eugenical sterilization among us—with, of course, the consent of all responsible persons concerned—as introduced more than fifteen years ago in Switzerland. One would like to know why Dr. Gibbons, who has so much to say about the United States, fails to refer to the highly relevant fact that in the State of New York it has for more than ten years been the practice at the Buffalo State Hospital for Women to sterilize for eugenical reasons, with the written consent of the relations, but without reference to any law. That is the line of sound progress.

With regard to marriage by health certificate, and compulsory celibacy, while there is good reason for opposing procreation by unsuitable persons, there is no social reason for opposing marriage, but rather the reverse. In the early world marriage and procreation may have been the same thing; they have long ceased to be the same thing in the world in which Dr. Gibbons lives. In muddling them up Dr. Gibbons commits an unfortunate confusion, for not only is his anti-marriage propaganda bound to fail, but in the mere act of preaching it he is bringing ridicule and discredit upon the eugenical control of procreation.

There are in his paper various other misleading statements which may now be passed over. But in preparing the way for a measure so excellent as eugenical sterilization, and so certain to be eventually recognized in general medical and surgical practice, it is desirable to be cautious, accurate, and precise, leaving to opponents of the measure a total monopoly in arguments and statements that are otherwise.—I am, etc.,

London, S.W., May 7th.

H. HAVELOCK ELLIS.

#### HOSPITAL POLICY.

SIR,—Dr. Bernard Batt suggests that the policy of the Association regarding staff funds should be limited to patients on whose behalf there had been arranged some form of obligation through contributory schemes or payments by third parties; and that the Leicester resolution, or any modification of it, requiring an assessment of patients' own payments for staff funds, should be dropped. This proposition would, I think, prove unworkable, because it is an attempt to distinguish between patients who are not properly distinguishable. We are up against a similar difficulty in London. The Metropolitan Counties Branch Council, through a special committee, has been negotiating with the Hospitals Saving Association, for the improvement of the contributory scheme launched by it. By general consent the conditions of admission for out-patient treatment had been made the crucial point. We desire to bring these admissions within the policy of the Association, so that they should be mainly for consultative purposes. The sponsors of the scheme cannot accept this limitation of out-patient admissions. The secretary writes: "My chairman feels strongly that contributors cannot, and should not, be excluded from the out-patient facilities which are offered to non-contributors." As with this reform, so with staff funds—it must be assessment for all payments or for none.

On the point of Dr. Batt's challenge that the Council has not carried out the instruction of the Representative Body by securing information, I suggest that the report of the



Council is a fair statement of the facts governing its doings, and that the Representative Body will judge of its deeds whether they be good or evil.—I am, etc.,

London, W., May 3rd.

N. BISHOP HARMAN.

\*\* This correspondence cannot profitably be continued.

#### NOTIFICATION OF CONVICTIONS OF MEDICAL PRACTITIONERS TO THE GENERAL MEDICAL COUNCIL.

SIR,—Under this heading in the Report of Council (SUPPLEMENT to the BRITISH MEDICAL JOURNAL, April 28th, p. 141) there appears such an absolute travesty of my letter of July 1st, 1922, on this subject, that I ask, in fairness to myself, to be allowed to restate my case.

I am of opinion that convictions for trivial offences are not under the jurisdiction of Section 29 of the Medical Act of 1858. My legal adviser thinks with me. So, apparently, does the Registrar of the General Medical Council. I asked him if cases of breach of promise and bankruptcy were reported to the General Medical Council. This is his answer:

April 7th, 1922.

DEAR SIR,—In reply to your letter of the 6th inst., I have to say that Section 29 of the Medical Act of 1858 directs the Council to deal with two classes of offences—namely, convictions for felony or misdemeanour, or infamous conduct in a professional respect. Cases such as you mention would not as a rule come within either of these categories.—Yours faithfully,

(Signed) NORMAN C. KING.

I am left wondering by what process of legal reasoning failure to renew my dog licence (with conviction therefor) can be brought "within either of these categories." This despite the fact that Dr. Macdonald's mind seems to be satisfied on the point. (See SUPPLEMENT, May 5th, p. 169.)

"As a means of dealing adequately with real offenders" I suggested that real offences should be reported to the General Medical Council. Convictions for indictable offences by (1) prison governors in cases of commitment to prison, (2) metropolitan police where fine is imposed, and (3) chief constables in the country.

I suggested a different procedure in the matter of convictions in courts of summary jurisdiction before magistrates without jury. We have to convict in many instances where there is a small or technical offence. So I suggested that magistrates (who hear the whole evidence) should do the "sorting" for the General Medical Council. Real offenders would be reported to the Council by magistrates through their clerk. A system which necessitates that a doctor's conviction for having his chimney fired by his cook should be reported by the police and be "duly recorded" in London is an indignity to which no other profession is subjected, is a futility, entails a waste of stationery and official time, and is a trespass upon a medical man's civil liberty. "Hardship" is too dignified a term to be used in connexion with a procedure which is intrinsically paltry. I claim that these are not theoretical but plain and practical objections. And in the SUPPLEMENT of May 5th quoted above I am pleased to find an ally on the Council in Sir Jenner Verrall. He seems to deprecate the reporting of "convictions of practitioners even for the most trivial and technical offences," but fathers the blame upon the Home Office. I have listened, during the last nine years, to many cases of disputed paternity and I was careful to obtain exact evidence. The General Medical Council is the admitted author of the procedure.—I am, etc.,

Stockport, May 6th.

J. M. BRENNAN.

#### THE COOLIDGE X-RAY TUBE.

SIR,—The remarks of Dr. W. M. Robson on the subject of Coolidge x-ray tubes in your issue of April 21st (p. 699) are of great interest to us as distributors of the tubes in this country.

We feel that his unfortunate experience must be somewhat isolated as many thousands of Coolidge x-ray tubes are in daily use, the majority of which, to judge by the very small number of complaints we receive, are in the hands of satisfied users. The manufacture of the Coolidge tube is

admittedly a difficult process demanding the most meticulous care and supervision, and it is only by exercising systematic control and testing at every stage in the manufacture that a tube is obtained as nearly perfect as it is humanly possible to make it.

Dr. Robson pays what is, to our mind, a wonderful tribute to the Coolidge tube when he states that he has known Coolidge tubes which will run "for one and a half to two hours or longer at a parallel spark-gap of 10 in. and with a current of 10 milliamperes passing through the tube, without causing any trouble or anxiety." No Coolidge tube has yet been placed on the market which has been designed to work under conditions as severe as these, and the fact that he has found tubes which could be overrun to this extent without immediate damage is very gratifying evidence of the large factor of safety which we are glad to feel is commonly associated with the Coolidge tube.—I am, etc.,

GEOFFREY PEARCE,  
Managing Director, Watson and Sons  
(Electro-Medical), Limited.

London, W.C., April 27th.

#### "QUAIN'S ANATOMY."

SIR,—I have had such a curious experience in connexion with the purchase of a copy of *Quain's Anatomy* that I think it would be well to communicate it to the readers of the JOURNAL. It is about three years since a lady, who wished to present a friend of hers with a good work on anatomy, asked me to recommend some particularly good work. I said that I was brought up on *Gray's Anatomy* myself, but that *Quain's* was generally considered the foremost work on anatomy in the English language. So she ordered a *Quain* from the bookman here in Clifton. It was duly delivered and paid for. Some considerable time afterwards she learnt that the edition was not complete. She went to the bookseller—he said he was sorry, but did not know it was incomplete. I then stated the circumstances to the publishers, and they were unable to give me any information as to when the missing volume of the book would be ready, disclaiming all responsibility for the delay, which was apparently due to the author of the missing volume not having the material ready for publication and issue along with the other volumes. Then I wrote to the principal editor, and he expressed regret that he didn't know when the new volume would be ready, but that "doubtless when it did appear I would be able to get a copy." Of course the recipient of the gift has had to get along by using another work treating of the blood vessels. But to me it seems a most extraordinary business transaction, and has certainly proved to be a very unsatisfactory one.—I am, etc.,

J. SMYTH, M.D.,  
Colonel I.M.S. (ret.).

Clifton, Bristol, April 17th.

### Universities and Colleges.

#### UNIVERSITY OF OXFORD.

*Degree Days.*—Degree days in the present term are Saturday, May 26th, Thursday, June 21st, Thursday, June 28th, Saturday, July 7th.

*Rolleston Memorial Prize.*—The next award of the Rolleston Memorial Prize will be made in Trinity Term, 1924. The prize is now of the value of about £100, and is awarded for original research in any subject in animal and vegetable morphology; physiology and pathology; and anthropology. Candidates must forward their Memoirs to the Registrar of the University of Oxford before March 31st, 1924. The memoirs may be printed, type-written, or in manuscript; should be inscribed "Rolleston Memorial Essay," and should bear the name and address of the author. No candidate will be eligible (1) who has not either passed the examinations for the B.A. degree or the B.M. degree at Oxford, or for the B.A. degree or the M.B. degree at Cambridge, or been admitted as a candidate for the degree of B.Sc. at Oxford, or as an advanced student for the degree of B.A. at Cambridge; (2) who has exceeded a period of six years from attaining one or other of these qualifications, or from his attaining the first of such qualifications, if he attained more than one; (3) who has exceeded ten years from his matriculation. (Reference *Oxford University Gazette*, April 26th, 1923.)

At a congregation held on May 3rd the following degrees were conferred:

D.M.—E. H. Culver (in absence).  
B.Sc.—B. W. Williams.



## UNIVERSITY OF CAMBRIDGE.

*Course in Psychological Medicine.*

A short course for the diploma in Psychological Medicine has been planned to be held in Cambridge from July 10th to August 17th. The subjects covered will be the physiology and anatomy of the nervous system, psychology, psychopathology, mental deficiency and practical psychiatry. The fee for the full course will be twelve guineas, but attendance at separate lectures can be arranged. Applications to attend the course should be sent to the Secretary, D.P.M. Committee, Psychological Laboratory, Cambridge, before June 7th. If a sufficient number do not apply the course will not be held.

At a congregation held on May 5th the following degrees were conferred:

M.D.—T. J. H. Hoskin.  
M.B.—A. G. F. McArthur, H. R. Bickerton.  
M.B., B.Ch.—C. B. S. Fuller.

## UNIVERSITY OF LONDON.

## PRESENTATION DAY.

*Capping Ceremony.*

The ceremony of presenting new graduates for degrees was held on May 3rd in the Albert Hall, which was well filled. Before the presentation the Principal Officer, Sir Cooper Perry, read his report on the work of the University during the year 1922-23. The total number of graduates admitted was 8,498, as compared with 3,652 in the last year before the war, and 7,092 in 1921 and 1922. Of those admitted last year 6,746 came in through the ordinary matriculation examination, for which, it would appear, there were nearly 20,000 candidates. The number of degrees and diplomas granted was 2,422, as compared with 1,301 nine years ago, and 2,093 last year. Reference was made to the Rockefeller gifts to University College and University College Hospital Medical School, and to the approaching visit of the King and Queen to lay the foundation stones of the obstetric hospital and nurses' home, and to open the new building for anatomy, embryology and histology. Reference was also made to the other gift of the Rockefeller Trustees, which made possible the erection of buildings for a school of hygiene.

After the capping by the Vice-Chancellor, who, owing to the large number of new graduates, was assisted by two other members of the Senate, the Vice-Chancellor read his "charge," which he described as a word of counsel from an older graduate to his younger comrades. A university degree, he said, was at once an end and a beginning; the end of three or four years of study and intellectual discipline, and the beginning of a larger discipline through contact with a larger world.

*Service at Westminster Abbey.*

The annual service for members of the University held at Westminster Abbey was attended by a large number of graduates of both sexes wearing academic robes. The Dean of Westminster read the lessons, and the Dean of St. Paul's preached the sermon, from the words "There is nothing new under the sun," and "I will make all things new." In the course of his sermon he said that a well ordered state must have regard for proportion between social service and the remuneration for such service, with perhaps a reasonable limit to the extent to which any man might appropriate to himself the results of the labours of others. It would be necessary to get rid of the conception of "a gentleman" as a man who did no work and had plenty of money to throw away. If the country was to recover we must all do more work than we fancied we were paid for doing.

*Graduation Dinner.*

A graduation dinner was held in the evening at Grocers' Hall, when the Vice-Chancellor was in the chair. The toast of the University of London and the new graduates was proposed by Sir Robert Blair, Education Officer to the London County Council. The University, he said, had been a pioneer in research and the extension of knowledge and the first to open its doors to women. Its fees, however, were higher than those of Scottish, Irish and Welsh Universities. If the cost of university education in England was kept too high it would be impossible for the poor man, the small tradesman, and particularly the artisan, to send his children to the universities. In the London area there was a great mass of unorganized knowledge ready to be organized and classified, and if there was still closer co-operation with the local education authorities the destiny of the University would reach a far higher point than anybody now could imagine.

The Vice-Chancellor, in reply, referred to the suggested division of the University into two, or, as some logically minded critics had suggested, into twelve or more universities, and said that it was the opinion of the University itself, as it had been of successive Royal Commissions, that there should be one University only in London. He mentioned the great assistance the City of London had given to the establishment of degrees in commerce as a good omen, encouraging the belief that the City would associate itself more closely with the work of the University. London had always been a poor man's University, the fees of the different colleges varied, but they represented only a small proportion of the cost of the education provided. The County Council and some of the City Companies offered scholarships, but there was room for more not only to enable poor students to enter the University but also to enable worthy students to remain after graduation for post-graduate and research work. Passing to the discussions which have occurred about the new site for the University, Mr. Waring

said that there was only one site within the realm of practical politics, a site of about eleven acres in Bloomsbury offered by the Government subject to certain conditions on both sides. The terms of the removal of King's College from its valuable site in the Strand would be a matter of negotiation between the Government, the Council of King's College, and the Senate of the University. Both the University and King's College would retain their present sites until the new buildings were ready for occupation free from debt; probably about six acres would be allotted for the University buildings and about four for the new building of King's College; plans for both had been prepared and were under consideration. In addition to the two great Colleges, University and King's, there were incorporated in the University 34 schools or colleges, including the medical schools. The number of students in all the institutions was estimated at about 20,000, of whom about 8,880 were sitting for degrees in the University. The teachers numbered over 1,000. Although the great bulk of the university students were preparing for the first degree London was gradually being recognized as pre-eminently the centre for post-graduate research, and for higher studies. The establishment soon after the war of the degree of Ph.D. in order to encourage post-graduate work and meet the needs of students coming from overseas, had fully justified itself; over 400 students had registered themselves for the degree. Sir William Collins, in proposing the toast of the guests, said that the University of London was not merely imperial but international. It had recognized students, the majority of them he believed Americans, from foreign universities, some of whom had received its highest degrees. In conclusion he expressed the pleasure with which the graduates welcomed the French Ambassador and representatives of the French universities. The toast was acknowledged by Viscount Burnham.

The Vice-Chancellor said that he had received a message of good wishes from the Chancellor, who was unable to be present owing to the state of his health.

## ELECTIONS TO THE SENATE.

Dr. R. A. Young has been elected a member of the Senate by Convocation in the Faculty of Medicine and Sir Sydney Russell-Wells, M.D., M.P., is one of those elected in the Faculty of Science. Lord Dawson of Penn and Dr. R. L. Eason, C.B., represent the Faculty of Medicine, and Sir William Collins, M.D., the London County Council. Mr. G. Leslie Eastes desires to thank those members of Convocation who recorded their votes for him and adds that only 30 per cent. of the electorate voted.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND.

At a meeting of the Council, on April 12th, diplomas of membership were granted to the following:—

B. Bourke, \*Eddie D. Fenwick, \*Marjorie A. Godfrey, \*N. R. Mucadam.

\*Under the Medical Act, 1875.

## ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

At a meeting of the Royal College of Physicians of Edinburgh on May 1st, when Sir Robert Philip, President, was in the chair, Dr. Henry George Masson was elected to the Fellowship of the College; and Drs. James Davie Gilruth and William Arnott Dickson were admitted to membership. The College re-elected Dr. William Russell as its representative in the General Medical Council for a further period of five years. The Freeland Barbour Fellowship for original research was awarded to Dr. James Walker Dawson. The gift by Lord Polwarth of an autograph letter by Edward Jenner dated 14th September, 1799, was received.

## ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

J. V. DHURANDHAR, M.B., B.S. (Bombay), having passed the requisite examination, has been admitted to the Licence in Midwifery.

## The Services.

## DEATHS IN THE SERVICES.

LIEUT.-COLONEL ARTHUR WILLIAM DAWSON, Bengal Medical Service (retired), died at Grange Park, North London, on March 7th, aged 64. He was the son of Dr. Thomas Dawson of Liverpool, born on February 11th, 1859, and was educated at Liverpool and at King's College, London. He graduated M.B. at Durham University in 1884 and M.D. in 1892, also taking the M.R.C.S. and L.R.C.P. Lond. in 1885. He entered the I.M.S. as surgeon on April 1st, 1886, became lieutenant-colonel after twenty years' service, and retired on July 19th, 1917. He spent his whole service in military employment, and for many years was medical officer of the Sappers and Miners stationed at Kurki. He had a long record of war service: North-East Frontier of India, Chin Lushai, 1889-90, medal with clasp; North-West Frontier, Hazara, 1891, clasp; Chitral, 1895, relief of Chitral, medal with clasp; Tirah, 1897-98, actions of Dargai and of the Sampagha and Arhanga Passes, operations at and around Dwatoi, and operations in the Bara Valley, two clasps; China, 1900, medal; Tibet, 1903-4, medal; and North-West Frontier, 1903, operations in the Momand country, medal. During the recent war he was in medical charge of the Indian hospital ship *Glenart*.



*Castle*, and was on board when she was in a collision on her first voyage, but had left her before she was finally sunk, with great loss of life, in the Bristol Channel.

Surgeon Alexander William MacLeod, R.N.(ret.), died at Great Yarmouth on April 9th. He was the elder son of the late Inspector-General William MacLeod, M.D., C.B., R.N. After taking the diplomas of L.R.C.P. and S. at Edinburgh in 1877, he entered the navy as surgeon in the same year, but retired after a few years' service in the same rank.

## Obituary.

CHARLES KILLICK, M.A., M.D., B.CH.CANTAB.,  
F.R.C.S.ENG.,

Honorary Surgeon, Royal Eye and Ear Hospital, Bradford, and  
Honorary Ophthalmic Surgeon, Bradford Royal Infirmary.

THE medical profession not only of Bradford but also of a much wider area has to deplore the sudden and tragic death at the age of 48 of Dr. Charles Killick. Apparently in normal health, he infected his finger while examining an ophthalmic patient and died within nine days of septicaemia. Born near Bradford, a member of a well known professional family, he received his medical education at Cambridge University. After taking his arts degree with honours in the natural science tripos, he gained a university scholarship at St. Mary's Hospital, London. His bent—ophthalmological—almost from the first led him to take up that branch of surgery, and he spent many years in Maidstone in ophthalmic practice and as honorary surgeon to the Kent County Ophthalmic Hospital. In spite of his success there he felt that Kent was not sufficiently bracing for his children, and he returned to Bradford, becoming honorary ophthalmic surgeon to the Royal Eye and Ear Hospital. He was a life member of the Société Ophthalmologique de France, a member of the council of the Ophthalmic Section of the Royal Society of Medicine, a member of the Ophthalmological Society of Great Britain, and a member of the Bradford Division of the British Medical Association. He was a frequent contributor to the medical journals; his chief hobby, indeed, was the translation of French and other foreign ophthalmic works. He greatly preferred literary and scientific studies to outdoor recreation. Of recent years he became interested in freemasonry, and obtained in a very short time an astonishing mastery of its ritual. His geniality and mental alertness as well as his great medical abilities made him universally popular in Bradford, and his early death is a severe loss to the profession. Great sympathy is felt for his widow and young children.

## Medical News.

AN Emeritus lecture will be delivered at the Middlesex Hospital Medical School by Sir John Bland-Sutton, LL.D., on Tuesday, June 5th, at 3 p.m.

MEMBERS of the Association who desire to take part in the discussions to be held in the Section of Diseases of Children at the Annual Meeting of the British Medical Association at Portsmouth next July are requested to communicate with Dr. R. Hamer Hodges, 93, Victoria Road North, Southsea. On Thursday, July 26th, the discussion will be on acidosis and alkalosis in children, and on Friday, July 27th, summer diarrhoea will be discussed.

THE annual dinner of the Federation of Medical and Allied Services will be held at the Langham Hotel, Portland Place, W.1, on Tuesday, May 29th, at 7.15 p.m., and not on May 23rd as previously announced. Sir Berkeley Moynihan, the president, will preside, and the chief guest will be the Right Hon. Neville Chamberlain, Minister of Health.

DR. C. K. CLARKE of Toronto will deliver the Maudsley lecture before the Medico-Psychological Association of Great Britain and Ireland in the Barnes Hall of the Royal Society of Medicine on Thursday, May 24th, at 3 p.m. Dr. Clarke will be entertained to dinner on the same evening. The quarterly meeting of the Society will be held at 11, Chandos Street, W.1, at 2.30 p.m. on the same day.

It is hoped that the Duke of York will be able to lay the corner stone of the new Nurses' Home of the Liverpool Royal Infirmary on July 25th.

At a meeting of the Medico-Legal Society on Tuesday next, May 15th, at the house of the Medical Society of London, a discussion on the Mental Treatment Bill, 1923, will be opened by Mr. A. H. Trevor, B.A. The chair will be taken at 8.30 p.m.

THE Infants' Hospital, Vincent Square, Westminster, has arranged a course of lectures, to be delivered by members of the medical staff during May and June at 8.45 p.m., on the diseases and treatment of infants. The first lecture of the series will be given by Dr. Eric Pritchard on Tuesday, May 15th, on the principles of infant feeding, and the second by Dr. Helen Mackay, on the treatment of nutritional disorders in infancy, on Wednesday, May 23rd.

WHEN the proposal was first made by the Inchcape Retrenchment Committee a couple of months ago we pointed out the strong objections there were to the abolition of the appointment of Public Health Commissioner with the Government of India. The *Times* correspondent, in a telegram from Simla on May 6th, states that the proposal has been abandoned.

DR. RUSSELL JOHN REYNOLDS has been appointed Honorary Adviser in Radiology to the Ministry of Pensions.

THE summer dinner of the Glasgow University Club, London, is to be held at the Trocadero on Friday, June 1st, at 7.30 p.m., when the Lord Rector, the Earl of Birkenhead, will preside. Any Glasgow University men who, though not members of the club, would like to attend, are invited to communicate as early as possible with the honorary secretaries, 1, Harley Place, N.W.1.

THE Ministry of Pensions announces that meetings of the Standing Joint Committee for Ex-Service Questions were held on April 27th. At the meeting of the Other Ranks Panel over which Major G. C. Tryon, M.P., Minister of Pensions, presided, it was stated that the special institution provided in the south of England for the separate treatment of insane ex-service men was now occupied by 50 patients and the number would shortly be doubled. The patients had been chosen from amongst those in county and borough asylums. Of one hundred relatives approached on the matter nearly half objected to the transfer of patients to a distance, being satisfied with the treatment given in their own county and borough asylums. Representatives of the British Legion expressed appreciation of the efforts made by the Ministry of Pensions to obtain separate treatment. Other subjects brought before the meeting included service disability awards, the care of motherless children, parents' need pensions, and repairs to artificial limbs.

A NEW course of post-graduate lectures free to medical practitioners commenced on May 3rd at the Hospital for Sick Children, Great Ormond Street, W.C.1, and will be continued on succeeding Thursdays at 4 p.m. up till and including July 12th.

THE Ministry of Health has issued a list (London: H.M. Stationery Office, price 3d.) of approved sanatoriums and other residential institutions for the treatment of persons suffering from tuberculosis and resident in England and Wales, with the names of the administrative counties and county boroughs in which the institutions are situated and the date on which approval expires.

DR. W. M. FRAZER and Dr. I. D. EVANS of Gray's Inn were called to the Bar on April 25th.

DR. G. M. THOMPSON, on the occasion of his retiring from the post of medical officer of Bellaghy dispensary district, which he had held for forty years, has been presented with an Overland Sedan car and an illuminated album containing the names of 700 subscribers. Mrs. Thompson was on the same occasion presented with a silver salver.

THE Southend Doctors' Cricket Club has a vacant date on Wednesday, August 1st, 1923. They will be very glad to arrange a match on that day against a team of doctors, and to entertain the players and their friends to tea after the game. Any doctor interested is asked to communicate with the Honorary Secretary, Dr. A. W. Holthausen, 583, London Road, Westcliff-on-Sea.

A LECTURE on the psychology of epilepsy will be given at the house of the Royal Society of Medicine on Thursday, May 24th, at 5.15 p.m., by Dr. E. D. Wiersma, professor of psychiatry and neurology in the University of Groningen. The chair will be taken by Dr. Robert H. Cole, physician for mental diseases to St. Mary's Hospital. The lecture is one of the course in advanced psychiatry organized by the University of London. Admission is free without ticket.

THE house and library of the Royal Society of Medicine will be closed from Saturday, May 19th, to Monday, May 21st, both days inclusive.



THE Ingleby lectures before the University of Birmingham will be delivered by Dr. Harold Black on May 30th and June 6th at 4 p.m.; the subject selected is the investigation of the alimentary tract by  $x$  rays. Members of the medical profession are invited to attend.

WE mentioned a few weeks ago that the Section of Otolaryngology of the Swedish Society of Physicians had invited some representatives from this country to visit Stockholm and to take part in certain meetings there. The British party is to arrive in Stockholm on the morning of Friday, May 18th, and will be entertained by Professor and Mrs. Holmgren in the evening. On the following morning Professor G. Forsell will give a demonstration at the Radium Institute, and in the afternoon there will be a meeting in the rooms of the Swedish Society of Medicine, when papers will be read by Dr. Logan Turner, Dr. Brown Kelly, Dr. de Kleyn, Professor Bárány, and others. In the evening the Section for Otolaryngology will entertain the foreign guests at dinner. On May 20th the party will pay a visit to Upsala, and on the following day will go sightseeing in Stockholm. On the evening of May 22nd there will be a final meeting at the house of the Society of Medicine, when papers will be read by Sir StClair Thomson, Professor H. Burger and Dr. Arthur Cheate.

THE third annual congress of German oto-rhino-laryngologists will be held at Kissingen next week (May 17th to 19th), when the following subjects will be discussed: (1) Operations on the accessory sinus, introduced by Hajek of Vienna, Halle of Berlin, and Manasse of Würzburg; (2) treatment of chronic tonsillitis, introduced by Dietrich of Cologne, Kummel of Heidelberg, and Schlemmer of Vienna.

THE Fourth International Neurological Congress will be held at La Salpêtrière in Paris on June 8th and 9th, when the subject for discussion will be compression of the spinal cord. The pathological anatomy and pathogenesis will be dealt with by Sir James Purves-Stewart and Dr. George Riddoch of London, and the pathological physiology, clinical symptoms, and treatment by Dr. C. Foix of Paris. Further information can be obtained from the General Secretary, Dr. H. Meige, 35, Rue de Grenelle, Paris.

THE Dutch Orthopaedic Society will celebrate its twenty-fifth anniversary in the hall of the University at Amsterdam on May 25th and 26th, under the presidency of Dr. Murk Jansen, when addresses will be delivered by Sir Robert Jones, Professor Adolf Lorenz, Dr. Albee, Dr. Calot, Dr. Spitzky, and Dr. Putti.

THE Cairo correspondent of the *Daily Telegraph* states that during the last week in April one hundred cases of plague were reported for the whole of Egypt. No cases were reported at Cairo; in Alexandria there was one case, and in Port Said two. The situation is reported to be more or less normal except at Girga and Assiout, where the infection is spreading. The disease is chiefly of the bubonic type.

THE seventh All-Russian Congress of Bacteriology, Epidemiology, and Public Health will, it is announced, be held at Moscow from May 22nd to 28th, when the following subjects will be discussed: (1) Immunity, serotherapy, vaccine therapy, chemotherapy, and diagnosis; (2) bacteriology and epidemiology of the prevalent infectious diseases in Russia; (3) disinfection and destruction of rats and insects; (4) organization.

THE total receipts of the United Hospital Fund of New York for the year ending June 30th, 1922, amounted, according to the annual report, to 585,557 dollars, as compared with 710,773 dollars in the previous year. In 1919-20 and 1920-21 there were "high pressure" hospital campaigns; the receipts in 1918-19 amounted to 221,535 dollars only, but this was the highest amount received down to that time. At the annual distribution of funds a sum of 525,000 dollars was allotted in amounts varying from 37,000 dollars to 1,000 dollars among 56 hospitals, comprising 18 general hospitals, 10 hospitals for women and children (including maternity hospitals), 11 special hospitals (including orthopaedic, eye, ear and throat, skin and cancer, and neurological hospitals), 6 hospitals for convalescents and chronic cases, and 11 hospitals in Brooklyn. The United Hospital Fund of New York was organized in 1879, and the receipts for the year 1879-80 were 26,455 dollars, distributed among 19 hospitals. All hospitals sharing in the fund are required to submit an annual statement on a uniform form showing in detail the work, income, and expenses for the preceding year. Any hospital in Greater New York may become a member of the United Hospital Fund after recommendation by a committee on admissions as to its equipment and management, and election by the Board of Trustees, provided that it is duly incorporated, has had for three years at least thirty-five ward beds, and has given during the same period not less than 5,000 days of free service each year.

IN the six Swiss universities there are at present 1,451 medical students, of whom 187 are women; among them are 231 foreigners, including 49 women.

## Letters, Notes, and Answers.

*As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.

2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.

3. MEDICAL SECRETARY, *Mediscera, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

### QUERIES AND ANSWERS.

"N." asks if any reader can suggest a successful remedy for black tongue.

WHOOPIING-COUGH.

DR. THOMAS CARRUTHERS (Kilbarchan, Renfrewshire) writes to point out that Dr. Midelton's note of April 28th (p. 746) contains no statement as to the period in the disease at which the treatment was begun; the whoop may go on for a long time by a sort of habit spasm. Dr. Carruthers adds that in a disease so variable both in duration and intensity "controls" are necessary.

### INCOME TAX.

"ANTHONY" took over a practice on March 31st, 1921. The inspector of taxes asserts that his predecessor's figures for past profits of the practice appear to have been inaccurate, and that as the correct figures cannot be ascertained he proposes that the practice shall be assessed for 1921-22 and 1922-23 on the first accounts of the new proprietors for the period to March 31st, 1923.

\* \* If, as seems to be clearly the case, "Anthony's" predecessor was doing badly, the inspector's proposal is unfair, as its adoption would deprive our correspondent of the benefit of the three years' average to which he is legally entitled. The impracticability of showing what were the past profits is, of course, a serious difficulty, but assuming that it can be shown that for specific causes the 1921-1923 earnings of the practice were greater than the 1918-1921 profits, it ought to be possible to come to some arrangement with the inspector to agree on an assessment on the three years' average basis, which would be less than the 1921-23 profits, though perhaps greater than the amount first claimed. Failing such agreement, the matter might be dealt with by the Commissioners on a personal appeal from the assessment when made; if all the ascertainable facts were put before them, they would, no doubt, give a decision which would be a reasonable compromise between the two figures at present in the field.

"A. B." holds an appointment under a local authority from whom he receives a rate per mile to cover all running expenses, repairs, depreciation of his car. When he renewed his car he found that the mileage allowance has not been sufficient to recoup him for the loss of capital value of his old car. Can he claim any special allowance from income tax?

\* \* He is entitled to allowance of expenses incurred wholly exclusively and necessarily in the performance of his duties. It may be that some of the expenses charged in "A. B.'s" car account might have to be reduced on account of private as distinct from official use of his car, but, apart from that, there is a difficulty arising over the introduction into the Statute of the word necessary. The local authority by which "A. B." is employed presumably decided on the rate per mile as sufficient for the type of car "necessary" for the work, and "A. B." may very well be open to attack—as regards any special claim—that the loss arises through his use of a car which was superior to



that "necessary," in power, type, or accommodation. One or two of "A. B.'s" figures—that is, the "purchase price of car £570" and "selling price £225"—differ from those in his covering statement, but the above considerations apply in any case.

"J. S." has to live in a house by virtue of his appointment as M.O. to a charity; he may not sublet it and must give it up on relinquishing his appointment; he has to pay for the internal repairs of the house but not for the rates.

\* \* On the facts the charity appears to be the statutory occupier of the premises, and the annual value forms no part of the "income" of "J. S.," inasmuch as the benefit of residence is not convertible into money (*Tennant v. Smith*).

### LETTERS, NOTES, ETC.

#### THE UNPLEASANT TASTE OF POTASSIUM BROMIDE.

DR. S. P. CASTELL (London, N.6) writes to suggest that the difficulty about the taste of potassium bromide can be avoided by using sodium bromide, the taste of which is the same as that of common salt. Thirty grains in a cup of meat extract, he says, is scarcely detected. Dr. Castell adds that a patient who persistently refused potassium iodide in various disguises took sodium iodide without any suspicion.

#### DE MORGAN'S SPOTS AND MALIGNANCY.

DR. GEO. A. PEMBERTON WRIGHT (Southampton) writes: Recently, on examining a man suffering from bronchitis, I noticed some twenty of the reddish or crimson raised spots known as De Morgan spots scattered all over the skin of the chest, with four fairly large ones within a radius of 1 inch from the region of the ensiform cartilage. I have noticed many cases before, but never so many spots on one man. In most of the cases noticed (over fifty in number) the spots have been single, rarely two or three together, and the sites have been in order of frequency: (1) Area of ensiform cartilage. (2) In the nipple line, mostly within a radius of a couple of inches or so from the nipple itself. (3) Near the umbilicus. I have not noticed them in other parts of the body. We were taught that these spots were related in some way with malignant disease and were found generally on persons suffering from such maladies. Of the cases that I have noticed, only one—a woman, aged 56 years—suffered from malignant disease. She had cancer of the stomach and one De Morgan spot near the left nipple. The last case I have noticed—the man with twenty spots on his chest—is very healthy excepting the temporary bronchitis. It seems unlikely that there really can be any connexion at all between the appearance of these spots and malignant disease. There must be some other explanation, and I should be very interested to hear it.

#### SERUM BY THE MOUTH.

DR. T. M. ALLISON (Newcastle-on-Tyne) writes: Some time ago in the BRITISH MEDICAL JOURNAL there were recorded some laboratory experiments made at Cambridge on guinea-pigs, throwing doubt on the efficacy of antidiphtheria serum when administered by the mouth. The method in human beings in my experience during the last thirty years has given excellent results, and the following letter from a practitioner in East Kew, Victoria, Australia, is interesting as confirming that experience.

"Dear Sir,—With reference to your letter in the BRITISH MEDICAL JOURNAL of November 18th last, it might be of interest to you to know of another Australian experience. Some years ago I was in a health resort in the mountains near Melbourne, and as an epidemic of diphtheria broke out it became necessary to stamp out the outbreak. I considered the plan of swabbing all the school children, but thought I would try a clean sweep as the easiest and most effective method, and this took the form of administering of antidiphtheria serum by the mouth. In all about one hundred and seventy State school children and about fifty convent school children were treated. The children were given about one thousand units each of the antidiphtheria serum by the mouth from a small china egg-cup; about one dozen egg-cups were used, and sterilized by boiling after each batch of one dozen children received their dose of the serum. Each child was told to sip the serum and hold it underneath the tongue for a minute or more before swallowing it. The local action of the serum in the mouth, throat, and tonsils may have been the chief factor, but after dealing with all these children in one afternoon there were no further cases of diphtheria, and no possibility of anaphylaxis if the serum had to be injected at a later date.—R. A. PARKER."

#### TREATMENT OF ACNE VULGARIS.

DR. M. AZER (Cairo) writes to recommend the following method for treating obstinate cases of acne vulgaris. All the cases treated were of over a year's duration and other treatments, including that by auto-vaccines, had failed. He gives an intramuscular injection of colloidal manganese every fourth day, one teaspoonful of levure de bière in water before every meal, and the following lotion dabbed on the parts night and morning: Pulv. calamin. 5 ij, pulv. zinci oxid. 5. ij, pulv. tragacanth 5 j, sulphur ppt. 5 ij, aq. calcis 5 ij, aq. rosea ad 5 viij. Dr. Azer gives a brief history of four cases: (1) A lady in whom the face, chest, and back had been affected (comedo and pustular stage) for two years; after seven injections great improvement was

noticed. (2) A policeman in whom the distribution was the same; he had suffered for one year; after six intramuscular injections he recovered. (3) A student with lesions on the face in the pustular stage; he had suffered for fourteen months and improvement followed eight injections. (4) A student with lesions in the pustular and comedo stage on face, back, and chest for one year, was somewhat improved after six injections.

#### A CAUSE OF LIFELONG HEADACHE.

DR. REGINALD COCK (London, E.2) writes: About two years ago a patient of mine, G., aged 74 years, wrote me the following letter:

"Dear Sir,—As I have often been under your kind treatment for my health and the bad pains and the dreadful sensations in my head through losing my hair when a child, for which there was no apparent cause whatever, not even illness—which has always been a mystery—I shall indeed feel extremely grateful if you will open my head after death, should you outlive me, whereby you, perhaps, may be able to find out the cause of my poor head being so greatly afflicted, causing me at times such acute suffering for over sixty years. As I get older it gets worse. I cannot describe what I suffer so often. I thought if it could be opened it may be a very great benefit to others who suffered like me with their heads if the cause of all my head afflictions can be found out, which you warmly approved of. I can assure you, dear Sir, it will be a very great relief to myself and relations to know and to be sure that my most urgent and last wish will be fulfilled in having my head opened after death."

My patient having died on April 14th, I carried out a post-mortem examination on April 16th and found the following conditions most worthy of note: (1) The hair on the scalp was very thin and scanty. (2) There was marked atheroma of the mitral, tricuspid, and aortic valves; also of the coronary arteries of the aorta. (3) The under surfaces of the ribs were much thickened, even to the extent of half an inch in some places, and pressing downwards on the brain. The last condition was also, in my opinion, of congenital syphilitic origin and no doubt the cause of the headaches.

#### CONSTRICTION OF THE PENIS IN AN INFANT.

DR. T. WILSON AIRD (Margate) writes: The case of a feather in the parotid duct reported by Sir Dundas-Grant in the JOURNAL of March 10th, p. 416, reminds me of an unusual case which came under my care while acting as M.O. on an Atlantic liner years ago. One day I was asked to see the six-weeks old infant son of a German couple in the steerage. The mother informed me that for several days and nights the child had kept up an almost continuous murmuring cry whenever it was awake as if it was in constant pain, and that she could find no cause for this. On the child being undressed I observed that it was in a very dirty, uncared-for condition, and that the penis was deeply constricted in the middle as if a ligature had been tied round it, with the result that the distal half was swollen and inflamed to twice its normal diameter, while the proximal half appeared to be normal. With some difficulty I was able to partly separate the sides of the constriction and discovered the extremity of a hair pointing from left to right. On seizing this with dressing forceps and carefully unwinding I found it to be a human hair about 12 inches in length—presumably from the mother's head. The parents seemed as much surprised as I was. On further examination I found that the skin of the penis in its entire circumference had been completely severed down to the subcutaneous tissue, but fortunately the deeper structures had escaped. I was afraid lest the urethra had been damaged but events proved that this was not so. The child made a rapid and satisfactory recovery. I imagine that the hair had become attached to the infant's nightdress, then to the penis, and the natural imbrication of the hair set up and carried on the "encircling movement."

#### CORRECTION.

In the Contents page of the JOURNAL of May 5th the letters "F.R.S.Ed." were, through inadvertence, printed after the name of Dr. J. Argyll Campbell in place of D.Sc.Ed.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 30, 31, 34, and 35 of our advertisement columns; and advertisements as to partnerships, assistantships, and locum tenencies at pages 32 and 33.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 191.

#### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, not later than the first post on Tuesday morning, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restants* letters addressed either in initials or numbers.



# A British Medical Association Lecture ON SOME CONSIDERATIONS ON DISORDERS OF GROWTH.\*

BY  
HUGH THURSFIELD, M.D., F.R.C.P.,  
PHYSICIAN, HOSPITAL FOR CHILDREN, AND ASSISTANT PHYSICIAN,  
ST. BARTHOLOMEW'S HOSPITAL, LONDON.

THERE is an old philosophical doctrine of the meaning of the universe expressed in the words *πάντα ῥεῖ*—everything is in a state of flux; nothing is stable. That is true of life in general and of human life in particular. Growth and development, degeneration and decay, are inevitable laws of Nature as we say—that is, these processes represent in our experience the recurring phenomena of life without a known exception. In our own department of the study of the phenomena of human life, in medicine, when we deal with the adult our principal business is the appreciation of the processes which lead to degeneration and decay, and we endeavour to influence conditions in such a fashion as to retard the operation of the inevitable law. But in the study of the infant and the child our attention is to a large degree concentrated on the opposite principle, the law which governs growth and development.

Till the middle of the nineteenth century our knowledge remained much as it had been in all the previous centuries of man's existence, but with the promulgation of the doctrine of evolution and natural selection an immense stimulus was given to the study of the development of the human being. New fields of investigation were opened and the modern science of physiology began to provide the ancient art of healing with new ideas. The results of the study of the thyroid gland introduced us to the functions of the glands of internal secretion, and speculations on the nature of inherited qualities and their transmission stimulated research into the origins of growth and development.

When we ask why the infant grows and develops, the answer which our present knowledge must give is that there are two principal factors: one the inherent stimulus which is common to all young life, which we recognize as a law of Nature; this we can analyse to a certain degree, and perhaps we may succeed in time in modifying it consciously in human life as we have succeeded in the vegetable and animal kingdoms. Eugenics is the branch of science which seeks this end. The other factor, over which we gain more control as time passes and knowledge increases, may be called the external factor, the law that growth cannot occur without a supply of the material which is to be built into the growing tissues, and even so can occur normally only if the material supplied is properly distributed and regulated by the various structures which we have learnt to regard as governing growth. These governing structures are the glands of internal secretion, and our knowledge of them, though it increases, is still pitifully small.

We can therefore recognize two spheres in which we can attempt to control growth—the ante-natal period and the period of growth after birth; and two factors which between them determine the nature and the course of growth—the glands of internal secretion, and the material supplied to them. It is obviously in the period after birth and in the nature of the material supplied that our best opportunity lies of influencing the development of the infant; but the ante-natal period is of increasing importance, and in one direction at least we have gained a measure of control over the ductless glands. The field thus sketched out is clearly far too wide for a comprehensive review, and I propose to select a few points in it for consideration.

## THE ANTE-NATAL PERIOD.

Congenital defects have always attracted much attention, but our knowledge of their causation is singularly small. Many of these defects are local and apparently the result of some aberrant impulse in the inherent principle of

growth. A good example is the congenital abnormality of the heart, or the congenital absence of some bone such as the radius. Some such events we classify under "atavism" or "reversion to type"—phrases which may help us to grasp the exceeding complexity of the human body as it exists at the present time, but throw no light on the stimulus which provokes the reversion. Such events we neither understand nor can attempt to control. On the other hand, we know that tuberculosis or alcoholism in the parents leads to a high percentage of mental deficiency in the offspring; and that a disease such as syphilis can be transmitted to the unborn child. Yet when we have counted all the recognized factors which influence the development of the foetus we are left with the great bulk of congenital abnormality wholly unexplained. We do not in the least understand why one of a pair of twins should be a Mongolian idiot, and the other a normal child; or why one child in a long family should be born with achondroplasia. You will be able to recall dozens of other examples in which as yet our knowledge is absolutely nothing. But we know enough of the facts of inheritance to be able to predict the probability of haemophilia in a given family; and we have mastered therapeutics sufficiently to secure that the child of a mother who was herself born a cretin should be a normal individual. Again, recent experimental work, to which I shall recur, seems to point to the fact that the absence or deficiency of certain elements of food in the diet of the pregnant or nursing mother has a marked influence on the growth and development of the offspring, and especially upon its skeleton.

But in the ante-natal period there remains a vast mass of unknown, unguessed-at factors which can only very slowly be revealed by the advance of eugenic study and the knowledge derived from researches on inheritance in animals and plants. Meanwhile, we in this generation must be content to do the recording and the classification so that the date of the revelation of the underlying principles may be hastened.

## THE PERIOD AFTER BIRTH.

Physiology deals with the function of the living organism, and its most obvious field of research is that which includes the supply of material to the increasing tissues; and though we know that growth may be stimulated by other factors of environment, such as air, light, and exercise, yet the quantity and quality of the food clearly holds the first place. Physiology early established the normal curves of infant growth and engaged in the task of analysing the quantities and qualities of the known chemical elements which go to the building up of the tissues.

## Vitamins.

Towards the end of the nineteenth century it had become clear that besides the proteins, fats, carbohydrates, and mineral salts which compose the essential chemical elements of food there must be other, hitherto unrecognized, substances essential to life. This was, of course, not a new idea—it had long been familiar to clinicians brought into contact with cases of scurvy; but the hypothesis was not accepted by all clinicians and was far from proof. Physiology sought the proof by the method of exclusion from the diet of everything except the recognized chemical elements. There was an interval before they were able to reach the desired standard of purity, but in the first decade of this century Hopkins at Cambridge was able to demonstrate conclusively that a diet of standard purity, though complete in quantity and quality as recognized by chemical analysis, was insufficient to maintain growth, and if continued led to death, usually from intercurrent infection. I need not detain you with the subsequent history. I will merely remind you that it is now established that over and beyond the recognized chemical elements of food there are three accessory food factors, or vitamins—fat-soluble A, water-soluble B, and the antiscorbutic factor C. Whether there are others than these is undecided. McCollum and his fellow workers at one time considered that fat-soluble A really contained two separate elements—one necessary to growth, the other necessary for the normal production of bone. More recently they have claimed the existence of a fourth vitamin, D, which is antirachitic, but at present the

\* Delivered before the Guildford Division of the British Medical Association on April 12th, 1923.



claim is not substantiated. It is possible that other vitamins exist, but with our present knowledge it is not very probable.

The discovery of these accessory food factors is of the first importance in our study of the disorders of growth. It is clear that no normal growth can occur in their absence, but we do not yet know clearly what are the effects of a mere deficiency in quantity. Nor shall we know this with accuracy until the efforts of the physiologists have succeeded in isolating the vitamins and determining their actual composition.

**Vitamin C.**—However, with vitamin C, the antiscorbutic factor, some progress in this direction has been made, and it is possible to estimate the quantity per kilo of body weight of orange juice or cabbage juice necessary to protect a guinea-pig against scurvy. In the infant it has long been known to clinicians that the effects of a scurvy-producing diet require some time to show themselves and that there are degrees of severity in their manifestations. With our knowledge of vitamin C some of this variability is explained. The milder cases and those which develop only after a long course of the scurvy-producing diet are presumably those in which antiscorbutic is not wholly absent but is present in insufficient quantity. And in those cases which are severe or develop after an extremely short interval of the scurvy diet the factor is presumably absent altogether. But clinical observation, stimulated by such considerations, has gone further, and Hess and others have shown that there is what we may call a latent or subacute scurvy which has not hitherto been recognized. There is a group of infants of from 3 to 6 months of age in which growth is defective, irritability pronounced, and there is obvious pain on handling. If such an infant is supplied with orange juice in good quantity these symptoms almost at once disappear and normal growth is resumed. Such infants have usually been fed either on food which is notoriously defective in antiscorbutic quality or breast-fed by mothers whose own diet has been similarly defective. I have in the past year seen two such cases, and the result of the addition of antiscorbutic to their food is striking. I think that besides the obvious haemorrhagic disorder of the older infants we must recognize the existence of a milder and less obvious scurvy which may attack the infant in the early months of life. We must further recognize that the nursing mother, though in normal circumstances amply supplied with vitamin C and able to transmit it to her infant, may be so situated that her own supply fails, and that with the failure the infant is exposed to scurvy. The remedy is to secure for every nursing mother an ample supply of the vitamin-containing foods, such as fresh fruit and fresh vegetables. On the whole the dangers of an insufficient supply of vitamin C are well understood; the chief addition to our knowledge is the appreciation of these minor and earlier manifestations in infants, whether fed artificially or by the breast.

**Vitamin B.**—On the whole, again, vitamin B, the water-soluble factor, seems to be very seldom, so far as our present knowledge goes, a factor in delay of growth. It is present so abundantly in so great a variety of foods, and it is so little affected by cooking processes, that a deficiency in this respect is hardly to be expected. I had hoped that a deficiency in this respect might be the explanation of our failure to deal successfully with some of the cases of infantile atrophy, but all clinicians are united in agreeing that the supply of this factor has no influence on the disorder. Nor have the results of administering yeast to older children suffering from chronic wasting disease been any more satisfactory. The claims of the manufacturers of patent foods may in this respect be entirely disregarded.

**Vitamin A.**—It is round the fat-soluble vitamin A that the greatest controversy rages and the most doubt exists. It is clear from the experimental work that without vitamin A growth fails; and it is also clear that if vitamin A is absent or deficient normal calcification of bone cannot take place. But it is also becoming clear that a failure or a deficiency in vitamin A is not the sole cause of rickets. In the controversy which has taken place the contention on the one side has been that rickets is essentially a deficiency disorder, and on the other that it is in the main caused by external conditions, especially by the absence of sufficient light and exercise. There are two facts which appear to

me to stand out from the mass of experimental work on this subject: one that it is difficult to produce rickets in an animal who is provided with a proper amount of vitamin A, of calcium, and phosphorus; the other that rickets is apt to be seen in animals whose diet is ample in these respects if the other conditions of their life are unfavourable. From some other experiments it would seem possible that these two apparently irreconcilable facts are in reality corollaries of each other. It would appear, for instance, that if the experimental animal is exposed to light—either sunlight or the light of the mercury vapour lamp—a much smaller amount of vitamin A is sufficient to inhibit the rickety changes in bone than is required by the animal who is brought up in the comparative darkness of the laboratory. Whatever the ultimate outcome of the investigations into the relationship between vitamin A and rickets, it is clear that the clinician must, as he has been doing for many years past, recognize that for his rickety patient an ample supply of animal fats is necessary. Fortunately all the researchers are agreed that cod-liver oil is a substance especially rich in fat-soluble A, so that by the simple addition of this drug to the food of an artificially fed infant the worst manifestations can be avoided.

I emphasized just now the importance to the pregnant or nursing mother of a supply of antiscorbutic factors. It would appear from some recent experimental work that the pregnant mother has also especial need of an ample supply of fat-soluble A. In Korenchevsky's experiments the young rats of two separate litters were weighed on the thirty-sixth day of their lives—both litters had been fed by their mothers and both mother rats had received during lactation exactly the same food. The one mother had, however, during her pregnancy received cod-liver oil in addition to the basal diet which both had; the young of this mother weighed on the average three times more than those of the other litter. Other similar experiments go to prove that a rat mother who is fed during her pregnancy on a diet defective in vitamin A will produce young with defective bone formation, due to a deficiency of calcium in the periosteum, and will herself tend to show a marked thinning of the bones.

#### *Osteogenesis Imperfecta.*

It is impossible with these experiments in our minds not to think of that obscure disorder of human growth which is best termed osteogenesis imperfecta. You will remember that there are infants born with so great a tendency to fracture of the bones that life is impossible; that others manage to retain a hold on life but with an extraordinary tendency to fractures and to marked curvature of the long bones; that others, again, with comparatively few fractures yet have bones so thin and slender that violence which would do no damage to a normal individual causes fractures. These various conditions have unfortunately been christened with a great variety of names, so that it is often difficult in reading of them to determine how far they are distinct disorders. My own impression is that there is but one disorder—osteogenesis imperfecta—and that fragilitas ossium, osteopsathyrosis, and infantile osteomalacia are merely varieties of severity. If this is correct I think it possible that Korenchevsky's experiments may indicate the cause of this disorder of growth: a lack of vitamin A during the pregnancy, and possibly a defective supply of calcium and phosphorus. From some other experiments it seems to be possible that the lack of vitamin A is the actual cause of the lack of calcium absorption. At any rate it is obviously the duty of the physician to ensure a good supply of vitamin A to the pregnant mother—an easy task, even when for any reason animal fats are difficult to procure or to digest, for cod-liver oil in quite small quantities contains vitamin A in abundance.

#### GLANDS OF INTERNAL SECRETION.

I have but touched the fringes of the subject in talking of vitamins, but I hope that I have been able to emphasize the great importance of the discovery, and the new field of hypothesis which it has opened. I must pass on to another portion of the subject—the relationship of the glands of internal secretion to growth and development. We are leaving to a large extent the sphere of experimental medicine and entering that of clinical observation, and too often



straying into that of mere surmise. So much has been written and is still being written on the ductless glands that it comes as something of a shock to realize how little we really know, and how much of what we sometimes consider knowledge is in reality nothing more than ingenious speculation. We know something of the influence of the thyroid on growth; less of the pituitary; and still less of the adrenal glands. We know that the interstitial tissue of the sexual glands, the testes and the ovaries, is of great importance for normal development. We believe that the parathyroid and the thymus have an intimate relationship with certain disorders. And we are just now apparently on the edge of conquest of a new sphere of control, in the isolation of the active principle of the internal secretion of the pancreas. I do not wish to enlarge on these topics. I want to turn your attention in a slightly different direction.

We have seen, in considering the subject of vitamins, that if you supply sufficient quantity and quality of food the young animal will grow in a normal fashion. But he will only do so if the glands which control growth are working naturally and in harmony with each other. If there is, for instance, a defect of the thyroid secretion growth will be abnormal; the creature will not cease to grow, but the increasing tissues will be distributed in the body in an abnormal way—the skeleton will develop abnormally; the fatty tissue will be excessive and curiously localized; and the mental powers will be defective. It is as if you had presented an architect with the richest material in proper proportion and asked him to build a shrine, and though he has used the material he has built a deformed and unsightly hovel. So it is also with a defect of the pituitary secretion, and with the victims of a defect of the interstitial tissue of the sexual glands. In the one case the failure of the pituitary architect may produce a "Fat Boy of *Pickwick*"; in the other the failure of the interstitial architect may produce the deformity of the body which we call the "eunuchoid" type. In the case of the cretin we have to a certain extent mastered the secret and can by addition of thyroid extract procure a more or less normal growth; in the hypo-pituitary abnormality we are only tentatively feeling our way; in the "eunuchoid" type there is, so far as I know, as yet no real success.

I want to digress for a moment to speak of the hypopituitary type. There is a group of children who exhibit a tendency to become very fat and at the same time to develop the fat especially in the hips, thighs, and abdomen; in addition their genital organs retain the infantile type, and towards puberty they exhibit none of the secondary sexual characteristics. Fröhlich was, I believe, the first to point out that this abnormality was sometimes associated with a tumour of the anterior portion of the pituitary gland, and it is often known as "Fröhlich's syndrome." What is perhaps not so well appreciated is that such a syndrome is often only a temporary phenomenon, and that after a time normal growth is resumed. The presumption is that there is a functional disorder which for a time diminishes the available amount of the necessary internal secretion. I have had some success in treating such children with extracts of the whole pituitary gland. One boy in particular was brought because he could not keep awake either in school or even at his meals. In this, as in his general appearance, he recalled Dickens's description of the Fat Boy. He had no sign of a pituitary tumour, but when placed on extract of the whole gland he became almost normal. He was discharged, but after an interval his father appeared asking for more of the tablets as the only means of keeping him awake. More often, however, therapeutic efforts fail: we do not know enough of the conditions.

In such forms of abnormal growth there is an inherent defect in the functions of the glands of internal secretion, but there are other conditions in which we have reason to suppose that the alteration of the secretion is brought about by factors over which we may learn to gain a degree of control. For example, it is a notorious fact that after some infectious diseases growth may take place with unusual rapidity. After an attack of typhoid fever, for instance, the adolescent may suddenly increase several inches in height; while the adult may become alarmingly stout. On the other hand, there are two diseases of childhood which in my own experience exert the opposite effect. Both

diphtheria and tuberculous peritonitis may for a time completely stop growth in height and weight, and I think it is usually a matter of a couple of years before growth is resumed, so that either of these diseases may leave a permanent mark. In these instances I think we are obliged to look for an explanation to some functional disorder of the glands of internal secretion, and I am at present trying the effect of increasing doses of thyroid on one such case, with the result that he has put on a pound a month since he began the drug, whereas for the previous year the total increase had been less than two pounds.

Somewhat in the same category I should feel inclined to place the celebrated case recorded by Byrom Bramwell, in which the addition of pancreatic extract transformed in a year or two a real dwarf into a small but fairly normal individual.

Lastly there is a group which is much less hopeful but which is, from our present standpoint, of great interest—the group of "renal" dwarfs. They were recognized and described by Morley Fletcher in adolescents some years ago and have been written about a good deal since. But quite lately my colleague Donald Paterson has shown that there is a similar group with characteristic lesions in the skeleton, recognizable by x-ray examination, occurring in the infant, and I have recently had in my charge a child of 7 years who seems to me to represent another type of the same abnormality. Whether their dwarfism is due to an internal secretion of the kidney, or can more justly be referred to a poisoning of the sources of growth, is a matter which must be left for later research.

There is, of course, much more that could be said on such a subject, but I hope that I have succeeded in sketching the intimate relationships which appear to exist between the materials and the architects: that the architects cannot work without the proper materials, and that improper material may impair the powers of the architect for a short time or even permanently; and that with architects of inferior powers or out of harmony with each other good material may be built into monstrosities.

## The Middlemore Lecture, 1922,

ON

## REFRACTION.

DELIVERED AT THE BIRMINGHAM EYE HOSPITAL

BY

T. HARRISON BUTLER, M.D., B.Ch.Oxon.,  
SURGEON, BIRMINGHAM EYE HOSPITAL.

(Abridged.)

DR. RICHARD MIDDLEMORE founded this lecture in order that it might year by year afford the medical men of the Midlands an opportunity to hear the latest views upon an ophthalmic subject of general interest. I therefore do not apologize for selecting refraction as my subject.

The field for refraction is unlimited, and it is quite impossible for ophthalmic surgeons to handle the whole. At the present time the majority of the cases are dealt with either in hospitals or by men who do not possess a medical training. There is no reason why much of this work should not be undertaken by the general practitioner to the advantage of himself and his patient. If he decide to take up refraction he must adopt modern methods and learn retinoscopy.

Refraction cannot be learnt from books, and retinoscopy demands considerable practice. Probably the average man will require three months' constant work in an eye clinic before he attains the necessary accuracy. This period will not be wasted, for both from the standpoint of diagnosis and treatment a working knowledge of ophthalmology, not excluding refraction, is indispensable to the up-to-date physician.

### THE OBJECTS OF REFRACTION.

The object of refraction is to make the patient comfortable, not the solution of a problem in optics. Glasses are prescribed to enable an individual to see clearly, and to relieve symptoms caused by errors of refraction and of muscle balance. It does not follow that spectacles which



accurately correct an error will be comfortable; on the contrary, a man may prefer indifferent vision to wearing glasses which he dislikes. In cases of this kind we must temper our desire for optical perfection with common sense. If our patient is quite satisfied with his moderate acuity, and does not suffer from the symptoms of an error of refraction, then he may, if an adult, choose for himself when he will wear his spectacles. We prescribe the glasses to be worn when he wishes for clear vision, and we attain our object, which is to make him physically and psychically comfortable. In the case of a child the conditions are different, and we allow no such latitude. An infant with poor acuity will grow up with unsocial habits and will not develop the habit of observation. He must wear his spectacles constantly.

#### SYMPTOMS CAUSED BY ERRORS OF REFRACTION.

The chief and obvious symptom is failure to attain to the normal standard of acuity. Using the ordinary Snellen's test types with the standard illumination this must be taken not as 6/6 but as 6/4.5. In actual practice for all ordinary work 6/12 is sufficient, so if the acuity is 6/12 or better, glasses are not called for in the absence of symptoms due to an error of refraction.

*Headache* is the next commonest symptom. In every case of headache the eyes should be examined both for refraction error and for disturbance of the normal muscle balance. It does not follow that a refractive error is the cause of the headache nor that its correction will cure the headache. If the spectacles have no favourable influence upon the pain, and if the acuity be good without them, then there is no necessity to wear them. I wish to emphasize the fact that many men and most women object to wearing glasses, and if they are of no use there is no valid reason for employing them. Headache may be due to migraine, to nasal sinusitis, and to many other causes, which may coincide with an error of refraction which is not responsible for the pain.

The degree of error is not proportional to the trouble it causes. In one individual a considerable amount of astigmatism may cause no symptoms, whereas another may suffer agonies from a minimal defect. There are some who possess an abnormal visual acuity—they may be able to read all the letters in the 6/3 line; such are very prone to be inconvenienced by a trivial refractive error. Others, with a highly excitable nervous system, may be relieved from life-long misery by a 0.25 cylinder. We must not, however, allow exceptional cases of this kind to pervert our judgement; in young persons slight astigmatism with the so-called rule, and in the aged against it, is so common that it may be taken as normal, and in most cases causes no symptoms.

*Pain in and about the eyes* is, after headache, the most frequent complaint. This may be, and in fact often is, due to an abnormality in refraction or muscle balance, but it can be a pure neuralgia. Countless women complain of ocular neuralgia, often associated with pain elsewhere; intercostal neuralgia, rachialgia, coccygodynia, sciatica, and dysmenorrhoea—such are not in the main relieved by glasses; the pain must be treated along ordinary medical lines generally with scant success.

*Vertigo*, in my own experience, is one of the rare symptoms. It may be caused by muscle imbalance, especially by a high degree of hyperphoria, but the large majority of those who have come to me complaining of giddiness have, if young, been suffering from an aural trouble, and if aged, from circulatory disturbances in the brain.

The essential symptoms of an error of refraction or of muscle balance are: poor acuity, headache, asthenopia, and very occasionally vertigo; but a host of others have been associated with these defects; in fact our American colleagues have given a long list of nervous and even of more general affections which they have treated by correcting errors of refraction. In this connexion we must steer a middle course and not allow enthusiasm to blind common sense. It is doubtless true that an individual of highly neuropathic habit may suffer in various ways from the constant strain of an uncorrected error of refraction, and it is a fact that such may derive benefit from wearing spectacles, at any rate for a time—in some cases from relief of strain, in others from pure suggestion; but, on the other hand, the extravagant lengths reached by some regarding the effects of eyestrain have given rise to much confusion of thought and to not a little frank charlatanism. Every

specialty tends to run to extremes and may even approach quackery. The term "eyestrain" has been so much abused in the commercial sense that I prefer to avoid it. There is no doubt that eyestrain exists, but it is not nearly so common as some would have us believe, nor are its effects in the main so baleful as is commonly supposed.

#### METHODS OF DETERMINING ERRORS OF REFRACTION.

The only satisfactory objective method of determining an error of refraction is by retinoscopy; it is the Alpha and Omega of refraction, and a man who is incapable of accurate retinoscopy will never achieve much success in refraction. Accuracy can be attained only by long and constant practice, but much may be done by attention to detail.

The apparatus necessary is of the simplest character: we require an adequate box of accurate trial lenses, a good trial frame, test types correctly illuminated, and a flat retinoscopy mirror. We must work in a room which is at least 20 feet across the diagonal, and we require a small but bright source of light.

Probably few to-day use the concave mirror; it has nothing to recommend it, and in my hands has never yielded accurate results. In many mirrors the hole is too large; I find that 3 mm. gives the best effect, and of all patterns I prefer that designed by Priestley Smith.

The source of illumination should be about the size of a shilling, and having cut down the size we must compensate by using a brilliant light. I think that the best illuminant is paraffin—a lamp with a round wick half an inch in diameter—but electric light is more convenient. I employ a 40 candle-power frosted globe in a Thorington's chimney with an iris diaphragm. This limits the general illumination of the room, and a shaded reading lamp will be convenient to light the box of lenses and the notes. The room should not be completely dark; objects at the end should be visible, otherwise, working without a cycloplegic, it will be impossible to secure full relaxation of accommodation. The old-fashioned dark room is an anachronism; it is better to work in a room with curtains sufficiently thick to obscure but not entirely exclude the light.

The retinoscopist must learn to use both eyes with equal facility, otherwise when a cycloplegic is not employed he cannot refract near the macula, because his head will prevent the patient from fixing an object immediately behind him, and the retinoscopy will be inaccurate. It is essential that the surgeon have good personal acuity, that he may appreciate the tenuous central shadows which alone determine the point of reversal.

In difficult cases it is wise to use cylinders as well as spheres. When the astigmatism has been approximately determined place the appropriate cylinder in the trial frame and alter it till a sphere corrects both meridians simultaneously. This method is very sensitive and is especially valuable when working without a cycloplegic.

Errors in retinoscopy depend almost entirely upon failure to work near the macula. In many eyes the posterior pole is not truly spherical and slight eccentricity in the retinoscopy may introduce an error of a dioptre or more. Generally speaking, retinoscopy should be accurate to within a quarter of a dioptre, but there are cases with scissor shadows and other manifestations of irregular astigmatism in which the limit value is far higher. Corneal nebulae render retinoscopy difficult and often impossible.

If a cycloplegic be used incomplete paralysis of accommodation is a fertile source of error, in fact it may be far greater than we are likely to get without the use of a drug. This has been forced upon my notice in school clinic work, and I have concluded that to obtain certain paralysis of and I have concluded that to obtain certain paralysis of and I have concluded that to obtain certain paralysis of the ciliary muscle in children atropine must be used, and it must be instilled over a period of twenty-four hours. The majority are ready for the test after three instillations spread over two hours, but there are frequent exceptions.

In all cases, except infants who cannot read, the final adjustment will be made with the trial lenses and test types. Intelligent children over 5 years old will give valuable information during the subjective test, in fact they are often more helpful and sensible than some adults. There is a tendency to underrate the intelligence of the child.

When each eye has been examined separately it will often happen that together they will take a stronger convex lens, a fact that has been emphasized by Priestley Smith.



### The Use of Cycloplegics.

There is still a wide difference of opinion to what extent we should use cycloplegics in refraction. My own views upon the subject will be found in a paper which I read to the Congress of the Ophthalmological Society in 1922.<sup>1</sup> My practice is to use atropine for young children, but to refract the majority of my patients without cycloplegia.

Cycloplegics are necessary in infants who have not sufficient concentration to fix a distant object, and in cases of spasm of accommodation. Hirschberg tells us that this is one of the rarest of ocular abnormalities, and most ophthalmologists will agree with him. I can only recollect half a dozen cases, and in each the spasm was obvious and detection easy; I am sure that spasm is a boggy. We meet with the ready and powerful accommodation of the young and the irritable action of the ciliary muscle in neurotic persons. Such may not easily accept the full correction of their hypermetropia, but I find that a properly conducted retinoscopy will rarely fail to show the full amount. If the patient will not accept the total correction of hypermetropia as shown by the shadow test, then it is wise to check the result with a cycloplegic. Generally the final result is the same.

Although it is permissible for the experienced to work largely without cycloplegics, the beginner will use them frequently; with increasing practice he will gain confidence and that instinct for spotting the "wrong 'un" which comes from constant association with patients, and he will use drugs less and less. I find that homatropine is not a reliable cycloplegic, and that it frequently gives less hypermetropia than one gets without it. I have found this anomaly after instilling a 2 per cent. solution three times during an hour or more.

In any case, assuming that an occasional error is made by working without a cycloplegic and that no errors accompany its use—a very large assumption—even then I prefer this infrequent lack of accuracy to submitting a large number of my patients to the discomforts of cycloplegia.

### VARIETIES OF ERRORS OF REFRACTION.

#### Myopia.

Myopia is the most interesting and important error of refraction—interesting because of the uncertainty of its genesis, and important because it so frequently ends in grave loss of sight and even blindness.

There are two types of short-sight; one we may call overgrowth myopia, the other progressive myopia. The first is a developmental anomaly, the second a disease.

Emmetropia is the result of a correct balance between the strength of the dioptric system of the eye and its distance from the retina. The young eye is hypermetropic and attains its final refraction when its growth is complete. In most cases the eye finishes with a more or less correct balance between axial length and lens strength, but there are units above and below the base line. On the one side we have cases in which the eye is short in proportion to lens power (the hypermetropes), and on the other those eyes which are too long in proportion to dioptric strength (the myopes). These myopes are not diseased, and the error, which rarely exceeds 3 dioptres, does not as a rule alter.

Progressive myopia is entirely different; here we have an eye in which the posterior segment gradually elongates. In time, if the stretching passes a definite limit, the sclera expands faster than the inner tunics of the eye, and there is developed first a myopic crescent, and eventually a posterior staphyloma. At the same time low-grade inflammatory changes take place in the choroid, and the retina begins to suffer, more especially at the macula. Haemorrhages may appear at the fovea, and large areas of the retina and choroid disappear, leaving extensive white plaques of bare sclera at the posterior pole.

These destructive changes are accompanied by serious loss of acuity. In some cases the retina refuses to stretch any further and becomes detached. I think that this tragedy is more frequent in cases which do not show the extensive destruction of the choroid that I have mentioned, but it may take place in any case of progressive myopia even when of comparatively low degree.

### Causes of Myopia.

For many years there has been much discussion about the cause of myopia. A generation has passed since Cohn and his supporters coined the objectionable term "school myopia," and put forward the theory that advancing short-sight was due to the effect of close work. The upholders of this view showed that the degree and incidence of myopia increased in proportion to the age of the scholars, and that myopia was more common in those who used their eyes for near work than in others who led an open-air life. The first statement is true, and it is equally valid for the length of nose or leg in the same children. The second is but partially true. Statistics of thousands of cases of myopia are available, drawn from German, British, and other sources. They bring out the curious fact that examples of progressive myopia of the worst type with fundus degeneration are more common in agricultural than in urban districts. Moderate myopia is commonest in towns, advanced in the country. The most recent and conclusive figures were published by Ernest Thomson. He found that severe myopia was commonest in mining districts, less so in agricultural areas, and still less in towns. My own feeling is that in the Midlands myopia is commonest among miners, but I have no exact figures to go upon.

The reason is clear: in a mining village it is almost a social crime to marry out of the community. In most villages there are few surnames and the whole population is related. In towns the conditions are different. The result is that the miner is the product of close in-breeding, an agriculturist of in-breeding, the urban dweller of cross-breeding. These facts point to the real cause of myopia—heredity. Myopia is also a racial disease. It is said that it is commonest in the Roman Campagna, because for centuries this area has been the recruiting ground for the constant wars of the past; the myope was rejected for military service and lived to perpetuate his kind. Short-sight is notoriously prevalent in Germany—decimated by the thirty years' war—and among the Jews. Myopia is rare in Britain, a country that has been spared the annihilating wars of the Continent.

The objections to the theory that myopia is due to close work *per se* are to my mind conclusive. The suggestion is that during the act of accommodation and convergence the intraocular pressure rises and gradually distends the organ. It has not been proved that such a rise of tension actually takes place, and even if such were the case the conditions found in the myopic eye are not those which are present in an eye which has been subjected to real well defined high tension. In glaucoma the hypertony is associated with cupping of the optic disc, whereas in myopia the stretching is more evident further forward. It is by no means uncommon to find myopia in infants, who have not used the eyes for near work, and cases are common with high myopia in one eye alone. These facts are all against the theory that close work causes myopia. We must seek another cause, and we find it in heredity.

I have dealt with the genesis of myopia at some length because there is a danger that false theory may be followed by worse practice. There is to-day a tendency for educational authorities to deprive myopes of the benefit of a liberal education. It is suggested that a child with more than three dioptres of myopia shall not be allowed to hold a scholarship, and young children with short-sight are herded into special myope schools. Special schools are necessary for children whose sight is so bad that they cannot be educated in an ordinary establishment, but if the child has sufficient sight to benefit by the general school he should not be condemned to an inferior system unless it has been proved that work under these conditions will be detrimental to his sight. It seems to me that it is not even probable that this is the case. It is true that confinement in a badly ventilated, indifferently lighted school will affect the general body tone, and that the resistance of the sclera will be lowered with the general deterioration of tissue nourishment. This consideration has great weight in the management of cases of myopia. Such must have as much fresh air as possible with sufficient exercise and



plenty of good food. In my private practice I allow myopes to continue their education, but I forbid music and novel reading. The child must read outside school work in the vacation, and if he take up music seriously he must not think of examination training. After an illness the myope needs a long rest, for it has been noted that an increase in myopia synchronizes with debilitating disease. The myope must be examined once a year and he must wear his full correction constantly.

It was once the custom to order special reading glasses for myopia. It was supposed from anatomical considerations that the ciliary muscle was weak and accommodative power defective. In the majority of cases, and especially in the young, this is bad practice. The myope has ample accommodative power, and he becomes presbyopic at the same age and to the same degree as the emmetrope. If, however, an adult myope has never worn a correction, he has not trained his accommodation, and for a time he will find it difficult to read with a full correction. If his myopia be under three dioptres the average man will wear his glasses for far sight only.

No rules can be laid down for the correction of very high myopia, nor for the strongest lens that can be worn with comfort. I furnish my patient with the lens which gives him the maximum acuity even if he cannot wear it constantly. The rule is to give our patients the best acuity possible with due regard to comfort.

#### *Hypermetropia.*

A high degree of hypermetropia will call for a constant correction, but it is unnecessary to order spectacles for moderate long-sight which is causing no symptoms. All depends upon the individual: some must wear their glasses always, others for near work only, while a third category can read and sew comfortably without optical aid. The young eye has an immense reserve of accommodative power and can utilize it without detriment as long as the general health is good.

#### *Astigmatism.*

The greatest care is necessary to obtain an accurate measure of the angle and degree of the astigmatism of an eye. Retinoscopy will give the approximate figure within about half a dioptre, especially if a cylinder is used for the final determination, but the ultimate choice depends upon the patient himself. Some of the astigmatic clocks are useful, but I depend upon a good set of test types with standard illumination, and I make the last adjustment with the aid of Jackson's crossed cylinders. A very few patients, and those mostly with an acuity of 6/3, are able to appreciate a difference of one-eighth dioptre, and they must be refracted within this limit, for they may be uncomfortable if the cylinder be not accurate to an eighth of a dioptre.

If the examiner is not a skilled retinoscopist he will have to fall back upon the astigmometer. This is a very expensive instrument, and, as it measures the corneal curvatures only, it cannot be accurate in the presence of any lental astigmatism.

A full correction should be ordered for astigmatism except when it is extreme; in such a case it is wise to undercorrect the astigmatism at first and proceed to the full correction when the patient has become accustomed to the first glasses. In any case we warn our patients with high astigmatism that they may at first suffer from some distortion when the error is corrected. Very high cylinders can be worn with comfort. I have a patient who gets excellent acuity with a 14 dioptre cylinder and complains of no discomfort.

#### *Presbyopia.*

The correction of presbyopia is not difficult if we use common sense; we must curb our desire for scientific accuracy, for few of our patients will appreciate the work of Donders. Generally speaking it is safest to undercorrect presbyopia. After 50 it is better not to add more than 2.5 dioptres to the distance correction. Even if the smallest print cannot be read and the work has to be held at a greater distance, the under-correction allows for work at a middle distance, and is more convenient for writing. In many cases we order three pairs of glasses—one for far,

the second for near, and the third for music. A low myope over 50 years of age will often be well suited with a pair of lenses one dioptre under the full correction. These will give him an acuity of about 6/12, which is ample for everyday requirements; they will afford full acuity for middle distance, and with them he can read large print.

#### SPECTACLES.

It is important that the lenses shall be correctly placed before the eyes, for all the work of a careful surgeon may be stultified by a careless and ignorant optician. For most purposes spectacles are better than pince-nez, but there are types of pince-nez which are perfectly satisfactory. The form which has a horizontal split bar and a coiled spring must be avoided, for it does not maintain a fixed distance between the optical centres and soon loses its rigidity.

Meniscus lenses and torics are best avoided for the following reasons: the optical advantages are largely theoretical, they are fragile and expensive, and they are disfiguring. No woman should wear torics. A pair of flat lenses with a delicate central mount is almost invisible, and gives a glint of light in but few positions. The toric reflects light in every position and gives the wearer a glazed appearance, hiding the eyes. Except for special occupations there is little or no advantage in Crookes's glass, which is expensive and absorbs much useful light. The combination of toric lenses and Crookes's glass is a fruitful source of financial loss to the poorer classes of society. In general the public will choose its own fittings and we should avoid any interference with individual preference, merely indicating what we consider to be the best or essential.

#### CHANGES IN REFRACTION.

The refraction of an eye cannot be regarded as final and unchanging. During the growth of the eye, in adult life and in old age, alterations occur—some regular and progressive, others irregular, and a few oscillatory in nature. I have not time to enter fully into this interesting aspect of the subject here, but I will briefly summarize a paper which I read to the Oxford Ophthalmological Congress in July, 1922. It is to be found in the *Transactions of the Ophthalmological Society*, vol. xlii, p. 293. I came to the conclusions that:

(1) The growing eye, examined from time to time, may show considerable alteration as regards sphere and cylinder. The astigmatism may alter both in amount and direction.

(2) In most cases equilibrium is reached when growth ceases, and the refraction is stabilized till old age, when the eye tends to alter in the direction of more hypermetropia. This change is by no means constant, in fact it is probably as often absent as present.

(3) In other adults progressive changes take place, chiefly in the amount and angle of the astigmatism, and in the main they are such that they tend to replace astigmatism with the rule by that against the rule—that is to say, that in the young a convex cylinder is more frequently vertical than horizontal, whereas in the old the reverse is found. This alteration is effected in two ways: there may be a gradual swing of the angle from the vertical towards the horizontal, or the astigmatism with the rule may diminish, disappear, and reappear against the rule. Such being the case it is advisable to examine our patients about every five years.

In addition to these alterations, which probably depend upon variation in the shape of the cornea, and perhaps upon lens changes, there are others caused by disease. Thus diabetes not infrequently gives rise to myopia which is due to an increase in the refractive power of the lens. Occasionally the reverse change may be noted. Cataract, again, may have a similar action. When a man who all his life has had good sight becomes in later years short-sighted, diabetes should be suspected.

#### ERRORS OF MUSCLE BALANCE.

Heterophoria is theoretically a difficult subject, but, fortunately, for all practical purposes its detection, measurement, and correction can be carried out along simple lines.

If means are taken to abolish fusion the visual axes of the two eyes should remain approximately parallel. This state is called euphoria or orthophoria. If one axis rises or falls with reference to the other the condition is called hyperphoria or hypophoria. Diverging axes are named exophoria, and crossed axes esophoria. There is



in heterophoria a tendency for the visual axes to depart from parallelism, and the necessary co-ordination is effected by excessive use of the fusion faculty. When the muscles are fatigued this state of suppressed squint may become actual strabismus, and diplopia may be complained of.

It is obvious that heterophoria disturbs the co-ordination between accommodation and convergence, and that increased nervous energy is used up in each act of combined vision. In consequence fatigue will develop and cause asthenopia and headache. It is therefore essential that the error shall be corrected. I shall not here go into the details of the examination. We use the Maddox rod

and tangent scale for testing the muscle balance at infinity, and the Maddox wing test for measuring the error at reading distance.

Hyperphoria causes most trouble, but is not common. The most frequent defect is weakness of converging power, and this causes difficulty in reading and needlework. It is corrected by adding prisms base in to the near glasses, and such an addition is greatly appreciated by those who have convergence insufficiency.

## REFERENCE.

<sup>1</sup>Transactions of the Ophthalmological Society of the United Kingdom, vol. xlii, p. 127.

## THE INFLUENCE OF INSULIN UPON ACIDOSIS AND LIPAEMIA IN DIABETES.

(A Preliminary Communication.)

BY

H. WHITRIDGE DAVIES, CHARLES G. LAMBIE,  
D. MURRAY LYON, JONATHAN MEAKINS,  
AND WILLIAM ROBSON.

(From the Department of Therapeutics, University of Edinburgh.)

THE effect of insulin in reducing the blood sugar of animals and of man has now been well established. Its similar action in an enhanced degree has also been found in cases of diabetes mellitus. In addition to reducing the high level of blood sugar in diabetes insulin has been shown to have the

percentage of the normal (Haldane<sup>2</sup>). The ketone bodies were estimated by the method of Van Slyke and Fitz,<sup>3</sup> while the respiratory quotient and hourly metabolism were determined by the Douglas bag method. The lipaemia was determined comparatively by centrifuging the specimens of blood and noting roughly the degree of lipaemia of the plasma. Four stages were recognized: ++ where there was a definite layer of creamy fat above the plasma, + where there was marked opacity of the plasma, + where there was moderate opacity, and ± for a slight cloudiness.

The following cases are examples of those which have so far been investigated. It was considered advisable to make observations upon cases with a moderate degree of diminished bicarbonate reserve in order to have a comparison between normal people and diabetics without any such reduction, and those cases showing evidence of impending coma.

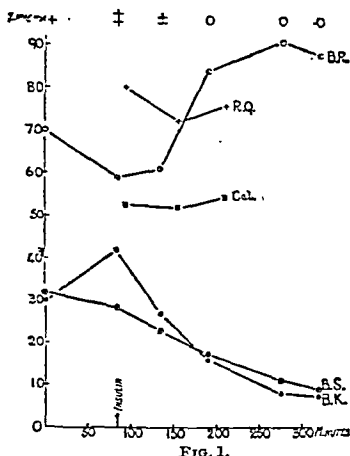


FIG. 1.

Fig. 1 (Case I).—B.R. = Bicarbonate reserve percentage (normal 100 percent.). R.Q. = Respiratory quotient. Cal. = Calories per hour calculated from respiratory exchange. B.S. = Blood sugar percentage. B.K. = Blood ketone bodies in milligrams per cent. The respiratory quotient and the blood sugar percentage have been multiplied by one hundred in order to show them by means of the same scale of ordinates. Abscissae = time in minutes from commencement of observation. Patient fasting; weight 32.3 kilos. Insulin 10 units at point shown.

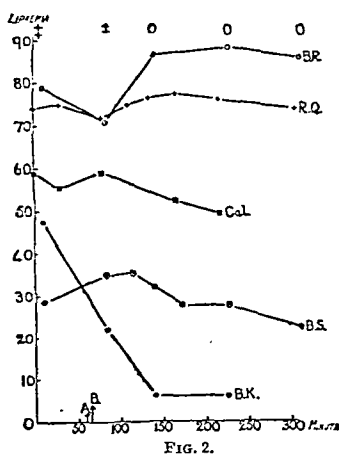


FIG. 2.

Fig. 2: Patient fasting; weight 32 kilos. Insulin 4 units at A. Glucose 16 grams at B.

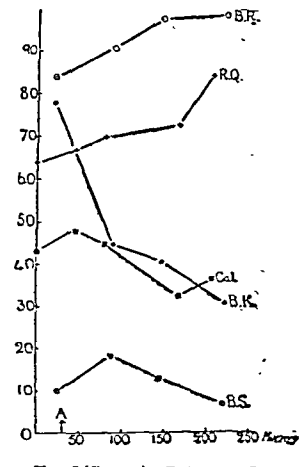


Fig. 3 (Case II).—Letters and conventional signs as in Figs. 1 and 2. Patient fasting; weight 31.1 kilos. Insulin 10 units and glucose 20 grams at A. There was no lipaemia in this observation.

power of increasing the utilization of ingested carbohydrate. It is these facts which make the introduction of insulin of such importance in the treatment of moderately severe cases of diabetes.

In severe cases, however, other and more alarming disturbances are found. Lipaemia, increase of the ketone bodies in the blood, reduction of the bicarbonate reserve, together with hyperpnoea and mental disturbances, are all symptoms of great importance and frequently are forerunners of disastrous results. It seemed of importance, therefore, to ascertain how far insulin might remedy or prevent the occurrence of these conditions.

### Methods.

The blood sugar, bicarbonate reserve of the whole blood, and the percentage of total ketone bodies in the blood were estimated, and where possible the hourly metabolism and respiratory quotient were determined. The blood sugar was estimated by the method of Folin and Wu,<sup>1</sup> the bicarbonate reserve was estimated by determining the carbon dioxide combining power of the blood at 40 mm. of mercury pressure of carbon dioxide, the amount found being expressed as a

### CASE I.

F. H., a woman aged 24, was a case of severe diabetes that had been under observation from time to time for two years, giving a history of diabetic symptoms for three years. Her diabetic condition had progressed over numerous periods of exacerbation and remission, her carbohydrate tolerance diminishing from 67 grams a day to her present condition, in which 10 grams a day produce glycosuria. Observations were begun at 9 a.m. after sixteen hours' fasting, and were carried out under basal conditions as far as possible. The blood sugar before insulin was given was 320 mg. per cent., while the bicarbonate reserve was between 60 and 70 per cent. of normal (Fig. 1). Ten units of insulin were given and frequent examinations of the blood were made during the subsequent three hours. It will be noted that there was a steady decline of the blood sugar until it reached the level of 90 mg. per cent. Coincidentally there was an increase of the bicarbonate reserve from 59 per cent. to 91 per cent., and a decrease of the ketone bodies from 42 mg. per cent. to 8 mg. per cent. During this period the hourly metabolism varied but little, although the respiratory quotient showed a considerable change. The lipaemia rapidly disappeared. At the end of the observation the urine was free from sugar and ketone bodies.



On another day the patient was the subject of a second series of observations, which were carried out under similar basal conditions (Fig. 2). It was considered of importance to determine whether the administration of glucose with insulin influenced the response in any way. Therefore half a gram of glucose for each kilogram of body weight was administered shortly after insulin. Although the blood sugar was at approximately the same level as on the previous occasion, the bicarbonate reserve was not so much decreased. However, the results were similar to those already found. As on the previous occasion, lipaemia was present at the commencement and rapidly disappeared. The respiratory quotient was more constant, and showed a definite and gradual increase and decline after the administration of insulin and glucose. The blood sugar curve increased for a time, but at the end of one hundred minutes it had returned to its fasting level, and then declined still further. The decrease in the ketone bodies was most conspicuous, being reduced from 48 mg. to 6 mg. per cent. at the end of eighty minutes. As at the end of the previous observation, the urine was free from ketone bodies.

## CASE II.

E. A., a woman aged 20, was admitted to the Royal Infirmary a fortnight previous to the observation suffering from thirst, polyuria, and emaciation of about nine weeks' duration. Two days after admission her blood sugar was 222 mg. per cent., and the urinary sugar 4.7 per cent. (105 grams in twenty-four hours). She showed only a moderate degree of acetonuria. Four days later she became sugar-free, but the acetonuria remained, although there were no symptoms suggestive of a severe acidosis. This observation (Fig. 3) showed results somewhat similar to those of Case I (Fig. 2).

## CASE III.

J. I., a woman aged 30, was admitted to the Royal Infirmary having suffered from diabetes for eighteen months. The day after admission she developed mental symptoms, having hallucinations and delusions. A few hours later there was considerable hyperpnoea, and she became semi-conscious. The blood sugar at this time was 601 mg. per cent., and the bicarbonate reserve was only 40 per cent. of the normal. She was treated with insulin, glucose, and alkali (in the form of disodium phosphate). During the first twelve hours she received 40 units of insulin and 17 grams an hour of carbohydrate. The blood sugar steadily increased until at the end of twenty-four hours it amounted to 1,000 mg. per cent. (Fig. 4). A parallel increase of the bicarbonate reserve occurred; at the end of twenty-four hours it was 70 per cent. of normal, at the end of forty-eight hours 90 per cent., and at the end of seventy-two hours 4 per cent. above normal (104 per cent.). On the second day she received 80 units of insulin with 19 grams of carbohydrate an hour. On the third day 60 units of insulin with 15 grams of carbohydrate an hour. During this period the blood sugar fell from 1,000 mg. per cent. to 500 mg. per cent. On the fourth day she received 80 units of insulin with 1 gram of carbohydrate an hour. The blood sugar rapidly fell to 150 mg. per cent., and the urine was free from sugar. The insulin was reduced and the carbohydrate increased, with a rapid increase of the blood sugar but no appreciable diminution in the bicarbonate reserve.

Within twenty-four hours of the onset of the acute symptoms of acidosis and semi-coma the patient was quite conscious and all evidence of her acute crisis had passed away. During the succeeding days, however, her mental condition was far from normal, and she still had certain hallucinations and delusions, but these rapidly disappeared, and her condition continued along the usual course. It seems probable that this mental condition may have been due to organic changes in the central

nervous system, the result of the severe disturbance of cellular metabolism.

## CASE IV.

Mrs. P., aged 44, had evidently been suffering from diabetes for a few months only, and was admitted to the Royal Infirmary in a state of diabetic acidosis verging upon coma. She was quite incoherent in her remarks, and did not appreciate her surroundings. There was considerable hyperpnoea with tachycardia and great prostration. The blood sugar amounted to 390 mg. per cent., the ketone bodies in the blood to 62 mg. per cent., and the bicarbonate reserve was but 45 per cent. of normal (Fig. 5). The lipaemia was considerable. In view of the results obtained in the cases already outlined it appeared to us to be very important to determine whether insulin and glucose alone, without the administration of alkali, would have the same beneficial effect as was obtained in Case III. The alkaline reserve, ketone bodies, and blood sugar were estimated every four hours, and at these periods insulin and carbohydrate were given (Fig. 5). During the first twenty-four hours in hospital 120 units of insulin and 190 grams of carbohydrate were given. At first there was a slight rise in the blood sugar from 390 mg. per cent. to 440 mg. per cent. During the succeeding twenty hours there was a steady decline, until at the end of twenty-four hours it amounted to only 110 mg. per cent. The increase in the bicarbonate reserve followed almost a straight line from 45 per cent. to 89 per cent. of normal, the decrease of the ketone bodies following almost a parallel course. The lipaemia had disappeared at the end of ten hours.

The improvement noticed in the patient's condition during the first sixteen hours was most spectacular, and at the end of twenty-four hours she appeared practically normal. In spite of the large quantity of carbohydrate taken, the glycosuria during the first seven hours amounted to but 5 grams an hour, for the next twelve hours it averaged three-quarters of a gram an hour, and during the last five hours there was but a trace, the urine at the end of twenty-four hours being sugar-free.

In view of the results obtained in these cases it seems to be indicated that insulin and carbohydrates, when given together in sufficient amounts to patients with diabetic acidosis verging upon coma, have a most beneficial and indeed spectacular effect.\* The rapid disappearance of the lipaemia and ketone bodies of the blood, and the return to normal of the bicarbonate reserve, clearly indicate the means whereby this improvement is brought about. In Case III the great increase in the blood sugar did not appear to have any deleterious effect—in fact we have reason to suppose that an adequate supply of carbohydrate is most important in the treatment of such cases, and that in view of the known deficiency of glycogenic function this supply must mainly be available in the form of sugar in the blood and tissues. If it be true that the acidosis in diabetes is the result of the imperfect oxidation of fat through the inability of the cells to use carbohydrate, such results as we

have obtained are quite to be expected.

It is noteworthy that the reduction of the blood sugar was not always accompanied by such an increase of the respiratory quotient as might be expected if the sugar had been burnt. Determination of respiratory metabolism in emotional subjects may not give a proper indication of the

\* We wish especially to emphasize the importance of combining carbohydrate administration with the use of insulin in cases such as the above. We have evidence that the administration of insulin alone may increase the amount of acidosis present. This question is at present under investigation.

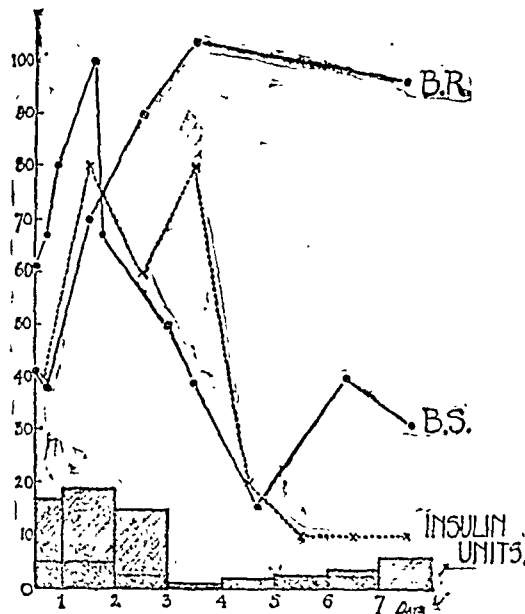


FIG. 4 (Case III).—Letters and conventional signs as in previous figures. Dotted line with crosses = insulin units per day. Total rectangles = carbohydrate ingestion grams per hour. Dark shaded rectangles = carbohydrate excretion grams per hour. Light rectangles = difference retained.

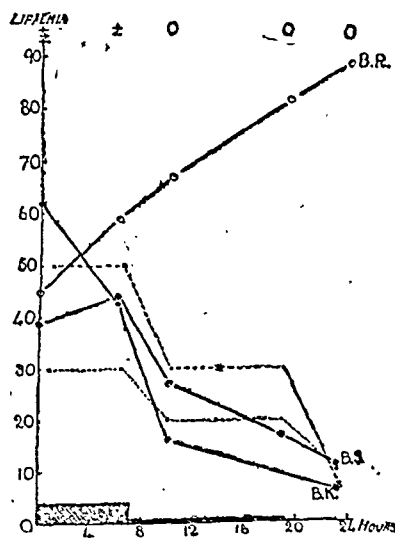


FIG. 5 (Case IV).—Letters and conventional signs as in previous figures. Dotted line with crosses = grams of carbohydrate taken. Dotted line with circles = insulin units administered. Rectangles = sugar excreted, grams per hour.



true respiratory quotient owing to irregularities of the breathing. Yet in such cases as the above there is another factor to be considered. The liberation of alkali in the blood consequent upon the removal of the ketone bodies would result in a compensatory retention of carbon dioxide. This might easily be sufficient in amount not only to mask any rise but even to produce a fall in the respiratory quotient. It will be noted in Fig. 1 that there is a conspicuous fall in the respiratory quotient at the time the increase of bicarbonate reserve is most rapid.

The above results form part of a larger scheme of research undertaken on behalf of the Medical Research Council.

REFERENCES.

<sup>1</sup>Folin and Wu: *Journ. Biol. Chem.*, 1920, vol. 41, p. 357. <sup>2</sup>Christiansen, Douglas, and Haldane: *Journ. of Physiol.*, 1914, vol. 48, p. 244. <sup>3</sup>Van Slyke and Fitz: *Journ. of Biol. Chem.*, 1917, vol. 32, p. 495.

## TRAUMATIC PARAPLEGIA:

OBSERVATIONS ON CASES WITH REFERENCE TO TREATMENT AND PROGNOSIS.

BY

O. H. GOTCH, M.B., B.Ch. Oxon., M.R.C.P. Lond.

THE object of this paper is to give an account of cases of paraplegia of traumatic origin with a view to establishing a rational treatment and prognosis. All the cases are collected together at the Queen Alexandra Hospital Home at Roehampton, and afford a unique opportunity for study.

It was rare before the war to meet a group of cases of uncomplicated traumatic paraplegia. The cases discussed in this report are all traumatic; all were young men when wounded, and their general health and strength at the time of the injury were apparently good. The belief is therefore warranted that most of the symptoms are purely the result of the spinal injury. It is possible, therefore, to draw conclusions as to treatment with reference to prognosis. In paraplegia following some particular disease this is not possible, since the pure picture of paraplegia is blurred in with the general symptomatology of the particular disease causing the paraplegia.

### Types of Cases.

The number of cases studied was 56, and the average age at the date of injury 21. All the cases when first seen had been wounded for three years, and some for five or six years. Of the 56 cases 39 were of the complete lesion type at the level of the fourth to tenth segments; 17 of the incomplete lesion type, ranging from the eighth to the lower lumbar segments.

In the cases with a complete lesion two well marked types can be distinguished—those with flaccid paralysis (paraplegia in extension) and those with spastic paralysis (paraplegia in flexion). Both types have an equal degree of motor and sensory paralysis extending as high as the original level of the lesion, but in the flaccid type there is a complete absence of all tendon and skin reflexes (with the exception of the anal skin reflex, which in a few cases is present). The lower limbs lie quite motionless, wasted, and shiny. The spastic cases, on the other hand, show an exaggeration of the knee-jerks (the ankle-jerks vary, and are occasionally absent), an extreme degree of ankle and patellar clonus, and a double Babinski response. The limbs appear very irritable to small stimuli; stroking or blowing on the skin surface will generally lead to involuntary contraction, the thigh becoming flexed on to the abdomen. A slight degree of irregular wasting of one or both limbs is to be observed, and the motor and sensory loss is as complete as in the flaccid cases. In both types there is complete loss of voluntary control over micturition and defaecation.

The cases exhibiting an incomplete cord lesion also fall into two types—the spastic and flaccid. The spastic cases have brisk tendon reflexes with pronounced double Babinski toe reflexes and ankle clonus, and the abdominal reflexes are absent. In one case, however, both upper and lower abdominal reflexes are briskly present, the Babinski reflex also being very pronounced. A certain amount of irregular wasting of the calf and thigh muscles may be present. The power of voluntary movement of the lower limbs is considerable, especially after

adequate massage, but walking is generally difficult, since so much energy is expended in overcoming the spasticity.

In the flaccid cases either all reflexes in the lower limbs are absent, or the knee-jerk is just elicitable in one or both limbs. The knee-jerk, if present, is not altered by reinforcement; one smart tap will elicit it, and a series of taps with the patient's hands clenched, etc., do not alter its character. The wasting may be very considerable, especially in the calf muscles, but the thigh muscles may be only moderately wasted. Systematic massage can improve this wasting very noticeably, but the neurological signs (that is, tendon reflexes) do not alter.

Voluntary movement varies. Most patients can stand and walk with aid, the motive power appearing to come from the muscles of the pelvic girdle. The loss of superficial sensation in the lower limbs is of a very patchy and variable nature, the majority showing an irregular riding-breeches anaesthesia with some patchy analgesia over the feet. The loss of muscle and joint sensibility is generally great, and nearly all the patients who can walk can only do so by looking at their feet; they cannot walk in the dark.

The bladder and rectal functions show a varying degree of departure from the normal. The majority of patients are aware of the desire to pass water and can control the passing of it—provided the bladder is not too full or the weather not too cold. Occasionally retention occurs, and a catheter has to be passed or retained for a few days. Five cases have almost normal bladder control but complete faecal incontinence, whilst three have no bladder control but normal rectal control. Sexual impotence is invariable. Priapism is common, and often a most distressing and, if there be obstruction to the circulation by a tightly fitting rubber urinal, a highly dangerous complication.

The blood pressure is within normal limits in all, and there is no difference between the arm and the leg readings.

### Special Symptoms in the Complete Type.

The symptoms now to be described are not as a rule found in the incomplete type of paraplegia.

Pain in the lower extremities is described as sharp, gnawing, gripping, burning, cutting, and is felt all down both legs; when very severe its onset is acute and there is a rise of temperature, though never above 101° in uncomplicated cases. There is no visible change of any kind in the physical signs. The patient is obviously in very acute pain, and is only relieved by hypodermic injections of morphine. A moderately severe attack is sometimes checked by aspirin, or better with salipyrin (gr. xx). The duration of these attacks is usually about twenty-four to forty-eight hours or less; if longer, some other factor is responsible, such as an old bed-sore which has become septic, or renal colic. The patients themselves ascribe these attacks to a change in the weather. I confess myself sceptical on this point, but cannot offer any adequate explanation as to the mode of origin of these pains. The symptoms suggest some irritation of the sympathetic nervous system, especially the pains described as gnawing and gripping, and may have an origin in the sympathetic ganglia outside the cord. Whatever the cause, there is no doubt that these limb pains form a very definite part of the syndrome of the complete type of paraplegia. Nearly all the patients complain of a continual sensation of tingling in the lower extremities, but this is not described as painful.

Flatulence is a very common and occasionally an acutely painful complaint. Well marked generalized abdominal distension with ladder-like peristalsis is to be observed, sometimes so great as to suggest definite obstruction. As a rule there is no vomiting, but constant eructations of gas and the passage of flatus per anum. The very severe cases look ill, and present a toxic appearance suggesting uraemia. These cases are relieved by a single injection of pituitary extract (posterior lobe, 1/2 to 1 c.cm.). The slighter cases, with moderate abdominal distension and pain, are often strikingly relieved by injections of mx of 1 in 1,000 liquor adrenalin. hydrochlor., or by double doses by the mouth in ice-cold water. An enema, either simple or mixed with asafoetida, does not appear to relieve



this condition, though, if given soon after the distension has disappeared, it will probably prevent a recurrence.

**Renal Colic.**—Typical attacks of renal colic are quite common, and occasionally the symptoms are bilateral. There is a decided tenderness in both loins, and usually in those cases of paraplegia that suffer frequently from such attacks a well defined mass in the position of the kidney is palpable. Several cases have shown very large irregular masses in both loins, which have been proved to be enormously dilated pelvises filled with pus and calculi, and surrounded by a grossly fibrotic kidney substance. The passage of blood-stained purulent urine usually follows after the attack has subsided, and may continue for several days.

**Chronic Urino-genital Sepsis.**—Under this rather cumbersome title I place all the complete paraplegics—that is, those patients with complete paralysis of micturition. Although the urine may appear clear and free from pus by gross tests, there is always present a cloud of albumin on boiling after adding acetic acid, and microscopically there is always evidence of a continually progressive breaking down process in the uro-genital tract in the shape of pus cells, bladder and renal epithelium, etc. At any time this process may become suddenly acute, resulting in a rapidly developing pyonephrosis, with an increasing mass in either loin, and high fever or cystitis, prostatitis, orchitis, or epididymitis. It is common to find a patient with no gross external evidence of an acute infective process, but with an irregular fever of months' duration, before the temperature finally returns to a normal level. I have regarded such cases as due to chronic sepsis in some portion of the uro-genital tract. I have often overlooked the prostate as the seat of infection in such cases, and in one case cautious prostatic massage led to the expulsion of a quantity of extremely offensive blood-stained pus, and the fever subsided. In massaging the prostate in these cases extreme care must be exercised, since if the massage be too vigorous a most alarmingly profuse haematuria will occur and take several days to subside.

**Uraemic Manifestations.**—Uraemia is the last stage in these cases. In a few instances it supervenes quite gradually without any very prominent symptoms. In one patient, who had been up and about for months, and seemed in good health and spirits, I noticed one morning that the respiration was peculiar, suggesting asthma. He said he felt very sleepy, but complained of no discomfort. The same evening twitching was observed, and coma rapidly supervened. No urine had been passed for twenty hours. Pilocarpine injections and hot packs were ineffectual. In other cases, however, the uraemic symptoms are most distressing, and continue for days; intractable vomiting and headache are prominent symptoms. The urine may show a practically normal measure or be entirely suppressed. I have never observed renal oedema of the eyelids, face, or back in any of these cases, and the eye-grounds have also been entirely normal, even in those patients who have shown symptoms of repeated slight uraemic attacks. The *post-mortem* findings are what one would expect. There is no naked-eye appearance of any true kidney substance. The kidneys are replaced by what looks like an irregular abscess cavity with fibrous walls, its interior filled with calculi and pus; the ureters are very much thickened, and occasionally filled with calculi. Slight cases of uraemia may recover under vigorous treatment (prompt injections of pilocarpine and hot packs, with abundant fluid by mouth), but I have not seen recovery in cases showing twitching even where the other symptoms are quite mild.

**Bedsore.**—These as seen in the cases under discussion are, for the purposes of treatment, conveniently divided into wet and dry. An old dry bedsore may remain stationary for years, and, unless very roughly handled, will not cause any trouble. A discharging bedsore, on the other hand, may defy the most energetic treatment in the shape of ointments, rest, and a variety of dressings and lotions, and get deeper and wider. I have no faith in any one particular line of treatment. I remember one patient who had had the most scrupulous aseptic treatment directed to a large extending bedsore with no avail;

finally it was decided to abandon the dressings and allow the bedsore to take its chance in a dressing largely composed of faeces; the result was complete healing within a few weeks. I can only attribute the healing of a bedsore to some personal factor in the patient, and assume that the reaction towards healing depends more on the general than on the local condition. As a rule dry dressings for dry bedsore and wet (preferably hot) dressings for wet sores give the best results. An extremely useful ointment for a clean but extensive bedsore which shows little sign of healing is that supplied by Messrs. Christy and Son under the trade name of "Sobrefacion."

#### General Treatment.

The incomplete cases with recovered bladder function show a gradual tendency to improve. Daily massage, systematic walking exercises, encouragement in self-confidence, all help this improvement. Such patients may with confidence be told that they will lead useful if restricted lives, and that no relapse need be feared. The completely paralysed patient, however, is in a different class. His progress cannot be other than gradually downward. Treatment, therefore, should be directed towards the retardation of that process as much as possible. Expert nursing, massage, and suprapubic drainage of the bladder are the essentials of treatment. I am convinced that the complete cases who have retained their suprapubic drainage apparatus have in all instances lived longer and have been very much freer from intercurrent symptoms than those without. Some of these cases with suprapubic drainage were wounded six or seven years ago and have hardly experienced the slightest discomfort. In patients with suprapubic drainage I have never observed any of the symptoms referred to above, such as acute pains in the lower limbs, abdominal distension, or intermittent fever of a severe and protracted nature. All the cases exhibiting such symptoms have either never had suprapubic cystotomy or the original suprapubic opening had been closed at some later date in their paraplegic history. Out of eight deaths two were in suprapubic cases, one of whom died of septic arthritis accidentally caused through injury; the other case died of uraemia.

There appears to be no doubt that as far as the patients' general condition is concerned suprapubic drainage has a great advantage over a closed automatically acting bladder. The bladder is washed out twice daily and the tubing changed. A solution of 1 in 8,000 to 1 in 10,000 potassium permanganate is the most effectual irrigating lotion. The best type of rubber drainage tube is an oesophageal tube. It is soft and does not cause trouble round the opening. For the complete cases I usually prescribe a routine mixture, to be taken thrice daily, of—

R. Urotropine	...	...	...	...	...	gr. x
Ammon. benzoat.	...	...	...	...	...	gr. xv
Tinct. hyoscyami	...	...	...	...	...	℥ xxx
Syrup. aurantii	...	...	...	...	...	5j
Aq. ...	...	...	...	...	...	ad 5j

Ammonium benzoate, when taken over long periods, does not cause digestive upsets like the acid sodium phosphate. The urine can generally be kept at a constant level of acidity by this therapy. I have found that tincture of hyoscyamus very appreciably diminishes the tendency to acute retention in cases without suprapubic drainage.

In cases without suprapubic drainage a retained catheter is used if there is a tendency to spasmodic retention. I have not found any harm result from employing a retained catheter for an indefinite period. The urethritis which may result can be quite easily controlled by sufficient lubrication of the catheter and irrigation of the urethra with 1 in 8,000 potassium permanganate solution.

Massage of the lower extremities, back musculature, and abdomen is absolutely essential in all cases of paraplegia, whether complete or incomplete. Without it the patient very quickly develops contractures, and bedsore on the feet appear; his general condition deteriorates, and he becomes very much weaker, so that he will be unable to sit up if he is a completely paralysed patient of a high level type. Massage should be given daily.



It does not appear to influence the acute pains in the lower limbs.

The importance of nursing in these cases cannot be overestimated. In fact, without the special care that the patients receive from the nursing staff at Gifford House I doubt whether any of the complete cases would be alive to-day.

#### *Prognosis and General Summary.*

In the complete cases the prognosis cannot be other than ultimately fatal, but in the absence of definite uraemic symptoms it is almost impossible to predict an immediately fatal issue. Even where a patient may seem semimoribund, with foul discharging bedsores, intermittent fever, and rapid general wasting, there is quite a chance that he will make a good recovery and be up in his chair again. A patient with extensiv osteomyelitis of the spinal vertebrae following a bedsores gradually pulled round and the condition entirely healed. On the other hand, I have not seen recovery following any uraemic nervous symptoms, even when the patient's general condition appeared quite good. It is always safe to predict rapidly developing coma and death when such symptoms exist. Acute haemorrhagic cystitis is always rapidly fatal; it may come on without any warning at any time during the patient's paraplegic life. I have seen two deaths from this condition, both in patients without suprapubic drainage. The mental factor undoubtedly plays a very large part in the grip that the patient has on life. A greatly depressing shock of some kind, the death of a friend, or serious trouble of any sort, will be sufficient to depress the patient's vital powers. He will become silent, depressed, refuse food, look increasingly ill, begin to develop bedsores, and may die if his confidence is not restored.

The main factors influencing prognosis appear to be:

1. Continued and skilled nursing.
2. Daily massage.
3. Establishment of adequate bladder drainage, preferably by the suprapubic method. Closure of a suprapubic cystotomy opening which the patient has had for some years and which is giving no local trouble is entirely contraindicated. This statement has been put to the test in five of the complete cases, and in all five symptoms have developed, such as bedsores, limb pains, fever, and malaise, which were not manifest previous to the closure.
4. Encouragement of mental confidence and mental occupation. In this respect an auto-wheel chair of special pattern has been found invaluable. It saves the patient any unnecessary friction, and enables him to get about and enjoy life, and generally assists him in forgetting the tragic aspects of his disability.

### A NOTE ON THE VALUE OF SYMPTOMS IN THE EARLY DIAGNOSIS OF PULMONARY TUBERCULOSIS.

BY

D. G. MACLEOD MUNRO, M.D., M.R.C.P. EDIN.,

DEPUTY COMMISSIONER OF MEDICAL SERVICES FOR TUBERCULOSIS TO THE MINISTRY OF PENSIONS.

THESE remarks are addressed primarily to the general practitioner, upon whose failure to diagnose pulmonary tuberculosis in its early stage some quite unjustifiable aspersions have been made from time to time. It is, indeed, encouraging to note how keenly the general practitioner has recently taken up this question and with what comparative success, especially on the lines of more recent views on physical diagnosis. It is not my intention to discuss this question from any original or novel standpoint, but I am inclined to think that we should seriously consider whether in this connexion the pendulum has not swung rather too far in the direction of diagnosis from purely physical signs.

The time is, I think, ripe to seek an adjustment of values between the two chief factors in the early diagnosis of pulmonary tuberculosis—namely, its symptomatology and physical signs. In a disease in which so many clinical and anatomical phenomena have to be correlated, and in which

the same individual may present a new symptom complex every few weeks, the position of the diagnostician is not always a happy one. It is only by painstaking adjustment of all the contributory elements in such cases and in the use of skilled judgement in interpreting the clinical picture thus presented that success will attend efforts to make a diagnosis in these difficult cases.

I am not aware whether it is still the rule, but until very recently I understand the diagnosis of pulmonary tuberculosis in the army was not regarded as established unless the tubercle bacillus had been found in the sputum; and it is not so many years ago that in civil practice the earliest recognition of the disease was based upon data which at the present time are considered to be the sign of a comparatively advanced stage. In auscultation, for example, it may not yet be generally appreciated that what is to be looked for is a change in the breath sounds of the *inspiratory* phase, which may be noted at a much earlier stage of the disease than alteration in the *expiratory* phase which may be present in many quite healthy chests.

The change of method in the elucidation of physical signs during the past few years has been, indeed, quite revolutionary, and thanks to Riviere and others, certain refinements in physical examination have materially assisted in the earlier recognition of the disease. The utility of inspection and palpation has been especially developed by the American school, and the value of these methods of physical diagnosis greatly enhanced. Hitherto inspection of the chest has been, from the point of view of the general practitioner, rather a perfunctory affair, and the virtues of palpation limited to vocal fremitus—now regarded as of doubtful value as a diagnostic sign in such cases. Now that special attention is being paid to the muscle reflex which results in what is known as "lagging" (the presence of which, especially at an apex, strongly suggests active mischief, although percussion and auscultation may give no indication of this) inspection and palpation assume a more important place. The proper appreciation of this sign requires practice, but this is soon acquired.

The information conveyed by inspection in these cases may be greatly reinforced by light finger-tip palpation, by means of which evidence of localized reflex muscle spasm—especially as affecting the sterno-mastoid, the scaleni, and the upper pectorals—may be detected. The trained finger appreciates in such cases a sense of muscle resistance in contradistinction to the smooth and more elastic sensation of normal muscle tension. Then, too, trophic changes in the muscles of the shoulder girdle and the state of the subcutaneous tissues may be similarly recognized. In the opinion of some experts, indeed, light touch palpation has very largely replaced percussion as an aid to diagnosis.

The technique of percussion, too, has been much improved, and it is now generally recognized that to be of any real value, apart from other points of detail, percussion must be light. But this method of physical diagnosis still presents many pitfalls, and, apart altogether from the question of accuracy, it must be strongly affirmed that local changes in the percussion note, especially at the apex of a lung—even if the existence of such cannot be doubted—convey nothing as to the presence of an active tuberculous lesion, or, indeed, that the lesion, if such exists, is tuberculous at all.

In my opinion, too much attention in the matter of percussion has been focused upon the definition of certain areas of the chest wall called after some eminent authorities. It is questionable, for example, whether in the early cases of pulmonary tuberculosis now under discussion any appreciable change can be found to have occurred in Krönig's area of so-called apical resonance. In rather a different category are the "bands of impairment" in the percussion note first noted by Abrams. These bands are said to be purely reflex in origin and to be one of the earliest indications of active pulmonary tuberculosis. My own experience of this diagnostic sign is not extensive, but I confess that in a number of cases in which I have utilized this method of physical diagnosis I have never been able to satisfy myself as to the reliability of the results.

But if we may gratefully acknowledge that a great deal of useful work has been done by what I may perhaps refer to without offence as the "physical force" school, we must admit, I think, that on the question of the early diagnosis



of pulmonary tuberculosis they have of late held the field too exclusively.

Turning, then, to the symptomatology of the disease, we find that a toxæmic state, revealed in one form or another and in greatly varying degree, is to be regarded as a manifestation of active tuberculosis. Pulmonary tuberculosis, however, cannot be held responsible for every unexplained toxæmia, as the symptom complex of this condition is much the same whatever the source of infection, and the existence of localized infection such as sinusitis, tonsillar infections, oral sepsis, and bronchiectasis must be excluded.

The group of symptoms comprise malaise, lassitude, nervous instability, digestive disturbances, tachycardia, fever, and night-sweats. I propose to deal in some detail only with two of the more prominent of the symptoms of the toxæmic syndrome, both of which on accurate observation will be found to present certain features characteristic of tuberculosis. These are (a) fever, (b) tachycardia.

#### *Fever.*

The presence of fever as an indication of tuberculous toxæmia is in this connexion of the greatest value, but certain qualifications are necessary if we are to arrive at trustworthy conclusions. It is unfortunate that temperature records are often taken in so casual a manner as to be practically valueless. It is not necessary, I think, to assume that a rectal temperature record is the only reliable method, more especially in private practice. If certain simple precautions are taken oral temperature records are quite trustworthy, except in the case of mouth-breathers. The thermometer should be retained in the mouth at least seven minutes; the temperature should not be taken immediately after the patient returns indoors after exposure to cold wind nor after partaking of a hot meal. It is not sufficiently recognized that the maximum temperature period varies greatly in different persons; to ascertain this period in a given case it is necessary to take the temperature every two hours. The first recorded temperature for the day ought not to be taken, as is often the case, after the patient has got up and dressed, but as early as possible in the morning before rising. The normal diurnal variation in temperature is about 1.5° F. In a majority of healthy persons the average early morning temperature is approximately 97.2° to 97.4° F., rising to a maximum of 98.6° F. in the early afternoon. This normal average is maintained by an equilibrium between the forces governing heat production and heat dissipation, and the entry of toxins into the blood stream, from whatever source, disturbs this balance. While it is not usual to find much temperature elevation in early pulmonary tuberculosis, it may be found that the early morning temperature is 98° F. and the maximum record for the day 99.2° or 99.4° F. The necessity for a continuous temperature record extending over three or four weeks in any case of suspected early tuberculosis will become apparent when it is pointed out that the toxæmic state is by no means constant; it ebbs and flows. The continuous temperature record therefore gives a fair representation of the degree of toxæmia present.

In chlorosis there is sometimes a slight average increase of temperature, while the premenstrual rise must not be overlooked. In persons of highly strung nervous temperament there are sometimes quite noticeable variations in the temperature curve. It will thus be seen that the process of elimination may have to be thoroughly invoked to clear the ground. Are there, then, any very clear indications, when all this has been done, which may point the way to a tuberculous toxæmia as the responsible source of the fever? I think there are. My own experience has led me to attach much importance to an early morning temperature—taken before rising—which is consistently a little above the average mean. The effect of a definite amount of exercise may be noted; while in a healthy person there is always a temporary rise—sometimes considerable—after exercise, this is usually quite evanescent, and within half an hour or so the temperature returns to normal. This is not so in the case of a tuberculous person. The decline of the temperature to normal limits is delayed and it may remain elevated for two or three hours. Hence the value of post-exercise temperature records in suspicious cases. Then, too, extraneous conditions resulting in emotional disturbance, worry, and anxiety;

which in a healthy person have no appreciable effect on temperature, may cause considerable disturbance in a tuberculous person. These features may be said to be characteristic of the tuberculous process. It will be seen, therefore, that fever, though still to be regarded as one of the cardinal points of the toxæmia of tuberculosis, cannot be accepted without due consideration of the qualifications outlined above, especially if there is no supporting evidence in other directions. It must be noted, however, that the absence of fever does not necessarily rule out the possibility of the existence of pulmonary tuberculosis.

#### *Tachycardia.*

From time to time I have seen patients found to be suffering from early pulmonary tuberculosis who have referred to an irregular and rapid action of the heart coming on without any apparent reason, but on the whole it has not been my experience that the cardiac disturbances caused by tuberculous toxæmia are noticed subjectively by the patient.

Tachycardia is of frequent occurrence in early tuberculosis—Fishberg puts it at 90 per cent. of incipient cases; it is hardly ever a subjective symptom. Like fever it is of toxic origin and appears to be the result of excessive stimulation of the sympathetic nervous system. The instability of the pulse in pulmonary tuberculosis would appear to result from a combination of vagus and sympathetic stimulation. Pottenger, who supports this view, considers that tachycardia as such is not a particular characteristic of active tuberculosis. In his opinion it is not regularly present unless the patient is in a depressed state, or has been over-exerting himself. This, I am inclined to think, does not fully represent the case. It is now, I believe, generally accepted that a pulse rate out of all proportion to any febrile condition present is a very common and reliable symptom of early tuberculosis in an active state, and further that the pulse rate may be notably increased on the slightest excitement or even after a fit of coughing. Another well marked characteristic is that, just as in the case of fever due to tuberculous toxæmia the fall of temperature is considerably delayed after exercise, so it is found that the increased pulse rate after exercise falls much more slowly than in health. I have repeatedly seen cases in which there has been persistent tachycardia, not referable to any cardiac abnormality or hyperthyroidism—a condition which is always to be borne in mind in the differential diagnosis—and in which the true diagnosis was only revealed by a sharp hæmoptysis. The physical signs in the chest in such cases may for a long time show no evidence of anything abnormal.

It has to be recognized, however, that pulmonary tuberculosis may masquerade as an affection of any of the great systems of the body with no signs or symptoms in any way directly referable to the lungs.

In none of the types of cases under discussion is it assumed that assistance can be sought by the presence of cough, sputum, hæmoptysis, pleurisy, or indeed any direct overt symptom. In such early cases radiography is of doubtful value and the complement fixation test is at times rather a blind guide. The key to the diagnosis is to be found more commonly in the history of the present illness, and inquiry cannot be too minute or painstaking.

### OBSERVATIONS ON A CASE OF MYASTHENIA GRAVIS.

BY

S. L. HEALD, M.D., F.R.C.S. EDIN.,

HONORARY PHYSICIAN, COVENTRY AND WARWICKSHIRE HOSPITAL;

AND

ARTHUR J. WILSON, M.B., CH.B. EDIN.,

HOUSE-PHYSICIAN, COVENTRY AND WARWICKSHIRE HOSPITAL.

THE following case, of a man in whom symptoms of this rare condition developed while he was serving in the army in the late war, and some six years before he attended this hospital as an out-patient, seems of sufficient interest to warrant publication.

The patient, a man 43 years of age, a painter by trade, first came under observation as an out-patient on December 13th, 1922, when he was complaining of muscular weakness and exhaustion and inability to swallow properly.



*Clinical History.*

The patient joined the army as an Al man in 1914. In 1916 he began to develop pain and weakness in the left shoulder and arm so that he was unable to lift things. His head began to feel heavy, and the muscles of the neck became so weak that he had difficulty in holding it up straight and it drooped downwards on to the thorax. He could not brace back his shoulders, which became rounded. His legs began to feel weak and heavy, and he was tired after a short walk. Shortly after this he had difficulty in articulation and he began to stammer. The upper eyelids began to droop and he developed a squint in the right eye which caused double vision. The lower jaw became weak, he had difficulty in chewing hard foods, and at the end of the day he was unable to close his mouth and the jaw drooped down, saliva dribbling from the mouth. Sometimes he had to hold his lower jaw up with his hand to enable him to masticate properly. In addition he complained of general weakness and unusual fatigue. He noticed that the quieter he was and the less he exerted himself the better and stronger he felt; thus at the beginning of the day the above symptoms were slight, but as the day wore on, especially if he had been exerting himself, they began to appear and reached their maximum intensity in the evening.

The symptoms used to disappear almost completely for intervals of a few weeks, during which he appeared to be quite normal, and then returned again, and a diagnosis of neurasthenia was made by the army doctors. Since that time the symptoms have become more marked, and in addition the patient developed difficulty in swallowing, the food regurgitated through his nose, and his voice became nasal. He had attacks of dyspnoea, especially during a fit of coughing. His legs became weak and he tended to fall.

*Clinical Examination.*

The striking thing is the facies, which is one of great fatigue or exhaustion, superimposed on a somnolent mask-like expression. The photograph shows the bilateral ptosis, the right external strabismus, the drooping of the jaw, and the general expression of exhaustion. The speech is normal in the early part of the day, but after much talking it becomes stammering and nasal in quality, those syllables which require complete closure of the nasopharynx by the elevation of the soft palate being pronounced with the greatest difficulty. The intellect and memory are normal and there are no emotional changes.

*Attitude.*—The body is bent somewhat forward, the head bowed down, the jaw droops, the lower lip sags down, and saliva dribbles from the angles of the mouth; the shoulders are rounded owing to weakness of the muscles which brace back the shoulders.

*Muscular System.*—No atrophy. The muscles are hypertonic and in a state of irritability. The patient states that he has experienced "twitchings" in certain muscles, especially after fatigue, particularly in the left masseter, lower eyelids, muscles of nape of neck, and in the thigh muscles. All the muscles show the myasthenic phenomenon—that is, at first the movement is performed perfectly,

but after being repeated it rapidly becomes slower and slower, and the extent of movement becomes diminished and is accompanied by severe pain; finally the muscle fails completely and after resting for a variable period recovery takes place; movement can then be resumed and the same cycle is gone through again. A curious phenomenon is seen towards the end of the voluntary contractions and is best observed in the masseter in the movements of opening and closing the mouth—namely, at the end of the last contraction the muscle passes momentarily into a state of painful spasm in which it cannot be voluntarily relaxed, and then it suddenly relaxes finally and completely, and passes into a state of paralysis. Thus the patient complains that, after chewing anything hard, his jaw soon becomes tightly clinched for an instant during which he cannot open it, and then it falls down "like a dead weight."

*Electrical Reactions.*—The reaction described by Jolly was obtained—that is, the muscles responded readily to the first few stimuli with the faradic current, then the contractions rapidly diminished in extent and ceased after a few minutes in spite of the continuance of the stimulus. After a period of rest, this myasthenic reaction was obtainable again; but this exhaustion of the muscles was not brought about by galvanism.

The superficial and deep reflexes are all exaggerated. The knee-jerk shows an alteration in type, the contraction appeared to be a summation of a series of superimposed small contractions. It was not possible to tire out the knee-jerks by repeated tapping of the patellar tendon for five minutes, though after the attempt the patient made the remark that he "felt as though he had just done a ten-mile walk." After this test the quadriceps muscle was observed to be in a state of coarse fibrillary tremor which the patient states is identical with that previously experienced in other muscles. Knee clonus is present. The pupils are equal and react to light and accommodation, and the fundi are normal. The right eye shows a permanent external strabismus, more marked in the evening, due to paresis of the internal rectus. Coarse lateral nystagmoid movements are present in both eyes. Deglutition, especially of solids, is difficult when the patient is fatigued, and

regurgitation through the nose then occurs. The palatal reflex is sluggish. There is no change in the organic reflexes. No sensory alterations in the nervous system are found. The blood Wassermann reaction is negative. Clinical and radiological examination of the thorax reveals no enlargement of the thymus gland, which is said to occur sometimes in this disease.

*Treatment.*

A prolonged course of treatment with strychnine alternating with pituitrin (hypodermically), thymic and thyroid extracts orally, was given, as recommended by those who suggest that myasthenia gravis may possibly be associated with disturbances in the endocrine system, but little improvement was noted. Most benefit appeared to result from absolute rest and the avoidance of all fatigue.

## HAEMORRHAGE FROM THE LARGE BOWEL CAUSED BY AN ADHERENT APPENDIX EPIPLOICA.

BY

R. ECCLES SMITH, O.B.E., F.R.C.S. EDIN.,

BARRY, GLAMORGAN.

In the *British Journal of Surgery* (July, 1922) Mr. Duncan C. L. Fitzwilliams recorded a case of a hernia involving an appendix epiploica, which became strangulated in a hernial sac, giving rise to urgent symptoms, but without the classical features of a strangulated hernia. Within the last year two somewhat similar cases were referred to me; the symptoms resembled subacute strangulation of a hernia, recurring at intervals, followed by the passage, after each attack, of a quantity of bright blood by the rectum.

The first patient was 54 years of age, and the possibility of a growth of the lower bowel was entertained by his medical attendant. The second patient was about 30 years of age, and the diagnosis was obscure, the presence of a polypus or adenoma of the lower bowel being suggested. In neither case were haemorrhoids present, nor did examination reveal any growth of the lower bowel, so far as could be ascertained by the finger or the sigmoidoscope.

In the first patient there was a hernia on the left side, which troubled him by coming down only occasionally, so that he did not wear a truss. In the second case the hernia was on the right side, and again was apparently of such a nature that he did not trouble to wear a truss. The symptoms in each case were very similar. The onset was

with a fairly severe pain in the lower part of the abdomen, followed by vomiting and by colicky pains for a short time. Within sixteen to twenty-four hours bright blood was passed per rectum, beginning with anything up to two ounces; it ceased in the next thirty-six hours. In each case the attacks came on while the patient was engaged in somewhat laborious work.

The diagnosis of a partial strangulation of the large bowel, of the Richter type, was given without much difficulty in the first case, where the hernia was on the left side, the bleeding following on the congestion of that part of the pelvic colon which had been partly strangulated and had escaped back into the abdomen. The second case was a little more obscure until a bismuth enema had been given. This showed plainly that the pelvic colon was lying right across the abdomen and appeared to be fixed near the region of the internal ring on the right side. A similar diagnosis was therefore made.

At operation in each case it was noted that an appendix epiploica of the pelvic colon was fastened to the fundus of the hernial sac; the neck of the sac was not unduly wide. There can be no doubt that the fixation of the appendix epiploica from time to time dragged a part of the pelvic colon into the sac, causing a partial strangulation of this viscus after the manner of Richter's hernia, giving rise to haemorrhage from that part of the bowel, after its escape, by rupture of some of the congested vessels consequent upon the reaction of the bowel. Radical cure of the hernia with removal of the offending appendices epiploicae entirely removed the repeated attacks of partial strangulation and the loss of blood from the lower bowel.





## Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

## MEAT POISONING IN JERUSALEM.

DURING the period January 5th to 11th, 1923, five families, comprising in all fourteen persons, were attacked with what appeared to be symptoms of food poisoning. The symptoms in each case were practically identical—initial chill, fever, gastro-intestinal disturbance, vomiting, colic, and diarrhoea, while in one or two of those affected nervous symptoms and collapse occurred.

The investigations made by Dr. MacQueen, A.P.M.O. Jerusalem, finally revealed the origin. He prepared a list of those suffering, and a list of the articles of food eaten by them during the three days prior to the onset of symptoms. It was found that each one of the patients had partaken of one thing in common—pork sausage—and, further, that each of the families had purchased portions of the same sausage at the same shop, but on different dates.

The ages of those affected ranged from 5 to 53. The time elapsing between the eating of the sausage and the appearance of the symptoms varied from four to seventeen hours; the average interval was seven hours.

In the case of a woman, aged 55, death supervened; she partook of the sausage on January 11th at 12 midday, showed first symptoms at 2 a.m. the next day, fourteen hours later, and died at 8 p.m. on that day, eighteen hours after the onset of symptoms. *Post-mortem* examination was not allowed.

On January 12th two samples of pork sausage were submitted to me from the District Health Office. One sample was taken from the portion left over from the sausage partaken of by a family then suffering, the other from the portion of sausage still remaining unsold in the shop where all the affected families had made their purchase.

Portions of the suspected sausages were removed, and after suitable treatment and preliminary enrichment in dulcitol peptone water, the growth resulting was transferred to plates of MacConkey's bile salt lactose neutral red agar. Colourless colonies picked off after twenty-four hours were transferred to agar slopes. Fermentation reactions of the organism isolated showed it to belong to the *Salmonella* group; the splitting of dulcitol was, however, considerably protracted. There was no indol production.

Tests were then made with the agglutinating serums made from *B. paratyphosus* B, *B. suispestifer* (*aertrycke*), and *B. enteritidis* Gaertner, prepared by the Lister Institute. The organism under investigation was strongly agglutinated in high dilution by the Gaertner agglutinating serum.

Inoculations of guinea-pigs with an emulsion of the organisms caused death, and *post-mortem* examination showed the presence of haemorrhagic enteritis.

The biochemical and agglutination reactions of the organism recovered from the spleen, liver, and lungs were those of *B. enteritidis* Gaertner.

In my opinion, despite the fact that I was unable to investigate the condition of the patients themselves from the bacteriological point of view, this small outbreak owed its origin to the toxin of *B. enteritidis* Gaertner.

G. STUART,  
Assistant Director of Health (L),  
Government of Palestine;  
Director Public Health Laboratories.

INVERSION OF THE UTERUS TREATED BY  
HYSTERECTOMY.

A WOMAN, aged 27, admitted to the Jersey General Dispensary on July 7th, 1920, stated that she had begun to menstruate at the age of 15 and that the periods recurred fortnightly and were excessive; she was treated for anaemia, and after a year the function became normal. She had a bad attack of influenza in 1918, but no other illnesses.

On January 25th, 1920, she was delivered by forceps under chloroform; pains were very slight before the birth, but much more severe afterwards; there was not much haemorrhage. On the fifth day after confinement she had retention of urine, and on examination the uterus was found to be inverted, and was replaced without difficulty by the medical attendant. She had attacks of fever and faintness during the six weeks she remained in bed, but no haemorrhage. On her bed she vomited and fainted twice. Two

weeks later haemorrhage began; it was slight at first but increased with time until large clots were passed.

I first saw the patient on July 1st, when she complained of metrorrhagia; a soft mass was felt projecting from the os uteri which was taken for a placental polypus.

On July 8th examination under an anaesthetic revealed the true nature of the case; manual replacement was attempted but was found to be impossible. On July 10th laparotomy was performed, and even with the belly open it was found to be impossible to replace the uterine body; amputation was, therefore, performed through the neck of the uterus. The uterus was not enlarged.

On admission to the hospital, on July 7th, the temperature was 100° F., and remained constant till the time of operation. On July 12th it rose to 101° F., and remained at this level, with slight daily remissions, till July 21st, when it rose to 103° F. On July 22nd the temperature reached 104.8° F., and the patient was very exhausted.

On July 24th 30 c.cm. of polyvalent antistreptococcus serum was injected; the temperature rose to 106.4° F., but fell in four hours to 99° F.

For the following four days doses of 20 c.cm. of the serum were injected, the temperature varying between 104° and 98° F.; at the end of this period the temperature became approximately normal and remained so until her discharge on August 15th.

The remarkable features of the case are the absence of uterine enlargement, which was possibly due to the strenuous use of ergot before she came under my observation, and the absence of any marked anaemia.

Jersey.

J. J. W. EVANS, F.R.C.S.

## THE TREATMENT OF DENTAL CASES.

I VENTURE to publish this short account of two dental cases because medical students are taught very little about dental diseases or inflammatory conditions of the mouth and jaws due to dental trouble, yet dental surgery is a branch of general surgery in the same way as otology or ophthalmology.

## CASE I.

A girl, aged 17, complained of swelling and tenderness on the right side of the mandible. The swelling was inflammatory and the doctor she consulted advised poulticing. The swelling burst and a purulent discharge lasted for some time, but eventually healing took place; the scar, however, broke down again in a short time. A dentist who was then consulted came to the conclusion that the girl had originally had an acute alveolar abscess; a considerable area of bone had necrosed and fracture of the jaw had ensued. It took a dental surgeon and a general surgeon over eighteen months to get the patient's chin into correct alignment, and the girl was left with a considerable amount of facial disfigurement.

The mistake here was the applying of fomentations to the outside of the patient's cheek. This practice is mistaken, and invariably leads to a certain amount of disfigurement, and sometimes to even more serious results. Dental students are taught to apply fomentations to the outside of the jaws only in exceptional circumstances. In the above case, if the doctor had had the tooth extracted at once and ordered hot mouth-washes every few hours, the necrosis and disfigurement would not have occurred. It is a sound principle to treat practically all inflammatory swellings of the jaws due to dental sepsis by hot frequent mouth-washes, after, of course, treating the cause. By this method the pus, if any, is drawn into the mouth, and so facial disfigurement is prevented. The exceptional circumstances I refer to are those cases in which the patient is obviously very ill from toxic absorption and drainage is needed at once. In these cases it is better to incise the swellings from the outside.

## CASE II.

A woman, aged 50, had been treated for about twelve months for gastritis and intermittent swelling of the joints. In six months her weight fell from 15 st. 2 lb. to 11 st. When I saw her the mouth was extraordinarily clean and healthy for a woman of her age; one or two teeth were missing, but the remaining teeth were clean, strong, and free from caries, and the gums were very healthy. There were three roots present which appeared healthy; the gum was tight and healthy round them, there was no pocket, and the root canal had calcified. I extracted these three roots and found that each of them had a chronic abscess sac at the apex. I prescribed a hydrogen peroxide mouth-wash and told her to return in a month. She was then a different woman; she was cheerful, was putting on weight rapidly, and had had no swellings of the joint since the date of the extractions.

This case is quoted because more harm is caused to the general health by such chronic abscesses than by chronic infection around the necks of the teeth, the pus from which



drains into the mouth. The chronic abscess being under pressure, infection gets directly into the blood stream, and so lowers the patient's whole vitality. This patient's mouth looked quite clean except for these roots, and admittedly even the roots appeared healthy. Her doctor might have suggested that she should have the roots extracted, simply because he knew it is the general rule to get rid of roots, but he would not be likely to think that the whole trouble could be due to the presence of the roots.

J. JAMES, L.D.S., R.C.S.Eng.,  
Dental Surgeon to Rotherhithe Hospital;  
Late Demonstrator, London Hospital Dental School.

#### SPONTANEOUS RUPTURE OF THE UTERUS.

A NATIVE woman, aged 29 years, was admitted to hospital in a very weak state, having been in labour for twenty-four hours at her home; she was in a state almost of collapse, and had intense abdominal pain. The appearance of her abdomen was quite abnormal—the outline of the child was easily felt and could be moved about, but this caused great pain, and the case appeared to be either extrauterine pregnancy which had gone to full term, or a ruptured uterus. As her condition was so bad I decided to wait until she rallied. On September 3rd, 1922, I opened the abdomen and found that it was a case of ruptured uterus; the child—full term and well developed—was lying dead in the abdominal cavity amongst the intestines, the placenta partially extruded from a transverse rupture of the uterus. The uterus was sutured and the abdomen closed; I brought the uterus forward and sutured the uterine wound to the abdominal incision for fear of accidents. The patient recovered very slowly, and I discovered that she was suffering from ankylostomiasis; the uraemia and general weakness rapidly cleared up after giving her chenopodium oil, and she was discharged well on October 17th.

Antigua, B.W.I.

C. M. ROLSTON, F.R.C.S. Edin.

### British Medical Association.

#### CLINICAL AND SCIENTIFIC PROCEEDINGS.

##### CAPE OF GOOD HOPE—WESTERN PROVINCE BRANCH.

A MEETING of the Cape of Good Hope—Western Province Branch was held at the New Somerset Hospital, Cape Town, on April 13th, with the President, Dr. CHARLES M. MURRAY, in the chair. He announced that two demonstration rooms would be conducted simultaneously, the one medical and the other surgical. Mr. C. C. ELLIOTT took charge of the surgical room and Professor A. W. FALCONER of the medical room.

Professor Falconer conducted the medical section to his wards, where he demonstrated cases of amoebiasis, gummatous meningitis, and cerebellar tumour. Dr. D. P. MARRAIS showed a case of Addison's disease. Dr. A. REITH FRASER showed a case of granuloma inguinale and one of digital chancre. Mr. D. J. WOOD showed an interesting series of eye conditions, including trachoma, spring catarrh, tubercle of the conjunctiva, chalazion, and an unusual example of glaucoma in a child aged 7.

Mr. C. C. ELLIOTT demonstrated cases of depressed fracture of the skull, depressed fracture of the supra-orbital ridge, malignant growth of the lower eyelid with the operation result, and an operated case of excision of the Gasserian ganglion. Mr. H. A. MOFFAT showed an old dislocation of the head of the radius, a tuberculous elbow, a fracture of head of the radius, and a fractured carpal scaphoid. Mr. C. F. M. SAINT showed an unusual case of psoas abscess with superimposed pneumococcal infection, a duodenal ulcer which presented a difficult diagnostic problem, and a tuberculous shoulder-joint. Radiographs were exhibited by Dr. H. W. REYNOLDS, including several interesting fractures, bone grafts, and cervical ribs. Professor E. C. CRICHTON demonstrated pathological specimens.

The PRESIDENT thanked Dr. A. Carrington Seale and the hospital staff for organizing the meeting and for entertaining the Branch.

## Reports of Societies.

### ULCERATIVE COLITIS.

A MEETING of the Subsection of Proctology of the Royal Society of Medicine was held on May 9th, under the presidency of Sir CHARTERS SYMONDS. Ulcerative colitis was the subject of discussion.

Sir HUMPHRY ROLLESTON, after referring to Sir William Hale-White's early description of the disease, asked what the term "ulcerative colitis" might mean. Ulceration due to amoebic or bacillary dysentery, to parasites, to known poisons, and so-called asyrum colitis (which was often epidemic and appeared to be bacillary dysentery) should be excluded. Ulcerative colitis did not appear to be a disease in the strict sense of the term, but a syndrome with fairly constant structural changes and clinical manifestations. Bacteriologically it was not a specific disease, for it might be due to a colon organism, to *B. pyocyaneus*, to the pneumococcus, streptococcus, or other organism. Some cases beginning as dysentery might cease to show the characteristic organisms in the faeces and become chronic ulcerative colitis. After death, as shown in a case of Dr. McNee's, the organism was still present in the wall of the colon. The opportunities for secondary infection of the colon were most favourable, and various organisms, especially of the colon group and streptococci, might appear to be the responsible factors for the condition. Bacteriological diagnosis of an acute colitis, such as the haemorrhagic type of pneumococcal origin, was less difficult than that of chronic ulcerative colitis. It was possible that a devitaminized diet, as suggested by McCarrison's and Findlay's experiments, might so lower the resistance of the patient, or change the type of organism, as to favour the onset of the disease. There was no proof that ulcerative colitis was related to swine fever. Was the type of the disease changing? It seemed to the speaker that perforation was less frequent now than thirty years ago. Stricture of the colon was rare. Leucocytosis appeared to be inconstant and inquiry as to a relative lymphocytosis was desirable. Sir Humphry Rolleston referred to the diagnosis of the ulceration, which was indistinguishable from that of amoebic dysentery, by the sigmoidoscope and x rays. For treatment a sufficient diet should be given. Drugs were not very successful; neither kaolin nor paraffin was completely satisfactory. Injections from below did not clear out the colon as did irrigation by means of appendicostomy. The relative values of appendicostomy, valvular caecostomy, colotomy, ileo-sigmoidostomy, ileostomy, and ileostomy with a separate appendicostomy, were briefly discussed. Vaccines had not enjoyed a very pronounced success. The use of anti-dysenteric serum, advocated by H. P. Hawkins in 1909, had been dramatically successful when given intravenously by A. F. Hurst, but, as evidence that the patients had bacillary dysentery was not forthcoming, it would be interesting to speculate if normal horse serum would not have been equally efficient.

Sir THOMAS HORDER remarked that he might have made more dogmatic statements with regard to this condition ten years ago. In his experience ulcerative colitis was found more commonly in women. Of ten recent cases eight were in the female sex; of five hospital cases only one was a male. The disease favoured young middle age—25 to 35. Among etiological factors he would mention enterotoxins, circulatory factors, and infections. Some of the patients would be found to have a cardiac lesion dating from an infection. With regard to bacteriology he would have said that streptococcal infection—not only *Streptococcus faecalis* or *viridans*, but also long-chained streptococci—should have come first, with the colon bacillus much later. He would mention certain clinical points. There was often an intense degree of anaemia. The spleen was sometimes enlarged, and this might be due to an infarct that did not suppurate. The liver might be enlarged. In one case in which he had had the opportunity of seeing the organ during caecostomy it was pale and fatty and reached nearly to the umbilicus. Within two months of the operation it had gone back to its normal level. The condition tended to recur. The doctor was often called in after there had occurred many attacks. Quite a number of people having normal-looking stools



suffered from chronic ulceration. When the physician thought he had cured the patient and looked through the sigmoidoscope, frequently there were still many ulcers present. What determined recurrence? He thought that ulcerative colitis was not so much a disease of the colon as a disease of the patient. It was a condition due to low resistance, as were phthisis and malignant endocarditis. With regard to treatment, if the patient were in such a condition that operative treatment must be tried, the colon might be drained by an appendicostomy or a caecostomy. If this had already been done he recommended treatment as for pulmonary tuberculosis, in bed, and in the open air. The diet should be the fullest the patient could comfortably manage without increasing the diarrhoea. A milk diet, not including casein, should be increased to a full diet; it should not be kept as low as possible. Tonics were useful. Vaccines could be used as supplementary treatment; he did not rely upon them. To sum up, the condition was a disease of low resistance. General methods of treatment should be adopted, supplemented perhaps by appendicostomy. There must be a long convalescence; for three months after the patient was up and about there should be no return to work.

Mr. P. LOCKHART-MUMFERY said that when the condition was discussed in 1909 there was a mortality of 50 per cent. Now the mortality had gone down to 15.7 per cent. Ulceration of the colon might be slight and localized to a few small patches or might involve the entire colon. The bacteriology of the condition was still very vague. Secondary infection was common. The paratyphoid group was often present, sometimes with and sometimes without streptococci. There were, he felt, great possibilities in the future for appendicostomy with replacement of organisms. He agreed that at present vaccine treatment was of little effect. The disease was one of early adult life; the average age was 32. The sex incidence was about equal. Diagnosis was by the sigmoidoscope. Stricture of the colon after the condition was very rare. There were more cases of this complication after caecostomy than after appendicostomy. An advantage of appendicostomy was that it could be done under local anaesthesia. The appendix should not be opened till the abdominal wall was healed. A catheter ought to be tied into the appendix. The fluid introduced should be at body temperature. The best he had found to be hypertonic solution of sea-salt. Weak silver solutions and solutions containing oil were sometimes successful. The appendicostomy should be performed early, and it should on no account be closed for a year. The patient should be warned of the danger of recurrence.

Dr. W. E. CARNEGIE DICKSON said that even if the ulceration should be due originally and primarily to one specific type of organism it speedily became a mixed infection in which a whole series of bacteria took part in attacking the bowel wall. Consequently it was generally necessary to treat the condition as one of mixed infection. It was important to remember this in treatment with vaccines or serums. In some forms of bacillary dysentery in which a vaccine made from the dysentery bacilli might not be suitable because of its great toxicity the specific serum might with advantage be used along with a mixed vaccine made from the organisms of secondary infection. In the old days it had been his custom to prepare a vaccine from some single organism which was thought to be the primary or the chief infective agent. He now used a widely varying series of culture media and from them, by selection, obtained a bacterial emulsion approximating to the organism found in direct films. A bacteriological report founded upon a single agar plate of the faeces was of little value and might be quite absurd. His own practice was to put on as a routine a series of agar, blood agar, broth, blood broth, anaerobic meat broth, litmus-milk, MacConkey lactose agar, and sometimes other media; and there were extraordinary differences in the variety and number of the various organisms grown from faeces in these different media. From them one might average up the results of the whole investigation. A bacteriologist needed three weeks, a month, or more to isolate his organisms in pure culture and give them long enough in the differential media to be certain of their biological reaction. Cultures after a week or longer showed a very different picture from that after three days, which was about the time a physician usually had to make his report. *B. pyocyaneus*,

difficult to recognize since it needed such copious supplies of oxygen to bring out its characteristic pigment, he regarded as being of great importance. Septic foci, especially in septic teeth, tonsils, nasal sinuses, and the appendix must be constantly remembered. In his own series of blood counts in such cases the speaker had usually found a leucopenia, the diminution affecting especially the polymorphs and thus producing a relative lymphocytosis and a secondary anaemia, especially a haemoglobinemia. He agreed with Sir Thomas Horder in the occurrence of leucopenia in very chronic streptococcal and in coli-typhoid-paratyphoid infections. He had also observed that injections of normal horse serum in such cases of leucopenia often brought about a rise to normal of the leucocytes or even a distinct leucocytosis.

Professor L. S. DUNCAN's paper was read in his absence. He was opposed to the view that ulcerative colitis and true dysentery were of necessity caused by the same specific organism. He felt that in all cases diagnosed as ulcerative colitis the following lines of investigation should be followed: (1) examination of the bowel by means of the sigmoidoscope; (2) bacteriological and protozoological examination of material from the floor of the ulcer or ulcers; (3) repeated examination of faeces; (4) examination of blood, more especially in relation to the presence of immune substances in the serum.

Dr. A. F. HURST said that Vedder and Duval, working under Flexner in 1902, found that epidemics of dysentery occurring in American institutions were caused by *B. dysenteriae*, and two years later Eyre showed that asylum dysentery in England was also caused by this organism. All attempts to isolate the bacillus from sporadic cases had failed, though in a small number of cases the blood had been strongly agglutinated by Flexner's bacillus. In diagnosis a growth within reach of the finger must first be excluded; then the sigmoidoscope should be used. Amoebic dysentery must still be considered even if examinations of the stools had been negative. He had seen a few cases in which this infection developed in England. An anaesthetic was only rarely necessary. The passage of the instrument did not cause pain unless the anal canal was inflamed, in which case a cocaine semple should be introduced a quarter of an hour before. If the sigmoidoscope were carefully introduced under visual guidance without inflation there was no danger. The few cases in which perforation had occurred had all apparently been due to the blind passage of the instrument. In ulcerative colitis the mucous membrane was bright red and thick; it bled easily when touched, and its surface was covered with blood-stained purulent mucus. The swelling of the mucous membrane was particularly noticeable in the normally thin Houston's folds. Ulceration might be slight or very extensive. Sometimes small islets of mucous membrane were left which, on rectal examination, might feel like small flat polypi. It was easy to mistake the floor of the ulcer for the surface of the mucous membrane. The ulcers were superficial, and had irregular, but not undermined edges. Their floor appeared greyish-yellow when wiped free from blood and mucus. The rectum and lower part of the pelvic colon were sometimes inflamed alone, but it was doubtful if the proximal part of the colon was ever involved without the pelvic colon and rectum. The differences between the sigmoidoscopic appearances of the mucous membranes in amoebic and bacillary dysentery were very marked; but the appearance of the mucous membrane in bacillary dysentery was indistinguishable in life, as Wilks had observed *post mortem*, from that of the sporadic ulcerative colitis occurring in England. In amoebic dysentery small round red elevations were seen on the otherwise normal-looking mucous membrane, corresponding to the collection of broken-down material in the submucous tissue caused by *Entamoeba histolytica*. In the centre of each elevation was a depressed yellowish ulcer caused by the rupture of the submucous abscess through the mucous membrane. The speaker had obtained remarkably good results through the intravenous injection of large doses of polyvalent antidysenteric serum. These results were not due entirely to the use of horse serum, but were definitely specific. In one similar case he had tried large doses of horse serum. No improvement resulted, but the administration of antidysenteric serum after a week's interval led to the usual



rapidly favourable results. He generally began with an injection of 40 c.c.m. intravenously, followed on consecutive days by injections of 60, 80, and 100 c.c.m. It might be necessary to repeat the maximum dose two or three times. A rise in the patient's temperature, a profuse erythematous rash, pain and swelling in the joints, often indicated a severe reaction which usually only lasted a few hours and never longer than a few days. The reaction was less likely to occur if 15 grains of calcium lactate were given three times a day the day before and during the days of treatment. Precautions against anaphylaxis were taken in patients who had previously had serum or in one who was subject to asthma. He had used this treatment in about ten cases. Very rapid improvement had always occurred, though in one case in which appendicostomy had been performed some months before it was incomplete. A secondary streptococcal infection had apparently become grafted upon the original dysenteric infection, as complete recovery only took place after the removal of the teeth, which was followed by a temporary severe local reaction. An attempt to treat this patient with a vaccine prepared from streptococci isolated from the stools had to be given up owing to the violent reaction which followed the injection of only a quarter of a million bacteria. His colleague, Dr. J. A. Ryle, obtained an equally satisfactory result in one case under his care. The treatment failed in two, but in both of these he recognized the ulcerative colitis as being of a hypertrophic character quite different from the ordinary type, so that in all probability it was caused by a different infection. One of these cases died shortly afterwards from perforation, which rarely, if ever, occurred in the usual form of ulcerative colitis, and in the other an appendicostomy, which was subsequently performed, led to no further improvement. In most cases the improvement was as rapid as that of amoebic dysentery with emetine, and epidemic bacillary dysentery with intravenous antidyenteric serum. In his first case the patient was so ill when he first saw him that he advised an immediate appendicostomy. In spite of this he went steadily downhill, and a fortnight later, when the first injection was given, his condition appeared to be almost hopeless. But in three days the blood had disappeared from the stools, in five the sigmoidoscope showed that the mucous membrane was entirely free from ulcers though still a little red, and in ten days the stools were normal and the mucous membrane was perfectly healthy, though the ulceration before the first injection was the most extensive he had ever seen. Treatment by rest, diet, albargin injections, and charcoal was of great importance before the introduction of serum treatment, but recovery was very slow. He had been inclined, therefore, till three years ago to advise appendicostomy as an additional measure in all severe cases. Since he had used large doses of serum he had not found it necessary to advise appendicostomy in a single case, and only occasionally had he used albargin injections. There were some cases, as in the two of Dr. Ryle's, in which the pathology was different and in which other methods of medical treatment with appendicostomy would be required. No case could be regarded as cured until the sigmoidoscope showed the mucous membrane to be perfectly healthy. Then the stools must be kept soft by paraffin or saline aperients for several weeks until the newly formed mucous membrane had overcome its original vulnerability to mechanical irritation. The sigmoidoscope should be used by every physician.

Sir CHARLES GORDON WATSON felt that antidiphtheritic serum had not yet been given a fair trial. Appendicostomy was the operation of choice. If this operation was performed early enough it offered a sure cure. But on no account should the appendicostomy be closed too early. He preferred flavine for his washes. The primary focus should be carefully sought, and, if discovered, should be treated.

## TREATMENT OF DIABETES WITH INSULIN.

At a meeting of the Edinburgh Medico-Chirurgical Society on May 2nd, with the President, Sir ROBERT PHILIP, in the chair, a communication was given by Professor J. C. MEAKINS, in collaboration with Mr. W. ROBSON, Dr. C. G. LAMBIE, and Dr. H. W. DAVIES, on the treatment of diabetes with insulin.

Professor Meakins introduced the subject by describing the discovery of insulin, referring to the work of Scott, Banting, and Macleod. Mr. Robson then described in detail the chemical processes involved in the preparation of insulin, its chief sources being the pancreas of the ox, sheep, or pig. Dr. Lambie dealt with the effect on the blood sugar curve in animals and also with the standardization of dosage. In the experimental work rabbits were the animals employed. Charts were shown indicating the effects on the blood sugar curve of injections of insulin; where the blood sugar fell to about 30 mg. per cent. harmful symptoms, similar to those produced by an overdose in man, were observed; the animals became somnolent and developed twitchings, followed by convulsive seizures and coma. By the injection of glucose, 3 grams in 10 c.c.m. of water, these symptoms were speedily relieved, otherwise death occurred. As regards standardization of dosage, as there were no means of determining this chemically, it was necessary to rely on biological experiment. In animals, however, great individual variation in susceptibility was observed. To overcome this it was necessary to use at least three animals of the same weight and whose reaction had already been tested. The animal was starved for twenty-four hours preceding injection, and the blood sugar estimated immediately before and two hours after injection. The dose which produced convulsions within four hours or which would reduce the blood sugar to convulsive level was known as "one rabbit dose." This was equivalent to four "American" units. The human dose was two and a half rabbit doses or ten American units. Dr. H. W. Davies then showed numerous charts illustrating the effects of insulin with or without glucose on the blood sugar curve of normal man and of diabetics, and its effects on acidosis and lipaemia. In normal man ten units of insulin produced a comparatively small drop in blood sugar as contrasted with a marked fall in the diabetic, this last being accompanied by a pronounced rise in the alkali reserve. Professor Meakins then dealt with the effect of insulin on carbohydrate metabolism in diabetics, demonstrating how its administration increased the retention of carbohydrate. He also spoke of the possible dangers of the drug, if the blood sugar content were allowed to fall too low, this being indicated by somnolence, delirium, twitchings, followed by convulsions and coma. These symptoms were most apt to occur four or five hours after the previous meal, when the carbohydrate was used up and the effect of insulin remained. Relief was at once obtained by the intravenous injection of glucose. Patients going out should be warned of the nature of these symptoms, and be instructed to carry some carbohydrate with them—an oatcake or a lump of sugar would do. The importance of combining insulin with dietetic treatment was emphasized. Finally, the beneficial effects of treatment with insulin were mentioned. There was an increased sense of well-being and, apart from oedema, a prompt increase in weight. The introduction of insulin made operation on the diabetic possible.

The communication was discussed by the President, Dr. CHALMERS WATSON, and Dr. KEEPIE PATERSON.

## Organization in the Treatment of Lupus Vulgaris.

A communication was read by Dr. ROBERT AITKEN on the benefits of organization in the treatment of lupus vulgaris. Dr. Aitken mentioned that the difficulties of treating lupus were greatly enhanced by the lack of control over the patient. A clinic at which only lupus patients attended was instituted to minimize this difficulty, and the method of controlling the attendance of the patients was indicated. Such a clinic had advantages for the physician and also for the patient. The physician could compare the value of the various remedies more thoroughly, while the moral effect of such a clinic on the patient was hardly to be exaggerated. Another advantage was the ease with which other investigations could be carried out. The treatment carried out at the clinic was next described, special reference being made to tuberculin injections. The results of treatment at the clinic were gratifying, the greater number of the patients being much benefited even when the attendance had been only for a short time. Statistics of the cures before and after the institution of



the clinic were given. The communication was illustrated by lantern slides showing the results of treatment in a few representative cases.

The PRESIDENT agreed as to the value of tuberculin, and made a plea for the percutaneous method of administration. The paper was also discussed by Dr. FREDERICK GARDINER, who spoke of the use of the arc lamp, and by Sir NORMAN WALKER. The latter emphasized the importance of early diagnosis and of perseverance in treatment, and said that the patient must be impressed with the seriousness of the disease and required to attend regularly. He strongly condemned the employment of x rays in treatment.

### THE COLLOIDAL ALKALINE RESERVE OF THE BLOOD.

THE Section of Anatomy and Physiology of the Royal Academy of Medicine in Ireland met on May 4th, with Professor EVART, in the absence of the President of the Section, in the chair, when Professor T. H. MILROY read a paper on the colloidal alkaline reserve of the blood.

Professor Milroy said that it was well recognized that the main alkaline salt of the blood plasma was sodium bicarbonate and that the steady reaction of the blood depended upon the constancy of the ratio of the free carbonic acid to the bicarbonate. The means by which living organisms maintained this ratio had attracted much attention, especially in regard to the renal and respiratory regulator mechanism. In addition to these modes of regulation there was another which undoubtedly played an important part—namely, the colloidal alkali store of the blood proteins. Many years ago it was recognized that on passing carbon dioxide through blood serum, and still more when the gas was passed through whole blood, the alkalinity of the fluid was increased. This increase was due to the removal of base from the plasma proteins and especially from the acid groups of the haemoglobin molecules. In this way, from one litre of plasma might be obtained 0.01 M base, and from one litre of whole blood 0.025 to 0.03 M base. Just as carbonic acid could remove base from these sources, other weak acids, such as cacodylic and even boric, were effective. The amount removed followed generally the law governing the distribution of bases between the competing acids in homogeneous solutions. The avidity of the acids for base was determined by their acid dissociation constants and by their respective concentrations. The blood colloids were removed by a method of ultra-filtration through thin collodion plates under pressure. The ultra-filtrates so obtained were quite colourless and suitable for determination of the reaction by indicator and other methods, and were free from any disturbing effects due to proteins. For this investigation it was necessary to examine the ultra-filtrates of different blood specimens before and after the addition of different acids of various concentrations. The methods employed were explained and a brief account of the results obtained was also given.

The CHAIRMAN thanked Professor Milroy for his kindness in coming to Belfast to present his important communication to the members of the Academy. Professor PRINGLE, in discussing the paper, speculated on the influence of the permeability of the stroma of the red corpuscles in affecting the fixation of acids. Dr. FEARON considered the possibility of a Donnan membrane equilibrium effect interfering with the alkali values of the ultra-filtrates. Professor MILROY, in reply, explained that he had eliminated the permeability effect by working only with laked blood. By a comparison of various ultra-filtrates, he had satisfied himself that no error was introduced by a Donnan effect.

Professor E. A. WERNER read a note on the precipitation of urea from urine. He said that when an equal volume of strong nitric acid was added to a 2 per cent. aqueous solution of urea, 59.1 per cent. was precipitated on standing as urea nitrate. A 4 per cent. urea solution similarly treated yielded 73.7 per cent. of urea nitrate. On the other hand, many samples of urine containing 2 per cent. and upwards of urea yielded no precipitate of urea nitrate when similarly treated. This was probably due to the influence of urinary colloids, since a 0.2 per

cent. gelatin solution would retard the precipitation of urea nitrate. This suggested a possible method for the determination of the colloidal matter in urine. The communication was briefly discussed by Professor SCOTT, Professor MILROY, and Dr. SPEARES.

Professor PRINGLE showed an apparent case of multiple ova in a single Graafian follicle from a rabbit's ovary. Instances of two and three ova had been previously recorded, but the present follicle appeared to contain fifteen, which made him somewhat doubtful as to their true nature. Professor SCOTT told of an occurrence of double ova in single follicles in a rabbit he had examined some years previously, and outlined the probable embryonic cause of such a condition. He could not, however, account for fifteen.

Professor DIXON exhibited sections of the earliest human embryo which he had encountered. The chief structures were described and illustrated by microscopic preparations and by diagrams.

Dr. FEARON demonstrated the benzaldehyde test for tryptophane, which could be applied to all proteins containing that amino-acid.

### GALL STONES.

At a meeting of the West Kent Medico-Chirurgical Society at the Miller Hospital, Greenwich, on April 13th, Mr. C. A. JOLL delivered a lecture on the diagnosis and treatment of gall stones. They might occur at any age, and he had had six patients under the age of 22—the youngest was 14½ years, and she had been treated as a neurotic for two years. Gall stones were common in the prime of life, and two-thirds of the cases were in women; frequently they were the result of infection. The symptoms were repeated bilious attacks, indigestion, flatulence, a feeling of undue fullness, nausea in the middle of a meal, sometimes a feeling of chilliness. The attacks had no relation to the time of taking any particular food. Half of the cases did not have biliary colic. Referred pain occurred at the point of the shoulder and the angle of the scapula, sometimes in the region of the lower right ribs. Robson's sign was elicited by standing behind the patient and pressing both sides under the costal margin, when pain occurred in the gall bladder. Jaundice was found in 21 per cent. of the cases. Pyrexia was uncommon, and when it did occur it was due to infection. In a small group of cases there was no pain, but obstruction came on suddenly; the gall stones in such cases were mostly single cholesterol stones unassociated with infection. Some cases had chronic indigestion and no pain, some had biliary colic only, some indigestion only. Medical treatment was futile. The intervention of the surgeon was necessary to prevent damage to the liver. Operation should be avoided in acute cholecystitis. Calcium was of use only when given intravenously; 5 c.cm. of a 10 per cent. solution was given for three days before operation. Drains should be inserted in all cases, and the cystic artery should be tied separately. Patients suffered no ill effects from the removal of the gall bladder; if it were left pain might return, but it should be left in chronic pancreatitis. Carcinoma was associated with stone. Drs. PURVIS, BUCHAN, HUDSON EVANS, PAYNE, KNIGHT, M. DAVIDSON, WHITE, BAIN, and QUINN took part in the subsequent discussion.

### CYSTOSCOPY AND PYELOGRAPHY.

A MEETING of the Liverpool Medical Institution was held on April 26th, with the President, Professor J. HILL ABRAM, in the chair, when Mr. F. STRONG HEANEY read a short paper on cystoscopy and pyelography. Mr. Heaney briefly reviewed the present position of cystoscopy and pyelography in the diagnosis of diseases of the bladder, ureters, and kidneys. He showed by means of a series of lantern slides how cystoscopy by itself excluded the bladder and localized one or other kidney as the active septic focus in certain cases of chronic pyuria. He pointed out that in the absence of tubercle bacilli in the urine cystoscopic examination in conjunction with clinical signs enabled one to make a definite diagnosis of tuberculous



kidney. The appearance at the ureteral orifice in cases of intramural ureteral calculus altered when the stone remained a considerable time *in situ*. In some cases of hydronephrosis it was not possible, he said, to demonstrate the condition by aspiration, whereas a pyelogram might successfully overcome the difficulties of diagnosis. In cases of obstruction the appearances of the ureterogram or pyelogram varied according to the level of the obstruction. He showed how a ureterogram differentiated between a phlebolith or mesenteric gland and a ureteral calculus, and how the normal pyelogram enabled one to exclude the possibility of a kidney condition in favour of other intra-abdominal lesions.

Mr. J. ST. GEORGE WILSON read a note on bronchopneumonia in a stillborn foetus associated with maternal death.

The mother was a 14-para, aged 49; all previous labours had been normal. The membranes ruptured thirty hours before the onset of labour, and the first stage occupied three hours. Forceps extraction failed. As the cord was prolapsed and pulseless the foetus was perforated, but there was still failure to deliver. The mother died five and a half hours after the onset of labour, owing to shock.

The foetus weighed 4.72 kg.; bronchopneumonia was demonstrated in both lungs, and streptococci were found in the alveoli and cultured from the spleen. The reaction in the lungs was so marked that the inference drawn was that pneumonia commenced before the onset of labour, and it was surmised, in the absence of post-mortem examination, that foetal infection was a contributory cause to, if not the sole cause of, the sudden death of the mother.

Dr. NORMAN B. CARON stated that caution was necessary in assuming that micro-organisms found in a foetus which had died during labour were responsible for any pathological lesion discovered. This was especially true when perforation had been performed.

Dr. J. MURRAY BLIGH read a paper on unexpected death in children. He discussed in particular its relation to lymphatism and the clinical signs indicative of that condition.

## Reviews.

### DISEASES OF THE GUMS AND ORAL MUCOUS MEMBRANE.

IN *Diseases of the Gums and Oral Mucous Membrane* Sir KENNETH GOADBY summarizes the results of many years of clinical and laboratory observation and research. It is interesting, therefore, to find him emphatically endorsing the opinion that "pyorrhoea alveolaris" is primarily a disease of the gums, owing its initiation to infection of the gum tissue around the necks of the teeth, and beginning as a mild but chronic infection of the gingival margin. He does not, however, belittle the predisposing factors. On the contrary, arguing from the analogy of scurvy, beri-beri, and rickets, and from the alveolar bone and gum changes found in dogs fed on a "deficiency diet," he is inclined to credit vitamin deficiency with an important part in the production of pyorrhoea. The suggestion may be valuable, but so far it is only a suggestion, and the author has not attempted to indicate where the deficiency is to be looked for, although he refers specifically to peeled potatoes.

Throughout the book there are frequent proofs of originality of thought and close clinical observation. As instances of the latter we may quote his description of the gums in lymphatic leukaemia and of the mouth in sprue; as an instance of the former his interpretation of certain x-ray appearances may be cited, though it probably runs counter to the opinion of most radiologists. Pathologists may ask what is meant by "acute hypertrophic gingivitis."

The chapter on diagnosis contains many useful passages. Perhaps the most interesting is a table of blood counts contrasting the blood changes found in early suppurative periodontitis (pyorrhoea) with those found in later stages accompanied by periarticular rheumatism, or by rheumatoid arthritis. The author insists on the use of a hand glass in examining the gums, and on the value of microscope

smears to determine the origin of pus. In discussing disease originating from mouth affections the suggestion is made that, so commonly are joint diseases due to chronic streptococcal infections, were a satisfactory polyvalent antigen evolved vaccination against streptococcal arthritis would become as common as vaccination against small-pox. Considerable importance is attached to the use of an antigen prepared from the infecting mouth organism before any extraction of teeth, and cases of "delayed infection" are cited in which it is suggested that the explanation is a subinfection due to the extraction of teeth. Such cases might be avoided by previous immunization, but we do not get a very clear idea of how to select the proper organism from the brief account the author gives of this important point.

In the chapter on periodontal disease Sir Kenneth Goadby expresses strong dissent from the view that pyorrhoea is a disease arising around the apices of the teeth and of a non-inflammatory nature. The microscopical appearances which have been invoked in support of this view he finds equally explicable as the result of an irritant and compares them to the changes found in the tissues in the immediate neighbourhood of the advance of gas gangrene. He points out also that in the deep pockets of "pyorrhoea" there are always considerable numbers of anaerobic bacteria, especially bacteria associated with Vincent's angina or necrotic stomatitis.

Though, perhaps, interest and criticism will chiefly centre round the author's views on periodontal infection ("pyorrhoea" to the vulgar), there are other chapters also which will challenge attention. Those on ulcerations of the gums, on special diseases of the mouth and gums, and on diseases with oral symptoms are of great interest; they are all written from personal observation. It is not quite clear why tumours, both innocent and malignant, should be included under ulcerations of the gums, and it may be noted that a ranula has perhaps other modes of origin than a blocked sublingual duct.

Throughout the book will be found notes and indications for treatment which cannot fail to be of interest and use to the practitioner, dentist, or doctor dealing with the conditions described. We doubt, however, whether many will be found bold enough to follow the advice given on page 117, to make punctures with the electric cautery into the cancellous interdental bone for the cure of early patches of rarefying osteitis. The work of others is freely quoted and references given.

The book is rather marred by the not infrequent occurrence of somewhat obscure passages. We may cite "the tongue turns round and round in the minor axis of an ellipse, and its edges perform simple harmonic motion in relation to the position of the teeth"; and we may ask, how do inflammatory masses pass from the surface of a traumatic ulcer through the epithelium deeply into the tissues below?

But whatever its faults the book is well worth the attention both of the dentist and of the general practitioner.

### TROPICAL DISEASES.

WITH the appearance of Volume III, *The Practice of Medicine in the Tropics*,<sup>2</sup> edited by Lieut.-Colonel BYAM and Major ARCHIBALD, is completed. The text of the three volumes fills over two thousand five hundred pages, and in addition there is an Index of Authors and a General Index to each volume. An excellent portrait of Major-General Gorgas forms the frontispiece of the third volume, which contains also thirty coloured plates of considerable merit. A large number of authors contribute the different articles. To helminthiasis (Section XI) 280 pages is allotted, and as the subject is dealt with in considerable detail this is not too much, especially when we remember the many and various diseases to which infestation with worms may give rise. There may be some difference of opinion as regards the

<sup>1</sup> *Diseases of the Gums and Oral Mucous Membrane*. By Kenneth Goadby, K.B.E., M.R.C.S., L.R.C.P., D.P.H. Cantab. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1923. (Roy. 8vo, pp. xvi + 383; 106 figures, 8 plates. £2 2s. net.)

<sup>2</sup> *The Practice of Medicine in the Tropics*, by many authorities. Edited by Lieut.-Colonel W. Byam, O.B.E., R.A.M.C. (retired), and Major R. G. Archibald, D.S.O., R.A.M.C. (retired). Volume III. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1923. (Roy. 8vo, pp. xx + 335; 348 figures, 30 plates. Price of the complete work £4 4s.)



classification adopted and some of the names employed, but this was probably inevitable. In the section on disorders of metabolism is an article on deficiency diseases by Lieut.-Colonel Vedder dealing with scurvy, beri-beri, and epidemic dropsy. Apparently the right of pellagra to a place amongst the true deficiency diseases is still in doubt; it is discussed in a separate chapter by Dr. G. M. Niles, who is by no means emphatic on the subject, contenting himself with saying "the hypothesis that pellagra is caused by a deficiency is very plausible, and must be taken into consideration in subsequent studies of this disease." A chapter is given to typhus fever, though it is not strictly a tropical disease. In the section on diseases of doubtful causation a fascinating summary is given of the present state of knowledge with regard to *Rickettsia prowazeki*, and Dr. Byam in an interesting chapter on trench fever deals with bodies of this nature in their relation to that disease. The study of rickettsia bodies is full of promise and of great interest to all workers on these diseases. A chapter on another interesting disease, tsutsugamushi, or Japanese river fever, follows that on trench fever, and is from the pen of Professor Nagayo of the Imperial University, Tokyo. He states that the symptoms of the malady are suggestive of typhus and Rocky Mountain spotted fever, but present some distinct features. The nature of the causative agent is not yet established with certainty, though it is known that a mite *Trombicula akamushi* transmits the virus; the subject is illustrated by a very good coloured plate of the primary lesion or ulcer. The possibility that the disease is due to a rickettsia is not mentioned. Dengue and phlebotomus fever are classed among diseases of doubtful causation, and no mention as far as we can find is made of the *Leptospira hebdomadalis*, of Japanese seven-day fever, nor of Whittingham's discovery of leptospirata in phlebotomus fever. Perhaps the work went to press before these observations were published. The subject of diarrhoeas in the tropics is treated in the section on regional diseases, though why it should be placed here is not very clear. Ophthalmology, the heart in chronic tropical disease, skin diseases, and diseases of women are all dealt with. The section on surgery is illustrated by some wonderful photographs of tumours and of an extraordinary example of Egyptian splenomegaly. In such a large and massive work as this slight mistakes in spelling and so on are difficult to avoid, but on the whole they are wonderfully few, and those that have been observed are not perhaps of extreme importance. Contentious matters arise in some of the articles, but the authors may reply, "Quot homines, tot sententiae." The standard throughout the three volumes is of the highest and the articles have been written by men thoroughly conversant with the subjects they have dealt with. The work will, we believe, become the standard book of reference on the subject throughout the English-speaking nations. All that remains is heartily to congratulate the editors on the completion of their laborious though interesting task, and to assure them that the hope they express that they have compiled an authoritative work which will familiarize students with the names, work, and lines of thought of many of the leading tropical investigators is well founded.

*Framboesia tropica (Parangi of Ceylon)*<sup>2</sup> is the title of a useful little monograph on yaws, by Dr. R. L. SPITTEL, F.R.C.S., Surgeon to the General Hospital, Colombo. In the preface he states that it professes to be nothing more than a clinical study of framboesia, or parangi, as met with in Ceylon, and that historical and experimental data are omitted. There are no chapters nor index, the whole being contained in some sixty pages. Even so, an index would have been of value. The photographs of the disease are the main feature of the book. They are not only numerous but of excellent quality and illustrate the points of the disease in an admirable manner. Fig. 23 (p. 31) very much resembles gangosa, a disease not admitted by all to be tertiary yaws. Students of the subject will be interested in the book.

<sup>2</sup> *Framboesia tropica (Parangi of Ceylon)*. By R. L. Spittel, F.R.C.S. Eng. London: Baillière, Tindall, and Cox. 1923. (Demy 8vo, pp. iv + 59; 39 figures. 5s. net.)

The fifth edition of DANIELS and NEWHAM's *Laboratory Studies in Tropical Medicine*<sup>4</sup> is in its style and general tone unchanged, but the text has been revised and some new diagrams and figures inserted. The number of pages remains much as before, but there are now twenty-nine chapters instead of twenty-four, with an appendix. Two chapters are given to normal blood and its study, one to abnormal blood conditions, one to blood plasma and serum, and three to protozoa in the blood. The term "intestinal parasites" has been dropped; they are considered under the heading of helminthic parasites. Insects are dealt with in eight chapters, and the last chapter is a survey of malaria. It will thus be seen that a large amount of material is dealt with, and in fact the realms of bacteriology, protozoology, helminthology, and entomology are all explored in a more than cursory manner. The work is intended especially for the student taking out the course at the London School of Tropical Medicine, and for those preparing for the Diploma of Tropical Medicine and Hygiene. In such a work the greatest accuracy is necessary, as otherwise mistakes may be perpetuated. An analysis of many of the scientific names that occur throughout the text shows that the rules of zoological nomenclature have not been strictly adhered to. Most of these lapses, which will grieve the purist, occur in the part dealing with the helminths. *Schistosoma* is rendered *Schistosomum*—a mistake; *buski* should read *buskii*; *Taenia echinococcus* (p. 304) should be *Echinococcus granulosus*; *gnathostomum* should read *gnathostoma* (p. 33); and the name *oxyuris* has been changed to *enterobius*. The generic name of the chigger is now, as pointed out by Rothschild, no longer *dermatophilus*, but *tunga*, and so on. The method of performing the Wassermann reaction described on pages 112 to 118 is not one of the four standard methods recommended in the Medical Research Council's report on the subject; one or all of these should be given in a future edition, so that the worker may make his choice of an accurate and thoroughly reliable method. In future editions it would, we think, be an advantage to put the headings in darker and heavier type, as this expedient would render it easier to pick up and remember the special points. The chapter on intestinal protozoa is now illustrated by Dobell's figures of the intestinal amoebae and flagellates, which are, of course, excellent; there are also many other diagrams and some useful coloured plates. There is room, then, for improvement in certain directions, for a student's handbook should be, above all things, strictly accurate, and it is with the intention of helping the authors that we have made these observations. Speaking generally, the new edition is a thoroughly practical guide to the student of tropical medicine and is sure to maintain the popularity previous editions have enjoyed.

#### THE BLOOD SUPPLY TO THE HEART.

AN inquiry into the circulation of the heart in its relation to age periods and pathological variations has led Dr. Gross, in his monograph entitled *The Blood Supply to the Heart*,<sup>5</sup> to present us with a work that has outstepped its original limits, and to supply us with many facts which have a very definite clinical bearing.

The author has developed a technique for the preparation of his specimens which has given excellent results, if we may judge by the numerous photographs which illustrate the book. For general purposes barium sulphate gelatin has been used as the injecting medium, after which the hearts were x-rayed, then cleared, finally dissected and sectioned. For special purposes, as for the capillaries, carmine gelatin has been used. Full details of the methods are given.

Two chapters deal with the blood supply to the auricles and ventricles. The supply to the auricles is specially prone to variation, so that the picture of the average

<sup>4</sup> *Laboratory Studies in Tropical Medicine*. By O. W. Daniels, M.B. Camb. F.R.C.P. Lond., and H. B. Newham, O.M.G., M.D. Durh., M.R.C.P. Lond., D.P.H. Camb., D.T.M. and H. Camb. Fifth edition. London: John Bale, Sons and Danielsson, Ltd. 1923. (Demy 8vo, pp. xiii + 576; 184 figures, 7 plates. 25s. net.)

<sup>5</sup> *The Blood Supply to the Heart*. By Louis Gross, M.D., C.M., Douglas Fellow in Pathology, McGill University. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1923. (Imp. 8vo, pp. xvi + 171; 29 plates, 6 figures. 25s. net.)



auricular supply cannot be given. Thus in 44 per cent. of cases both auricles received their chief supply from the right coronary; in 36 per cent. from both coronaries; and in 20 per cent. from the left coronary. The supply to the ventricles is more constant, though no clear line of demarcation can be drawn owing to the overlapping of the arteries and to the profuse and abundant anastomoses. In general the right coronary supplies the whole of the right ventricle with the exception of the left third of the anterior wall, and also the right half of the posterior wall of the left ventricle and the posterior part of the intraventricular septum. The left coronary supplies the remainder. The blood supply to the neuromuscular tissues receives separate attention. A special supply is described, though the supply from the two coronaries is variable. Thus the *s-a* node is supplied by the right vessel in 60 per cent. of the cases, while the *a-v* node, the bundle, and main branches receive blood from the same vessel in 92 per cent. of the cases.

The subject of endocarditis is illuminated by the author's study of the vascularity of the valves and the discussion of previous work along similar lines. It is shown that the vascularity and musculature of these structures diminish as age advances, and few cases have been injected after the age of 30 years; the aortic cusp of the mitral valve is the last to lose its blood vessels; in foetal hearts the blood supply is greater on the right than on the left side. A discussion of the possible connexion between these facts and the relative frequency of valvulitis in early life, the special liability of the mitral valve to be affected, and the right-sided valvular defects of the newborn, is very suggestive, more particularly when related to the view that the infection comes by the coronary supply.

The blood supply of the heart at different ages is discussed, and some interesting facts are brought to light. Dr. Gross sees in the increasing vascularity of the adipose tissue as age advances something approaching a compensatory mechanism, as it may function as a source of supply to the underlying muscle.

The illustrations are very well produced, but just because of the wealth of detail a pointer in some of them would have added to their value. The book will take its place among the classics in this subject.

#### A CONSTELLATION OF THE NORTH-EAST.

In *Viri Illustres Universitatum Abredonensium*,<sup>6</sup> W. E. McCulloch, himself a medical alumnus of the ancient seat of learning, has compiled a little volume that every Aberdeen graduate and student should have in his possession, if for nothing else than to remind him—if so be he needs the reminder—that he is one of a goodly company. Dedicated "To my Fellow-Students," the volume opens with a modest preface in which our compiler, after due acknowledgements to the University librarian, Mr. P. J. Anderson, and Professor J. Arthur Thomson, states that, having considered biographical notices of about 700 of "our graduates, alumni, and teachers," he has only included some 280 of these in his final selection. For inclusion in the list he has applied the tests: "Did the subject lead? Did he set men thinking? Did he add to the sum of human knowledge or help to preserve it?" And Mr. McCulloch further states that he looks on his work as "merely a stop-gap until some graduate shall arise who will devote the requisite energy and ability to the full unfolding of these half-cut pages in our great records." But he may rest content, meanwhile; for he has well and truly laid the foundation stone of that granitic edifice which he hopes later to see rear its head.

The biographies are assembled under four headings—Science; Theology; Literature, Art, and Philosophy; and Public Services. Medicine, for some obscure reason, is slumped in along with Science—all the more strange as Theology is deemed worthy of a section to itself; but this may simply be an evidence of the hereditary, ingrained Scots respect for the pulpit. Amongst his medical men he deals with John Abercrombie (1780-1844), a native of

Aberdeen and M.A. Marischal College, 1800, the famous teacher in the Edinburgh medical school; Francis Adams of Banchory-Ternan (1796-1861), M.A. King's College, 1813, the well known country practitioner and classical scholar, to whom "Rab" pays a glowing tribute under "Our Gideon Grays" in *Horae Subseivae*; his son Andrew Leith Adams (1827-1882), M.A. 1846, M.B. 1848, F.R.S., who, after serving in the Army Medical Service, became Professor of Natural History at Queen's College, Cork; Sir Andrew Clark (1826-1893), M.D. 1854; Sir James Clark (1788-1870), an alumnus 1803, and M.A. (hon.) 1848, Physician in Ordinary to the Queen (Victoria), and to whose advice is ascribed her purchase of Balmoral; Sir Patrick Dun (1642-1713), alumnus Marischal College, 1658-1660, a native of Aberdeen who went to Dublin in the far-off days when the expectation of life in that city was longer than it is now, and became its leading physician and President of the Irish College of Physicians; James Matthews Duncan (1826-1890), M.D. 1845; the academic Gregories, of whom James *secundus* (1753-1821) and John (1724-1753) were Professors of Medicine in Edinburgh after being teachers of medicine in Aberdeen; Sir James Mackintosh (1765-1832), M.A. Marischal College, 1784, and M.D. Edin., 1787, who forsook medicine for law, was recorder of Bombay, and later a Liberal M.P.; Sir Patrick Manson (1845-1922); Sir James McGrigor (1771-1858), M.A. Marischal College, 1783, M.D. Edin., 1884, Director-General of the Army Medical Department, 1815-1851, whom Wellington called "one of the most industrious, able, and successful public servants" he had ever met; and William Pirrie (1817-1882), M.A. Marischal College, 1825, M.D. Edin. 1829, the immortal "Baron" of much legendary lore, who was first Professor of Surgery at Aberdeen.

This little book deserves to have a wide circulation, not only in "Aberdeen an' twal mile roun'," but also amongst the many, born or educated there, who have migrated beyond the sacred radius.

#### VITAMINS.

THE large number of books dealing with vitamins and nutrition which have appeared recently may be divided roughly into two classes—reference works for research workers, and semi-popular works intended for those without special knowledge of the subject. *Vital Factors of Foods, Vitamins, and Nutrition*, by Mr. ELLIS and Professor ANNIE MACLEOD, one of the biggest volumes on the subject that has yet appeared, seems to be an endeavour to combine the two classes. The authors refrain as a whole from expressing their own opinion on problems, but give short statements of the results obtained by various authorities. This method unfortunately makes the book rather difficult to read, for the general result is somewhat reminiscent of a card-index. This must reduce the value of the book to those without special knowledge of the subject, more particularly as authorities disagree on an unfortunately large number of matters regarding vitamins; the general reader is not assisted by learning that a certain number of authorities believe one thing and an equal number believe the opposite.

From the point of view of the research worker the book suffers from the drawback that it contains very little about the work done during the last two years. This is, of course, an inevitable disadvantage attending the writing of a large book on a rapidly changing subject. The larger the book the longer it takes to prepare, and the more certain it is to be partially out of date by the time it is published. In the present case this is a rather serious disadvantage, for the present output of vitamin literature is something like one article a day, and about one-third of the total literature on the subject has appeared since the beginning of 1921. The book contains an appendix of thirty-four pages summarizing the evidence as to the distribution of vitamins in foodstuffs; about three hundred references are given and only about twenty of these refer to papers published in 1921 and none to papers published in 1922.

Similarly, in the chapter devoted to rickets we found no

<sup>6</sup> *Viri Illustres Universitatum Abredonensium*. Compiled by W. E. McCulloch. Aberdeen: W. and W. Lindsay. 1923. (Demy 8vo, pp. xvi + 175. Cloth, 4s. 6d. net; paper, 3s. 6d. net.)

<sup>7</sup> *Vital Factors of Foods, Vitamins, and Nutrition*. By Carleton Ellis, S.B., F.C.S., and Annie L. Macleod, Ph.D. London: Chapman and Hall, Ltd. 1923. (Med. 8vo, pp. xiii + 391; 22 figures. 2s. net.)



mention of the very important recent work upon the influence of light on this disease, which has made it necessary to revise many of the conclusions previously arrived at concerning the relation between vitamin lack and the occurrence of rickets. It may be replied that as it is obviously impossible to write a completely up-to-date textbook upon such a subject as vitamins, it is therefore unnecessary to lay too much stress upon the points mentioned above, but we feel that the volume under review rather falls between two stools; it is too much a summary of conflicting opinions to be of great service to the general reader, and the fact that it contains so few recent references reduces its value as a book of reference for research workers. The writers of the book are chemists, and it is therefore not surprising that the best chapters are those upon the stability, chemical structure, and methods for the concentration of vitamins. In the chapter devoted to "Concentrated preparations of vitamins" several proprietary preparations of vitamins are mentioned; the authors might have been rather more cautious in accepting the claims made for some at any rate of the preparations mentioned.

The chapters devoted to the action of vitamins in disease contains a good summary of the knowledge available down to the middle of 1921. In the chapter "Vitamins for the Baby" an account of the vitamin requirements of infants is given, but we are surprised to read the statement (p. 295): "In spite of the somewhat conflicting evidence it seems justifiable to conclude that a healthy child can develop normally on an exclusive diet of cow's milk, whether raw, pasteurized, dried, or condensed, provided a sufficient quantity can be fed." Presumably the word "exclusively" means without the addition of fruit juice, and while we are not prepared to assert that it is impossible for a healthy child to develop on an exclusive diet of condensed milk, yet we believe that the available evidence is practically unanimous in indicating that on such a diet scurvy or rickets will probably develop.

As we have indicated, there are numerous points in this book open to criticism, but it may in conclusion be said that the authors have succeeded in compiling an immense mass of material, and that those interested in research in vitamins will find in this volume a large amount of valuable information, particularly in the chapters dealing with the chemistry of the vitamins.

#### SURGICAL PATHOLOGY.

*Grundriss und Atlas der allgemeinen Chirurgie*,<sup>a</sup> by Professor Dr. GEORG MARWEDEL, dedicated to Professor Dr. V. Czerny, is a short textbook dealing with surgical pathology and bacteriology. It is well illustrated, containing about 30 coloured and 200 ordinary illustrations. We observe that many of these show advanced stages of disease, seldom seen clinically nowadays. Whether they have been copied from old textbooks is not stated, but if not they seem to suggest either that the early treatment of disease as a whole does not penetrate the remoter strata of the Bavarian populace as it does in this country, or that it is more conservative.

In the chapter on sepsis and antiseptics special emphasis is laid on the work and teaching of Lister. Under anaesthesia all the ordinary methods are discussed; cocaine is recommended for local anaesthesia, and tropacocaine for spinal anaesthesia. It is interesting to note that the gas and oxygen method is not mentioned. Wounds of all kinds are discussed in detail. The question of shock and haemorrhage is dismissed in a few pages. Saline infusion and blood transfusion are mentioned, but it is disappointing to find no account of the research work on this subject during the war. Fractures are treated with plaster and (according to the diagrams) by a complicated series of weights, pulleys, extensions, and counter-extensions.

The classification of tumours in many respects differs from ours. Among the fibromata are included the hard and soft varieties, the mollusca fibrosa of von Recklinghausen, keloids, and the various forms of elephantiasis. The illustration of "Kolossales Lipom des Nackens" rather

suggests a Tyrolean mountaineer with a permanently adjusted rucksack. The malignant tumours are classified into the sarcomata and carcinomata; among the former are grouped the peritheliomata, endotheliomata, and melanomata. Three varieties are given—the round, spindle-celled, and the myeloid. This grouping of the myeloid sarcomata is interesting because no reference is made to the non-malignant variety, although treatment by local resection is advised. Sarcomata of bone are divided into periosteal and myelogenous varieties. Rodent ulcers are placed among the carcinomata.

It is a pity that political venom should make its way into textbooks. Two spiteful references are made to the "disgraceful hunger blockade." It is regarded as a cause of non-puerperal osteomalacia and rickets, these various bone lesions being grouped under the heading of "Hunger Osteopathies." The greater incidence, severity, and mortality of the various forms of tuberculosis during the war is ascribed to the same cause.

#### NOTES ON BOOKS.

THE appearance of the fifth edition of CROSSEN'S *Diseases of Women*<sup>9</sup> is a satisfactory indication of the continued popularity of this book. In the reviews of the early editions we have indicated the main points of the work and expressed our high appreciation of its worth. The author in the present edition has subjected the text to extensive revision and has endeavoured to bring up to date the discussion of the x-ray and radium treatment of malignant disease, fibroids, and other pelvic conditions. There is also an interesting exposition of the employment of x rays in diagnosis by means of pneumoperitoneum, a method which is in vogue on the other side of the Atlantic for the moment, but which will probably disappear for all cases except some of sterility in which the patency of the tubes is dubious. Recent advances in pathology have also been incorporated in the text, as, for example, those with regard to the connexion between "endometrial" cysts of the ovary and adenomyomata or "endometriomata" of the recto-vaginal septum and elsewhere. Dr. Crossen's book is very beautifully produced and profusely illustrated, and we are confident that this edition will be as successful as its forerunners.

The forty-second volume of the *Transactions of the Ophthalmological Society of the United Kingdom*<sup>10</sup> comprises the proceedings of that society during its forty-second session, together with reports of the proceedings of the Oxford Ophthalmological Congress, the Midland Ophthalmological Society, the North of England Ophthalmological Society, the Irish Ophthalmological Society, and the Ophthalmological Society of Egypt. At the session of the Ophthalmological Society of the United Kingdom in May, 1922, the chief discussion was on industrial diseases of the eye, to which Dr. T. M. Legge, Mr. A. Bernard Cridland, Professor Edgar Collis, Mr. N. Bishop Harman, and the late Mr. Charles Killick contributed papers. The feature of the Oxford Ophthalmological Congress in July, 1922, was the discussion on the significance of retinal haemorrhages, opened by Dr. C. O. Hawthorne and Mr. P. H. Adams; the important paper contributed by Dr. Hawthorne was afterwards published in full in our columns (*JOURNAL*, September 16th, 1922, p. 495). The Doyne Memorial Lecture at the Oxford Congress was delivered by Dr. J. Burdon-Cooper, on the etiology of cataract. An interesting discussion also took place there on methods of operating for cataract, to which Sir Anderson Crichtett, Colonel Smith, Dr. K. K. Lundsgaard, and Mr. T. Harrison Butler contributed. The volume contains also reports of ophthalmological cases and pathological observations contributed to the various affiliated societies. There are many excellent illustrations.

*Flowers and Fancies*<sup>11</sup> is the title of a pleasant little book of poems by Mrs. CELESTINE LAVENS WEST, who shows a decided leaning towards the less elaborate forms of versification. The poems are marked by sincerity and sympathy, and their subjects cover a wide range—the countryside of Staffordshire and Northumbria, the fancies of children, Michael Collins, Einstein's theory of relativity, the seasons, and metempsychosis.

<sup>9</sup> *Diseases of Women*. By H. S. Crossen, M.D., F.A.C.S. Fifth edition, revised and enlarged. London: H. Kimpton, 1923. (Sup. royal 8vo. pp. xxx + 1005; 924 figures, 1 plate. 50s. net.)

<sup>10</sup> *Transactions of the Ophthalmological Society of the United Kingdom*. Vol. XLII. London: J. and A. Churchill, 1922. (Demy 8vo, pp. xlix + 409; illustrated. 30s. net.)

<sup>11</sup> *Flowers and Fancies*. By C. L. West. London: A. H. Stockwell, 1923. (Cr. 8vo, pp. 42. 3s. 6d. net.)

<sup>a</sup> *Grundriss und Atlas der allgemeinen Chirurgie*. Von Professor Dr. G. Marwedel. Zweite vermehrte und verbesserte Auflage. Munich: J. F. Lehmann, 1923. (Cr. 8vo, pp. xii + 454; 201 figures, 32 plates.)



## THE VOLUNTARY HOSPITAL SYSTEM.\*

BY

SIR RICHARD LUCE, K.C.M.G., C.B.,  
SENIOR SURGEON, DERBYSHIRE ROYAL INFIRMARY.

I HAVE chosen the subject of the Voluntary Hospital System because the maintenance of our hospitals is one of the most pressing social questions of the hour, and one which vitally concerns, not only the medical profession but the whole body of the community. No one who concerns himself at all with social matters can fail to be interested in the future of the hospitals.

The title "*Voluntary Hospitals*" has come gradually into use without any very exact definition of its meaning having been laid down. It has come to be applied generally to those hospitals which are supported by voluntary contributions as opposed to those on the one hand in which the patients pay for the treatment they receive, and those, on the other, which are supported by State or local government funds. It does not necessarily mean that all the work done in them is unpaid work, or that there are no patients in them who do not contribute to their maintenance.

The origin of these hospitals is largely lost in the mist of history, but with few exceptions they sprang up through the country during the latter end of the eighteenth or beginning of the nineteenth centuries by the benevolence of charitably disposed persons to provide that medical care and treatment which the necessitous poor could not provide for themselves in their own homes. With them came to be associated, in the larger centres, the medical schools in which medical students, no longer content with the training they could get by apprenticeship to older practitioners, could obtain organized instruction and practical experience under trained teachers of high repute. It became the recognized custom for a medical student during part of his curriculum to "walk," as it was called, one of the larger hospitals. Gradually as the State assumed control of medical education certain of these hospitals became the sole recognized places for the provision of the more professional parts of a student's training.

The control of the hospitals was vested in a body of governors, who were subscribers of a certain sum annually or donors of a lump sum, who themselves appointed a committee of their number to carry on the management. In those hospitals where any of the subscriptions come from the working class it has become usual to have representative governors for these subscribers and a definite representation of them on the board of management.

In the by-laws of most of these institutions there was originally a clause to the effect that only the necessitous poor were eligible for treatment. In our own Derbyshire Royal Infirmary, by a recent revision of the rules, it has been thought well to omit this clause. Since the foundation of the hospitals times have changed.

The advances of medical science have introduced many complicated and expensive forms of treatment, which can only be carried out in an institution fitted with costly apparatus, controlled by specially trained doctors, nurses, and assistants. Moreover, specialism in medicine has advanced to such a degree that a large number of diseases can now only be satisfactorily dealt with by the co-operation of several men who have made a special study of different branches of the work. Thus a surgeon, before undertaking a grave operation, often requires the assistance of a physician to elucidate certain medical aspects of the case, a radiologist to make certain x-ray examinations, and a pathologist to carry out special tests as to the working of the organs to be dealt with. This co-operation of medical men, or "team work," as it has come to be called, is of course available in a fully equipped general hospital, but elsewhere can only be obtained by running about to a number of specialists, an expensive business, only within the reach of those who are well off.

Further, surgical technique has become so complicated that a surgeon is very unwilling to perform serious operations except under the best possible hygienic surroundings and in rooms specially designed for the purpose, and with the help of assistants who are accustomed to his particular methods. This means that most operations are now performed either in the hospitals or in nursing homes, which from administra-

tive expenses are within the reach only of the comparatively well-to-do.

It has become necessary, therefore, for the large bulk of the community and not only the necessitous poor to find a refuge for the relief of their graver ailments in the voluntary hospitals. At the same time changes have been taking place in the social outlook which affect the hospital question in various ways. It has gradually been recognized that the State has large responsibilities to its citizens. First, in the matter of education, then in sanitation and preventive medicine, and finally in the provision of medical care and support for the workers in ordinary sickness, the State has felt it to be its duty to take control and ensure that adequate provision is made for the needs of the community. The State has already made itself responsible to some extent for the treatment of infectious cases, for tuberculosis, for venereal disease, for school children, expectant mothers, and infant babies. These departments of medicine have been taken over by the State one after the other until, for the mass of the community, comparatively little besides the medical, surgical, and special treatment provided by the voluntary hospitals remains outside the control of the State or local authorities.

Another concurrent change is the altered eye with which the mass of the people regard so-called charity. The industrial class no longer wish to be the objects of charity from another class, and yet are forced to take advantage of the institutions which were started and long maintained by that class. The result is that the voluntary hospitals are no longer maintained by the rich as a charity to the poor, and all members of the community are now taking their share in the work. But since the money is given as a free-will offering and without any definite right to benefits conferred on the subscribers, the voluntary and charitable nature of the system remains. Naturally and rightly, with their increased share in providing the funds, the industrial classes have obtained a greatly increased representation in the management of the hospitals.

That the voluntary hospitals have done their work well and that they have become more and more popular with the public that use them, I think, incontestable. They have fulfilled their function with credit to themselves and with benefit to the community. It is no failure on their part that has brought about the present financial difficulties, under which a large proportion of the hospitals in the kingdom are now working with an annual deficit. They are only suffering with the rest of the world from the tightness of money and increased cost of living produced by the war. It is a crisis which is likely to break some of them or seriously curtail their capacity for usefulness unless active steps are taken to restore their financial stability.

The easiest way, though difficult enough under the present conditions of high taxation, would be to obtain the necessary funds from the revenues of the State or local authorities. In doing this we should only be following the trend of the times. It has already been done in education and in several departments of medicine.

*Arguments for and against State Control.*

My chief object in bringing this subject before you is to discuss whether such a method would be for the good of the community.

To begin I will refer to the possible advantages of such a remedy.

1. In taking over the responsibility of providing hospital treatment for all those who need it, the State would be compelled by public opinion to provide full accommodation in the hospitals for all who demand it. This cannot be said to exist at present, though by careful use of the beds we manage to carry on without any great hardship to the individual.

2. The hospitals themselves, relieved of the present burden of financial anxiety, would be able to devote themselves more whole-heartedly to their administrative work. The responsibility for finding the money would fall on the broad back of the Chancellor of the Exchequer. The hospitals would only be concerned in seeing how much they could get out of him.

3. It might be thought that under unified State control it would be possible to co-ordinate the various medical services into a homogeneous whole and do away with a certain amount of overlapping, rivalry, and waste. To the orderly mind of the professional administrator and to the political reformer this might seem somewhat of an advantage, though I shall hope to show later that it is not all gain.

\* An address delivered to the Derby Rotary Club.



4. The financial burden would be distributed fairly throughout the whole community, and not rest on the shoulders of the generous, though the degree of fairness would no doubt be viewed differently by individuals just as it is now in other forms of taxation.

5. It would no doubt be said by some, though I cannot altogether agree, that under State control a higher standard of efficiency could be obtained by a system of inspection similar to that obtaining in education.

Now for the opposite side of the picture:

1. The practice of medicine is a combination of an art and a science. It is based on scientific knowledge, and in recent years science has perhaps become the predominant partner, but it is still largely an art. A large amount of medical treatment is based not on exact scientific lines in which the correct treatment follows the correct diagnosis as a matter of routine in the way that an omelette is produced by the proper mixture and treatment of certain ingredients. It is largely a personal factor. The best doctor is one who, with a good knowledge of the recognized scientific facts, by his individuality and intuition is able to apply his scientific knowledge so as best to suit his own capacity and the characteristics of the patient. It is not a rule-of-thumb business which can be controlled by acts and regulations, but a skilful handicraft working largely empirically with a just regard to the qualities of both doctor and patient. We might conceive of a time when all medicine would be reduced to a dead level of science, but that time has certainly not arrived yet. The human body, its constituents and its vital processes, are in many ways too complicated for our present knowledge. We still must work largely in the dark. This is what I mean by the art as opposed to the science of medicine. Now art is a shy bird. It lives on freedom. It cannot endure being fettered by rule and harassed by control. It soon begins to wilt in captivity. Whenever arts have been bound by rule they have deteriorated. Whether it be in painting, poetry, music, or architecture, all progress stops when individual freedom is checked; and so it is with medicine. State medicine will never be progressive medicine. It is individualism and freedom that have brought about progress. With State control in medicine, as in every other department that the State has touched, a system of bureaucratic control, both financial and professional, will inevitably be introduced. People will not work honestly for the State unless they are watched. The State does not expect it. With inspection freedom and individual enterprise will to a large extent disappear and progress in medicine will cease, just as it disappeared years ago under the control of the Church. I know this is an argument against all State control in medicine, and you may say I am preaching a retrograde movement, but it is not wholly so. Most of those branches of medicine which the State has hitherto taken over are those in which control is least harmful and in which there are special reasons, such as the public safety, why they should be controlled; but it would be particularly harmful in those institutions which have led the way in the new developments of the science and art of medicine as the voluntary hospitals have done.

2. State medicine is extravagant medicine. Even an M.P. does not work for the State for nothing, and very few State workers will do more than they are obliged for their money—they get no thanks if they do. Not only must every worker be paid, but an army of paid administrators, inspectors, and financial controllers must at once be superimposed on the workers to see that they do their work and do not spend too much money. How does this compare with the present management of the voluntary hospitals? No one will, I think, deny that at present they are run very economically, and yet there is no stint either in the domestic or medical department. At the Derbyshire Royal Infirmary the staff of 100 men in my time of over twenty years, been refused any means of treatment or apparatus which they have asked for; but the staff, because they have had the financial interests of the institution at heart, have been careful and reasonable in their requests. From my experience of State hospitals I am afraid that under State control the medical staff is not likely to be much interested in the economical working of the institution. Then, in the voluntary hospitals, the vast proportion of the medical work has been done by the medical men. Under the State this certainly would not be so. Through their Medical Association they have already stated that they will not do so. The payment of the medical staffs must involve a great increase to the expense of running the hospitals under State control.

3. A cut-and-dried scheme of State hospital medical benefit designed to prevent overlapping, by which patients would be obliged to go into the institution provided for them in the area in which they live, would do away with that wholesome spirit of competition which does so much to stimulate

the flagging energy and interest. You will remember that one of the chief points which was fought for at the time of the inception of the Insurance Act was free choice of doctor, and there is no doubt that this is a most important factor in keeping the medical man up to the mark professionally. If it is true of the individual medical man, it is equally true of the medical institution and its staff. If the limit of area of the Derbyshire Royal Infirmary was absolutely fixed and there was no competition between Derby, Nottingham, Burton, Sheffield, and Manchester, or even between the various hospitals in Derby itself, an important item which works for efficiency would be lost. It is perhaps an admission of human frailty that this is so, but it remains a fact that without competition human effort flags and the quality of work deteriorates.

4. There is what I call the Argument of Sentiment. This is a prosaic world and we are supposed to be a prosaic people, but sentiment still occupies a large part of our lives, and especially so in matters of health and sickness. The craving for sympathy is inherent in the human race, and is never more present than in times of illness. There is no doubt about its efficacy in mitigating the pain and misery that sickness causes, nor about the help that human sympathy gives in the actual cure of physical and mental disorders. Anyone who has seen the craving of a wounded man in a far-off land to get back to England and his friends, and the glow of hopefulness that lights up his whole being when he knows that he has been marked for transfer to the United Kingdom, could not fail to be convinced of the real curative power that sentiment has with the sick. There is no doubt that the voluntary system in our hospitals fosters this spirit of sympathy in the community. Those who give voluntarily, whether it be of their wealth or of their time and thought, cannot fail to have their sympathies drawn towards those for whose benefit they are giving, and an atmosphere will be produced in which there will be a blessing both for him that gives and for him that takes. Into this atmosphere, with its spirit of kindness and charity, the sick will enter trustfully and without dread, and from it they come forth filled with a spirit of gratitude. I am not saying that in State institutions kindness and sympathy are not to be found, but I am convinced that it cannot be the same thing in them with human nature as it is. With the voluntary system there comes, too, the pride of possession to those who support the hospital. The voluntary donor feels a personal interest in it and likes to see it popular and efficient. He rejoices to see his hospital a credit to his town and county. This feeling reacts on the staff and is distinctly stimulating. One cannot help comparing the pride and affection with which our voluntary hospitals are regarded by a large section of the community with the atmosphere of business-like apathy which surrounds hospitals supported by taxation as they are in foreign countries.

#### *Can the Voluntary System Survive?*

These are, to my mind, unanswerable arguments in favour of a voluntary basis of maintenance for our hospitals, but of course they count for nothing if the goodwill and generosity of the community is insufficient to provide and maintain sufficient accommodation to meet the needs of those who require treatment. If the necessary funds are not forthcoming from voluntary sources they must be found by taxation. The work cannot stand still; hospital treatment has come to be a vital part of the life of the nation, and must be carried on in its interests. But it will be a bad day if the fountain spring of charity ceases to flow in sufficient volume to maintain and distribute its full measure of the healing fluid. If force has to be added to maintain the pressure, like all forced pressure it will be wasteful, extravagant, and harsh in its action.

The question is, therefore, whether it will be possible in the future to maintain these great and growing services on a voluntary basis. Have we reached the limit of what can be got by the free-will offerings of the people, or must the residue be extracted forcibly by legislation? In my opinion the answer to this question must be met by another question. Do the people of this country really want the voluntary system to continue? Do they realize the advantages of it from the point of view of what they get by it and what they have to pay, and that under the State they will have to pay more for an inferior article?

If they fully realize this and set about an effort to maintain the present system it can be done. In some places, in spite of bad trade and high cost of living, it is being done now, and these places are just such manufacturing centres as our own, with a large working-class population who believe in their hospital and have made up their minds that it shall go on.

At the end of 1921 the Derbyshire Royal Infirmary had a deficit of £7,000 on the year's working expenses, besides a considerable amount due on the extensive building scheme just completed. At



the end of last year not only was there no deficit on the year's working, but practically the whole of the previous year's deficit had been wiped out, and only a comparatively small sum was still due on the building fund. And how had this been done? Trade was bad; taxes were as high as ever. It was the working men's contribution. They decided that the voluntary hospitals were necessary to them and they found the extra money. It was found with enthusiasm. With the increasing subscriptions the interest in the institution has spread widely.

It is evident that here, at any rate, the voluntary system is popular with the industrial classes. But though the maintenance of the hospitals on a voluntary system is now assured in most large industrial areas, it is not so everywhere, and a system of this kind must stand or fall by its weakest members.

It may be worth while to consider the views of some of the various groups in the State concerned with the question of the voluntary hospitals.

#### *The Cave Committee's Report.*

The Minister of Health appointed a committee in January, 1921, under the chairmanship of Lord Cave, to consider the financial position of the voluntary hospitals, and to make recommendations as to any action which should be taken to assist them. They reported in May of that year that in the hospitals of London there was a deficiency of £468,413, and in those of the rest of England and Wales of over £280,000; that since 1913 the income of these hospitals had risen by 67 per cent., but that their expenditure (chiefly due to increased cost of provisions, medical requisites, and wages) had increased by 138 per cent. They recommended that to set the hospitals on their legs the Treasury should, as a temporary measure, make a grant of £1,000,000. They stated that they were convinced that the voluntary system is worth saving, and that if it is worth saving any proposal for continuous rate or State aid should be rejected.

They also recommended the setting up of a Central Hospitals Commission under the Ministry of Health with local area committees under it to co-ordinate the work of the hospitals and to distribute any big central funds that might be forthcoming. They suggested various ways in which further funds might be made available, such as voluntary contributory schemes by workmen and employers, and various ways in which economies might be effected.

On the report of this committee the then Minister, Dr. Addison, expressed his agreement as to the importance of maintaining the voluntary system and set up the suggested Hospital Commission and its local committees, but with regard to the grant the Cave Committee had recommended, the Government followed the example of the unjust steward of the parable even to the exact proportion and sat down quickly and voted £500,000 instead of £1,000,000, making it a condition of grant to any hospital that an equal amount of new subscriptions should be found from other sources.

#### *The Labour Party's Hospital Policy.*

The Labour party, through their Advisory Committee on Public Health, have issued a programme of their policy with regard to the hospitals. Their proposals envisage a complete public medical service which shall include hospital treatment. They say, "No public medical service can be efficient that does not provide an adequate number of beds for those requiring institutional treatment, that the accommodation should be very ample." They estimate the present accommodation at 521,194 beds, and in their opinion think there should be 107,906 more. We all know that the present number of beds is insufficient, but such an increase would, in my opinion, be extravagant.

One of their points is that the hospitals are understaffed and that this is the cause of the overcrowding of out-patient departments and the long waiting lists for in-patients, and that the understaffing is due to the monopoly value of the appointments. There is, I think, an element of truth in this contention, but it is more or less inevitable with an unpaid staff.

They say that the one and only salvation for the hospitals of the country is State control and management, but almost in the same breath they testify to the magnificent work which has been done hitherto in the voluntary hospitals, and (as if not having the courage of their opinions of the necessity for State control) they recommend that the voluntary hospitals should be given the option of being taken over by health authorities or receiving grants from public funds conditional on efficiency and representation of the local authorities on the boards, but leaving to the boards complete control.

There is evidently a doubt in the minds of the promulgators of these proposals whether the bulk of the working population would not resent having their voluntary hospitals, which have grown into their affection, and which are in a very real

way under their control at present, taken from them and handed over to an unsympathetic bureaucracy. Perhaps, too, they are not really convinced that State control is the best system.

I hope this question of hospitals will never become a matter of politics. In the general tendency for nationalization of the big public services, I sincerely hope this vital service will be kept outside. It is not a question of popular control. In the hospitals to a large extent we have this already. The beneficiaries are already largely represented on the boards, and will be to a greater extent as the working class come to furnish a larger proportion of the cost. Under the State, the real controllers will be the Chancellor of the Exchequer and the officials of the Ministry of Health, who have little knowledge of local circumstances and scant sympathy with local requirements.

#### *The Medical Profession and the Voluntary System.*

Now as to the opinion of the medical profession, two large representative meetings of the members of the staffs of the hospitals from all over the country were practically unanimously in favour of the voluntary system, and the voice of the general body of the medical profession as represented by the British Medical Association is equally unanimous. This cannot be for any motive of financial gain, for if the hospitals were handed over to the State the members of the staffs would certainly have to be paid. It is because they know that it would be bad for the hospitals, and because they as individuals would lose their freedom of action and thought without which their whole work would be cramped and stultified.

Before concluding I feel that I must say a few words about the relations of the medical profession to the voluntary system. For long years practically the whole of the responsible medical work at the voluntary hospitals has been a free gift by the medical profession to the public, and the demands on the time of the members of the honorary staff have been steadily growing. It may surprise some of you to know that the average number of hours a surgeon on the staff of the Derbyshire Royal Infirmary has to devote to his work there is just about twenty hours a week, apart from any work that he may put in on committees of management. In the twenty years I have been on the staff the surgical work has practically doubled, and it is now work which can, in my opinion, only be undertaken by one who devotes himself specially to surgery. This demand makes a very big hole in one's working week and leaves no very big proportion in which to earn one's living. There are, of course, compensations. In the early stages it gives one the opportunity to learn special work by practical experience, and as one goes on to keep one's hand in. It also gives some advantage in the way of professional prestige and what was referred to in the Labour party programme as monopoly value. But it is a fairly big price to pay for these assets, involving a great amount of physical and mental stress which I doubt if many of us would be willing to give were it not that the work is intensely interesting and performed in the happiest of surroundings, free from petty controls and in an atmosphere of kindly feeling and good fellowship.

The reason why the medical profession is wedded to the voluntary system—although it would probably be better off financially under a State system—is because it knows that under the latter it would be subjected to all the irksome pettiness of bureaucratic officials who, to justify their existence, would be obliged to interfere whether they liked it or no, without benefiting the patient one single jot.

Under the voluntary hospital system as now administered there is not unnaturally a certain amount of feeling among some members of the staff that to some extent their services are being exploited—that a considerable section of the community are getting our services free who are able, and even quite willing, to pay something for those services. There is a dread, too, that with the increasing proportion of the community who get their treatment free the number left may not be sufficient to provide a living for the increasing number of doctors required to do the increased free work. These factors naturally keep consulting fees high and produce a system by which the well-to-do are taxed to pay for those who are not so well off. At a time when the hospitals are struggling for existence it is hard to devise a scheme by which the burden can be more evenly distributed.

The medical staffs have, however, been obliged to lay down that they shall receive a proportion of any funds received by



the hospitals for the treatment undertaken by the hospitals on behalf of public authorities, such as the Ministry of Pensions, the Ministry of Health, and the local health authorities. Further, it has been found necessary to give remuneration for some of the less well paid specialties, such as anaesthetics and x-ray work, in order to obtain the services of suitable men. In the future it may be necessary to extend this principle to some of the junior physicians and surgeons if the right class of men are to be obtained. But this will not, in my opinion, alter the voluntary nature of the bulk of the service which we have so much at heart.

I have not gone in any detail into the ways in which sufficient funds may be got to keep the voluntary system alive. I have contented myself with giving an exposition of the faith that is in me with the hope that it may stimulate public interest in the voluntary system and put off the day when these great institutions are handed over to bureaucratic control.

## PARENTS' PAYMENTS FOR MEDICAL TREATMENT OF SCHOOL CHILDREN.

THE Board of Education has issued to local education authorities a circular (1300 of March 16th, 1923) explaining its requirements in respect of parents' payments for treatment received by their children through the School Medical Service. The imposition of these charges is obligatory under the Education Acts, and "it is not open to a local education authority, in exercising their statutory powers, to adopt arrangements, or to the Board to approve arrangements, which make no provision for obtaining payment or for discriminating between cases in which parents are able or unable to make payment."

The provision contemplated by the Board as meeting the "reasonable requirements of the Act" includes the adoption of an income limit, below which treatment shall be rendered free, and of a scale of charges for the several forms of treatment provided by the authority—both the income limit and the scale to be adjusted in accordance with local conditions. As an example of the arrangements considered satisfactory a scheme is quoted providing for free treatment in the case of a family of two parents and three children where the total weekly income, after deduction of rent, does not exceed 50s. When this income is exceeded, minor ailments may be treated free for the first fortnight, and subsequently at a charge of 1s. for three or 2s. for six months' treatment. Operative treatment of tonsils and adenoids may be offered at 5s. to 7s. 6d., spectacles charged at cost price, and dental treatment at 6d. an attendance, or 1s. for the full treatment. Where wide variety of income exists it is suggested that some corresponding variation should be made in the charges, and it is expressly provided that the income scale adopted in respect of medical treatment should be less severe than that for the provision of free meals, and that investigation into the circumstances of parents should be confined to doubtful cases and as simple as possible. Finally, the Board is prepared to accept, at least for the present, schemes which provide free treatment for minor ailments, subject to the provision of satisfactory arrangements for payment for other types of treatment. In areas where no charge has hitherto been made, and it "is not easy to bring a complete scheme into force at a moment's notice," the Board will accept for the current year any scheme which marks a "reasonable advance" upon previous practice. The circular does not touch upon the vexed question of the definition of minor ailments.

The position indicated by this circular is of considerable interest. The statutory obligation to impose some charge upon all parents able to make any payment dates from 1909, whereas the obligation to provide such treatment, as opposed to the permission to do so, dates only from August 1st, 1919. Apparently what is termed in the circular "the clear intention of Parliament" in connexion with these payments has been to a great extent ignored, both by local and central authorities, over a period of some fourteen years. This being so, we may well inquire what the intention of Parliament really was, why it has been ignored, how far

the present policy is calculated to give it effect, and what will be the probable result of its enforcement.

It is perhaps fair to assume that in providing for payments by parents Parliament had in view one or all of three objects—to restrict treatment to the necessitous, to relieve the pressure on the public purse, and to provide for the case of parents who, unable to meet the full cost of treatment, may wish to contribute towards it according to their capacity. The explanation of the present activity lies, presumably, in the prevailing policy of retrenchment, and in the extension of facilities for treatment to children in secondary schools, many of whom are in more favourable economic circumstances. The experience of a local authority which has endeavoured during the last twelve months to give effect to the policy now laid down by the Board will serve to illustrate both the cause of past neglect of the obligation and the success likely to attend the attempt to make it effective. According to the report of the school medical officer for 1922, the authority, in adopting a scale of charges,

"had in mind two dangers attaching to a rigorous requirement of payment for treatment given: firstly, that such action would serve as a deterrent to obtaining treatment for an ailment in its early stages, and hence would tend to rob the School Medical Service of its main function—the prevention of disease by its early detection and treatment; and secondly, the fact that the sums recovered might not pay for the cost of collection."

The authority calculated that, assuming all parents to be capable of payment on the prescribed scale (a condition which does not, in fact, obtain), the maximum amount recoverable for the year would be about £250, whilst the expense involved in any system of inquiry as to income in individual cases would amount to about £80. Accordingly the adoption of an income scale was rejected in favour of an arrangement by which head teachers inform the school medical officer of all cases in which, in their opinion, the scale payments cannot be met. In all other cases parents receive a request for the amount due under the scale in respect of every child treated. Under this scheme the total amount received by the authority during nine months was £18 4s.

If this experience is typical (and the absence from the reports of school medical officers and those of the Board of Education and its chief medical officer of any indication of the total sum recovered each year in respect of treatment in areas where scales are actually in force is significant in this connexion) it would seem that the present policy is not calculated to meet the first end in view—namely, relief of the rates, with a corresponding decrease in the amount of the Treasury grant. On the other hand, the nature of the charges suggested demonstrates that there is no intention of using them as a means of inducing parents able to obtain necessary treatment privately to do so rather than utilize a service primarily intended for the necessitous. As regards those who may wish to pay according to their means, the object in view might perhaps be more simply attained by a system of voluntary contributions. Moreover, there is a distinct danger that parents actually making the scale payments may imagine that they are paying for the service rendered. It is to guard against this danger that some authorities have adopted an expedient referred to in the Board's circular—namely, the exhibition of a table showing the actual cost to the authority of each service rendered, with a box in which parents may place some contribution towards the difference between that cost and the scale charge. The plan seems rather clumsy, but, provided that in reckoning the cost of each service adequate allowance is made for establishment and administrative charges, it may be of some use.

In view of the difficulty of the whole position it may be asked whether the intention of Parliament in connexion with these payments is, after all, so clear as the Board suggests, and whether the present policy is indeed calculated to give it effect. If the answer to these questions is proved by the experience of the next twelve months to be in the negative, it may be hoped that some amendment of the law will relieve the Board of the thankless task of trying to enforce a policy which would seem not to work well in practice.



## British Medical Journal.

SATURDAY, MAY 19TH, 1923.

### IONIC MEDICATION AND THE CONSTANT CURRENT.

THE important place which galvano-therapy holds in modern therapeutics was indicated by the correspondence which followed the appearance in this JOURNAL of a paper by Dr. David Campbell<sup>1</sup> upon ionic medication. His main conclusion was that the amount of any drug introduced in an ionic state into the body by currents which can be used therapeutically is very small. He found that a drug, as soon as it is carried through the skin, is swept away in the blood stream, and produces its specific effect upon the system generally, and that there is therefore no local concentration. Nor is there any evidence of deep penetration; experimental evidence in animals is all against the belief that a drug penetrates farther than the subcutaneous tissue, and it seems quite clear that a similar state of affairs exists in man.

These conclusions, which Dr. Campbell based upon his own experiments and the results of several other workers, have been challenged by some correspondents; but a study of the literature reveals a really overwhelming mass of evidence in their support.

A belief has prevailed that it is possible by means of an electric current to drive drugs down directly into the muscles and joint cavities. The facts known regarding the rate of migration of ions in an electric current render it almost incredible that this can occur under therapeutic conditions, but in addition very careful tests made upon animals by Inchley,<sup>2</sup> and other results quoted by Turrell,<sup>3</sup> show that the ions do not penetrate directly beyond the subcutaneous tissues. How, then, are we to account for the fact that the many practitioners who resort to ionic medication have become convinced of its efficacy?

In the first place we have a very general consensus of opinion that the constant current is of great value in many conditions, and particularly in the relief of pain in such diseases as sciatica, neuritis, and fibrositis. The exact mode of action is unknown, but various possibilities may be mentioned. Dr. Campbell suggests that the action is simply by way of counter-irritation, and the therapeutic application of the constant current does produce irritation beneath the electrodes. This effect can be accounted for partly by the heat produced; the current is most concentrated beneath the electrodes, and the skin has a far higher resistance than any other tissue traversed; hence there is a maximal production of heat beneath the electrodes. Electrolytic effects in the electrodes also are capable of producing irritation, and such action will be most marked when irritant drugs such as salicylates are present; this may account for the superior results stated to be obtained when the electrodes are soaked in salicylates instead of salt solution.

Dr. Turrell, in a recent letter,<sup>4</sup> has suggested that the benefit is due to the heat produced in the tissues

by the passage of the constant current. The objections to this view are that the chief site of heat production must be the skin, and that many observers claim that in many cases the application of the constant current is followed by results superior to those produced by diathermy, although more heat is produced by the latter method. There can, however, be no doubt that heat production plays a very important part in producing the beneficial effects observed. Dr. A. R. Friel has suggested<sup>5</sup> that the important factor is electrical endosmosis, which causes a passage of fluid through the tissues towards the negative electrode. Such an effect can be produced in dead tissues, but it appears doubtful whether it can occur in tissues provided with an efficient circulation. Finally, it is often suggested that the current causes a stream of ions between the two electrodes, and that the cells are stimulated by the passage of these ions through them. The objection to this view is that the surface membranes of cells have a high resistance, so that in all probability nearly the whole of the current passes through the tissue fluids.

Our knowledge as to the action of the constant current is obviously very imperfect, and there is an unpleasant amount of truth in Dr. Turrell's<sup>4</sup> blunt comment: "When we consider that the constant current, the so-called 'ionic medication' or 'ionization,' is commonly ordered by medical men who have no knowledge of electricity or its mode of action, and that the treatment is generally carried out by those who have no knowledge of medicine or the nature of the disease they are treating, it is remarkable that benefit is so often obtained." That such a comment is possible seems to indicate that more regard ought to be paid to teaching electrotherapeutics in medical schools, for there is no doubt that the subject is becoming of increasing importance in practical therapeutics.

Moreover, many of the unsettled problems mentioned above should prove soluble by experiment, and it is to be regretted that more research is not carried out in this interesting and important branch of therapeutics. Dr. Campbell's paper was both interesting and valuable; it is a pity that such papers should have an additional value due to their rarity.

### INHERITANCE OF ACQUIRED CHARACTERS.

For something like a generation the belief that acquired characters are not transmitted to the offspring, reinforced by Weismann's hypothesis of the "continuity of germ plasma," has held sway. Those who ventured to believe otherwise went in danger of condemnation as heretics. Floods of printers' ink were expended in expounding the true doctrine, but most of the writing was *a priori*. For nearly a quarter of a century Dr. Paul Kammerer, a member of the staff of the institute for experimental biology in Vienna, has been working at the subject by experiments of a most laborious character, which seem to have been very carefully made and very cautiously interpreted. Little, however, was heard about them in this country until last summer, when a member of the Cambridge Natural History Society visited Dr. Kammerer, and studied some of the breeding experiments in progress. The visitor was particularly impressed by certain observations on Alytes, and eventually the Society invited Dr. Kammerer to come to this country; the lecture he gave in Cambridge has now been published.<sup>6</sup>

<sup>1</sup> David Campbell: BRITISH MEDICAL JOURNAL, 1923, i, 409.

<sup>2</sup> O. Inchley: *Journ. of Pharm. and Exp. Ther.*, 18, 241, 1921.

<sup>3</sup> W. J. Turrell: *The Principles of Electrotherapy*. Oxford Medical Publications, 1922, p. 11.

<sup>4</sup> W. J. Turrell: BRITISH MEDICAL JOURNAL, March 24th, 1923.

<sup>5</sup> A. R. Friel: BRITISH MEDICAL JOURNAL, March 17th, 1923.

<sup>6</sup> *Nature*, May 12th, p. 637.



In frogs, which pass the mating period in water, there appears shortly before that time on the inner fingers of the males a dark, rough, horny pad; in *Alytes*, which mates on land, no such pad appears; but if they are induced to mate in the water—by raising the temperature so that if they went ashore they would be dried up—certain changes gradually appear; among these is a pad limited to the inner fingers in the first season, but extending in subsequent breeding seasons to the other fingers, to the ball of the thumb, and even to the under side of the arm. On examining the skin of the thumb of the normal male it was found to be subject to an annual thickening, and it is characteristic of Dr. Kammerer's caution that in view of this natural tendency to pad formation he does not look upon this observation as affording a trustworthy example of the inheritance of acquired character, even though the pad appeared in four successive generations after the original stimulus of warmth was removed.

Setting these observations aside we turn to others which their author thinks may be regarded as crucial. They were made on an Ascidian, *Ciona intestinalis*. It possesses great powers of surviving mutilation and of reproducing parts that have been amputated. It has two tubes or siphons, water being drawn in by one and expelled again by the other. If the two siphons (inhalant and exhalant tubes) be cut off they grow again, and become somewhat longer than they were previously. By repeated amputations individuals were induced to grow very long tubes in which the successive new parts produced a jointed appearance. The offspring of these individuals had siphons longer than usual, but the jointed appearance has been smoothed out. "That is to say, the particular character of the regeneration is not transferred to the progeny, but a locally increased intensity of growth is transferred." Kammerer was able to go further. Weismann's doctrine of the necessary continuity of germ plasma had previously been shown to be subject to exceptions, and a further experiment made by Kammerer is very significant in this connexion. At the hinder end of *Ciona*, in the coils of the intestine, lies the generative organ, a hermaphrodite gland. If the whole of this hinder part of the body be removed, the front part regenerates and reproduces a new generative organ, so that the new germ plasma has been formed from somatic tissue. The long-siphoned Ascidian with regenerated germ plasma gave birth to progeny which were long-siphoned. It has been objected to other experiments that the operation, or the change of environment as the case might be, in some way exercised a direct influence on the germ plasma; in this experiment this objection does not seem to apply. The new long-siphoned individuals are the offspring of an animal with a new generative organ formed after the original operation on the siphons, so that that operation can have exercised no influence on the germ plasma.

Another series of experiments, made on *Salamandra*, yielded some very striking results, though not apparently so conclusive as those with *Ciona*. It is indeed significant that the most convincing result should have been observed in an organism such as *Ciona*, which is low in the scale of living things and may therefore safely be assumed to be the more plastic. Man is so highly specialized, and the same is, indeed, true of all the mammalia, as to be very little plastic. None of the instances of inheritance of acquired characters in man, though very many have been reported at one time or another, can be said to fulfil rigid scientific requirements.

## THE GROUP CLINIC.

LAST week the Westminster and Holborn Division of the British Medical Association held a meeting at the house in Brook Street, W., where a group clinic has recently been established. The occasion has afforded us an opportunity of giving (p. 876) an account of the interesting experiment in the organization of medical practice which is being made by a group of medical men, including consulting physicians and surgeons and specialists with the co-operation of a general practitioner, who is understood to have originated the idea. It is an attempt to introduce the group clinic system, which has existed in the United States of America for some years, with such modifications as conditions of practice in this country may render necessary. The scheme was outlined by Sir Thomas Horder in an address he gave to the Abernethian Society in January, 1922. Briefly it consists in housing under one roof a group of consultants and specialists, and the experts and equipment for pathological and radiographic investigation required in modern diagnosis. When the circumstances permit the scheme to be carried out to the full the patient is examined by such consultants as seem necessary in his individual case, special investigations are made if necessary, and an inclusive fee charged. It is hoped that in this way there will be a saving of time, money, and worry for the patient without any detrimental effect on the income of the experts forming the group. Sir Thomas Horder has answered in advance several of the objections raised against the proposal, but it is possible that in the process of developing the clinic other difficulties will arise. For example, it is proposed to retain a member of the group, "by preference a general practitioner of considerable experience," to indicate the member or members of the group to whom a new patient may best be allocated; it seems a little doubtful whether this plan will work well and really save time. If it is intended that the clinic shall assist the general practitioner in his work, it may be asked whether the best plan would not be to encourage the general practitioner habitually to do what is already permissible—namely, to select the member of the group who shall take initial charge of the patient. If this were done in every case it becomes a question whether the method of "clerking" for the various experts, which seems to be suggested, will prove necessary. Only experience will show; but it seems possible that the expert will find that the reading of notes combined with the questioning of the patient may take almost as much time as if he had himself questioned the patient in the usual way. There can be little doubt that the patient will as a rule be saved time and worry, and probably also money. This seems almost to imply that each expert in a case will receive less than his usual fee for each patient. On the other hand, the member of the group will be saved some worry, perhaps some time, and probably also some overhead expenditure which when working alone he is bound to incur. It seems possible that difficulty may sometimes arise in connexion with treatment, especially of a surgical nature. It is true that the clinic is supposed to be purely diagnostic in character, and that any member of the group is entitled to seek outside opinion. Nevertheless, if one expert in the group should systematically prefer to seek opinion in some special subject outside the group, will he not run the risk of destroying the mutual confidence of the members? Even if he wishes to maintain solidarity, he may meet with difficulties raised by the patient or the practitioner. We ask these questions with no idea of opposition to the principle of the scheme; they may all be solved satisfactorily, and certainly the courage of the promoters of the clinic is worthy of admiration and deserving of success. The only criticism we have heard from a patient is that the congregation of large numbers in the common waiting-room may lead to embarrassment by the accidental meeting of friends.



## AN EPIDEMIOLOGICAL VIEW OF ULTRAVISIBLE VIRUSES.

At a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine on May 11th, the President, Dr. R. J. Reece, C.B., M.D., in the chair, Sir William Hamer, M.D., read a paper on the ultravisible viruses considered from an epidemiological point of view. He traced the modern history of the subject from Buchner's demonstration in 1897 of an intracellular enzyme in the yeast cell, and observed that the germs of the bacteriologist might perhaps "assume importance in disease mainly by reason of their being able under certain conditions to live in symbiosis with the generally speaking much more deadly though far more minute ultravisible living particles." The important inter-relationships between the ultravisible germs and the bacteria had been compared "to those between man and the tools he works with; or alternatively to the partnership, on a far vaster though probably less important scale, between alga and fungus connoted by the term lichen." Two questions had to be considered: (1) Were germs "hitherto regarded as causal really primarily concerned with fermentations and with diseases, or merely concomitants—that is, associated organisms"? (2) What was the "status, *qua* organization, of the ultramicroscopic 'enzymes'?" In dealing with the first question, Sir William Hamer referred to Lord Lister's classical researches on the souring of milk, and quoted the remark that "it is far from impossible that there may exist ultramicroscopic organisms, as real, as distinct, in structure, and as potent in their effects as is the *Bacterium lactis*." In these words Lord Lister remarkably anticipated the results of later research, and "saw as in a glass darkly the phenomena now familiarly described as those of 'sporting' or 'mutation' in bacteria, and clearly discerned that ultravisible particles might play a part in these." With regard to the second question, the opinion was expressed that the experimental results suggest that each germ must be assigned a very complex constitution *qua* enzymes; one enzyme might be represented by numerous particles in a condition of great activity and apt for rapid multiplication; another might be poorly represented by particles in an inactive or dormant condition. After outlining the present state of opinion respecting the physico-chemical status of catalysts and enzymes, Sir William Hamer remarked that "it would simplify things a great deal if, taking our courage in both hands, we boldly declared that many 'organic catalysts' are really living organisms." He referred with approval to the late Professor Minchin's speculations regarding the simplest forms of life and their origin, and added that "an outstanding difficulty of the epidemiologist, confronted with all the later developments of the germ theory, is, however, that of explaining persistency of type in epidemic disease—persistency such as that displayed, say, by measles or small-pox... In the case of ultravisible germs of epidemic disease, it may be that, while variability of type is favoured by association of the primary ultravisible organism with various satellite secondary invaders, there is an inevitable return, at appropriate intervals, to phases of influence which again and again repeat themselves. Just as syngamy prevents a species from breaking up into strains, so some equilibration between a primary influence and secondary influences encountered in the bodies of the hosts may bring about major waves of epidemic disease." De Vries, he went on to point out, had hinted at something of this kind in his "periodic mutations" of the higher plants, and said that "analogous phenomena will at once suggest themselves to all those who have followed up Creighton's teaching with regard to influenza, scarlet fever, and diphtheria. Minchin's ultramicroscopic chromatin grains may then become endowed by mutation with the capacity for exercising marvellous powers; for

while an evening primrose, when it mutates, causes comparatively speaking but little disturbance in the world at large, the ultravisible germ of influenza, on the other hand, when it manifests its greatest effects, the pawn becoming, so to speak, a queen, determines development of influenza in pandemic phase, 'posting' abroad and wreaking terrible havoc among the peoples of the globe."

## LIFE AND PROBLEMS IN A MEDICAL UTOPIA.

THE conditions of life in a medical utopia were reviewed by Dr. J. Walter Carr in an entertaining address delivered to the Medical Society of London on May 14th. Those privileged to live under the despotism of some benevolent autocracy, such as a super-ministry of health, will, in the days of a medical utopia, lead a strictly hygienic existence under the watchful supervision of the State from infancy to old age. The young couple about to get married will be provided with certificates of fitness and receive instruction in sex hygiene; pregnancy will be notifiable to the medical officer of health, and the unborn child will be brought into the grip of the municipal authorities even before parturition, which, of course, will not be tolerated in the unhygienic surroundings of the home. Compulsory attendance of mother and child at the infant welfare centre will enable the State to regulate the life of the newborn child until he attains school age, when he will be transferred to the care of the school medical officer, who will in due course hand him on to the panel practitioner when the child ceases school attendance. Soon after birth the question will have to be faced as to which superfluous organs it will be necessary to remove for reasons of personal hygiene and the prevention of future disease. Boys will, of course, all be circumcised, but in all probability the appendix also will be removed as a matter of routine in all new arrivals in the medical utopia. The complete removal of the colon as soon as possible after birth would prevent the onset of intestinal stasis and the innumerable grave, distressing, and common diseases attributable to absorption of toxins from this organ. The colon is a veritable cesspool; its removal is essential to health, and in a medical utopia a race of surgeons would be evolved capable of performing the operation of colectomy with great dexterity and without danger to the patient. For the benefit of conscientious objectors (if such there be) paraffin would be distributed gratuitously by the medical officer of health. Tonsils and adenoids would be compulsorily excised in a well regulated State, and there is much to be said for the removal of teeth of the second dentition immediately or soon after their appearance, instead of removing them one by one after pyorrhoea and decay have inevitably supervened. In women the uterus and mammary glands will be excised after the climacteric in order to avoid malignant disease, and in man at the corresponding period of life the prostate will be removed, any deficiencies in internal secretion being made good by organotherapy. Vaccination against small-pox will be carried out every ten years and a well devised blend of half a dozen organisms will be used for compulsory inoculation against diseases of the respiratory tract, such inoculation being carried out every few months throughout life. Meanwhile, the mind will not be neglected, for the psycho-analysts and interpreters of dreams, who will be attached to all infant welfare centres, schools, and courts of justice will watch over the developing intelligence and by timely intervention nip in the bud those undesirable complexes which, if allowed to develop, would lead to such preventable mental afflictions as neurasthenia, psychasthenia, and melancholy dispositions. Guarded and controlled in this salutary fashion, man will ultimately pass into a condition of simple senile decay, but there will probably be special provision for old people, homes where they can pass their declining days in attractive surroundings equipped with a lethal chamber, under strict medical control,



by means of which the aged may pass out peacefully from the kindly supervision of the authorities of the medical utopia. Will the inhabitants of the medical utopia be better off than the citizens of to-day? Dr. Carr was forced to the conclusion that he would rather see England free than England thoroughly healthy. Despots always abuse their power, and however high-minded may be the conceptions a man desires for his fellows they may none the less be completely erroneous. Health depends on obedience to laws, but these laws must be intelligently understood and should be voluntarily obeyed. Social conditions must be improved in the future, but the individual must also be educated to a social consciousness, and a happy blending of socialism and individualism offers a prospect of true evolution. Obedience to the moral law is the only way to a medical utopia.

#### THE LISTER INSTITUTE.

THE annual report for last year, presented by the governing body to the meeting of members of the Lister Institute on May 16th, is a record of a very large amount of valuable research work done under the inspiration of the director, Professor C. J. Martin, C.M.G., F.R.S., and also of much important routine work conducted in the department for the preparation and study of antitoxic serums at Elstree, and the department for the preparation and study of antivariolous vaccine at Hayle. In the department last mentioned a series of experiments, continuing those conducted in the previous year, has demonstrated that while minor differences in the immunization value of a stock lymph against different strains of African variola exist, a high degree of immunity is conveyed against all those experimentally tested. The experiments lend no support to the view put forward by some medical officers of the Colonial Service that the variola of native West Africans is not the same as the variola of Europe. In the department of bacteriology Dr. M. Cowan has continued her work on strains of streptococci. Mice immunized with the non-virulent (R) type are found to acquire a certain degree of immunity against the virulent (S) type. The results have an obvious bearing on serum therapy in streptococcal infections, and horses are being immunized at Elstree with both types, in order to ascertain whether the resultant serums differ in their protective action. When frequently subcultured both strains remain stable, but in freshly isolated growths left for long periods without subculture the non-virulent type tends to become dominant. Miss D. Steabben, a Jenner memorial research scholar of the Institute, had begun a research into the effect of various organic and inorganic colloids, in the hope of elucidating the physiological basis of so-called "shock" therapy and non-specific vaccine therapy, when her services were requisitioned for the National Collection of Type Cultures owing to the absence of the staff through illness, due to the newly discovered Californian disease, tularaemia. A culture of *B. tularensis*, the causative organism, had been received from the Government Health Laboratories, Washington, in the spring of 1922, and passage through guinea-pigs and mice was readily effected. In July Miss Rhodes, the assistant curator, fell ill, and in September Dr. R. St. John Brooks, the curator, and also Dr. Schütze. It became necessary to elaborate a method of serological diagnosis; a suitable antigen was not then available, but from the organs of infected mice, which teem with *B. tularensis*, suspensions of the organism were prepared by a special process, and by their aid a diagnosis was established. Dr. Schütze made a rapid recovery, but the infection in the other two members of the staff ran a tedious, chronic course. Both returned to light work in January, but Miss Rhodes contracted what appeared to be a genuine recrudescence of infection shortly after resuming work, and had to be invalided again. A great part of the time of the staff of the department of experimental

pathology and assistants working in it was taken up by investigations into questions relating to nutrition and vitamins, with special relation to rickets. Many important and some unexpected results were obtained. To this part of the report we hope to recur at an early date. The governing body, in concluding its report, expresses its satisfaction at the high quality of the work carried out at the institute during the year and the importance of the results obtained, and places on record its appreciation of the devoted and enthusiastic labours of the director and of the scientific staff in the furtherance of the objects for which the Lister Institute was founded.

#### STERILIZATION OF MENTAL DEFECTIVES.

"Thou did'st prevent me; I had peopled else  
This isle with Calibans."

DURING a large part of the second half of last year our correspondence columns bore witness to the interest taken by readers in the vexed question of what is to be done with the mentally unfit. The correspondence on sterilization was initiated by Lieut.-Colonel A. E. J. Lister on July 1st, and was continued by many other readers (among them Sir Archdall Reid and Sir Bryan Donkin) from many points of view—biological, sociological, and administrative. When the debate seemed to be at its height Sir Bryan Donkin laid down the proposition that without a clear understanding of certain key words—inheritance, reproduction, innate, acquired, germinal, somatic, and the like—no useful purpose could be served by discussing the question of sterilization of the feeble-minded. This plea for precision in the use of biological terms seemed to have some effect; at any rate, the correspondence thereupon died down. Interest in the subject has, however, been maintained, as is evidenced by the discussion at the annual meeting of the Westminster and Holborn Division (*BRITISH MEDICAL JOURNAL*, May 5th, pp. 754, 760). The subject was introduced by Dr. Gibbons, whose paper, which was published in full, has provoked some further correspondence, which, however, does not seem likely to add much to our information, beyond the fact that some of the laws passed by State legislatures in America are not enforced. By a coincidence we have received quite recently from New Zealand a communication on this matter by Dr. Clennell Fenwick, C.M.G., consulting surgeon to the Christchurch Hospital. He sends us extracts from the local newspaper showing the interest taken by certain hospital authorities in the problems of mental degeneracy. In New Zealand the hospitals are managed by hospital boards, elected by the ratepayers. Not the least active of these is the North Canterbury Hospital Board, which has lately shown its concern for the public welfare by referring to its hospital committee, whose chairman is Dr. Fenwick, the question of the sterilization of mental degenerates and epileptics. The committee passed a series of recommendations, and these were adopted by the board. Apart from the merits or defects of the recommendations, their formal adoption has this advantage, that it implies subsequent consideration of the whole question by the Government of New Zealand. In further proof of the attention now being devoted to this problem by the medical profession at home and abroad, we may note that the Section of Medical Sociology at the forthcoming Annual Meeting of the British Medical Association at Portsmouth has chosen the topic of mental deficiency in its various aspects as the principal dish in its bill of fare.

#### MEDICAL WOMEN'S FEDERATION.

THE annual meeting of the Medical Women's Federation this year was celebrated by a dinner held at the Trocadero Restaurant, London, on May 10th. Lady Barrett, C.B.E., M.D., presided, and over 200 members and friends were



present. The official guests included the Earl of Onslow, Captain Elliot, M.P., Sir George Berry, M.P., Sir William Hale-White, Sir Sydney Russell-Wells, M.P., Mrs. Swynnerton, A.R.A., Mr. H. J. Waring, Mrs. Wintringham, M.P., Dr. Alfred Cox, O.B.E., Medical Secretary of the British Medical Association, and Dr. James Neal, General Secretary of the Medical Defence Union. After the loyal toast had been honoured, Lady Barrett gave a brief account of the origin and progress of the Medical Women's Federation. She said that it was only six years since the scattered associations of medical women in Britain were united into one federated body, largely as the result of the efforts and enthusiasm of Dr. Jane Walker. The membership then was 355; now it was 800. The fellowship and helpfulness engendered proved a powerful stimulus. It seemed to be a case of rejuvenescence by conjugation. In the last year, although the subscription had been increased, the membership had increased by over 100. In the first quarter of this year 93 new members had been enrolled. Great interest was being shown by the newly qualified medical women, and in many places hospital students were becoming student associates. This movement, like so many other good things, had originated in the provinces, and on the initiative of the students themselves. Already over 400 students had become associates. The medical women of Britain were also seeking to join hands with the medical women of other countries. The constitution of the International Medical Women's Federation, which was drawn up last year at Geneva, had been approved by the medical women of eighteen countries. They hoped that this international association would do much in the promotion of international friendship and peace. At this, the first dinner of the Federation, they were naturally anxious to entertain as guests their men colleagues in the profession. Medical women were in no way antagonistic to medical men, but desired real co-operation. Sex antagonism within the profession was a bogey. Great contributions had been made to progress by medical men in the past, and they hoped that even greater contributions might be made in the future by men and women working together. The toast list included "The Medical Profession," proposed by the Earl of Onslow; "The Medical Women's Federation," proposed by Sir Sydney Russell-Wells, M.P.; and "The Guests," proposed by Dr. Jane Walker in a humorous and vigorous speech, in which she paid a graceful tribute to the friendly help medical women had always received from their men colleagues. The occasion was a great success in every way.

#### ATMOSPHERIC POLLUTION AND FOG PREVENTION.

The question of the extent to which fog in London is caused by atmospheric pollution due to preventable causes was the subject of a report by the Public Control Committee to the London County Council on May 15th. The report describes fog in London as being caused chiefly by the smoke arising from domestic chimneys, industrial operations, railway and road locomotives, and steam vessels on the Thames and its subsidiary waters. On account of the extent of the drained area and the artificial warmth of the city there is reason to believe that if the smoke conditions of London and of the populous surrounding area, especially to the east, were mitigated, conditions favourable to the formation of fog would not arise so readily in London as elsewhere. During the last twenty years there has been a great development in the use of gas and electricity for heating purposes. The three gas companies which supply London had only about 600,000 appliances in use for cooking and heating twenty years ago; now they have more than two millions. The number of millions of units of electricity sold annually for all purposes in London twenty years ago was 66, now it is 450, and this increase is almost entirely due to the extended use of electricity for heating and power, because, although

the use of electricity for lighting purposes has increased, the efficiency of the electric lamp has increased also, and the amount of current consumed in lighting is thought not to be appreciably greater. The Committee repeats the conclusion reached by many predecessors when it expresses the opinion that the domestic chimney is responsible for a large proportion of the London fog. Nearly five million tons of coal are consumed annually in London for domestic purposes. The remedy suggested is that steps should be taken to induce builders to fix types of grates which will be effective for warming and yet in large measure smokeless when burning bituminous coal, and so constructed that gas appliances can readily be fitted to them. The Committee agrees also with the opinion so often expressed in the past that the use of the old-fashioned kitchener should cease. In industrial and railway operations, plant and boilers can be so constructed and worked as to produce very little visible smoke. When an engineer is careful about the calorific value of the coal supplied to him, the conditions of his furnaces, and the methods of his stokers, he not only does not offend in the matter of smoke emission, but he works with an economy of coal consumption not otherwise obtainable. Certain observations have been made at lofty points in various parts of London, and during five periods of two hours each the total number of black smoke nuisances observed was 1,288, and of smoke not black 1,178. Serious smoke nuisance occurs at the Royal Arsenal and Dockyard, Woolwich, which is exempt from the provisions of the Public Health Acts, with the exception of nuisances from rail and road locomotives, the dilatory machinery of the Public Health Acts has to be employed in dealing with offences. The Committee considers that if the smoke nuisance is to be effectually prevented progressive penalties must be provided for offences. It suggests certain lines along which local authorities might co-operate with manufacturers and others, and generally endorses the broad and comprehensive proposals of the Departmental Committee on Smoke and Noxious Vapours Abatement. The report agrees that the problem has now become so acute that a well-thought-out and properly co-ordinated solution is manifestly called for, and that the existing law on the subject is chaotic and largely ineffective and requires codification. Local authorities are ill equipped with the necessary powers for enforcing compliance with the statutes, and there exists at present no encouragement to manufacturers and others to diminish the large volumes of smoke poured into the atmosphere. The Government is asked to introduce at an early date legislation on the lines indicated in the report of the Departmental Committee.

#### THE SURREY AND CROYDON VOLUNTARY HOSPITALS COMMITTEE.

In an admirably brief document the Surrey and Croydon Voluntary Hospitals Committee has issued its report for the year 1922. After tracing the origin of the Committee to the recommendations of the Cave Report, and describing its constitution with Lord Cave himself as chairman, the report comments on the memorandum on the hospital accommodation available in voluntary hospitals of the Surrey area, drawn up by Dr. Cates at the request of the Committee. Dr. Cates, who is County Medical Officer of Health, arrived at certain conclusions which were adopted by the committee; one was that from the public health point of view the number of beds in voluntary hospitals in Surrey is insufficient, especially in the accommodation for women and children and for some special diseases; another was that piecemeal extension of small buildings not originally planned as hospitals is uneconomical and to be deprecated; and a third that medical work should be gradually concentrated in larger and better equipped institutions. General hospitals of this type are, it was considered, required in the Guildford, Redhill or Reigate, and perhaps Surbiton or Epsom areas. One of



the first steps taken by the committee was to ask all voluntary hospitals in the area to furnish their last annual report and statement of accounts, together with particulars as to the areas they serve; the request was accompanied by full information of the object and functions of the County Committee. It appeared that only nine out of thirty-two hospitals had applied for grants, and in the end it was only found necessary or possible to approve grants for four hospitals. The Surrey and Croydon Committee made suggestions to the trustees of the late Mr. Leopold Salomons with regard to the distribution of £5,000 among the hospitals of Surrey; it gave advice, at the request of the Earl of Onslow, with regard to a scheme for the extension of the Royal Surrey County Hospital at Guildford; it endeavoured to assist in a scheme for the rebuilding of the Reigate and Redhill Hospital, which came to naught owing to financial considerations; and it is pressing upon the hospitals in its area the importance of adopting a uniform system of accounts. After considering the matter of conflicting appeals for the maintenance of voluntary hospitals, the committee expressed the opinion that a Central Fund for provincial hospitals, formed on the lines of King Edward's Hospital Fund for London, would assist in the development of country hospitals on approved lines. In conclusion, the report states that the work of the committee as local advisers of the Hospitals Commission is likely to be continued throughout the current year, in respect of applications for grants towards the reduction of accumulated deficits; that it is proposed to make inquiries as to the best method of organizing systematic contributions from employers and employees; and that the question of co-operation in hospital administration and the purchase of stores is under examination. The expenses of the committee, which were very moderate, were met out of grants from the Surrey County Council and the Croydon Borough Council. The report seems to show that the Surrey and Croydon Voluntary Hospitals Committee is dealing very tactfully with a difficult problem. If other committees throughout the country are proceeding on the same lines there can be little doubt about the benefits which will accrue to the voluntary hospital system. It seems desirable that time should be given for the development of these committees on advisory lines before any attempt is made to confer upon them definite powers with regard to the co-ordination of hospitals throughout their areas. It would appear that the Surrey and Croydon Committee aims at the ideals of King Edward's Hospital Fund for London, and proposes to devote its energies to development on the lines of that excellent body.

#### SMALL-POX PREVALENCE.

In the four weeks ending April 28th, 134 cases of small-pox were notified outside of London. In the successive weeks the numbers were 32, 51, 20, and 31. The counties affected were Derby with 39 cases, Gloucester 25, Lancaster 22, Nottingham 19, the West Riding of Yorkshire 17, the North Riding 5, Durham 4, and Monmouth, East Surrey, and Wiltshire 1 each. In Derbyshire, Clowne and Heanor had 17 cases each; in Gloucestershire, Cheltenham had 18 cases; in Lancashire, Nelson had 21 cases; in Nottinghamshire, Basford had 11 cases, and Stapleford 7. In the West Riding Doncaster had 10 cases, and Sheffield 2, and in the North Riding Middlesbrough had 5 cases. From the beginning of the year to April 28th the notifications numbered 652. The average for the first thirteen weeks was 40; for the four weeks of April it was 34. In reporting on the position in our issue of April 14th (p. 643) it was noted that at Clowne a prominent anti-vaccinationist had been summoned to the police court for failing to notify a case in his house, but was unable to obey the summons because in the interval he himself had been attacked by the disease and removed to hospital. The story is continued in the *Sheffield Independent*

of May 1st. The clerk to the District Council of Clowne applied to the magistrates for permission to withdraw the summons, explaining that though the man was formerly opposed to vaccination he had now changed his views on the matter. The magistrates refused the application and decided that the case must go on, but allowed a month's adjournment, presumably because the converted anti-vaccinationist was still in hospital. The chairman of the magistrates made some pointed comments on the District Council's attitude in the outbreak. He said that he understood one woman who was told she had small-pox was told also to stop in the house for a few minutes until the ambulance came, but when it arrived it had to wait for three-quarters of an hour because the woman had gone out shopping! It may be mentioned that the Registrar-General's weekly returns show no fewer than 84 notifications of small-pox in Clowne from the beginning of the year to the end of April.

#### THE ROYAL SOCIETY'S CONVERSAZIONE.

THE first of the conversazioni, which it is the custom of the Royal Society to give every year, was held on Wednesday evening in the Society's rooms at Burlington House. The National Institute of Medical Research had a number of interesting exhibits. One of these, shown by Dr. E. H. J. Schuster, was a new recording katha-thermometer, in which the heating was carried out automatically by electricity after each cooling period, and the length of each such cooling period was automatically recorded on a roll of paper. Another exhibit from the same laboratory was that of Dr. Leonard Hill and Dr. Eidinow illustrating the lethal power of ultra-violet rays as manifested by granulation and loss of mobility in hay infusoria after exposure to the rays. A third exhibit from the National Institute embodied improvements made by Mr. J. E. Barnard and others in the method of dark-ground illumination for microscopical purposes; it was shown that a progressive increase of efficiency could be obtained by using illuminators of high numerical aperture, together with objectives corresponding thereto. Dr. Hele-Shaw, F.R.S., had on view a special laboratory filter of a simple and inexpensive type, which he called a stream-line filter, from the fact that the fluid which had to be filtered was caused to flow with a stream-line motion. The results of certain researches on the markings on the scales of herring as a means of estimating the growth of the fish were also shown, as well as some photomicrographs of certain woods which had a peculiarly low thermal conductivity, and, from the Rothamsted Experimental Station, an illustration of the importance of the flocculation of soils. The Department of Zoology of the British Museum contributed a number of interesting African exhibits, including the contents of the stomach of a man-eating crocodile, and the modification of dentition of some African vertebrates. Another exhibitor, Mr. E. Hatschek, has succeeded in imitating organic forms by drops and vortices of gelatin. The gelatin was run into suitable coagulating solutions with the temperatures and densities so adjusted that the gelatin set to certain desired forms, and then, owing to shrinkage, a number of features like radial ribs, undulating membranes, coronated discs, and so forth, made their appearance; he had even succeeded in obtaining models astonishingly like red blood corpuscles. The research work of the Institute of Industrial Psychology was illustrated by charts showing how a study of the miner's movements in wielding the pick at the coal surface had effected an increase of about 16 per cent. in output, with lessened exertion for the miner. Another matter which appeared to be shown conclusively was that frosting the miner's standard lamp resulted in a striking reduction in the number and duration of the disturbing after-images, thus bearing out the claim of the



miners themselves that the frosted image afforded them better vision and caused less eyestrain. Another chart, which had to do with a different class of workers, showed the improvement in the work curve by introducing twice daily a fifteen minutes' period of change of work, or by encouraging rhythmical movements and reducing needless decisions. The exhibits included some examples of ancient as well as modern science. Among these were Egyptian water-clocks and some surveying instruments of the ancient Romans. The Jenner centenary found a reflection in the exhibition of the certificate of the candidature of Dr. Edward Jenner for the Fellowship of the Royal Society, a distinction he obtained in 1789.

#### RIVERS MEMORIAL FUND.

No one will question that the services of the late Dr. W. H. R. Rivers to the sciences in which he was particularly interested—first those of anthropology and ethnology, and later psychology—were so great as to deserve some permanent memorial. We are glad, therefore, to hear that a committee has been formed to give practical effect to a desire which has been expressed in many quarters. The committee includes Sir Charles Sherrington, President of the Royal Society, Sir Humphry Rolleston, President of the Royal College of Physicians, Sir James Frazer, Dr. Henry Head, Professor Elliot Smith, and Dr. C. S. Myers. The treasurer is Dr. L. E. Shore, St. John's College, Cambridge, to whom contributions may be sent. It is intended that the proceeds of the fund shall be devoted to the promotion of those sciences in which Dr. Rivers took a special interest, but until the amount and the wishes of the contributors are known no definite decision will be reached.

#### EXCHANGE PROFESSORS.

IN the article under this heading published last week (p. 827) describing the visit of Sir Harold Stiles to Boston, the first paragraph was unfortunately so expressed as to produce the impression that this was the first occasion on which such an exchange had taken place between this country and America. It ought to have been stated that Professor Gask, director of the surgical unit of St. Bartholomew's Hospital, went to Boston to replace Professor Cushing in the same way last year, and that in June, 1922, Professor Cushing reciprocated by occupying the chair at St. Bartholomew's Hospital for a similar period.

THE Ontario Legislature has established a research chair for Dr. Banting, the originator of the idea that diabetes might be controlled by extracts of the islands of Langerhans, for which the name "insulin" had been suggested by Sir Edward Schafer a good many years ago, and under which it has now become a commercial product. The success which attended the inquiry instituted by Drs. Banting and Best in Professor Macleod's laboratory in the University of Toronto is now well known. The income of the chair, to which Dr. Best will act as assistant, will be 10,000 dollars a year. Dr. Banting intends to be present at the discussion on diabetes in the Section of Medicine at the Annual Meeting of the British Medical Association in Portsmouth.

THE next session of the General Medical Council will begin on Tuesday, May 29th, at 2 p.m., when the President, Sir Donald MacAlister, will give an address on the work of the Council since the November session, and penal and other matters will be considered. Dr. W. L. H. Duckworth, Reader in Human Anatomy in the University of Cambridge, has been elected the representative of the University on the Council, in succession to Professor Hopkins, who did not desire reappointment.

## MEDICAL SOCIETY OF LONDON.

### 150TH ANNIVERSARY DINNER.

THE 150th anniversary dinner of the Medical Society of London took place at the Hyde Park Hotel on May 15th. LORD DAWSON OF PENN presided, and the principal guest was H.R.H. The Prince of Wales. About 350 sat down at the tables, and the company included:

Viscount Astor, the Bishop of Birmingham, Dr. R. A. Bolam, Sir Anthony Bowlby, Lord Burnham, Sir Archibald Garrod, Viscount Gladstone, Sir William Hale-White, Dr. G. E. Haslip, Sir Thomas Horder, Sir Robert Jones, Viscount Knutsford, Major-General Sir William Leishman, Sir William Macewen, Sir George Newman, Lord Riddell, Sir Charles Sherrington, and Mr. H. J. Waring, Vice-Chancellor of the University of London.

LORD DAWSON, in proposing the health of the principal guest, said that in addition to the representatives of medicine there were many representatives of allied professions, with varied interests and gifts, but hosts and guests alike were one in loyalty and support for their beloved Prince. In his interest in medicine the Prince was following the tradition of his great ancestors. To kings in ancient times were ascribed powers of miraculous healing. In those old days who would not have preferred the "royal touch" to the rigours of medical treatment? Imagine fourteen doctors around the bedside of Charles II! But that "royal touch" still existed. It was a human touch. It was at the service alike of the individual and of the body politic. It was prompted not by favour, but by need. It owed its success not to miracle, but to high endeavour, unflinching kindness, and a feeling for human frailty.

#### THE PRINCE OF WALES'S TRIBUTE TO THE GENERAL PRACTITIONER.

THE PRINCE OF WALES said that it was a common boast among members of the medical profession that they practised the oldest science known to man. He could not imagine a time when doctors had not been needed. The only reason why they were not mentioned in the record of the Garden of Eden was evidently because Eve knew the prescription, "An apple a day keeps the doctor away." (Laughter.) That evening he was a solitary and nervous patient surrounded by many of the keenest practitioners in London—an island in a sea of medicine. But as one who had had long experience of the characteristic kindness of the profession, he would be ungenerous if he did not feel himself at home. Anybody who was as familiar with hospitals as himself could not have failed to observe that the art of healing had a particularly good effect on those who practised it. He went on to pay the general practitioner a special tribute. The general practitioner was a devoted and, he was afraid, sometimes an unrecognized friend of the community. Upon him in the long run the health and well-being of the community depended. Everyone outside the profession owed the general practitioner gratitude. In referring to the presence of three distinguished physicians from the United States, His Royal Highness remarked that America was "a country to which we owe a great deal," but when the laughter had subsided he said that he was referring to medicine, not to money. One aspect of the Society's history appealed to him particularly—namely, the close connexion between the Society and the national hospital system. The Society's foundation showed that medicine at that time, in 1773, was passing from the twilight of quackery into the clear light of science. The progress during those 150 years had proceeded on parallel lines with the growth of the modern hospital system. The hospitals were at once the school and the workshop of medical science—centres to which the doctor could go to get further knowledge, and the suffering to get the practical application of that knowledge. Without the hospitals medical science would be a comparatively barren thing. The Society had grown up alongside the hospital system; many of the great London hospitals dated from about the same period, and to that hospital system the Society had been a very loyal and helpful friend.



## MR. LLOYD GEORGE ON MEDICAL ACHIEVEMENT.

MR. LLOYD GEORGE gave the toast of "Medicine and the Medical Society of London," coupling with it the name of Lord Dawson. During the 150 years of the Society's existence medicine had, he said, seen great changes. It was only about forty years before the foundation of the Society that the Barbers and the Surgeons separated—a very good indication of the state of medical science at that period. The science of destroying human life had been perfected from generation to generation, but until after this Society was founded the art of saving life had hardly moved. Science had been called in to serve the purposes of destruction; but when it came to the saving of life it had been regarded too often as an intruder. Since that time, however, there had been almost incredible changes—changes which were like a romance. This later age had been the age of unlocking. It had been the age of revolution—political, industrial, scientific—and there was no profession which responded to the revolutionary spirit more readily than medicine. There was a time when the human body was like a land which was the prey of bandits—bandits roving, sulking in recesses, issuing forth to pillage and slay with impunity. The strong might resist, the weak invariably fell. Even the most expert professors of medical science had not known who these bandits were nor what measures to take to deal with them. But at length the whole dark continent of disease had been explored. These bandits had been discovered, docketed, identified, blacklisted, tracked to their lairs, and in the majority of cases exterminated for the benefit of mankind. Medical science had given human life a better fighting chance—had turned the odds in its favour for as long as the "military age" (in the medical sense) might last. These were achievements over which they had a right to rejoice. The Prince had spoken of the hospitals. Mr. Lloyd George recalled the fact that during the illness of that former Prince of Wales who afterwards became Edward VII, Sir William Gull said to the royal patient, "Sir, you are as well cared for as if you had been in a hospital." In speaking at Manchester the other evening he had occasion to remind some of his fellow citizens that when they had a good doctor they ought to be grateful to the hospitals for the training he had received, and when they had a bad doctor they ought to thank the hospitals that he was no worse! But the greatest advances in medicine were in the preventive direction. Recent history taught that it was a dangerous and costly enterprise to expel an invader once he had a grip upon the soil, and even if he was expelled he left behind a devastated area which took years to recover. But preventive medicine had put up barriers against attack. There was a good deal in the old Chinese idea of paying the doctor for as long as one was well. It was a bit of profound philosophy from a reflective race. In sanitation, water supply, food, the teaching and inculcation of habit, and above all in the housing of the people, science had exerted itself nobly for preventive ends. It was a great saying of a very great statesman fifty years ago, that the first consideration of a Minister should be the health of the people. All would remember Disraeli's famous speech in which he framed the saying *Sanitas sanitatum, omnia sanitas*. They had a right, on looking back at the triumphs of their art, as they beheld the legions of disease driven from the field, to meet in banquet and rejoice over the past, and toast the future prosperity of medicine and of the Medical Society.

LORD DAWSON acknowledged with gratitude the eloquent and impressive tribute from one so distinguished in achievement as Mr. Lloyd George. The Medical Society of London, before the end of the eighteenth century, had come to occupy a distinguished position in the world of medicine, but a study of its proceedings in that early time showed that its members were for the most part concerned with phenomena and failed to get down to causes. It had to be remembered that Darwin, Lister, Pasteur, and Koch had still to live. The watchwords of the new medicine for which the Medical Society of London stood were discovery, humanism, and statesmanship. In speaking of discovery he made a reference to the investigations which had resulted in the production of insulin. That remarkable and important achievement was the outcome of proper co-ordination between laboratory and ward. Insulin, he went on to say, had been put before the

world with a restraint wholly admirable, and there was every likelihood that its ultimate value would be more and not less than appeared from the original statement. He touched also on the investigation of the scourge of cancer, and in doing so said that far too little homage was paid to those who attained only negative results. Such results were part of the pathway to truth. Medicine was a wide and open field in which all who could contribute anything were welcome, subject to the condition that only those who had had an ordained training could be accepted to take the full responsibility of the treatment of the sick. As a distinguished Frenchman had said, there were no illnesses, there were only sick people. In the practice of medicine the qualities of insight, understanding, and judgement were necessary. Uniformity was not desired, yet it was sometimes difficult to convince even well-trained minds outside the profession that medicine had no panacea, no short cut, no talisman to offer, no magic beyond that which belonged to understanding and kindness. Medicine also required statesmanship if its benefits were to be of the best use to mankind; health as a positive conception must more and more claim attention, and, in closing, he praised the public health service, which was unsurpassed by that of any other nation.

## SISTER PROFESSIONS.

SIR JOHN BLAND-SUTTON, in proposing the toast of "The Sister Professions and the Guests," said that the need for professional assistance, in one form or another, belonged to the human being from the moment of his birth right to the administration of his estate after death. Medicine had its evident associations with the law; he fancied, by the way, that if some medical theories were tried by judge and jury, on the lines of law court procedure, they would not survive. Medicine had associations also with the Church, and his advice to all men newly starting in practice was to stand well with the vicar! The painter or sculptor and the doctor had this in common, that they both must have some knowledge of human anatomy and of psychology. There seemed to be considerable sympathy between art and medicine, to judge from the number of medical portraits exhibited year by year in the Academy; one which gave him great pleasure this year was that of Miss Aldrich-Blake, and the mention of her name reminded him that the Medical Society, though a progressive society, still barred its doors against women. Some medical portraits in the Academy owed their origin, no doubt, to the vanity of the sitters; others were due to the reverence of pupils for great teachers, and yet others, best of all, were tributes of affection from the artist to the doctor for service rendered.

The Lord Chief Justice (LORD HEWART), in responding to the toast, claimed for the sister professions that they were all more or less associated with the great art of healing. That was certainly true of the Church; it was true also of literature, and he believed it was no less true of the profession of the law. The business of the lawyer was not, as was ignorantly supposed, to provoke and prolong litigation, but, on the contrary, it was extraordinarily like the business of the physician, to reconcile difficulties, to heal or prevent contention, and to make the wheels of the body politic move as smoothly as possible.

MR. NEVILLE CHAMBERLAIN, who also responded, said that he thought it necessary to state that he was now Minister of Health, because, to judge from his correspondence, a good many people still regarded him as Paymaster-General! As one who began his public work on the board of a general hospital, and who, throughout his municipal career had served on a public health committee, he was not likely to lose sight of the medical side of the work of his new office. He desired to do something towards bringing the great advances in medicine and surgery within reach of all, rich or poor, and of those who were neither rich nor poor, and whose lot in this respect was perhaps the most unfortunate of all. Though it did not seem that disease would ever be conquered, for the medical profession invented new ailments as fast as it learned to cure old ones, yet he thought they were justified in hoping that, like those mathematical problems which worked out to infinity, while they never actually achieved their end, they would advance continually towards it.



## A CORONER'S ATTACK ON THE PANEL SYSTEM.

SOME remarks made by Dr. Edwin Smith, coroner for North-East London, at the conclusion of an inquest on May 11th constituted an attack on the panel system. It was a sweeping, indiscriminating onslaught, based on evidence which would not survive any serious attempt at investigation. For instance, he made the wholly unsupported assertion that there was widespread and increasing dissatisfaction among the general public with the panel system; that it was common knowledge that at a typical panel consultation the patient announces what seems to him to be his most prominent symptom and instantly gets a prescription for something supposed to fit his condition; that there is no time for any but the most perfunctory investigation and he is hurried from the surgery almost before he has entered it; that "the human machine does not lend itself to this lightning diagnosis and penny-in-the-slot style of treatment;" that a reasonable time was required, but this the patient did not get and could not hope to get under present conditions.

He roundly declared that "the panel system was a retrograde step, not too strongly described as a disastrous blunder and a miserable failure. It put a premium on scamped work and inefficiency." He wound up by making two suggestions for improvement of the system—namely, to replace the present system by one under which the doctor was paid for actual work done, and the other that the patient should be freed from restrictions both in choosing and in changing his medical attendant.

Naturally enough the coroner's remarks made in open court attracted the attention of many of the London newspapers, who dealt with them each after its own fashion.

The *Evening Standard* published an article which in moderate terms agreed with a good deal that had been said by Dr. Smith and took the view that the advent of the panel spelt the end of personal intimacy between doctor and patient and that the real issue was whether we should return to the old methods or turn our doctors once and for all into State officers. The *Daily Express* said that

the attack "endorses a general charge that the panel patient does not receive medical attention . . . even the most conscientious doctor cannot give to every panel case the care and attention he would feel bound to exercise with a private patient." It declared that the panel system was "in theory a great advance. It brought the boon of medical science to thousands who had relied on empiricism. In practice it is not 'functioning.' That is a reason for new investigation rather than for casting the panel on the scrap-heap."

The *Daily Chronicle* declared that it was not the insurance system that was at fault but the doctor himself and ultimately the Insurance Committees. "Medicine should be like the law—just and impartial and universal. We prefer to believe that these lapses so frequently reported are due rather to overwork or accident than to lack of professional morality."

The *Daily News* took the line that Dr. Smith was exaggerating. It said:

"The case for the present system is not that there is no bad doctoring under it or that the conditions are such as intelligent statesmanship with a perfectly free hand would be disposed to institute in a new community, but that it is a tolerable compromise between conflicting interests in an old and complex society; that it has worked, despite these exceptional cases, better than might have been expected, and that its working is being steadily improved; and that in any case it is an immense advance on the conditions which preceded it. When Dr. Smith denies this, he is merely speaking in his wrath."

It then went on to describe the conditions which existed before the Insurance Act came into force, quoting from an article by Dr. Frank Layton of Walsall, and concluded with:

"If bad treatment is too common under the panel system it was far commoner under the only doctors whom the poor could afford in the old days; and the very poor had no doctoring at all."

The *Daily Graphic* took much the same line. It remarked that Dr. Smith's attack "constitutes a grave

charge not only against the system but against the doctors who carry it out and we should be loth to think it justified in either case."

"The panel system is far from perfect and it admittedly makes possible the scamping of work of which the coroner complains, but no profession has a higher standard of honour than the medical, and by none is that standard more conscientiously observed. But for those facts the panel system could not have been even introduced, and because of them it works in the great majority of cases to the satisfaction of both doctor and patient."

"The average conscientious general practitioner who treats each case on its merits whether he is to be paid for it or not, is well enough content with a system which yields him a steady income and relieves him of the unpleasant business of extracting fees from persons ill able to afford the smallest."

The *Westminster Gazette*, in a very reasonable article, remarked that "mistaken diagnosis is not invariably due to pressure of work. It has been known even in Harley Street."

The Medical Secretary of the British Medical Association had several interviews with press representatives and, in view of the widespread publicity that had been given to Dr. Smith's remarks, issued through the Press Association the following statement:

### Statement by the Medical Secretary.

The attention of the British Medical Association, which officially represents the views of doctors engaged in National Health Insurance work, has been called to the statements made by Dr. Edwin Smith, the coroner for North-East London. In the opinion of the Association Dr. Smith has abused his official position in ventilating his personal prejudices against the panel system, of which he apparently knows little. His statement amounts to an unwarranted attack upon his own profession, for the majority of general practitioners in this country are panel doctors, and if the system is as described by Dr. Smith they are acting in a manner discreditable to themselves and to their profession by taking part in it.

So far from there being "widespread and increasing dissatisfaction of the general public" with the panel system, all the evidence the British Medical Association has is to the effect that the system has greatly improved during the past two or three years, that the evidences of dissatisfaction are largely based on a few individual bad cases, and that the representatives of insured persons are of opinion that with the good will of the medical profession (which they will have) the system, which, it must be remembered, has been a great national experiment, can easily be made into one with which all concerned can feel satisfied.

Dr. Smith's statement that there is no time for any but the most perfunctory examination by the panel doctor is nonsense. The panel doctor is simply a general practitioner who happens to be doing part of his work under the panel system, and if a panel patient requires thorough examination the doctor can give it to him just as well as to a private patient—and he generally does. Dr. Smith is wrong when he suggests that the panel doctor necessarily has a very large number of cases to deal with. The average panel doctor has less than 1,000 insured persons on his list; no panel doctor in any area is allowed to have more than 3,000; and in many districts the highest possible limit is 2,500 or 2,000. There is conclusive evidence to show that the average number of attendances a year per insured person is about 3.6; therefore 1,000 insured persons would amongst them require 3,600 attendances in a year. This means that the doctor with the average list (1,000) would see about 10 insured patients every day. It will be seen, therefore, that even the small number of doctors who have the biggest lists allowed (3,000) would, on an average, not see more than 30 insured persons altogether in a day—that is, inside the surgery spread over two or three sessions, and outside visits. The picture that the coroner asks us to conjure up of the panel doctor with his crowded surgery is either drawn from his imagination or he is asking us to judge the average doctor by the few exceptions.

The only two suggestions he makes for the improvement of the service are that the doctor shall be paid for actual work done, and that the patient should be freed from all restrictions in choosing and changing his doctor. The first point has been considered by the Approved Society Consultative Council, which represents insured persons and acts as the advisory body of the Ministry of Health, and has been turned down. The second point is one which the medical profession has itself proposed to the Ministry of Health—namely, to allow the insured person to change his doctor when he likes, instead of, as at present, only having that opportunity twice a year and very seldom taking advantage of it. No doctor wants to keep a dissatisfied patient.

The Association appeals to the public to judge the panel



doctor as an average general practitioner who does good work steadily day by day—which does not get into the papers.

(Signed) ALFRED COX,  
Medical Secretary.

May 14th, 1923.

We have received a letter from Dr. Burges, vice-chairman of the Birmingham Panel Committee and a member of the Insurance Acts Committee, in the course of which he writes:

The strictures made by Dr. Smith, the Shoreditch coroner, are by no means justified. It is a stab in the back to the 12,000 panel practitioners, most of whom are doing the work conscientiously and thoroughly. The medical profession is a noble one, and I maintain the great majority are honest. If this is so whether we work under the contract system or the private system is of no consequence—the patients will be well attended. If dishonest, again the system is of no consequence. The panel system is all to the advantage of the public; it is to the interest of the doctor to get his patient well as soon as possible, but if he is neglected he can complain, and does complain. The good work done by the many thousand panel practitioners never gets into the papers, but if an expression of opinion could be obtained from our patients themselves it would be an eye-opener to the enemies of the service. Under the panel system the patients are seen privately one by one. Some are trivial cases and require but little time—but a reassuring word from the doctor, who also is the friend of his patient, sets his mind at rest and the little ailment is not heard of again. The serious cases get the attention they require. I have been in practice twenty-five years—fifteen years before the panel and ten years as a panel practitioner. I can state emphatically the workers (and they are the panel patients) are better attended by these 12,000 panel practitioners than they were before the system was introduced. We get to know our patients better, and so can understand them better. The death rate has considerably fallen, largely due to the fact that the insured person can now go to his doctor without considering the fee. Before the panel system so many of the poor waited until they were so ill that the doctor only had a poor chance of pulling them through. My first fifteen years of practice was a nightmare to me on account of the excessive amount of night work. Now the night calls are reduced to a minimum because the patient comes before he is so ill. The first call to a patient in these years before the panel was often a night call—sometimes to a case of pneumonia of three or four days' standing and a fatal ending only too certain; at others a broken-down heart with much distress, with again no hope of pulling the sufferer through. Either case if seen sooner would have in all probability recovered. If our profession could only advertise these facts we should not get these stabs in the back from such men as Dr. Smith. Statements such as these must be refuted. It is not only the panel system that is attacked, but the whole honour of the profession.

### THE PRIVATE CLINIC IN GREAT BRITAIN.

In January, 1922, Sir Thomas Horder gave the mid-session address to the Abernethian Society at St. Bartholomew's Hospital on the subject of the private clinic in Great Britain. As the institution then adumbrated has now taken form, it is worth while to review the scheme set forth in the address, which has been published in pamphlet form, and to record the progress made in the development of the venture.

In his address Sir Thomas Horder recognized three types of private clinic: first, those established in connexion with general hospitals; secondly, those formed by the conversion of a large house into a nursing home with laboratories, such as Duff House or the New Clinic, Windsor; and, thirdly, "group-clinics," which have existed in the United States for some years, but at the time of the address did not exist in this country. Sir Thomas Horder suggested that the group-clinic should confine itself in the first place almost entirely to diagnosis; later, if the institution gained support, observation beds might be added or even a therapeutic institute equivalent to a large private nursing home. Three or four men of equal professional status would group themselves together, adding singly the other representative experts needed to complete the personnel of the clinic. It would, he thought, probably be found that a personnel of twelve would suffice at first, others being added as expert work in other special departments became necessary. The group thus formed would work under one roof, each member having his own consulting room and such additional accommodation as his work might require. A general secretariat would deal with all correspondence, telephoning, and record keeping, but any member would have his own private secretary if he so desired. The group ought not to be too large; the individual members should be chosen not only on account of their expert knowledge and skill in particular directions, but also with a view to their ability to work with one another. The members should have complete freedom to go outside their number for further opinions concerning their

patients; and patients coming to the group-clinic should have free choice of opinions outside the personnel of the group.

The patients seen by a member of the group might be (1) patients sent for his individual examination and opinion as at present, quite independently of the group; (2) patients sent for an opinion by one of the members of the group to whom the patients had been sent individually; (3) patients sent to the clinic as such (the "group-case"); these would either pay a flat rate to include the pathological examination and any expert examinations thought to be necessary, or would be charged a reduced fee for each expert opinion given. On arrival at the clinic a patient would be dealt with by a member of the group, preferably a general practitioner, who, upon the information given by the patient's doctor, would indicate the member or members of the group whose examination and opinion seemed most essential to diagnosis. Each of these members would be able to suggest further investigations if he thought fit to do so. The member of the clinic who might take initial charge of the "group-case" would interview the various other experts, collect their signed opinions, and summarize the position in a report stating the diagnosis and the treatment indicated, which would be sent to the patient's practitioner. As all the expert members of the group would be of consultant status, no patient would be seen unless sent by his general practitioner, and no second attendances at the clinic would be permitted except at the request of the practitioner, who would be free to accompany the patient to the clinic, and suggest the consultant he desired. All the members of the group would consult together concerning difficult cases, and interested practitioners would be invited to attend. Joint reports on particular types of cases dealt with in the clinic should be published from time to time after open conference between the members of the group specially interested.

As we have said, the group form of private clinic suggested by Sir Thomas Horder has now taken shape; and on May 10th members of the Westminster and Holborn Division of the British Medical Association met there (86, Brook Street) for a discussion upon modern methods of investigation of abdominal diseases, conditions pre-eminently suitable for group examination. The discussion was opened by Sir Thomas Horder and continued by Mr. Clayton-Greene, Dr. Gilbert Scott, Dr. Jockes, and Mr. Arthur Evans, all of them members of the group. The speakers dealt mainly with the condition of chronic abdominal pain, and gave illustrations of the advantage to be derived from combining facilities for investigation under one roof, and from consultation with their colleagues in difficult cases. Subsequently Dr. Gilbert Scott gave a demonstration of x-ray examination with the opaque enema; and the members of the Division were able to inspect the organization of the clinic. It appears that, as Sir Thomas Horder predicted would be the case at the beginning of the venture, the number of "group-cases" seen is not very large; and the members of the group are at present chiefly occupied with their own patients.

The ground floor of the clinic contains a large waiting room for patients. On the floor above Dr. Drury Pennington, to whose exertions it is in large measure due that the scheme materialized, has his room, where he interviews "group patients" on their arrival. Each member of the group has his own consulting room, with a small dressing room attached, and accommodation for patients while waiting to see the particular consultant to whom they have been directed. On the first floor also is the x-ray department, and on the second the pathological department. At the present time the group consists of fourteen members; but some other experts in special subjects ("associates") are available when needed. The patients are charged a flat rate for the consultation and investigations required, but the precise amount varies to some extent according to the requirements in the way of prolonged pathological or x-ray examination. When the dossier of the case is complete, the members of the group who have been concerned in the investigation meet for discussion, and the general practitioner of the patient is invited to attend this discussion.



In his address at St. Bartholomew's Hospital Sir Thomas Horder enumerated the following cases as suitable for "group diagnosis"—chronic toxic processes, whether microbic or metabolic, arthritis and fibrositis, many gastrointestinal disorders, and a large group of neurasthenics. He dealt also with various objections and difficulties that have been raised, or are likely to arise, in connexion with group-clinics. Thus in the United States some of the clinics are too large, so that the whole process becomes mechanical, and the patient is sent on a "circular tour" from which he emerges with a voluminous and extensive dossier, but with no considered judgement as to the essential nature of his malady. It has been urged also that the group system will eliminate the general practitioner; but in the opinion of Sir Thomas Horder this will not be so. Rather will the general practitioner come to regard the group as relieving him of the intolerable burden of knowing that in many cases he is not giving all the help that can be given because he has not had the expert knowledge necessary for all the investigations required for diagnosis. The objection that the group clinic must lead to unnecessary duplication of examination should not arise in practice where the members of the group work harmoniously together. The danger of the formation of cliques must be guarded against by drawing the members of a group from different schools, by making groups overlap, and by retaining power to the patient and to any member of the group to obtain outside expert opinion.

Sir Thomas Horder concludes his exposition of a very interesting experiment by expressing his belief in the "urgent desirability of great and even drastic changes in medical practice." In his opinion "our profession should take the lead, rather than be forced by the public to follow a less wise lead taken by itself, in the direction of making our art more efficient, more rational, and more attractive."

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

### *Dangerous Drugs and Poisons (Amendment) Bill.*

THE Dangerous Drugs and Poisons (Amendment) Bill was taken on report in the House of Lords on May 10th.

On Clause 2 the Earl of Onslow moved a drafting amendment in order to correct an unintended construction. As the bill stood, words in Clause 2 might be read as meaning that all offences were indictable and that the consent of the Attorney-General was required even for summary proceedings. Instead, it was proposed to begin the subsection: "Subject as hereinafter provided no persons shall, in England or Wales, be proceeded against by indictment for an offence under this Act unless the proceedings are instituted . . ." Then would follow the reference to the Attorney General or the Public Prosecutor. The amendment was agreed to.

Earl Beauchamp afterwards moved an amendment with the object of relieving the inadvertent retailer, who by a mistake of his own, or by his agent's mistake, offended against the law. There would, Lord Onslow pointed out, be great difficulties in administering the law on the lines suggested, and the amendment was negatived.

Lord Dwyer next moved an amendment to permit a pharmaceutical chemist to administer in an emergency and in good faith without any medical prescription any of the drugs to which Part 3 of the Act applied. The Earl of Onslow said that to give chemists a statutory right—for that is what it would amount to under the amendment—to administer these drugs at their own discretion would be a very serious matter indeed. It would place the chemist in a semi-medical position and would be strongly criticized by the medical profession generally because these particular drugs, especially one—cocaine—could not really be safely administered by persons who had not a medical training. The Pharmaceutical Society did not suggest this amendment nor officially support it. Any representations which might be made in regard to the regulations would, of course, be most carefully considered by the Home Office. Lord Dwyer did not press his amendment, and it was by leave withdrawn.

Two other drafting amendments were afterwards agreed to.

### *Vaccination and Small-pox Statistics.*

In reply to Mr. T. Thomson, on May 8th, Lord E. Percy (for the Minister of Health) stated that the total number of deaths certified last year as due to small-pox was 27, but one of these cases was probably incorrectly diagnosed. Of the remaining 26 cases, 11, whose ages varied between 43 and 74 years, had been vaccinated in infancy but not since, 10 were unvaccinated, 3 showed no evidence of vaccination, and 2 were vaccinated during the incubation period of small-pox. According to the information at present available the total number of cases of small-pox occurring in vaccinated persons last year was 275, and the percentage of deaths among cases in this class, irrespective of age, was 4. The total number of unvaccinated cases, including those which showed no evidence, or were vaccinated only during the incubation period

of small-pox, was 687, and the percentage of deaths from cases in this class, irrespective of age, was 2.1. Of the 26 fatal cases 24 occurred in the outbreak of virulent small-pox in London and the neighbourhood, and in this outbreak the fatality rate was 23.7 per cent. in the case of vaccinated persons and 60 per cent. in the case of unvaccinated persons.

Mr. Chamberlain, on request for a comparison of the figures of vaccination of newly born children in the years 1907 and 1921, stated that in the year 1907 10.9 per cent. of these children were vaccinated, and in 1921 the percentage was 38.3. The total number of exemptions from vaccination in 1907 was 76,709, and in 1921 it was 382,155. Figures for 1922 are not yet available.

At the instance of Mr. Becker the Minister of Health, on May 9th, gave the following particulars of small-pox cases during the last three years:

Period.	No. of Cases Notified.	Other Cases Reported but not Notified.	Cases Subsequently Withdrawn or not Regarded as Small-pox.	Net Total of Cases.
1921 ... ..	343	23	30	336
1922 ... ..	1,042	17	80	979
1923 (first three months)	533	5	18	520

On an inquiry as to small-pox cases in Doncaster Mr. Chamberlain said, on May 9th, that in no case had small-pox occurred in that town after recent vaccination where the interval between vaccination and the development of the disease had exceeded fourteen days, nor was he aware of the occurrence of any such case elsewhere during the past two months.

### *Health at the International Labour Conference.*

Sir Montague Barlow, on May 9th, asked the House of Commons to approve of the policy of the Government at the third and fourth sessions, in 1921 and 1922, of the International Labour Organization, which is a development of the League of Nations; one or more conferences are held each year, and each State can have four representatives—two for the Government, one for employers, and one for workers. Draft conventions adopted are intended to be a basis for legislation in the various countries, and the recommendations approved have for their object to affirm principles to be carried out. Sir Montague spoke of the compromise in regard to the convention as to the use of white lead in painting. By this convention the use of white lead or lead sulphate in the internal painting of buildings would be prohibited, subject to several definite exceptions. The employment of males under 18, and of all females, would with certain exceptions be prohibited in any painting works of an industrial character involving the use of white lead. To enable employers to adapt processes these provisions would not apply until November, 1927. Regulations designed to be of earlier application would limit the use of white lead for painting either to a form of paste or to paint ready for use; the danger was largely ascribed to dust. Statistics of lead poisoning amongst painters would be kept. These provisions were to be applied not later than January, 1924. The compromise had been rather hastily settled, and would have to be considered further by the executive at Geneva. The Maritime Draft Convention would make compulsory, except in urgent cases, the medical examination of all children and young persons under 18 years of age employed on shipboard. The examination was to be repeated once a year. The Government proposed to introduce a bill to give effect to these provisions. For the same reasons which prompted the late Government to refuse to ratify the Washington Maternity Convention for industry generally, the Government did not propose to accept the recommendation dealing with the protection before and after childbirth of women wage-earners in agriculture. The reason was that the Washington maternity proposals affected only women who were engaged in industry. The English provisions, under the Insurance Act, affected not only women engaged in industry, but the wives of employed contributors under the Act. Further, the schemes of local authorities with State Aid Grant provided various services for all women. After considerable debate an amendment by Mr. Clynes, that the House should declare in favour of the ratification of the various conventions instead of approving of the qualified support by the Government, was rejected by 176 to 235.

*Royal Army Medical Corps.*—In reply to questions by Dr. F. E. Fremantle, Mr. Gwynne (Financial Secretary, War Office) said that an unsettled feeling had been caused in the army generally by uncertainty as to the future establishment and rates of pay, and by the conditions of service that had prevailed during the period of reconstruction after the war. In the case of medical officers the attractions of the civil professions had doubtless reinforced those causes. It was hoped that the army would now be able to return to normal settled conditions, and it was not proposed at present to take any special steps in regard to the Royal Army Medical Corps. He was aware that there was a shortage of candidates at the only examinations which had been held since 1914 for commissions in the Royal Army Medical Corps. This might have been due to the short notice given. It would, however, be easier to gauge the situation when the next examination, due in August, had been held. Dr. Fremantle asked also whether it was not the case that formerly it was recognized in the pay warrant that officers of the Royal Army Medical Corps, owing to their long and expensive training and their necessarily higher age on joining, could be attracted only by special conditions, including a higher rate of pay and pension than other officers, but that recent changes in the warrant had tended to abolish this differentiation, and that



sufficient increase had not been made in the pay of the Royal Army Medical Corps to compensate for the increased cost of living since the war. Mr. Gwynne said that officers R.A.M.C. still enjoyed special conditions as regarded pay and retired pay, and he was not aware that the essential financial conditions of a sound medical service for the army were absent to-day. Army pay generally was about to come under review.

**Dentists Act (1921) Amendment Bill.**—Lieut.-Colonel Dalrymple White, on May 9th, introduced a bill to amend the Act of 1921. The main proposal, he said, was to enable ex-service men who were unregistered dentists to enter for the qualifying examination at the age of 21 instead of 23, as laid down in the Act as the fixed age for all unregistered dentists. The number of men who would come under the provision of this bill would not be very large, but he hoped that it would be sympathetically received. The bill was given a first reading. It is backed by Colonel Sir Charles Burn, Mr. Hohler, Mr. Lumley, Sir Arthur Marshall, Mr. J. H. Thomas, and Lieut.-Colonel Lambert Ward.

**Tuberculosis in Canadian Cattle.**—Lieut.-Colonel Fremantle asked a question, on May 9th, with reference to the report of the medical officer of health to the Manchester Port Sanitary Authority to the effect that the first batch of Canadian cattle was not altogether free from pulmonary tuberculosis. Sir Robert Sanders said that Canadian store cattle imported into this country were not required to undergo a test as to freedom from tuberculosis. Cattle affected with tuberculosis to a dangerous degree could be dealt with under the Milk and Dairies (Amendment) Act, 1922. In reply to questions by other members he said that the general report on the cattle was that they were very healthy. He had no power to order the isolation of the cattle affected, and he did not, therefore, see that any useful purpose would be served by attempting to trace them. A notable proportion of the cattle of all countries was affected by tuberculosis, and it had been found possible to deal with tuberculosis in British cattle only within the narrow limits prescribed by Section 5 of the Act of 1922. The conditions regularizing the import of breeding animals were under discussion, and he was endeavouring to frame such regulations as would confine the admission to the high-grade stock to which alone the agreement with the Canadian representative referred. Lieut.-Colonel Fremantle inquired, on May 14th, by what pledges, if any, the Minister of Agriculture was debarred from testing imported Canadian breeding cattle for their healthiness. Sir Robert Sanders replied it was provided in Section 2 of the Importation of Animals Act, 1922, that Canadian breeding cattle could be admitted only by the authority of an order made by the Minister of Agriculture under this section; an essential condition to be prescribed in the order was the production of a certificate issued by a duly authorized officer of the Dominion of Canada to the effect that the animals were within one month before shipment effectively tested for tuberculosis and were found free therefrom.

**Yaws in the West Indies.**—Dr. F. E. Fremantle asked, on May 14th, what payment had been made to the medical officers in the West Indian Colonies who had carried out treatment of yaws on an intensive system during the past four years; and what saving to the revenue had been effected by closing the hospital in Grenada owing to the success of this treatment. Mr. Ormsby-Gore replied that the medical officers in Grenada undertook to perform this work without additional remuneration, but as the committee appointed to inquire into the Windward Islands medical service had recommended that some special allowance should be granted, the matter, together with the other recommendations of the committee, was receiving consideration. The Yaws Hospital was closed at the end of 1921. The cost in that year was £902, but as a certain amount of treatment was still being carried out he was unable to say what proportion of this sum represented a saving.

**Colonial Medical Practice.**—Dr. F. E. Fremantle asked, on May 14th, in which colonies it had recently been considered necessary to amend the ordinary medical practice in order to enable persons not holding a medical qualification to practise in the United Kingdom to practise in the colonies. Mr. Ormsby-Gore said that the only three colonies in question were British Honduras, Turks Islands, and St. Vincent. His Majesty had not been advised to disallow the ordinances, but in two of the three cases the Governor had been instructed not to use the power conferred upon him without previous reference to the Secretary of State except in emergency. The Secretary of State attached great importance to the maintenance of a high standard of professional standards in the Colonies, but he recognized that there were instances in which rigid adherence to rules in the United Kingdom was impracticable in some of the poorer or less developed communities.

#### Answers in Brief.

The number of whole-time medical officers in the employment of the Ministry of Pensions is 511, of whom 374 served overseas, 104 served at home, and 33, or 6.5 per cent., had had no military service.

The gross expenditure of local authorities on tuberculosis treatment during the financial year ended March 31st, 1923, was estimated to amount to £2,813,610, exclusive of capital expenditure for which particulars were not yet available.

Instruction in lip reading is provided by the Pensions Ministry for ex-service men likely to benefit by it. After a certain amount of instruction, proficiency was entirely dependent upon regular practice, and the Minister's advisers considered that a course of twenty-five lessons afforded the man of average intelligence ample opportunity of acquiring facility in the art. Experience had shown that the unlettered man of less than normal intelligence was not capable of benefiting.

It has been decided to retain Queen Alexandra's Convalescent Centre at Saltash for a limited period for the treatment of neurasthenic pensions patients.

## England and Wales.

### BACTERIOLOGICAL DEPARTMENT, NEWCASTLE.

The new building of the Bacteriological Department of the University of Durham College of Medicine, Newcastle-upon-Tyne, will be opened on Friday, May 25th. The visitors will be received by the president of the College of Medicine, Sir David Drummond, in the King's Hall, Armstrong College, at 4.30 p.m., and Sir Frederick William Andrewes, M.D., F.R.S., will give an address at 5 p.m. Afterwards the building will be open for inspection.

### LIVERPOOL OPEN-AIR HOSPITAL FOR CHILDREN.

According to the report for 1922 of the Liverpool Open-air Hospital for Children, Leasowe, Cheshire, the income for the year amounted to £25,414, nearly all of which was received in grants from the Liverpool Corporation, the Lancashire County Council, and other public bodies; the expenditure for the year, including extraordinary expenditure, amounted to £25,443. Dr. Hartley Martin, the senior medical officer, in his report on the results obtained from treatment in the hospital as deduced from the state of health of the cases discharged during the year, said that of the 186 cases discharged, 20, or 10.7 per cent., were non-tuberculous. Of the 166 tuberculous cases discharged, 134, or 80.15 per cent., were discharged with the note "disease quiescent"; as 12 cases were removed by their parents before the completion of treatment, and 2 cases were transferred on account of infectious disease, the figure which represented the results achieved in all cases treated to completion was 88.15 per cent. The percentages showing the results achieved from Liverpool cases only were 85.5 and 93.9 per cent.; this is held to show the advantage of working in close conjunction with the tuberculosis dispensaries and the hospital out-patients' departments, so that cases were admitted as soon as diagnosed and in many cases for diagnosis. Owing to the cloudy summer of 1922, the usual routine exposure of the children to sunlight could not be practised and the marked improvement in the health of the children which followed this exposure could not be achieved. This partly explained the reason for a falling off in the number of cases discharged, the children being retained in hospital for a longer period than usual. The same cause interfered with the work of investigating the blood response to sunlight, which had been begun during the summer of 1921; it was then observed that the phagocytic power of the blood, as indicated by the differentiated nuclear leucocyte count, was improved as the result of exposure to sunlight, and that the health of the child improved *pari passu* with this. An attempt was made during the winter months to produce this result by exposure to radiant heat, but the results achieved were not satisfactory.

### AMBULANCE ARRANGEMENTS IN LONDON.

In view of reports in certain newspapers to the effect that undue delays sometimes occurred in the arrival of ambulances to carry urgent cases in London, and of questions in Parliament (see, for instance, JOURNAL, April 7th, 1923, p. 606), the Metropolitan Asylums Board, has issued a report on the ambulance service it provides in London. It has 107 motor ambulances and omnibuses, accommodated at six ambulance stations in different parts of London, and a large repair dépôt at Fulham. The primary function of the Board's ambulance service is the removal of cases of infectious disease in the metropolis, but patients are also removed to the other institutions of the Board for tuberculosis, sick and convalescent children, and mental deficients. Apart from this work the Board's ambulance service has been largely utilized for the removal of non-infectious cases from private houses to hospitals, for which service a fee is charged (ten shillings a journey within the administrative county of London, with an additional charge when a nurse is supplied). In 1922, out of a total of 51,767 removals, 33,679 were to the infectious and 4,807 to the non-infectious institutions of the Board, and 13,281 were removals from home to hospital, infirmary, or elsewhere, or return journeys. In 1906 a departmental



committee was set up by the Home Secretary, to inquire as to the provision made for dealing with accidents and sudden illnesses in the streets and public places of London, and two of the three members of the committee reported that the most efficient and economical plan would be an extension of the non-infectious system of rapid ambulances initiated by the Metropolitan Asylums Board. In 1913 the London County Council invited the Board to prepare a scheme of co-operation with it and other metropolitan authorities for the establishment of a street accident ambulance service, but the scheme was not accepted, and in 1915 the County Council set up the existing street accident ambulance service. The present position is that the London County Council has a free ambulance service to deal with street accident cases, while the Metropolitan Asylums Board has a service which deals with removals to infectious and other hospitals and is able and willing to deal with removals of all kinds, other than street accidents.

#### THE CITY OF LONDON TRUSS SOCIETY.

The 113th annual festival of the City of London Truss Society was held at the Abercorn Rooms on May 8th, when the Lord Mayor of London presided, supported by the Sheriffs. The Lord Mayor mentioned that since its foundation the Society had been the means of affording relief to 6,706,000 persons suffering from hernia. Every patient attending at the institution was seen by the surgical staff. A stock of about 2,000 trusses was kept on the premises, but there were as many as eight or ten cases a day in which the ordinary truss would not prove efficient, and in those cases special instruments were ordered. The ages of the patients treated by the Society varied within the widest limits; the youngest on record was an infant 7 days old, and the oldest a woman of 105! Mr. Sheriff Studd acknowledged the indebtedness of the institution and its beneficiaries to the surgical staff, and Mr. G. L. Keynes, surgeon to the Society, responded. Mr. Keynes said that the professional knowledge and skill now available for these ruptured patients were of a very high order, but this was not due to the special genius of himself or of his colleague, Mr. R. Coyte, the assistant surgeon; it was due to the fact that they had one hundred years of that institution's experience to draw upon—an accumulated experience unique in this country. The necessity for trusses was not as great as formerly, but the fact was that a large residue of older persons could not be treated by operation. The number of special trusses now provided was about a thousand a year and showed a tendency to increase.

## Scotland.

#### NEW REGULATIONS FOR MEAT INSPECTION.

IMPORTANT regulations have been issued by the Scottish Board of Health with a view to securing uniformity of meat inspection. They are dated April 20th, 1923, and are entitled "Public Health (Meat Inspection) Regulations (Scotland) 1923," and have followed upon an inquiry which began in 1914, when the Board instructed one of its medical officers, Dr. Gerald Leighton, to investigate the question of establishing a uniform system and standard of meat inspection for Scotland. The inquiry was resumed after the war and three committees of experts assisted in the investigation. The most important provision in the regulations is Article 4, which provides for a system of detention and seizure of unsound meat. Certain officials with sufficient training and experience, who, in general, will be certificated sanitary officers, to enable them to recognize any departure from the normal in a carcass, are to be entrusted with the work of a primary inspection and power to pass carcasses which are obviously sound, and to detain all carcasses that show any departure from the normal for final judgement by the qualified meat inspector. The latter will be a veterinary surgeon or medical officer of health. There will thus be two grades of officials concerned in meat inspection known respectively as the detention officer and the meat inspector. The Board of Health

recognizes that the inspection of carcasses in private slaughterhouses; especially in widespread rural areas, is one of great difficulty; it considers that the best measure which can meantime be taken is to regulate the days and hours during which slaughtering may take place in each slaughterhouse and to arrange that a detention officer shall visit each slaughterhouse as often as possible during the times so fixed. An emphatic opinion is, however, expressed that private slaughterhouses should be abolished, and replaced by public abattoirs owned and controlled by the local authority. In the case of carcasses of bovines slaughtered for emergency reasons, such as sickness or accident, the Board recommends that very careful inspection should be made by a veterinary surgeon or the medical officer of health. The Board does not consider a distinctive mark upon the carcasses passed as fit for food absolutely necessary, except in the case of such as are sent from the area of one local authority into that of another. Attention is drawn to a very undesirable practice said to be increasing in some towns—namely, the practice of hawking meat from baskets, barrows, or small carts. Such meat is probably uninspected, is of doubtful origin, and is specially liable to contamination by dust, handling, and unsuitable storage of unsold meat overnight. This matter is controlled by registration of meat sellers under Article 10. The registration of places of cold storage, and the inspection not only of meat, but of meat products and game stored in them, is controlled by Article 11 of the regulations. The question of *ante-mortem* inspection of animals consigned for purposes of food also forms matter for a recommendation; in some districts a veterinary surgeon attends all sales of fat stock and in this way diseased animals are often detected; if they are subsequently transferred from the area of one local authority to that of another, the latter should be notified of the fact.

#### GLASGOW MEDICAL LUNCH CLUB.

The thirty-seventh meeting of this club was held on May 10th in Ferguson and Forrester's restaurant, when the President, Dr. W. L. Reid, occupied the chair, and a very representative gathering of members attended to welcome as their guest of honour Sir Samuel Chisholm, Bt., who almost a quarter of a century ago was Lord Provost of Glasgow. In his address after lunch, Sir Samuel harked back to the year 1900, when during his term of office small-pox broke out in the city and rapidly became epidemic. Apart from the danger which thus threatened the population, an international exhibition had been arranged for the following year, and over half a million pounds had been raised as a guarantee fund. It was clear that the success of the venture would be seriously jeopardized unless the epidemic could be arrested. He described the excellent work done by the medical profession of the city in conjunction with the sanitary authorities in the thorough revaccination of the inhabitants. A large and well organized band of trained vaccinators was sent to the different areas of the city, particularly to slum districts, model lodging houses, and police courts. Thanks to the energetic measures adopted, and to the thorough co-operation of the medical profession, the epidemic was arrested. The city was thus not only freed from the epidemic, but the systematic revaccination of almost the entire population conferred upon the inhabitants a large measure of immunity against future attacks. He appealed to the medical practitioners of to-day to emulate the good work of 1900, and to strive to maintain the health of the city at a high standard. The Vice-President, Dr. John Henderson, expressed to Sir Samuel the thanks of the members for his presence and for his interesting address.

#### INSTITUTIONAL TREATMENT FOR MENTAL DEFECTIVES.

The Edinburgh District Board of Control is purchasing Gogarburn House for the Edinburgh Town Council for the purpose of institutional treatment of mental defectives belonging to the Edinburgh Lunacy District. The property, which is an old mansion standing in grounds, was acquired by the town council some years ago as a convalescent home for the treatment of children under the maternity service and child welfare scheme. It has now



agreed to accept the offer by the Lunacy Board of £11,500 for the property, which represented what they had paid for purchase and alterations.

#### LEGACIES IN AID OF EDINBURGH BLIND.

At a meeting of the managers of the Edinburgh Royal Blind Asylum intimation was made of two legacies from the estate of the late Mrs. Sara Phyllis Katherine Duncan, one of £400 to the institution and one of £600 to the Blinded Soldiers' and Sailors' Hostel, Newington House, Edinburgh. A legacy to the Blind Asylum of £1,000 by the will of the late John A. Forrest, W.S., was also intimated.

## Ireland.

#### ROYAL COLLEGE OF SURGEONS IN IRELAND.

The Royal College of Surgeons (Ireland) presented recently the following address to Mr. T. M. Healy, Governor-General of the Irish Free State:

"May it please your Excellency.—We, the President, Vice-President and Council of the Royal College of Surgeons in Ireland, wish to greet you on your appointment as the first Governor-General of the Irish Free State, and to express the earnest hope that your tenure of that high office may be both long and prosperous, and rendered illustrious by the establishment of peace and prosperity within the border of the Irish Free State.

"Since its foundation, in 1784, to the present date, the College has endeavoured to discharge its functions with efficiency and as an educational body to fulfil its duties and obligations to the country. Its Fellows and Licentiates are found on the staffs of nearly every hospital in Ireland, and many hold leading positions in the great medical and scientific institutions in the Colonies abroad.

"We can assure your Excellency that the services of our College will on all occasions be placed loyally and wholeheartedly at the disposal of the Government of the Irish Free State wherever questions arise affecting the public health or the welfare of the people."

The Governor-General, in reply, said:

"Mr. President and gentlemen of the Royal College of Surgeons in Ireland.—Your greetings on my appointment as the first Governor-General of the Irish Free State afford me great pleasure. They come at a moment when it seems possible that tranquillity may be re-established within our borders. Surgeons, no doubt, gain experience in warfare, but they can profit only by a guarded peace. Your College has, as an educational body, discharged splendid functions. Nearly every hospital in Ireland, and many abroad, have been strengthened by the attainments and zeal of its Licentiates and Fellows.

"Irish surgeons are justly esteemed for their skill, originality, and courage wherever they practise. Medicine, leechcraft, and inoculative science daily win fresh triumphs over disease. The knowledge which is yours may, therefore, be regarded as the treasure house of the community.

"I thank you for the assurance that your services can be counted on by the Irish Free State, to aid it in preserving the public health and welfare of the common people."

The members of the deputation representing the College were: Sir William I. de C. Wheeler, president; Mr. R. C. B. Maunsell, vice-president; Sir Lambert Ormsby, secretary; Sir Thomas Myles, Sir Arthur Chance, Sir Conway Dwyer, and Mr. Alfred Miller, registrar.

The deputation afterwards had luncheon with the Governor-General.

#### SALARIES OF MEDICAL OFFICERS.

A deputation of the dispensary medical officers in the Connemara district recently waited upon the Co. Galway Central Hospital Committee and presented the following statement as to the inadequacy of their present salaries:

"The Connemara doctors are at present very badly off financially; many are in debt, and their heavy travelling expenses swallow up almost their entire income. Their work has been increased by the abolition of the district hospitals, and they have received nothing to make up for the increased cost of living; the salaries paid are lower than those paid in the eastern part of the county, lower than those paid in other parts of Ireland where good private practice is to be had. Private practice is nil in some parts of the county, and doctors have to travel vast distances, often up to 200 miles a week, to attend to dispensary patients. Connemara is a hotbed of tuberculosis, typhoid, and typhus, and many doctors have lost their lives in the course of their duty. The salaries paid are lower than the wages of a tradesman, and the net salaries, after deducting expenses, are often less than that paid transport union labourers. A good shop assistant or a country council clerk would refuse to work for the small remuneration paid.

"Suggestions: (1) That a salary of £350 rising to £500, together with actual travelling expenses, should be paid; (2) that all dis-

pensaries should be graded; (3) that appointments to the better class districts should be filled by the promotion of doctors from poorer areas."

The Chairman said that all the Committee could do was to make a recommendation to the Board of Health. It seemed to him that the only way to deal with the salaries was to fix a flat rate. The Government ought to be asked to do in Ireland what the British Government had done in the Highlands and Islands of Scotland. After the application of the medical officers was fully discussed the Hospital Committee made the following recommendation to the County Board of Health: That the salary should be £300 per annum with annual increments of £5 until a maximal salary of £350 is reached; the annual increments to be applied retrospectively. The Committee decided to take no action with regard to the second and third recommendations put forward by the doctors as to the grading of the districts for the purpose of promotion. The County Board of Health has adopted a flat rate of £300 per annum for all the dispensary doctors in co. Galway, including those in the Connemara area.

The Ministry of Home Affairs (Northern Parliament) has informed the Ballymoney Board of Guardians that after careful consideration of the report of the inspectors—Mr. Robinson and Dr. Patrick—the Ministry is satisfied that the salaries of the medical officers of the union are too low, having regard to the service rendered by the medical officers, the cost of living, travelling expenses, and to the salaries paid in other unions of similar character. The Ministry, having reviewed all the circumstances, considered that it would not be justified in prescribing a new scale of salary, and that it was better to pay medical officers a fixed salary instead of a scale salary, and that the amount should be such as to offer reasonable remuneration for the work required. Having regard to all the circumstances, they thought that £225 would be a reasonable salary to pay in Ballymoney Union, except in Portrush district, where, as the work was not so heavy as in other districts, £200 per annum would be sufficient. The Ministry proposed to fix the salaries of these officers at these figures, but before making an order desired to afford the guardians an opportunity of paying their medical officer at the rate specified, so obviating the necessity for an order. The Ministry considered that the revised salaries should have effect as from October 1st, 1922.

## Correspondence.

#### TREATMENT OF PUERPERAL INFECTIONS.

SIR,—The question of the best method of dealing with puerperal infections is of the deepest concern to every practitioner in the kingdom. Professor Watson's interesting communication should be reviewed in conjunction with the discussion which followed the reading of his paper (BRITISH MEDICAL JOURNAL, March 24th, 1923, p. 505; discussion, p. 511). In the last sentence of his reply to the discussion Professor Watson says, "If in the meantime death occurred it was due to bacteraemia, which would only have been aggravated by interference." This is surely the acme of advanced obstetric thought, but conveys no practical help to the general practitioner. The same comfortable scientific cloak may adorn the mind of the practitioner who allows a gangrenous appendix to kill his patient. We may well ask if this conforms to present-day surgical principles. The discussion, as published in the BRITISH MEDICAL JOURNAL, was of great interest and deserves close study; while most of the speakers agreed to some extent with Professor Watson's ideas, their words contain faint praise for treatment based upon the retention of foreign decomposing matter in the uterus.

I have been engaged in general practice for just over a quarter of a century, and for many years have sufficiently enjoyed the confidence of my colleagues in neighbouring towns and villages to be asked to share their anxieties and responsibilities in these distressing cases. The treatment I adopt is based on the principles I saw carried out in the Rotunda under the mastership of Dr. Purefoy, while studying for the L.M. The results in my last seven cases are of some interest. Five of the practitioners who



sought my aid sent for me as soon as they found conditions abnormal, and the five cases were removed to my wards in the Dumfries and Galloway Royal Infirmary, and treated under as careful and thorough technique as we carry out in our routine for abdominal section. They all recovered. In two cases manipulation had been undertaken before I was called in; one case had been curetted, both had been douched. My treatment in these two cases was carried out in the homes of the patients on similar lines to those I adopt in hospital practice, but there can be no comparison. Home treatment is a very poor substitute. Both cases were late cases and both died. I would like to ask Professor Watson if I am justified in drawing from his paper the conclusion that he would regard these two cases as having been aggravated by the treatment we adopted. The conclusions I myself draw are, that if any form of manipulation is to be undertaken it must be early and under hospital conditions.

During the war I had a priceless experience as officer in charge of the surgical division of the 21st General Hospital. I there had the opportunity of observing closely the work of several well known surgeons. We received cases from various casualty clearing stations. Many wounds had been "bipped." From one casualty clearing station the results, where this treatment was adopted, were uniformly good, but had we based our opinion on cases drawn from other sources I fear we would have arrived at the conclusion that this form of treatment was futile. Results depend, not on the method, but, if I may so put it, on the method of the method.

We groan to-day under a multiplicity of methods of treatment in all branches of surgical practice, and the tendency of teachers is to overlook the fact that it is the laborious, often wearisome, attention to apparently trivial details which brings success in individual cases and which, if followed in every midwifery case, would render puerperal sepsis rare. We in country areas, who drink from many fountains, cannot but be surprised that a new well of knowledge has been tapped. The waters are bitter; we are asked to throw over the methods of treatment taught us by those whose memory we revere, and who claimed for their treatment reasonably good results, and which in our own hands have proved satisfactory. I would not myself quarrel with the use of a blunt curette in those cases, although I prefer gauze, but I very often do quarrel with the method in which the curette is used. The curette must at all times be used with great delicacy and restraint.

Dr. Dudley Boswell's reference to his cow which calved, and what I see in this rural area, suggests that the cow is much more tolerant of puerperal infection than the human female. If this is an accepted view, would it not be advisable, in preparing serums for those conditions, to obtain them from the cow's blood? The mare, I think (but my experience is very limited), is very much less tolerant. Professor Watson has placed us under a deep obligation in bringing before us so stimulating a paper. If there is any golden thread to which we may cling for guidance, it is, "Don't let sepsis occur."—I am, etc.,

GEORGE R. LIVINGSTON, M.D.,  
F.R.C.S. Ed.

Dumfries, May 8th.

#### CATGUT OR SILVER AS SUTURE FOR VESICO-VAGINAL FISTULA.

SIR,—In your issue of May 12th (p. 834) Dr. Blair Bell writes with reference to a report of the Gynaecological Congress in Edinburgh in your issue of May 5th, which, as he says, is "a perfectly accurate one."

This is what this report says: "He [Dr. Blair Bell] did not claim to cure every case, however, as Dr. Herbert Spencer said could be done if silver wire were used." There is not a word in the report about Dr. Blair Bell's having cured his cases after two or three attempts, nor am I reported to have stated that these cases could always be cured at the first attempt by silver wire, a statement which I have never made. It was Dr. Blair Bell's admission of failure and my not knowing then that he had cured the cases at the second or third attempt which led me to remark that in my opinion they could all be cured by the use of silver wire, passed by means of a hollow needle.

I brought the subject of silver wire before the Congress in the hope that it might enable members, as it has enabled me—after the failure of catgut in most experienced and skilful hands—to rescue a patient from the consequences of such a mode of treatment as had been adopted by a surgeon in Dr. Haig Ferguson's most instructive case.

Dr. Blair Bell is quite right in supposing that I should regret any misunderstanding, and I hope this statement will make the position clear.

In all my operations for vesico-vaginal fistulae silver wire has been used, and—with the exception of one case in which a recto-vaginal fistula and a vesico-vaginal fistula occurred as a result of a too successful removal of cancer by radium—every case has been cured, though not always at the first attempt.

In view of the statement in your report that "he did not claim to cure every case," I ask Dr. Bell if he has cured every case of vesico-vaginal fistula he has operated on by means of catgut.

Dr. Blair Bell says that the use of silver wire is a retrograde step. A little retrogression from ground liable to infection with tetanus (as catgut is) has its advantages. Within the last few days I have seen two gynaecologists who have lost three patients from tetanus owing to the use of catgut, and the colleague of one of them had lost another patient from the same cause. There is no such risk with silver wire. In my opinion it is more scientific to use silver sutures, which are removed, than to leave in the bladder buried stitches of any material whatever. Of course, in any operation the technique must be good to secure success.—I am, etc.,

London, W., May 12th.

HERBERT R. SPENCER.

#### PERNICIOUS ANAEMIA.

SIR,—In the JOURNAL of April 28th (p. 743) Dr. Knyvett Gordon takes Dr. Coates to task for publishing as pernicious anaemia a series of cases which included examples of sprue, etc. Dr. Coates seems to pin his faith to the "idiopathic" criterion of what shall and what shall not be called "pernicious" and will thus, if he is not wary, be one day defeated by a case of bleeding piles. For Dr. Knyvett Gordon the criterion of perniciousness is "a lethal change in the bone marrow" and this, he says, must be accompanied by persistent presence of megaloblasts in the blood, free iron in the liver, etc. He further seems to suggest that these changes are non-specific and may be grafted on to any kind of anaemia as a terminal event. His remarks are addressed to the subject of what facts must be demonstrated to "establish a pathological diagnosis of pernicious anaemia" (the italics are mine).

I wish, on behalf of the poor clinician, to take the gravest exception to the suggestion that the establishment of a particular form of end-process, admittedly common to various clinical conditions, by the pathologist gives him the slightest right to limit the use of such well recognized clinical terms as "pernicious anaemia."

If the term "pernicious" must be used, I submit that it must be used as a clinical term and applied to the syndrome with which it is already associated. This syndrome has many features, not all of which are present in every case—for example, glossitis, gastric and intestinal symptoms, combined degeneration of the cord, etc. Except that there is present an anaemia of haemolytic type, and this can be discovered by suitable examination of the blood, urine, etc., we have no haematological criterion of value in diagnosis. This type of anaemia is not by itself absolute evidence since it occurs in a variety of other conditions. Diagnosis is to be made by careful consideration of the whole of the symptoms, any one of which may be found in other cases, although there is no other disease which presents them in the same grouping. This, I believe, is the general opinion of clinicians, but we are apt to have set against it the suggestion originating on the Continent that there is something characteristic in the blood picture and so constant that without it pernicious anaemia cannot be said to exist. The argument is even taken further; I do not say that Dr. Knyvett Gordon would do so, and it is asserted that such blood changes connote pernicious anaemia and nothing else. — It is time that we ceased to have two meanings current



for this one term; it is time that the careful but brilliant work of Wm. Hunter should be allowed to dominate that of the specialist on blood pictures. I accept Dr. Knyvett as well qualified to speak from the pathologist's point of view, and should like to ask him the following questions:

1. Is the so-called "megaloblastic degeneration" a degeneration, and, whether it be so or not, can any particular factors which determine its development be specified?

2. Is it common to several disease processes or peculiar to one?

3. Can a diagnosis of "pernicious anaemia," carrying with it the usual significance of an inevitably fatal outcome, be made from a blood film alone?

—I am, etc.,

Sevenoaks, April 30th.

GORDON WARD.

### CANCER OF THE BREAST.

SIR,—There are many debatable points raised in Mr. Cecil Rowntree's lecture on cancer of the breast, published in the *BRITISH MEDICAL JOURNAL*, May 5th, 1923, and the section devoted to early diagnosis is rather disappointing. He rightly points out that the usual textbook description of a hard irregular mass infiltrating the breast, causing retraction of the nipple, and accompanied by enlargement of the axillary glands, need not concern us. But what sign does he offer the student on which to found his diagnosis of early cancer? A slight dimpling of the skin! Surely when a cancer is capable of "diagnosis" from its clinical signs it has long passed its early stage. A surgeon may guess correctly the nature of a small tumour of the breast, but is guessing scientific? It has been estimated that clinicians are unwilling to commit themselves to a diagnosis in over 20 per cent. of breast neoplasms. In these circumstances, what is a surgeon to do with these cases? Is he to take away a small piece of the neoplasm and await the pathologist's report, and submit the patient to a second operation? Is he to remove the breast? Is he to perform the major operation? Or is he to rely on the opinion of the pathologist from a frozen section at the time of the operation? The last method of procedure if reliable would certainly be the best for the patient and the surgeon. But Mr. Cecil Rowntree tells us that he has never been able to convince himself of the value of rapid frozen sections.

Dr. Ernest H. Shaw, who has practised the frozen section method for over twenty-three years, says<sup>1</sup> he has attended as pathologist to assist in 382 clinically doubtful tumours of the breast in the practice of a large number of surgeons, most of whom are well known. Further on in the same paper he writes of the pathologist who practises the frozen section method of diagnosis. "He (the pathologist) must be able to give a definite opinion as to whether the case he is dealing with is malignant or not. The surgeon expects a quick and definite report on which the fate of an important organ or even a limb often depends. I have made it a rule to have paraffin sections prepared of all my cases, and am pleased to be able to record that in every instance the pictures seen in the permanent sections have agreed exactly with those made immediately at the operation."

Again, Dr. W. C. MacCarty<sup>2</sup> writes, "It is unfair to perform a radical operation on the mammary gland in doubtful cases, but that it is fair with our present knowledge to remove a sector of the gland-bearing structure for immediate examination."

It is quite true that a pathologist, to be of immediate value to the surgeon, requires long training both in the macroscopic and microscopic characters of neoplasms. Pathologists make mistakes, but the cancer problem is to be faced scientifically; all methods available must be used at the earliest opportunity and in the early stage of cancer before it is capable of being clinically diagnosed. The immediate frozen section method in competent hands will be found a valuable agent in the fight against cancer. It certainly appeals to me as the reliable, sane, and scientific method of to-day and should certainly be more extensively used. It is the method capable of guiding the surgeon in the choice of operation and the

only method calculated to save the patient the distress and inconvenience of a second operation.—I am, etc.,

London, W., May 7th.

W. H. MCKINSTRY, M.D.

### RESTORATION OF THE HEART BEAT.

SIR,—With reference to the letters from Sir James Mackenzie (April 21st) and Dr. Harrington Sainsbury (May 5th) it may be of interest to refer to some recent observations I have made on the effect of adrenaline on the lower rhythmic centres of the human heart. A variable time after the hypodermic injection of 7 to 10 minims adrenaline chloride (1 in 1,000, Parke, Davis and Co.), it was found that pressure over either right or left vagus, by depressing the sinus rate, allowed a new slow rhythm to appear, which started in the auriculo-ventricular node or below this. The new rhythm was maintained for a variable number of cycles, according to the duration of the vagal stimulation, until the sino-auricular node escaped. This result has been attained in twelve observations made on seven subjects.

In the case of the apparently arrested heart, such a new rhythm once aroused would presumably continue and maintain a sufficient circulation to allow the normal pacemaker to recover and resume control of the heart's rhythm.—I am, etc.,

Hull, May 12th.

E. E. LASLETT.

### INSULIN AND DIABETES MELLITUS.

SIR,—I refrained from replying to Dr. Cammidge's letter in your issue of May 5th thinking that someone with more experience would explain that it is not possible at present to assert how far permanent benefit may accrue to diabetics from the administration of insulin.

I am in agreement with Dr. Cammidge in so far as to have made it a rule to explain to patients that when one embarks upon a course of insulin it may be necessary to continue it indefinitely. This incidentally adds great difficulty to its use in hospital. Personally, I do not treat patients in hospital with insulin unless I am satisfied that they will be able to obtain a supply after leaving. It is too cruel to let an individual learn that there is some substance which will allow him to live in comparative comfort, but because he has not money to buy it he must perish miserably. Some fund should be started to supply poor people with insulin: the State should not supply it. The administrators of the fund might stipulate that those whom they assist to pay for insulin must have no progeny: the State could not make this stipulation, and without it the diabetic population would increase, because the tendency to diabetes mellitus is undoubtedly hereditary. In the past the multiplication has been checked automatically, because a man suffering severely from diabetes is impotent, whilst a woman, even if she conceive, rarely bears a living child.

In spite of this, the data at our disposal at the moment do not allow us to conclude that cure does not occur. Rest is the greatest healer: poor nutrition is his greatest antagonist. In the past the islets of Langerhans could be rested only by fasting. Rest could only take charge of the patient accompanied by poor nutrition. We have reasons to believe—although we have no proof at the moment—that now we may be able to rest the islets whilst feeding the patient, so long as we give sufficient insulin to maintain a slight hypoglycaemia. All those who have had some little experience with insulin have met cases in which either the diet could be increased or the amount of insulin diminished after a few weeks' treatment designed to prevent any hyperglycaemia. In my opinion at the present time it is the duty of any practitioner who diagnoses diabetes mellitus, and has reason to believe that the onset of the disease is quite recent, to make arrangements for his patient to be treated with insulin without any delay. Many have designed and are carrying out experiments to estimate the improvement of the glycopyretic function of diabetics following a course of insulin.—I am, etc.,

London, W., May 11th.

O. LEXTON.

<sup>1</sup> *Lancet*, vol. 1, 1923, p. 218.

<sup>2</sup> *Collected Papers of the Mayo Clinic*, May, 1922.



## STERILIZATION OF THE UNFIT.

SIR,—In answer to the letter of Mr. Havelock Ellis, I may say that I quoted at length the Indiana law to show how much care was taken before the operation of sterilization was performed. He says that there never seems to have been any such law in Utah, but I have before me a summary of sterilization laws published in the *Journal of Criminal Law and Criminology*, a copy of which I was unable to obtain, but which is to be found in the *International Clinics* for 1920. Some may have been cancelled even since then. Therein I find:

"Utah has also passed a law similar to those cited. In most of these laws provision is made for severe penalties for those who perform the required operation for improper purpose."

My paper had for its object only the sterilization in our own country of the unfit, which, considering the enormous influence of heredity, would prevent the advent of mental defectives; and a State certificate of marriage, which, if effectively carried out, would tend to diminish the risk of infection by the *Spirochaeta pallida*, the gonococcus, and tubercle bacillus, for, should either be present, marriage could be postponed until health was established. There is no opposition to marriage in health. No legislation can prevent promiscuous intercourse, with its attendant risk.

It is evident that although Mr. Havelock Ellis approves of "a measure so excellent as eugenical sterilization, and so certain to be eventually recognized in general medical and surgical practice," he does not care for laws; but I hope that, at any rate in this country, should the operation ever be allowed, it will only be through legislation, and not "with the written consent of the relatives without reference to any law." The councillors of Utah would not be the only ones to be obliged to make provision for severe penalties when the operation was done for an improper purpose.—I am, etc.,

London, S.W., May 14th.

R. A. GIBBONS.

SIR,—Dr. R. A. Gibbons is reported (p. 760) as saying that "four children to a marriage were necessary to continue the State in view of the fact that some would die before maturity and some would not marry." I beg to point out that it was stated in *La question de la dépopulation*, by M. Leroy Beaulieu, that in 1901-1905 the average number of children per family in France was 2.5, that in 1906-1911 it was 2.32, and that in 1911 it was 2.18. Yet the population in France continued until the war to increase, by excess of births over deaths, at its usual rate of about one per thousand a year.—I am, etc.,

London, S.W., May 14th.

B. DUNLOP.

## INTRATHECAL INJECTIONS OF TRYPARSAMIDE.

SIR,—My attention has been arrested by a statement in the paper "The Treatment of Trypanosomiasis," by Marshall and Vassallo, in the *BRITISH MEDICAL JOURNAL* of February 10th, 1923, to the effect that I advocate the local or intrathecal injection of tryparsamide in the treatment of sleeping sickness. I desire to point out to your readers that I have never advocated this method of treatment and, indeed, with our present knowledge of tryparsamide, regard it as unnecessary.—I am, etc.,

New York City, May 7th.

LOUISE PEARCE.

An international exhibition of hygiene will be held at Strasbourg in commemoration of Pasteur from July to October, consisting of the following sections: (1) Bacteriology and parasitology, including tropical diseases, and diseases of animals and plants; (2) chemistry, and chemical industries, antiseptics, etc.; (3) general hygiene; hydrology, climatology, thalassotherapy, gymnastics; (4) public health questions in schools, the army, navy, colonies, out-patient departments, factories, etc.; (5) hospitals and insurance; (6) statistics and demography; (7) municipal hygiene, including building, ventilation, lighting, water supply, baths, parks, drainage, etc.; (8) food hygiene; (9) refrigeration industry; (10) agricultural hygiene.

## Obituary.

GEORGE HALIBURTON HUME, M.D. EDIN.,  
D.C.L. DUNELM., F.R.C.S. EDIN.,

Consulting Surgeon, Royal Infirmary, Newcastle-on-Tyne.

By the death, on May 8th, of Dr. G. H. Hume at the age of 77, Newcastle-upon-Tyne has lost a distinguished surgeon and a man held in very high esteem. For the last year or more he had been in indifferent health, and had led a semi-retired life. Dr. Hume had outlived most compeers whose acquaintance he made when he came to the city half a century ago.

He was born in Kelso, graduated at the University of Edinburgh in 1867, and continued his studies in Berlin and Vienna. His introduction to Newcastle occurred through a partnership with the late Mr. Septimus Rayne, then well known as the city police surgeon and as medical and surgical adviser to the North-Eastern Railway Company. At this period—the early seventies—Dr. Hume engaged in general practice and rapidly rose to be one of the most successful medical practitioners in the North of England. When, in 1875, the partnership was dissolved, Dr. Hume felt himself free, not only to occupy the post of surgeon to the infirmary, but gradually to devote himself more and more to surgery, for which he had a marked inclination. His surgical work was good. Speaking as a physician of a surgeon whom I have seen frequently operate, Dr. Hume, owing to his neat-handedness, seemed to excel particularly in small but delicate operations, in the performance of which patience and the taking of pains are so essential. A careful observer of disease and an attractive bedside teacher, he was a safe guide for students to follow.

For a few sessions Dr. Hume lectured on physiology in the School of Medicine in Neville Street. He possessed just that type of mind and love of the recondite facts of physiology and pathology which, with his gift of clear exposition, made him one of the most respected of lecturers. He was a man of great literary taste, of refinement and culture. Didactic and concise, his style and mode of expression made him an interesting and attractive speaker in medical societies and elsewhere.

When the British Medical Association met in Newcastle in 1893 he was invited to give the address in surgery. Choosing for his subject the evolution of surgical principles, he dwelt upon the rapid strides surgery had made under the Listerian treatment of wounds, and how the art of surgery had improved as its science had broadened. He wrote a history of the Royal Victoria Infirmary, and on the occasion of the opening of the institution by the late King Edward, His Majesty graciously accepted a copy of the book.

Dr. Hume's wife died several years ago, and his youngest son was killed in the recent war. He is survived by two sons—both well known in the medical profession—and by four daughters.

His body was laid to rest in St. Andrew's Cemetery on May 10th. The funeral was attended by a large gathering of colleagues and members of the medical profession, and by many old patients.

T. O.

We are indebted to Mr. H. BRUNTON ANGUS, Professor of Surgery in the University of Durham College of Medicine, for the following tribute:

By the death of George Haliburton Hume, M.D., D.C.L., F.R.C.S. EDIN., Newcastle-on-Tyne has lost a man of striking personality. Sprung from a Border yeoman stock, educated at Edinburgh University, he settled in Newcastle-on-Tyne, where he was fortunate in being appointed at an early age to the surgical staff of the Newcastle Infirmary. Never of robust physique, such was his devotion to work that he built up a large practice and also conscientiously fulfilled his duties to the hospital. As a surgeon he was characterized by the thoroughness and care which he devoted to his work. A very efficient operator, he shone by the soundness and excellence of his judgement. He had a keen critical mind which never lost sight of the best interests of his patients. The public were quick to discover



this trait and few men in Newcastle-on-Tyne have ever enjoyed such implicit confidence. As a teacher he was gifted with a lucid style and fluent speech; drawing from his rich experience he held the close attention of his students. Outside of professional matters his balanced judgement made him a trusted adviser and friend. He was a refined, scholarly man, a great student of history and a brilliant conversationalist. His *History of Newcastle Infirmary* is a worthy monument to his literary ability and love of historical research. Of a retiring disposition, he never sought public notoriety, but to those who enjoyed the privilege of his friendship he was a charming companion.

A strong family man, his later years were darkened by the death of his wife and the loss of his youngest son, who was killed in the great war. These were blows which he felt deeply, but he bore them with the same unfaltering courage that he displayed when his own health failed. His last two years proved a severe trial; conscious of his steady decline, with mind clear even to the last week of his life, he neither complained nor repined but faced the inevitable with sublime heroism.

#### ARTHUR LOOSS, Ph.D.,

Formerly Professor of Parasitology, Cairo.

We learn with regret that the distinguished helminthologist, Dr. Arthur Looss, died after a long illness on May 4th, at Giessen. Dr. Looss was born on March 16th, 1861, at Chemnitz, where his father was a works director. He received his early education in his native town and at Lodz in Poland. In 1880 he matriculated at the University of Leipzig as a student of natural science, and attended the lectures of Professors Credner, Haeckel, and Hoffmann, and worked in the laboratories of Professors Leuckart, Schenk, Wiedemann, and Dr. Fraiine. In 1885 he received the doctorate of philosophy for a thesis on the Trematodes.

For some years he lectured in Leipzig, and later on was sent by Leuckart to Egypt to investigate the transmission of bilharzia. Failing to implicate the molluscan fauna in the spread of the disease he arrived at the conclusion that infection took place directly from man to man through the skin. During the inquiry Looss studied also the development of *Ankylostoma duodenale*, and accidentally infected himself. This led to his remarkable series of observations which demonstrated for the first time that infection takes place through the skin, and that the larvae there are carried to the heart and lungs, finally reaching the alimentary canal from the trachea. The two volumes on the anatomy and life history of the hookworm published by Looss in the records of the Government School of Medicine show him at his best as a most detailed and accurate observer, as well as a highly skilled artist. His other contributions to medical helminthology comprise briefer but equally masterly descriptions and illustrations of *Heterophyes heterophyes*, *Trichostrongylus subtilis*, *Filaria loa*, and *Schistosoma japonicum*. His monograph on the *Sclerostomidae* of horses has proved to be one of the most important helminthological contributions to veterinary science. Looss's predilection lay, however, with the trematodes, and the series of monographs on the classification of the distomes, beginning in 1899, completely revolutionized the basis of classification of this group. For many years Looss was professor of parasitology and biology at the School of Medicine in Cairo, where he lectured with remarkable lucidity and earnestness to the Egyptian students in their first year of medical studies. It was not until some time after the outbreak of the world war that his professorial duties were suspended. With the entry of Turkey as an ally of Germany he was permitted to retire from his chair and return to Germany. Separation from his library and collections, and the crushing sorrows which fell upon his friends and country overcast the last years of his life, which were quietly spent in teaching at the University of Giessen. In spite of a peculiarly dogmatic manner and an acrid controversial style which brought him into conflict in turn with Railliet, Stiles, Manson, Leiper, and Sambon, Looss was in private life a man of simple and lovable character, and one who had many friends of many nationalities, for he was an accomplished linguist.

Helminthology and philately were his hobbies. Twice he visited England, on the first occasion to receive the Mary Kingsley medal of the Liverpool School of Tropical Medicine. His second visit took him to Cambridge, where an extended tour of the colleges was arranged for him. After viewing three, he pathetically appealed to his host with the remark, "Ach, they are all the same, now show me some worms." This single-minded absorption in a field of study which at one time many considered to be exhausted has won for Looss an imperishable name, and placed upon humanity a debt which posterity must eventually acknowledge.

WE regret to record the premature death, on April 21st, after an operation, of Dr. S. JERVOIS AARONS, of 17, Harley Street. Dr. Aarons was Australian by birth, and was educated at the Universities of Sydney and Edinburgh; he was a popular president of the Union at Edinburgh. He graduated M.B., C.M. Edin. in 1895, and M.D. in 1897, and became M.R.C.P. Lond. in 1904. After having been house-surgeon in the gynaecological wards of the Edinburgh Royal Infirmary, and tutor in midwifery and gynaecology at the Edinburgh Extra-Mural School, he settled in London, and held the appointments of pathologist and registrar at the Hospital for Women, Soho Square. At the time of his death he was gynaecologist to St. Anthony's Hospital, Cheam. Dr. Aarons was a man of brilliant personality and kindly nature; he was perhaps best known for his work on sterility, on which subject he wrote in the *Index of Treatment*. He was the author of a small book on *Gynaecological Therapeutics*, a volume of modest aims but of real practical value, and he also contributed many articles to the literature of gynaecology.

### Universities and Colleges.

#### VICTORIA UNIVERSITY, MANCHESTER.

THE Earl of Crawford and Balcarres has been nominated Chancellor of the University, in succession to Viscount Morley, who has resigned on the ground of advancing years. Lord Crawford is the head of the house of Lindsay, has been a Cabinet Minister, and is trustee of the National Gallery and the National Portrait Gallery.

Professor J. S. B. Stopford has been appointed Dean of the Medical School as from September next, in succession to Professor R. B. Wild.

A ceremony for the conferment of medical degrees will be held on Saturday, July 14th.

#### UNIVERSITY OF SHEFFIELD.

MR. ERNEST FINCH, M.D., M.S. Lond., F.R.C.S. Eng., has been appointed to a lectureship in surgery.

#### ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN extraordinary comitia of the Royal College of Physicians of London was held on Thursday, May 10th, at 5 p.m., the President, Sir Humphry Rolleston, being in the chair.

The following gentlemen, elected to the Fellowship at the last comitia, were admitted as Fellows:

Richard Hingston Fox, M.D. Brussels, John Porter Parkinson, M.D. Lond., Donald George Hall, M.D. Camb., Wilfrid Stephen Fox, M.D. Camb., Frank Edward Tylecote, M.D. Manch., John Owen, M.D. Lond., Leonard Gregory Parsons, M.D. Lond., John Parkinson, M.D. Lond., Alfred Hope Gosse, M.D. Camb., Philip Henry Munson-Bahr, D.S.O., M.D. Camb., Sir Hugh Kerr Anderson, M.D. Camb., Byrom Bramwell, M.D. Edin.

A communication was received from Dr. J. J. Perkins, resigning his examinership in medicine as from July next.

A report was received from Dr. Drewitt, who represented the College at the bicentenary of the death of Sir Christopher Wren. The thanks of the College were conveyed to Dr. Drewitt by the President.

Dr. Edwin Goodall was appointed a representative of the College at the University of Wales, vice Dr. H. W. G. Mackenzie, resigned. A vote of thanks was accorded to Dr. Mackenzie for his services.

An address to his Royal Highness the Prince of Wales, President of St. Bartholomew's Hospital, on the occasion of the 800th anniversary of its foundation, was sealed.

#### ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary Council was held on May 10th, when Sir Anthony Bowlby, President, was in the chair. Diplomas of Membership were issued to 150 candidates recently found qualified. Twenty candidates were found qualified for the Diploma in Public Health, in conjunction with the Royal College of Physicians. (The names were published in the report of the comitia of the Royal College of



Physicians, May 5th, p. 792.) Ten candidates were found qualified, in conjunction with the Royal College of Physicians, for the Diploma in Tropical Medicine and Hygiene. (The names were published in the report of the committee of the Royal College of Physicians, May 5th, p. 792.)

Mr. Hugh Lett was elected a Member of the Court of Examiners.

A letter was read from the Clerk of the Barbers' Company stating that, subject to the consent of the Royal College of Surgeons, the Thomas Vicary lecture should be continued for a further period of five years.

## Medical News.

THE subject selected for Sir John Bland-Sutton's Emeritus lecture at the Middlesex Hospital Medical School, on June 5th, is the choroid plexus and ventricles of the brain as a secreting organ.

THE Cavendish lecture of the West London Medico-Chirurgical Society will be delivered by Dr. Henry Head on "Speech and cerebral localization" on June 22nd, at 8.15 p.m., at Kensington Town Hall. The annual dinner of the society will be held at the Monaco Restaurant on June 19th at 7.45 p.m., with Dr. A. G. Wells, President, in the chair. Further particulars and tickets may be obtained from Dr. Guy Chambers, 101, Goldhawk Road, W.12.

THE twelfth biennial Huxley lecture, on recent advances in science and their bearing on medicine and surgery, will be given at the Charing Cross Hospital Medical School by Professor Sir Arthur Keith, F.R.S., on Wednesday, June 27th, at 3 p.m. The chair will be taken by Dr. William Hunter, C.B., and admission will be free without ticket.

A GENERAL meeting of the Medical Society for the Study of Venereal Diseases will be held at 11, Chandos Street, W.1, on Friday, May 25th, at 8.30 p.m. Sir Thomas Horder will give an introductory address on metastatic gonorrhoea, and Sir William Willcox will open a discussion on gonococcal arthritis.

SIR ROBERT ARMSTRONG-JONES, M.D., will deliver the Gresham lectures on physics at the Gresham College, E.C., on May 22nd, 23rd, 24th, and 25th, at 6 p.m. each evening. The subject will be medical hydrology and hydropathy, with special regard to the climate of health resorts in England and Wales. The lectures are free to the public.

WE are asked to state, with reference to the special course of medical hydrology arranged by the University of London Extension Board (see JOURNAL, April 28th, p. 735), that medical students are invited, without fee, to attend the whole course, and medical practitioners to attend the two opening lectures, on May 29th, at the University of London, South Kensington.

A MEETING of the Medical Officers of Schools Association will be held at 11, Chandos Street, W.1, on Tuesday, May 29th, at 5 p.m., when Dr. Alice E. Sanderson Clow will read a paper on the effect of physical exercise on menstruation.

THE University of Glasgow proposes to confer its honorary degree of LL.D. upon Dr. Graham Lusk, professor of physiology in Cornell University, and not as previously announced.

THE Llandrindod Wells Open Medical Golf Challenge Cup was played off on May 2nd, 3rd, and 4th. In the semi-finals Dr. J. C. Hunot (8) beat Dr. D. Evans (10) 3 and 1; Dr. D. Saunders Jones (9) beat Dr. A. Davies (6) 5 and 4. In the finals Dr. D. Saunders Jones beat Dr. J. C. Hunot (the winner last year) 6 and 5. Lady Mayo Robson presented the cup and replica. The competitors were entertained to luncheon at the Golf House by the local committee. Toasts were proposed and responded to by Dr. Evans (Pennard), Dr. Baird (St. Leonards), and others, who all spoke highly of Llandrindod Wells and its facilities for various treatments.

THE examination of the Central Midwives Board for Scotland, held simultaneously in Edinburgh, Glasgow, Dundee, and Aberdeen, has just concluded. Out of 95 candidates who appeared for the examination 87 passed. Of the successful candidates 27 were trained at the Royal Maternity Hospital, Edinburgh; 20 at the Royal Maternity Hospital, Glasgow; 3 at the Maternity Hospital, Aberdeen; 9 at the Maternity Hospital, Dundee; 7 at the Queen Victoria Jubilee Institute, Edinburgh; 4 at the Cottage Nurses Training Home, Govan, Glasgow; and the remainder at various recognized institutions.

THE annual summer meeting of the Medical Golfing Society will be held at Addington (by kind permission of the Addington Golf Club) on Thursday, June 14th. Entries, with lowest handicap, must be sent to the honorary secretary, Dr. Rolf Creasy, jun., 25, Devonshire Place, W., on or before Monday, June 11th. The entry must be accompanied by the annual subscription of 10s., if due. All medical men on the *Medical Register* are eligible for membership of this society.

THE Fellowship of Medicine have arranged a further series of post-graduate lectures, open to members of the profession, to be given by kind permission of the Royal Society of Medicine, at 1, Wimpole Street, W.1. The opening lecture on Wednesday, May 30th, at 5.30, will be given by Mr. Ernest Clarke on tips in ophthalmology for the general practitioner, and others will follow by Mr. R. A. Hendry, Mr. James Berry, Sir Sydney Russell-Wells, Sir Henry Gauvain, Mr. Harold Chapple, and Mr. H. S. Souttar. Copies of the complete programme will be forwarded on application to the Secretary to the Fellowship of Medicine, 1, Wimpole Street, W.1. A course of eight practical lecture-demonstrations on gastro-intestinal diseases of children will be given by Professor Sir William Bayliss, Dr. Bernard Myers, and Mr. E. T. O. Milligan at the Children's Clinic, Western General Dispensary, Cosway Street, N.W.1, from Monday, June 11th, to Thursday, July 5th. The fee for the course is £1 ls., or lectures can be taken singly, if desired. Copies of the syllabus can be obtained from the Secretary to the Fellowship of Medicine, 1, Wimpole Street, W.1. The lectures will be delivered at 5 p.m. on each day.

THE societies engaged in the educational health and food campaign organized by the Bread and Food Reform League, in association with other scientific and sociological societies, have asked the Minister of Health to receive a deputation which desires to direct attention to the importance of introducing legislation to notify and limit the presence of preservatives in food, and to urge the necessity of publishing educational leaflets giving information about healthy and economical foods.

AT the solemnity in the hospital square on Tuesday, June 5th, during the celebration of the 800th anniversary of St. Bartholomew's Hospital, the musical arrangements will be under the supervision of Lieut.-Colonel J. Mackenzie Rogan, C.V.O., who has composed fanfares for trumpets and drums specially for the occasion; these will be played by the Coldstream Guards band. The band of the Welsh Guards will play a selection of music.

A COURSE of eight lectures on surgery will be given by members of the staff in the London Hospital Medical College, commencing on May 25th at 4.15 p.m., when Mr. Russell Howard will lecture on the testicle. The course is intended for senior students and post-graduates.

THE eighth French Congress of Legal Medicine will be held in Paris from May 24th to 26th under the presidency of Dr. Pierre Parisot. M. Courtois-Suffit and Giroux will introduce a discussion on the international regulation of the sale of cocaine. There will be discussions also on industrial diseases, on the identification of blood, and on injuries to the vertebral column. A special meeting of the French Society of Legal Medicine will be held on May 26th, and a discussion will take place on the declaration of deaths in France.

A CRICKET match will be played at Brentwood on June 20th, at 2.30 p.m., between the Essex Doctors and the Southend Doctors. Any Essex medical man who would like to take part in the match should communicate with Dr. Horace E. Haynes, Littleton Hall, Brentwood, Essex.

DR. T. S. HIGGINS, M.O.H. St. Pancras, and Dr. J. SPENCER LOW, a medical officer of health of the Ministry of Health, have been elected Fellows of the Royal Sanitary Institute.

THE next examination of the Dental Board, which will be held in Edinburgh on July 6th and 7th, in Manchester on July 18th and 19th, and in London on July 26th and 27th, affords the last opportunity for those persons entered under Section 3 (2) of the Dentists Act, 1921, to present themselves, unless they be entered as war service candidates. Notices have been addressed to persons whose names are entered on the list. Any eligible person who has not received such a notice should communicate with the Secretary for Examinations, Dental Board, 44, Hallam Street, London, W.1.

THE annual medical dinner for Southampton and district, the fourth of the series, was held on the night of Wednesday, May 9th, at the South-Western Hotel, Southampton, and was well attended by the doctors residing in the town, and even from so far afield as Botley and Romsey. After the toast of "The King," the chairman, Dr. Farquharson, made a reference to the late Dr. Purvis, whose memory was honoured, standing and in silence, by the company. A musical programme was supplied by Mr. Leonard Munn, who kept the audience interested and amused for over an hour with a varied programme of songs, stories, and piano. Several items were also given by Dr. Hamilton, whose splendid voice was very much appreciated, and a very entertaining evening was brought to a close at 10.45 p.m. by the singing of "God Save the King."

MESSRS. WILLIAM HEINEMANN (Medical Books) LTD., have in the press *Aromatics and the Soul*, by Dr. Dan McKenzie, M.D., and *The Hygiene of Marriage*, by Mrs. Hutton, M.D., with a preface by Professor A. L. McClellroy.



## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

The postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology*, Westrand, London; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand, London; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediscera*, Westrand, London; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Dacillus*, Dublin; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate*, Edinburgh; telephone, 4361, Central).

### QUERIES AND ANSWERS.

#### INCOME TAX.

"R. W. S. C." gave up his practice at the end of March or beginning of April, 1916, subsequently earned a few fees as locum-tenent, and joined the R.A.M.C. on September 7th, 1916. He has recently received an application for payment of £21, income tax assessed on his earnings as for the year 1916-17.

\* \* Provided the assessment was made by April 5th, 1920, the tax is legally recoverable. But it may be assumed that the authorities would be willing to make any adjustment necessary to bring the amount down to a proper figure. "R. W. S. C." should therefore ask for full particulars as to the precise amount of income assessed and supply a statement of the fees earned by him from April 5th, 1916, to September 7th, 1916. He might also take steps to ascertain what was his assessable military pay and what allowances were made to him when that was assessed to tax, as there may be some balance of allowances to be set against the assessment on the civil earnings.

"SENEX" is in receipt of retired pay from the Government and income from various taxed and untaxed sources. He has been medically advised to reside on the Continent, and inquires what abatement he would receive if he left the United Kingdom and established his ordinary residence abroad.

\* \* He would be entitled to exemption from tax on income not arising from this country and on interest from most of the war issues—for example, 5 per cent. War Loan. On the other hand, the allowances which he receives at present would be restricted to the proportion which his liable income would then bear to his total income.

"A. B." has an income of £500 a year, all of which is taxed at its source. How will he benefit by the £225 allowed him?

\* \* Taking the year 1922-23 as an example, he is entitled to repayment of

£225 at 5s.	...	...	...	...	...	£56 5 0
£225 at 2s. 6d.	...	...	...	...	...	£28 2 6
						£84 7 6

He can claim repayment of this amount through the inspector of taxes for the town in which he resides, on the usual official form of claim which the inspector will supply on request.

### LETTERS, NOTES, ETC.

#### TREATMENT OF DIABETES.

DR. C. MUTHU (Mendip Hills Sanatorium) writes: I am glad Dr. Cammidge, in your issue of May 5th (p. 787), has raised a note of warning with regard to "optimistic forecasts" of insulin in the treatment of diabetes. May I relate my experience during my recent visit to India? I had the privilege of seeing and examining 6 cases of diabetes in different parts of India which were cured by simple fasting. One of these cases was a medical man practising in Nepal, who fasted the first week, taking nothing but butter milk, and during the second, third, and fourth weeks

fasted two days a week and reduced his diet on the other days to a fourth of what he took before. At the end of the month he completely recovered and was none the worse for his fasting experience. I am sure that diabetes, at least in India, is due to an over-indulgence of rich foods and to an excessive meat diet with little or no exercise whereby the gastric organs—the liver and pancreas—get overworked and fatigued; and the abstinence from food gives them time to recover their exhaustion and renew their normal metabolism. I have seen other cases besides diabetes do well by fasting treatment. I myself got rid of commencing dysentery by fasting two days and taking nothing but orange juice. I saw a case of paralysis agitans in a fat purdah lady in whom both her weight and the tremors of head and hands were considerably reduced on a diet of nothing but oranges. Another case was a lad of 14 with a voracious appetite who got rid of his asthmatic attacks when his diet was considerably reduced and his bowels attended to. There is no doubt that civilized man, by over-indulging in eating and drinking and thus overworking his digestive organs, invites diseased conditions, and that in partial or strict fasting and regulation of diet the medical profession has a simple but efficient remedy in the treatment of diabetes and many another disease.

#### THE INFLUENCE OF INTESTINAL BACTERIA UPON THE THYROID GLAND.

"K." writes with reference to Dr. Harries's paper on disease of the thyroid gland (BRITISH MEDICAL JOURNAL, March 31st, p. 553): I had a case regarded as early exophthalmic goitre by a consultant and another doctor. Laboratory reports on specimens of urine were: first, "indican—a trace"; secondly, "indican—none." After four weeks of the usual treatment, without improvement, the patient was put on thyroid, 1 grain daily, tincture of iodine, 5 minims thrice daily, and decided improvement ensued. The question arises as to what other conditions are associated with absence of indican in the urine, interfering with its utility for diagnosis and prognosis in exophthalmic goitre.

#### THE DETERMINATION OF LABOUR.

DR. HEXWOOD SMITH (Chichester) writes with reference to the discussion on the legal period of gestation before the Medico-Legal Society on April 17th (BRITISH MEDICAL JOURNAL, April 21st, p. 691): Is not the menstrual cycle the determining factor in the calculation of the commencement of labour? I used to calculate for my patients that labour was due at the beginning of the tenth "period," reckoned from the first day of the last menstruation, and it usually proved correct within a week. For instance, if the last "period" began on January 1st, labour was due on September 10th, and would probably take place before the 17th. May I draw attention to a mistake that is not infrequently made by authors of communications in using the word "pubis" instead of "pubes"? "Pubis" is the genitive case.

#### CUPPING.

DR. J. R. KEITH (Driffield) writes: In the interesting communications which have appeared recently in the JOURNAL with regard to cupping I see no reference to a very effective and easy method of carrying it out—namely, the vacuum glasses which have been devised by A. Bier and R. Klapp for the treatment of various inflammatory conditions. These glasses, which were originally manufactured by Eschbaum of Bonn, may now be obtained from makers of surgical instruments in this country. A convenient glass to use is one 2½ inches in diameter, which, held in position by an assistant, is exhausted by the operator by means of a suction pump which is connected with the glass by a short piece of rubber tubing.

#### CORRECTION.

DR. D. MONTAGUE B. SNELL calls attention to an error in the qualifications printed after his name in the JOURNAL of May 12th (p. 809 and Contents page). For M.R.C.P. read L.R.C.P.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 30, 31, 34, 35, and 36 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 32 and 33. A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 207.

#### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, W.C.2, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restant* letters addressed either in initials or numbers.



## A British Medical Association Lecture

ON

## THE PATHOGENESIS OF RICKETS.\*

BY

ERIC PRITCHARD, M.A., M.D. OXON.,

M.R.C.P. LOND.,

MEDICAL DIRECTOR, INFANTS' HOSPITAL, WESTMINSTER; CONSULTING PHYSICIAN TO THE QUEEN'S HOSPITAL FOR CHILDREN.

EVIDENCE derived from experimental and clinical work on the subject of rickets has accumulated so greatly during recent years that we are now in a position to review in reasonable perspective many of the rival theories which from time to time have been advanced, to explain both its etiology and its pathogenesis.

There is scarcely any element in the food which, at one time or another, from the days of Glisson (1650) downwards, has not been incriminated, as the guilty factor in the causation—sometimes on the grounds of excess, sometimes on the grounds of default. Further, apart from food causes, there are few factors in the general hygienic environment—whether connected with bad housing, with confinement, with infection, with want of exercise, or with want of light—which have not been regarded by one or other authority as having an important bearing on the etiology. During the recent renaissance of interest in these sides of the subject there has been a distinct tendency for investigators to range themselves definitely either on the side of the dietetic theory or on that of the environmental explanation; but the deeper each party probes into the problem the greater are the concessions which it is compelled to make to the claims of the other, so that what appeared quite a short time ago to be a sharp line of demarcation between the two standpoints has now become an ill-defined neutral zone.

I do not think that at the present moment any impartial person who has at all followed the recent controversy would question the general truth of any of the hypotheses which have been formulated by either of the rival parties. Nobody, I believe, has any doubt that Mellanby is correct in his view that the fat-soluble "A" factor plays an important part both in the cure and prevention of the disease. Neither do I think he would quarrel with the claim made by Findlay and others that housing conditions, confinement, and want of exercise have a share in the etiology; nor with Buchholz (1904), Chick, Hume, and Mackay (1922), in their belief that ultra-violet rays have both a prophylactic and a curative influence on the rachitic changes in bone; nor with Noël Paton in his view that infection also plays a part; nor, for the matter of that, would he dispute the possibility of carbohydrate excess (Rabagliati and Hutchison), or protein deficiency (Henry), or defects of balance with respect to calcium or phosphorus, or any other of the constituents of the food being concerned in the causation of the rickety syndrome. I think it would not be overstating the case to say that at the present time most reasonable people are agreed that there is not any single cause of the disease, but there are many possible contributory factors which may exist in a great variety of combinations.

If, however, there is agreement as to the multiplicity of these remote or contributory causes, there is absolutely no unanimity of opinion as to the *causa vera* or the exact pathological process which can explain how it is that the same end-result can be reached by so many routes. Some authorities have regarded some disturbance of calcium metabolism or some faulty relationship between the phosphorus and calcium balance as the common point at which all these convergent paths meet, and many painstaking investigations have been carried out by Stheeman, Hess, McCollum, and others to estimate the exact composition of the blood in respect of these elements under normal and rickety conditions. Although there appears to be a distinct tendency for both the calcium and phosphorus content to show a noticeable diminution in cases of active rickets, and especially in the extreme phases of tetany

and other spasmophilic conditions, this result is by no means universal, and in certain cases the amount of calcium at least may be actually increased. The comparative fruitlessness of such lines of research is explicable on several grounds. In the first place, it does not follow that because the blood has a normal calcium content the whole of it, or any considerable part of it, is available either for bone building purposes or for the neutralization of acid bodies, which, according to Hamilton and Tobler, are the important functions of calcium in the metabolic processes of the body. Varying proportions of such calcium may be, so to speak, "dead," having served their purpose in the economy; little of this base may be in an ionic state and serviceable for either purpose, especially for the purpose of neutralization. In accordance with this view, whether a large or a small amount of calcium is present in the blood will depend largely on the efficiency of the excretory processes in eliminating "dead" calcium either in the urine or in the faeces, and the amount present is no index of the available supply. Further than this, there are several automatic mechanisms for maintaining the calcium content of the blood at a constant and normal level. Hence estimations of the amount of calcium present in the blood do not afford a reliable index of the amount of calcium available in the whole body, either for the purposes of bone formation or for the neutralization of acid bodies—the question of dépôts comes into consideration.

Dr. Bengt Hamilton<sup>1</sup> has calculated that the total amount of calcium required for the purposes of internal metabolism in the infant—that is to say, for the neutralization of acid radicals—is about 0.200 gram in the twenty-four hours, and that unless this amount is afforded as income in the food or can be spared from the blood reserves the deficit must be made good by borrowing from the calcium dépôts of the body—that is, mainly from the bones themselves. Hamilton points to the interesting fact that at birth there are wide fluctuations in the amount of these reserves, and that the latter are generally stored up during the final two months of intrauterine life—an explanation which helps us to understand why premature infants are liable to develop symptoms of rickets at a very much earlier date than is usual in the case of full-term infants.

We know that in rickets, and indeed in conditions antecedent to the development of its manifest symptoms, there is always an increased output of calcium, mainly in the faeces, and to a lesser extent in the urine, and that this, in conjunction with the general depletion of the total calcium content of the body, is the most striking and constant factor in the pathology of the disease. No theory of the pathogenesis of rickets can be satisfactory which does not offer an explanation of these phenomena.

If, as Hamilton and Tobler maintain, the chief function of calcium in internal metabolism is to neutralize acid bodies, and that new bone will not receive the required quantity of this base until such vital needs have been satisfied, it seems probable that the solution to the problem will be found in discovering some common cause in all cases of rickets for an existing shortage of this base. An income of calcium which may be adequate for the neutralization of a normal production of acid bodies may be quite insufficient if the latter are produced in excess. If, therefore, among all the etiological factors of rickets we could find some common explanation of excessive acid production, or some common reason for default of calcium, we should have at least a logical basis of the pathogenesis, and we could then understand why on the same dietary one child will become rachitic and another remain in health, and also why, under similar conditions of environment, one child may develop symptoms of rickets while another may show none. I feel convinced that we can find in all cases of rickets, from whatsoever cause arising, definite reasons for explaining either an excessive acid production or a relative shortage of calcium—in other words, some definite disturbance of their normal relationships.

If the whole of the food consumed is used for physiological purposes and all its potential energy represented in the form of growth, heat production, work, or secretions, it is clear, on theoretical grounds at least, that no part of it can leave the body except in the form of completely

\* Delivered before the Oxford Division of the British Medical Association, March 28th, 1923.



oxidized and energy-free end-products—in other words, in the form of carbonic acid gas, urea, and water. In practice, however, there will always be some waste—that is, some products of incomplete combustion which will be represented in part at least by acid bodies of larger molecular size than  $\text{CO}_2$ . Such acid bodies, unlike  $\text{CO}_2$ , cannot be removed from the body without loss of the mineral bases which are required for their neutralization. This inevitable loss, in the case of babies, as far as calcium itself is concerned, is represented by 0.200 gram in the twenty-four hours—that is to say, if Hamilton's figures can be relied upon as accurately representing the irreducible minimum. In addition to this there will, of course, be a corresponding depletion of other mineral bases such as sodium, potassium, ammonium, iron, and magnesium. When, however, large amounts of acid are produced, correspondingly large quantities of calcium, as well as of other elements, will be requisitioned, and if they are not forthcoming in the food they must be withdrawn from the reserve dépôts.

If excess of food—that is to say, any amount over and above the existing physiological requirements—is consumed, there will be a corresponding increase in the production of acid bodies, and I propose now to explain how it is that all the known etiological factors in the production of rickets may lead to some disturbance of balance between the intake and output of energy.

The degree to which food consumed can be utilized in the body will naturally depend either on the amount of

depressed by deprivation of the essential stimuli, and the appetite still remains. The only possible alternatives to carbon dioxide production are: (1) storage, (2) non-combustion, or (3) semi-combustion of the food consumed. The limits of storage are restricted, non-combustion means albuminuria and glycosuria, while semi-combustion means the production of the intermediate products of metabolism, most of which are acid bodies which require neutralization.

It will be noted that most of the etiological factors of rickets are also depressants of metabolism, as is set out in Fig. 1.

Contrariwise most of the prophylactic and remedial measures which are employed in the treatment of rickets are also stimulants of metabolism, as shown in Fig. 2. Consequently I repeat that the obvious cause of rickets is a defective oxidation of the food consumed, with a consequent increased production of acid bodies which must be neutralized at the expense of basic elements, including calcium. It may be argued that there is not sufficient direct evidence to justify the acceptance of this very obvious theoretical line of reasoning; to this I can only reply that the most practical proof of an excessive production of acid bodies is the presence of an excess of ammonium-nitrogen in the urine; ammonium of all bases is the cheapest and most available, and one of the most characteristic features of rickets is an excess of ammonium salts in the urine, as has been shown by Dr. Amy Hodgson.<sup>2</sup> Further proof would, I am quite sure, be forthcoming if

### DEPRESSANTS OF METABOLISM.

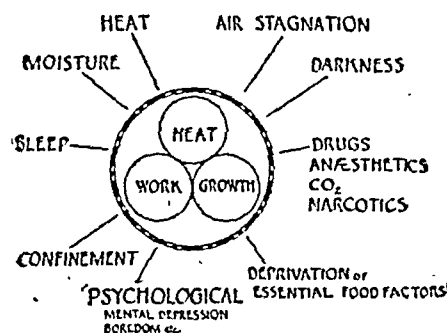


Fig. 1.

### STIMULI OF METABOLISM.

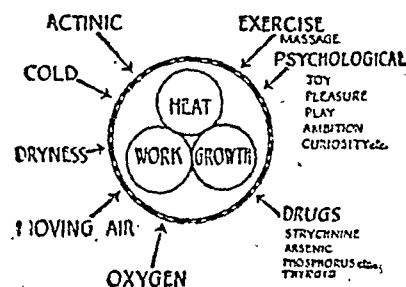


Fig. 2.

food itself or on the physiological demand for its utilization—in other words, on the relationship of the intake and the output. Whether, therefore, any particular diet is excessive or not cannot be decided by arbitrary codes or diet tables. If the body is an efficient working machine, and the output of energy in the form of heat or work is correspondingly high, a liberal diet may not be physiologically excessive, whereas with a defective machine and a small output even a very exiguous diet may be relatively excessive. The efficiency of the machine itself will depend on a great variety of antecedent conditions—its innate qualities, and the uses to which it has already been subjected; hence we can well understand why hereditary, ante-natal, and previous environmental conditions play a part in the existing output of energy, in the fate of the child, and in the etiology of rickets. Without any change in the machine itself the actual output of energy will in large measure depend on the circumstances under which it is working—that is to say, on the environment and on the stimuli for activity which the latter affords. In the case of the child such stimuli are not exclusively physical; many of them are of a psychological character, and hence we can understand how it is that such influences as joy, pleasure, play, sunshine, opportunities for exercise, and exposure to fresh air can be etiological factors in rickets. In this connexion I would especially direct attention to the influence of cool air in stimulating metabolism. Dr. Leonard Hill has proved that the output of carbon dioxide, which is an index of metabolism, may be doubled by exposing the child to the open air.

Although under such conditions appetite is increased and more food consumed, it may well be asked what happens to the food when the metabolic processes are

the degree of depletion of the alkaline reserves of the blood were to be consistently estimated in cases of active rickets. Clinically there is abundant evidence of such depletion, especially in the crises which complicate severe cases of the disease. Theoretically the alkaline treatment of rickets, by affording substitutes for calcium as neutralizing bases for acid products, ought to be most efficacious; and so in my experience it is, but to be effective it must be continuously employed as long as acid bodies are formed in excess. Such treatment by calcium spacers if spasmodic or intermittent will fail.

Since calcium is not readily excreted by the kidneys but mainly by the bowel, we must search the faeces for evidence of this base in combination with acid bodies, and here again we find the expected result, for calcium soaps present in excess are a striking feature of the rickety and pre-rickety condition. Such soaps may be, and probably are, excretions from the blood, and represent the defective oxidation of fats rather than the surplus of fat which has never been absorbed and passed through the processes of internal metabolism.

It is not always easy to understand why all the known factors of rickets impair the efficiency of the body as a working machine and thus limit the output of work. Some of the dietetic causes may owe their results to the withholding of certain elements necessary for the performance of certain special functions. For instance, iodine starvation may depress the metabolic processes by depriving the thyroid gland of the particular element which is necessary for the elaboration of its specific secretion. On these grounds we can understand how it is that certain authorities have regarded rickets as the result of thyroid defects; and even in the light of more recent knowledge there



seems to be no reason for excluding in exceptional cases the thyroid from all participation in the disease. For the thyroid secretion is the great stimulator of the metabolic processes.

If these views on the pathogenesis of rickets are well founded, it seems illogical to expect that there can be one cure for the condition; each case, in accordance with its own particular etiology, must be treated on specific lines. It would be unreasonable, for instance, to expect good results from treating a case of rickets due to carbohydrate excess on the same basis as one due to a chronic infection or vitamin starvation. The specific treatment of rickets lies in the specific treatment of the contributory factors, although the symptomatic treatment of the resulting mineral depletion certainly lies in the adequate supply of available calcium salts, and in alkali therapy.

I have drawn up a schematic diagram (Fig. 3) to show the common etiological factors of rickets in such a way that their contributions to the common end-result may be easily visualized. These various factors are arranged in

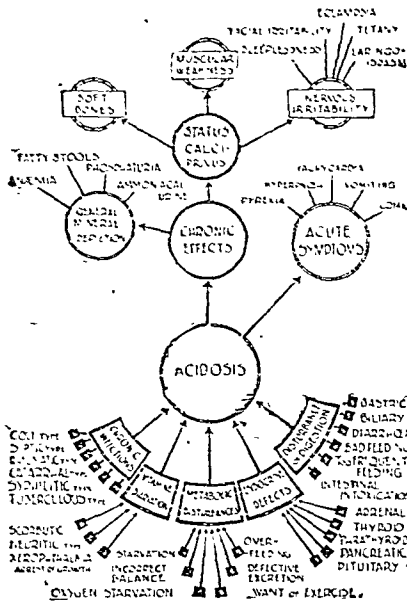


FIG. 3.

groups. Like a vast watershed they afford their respective contributions of acid products to the common reservoir—the blood—which is indicated in the centre of the figure.

The clinical picture of any given case of rickets must be just as composite as the etiological factors which are responsible for its production. The symptoms and the general clinical picture of a case which is due to vitamin starvation, or calcium inanition, will be quite different from a case due to carbohydrate excess or a chronic infection, although they may have certain symptoms in common—namely, those which are due to the resulting acidosis.

Since almost every variety of malnutrition, either acting alone or in combination with others, can lead to one and the same end-result, we can easily understand why there has been so much confusion between the symptoms proper to the rickets condition and those due to the contributory causes—a confusion which is really one between cause and effect.

In conclusion, I would once again repeat that the essential basis, or the *causa vera*, of rickets is most probably a relative excess of acid bodies produced in the system by a disproportion between the intake and the output of energy—a condition which results either from an innate inefficiency of the body machine itself, or from defects in the environment, the latter being regarded as including the quantity and the quality of the food as well as the character of the stimuli afforded by the hygienic surroundings.

## REFERENCES.

- <sup>1</sup> *Acta Paediatrica*, vol. ii, fols. 1 and 2. <sup>2</sup> *Lancet*, 1921, ii, p. 95.

## NEPHROPTOSIS: ITS CAUSATION, SYMPTOMS, AND RADICAL CURE.

BY

JOHN J. BELL, F.R.C.S.I., F.R.C.S. EDIN.,

SURGEON TO THE WADDILOVE SAMARITAN HOSPITAL FOR WOMEN.

ABOUT thirty years ago Dr. Suckling of Birmingham was led to the conclusion that, as many cases complaining of nervous dyspepsia, neurasthenia, and depression had also movable kidney, there might be in these associations more than a casual relationship. His further investigations convinced him that the renal displacement and the nervous disturbances stood in the relation of cause and effect. When my attention was first drawn to Dr. Suckling's work, published in 1907, I had already seen and treated many cases in the usual way. In consequence of the striking results disclosed in his work, I decided to operate on all suitable cases.

## CAUSATION.

Movable kidney may be classed under two heads: (1) accidental; (2) constitutional or congenital. Cases of the first class are usually due to accident or injury of a crushing nature, and are easily diagnosed by the history and acute symptoms. The second class comprises the vast majority of all cases, varying from the least increase of the normal mobility to the complete dislocation of the organ from its anatomical site.

To account for the fact that many more women than men suffer from nephroptosis various explanations have been advanced—such as frequent pregnancy, loss of flesh, loss of intra-abdominal pressure, chronic constipation, chronic cough, etc.; but these causes do not account for more than a small percentage of the cases I have seen. I am convinced that there is something in the anatomical formation of women which is the primary physical origin of the condition. I suggest that there is a congenital or family defect of shape of the renal pouch, which predisposes to an easy descent of the organ, and that there is some inherent weakness in the suspensory tissues which disposes them to stretch easily. Can we deny the hereditary influence, in tone of tissue, while admitting it in type of outline of body, in temperament, and in nervous responses? I am strongly disposed to consider the larger proportion of cases as directly due to some transmitted congenital defect. In support of this I would cite the instance of a father with double nephroptosis and two daughters with a similar condition; another of a mother and two daughters; and at least twenty cases of sisters. Suckling states that he has often found movable kidney in children, and that he is inclined to the view that it is hereditary and congenital. Billington and Pardy confirm this observation.

Volkow and Dilitzin state that the paravertebral niches in which the kidneys rest are shallower and more open below in women than in men. This observation is supported by Morris, who examined one hundred men and found movable kidney in two only, and in a series of operations by him for this condition ninety-six were upon women and only two upon men.

In addition to the congenital tendency and anatomical defect in the formation of the renal pouch, there are contributory causes, of which the most important are nutrition and occupation. A large proportion of my cases in the Samaritan Hospital have been operatives from half-time age. Inquiries from doctors in large practices in other manufacturing towns confirm my view that the too early employment of girls in occupations causing long standing and weight carrying is an important causative factor. Another contributory cause which has been suggested is repeated pregnancy, but I believe it to be a negligible factor, for over 50 per cent. of my cases were unmarried or non-paious, and I have examined many mothers of large families and found no displacement. Loss of intra-abdominal pressure may, in some cases, aggravate the condition, but is never its cause. Other alleged causes are tumours of the kidney and calculi, but I do not attach much importance to them. Were nephroptosis the result of accident, physical strain, etc., we



should expect the larger proportion of cases to be found in them, whereas I have only seen it in ten men as against three hundred women.

#### *Examination of the Patient for Nephroptosis.*

Many cases of nephroptosis have been missed by examining the patient in the recumbent position. It is a common experience to find that the movable organ goes back on lying down, and deep breathing or coughing may not cause it to descend.

There are three ways of examining for a movable kidney. The first and most important one is with the patient standing, with back toward the examiner. The body being uncovered from breast to above symphysis, the patient is instructed to breathe deeply, slightly leaning towards the side examined. The thumb of the right or left hand, according to the side examined, is pressed deeply into the back below the last rib, the fingers grasping the front of the body and compressing the structures, alternately pressing and releasing until all rigidity passes off. The kidney, if movable, can then be felt; usually it slips up suddenly from the grasp, and renal tenderness is generally shown by the patient wincing.

In the second method the patient is placed upon a couch, in the sitting position, knees drawn up and body slightly bending forward, and then examined as in the standing position. In fat patients it is often necessary to try a third position. Place the patient on right or left side, as the case may be, with the knees drawn high up; this causes the abdominal contents to fall away from the flank, and the freely movable kidney can be palpated. A point of importance in each method is to begin the compression of the anterior wall over the iliac fossa, gradually ascending. If this is not done one can easily miss a kidney low down.

#### DIFFERENTIAL DIAGNOSIS.

In my experience only one condition has given any real difficulty—an elongated right lobe of the liver. When this is thin and freely movable it may easily be mistaken for movable kidney. It is, however, more anterior and does not slip from the compressing fingers in the same way as the kidney does. Nevertheless pressure upon this lobe may push it backwards, and give the impression that it is a kidney slipping back into its fossa. The two conditions are often present in the same subject. I need only mention tumours of gall bladder and ascending colon, and tumours of kidney, as possible sources of error.

A patient may present a typical history and symptoms of movable kidney, but on careful examination no kidney can be felt; on this account mistakes are sometimes made and patients are told that there is no displacement. I have often had to examine several times before finding displacement.

Another difficulty arises where the kidneys move downwards and inwards under the rectus, or when from their thinness we compress over them. Another point to note is the excitability of the muscles of the body wall. This is especially likely to arise if pressure be made too rapidly or too deeply. A further difficulty met with is rotation of the lower pole inwards: in such cases we do not find displacement, nor can we palpate any portion of the kidney, but still the symptoms definitely point to mobility. This is frequent in the early stages of descent.

#### SYMPTOMS.

Symptoms may be classified as direct or reflex. The former comprise intermittent pain in the small of the back of a dull aching kind, radiating from loin to thigh, described by some as dragging and tiring in character, increased by walking, long standing, or train journeys, inducing a feeling of over-fatigue. Reflex symptoms may arise in any organ supplied by the autonomic nerves.

Complaint may be made of violent headaches associated with giddiness and disturbance of vision, and sometimes ending in violent sickness and prostration. Or the patient describes palpitation, shortness of breath, increased upon exertion, and sometimes induced by the effort of undressing, but commencing after lying down. There is a small rapid pulse, with low blood pressure, and a mildly cyanotic appearance in face and lips, as if there were vasomotor disturbance. Again, the history may be one of chronic indigestion, sick-

ness, vomiting, in some cases haematemesis, discomfort after meals, giddy attacks, with sallow skin and tired appearance. Rarely is there any local tenderness in the region of the stomach. Or there is a feeling of sickness and giddiness on getting into the erect position after a night's rest. This symptom is very significant when it occurs in a young subject. It appears to be due to the sudden descent from the pouch of one or both organs. Similar attacks are common after any form of energetic physical exertion.

In another case the story may be one of intermittent diarrhoea with colicky pains, and evident tenderness in the caecal region, distension in the lower abdomen, a feeling of weight and heaviness, and great discomfort. Later on colitis may ensue. Or, again, the patient may complain of frequent micturition, day or night, often both, and sometimes haematuria, but there is no pus in the urine, no albumin, no sign of gravel, only an increase in mucus. The normal quantity of urine may not be increased in twenty-four hours, and generally the specific gravity is low. Many of these cases end with contracted bladder. In some cases the amount of urine secreted during the daytime is diminished, though there is no irritation, but, after retiring, there is frequent necessity to empty the bladder. This, I believe, is due to recession of the kidney, which, in the recumbent position, functions more actively when relieved from the inhibitory effect caused by descent.

We come next to that class of cases where the symptoms are referable to the female generative organs. The late Goelet of New York was one of the first to call attention to the reflex effect of nephroptosis upon the uterus and ovaries. The conditions he enumerated as provoked by movable kidney were: ovarian congestion due to interference with the ovarian vein; dysmenorrhoea, due to congestion of ovaries; profuse leucorrhoea; and endometritis. Menorrhagia and metrorrhagia are undoubtedly increased by this condition, and premenstrual headache is often intense. Amenorrhoea is sometimes present, and uterine displacement is a frequent concomitant. I am satisfied that in all cases of chronic pelvic symptoms, where there is no evidence of a local pathological condition, we should examine the renal region for mobility repeatedly if necessary.

Then we come to those cases with acute abdominal pain and vomiting, profuse sweating, pain in abdomen, and all the signs of shock—"Dietl's crisis"—sometimes diagnosed as due to acute appendix, acute gall stones, renal colic, or calculus. Lastly, I would draw attention to the fact that many of these cases of nephroptosis have chronic irritation of the appendix, and that it is not uncommon for the appendix to be removed, but without benefit. Conversely, the kidney may be fixed and a diseased appendix left. This coexisting condition is a sequel to the dropped right kidney producing irritation by its descent behind the caecum.

Many cases of nephroptosis are treated for neurasthenia, dyspepsia, and vague neuralgias, with little or no success. Closer investigation would reveal that the symptoms are secondary to and dependent upon renal displacement.

#### *The Nervous System.*

The autonomic nervous system comprises the sympathetic and parasympathetic; speaking generally of their functions, it may be said that when the sympathetic and parasympathetic are distributed to the same structure their actions are antagonistic. As Cannon graphically puts it, the parasympathetic serves for bodily conservation, as seen in its action on the pupil, which it contracts to save the retina from the excessive effects of light. By slowing the heart rate it gives the heart muscle longer periods of rest; by providing the flow of saliva and gastric juice, and by supplying the muscle tone necessary for contraction of the alimentary canal, it is essential to digestion. The sympathetic activates the body for struggle. It dilates the pupil to receive more light and stimulates the heart to beat more quickly to supply blood to the muscles. It contracts the blood vessels in the visceral area and inhibits the functions of the digestive organs.

Should the sympathetic be stimulated to overaction in any of its branches we should naturally expect disturbance of the ordered function of the gland or organ it governs. If this stimulation be more or less continuous there will be engendered in those nerve tracts a special susceptibility to such



stimulation, and consequently an increased liability to overaction. If we remember the distribution of the sympathetic chain with its numerous ganglia or exchanges acting as distributing centres, we can comprehend that stimulation received at one point may be passed along from the first receiving station to some other exchange centre, and produce disturbance of the function of another gland or organ remote from the point of stimulation. This action may be seen in reflex vomiting of early gestation, in unilateral renal calculus producing a pain in the other kidney, or in spasm of the pylorus in appendix disease. Sir James Mackenzie's investigations show that the majority of symptoms of disease are disturbances of normal reflexes, and give support to my view that abnormal stimulation of the renal nerves is transmitted to the proximal ganglia, and, passing through the synapses therein, sends out radiation impulses which affect other structures and organs. I believe that in this way a movable kidney, by tugging upon its pedicle, sets up irritation in the nerve, which is transmitted to the proximal ganglion, and that through the synapses therein the irritation is passed either upwards or downwards or both, through other ganglia, thus calling into action, or overaction, the nerve supply to the stomach, bladder, heart, or any structure controlled by the autonomic nerves, producing in one case dilatation, in another irritation, and in a third palpitation. It is this mechanism of transmission and radiation of stimuli which makes possible the comprehension of the numerous and varied symptoms arising from dropped kidney. It has been shown, moreover, that stimulation can be carried to the extent of causing pathological changes in nerve tissue. Langdon Brown says:

"The sympathetic response may be so dissociated, perverted, or prolonged as to produce through the thyroid, Graves's disease, through the pituitary, diabetes insipidus, and through the pancreas and other endocrine organs, excessive mobilization of sugar, which is the first stage of diabetes. It may disorganize digestion by exciting spasm, by producing atony in stomach and bowel, and inhibiting the secretion of gastric juices, etc."

We need only continue the irritation for sufficient time and there must ultimately follow a complete breakdown in the normal responses. As Jelliffe puts it, "after years of maladjustment permanent changes result, and a vicious circle is established in which cause and effect are inextricably interwoven in their general result." Timme, by a series of experiments on the nerves of the stomach, has demonstrated the possibility of unbalanced action in them, and has also shown that such unbalanced actions are constantly brought into operation by mechanical factors, toxins, hormones, and by mental stimuli.

We thus realize the importance of the perfect balance of these two divisions of the autonomic nerves to the health of the individual. We are cognizant of many factors which disturb their normal harmony, and, though not yet generally recognized, I believe movable kidney is one of the most important of these factors, even in the early stages of descent. Chronic recurrent overstimulation of the nervous mechanism, whether from constant tugging as in movable kidney, or chemical as in retained products of excretion, produces permanent changes in the nerves and ganglia.

These factors have an important bearing upon treatment, for it will be obvious that the sooner disturbing causes are corrected the better for the patient, and, conversely, that in long-standing cases changes may have taken place which cannot be cured, either by palliative or operative treatment.

#### *Suprarenal Glands.*

In nephroptosis, as can be demonstrated at operation, the suprarenal glands are pulled down along with the kidney, and there must be some interference with the circulation, consequent upon stretching of their vessels. I wish to emphasize the importance of this point, for it has been shown that the blood supplied to these organs is proportionately greater than to any other organ in the body, and that they consume proportionately more oxygen. This consumption is increased threefold during a rise in blood pressure produced by the action of adrenaline. The chromaffin cells forming the medulla of the gland secrete adrenaline, and the action of adrenaline is to activate the sympathetic. It is also known that adrenaline has an effect upon the glycolytic functions of the liver, increasing the blood sugar content

which is necessary to supply the muscles of the body with energy. Excessive stimulation through temporary congestion caused by increased movement in the early stages of nephroptosis may produce an increased output of adrenaline, and as this is the hormone for activation of the sympathetic, this may be an explanation of the severe headache, rapid action of the heart, and increased blood pressure, which are common symptoms in renal ptosis.

On the other hand, any reduction of the amount of blood passing through the glands, as may arise in stretching of the vessels, thereby contracting the lumen, would reduce the output of adrenaline, or the same result may follow exhaustion after a period of overaction. This would diminish the production of blood sugar, which would affect the muscles by reducing their pabulum, and consequently engender a state of fatigue and exhaustion, which is a well known symptom of hypo-adrenalism—a very common sequel in chronic cases of nephroptosis. As the amount of adrenaline present in the blood under normal conditions is equal to a dilution of one in twenty millions, a slight increase or diminution in secretion will very seriously affect the action of the sympathetic and the musculature. The whole range of the chemical action of adrenaline has not yet been physiologically determined, but enough is known to justify our conclusion that variation in adrenaline output is an important factor in the symptomatology of nephroptosis.

#### *Toxaemia.*

Toxaemia, I believe, only becomes operative when the kidney has become so displaced as to interfere with the normal circulation and proper drainage through the ureter. The later effects of displacement are, first, obstruction to return of blood through the veins, increased size of gland, and hyperaemic congestion caused by descent and inward rotation of the lower pole. Secondly, obstruction of the ureter, with intermittent back pressure, resulting in dilatation of the pelvis of the kidney, widened calyces, and flattened pyramids. There is consequently a reduced excretion of urine, particularly during the daytime, with lowered specific gravity, causing retention of poisons. Continued mild auto-intoxication will in time reduce the vital powers of the strongest, and this is particularly the case if the primary cause lies in an organ of elimination such as the kidney. This is well shown in chronic Bright's disease, or in lethargic colon, or in chronic infection, as in antrum, nose, or throat. Suckling thought that most of the nervous symptoms of movable kidney (neurasthenia, melancholia, and insanity) were due to toxic products retained in the blood. In my opinion, however, the cardinal symptoms in the early stages of nephroptosis are due to nerve irritation and suprarenal instability. We need not, however, be surprised to find a moderate diminution of renal excretion producing many complex symptoms, among which not the least are changes in the functional integrity of the higher levels of cerebration, including, according to Suckling and Billington, acute mania and melancholy.

#### *TREATMENT.*

The opinions of physicians and surgeons have been variously expressed, some holding the view that a two months' rest in bed will do all that is required; others that a well made corset fitted with pads will effect a cure; and yet others that in most cases no treatment is necessary. This divergence of view may have arisen as a consequence of unsatisfactory methods of treatment. One cause of unsatisfactory results in surgical treatment has been imperfect method and technique. This has led conscientious surgeons to declare that the results of operation do not justify its general use. Failure to obtain good results is frequently due to a second movable kidney, which has been overlooked, being apparently less mobile, or considered unlikely to affect the symptoms. The left kidney often gives the impression that it is not freely movable, whereas I have been astonished at the extent of mobility disclosed when the left loin was opened. I would therefore lay great stress upon the omission to fix the left kidney as the explanation of operative failure in many cases. When surgeons recognize the frequency of double nephroptosis, and operate on both sides, I am confident that the value of nephropexy will be as well established as that of appendicectomy. If I find any mobility on the left



side, however slight, I now invariably fix both sides at the same time.

Another cause of incomplete cure is fixation too low in the loin, so that the kidney is at an abnormal angle in relation to the ureter. This interferes with proper drainage, and places the kidney in the angle of flexion of the body which is often the cause of continued symptoms.

After fifteen years of careful study of over three hundred cases, and fitting and adapting various kinds of belts upon some two hundred, I am compelled to state that I have never once seen a cure arising from their use. There has never been invented a belt capable of keeping a dropped kidney in its place, which could be tolerated by the patient. Its pressure would ulcerate the skin in less than a week.

Operation, properly performed, is the only means whereby those who suffer from the effects of nephroptosis can be effectually cured. In 1910 Mr. Billington published his book giving the results of his work on the surgical side. His cases number hundreds, and the results leave no room for doubt as to the best method of treatment. Since that time he has operated upon many more, and has placed the surgical treatment of dropped kidney outside the realm of question or doubt. I fail to comprehend the teaching which, while recommending operation on hernia, displaced uteri, varicocele, and various abdominal conditions causing reflex dyspepsia, such as ileal kinks, intestinal bands, and chronic appendix, yet hesitates to deal with dislocated organs of such importance as the kidneys on similar lines.

#### *Method of Operation.*

It was not until Mr. Fullerton of Belfast published his method that nephropexy was placed upon a sound mechanical basis. Since its publication I have practised his method with slight modification. Formerly I used the oblique incision parallel with the last rib and about a fingerbreadth below, carrying it forward through the external and internal oblique muscles, exposing the lumbar fascia. This method damaged the important muscles of the back and side, and I now use the almost vertical incision recommended by Edebohl and divide the lumbar fascia transversely; the opening, which can be pulled apart, allows the bulging of perirenal capsule and fat. The capsule should be thoroughly separated from the muscles behind, and then clipped through deep in, and stripped off the kidney with the contained fat and pushed deep into the wound and left there. The kidney can then be lifted out quite easily and all adhesions in whatever part divided, paying particular attention to a strong band of tissue passing down from the lower pole of the kidney—the so-called reno-colic ligament. The ureter and the pelvis of the kidney should be cleared of all fat and bands, if any. Care should be taken to avoid any aberrant artery or vein; these I leave alone, unless they definitely hold the kidney down, but this is not usual.

The operation as designed by Mr. Fullerton consists of raising a tongue-shaped flap of capsule from the back of the kidney, passing this through the external arcuate ligament, and drawing the kidney up into position and stitching the suspension flap to the capsule below. Billington and Pardhy bring the flap over the last rib. The merit of this plan is that the kidney can be got higher up, according to the length of flap. In addition to this I follow the plan of Mr. Billington in using Brodel's silk-gut suspension stitches, two of which I pass through the lower portion of the capsule in the form of a letter U, bringing the free ends through the muscle and the skin, tying them over a pad of gauze, when the operation is finished. They should be left for three weeks. Care should be taken that none of the fat or loose tissue finds its way between the upper pole and the stripped psoas muscle, as this prevents strong union. Immediate risks are confusion of the gland, rupture of artery, vein, or ureter, and opening of the pleura. Later risks are shock, embolism, and sepsis.

The mortality in my whole series is two—one due to post-operative shock, with acute paresis of the bowels; the second was due to embolism caused by laceration of a large abnormal vein in the lower pole of the left kidney, which I ligatured.

#### *Results of Treatment.*

Mr. Billington, in his recent work, gives the percentage of cures as 90; Mr. Pardhy informs me that he has a

like result. In a first series of 100 cases operated upon by me, my percentage of complete cures is 73. This low percentage has arisen from the reason already mentioned—namely, that in a number of my early cases I fixed up only one kidney, and also that a number of long-standing cases were constitutionally in a condition in which, I believe, permanent changes had taken place in the autonomic nerves which no operation could completely cure. Nevertheless, in the remaining 27 cases there was great improvement, and the operation was fully justified, particularly so where there was only one kidney down. In the second series of 50 cases, the percentage of cures rose to 94, owing to the facts that most of the patients were younger subjects, and that in 45 of them I fixed both kidneys.

## THE RADIAL PULSE IN INTRATHORACIC ANEURYSMS.

BY

C. O. HAWTHORNE, M.D. GLASC., F.R.C.P.,  
F.R.F.P.S.G.

DIFFERENCES between the arterial pulses as these are studied at corresponding points on opposite sides of the body have an established position in the list of physical evidences suggestive of intrathoracic aneurysm. Since the introduction of the sphygmograph and the sphygmometer it has been possible more confidently to detect these differences and more precisely to define them. Indeed, it may not be unfair to say that unless the contrast between the compared pulsations is a very decided one its value as a trustworthy observation, until confirmed by instrumental evidence, would hardly be admitted. Certainly the advantage of such graphic and numerical displays is beyond dispute, though, as will here be shown, they include opportunities for error peculiar to themselves. Where their worth resides, apart from their merits as summarized and permanent records, is in the confirmation or contradiction they afford to the judgement dictated through the unaided finger. In this respect at any rate, whatever may be true in other directions, the facts of the pulse may miss an adequate recognition in the absence of registration by an apparatus which eliminates the personal factor of the individual observer. In other words, a graphic or numerical record has this merit: it speaks in terms not of a personal impression but of a physical fact.

The usual statement made on the point here under consideration is that the radial pulses in a case of intrathoracic aneurysm may differ the one from the other in force and in volume; and to this statement there is universal assent. But an alleged further difference—namely, a delay in the arrival of one pulse in relation to the arrival of its fellow—is a sharply contested issue. Everyone allows a possible sense or impression of delay as judged by the finger, and writers in pre-instrumental days—rightly or wrongly—assumed this impression to represent an actual occurrence. Graphic records, however, have shown that in some instances where delay seems to be beyond challenge it does not really exist, and that the suggestion to the finger of a unilateral pulse delay must be attributed to a more gradual rise of pressure within the artery between which and the left ventricle there is interposed the elastic sac of an aneurysm. Not unnaturally this observation has thrown doubt on the accuracy of the assertion that in intrathoracic aneurysm the radial pulse on the side corresponding to the aneurysm may in point of time fall behind its fellow. As appearances have certainly been misleading in some instances a facile conclusion is that they are misleading in all, and in the circumstances it may be admitted that the *onus probandi* now falls on those who affirm real delay—as distinct from the mere appearance of delay—to be among the possibilities. Manifestly, to secure this position graphic records are essential, for without such records there can be no effective answer to those who are able to show that the test of the finger has in particular instances undoubtedly proved deceptive; and who, further, have a ready and reasonable explanation of the source of the mistake. It is on registered tracings,



therefore, that the case for actual pulse delay must stand if it is to stand at all.

The record now submitted (Fig. 1) is claimed to be a demonstration of actual pulse delay in the left radial artery as compared with the time incidence of the right radial, and the tracings were obtained from a case of intrathoracic

explained, delay as interpreted through the finger may be apparent only, it is necessary to add that delay as registered in a graphic record falls outside this comment and must be accepted as the announcement of an actual occurrence.

While a time difference of the radial pulses, when it exists, needs careful demonstration, there are in not a few cases of aneurysm other differences that may be openly displayed in the contrasted sphygmograms. One of these is a difference in the height of the right and left waves; another is difference in form; and the full message is provided when both are present. Of the two, difference in form is much the more significant. Indeed, mere difference in the height of the contrasted waves is by itself of little moment, for this may exist with a perfectly normal cardio-vascular apparatus. Thus, Fig. 2 is taken from a healthy adult, and although the excursion of the wave in the left radial tracing is decidedly more extensive than that of the right radial, the other features of the tracings are substantially identical, and no experienced eye would read into the picture a suggestion of aneurysm. On the other hand, in Fig. 3 the waves in the two tracings are of one and the same height, but they are strikingly different in form, the right showing the sharply defined lines and angles of a normal sphygmogram, while the left suggests a swinging or pendulum-like movement—the ascent is gradual and the secondary waves proper to the descending line are absent. In Fig. 4 the contrast is a glaring one, and is exhibited both in the height and in the form of the waves of the sphygmograms. As a matter of fact, Figs. 3 and 4 were obtained each from a case of

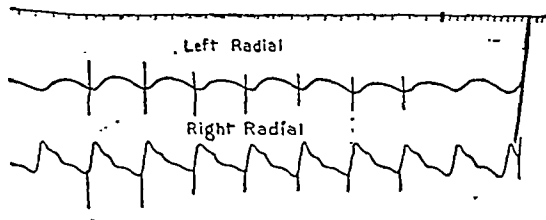


FIG. 1.—Sphygmometer: Right, maximum 135, minimum 55; Left, maximum 75.

aneurysm. This diagnosis is beyond question, for a *post-mortem* examination revealed a considerable fusiform aneurysm of the aortic arch extending beyond the origin of the left subclavian artery. The wall of the aneurysm showed but little fibrinous deposit, and doubtless, therefore, during life the sac responded freely to the alternate rise and fall of blood pressure determined respectively by the systole and diastole of the left ventricle. In a word, the aneurysm was an elastic bag placed in the course of the circulation between the left ventricle and the left radial artery. Such an

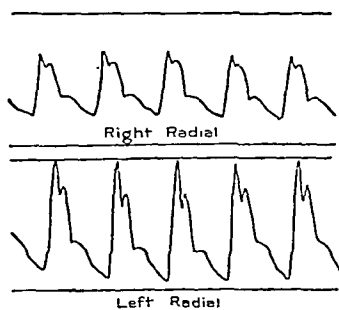


FIG. 2.—Sphygmometer: Maximum, Right and Left, 135.

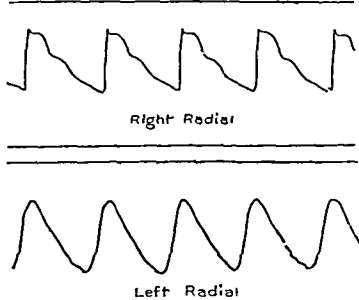


FIG. 3.—Sphygmometer: Right, 120; Left, 80.

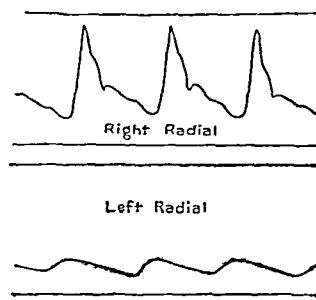


FIG. 4.—Sphygmometer: Right, 160; Left, 50.

arrangement might on the face of it suggest a delay in the arrival of the pulse wave at the left wrist as compared with the time occupied by the passage of the wave along the arterial trunks of the opposite limb. That it did, as a matter of fact, effect this delay is apparent from the contrasted tracings. These were taken simultaneously on a polygraph, a wrist splint being fixed on each forearm; and it is obvious that the commencement of the rise in pressure in the left radial falls behind the corresponding movement in the right radial by an appreciable interval of time—approximately one-fifth of a second. Thus even if, as is alleged, there is normally a difference of one to two one-hundredths of a second in favour of the right radial pulse, the present record is an announcement of pathological delay in the radial artery on the side corresponding to the situation of the aneurysm. It is a proof that in the individual case here reported the delay was a real happening and not merely an apparent one. Other cases must, of course, be tested by a similar order of inquiry, but if the above record is accepted it is necessary to admit that among the possible evidences of intrathoracic aneurysm a place must be found for a true asynchronism of the radial pulses.

This evidence does not stand alone. Dr. Leonard Findlay<sup>1</sup> has published tracings which tell the same story, and has demonstrated by an ingenious apparatus the delaying effect of the introduction of a distensible sac on pulsations produced in a system of elastic tubes. His paper includes a very full discussion of the whole subject, and he rests the case for real delay in one or other radial pulse both on clinical and on experimental evidence. Hence even when the admission is freely made that, for reasons already

aneurysm, and, as can well be understood, gave definite aid to the diagnosis. Yet such sphygmograms cannot be quoted as compelling confidently a diagnosis of aneurysm; they necessarily mean some unilateral interference with the course of the arterial pulse, but it does not follow that this interference is provided by an aneurysm. Fig. 5, for example, shows facts essentially identical with those of Fig. 4; yet the case was not one of aneurysm. It was, indeed, a quite manifest case of chronic interstitial nephritis, and as no evidences of aneurysm could be discovered the differences between the radial pulses provided an opportunity for clinical speculation. The riddle was read at the *post-mortem* examination, for this revealed in the right subclavian artery a firm clot adherent to the arterial wall for a matter of two inches and largely obstructing the lumen of the vessel.

One other possible difference between the circulatory conditions existing in the right and left upper limbs in intrathoracic aneurysm may be noted—namely, a difference in the sphygmometer measurements. In the cases from which Figs. 1, 3, and 4 were taken the difference was a considerable one, the records being: in the first, right 135, left 75; in the second, right 120, left 80; and in the third, right 160, left 50. In each case it was observed that the auditory method applied to the left brachial artery detected no sound, so that the maximum reading had to be fixed solely by the finger, and no minimum reading was possible. Some degree of difference between the readings in the right and left limbs is not uncommon, but nothing like the contrast exhibited here can be passed as normal. On the basis of numerous measurements, Dr. O. K. Williamson<sup>2</sup> came



to the conclusion that a difference of 30 mm. or upwards in the sphygmometer readings obtained from the two upper limbs speaks strongly in favour of aneurysm; that a difference of 20 mm. may mean either aneurysm or dilatation of the aorta; and that with a still slighter difference may be found either of the conditions just mentioned, or arteriosclerosis, or mediastinal tumour. Broadly, the position is that to be of diagnostic value the inequality between the measurements must be a pronounced one, and even then, as

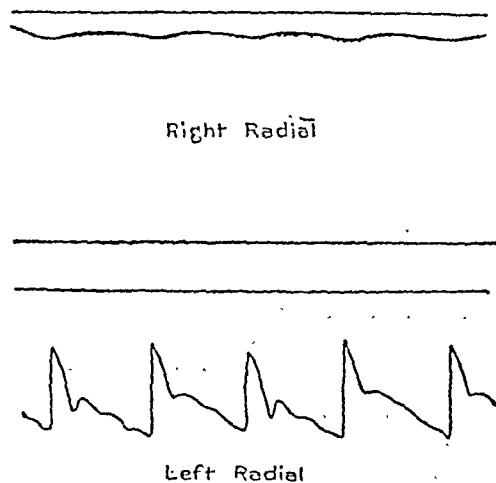


FIG. 5.—Sphygmometer: Right, 40; Left, 160.

shown by the case from which Fig. 5 was taken, the possibility of a unilateral interference with the arterial circulation other than aneurysm must be remembered. Further, such differences as are illustrated by the readings recorded in Figs. 1, 3, and 4 are unusual even in cases of aneurysm, and frequently—probably in the majority of cases—the readings are identical or approximately identical. A parallel remark applies to the other pulse differences noted in this paper. Neither unilateral delay in the pulse wave, nor modification in the height or in the form of the wave, is to be observed as a frequent clinical experience in thoracic aneurysm. The absence of such conditions from an individual case is therefore of little diagnostic moment, and while their positive values, when present, may be considerable, even these are subject to such qualifications as are here described and illustrated.

#### REFERENCES.

<sup>1</sup> *Practitioner*, December, 1909. <sup>2</sup> *Lancet*, 1907, vol. ii, p. 1516.

### A NOTE ON THE NATURE OF THE BLOOD SUGAR.

BY

L. B. WINTER AND W. SMITH.

(From the Biochemical Laboratory, Cambridge.)

IN a recent paper<sup>1</sup> we gave the results of an investigation into the nature of the blood sugar by a new method. Hewitt<sup>2</sup> has lately criticized both the method employed and also the interpretation placed thereon. He states that we "reached the conclusion that the normal blood sugar is  $\gamma$  glucose." In discussing the experimental evidence which we brought forward in our original paper we stated: "The nature of the normal blood sugar we leave for the present undecided." Later, in view of the fact that Hewitt and Pryde<sup>3</sup> had shown "with some certainty"<sup>2</sup> that  $\gamma$  glucose is formed from  $\alpha$ ,  $\beta$  glucose in equilibrium of the intestine, we suggested that the unstable sugar which was found to be present might be  $\gamma$  glucose. We stated further that "The enzyme responsible for the conversion being apparently absent from the blood, and the reaction of the blood being alkaline, suggests that it is impossible for so reactive a sugar to exist free in the blood."

It is obvious therefore that our only reasons for ever suggesting the presence of  $\gamma$  glucose were based on the work of Hewitt and his collaborators. They state<sup>4</sup>:

"It may be presumed on *a priori* grounds that a structural change of the nature referred to has some fundamental reason." The reason was not clear, but a possible explanation was afforded by the differences we showed to exist between the normal and diabetic blood sugars, and more recently by the fact that the nature of the diabetic blood sugar becomes similar to that of normal persons after injections of insulin.<sup>5</sup>

Hewitt<sup>2</sup> objects: "Polarimetric evidence alone, therefore, must exclude rigorously the presence of  $\beta$  glucose in amount greater than that found normally in aqueous solution of glucose in equilibrium." Control experiments showed that the equilibrium of  $\alpha$ ,  $\beta$  glucose was hardly affected by the experimental technique; further, after the alcoholic extraction no trace of copper-reducing substance was found to be left behind. Preferential extraction by alcohol or alteration in equilibrium of  $\alpha$ ,  $\beta$  glucose is therefore definitely excluded. In some experiments the initial rotation was below that which would be given by  $\beta$  glucose alone, and in the case of diabetics above that of  $\alpha$  glucose alone. The suggestion that the normal blood sugar contains  $\beta$  glucose, and diabetic blood  $\alpha$  glucose, is therefore not valid. Further, in one experiment a laevo-rotation was observed, but as this has not been repeated no stress has been laid on it; in this connexion it is of interest to note that Hewitt and Pryde attach considerable importance to the one laevo-rotation observed in their own experiments.

The fact that we obtained a glucosazone from normal blood may be due to the fact that some of the normal blood sugar is the stable  $\alpha$ ,  $\beta$  form. It seems probable that normal blood sugar is an equilibrium mixture of  $\alpha$ ,  $\beta$  glucose, and a reactive sugar.<sup>5</sup>

The question of sterility is disposed of by the following facts: (a) the polarimeter tubes were sterilized; (b) the copper-reducing value was unaltered at the end of three or four days; (c) the fluid was perfectly clear throughout, and no sign of any growth was observed.

With regard to the criticisms on the general technique adopted, though admittedly it is not perfect, we maintain that by it we have been able to obtain a clear and concentrated protein-free filtrate from blood by which we are able to show with ease the very wide differences in the nature of the blood sugar under different conditions. We may merely mention here that the nature of the diabetic blood sugar differs from normal, and that after administration of insulin the blood sugar of the diabetic approaches normal; and further, that after administration of adrenaline the blood sugar differs again from normal. A most striking difference is observed in the blood sugar of normal animals after insulin (unpublished experiments); the blood sugar in this condition, though dextro-rotatory, has no copper-reducing value, as determined by the Wood-Ost method.

The downward change in optical values of the diabetic blood sugar is not always observed, and it would appear that in this pathological condition the blood sugar may be very complex.<sup>6</sup>

Hewitt criticizes the experiments in which we endeavoured to test whether there is present in the blood an enzyme capable of converting added  $\alpha$ ,  $\beta$  glucose or *d*-fructose into a reactive sugar. The experiments of Cooper and Walker,<sup>7</sup> directed to the same end, are also not allowed to pass unchallenged. The first point he makes is that the blood was extravascular; criticism on this line is purely destructive and would invalidate a vast amount of work which has been done with blood. A more legitimate objection which he makes against the experiments of Cooper and Walker is that an enzyme, if present, was probably unable to pass through the membrane of the dialyser owing to its physical properties. Our own experiments he dismisses on the ground that the method employed was in every way suitable to destroy  $\gamma$  glucose; he omits to notice that if differences in the blood sugar could be demonstrated by this method, the same method would probably be capable of showing a difference had any change taken place in the nature of the sugar which had been added to the blood. He agrees, however, "that no such enzyme can be demonstrated in the blood,"<sup>2</sup> and



refers to a paper by De Souza and himself.<sup>1</sup> They injected sugars into the blood stream, and collected the urine passed immediately afterwards. The one merit of the method employed is that the blood is not extravascular, but is a means of demonstrating the presence of such an enzyme in the blood the method does not lend itself to any conclusions. It is unlikely that more than a proportion of the injected sugar would be changed into a reactive form in the time allowed (five minutes); further, the sugar excreted would presumably be that which was unchanged, and therefore useless to the body during that period; further, if any change was observed it could not be a proof that an enzyme was present in the blood.

After a careful study of the figures given by Hewitt and Pryde in their paper,<sup>2</sup> it is reasonable to conclude that the rotations observed with isotonic and hypertonic solutions were of the same degree as those observed with hypotonic. It is stated that in the case of hypertonic and isotonic solutions a specific rotation below  $+40^\circ$  was not recorded. No figures are given, but this statement implies that changes of that order were observed. In the absence of fuller details, it would appear from the figures 1 and 2 that only about a quarter of the sugar originally introduced into the intestine was present when the fluid was removed for polarimetric examination. Supposing that a quarter of the sugar remains in the intestine when an isotonic or hypertonic solution is introduced, then the observed alteration in rotation required to change the specific rotation from  $+52.5^\circ$  to  $+40^\circ$  would be  $0.34^\circ$  for the isotonic solution, and  $0.50^\circ$  for the hypertonic solution of glucose employed, or alteration of rotation (not specific rotation) very similar to, or even larger than was observed, according to the figures, which are stated to "show the optical changes most markedly." It is a curious fact that marked changes should have been observed in hypotonic, and not in isotonic solutions. The authors state: "Contact with the mucous membrane of the living intestine probably effects the production of  $\gamma$  glucose in excess of any amount normally present in glucose solutions which have attained a permanent specific rotation." Were it a genuine effect due to an enzyme in the intestinal cells, it would be likely that the most marked change would be observed in the isotonic solution in the short time allowed (five minutes), since, presumably, changes in the body preferably occur in fluids isotonic with the tissues—for example, perfusion experiments are always performed with approximately isotonic solutions. On the above reasoning precisely similar alterations in observed rotation (not specific) must have taken place in hypo-, iso-, and hyper-tonic solutions of sugars, but only in the case of hypotonic solutions do these differences lend themselves to the elaborate treatment which they have received in this paper, owing to the fact that a small difference in observed rotation of a hypotonic solution makes a large difference in specific rotation. A conclusion derived from neglecting inconvenient facts with the acceptance of others is of questionable use. The conclusions drawn from these facts were only given in the following paper,<sup>3</sup> in which they state: "It may be presumed on *a priori* grounds that a structural change of the nature referred to has some fundamental reason."

Further doubt is thrown on the work by the admitted difficulty in seeing through the fluid for polarimetric observation, a difficulty which becomes obvious when the wide variations in the successive readings are noted; incidentally, the readings are given to three places of decimals. Small reliance therefore can be placed on the one laevo-rotation observed. No copper-reducing value of the sugar is given; the statement is merely made that it agreed remarkably well with the final rotation.

The one experiment recorded in which fructose was used may be adequately explained by temperature variations, to which this sugar is notoriously sensitive. There is evidence that fructose is more rapidly utilized in the body than glucose, presumably because it is more rapidly converted into normal blood sugar. It is remarkable therefore that Hewitt and Pryde attained such little success with the use of fructose.

Hewitt rightly observes: "The dangers attending the

use of permanganate with biological material are obvious." The technique adopted by these authors when using permanganate has been briefly referred to by us as being not above suspicion.<sup>4</sup> They omitted to perform the only conclusive test—namely, a comparison between the rates of decolorization at the beginning of the experiment, and at the end when the sugar had attained equilibrium. The italics used in discussing their experimental method hence have not the importance the authors attach to them.

We may conclude that the experimental evidence put forward by Hewitt and Pryde does not support Hewitt's recent contention<sup>2</sup> that " $\gamma$  glucose and  $\gamma$  fructose are formed and can be detected when the stable  $\alpha$  and  $\beta$  isomerides are in contact with living intact intestine." We are glad to note that the possible significance of their experiments performed three years ago has not escaped Hewitt, and that experiments are now in progress on the diabetic organism. We feel that it is necessary to point out the above facts in order to correct any doubt on our work which Hewitt's criticism may have caused.

#### Summary.

1. There is definite evidence that a reactive sugar is present in the blood.
2. There is no chemical evidence that  $\gamma$  glucose is formed in the body.
3. There is definite evidence that some of the blood sugar of diabetics is fundamentally different from that of normal persons.
4. No evidence at present exists that the intestine plays an essential part in the causation of this difference.

#### REFERENCES.

- <sup>1</sup> Winter and Smith: *Journ. of Physiol.*, 1922, 57, p. 100. <sup>2</sup>Hewitt: *BRITISH MEDICAL JOURNAL*, 1923, p. 590. <sup>3</sup>Hewitt and Pryde: *Biochem. Journ.*, 1920, 14, p. 335. <sup>4</sup>Hewitt and De Souza: *Ibid.*, 1921, 15, p. 657. <sup>5</sup>Forrest, Smith, and Winter: *Journ. of Physiol.*, 1923, 57, p. 224. <sup>6</sup>Winter and Smith: *Proc. Phys. Soc., Journ. of Physiol.*, 1923, 57, p. xxxi. <sup>7</sup>Cooper and Walker: *Biochem. Journ.*, 1922, 15, p. 455. <sup>8</sup>Winter and Smith: *BRITISH MEDICAL JOURNAL*, 1923, i, p. 711.

## THE TREATMENT OF GENERAL PARALYSIS BY MALARIA.

BY

W. L. TEMPLETON, M.B., Ch.B.,

ASSISTANT MEDICAL OFFICER, CITY OF LONDON MENTAL HOSPITAL, DARTFORD.

A SHORT account of the treatment of general paralysis of the insane by infection with malaria was given by Dr. E. W. Scripture at a meeting of the Medico-Psychological Association on November 23rd, as reported in the *BRITISH MEDICAL JOURNAL* of December 8th, 1922 (p. 1121). The principle depends on the fact that remissions in chronic disease may occur after an attack of an acute specific fever. Many methods of producing fever artificially have been tried, with varying results, but Wagner-Jauregg, quoted by Pilcz,<sup>1</sup> has drawn up a scale of efficiency of the various methods used as follows: (1) chemical substances—for example, sodium nucleinate; (2) toxalbumins—for example, tuberculin, staphylococci; (3) acute disease; the last is the most efficient. With tuberculin treatment Pilcz<sup>2</sup> obtained a remission in 26 per cent. of his cases, and eight remained well three years after treatment. The treatment by malaria gives a much higher percentage of remissions. During a recent residence in Vienna as a post-graduate I had an opportunity of seeing some of the clinical results, which are very encouraging.

The method consists in the withdrawal of from 2 to 4 c.cm. of blood from the vein of a patient suffering from benign tertian malaria (whether the patient be in the febrile stage or not), and in its subcutaneous injection into the subject of general paralysis, who will develop within about a week typical attacks of malaria. He is allowed to have ten to twelve such attacks, when the malaria is cured by the administration of quinine in doses of 1 gram for three days in succession; then in doses of 0.5 gram for fourteen days. In no case did the malaria persist; it invariably cleared up after the first few doses of quinine. During the febrile attacks and occasionally after, there is very often an exacerbation of mental



symptoms, consisting chiefly of auditory hallucinations and delusions of persecutions. In the majority of cases these symptoms promptly disappear when the febrile attacks have terminated. Following upon the febrile attacks and going parallel with the quinine treatment, weekly doses of neo-salvarsan are administered intravenously; commencing with 0.3 gram; six doses in all are given, in the scale of 0.3, 0.4, and four of 0.6 gram.

Of the 350 cases treated down to February, 1923,<sup>2</sup> complete observations were made in 296 only. Of these, no fewer than 202 showed remissions of varying degree, and 112 showed complete remission with the disappearance of former mental disturbances and a return of former business capacity; 68 per cent. showed remissions, and 38 per cent. complete remissions, and this in spite of the fact that many advanced cases were included.\*

Of especial practical importance is the time during which remissions persisted. Of the patients who had complete remissions, 3 treated in 1917 are still actively employed at business and show no evidence of relapsing. These remissions are therefore of five years' duration. In 17 the remissions have already lasted two to three years, and in a further 34 treated correspondingly later the remission has persisted for one to two years. Of the total for whom complete remission has at any time been claimed 3 only have relapsed or have shown any tendency to relapse. Of those for whom incomplete remission has been claimed the majority were far advanced forms of the disease, and yet even here much benefit was seen, particularly in the cessation of acute symptoms and in the non-progression or even regression of the dementia. Of those showing all the signs of an already present dementia many again became sociable and inoffensive, and regained a certain degree of occupational ability.

Several of the German clinics have already made a trial of the method, with good results. Weigandt<sup>4</sup> reports that of 50 cases treated by this method remissions were obtained in 88 per cent., and good remissions in 48 per cent. The remissions do not follow immediately upon the febrile attacks, but very often show a gradual progressive course over a period of weeks and even months, so that cases which at first seemed incomplete, when re-examined months later showed complete absence of symptoms. One very remarkable fact is that there is no parallelism between the clinical and serological findings. Many who show a complete remission of symptoms still give a positive reaction in blood serum and cerebro-spinal fluid, and yet the same cases, when examined months later, have shown a negative Wassermann result in both. In connexion with this Gerstmann<sup>2</sup> quotes a case treated by the tuberculin-mercury method in 1909 in whom a complete remission still persists. When examined recently the report was: Wassermann reaction positive in the blood and cerebro-spinal fluid; globulin test positive; lymphocytes 186.3.

In this country and in some others the difficulty consists in obtaining suitable cases of benign malaria for purposes of inoculation. Once a single case has been inoculated there is then no difficulty in transferring the infection to other paralytics, and though this involves the transference of syphilitic blood, yet, in cases which have been thoroughly examined and found positive for syphilis, this is of little consequence. The method of continuous transference has been practised in Vienna, where two strains of plasmodia are being used—one after having been passed through 58 hosts, and the other through 38, in both cases without any reduction in the virulence of the infection. Attempts are being made to keep the parasite alive outside the body; so far it has not survived for more than eight hours. The latest report<sup>2</sup> from the Wagner-Jauregg clinic contains an interesting account of the histological findings in the case of a patient treated by malaria who died of intercurrent disease. The authors seek to draw conclusions from the greater infiltration of the temporal lobes as to some extent explaining the occurrence and persistence of the auditory hallucinations mentioned. In general the histological changes in cases which had shown remission under malarial treatment were those of the so-called stationary paralysis of Alzheimer, with an almost complete absence of the changes usually found in progressive general paralysis.

\* These figures are given in a personal letter from Dr. Gerstmann, and differ slightly from those in the *Zeit. f. d. ges. Neur. und Psy.*

The proportion of complete remissions (38 per cent.) is high for general paralysis, but it is certain that with cases treated at an earlier stage than many of those included in the Vienna figures this percentage would be much higher. Professor Wagner-Jauregg<sup>5</sup> goes so far as to say that in cases of short duration entire success can be predicted with almost absolute certainty. Whether this be justified or not can only be determined by a widespread trial of the method.

## REFERENCES.

- <sup>1</sup> Pilez: *Lancet*, January 6th, 1923. <sup>2</sup> Gerstmann: *Zeit. f. d. ges. Neur. und Psy.*, LXXXI, 1923. <sup>3</sup> Stoddart: *Mind and its Disorders*, 1919. <sup>4</sup> Gerstmann: *Zeit. f. d. ges. Neur. und Psy.*, LXXXIV, 1922. <sup>5</sup> Wagner-Jauregg: *Ars Medici*, Vol. i, No. 1, 1923.

## Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

## A SMALL EPIDEMIC OF PLAGUE.

THE epidemic here reported occurred on an India-going vessel. It began on March 7th, 1922, nine days after the ship left Karachi, the last port of call. There were six cases, all among the lascar crew of the ship; no Europeans were affected.

*Case 1.*—A Goanese steward, aged 32, was taken ill on March 5th, 1922; he was first seen on the morning of March 7th. He complained of intense pain in the small of his back, with severe frontal headache, and had vomited twice during the night. His temperature was 103°, his pulse rate 120. His temperature rose the same night to 104.2°, and he became slightly delirious. There were no physical signs in the chest or abdomen. Towards evening vomiting became incessant. Next day the patient's general condition somewhat improved, but vomiting was still incessant. On examination an exquisitely tender small bubo was found in the left groin. The diagnosis of plague was made on discovery of this bubo. Towards evening the patient became markedly worse, and was delirious at intervals. He continued so until death occurred on the afternoon of the following day.

*Case 2.*—A native sailor, aged 32, first seen on March 15th, had a large bubo, which was hard and somewhat tender, in the left groin. The constitutional disturbances were very slight; fever was absent, the pulse rate 90. Next day his temperature rose to 106°, and the patient showed some degree of lethargy. Without his condition apparently altering he died suddenly soon after midnight.

*Case 3.*—A native sailor, aged 35, was seen first on March 15th, but had apparently been ill for two days before. He was obviously very ill when first seen, with a temperature of 103°. There was some enlargement of the inguinal lymphatic glands on both sides, but no tenderness. He died suddenly the same evening.

*Case 4.*—A Goanese steward, aged 37, reported sick on March 19th, just as we were going into port at Port Said. His temperature was 100.8°, his pulse rate 100. There was a small tender bubo in the left axilla. He was sent ashore as a case of suspected bubonic plague and died three days later.

*Case 5.*—A native sailor, aged 35, was taken ill on March 24th, and was first seen on the morning of March 26th. He had a temperature of 104°, pulse rate 124. In his left groin was a large, exquisitely tender bubo. He was seen on the following morning by Dr. Duval, assistant M.O.H. for Dunkirk, who confirmed the diagnosis and supplied serum, which was given daily in doses of 50 c.cm. This was the first supply of serum which we had had. On March 27th the patient was very weak, and in the evening he sank into a low delirium. Next day he was in a typhoidal condition, having a weak irregular pulse, muttering constantly, and taking food and stimulants only with much persuasion. On March 29th he was still in a very collapsed state, and on March 30th the Dunkirk authorities consented to take him into hospital, where he died the following day.

*Case 6.*—This case may have been a virulent pneumonia, but I have added it under the impression that it was really a case of pneumonic plague. The patient, the galley cook, aged 41, was taken ill during the night of March 29th; he was first seen on the morning of March 30th, when his temperature was 104°, his pulse rate 132. He had a slight, often repeated cough, with expectoration of blood-stained sputum; there was marked cyanosis and embarrassment of breathing (respiration rate 42). In the chest there was nothing to be detected, save a few râles at the bases of both lungs. The temperature continued to rise to 106°; by evening the patient became worse, and died at two o'clock the following morning.

The origin of the outbreak was not traced; very few rats, dead or alive, were seen on the ship, and even after fumigation with sulphur dioxide at Dunkirk only about half a dozen rats were discovered. If the infection were from man to man, which is said by the Royal Commission on Plague to occur only in 3 per cent. of cases, the first patient had a much longer incubation period than usual; as he had not been ashore for thirteen days previously (in Karachi), whereas the usual incubation period is said to be from two to five days.



No serum nor vaccine could be obtained until Dunkirk was reached. The well known iodine treatment (2 minims of tincture of iodine every two hours) was tried in the first five cases without any success, but obviously the numbers are too small to justify any conclusions being drawn. Apart from this treatment, and the injection of half a drachm of tincture of iodine into the buboes in two cases, the treatment was symptomatic. In Case 5, which occurred at Dunkirk, serum was used in doses of 50 c.cm. per diem. The result was difficult to judge, for although the temperature and pulse fell, the bubo did not diminish in size, the patient's general condition was little better, and he ultimately died.

At Dunkirk each member of the crew was given 10 c.cm. of serum, which is said to act as a prophylactic for twelve days, and at a later date (when the vessel arrived in England) a further dose of 1 c.cm. of vaccin anti-pestueux was given. After the complete inoculation of the crew, no further cases of plague occurred.

Liverpool.

E. NOBLE CHAMBERLAIN, M.B., Ch.B.

### THE TREATMENT OF PNEUMONIA.

The treatment of pneumonia by Dr. Wynn of Birmingham with pneumococcal vaccines, as related by Dr. Newell in the issue of the *BRITISH MEDICAL JOURNAL* for April 21st (p. 676), gives such splendid results that it will be obviously the duty of general practitioners to test the validity of the conclusions, since the ordinary treatment of this disease by drugs, etc., is very disappointing. It is not an over-estimate to state that, in the case of adults, there is one death in every four or five patients attacked by the disease. As the last four cases of pneumonia that I had occasion to treat all recovered, I am tempted to state the treatment adopted.

The youngest was a woman aged 38 with double pneumonia: the oldest was a man of 70; the other two were about 60. Alcohol was used freely in all cases, and the patients were allowed to take whisky and soda-water whenever they desired it. It was left to the patients to take it or leave it according to their own inclination. Digitalis was given in sufficient quantity to reduce the pulse rate from 120 to 100; 1 grain of quinine was administered every two hours with the suitable dose of digitalis, preferably in pill form. If the temperature was 104° F. 1 or 2 grains of antifebrin were added to the pill, for a high temperature, in my opinion, has an exhausting effect on the heart. Opium gr. 1/4 was given to soothe the cough and the patient. The prescription was therefore as follows:

R Quinine	...	...	...	...	...	gr. 1
P. digitalis	...	...	...	...	...	gr. 1/2 or 1
Antifebrin	...	...	...	...	...	gr. 1 or 2
P. opio	...	...	...	...	...	gr. 1/4

Fi. pil. 1 or pulv. 1. Sig.: One to be taken every two, three, or four hours, according to circumstances.

The quantity of digitalis and antifebrin is determined by the pulse rate or the rise of the temperature. On these lines we protect the heart, and the results are excellent.

Rothsay.

JOHN T. MACLACHLAN, M.D.

### UPPER CANINE TOOTH IN ANTRUM OF HIGHMORE.

About eleven months ago a lady aged 59 began to have discomfort in the region of the right upper canine tooth. She had lost all her other upper teeth, but said that this one had never come through.

In February last, as the pain increased, an x-ray photograph was taken by Dr. Anstey Chave, and showed the tooth lying very obliquely and pointing rather more towards the mid-line than downwards. The gum was lanced on several occasions by Mr. Bidlake of Reigate, and on May 1st an attempt was made to extract the tooth under gas. The wedge-shaped crown was very difficult to hold with the forceps, and at the third attempt the tooth shot completely out of sight and no sign of it could be felt anywhere. As we thought it had probably entered the right antrum of Highmore, the patient was again x-rayed, and the plate showed the tooth lying loose in the antrum with the crown pointing backwards.

I took her into the Reigate and Redhill Hospital, and under a general anaesthetic, administered by Dr. Whittington, I incised and reflected the mucous membrane in front of the right upper jaw, and found a hole about half an inch in diameter in the anterior wall of the antrum, through which I easily extracted the tooth with a pair of long sinus forceps.

Reigate.

JOHN H. PEGG, M.R.C.S., L.R.C.P.

## Reports of Societies.

### DIATHERMY AND MEDICAL PRACTICE.

A MEETING of the Brighton and Sussex Medico-Chirurgical Society was held on May 3rd, with Mr. A. J. HUTCHISON, President, in the chair, when Dr. H. T. CUBBON read a paper on diathermy in medical practice.

Dr. Cubbon described medical diathermy as the heating through of diseased tissue to a temperature insufficient to destroy the tissue or impair its vitality. The main physiological effects of diathermy were due, he said, to its thermo-penetration. The dilatation of the peripheral vessels, increased perspiration, and elimination of solids in the urine aided in the elimination of toxins. The local effects of heat generated in the tissues were to reduce spasm and increase tension, with consequent relief of pain. The relief of pain was the most valuable property of diathermy. Diathermy was an effective method of supplying a supplementary ration of heat in marasmic diseases of children, in malnutrition associated with stricture of the oesophagus or cancer of the stomach, and in hypothermia following profuse haemorrhage. Owing to its penetrating power diathermy was very useful in the treatment of neuritis, and it was often of service in relieving the symptoms due to high blood pressure, although the effect appeared to be only temporary. Diathermy was effective in the treatment of pain and spasm caused by haemorrhoids which were not due to affections of the liver, heart, or compression of the rectum. It had also been found an effective method in dealing with gonococcal infections of the cervix, and in gonococcal arthritis before structural changes had taken place. Diathermy was an excellent method of relieving the pain and muscular spasm in cases of lumbago and torticollis of recent origin; chronic cases responded better to the constant current. Diathermy was useful in controlling and relieving cases of painful menstruation. Treatment should be given daily for three days before the expected period and in some cases during the period also. Cases of amenorrhoea for which no obvious cause could be found could often be remedied by diathermy applications of low intensity. The treatment should be given for six days before the period was calculated to be due. M. August of Paris had had success in treating cases of abdominal pain in which no other lesions beyond adhesions and inflammation of the omentum were present. Out of 23 cases which he had operated upon, 15 could be considered cured, 4 were more or less well, and 4 had gained no benefit. In coccygodynia, great relief and usually complete cure could be obtained by diathermy. One electrode must be placed in the rectum and the other electrode applied externally over the coccyx. Diathermy would quickly relieve the acute pain of gout, but it had to be administered with caution and combined with treatment for the elimination and neutralization of uric acid, as the patient might suddenly develop severe constitutional symptoms—possibly the result of absorption into the system of the dissolved uric acid in the joint—as the result of the heat applied. Diathermy would be found a useful adjunct to the treatment of infantile paralysis. The temperature of the paralysed limb could be maintained at a normal level by this method and so aid in the restoration of the nutrition of the limb. Until the normal temperature was attained electrical treatment was of little use. Diathermy had likewise been found useful in treating the pain associated with herpetic neuralgia in aged patients. The following maladies were not suitable for this method of treatment, although it might be thought that diathermy would be suitable: chilblains, chilblain circulation and Raynaud's disease—these cases responded better to the constant current; cases of trigeminal neuralgia did not respond well to diathermy, and the treatment of rheumatoid and osteo-arthritis was disappointing.

After remarks by the President, Drs. BROADBENT, BOYLE, NEVILLE COX, LYON SMITH, and STORMONT spoke, and Dr. CUBBON replied.



*Acute Suppurative Infections of the Fingers and Hands.*

Mr. J. R. GRIFFITH then read a paper on the treatment of acute suppurative infections of the fingers and hands. After expressing his indebtedness to Dr. Ranavil, Mr. Griffith said that these infections were dangerous in that they might spread through the lymphatics into the general circulation, and also because they might cause local destruction of tissue both by pressure and by cutting off the blood supply. Treatment was, therefore, directed towards evacuating inflammatory products and relieving tension by means of incisions which did as little damage as possible and did not involve uninfected spaces. The advantage of treating infections of the finger pulp by means of lateral incisions was discussed, and the method was described of treating infections of the nail bed by exposing and excising the root, a flap having been formed by making two lateral incisions continuous with the lateral margin of the nail. Mr. Griffith recommended the treatment of infections of the fascial spaces of the palm and thenar eminence by an incision through the web of the finger in the first case and by an incision through the dorsal aspect of the first interosseous space in the second case. Collections of pus in the forearm spreading from the hand were usually situated between the flexor aspect of the interosseous membrane and the pronatus quadratus deeply and the flexor tendons superficially. This space might be drained by means of an incision along the anterior margin of either the radius or the ulnar; this incision avoided important structures. The treatment of infections of the tendon sheaths was then discussed, and in the case of the middle finger the importance of providing adequate drainage by means of long lateral incisions was stressed. In the case of infections of the thumb and little finger tendon sheaths, the possibility was emphasized of extension of the infection from one sheath to the other and from a sheath to the neighbouring tissue spaces in the hand and forearm, and methods of dealing with these infections and complications were detailed. The after-treatment consisted of prolonged arm baths in 2 per cent. saline; early mobilization was to be encouraged—it did not spread the infection when incisions were adequate.

The PRESIDENT, Drs. WALKER and FITZMAURICE-KELLY spoke, and Mr. GRIFFITH replied.

### TREATMENT OF CONCEALED ACCIDENTAL HAEMORRHAGE.

At a meeting of the Edinburgh Obstetrical Society on May 10th, with the President, Dr. J. LAMOND LACKIE, in the chair, Dr. R. A. LENNIE (Glasgow) read a paper on the treatment of concealed accidental haemorrhage by conservative Caesarean section.

Dr. Lennie said that it seemed to be the prevalent opinion that in cases of concealed haemorrhage, on account of the damage to the uterine wall, if Caesarean section was performed the uterus must at the same time be removed. This had not been his experience in the Glasgow Maternity Hospital, and he described three cases in which hysterectomy was purposely omitted owing to the collapsed condition of the patient.

*Case 1.*—1904. A primipara, aged 27, was admitted to hospital with a history of vaginal haemorrhage of several hours' duration. The os was the size of a shilling; the conjugata vera measured 2½ inches; the uterus was much distended and tender, and the abdominal wall was oedematous. After admission the patient's pulse became thready and rapid. Caesarean section was performed by Dr. Jardine, the child being delivered alive. The uterine cavity was full of blood clot and the placenta was partially detached. After delivery of the child the uterus retracted well, and the puerperium ran a normal course.

*Case 2.*—1920. A 10-gravida, aged 41, was admitted to hospital with *ante-partum* haemorrhage. She was 7½ months pregnant, blanched and exhausted; her pulse was thready and rapid; the urine was loaded with albumin. She had severe and continuous abdominal pain; the uterus was tense and tender; no foetal heart was heard nor were foetal parts felt; the os was closed and the patient was not in labour. After admission the uterus gradually increased in size and rigidity and tenderness became more marked. Intravenous salines were given with pituitrin, and Caesarean section was performed by Dr. McLennan four hours after admission. The anterior and posterior walls of the uterus showed a purplish mottled discoloration, and on incising the uterus small interstitial haemorrhages were found throughout the uterine muscle. The placenta was completely detached, there was a large amount of blood clot

in the uterine cavity, and the foetus was dead. The uterus retracted readily after being emptied. Hysterectomy was considered inadvisable as the patient was in *extremis*. The puerperium was uneventful.

*Case 3.*—1922. A primipara, aged 24, 7 months pregnant, was admitted to hospital with evidence of concealed haemorrhage. The os barely admitted one finger, and there was a constant trickle of blood. Oedema had been present for several weeks, and the urine contained a fair amount of albumin. Caesarean section was performed by Dr. Lennie. The uterus showed a black mottled appearance and the incision revealed numerous intramural haemorrhages, while its cavity was full of blood clot. The placenta was almost completely detached by a large retroplacental haematoma, and the membranes were also separated from the uterine wall by blood. When the contents were evacuated the uterus retracted even more readily than in ordinary sections, and there was practically no bleeding during the operation. Progress was good for the first two weeks, when the patient contracted phlegmasia alba dolens, followed by myocarditis and death forty-seven days after operation. Dr. Lennie considered that if hysterectomy had been performed the patient would have died on the table.

Dr. Lennie held that when Caesarean section was performed in a case of concealed haemorrhage the uterus should be left *in situ* as the musculature was still capable of contraction and retraction.

The paper was discussed by Dr. FORDYCE, Professor WATSON, Dr. DAVIDSON, and Dr. YOUNG.

### CASES AND SPECIMENS.

Dr. W. F. THEODORE HAULTAIN and Dr. J. S. HALL read a short paper on a case of fits occurring in the fourth month of pregnancy with no other signs of toxæmia.

The patient was a 2-para, 4½ months pregnant, admitted in a semi-conscious state. Her blood pressure was 135, and the urine was normal. The nervous system was normal except for slightly exaggerated deep reflexes; a positive Kernig sign and head retraction were present, with a tendency to opisthotonos. Lumbar puncture showed a normal fluid under slight pressure. After lumbar puncture the patient gave a cry and went into a short clonic followed by a tonic spasm, the whole lasting about two minutes and being repeated five times in two hours. She afterwards went downhill rapidly, her temperature rose to 103°, and her respirations to 38, and she died fourteen hours after admission.

At the *post-mortem* examination the liver showed small points of haemorrhage through its substance and under its capsule. The kidney showed toxic appearances, but no definite pathological change. The uterus and contents appeared to be normal. The brain showed no lesion either macroscopically or microscopically, the pathologist who carried out the examination giving it as his opinion that "the changes present were consistent with the effects produced by a toxæmia of pregnancy." Dr. Haultain, however, was disinclined to admit that the case was one of eclampsia.

Dr. F. J. BROWNE described a specimen of an acardiac foetus.

The foetus was an extremely macerated (papyraceous) twin, the other twin being alive and healthy. There were two lower limbs, a trunk, and one upper extremity attached to the centre of the upper border of the trunk. There was no diaphragm, and the chest cavity was represented by a mass of gelatinous tissue containing no trace of heart or lungs. The abdomen contained no organs except one kidney, a ureter and bladder with two hypogastric arteries; the specimen was received in a very macerated condition and in consequence these vessels could not be traced further than the pelvis. There was a common placenta and the umbilical cord was inserted at its centre but bifurcated about one inch from its insertion, the main cord going to the normal foetus, and the other, very slender, but containing two arteries and a vein, going to the acardiac foetus. About one inch from the foetal insertion of the cord there was a true knot very tightly drawn which might have been the cause of foetal death. Between this knot and the umbilical end there was a sac containing intestine, although the abdomen was completely closed. Dr. Browne described the probable course of the common circulation; he thought that there was an anastomosis in the last common part of the cord between the umbilical veins of the two foetuses. The specimen was classified as *Holoacardiacus accephalus bipus monobrachius*.

Dr. H. S. DAVIDSON showed a specimen of lipoma about the size of a Tangerine orange, removed from the right external abdominal ring of a woman aged 41. The only symptoms had been some discomfort and slight tenderness.

### HYPERPLASIA OF THE HYPOPHYSIS CEREBRI.

A MEETING of the Section of Medicine of the Royal Academy of Medicine in Ireland was held on May 11th, with the President, Dr. T. G. MOORHEAD, in the chair, when Dr. J. D. CUMMINS reported a case of hyperplasia of the hypophysis cerebri in an unmarried woman aged 33, who had amenorrhoea, progressive stoutness and lethargy, bitemporal hemianopia, and unequal impairment of central vision; there was no enlargement of the sella turcica. Disharmony between the hormone-producing organs was held to be the



cause; and complete cure was effected within five months by the administration of one grain of thyroid extract daily. The PRESIDENT said that two years ago he had shown a somewhat similar case at the Academy, a woman, aged 55, who was suffering from all the symptoms of a pituitary tumour, and was shown by x rays to have a definite enlargement of the sella turcica; there was almost complete blindness of the right eye, and blindness of the nasal half of the left eye. He treated the patient first with pituitary extract, and later, for a period of six months, with thyroid extract, and, although he did not attribute the improvement to these remedies, it was a remarkable fact that this patient was now practically well. Dr. J. H. POLLOCK read a note on some clinical aspects of the Wassermann reaction, which was discussed by Dr. KIRKPATRICK, Dr. BIGGER, Dr. ROWLETTE, Dr. SPEARES, Dr. NESBITT, Dr. PARSONS, Dr. MICKS, and the PRESIDENT. Dr. H. C. DUNN read notes on cases of scleroderma in a child, Ritter's disease, and von Jaksch's disease. The first case was a female child, aged 4 years, with a sclerotic condition of the right side of the face and neck. The case had been seen by Dr. Walter Smith and Dr. Wallace Beatty, who confirmed the diagnosis of scleroderma. The case was remarkable on account of the age of the patient. The second case was a child 14 days old. Blisters were noticed on the body on the day before admission to hospital. These increased rapidly to large bullae which ruptured, leaving a raw red surface. The greater part of the body and limbs were involved, and the process resembled severe scalding. The case was diagnosed as dermatitis gangrenosa infantum (Ritter's disease). It ran a very rapid course and ended fatally forty-eight hours after the eruption appeared. The third was a female child aged 1 year and 3 months, who was admitted to hospital in an emaciated anaemic condition, suffering from severe diarrhoea. Blood films were diagnostic of von Jaksch's disease. The child died six days later.

#### TREATMENT AFTER ABDOMINAL OPERATIONS.

At the West London Hospital on May 4th Mr. McADAM ECCLES read a paper on treatment after abdominal operations to the West London Medico-Chirurgical Society. Dr. WELLS, the President, occupied the chair. Mr. McAdam Eccles said that it had been contended that it was only the surgeon or practitioner who had experienced an abdominal operation on himself who could adequately treat a fellow sufferer; he would speak from personal experience of appendicectomy. Post-operative vomiting was partly due to the general anaesthesia, but not entirely, for Mr. Eccles had seen it occur after spinal anaesthesia. The treatment he recommended for post-operative emesis was: (1) to allow the patient a pint of hot water to drink with half a drachm of sodium bicarbonate dissolved in it; (2) a saline enema of half a pint was slowly given to relieve thirst, and this, if retained, was repeated in a few hours; (3) to prop the patient up with pillows, as this position stopped vomiting. Flatulence after laparotomy might be due to at least four causes: (1) purge and enema previous to operation; (2) a preliminary dose of morphine and atropine; (3) excessive manipulation of bowel, causing paresis; (4) too rigid confinement of abdominal patients to the dorsal position. Early flatulence was best relieved by a pituitrin enema. Of great service was a hot fomentation placed over the whole abdomen; it was superior to a layer of cotton-wool. Solid food should be given as soon as possible. For late flatulence there was nothing superior to a good dose of castor oil. Pain after abdominal operations was best relieved by a rectal injection of aspirin gr. x and sodium bromide gr. xx. As for diet, except where the intestine had been actually interfered with, the sooner the patient had semi-solid and solid food the better. When a drainage tube had been inserted it should be removed as soon as possible. A tube pressing against the intestine might cause a fistula within forty-eight hours of its insertion. For retention of urine after operation a catheter should never be passed if it could be possibly avoided. Finally, it should be remembered that under the strain of coughing or vomiting abdominal sutures might give way; the actual line of sutures should therefore be inspected every day. An interesting discussion followed.

## Rebiefus.

### CUNNINGHAM'S TEXTBOOK OF ANATOMY.

*Cunningham's Textbook of Anatomy* must be well known to readers of the BRITISH MEDICAL JOURNAL, and we therefore venture to assume that a description of the last edition may fairly be given in terms of comparison with earlier editions.

Perhaps the most noteworthy feature of the fifth edition<sup>1</sup> is that, despite the introduction of much new matter, the volume is slightly smaller. This result has been reached by substitution rather than by addition, and by a systematic and critical revision of the whole text. The appearance of new collaborators—Dr. E. B. Jamieson replacing Professor Arthur Thomson, Professors T. B. Johnston and S. E. Whitnall the late Professor Paterson, and Professor J. T. Wilson Sir Auckland Geddes—has naturally been associated with considerable changes in the sections for which they are severally responsible.

Dr. Jamieson, in the osteological section, has paid special attention to epiphyseal lines, and has supplied illustrations showing many of the long bones as seen from the side as well as from the front and back—an innovation of distinct value, and one which we should like to see adopted in other sections, particularly in those concerned with muscles and joints. The progress made in myology has scarcely permitted of any notable change, but certain new illustrations of the pelvic floor help to elucidate the anatomy of this somewhat complicated region. In the sections on the vascular and digestive systems respectively admirable and original illustrations are provided of the middle cranial fossa and orbit, and of the mouth after removal of the tongue—this last should be of particular interest and assistance to the surgeon. In the section dealing with the peripheral nerves the tables in which the segmental origin of the nerves supplying the various muscles was given have been removed, mainly no doubt because of their doubtful accuracy and value; in this section certain schematic drawings are still retained, and one representing the distribution of the ophthalmic division of the fifth cranial nerve has been added; so excellent and clear, however, are the illustrations throughout the book that these departures from realism are, we think, neither necessary nor desirable. We remark with satisfaction that in the embryological section certain diagrammatic schemata to be found in earlier editions have been replaced by drawings of actual mammalian oöcytes.

It was in the section concerned with the ductless glands that we expected to find the greatest change, in view of the extension of knowledge regarding these structures; nor have we been disappointed. From a section of fourteen pages it has extended to one of twenty-five pages, and the three groups into which the glands were classified in the fourth edition have been expanded into five by the formation of distinct pharyngeal and cerebro-glandular groups. Like all composite works, the book suffers from occasional inconsistencies—on page 183, for example, we are told that the stapes is developed from the hyoid arch, while on page 835 it is described as arising from the mesoderm in the region of the fenestra vestibuli; on page 711, again, we are told that the cerebral portion of the spinal accessory nerve takes its origin from the dorsal motor nucleus of the vagus, while on page 594 we are informed that it arises from the nucleus ambiguus. Nor can these inconsistencies be excused on the plea that our knowledge regarding these subjects is still uncertain and imperfect, for we are—or perhaps we should now say we were—under the impression that a consensus of opinion had been reached upon both these matters. Further, we value osteology so highly as an easy, interesting, and accurate means of acquiring precise anatomical information that we regret to see it not used to the utmost; whatever abridgement of the subject of anatomy may be considered, in the interest of other subjects, advisable, the markings upon the various bones should be regarded as sacrosanct. We should have liked

<sup>1</sup>*Cunningham's Textbook of Anatomy*. Edited by Professor Arthur Robinson, M.D., F.R.C.S. Ed. Fifth edition. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1922. (Roy. 8vo, pp. xxvii + 1577; 1109 figures, 2 plates. 42s. net.)



to have seen, for example, the coloured area of insertion of the extensor carpi radialis brevis bear a closer relation to the sunken area so sharply circumscribed by nature on the adjacent parts of the dorsal surfaces of the second and third metacarpal bones; we regret, too, that in a work running to some 1,450 pages only one and a half lines can be spared for that minuscule, the pisiform bone, and that no mention should be made of the constant deep and narrow groove on its inner surface into which a part of the posterior annular ligament creeps to its attachment.

True, these are small matters—mere spots on the sun—but the standard reached by *Cunningham's Textbook* is so high, its position among medical books so honourable, that we would fain see it above all criticism. It is in this spirit that we have made these later observations, but let us hasten to add that they in no way prevent us from offering our warmest congratulations to the editor and his collaborators on the successful completion of an arduous and highly commendable piece of work.

### EXERCISE.

A THIRD edition of Professor TAIT MACKENZIE'S book on *Exercise in Education and Medicine*<sup>2</sup> has just been published. The first edition appeared in 1909, and was followed in 1915 by a considerably enlarged edition. Since then the author has had the experience of the war at his disposal. He accepted a contract commission in the R.A.M.C. in 1915, and after a short time on duty in one of the hospitals was appointed to advise on physical training at Aldershot. In 1916 he was transferred to the Heaton Park Command Dépôt, where he remained as medical officer in charge until his contract expired. It is in connexion with the experience thus gained that fresh matter has been added to the new edition of his book.

The chief addition is in the chapter on mechanical means for massage and exercise, where nineteen pages have been introduced descriptive of the apparatus standardized during the war to replace the costly and cumbersome Zander machines. These new appliances were used in the military, naval, and re-education institutions of France, Canada, India, and Japan as well as in England, and in America more especially in the Brooklyn Naval Hospital and the Reconstruction Hospital of New York. They had the fourfold object of isolating the muscle groups most frequently in need of development, of giving resistance by a graduated load, of measuring the range of movement and work done, and of arousing and holding the patient's interest. The additional pages also include a short note on the re-education after amputation of the leg, and on corrective gymnastics for re-education of lost or impaired function. The illustrations of the new appliances are chiefly taken from *Keen's Surgery*. Space has been gained by the omission of Dr. E. H. Pool's personal experience of the value of various exercises after appendectomy, which appeared with numerous illustrations in the second edition. This omission, however, does not detract from the emphasis given by the author to massage and movements as a necessary adjunct to post-operative convalescent treatment of parts put temporarily into disuse by grave surgical necessity.

In the chapter on exercise in the treatment of diseases of the circulation the work of Sir James Mackenzie and of the Mount Vernon special heart hospital under Lewis and others during the war is fully appreciated. Reference is also made to the systematic treatment of abnormal heart conditions in the Relief Foundation Hospital, White Plains, U.S.A., as recorded by Dr. F. Brush. In the chapter on the treatment of respiratory diseases Marcus Paterson's observations at the Frimley Sanatorium on the gradual immunization and subsequent recovery in cases of tuberculosis by a series of auto-inoculations produced by progressive exercises find a place. This combination of exercise and rest is also illustrated by the observations of Dr. J. Roddick Byers in the treatment of tuberculous soldiers in military sanatoriums in America. These are the chief additions in the way of new matter in the third edition. Several illustrations have been omitted without

detracting from the value of the book, and as a consequence its size has not been increased, nor has the general character of the book been altered. The first 305 pages, forming Part I, are devoted to exercise in education, and the remaining pages, forming Part II, to exercise in medicine. Part I is mainly descriptive of physical education in schools, colleges, and other institutions in the United States, with accounts of the German, Swedish, and French systems of exercises. With the exception of the additions and modifications referred to above, Part II has retained its original form and matter.

The volume appeals in a special degree to education authorities and their medical officers, but the subjects with which it deals are of importance to the general practitioner and consultant as well, and also to the officers of the combatant services. It illustrates in an authoritative manner the position now held in the scholastic and medical world by what the author designates the Cinderella of the therapeutic family. The work of Professor Tait Mackenzie in America and of Sir Robert Jones in this country has been of infinite value in placing physical training on a scientific basis in connexion with education and medicine, and may thus be said to have revolutionized the attitude of the medical profession towards its teachings.

### THE TREATMENT OF GONORRHOEA.

DR. A. REITH FRASER, lecturer in venereal diseases at Cape Town University, has added yet another book to the flood of literature that has appeared within recent years on the subject of gonorrhoea. It was once said, and with reason, that English medicine had seriously neglected venereal disease, and that anyone requiring information on the subject would perforce have to turn to foreign literature. This accusation can no longer be made, for the English works on the subject of venereal disease and its treatment turned out in the years following the war would form a library of no small dimensions.

Dr. Reith Fraser has, however, struck a new note, and his *Monograph on Gonorrhoea*<sup>3</sup> may in some ways act as a corrective or as an antidote to some of its predecessors. The pith of the gospel that he brings to us is that it is utterly impossible to sterilize the infected urethra by means of the antiseptics at present at our disposal, and that those who endeavour to eradicate the gonococcus by prolonged applications of powerful antiseptic solutions or by intraurethral manoeuvres necessitating the constant passage of instruments are possibly doing far more harm than good. In the words of his preface:

"The added responsibility of incision and scarification of an infected surface, the traumatizing nose of urethral instruments on a fragile mucosa and the extensive cicatrization which follows in the wake of curette and cautery have not been weighed in the balance against accepted principles of sound surgical procedure. Indeed it seems quite reasonable to postulate that in days gone by gonorrhoea was treated much more rationally and successfully than it is at the present time."

The author is equally strong in his condemnation of the abuse of the numerous "scopes" that have been invented for peering into the human vitals, and considers that "With reasonable reservations most of them one day will be relegated to the limbo of forgotten things, and the fact that they ever were perpetrated will be apparent only to those who dabble in museum curiosities, or probe a diligent finger into the pages of history."

The book that follows these introductory flourishes is extremely complete; it starts with the history of gonorrhoea, its literature, the anatomy of the male urethra, and the pathology and bacteriology of gonorrhoeal urethritis. In the later chapters describing methods of treatment the author has endeavoured to keep out stereotyped and reiterated teaching which conflicts with his clinical experience, and advocates only those remedies which he personally has found to be successful. At the end of each chapter is a very complete bibliography, including a very large range of foreign literature. A very useful chapter is that devoted to standards of cure in the male. The aim is to set up a satisfactory and practical standard universally applicable, and within its scope is included both the

<sup>2</sup> *Exercise in Education and Medicine*. By R. Tait Mackenzie, M.D., LL.D. Third edition. Philadelphia and London: W. B. Saunders Co. 1923. (Med. 8vo, pp. 601; 445 figures, 1 plate. 24s. net.)

<sup>3</sup> *A Monograph on Gonorrhoea*. By A. Reith Fraser, M.D. (Aberd.). London: Henry Kimpton. 1923. (Roy. 8vo, pp. xvi + 508; 55 illustrations and plates. 18s. net.)



single and the married man. Dr. Fraser has rightly included gonorrhoea in the female within the scope of his work.

In summarizing the very difficult question of treatment he states that the underlying principle of all treatment is to secure free drainage. For this reason he deprecates the use of styptics and powerful astringent drugs, and employs only those agents which promote a profuse serous exudate and an energetic secretion by the mucus glands. He has apparently found "Milton" (a strongly hypertonic saline solution containing a high proportion of free hypochlorous acid) as useful an application as anything. During the whole course of treatment vaccine therapy is employed in the hope that it may protect the upper genital tract from infection and reduce any likelihood of metastases.

Following the description of his own treatment he gives summaries of methods that have been advocated during the last ten years by various writers on gonorrhoea in women. These summaries are so complete that they leave no doubt that Dr. Fraser has followed very closely the trend of modern opinion.

In spite of the somewhat overburdened state of the market for venereal manuals a welcome must be given to the work under review, since it succeeds in avoiding the beaten track and furnishes a not unneeded corrective to the vast amount of instrumental and mechanical treatment carried out by many workers in this branch of medicine. We recommend it especially to those who have allowed their enthusiasm for "scopes" and other instruments to get the better of their judgement.

#### STERILITY IN WOMAN.

DR. R. A. GIBBONS has collected in a useful small volume the fruits of his ripe experience of the subject of *Sterility in Woman*.<sup>4</sup> Dr. Gibbons has for long given attention to this important subject, and has had exceptional opportunities of studying it in the course of many years in practice. His book shows that in his studies and in his practice he has considered the subject from every point of view, and his statements may therefore be regarded as having a considerable weight of authority behind them.

In his first chapters Dr. Gibbons considers the important aspect of sterility in its relation to the State—the question of the falling birth rate, of illegitimate children, of infantile mortality, of abortion-mongering, of the marriage of near kin, of the compulsory notification of venereal disease, of the use of contraceptives, and so forth. In the following chapters he discusses the physiology of conception, and then deals seriatim with the structural causes of sterility and with the functional and constitutional causes. He also discusses sufficiently for most purposes the causes of sterility in the male. The last two chapters are devoted to treatment, medical and operative.

The volume provides an admirable account of the whole subject. It is sufficiently full for the needs of the family practitioner, and is written in a refreshingly clear and lucid style. It is well illustrated by figures, which are borrowed for the most part from well known textbooks in gynaecology, and these figures are carefully chosen to illustrate helpfully the important points in the text. Lastly, Dr. Gibbons has provided a useful bibliography, which will serve as an introduction to a fuller consideration of the subject for those who require it. We are confident that family physicians and others who are consulted on this important subject will find much to help them in this book, and will appreciate it all the more perhaps in that it is not written too exclusively from the point of view of the gynaecologist.

#### ANNALS OF MEDICAL HISTORY.

From an editorial survey of its position in the concluding number of the fourth volume of the *Annals of Medical History*<sup>5</sup> it is to be feared that this admirably produced quarterly is not receiving the support that it so undoubtedly

deserves. It supplies a very definite want and, as the editor remarks, its discontinuance would make any effort to start a successor a matter of grave anxiety and hesitation. Its cover bears an admirable reproduction of Sir William Beechey's portrait of William Heberden the elder in his 86th year, and in the account of his life Mr. P. B. Davidson compares him with the late Sir William Osler both in personal charm and in showing more interest in diagnosis than in treatment. The frontispiece, a photograph of S. Weir Mitchell, illustrates Dr. C. L. Dana's attractively written Weir Mitchell oration on "Medicine and the Humanities" in which, apropos of that wide-minded neurologist, he says that in medical practice quite two-thirds of efficiency and success depend on conduct and character, and hardly one-third on technique, though he did laboratory work and was the father of the best modern phases of psychotherapy. Dr. Ernest Wickersheimer, of the University Library, Strasbourg, contributes a scholarly note on the *Liber de Medicinis expertis* falsely attributed to Galen, which is remarkable for the long list of medical names, generally bizarre, and therefore exciting much interest among bibliographers.

This issue contains an appreciative sketch of Dr. Wickersheimer, who was librarian of the Sorbonne and general secretary of the Société Française d'Histoire de la Médecine. Dr. F. R. Packard concludes his account of Guy Patin and the medical profession in Paris in the seventeenth century, and it is to be hoped that this attractive life will appear in book form. Dr. M. Charlton writes a short sketch of Christopher Widmer (1780-1857), who went to Canada as an army surgeon in 1812 and settled at York, now called by its original Indian name of Toronto, and played a prominent part in the early medical history of Canada. Dr. Charles Greene Cumston, lecturer on the history of medicine in the University of Geneva, gives an account of the Latin poem on the diseases of nurslings—paedotrophia—written by Scevole de Sainte-Marthe in 1584. This number contains a note on a unique book recently presented to the library of the College of Physicians of Philadelphia, the *Congressiones* (1514) of Francisco Lopez de Villalobos, who gave elsewhere one of the earliest descriptions of syphilis.

#### NOTES ON BOOKS.

DR. D'HERELLE'S book on the bacteriophage<sup>6</sup> was issued last year as one of the monographs of the Pasteur Institute and reviewed in this journal (March 4th, 1922, p. 354). An authorized translation into English now published contains an additional chapter on the nature of the bacteriophage, in which the hypotheses which have been advanced in explanation of the phenomenon of bacteriolysis are discussed and refuted one by one; d'Herelle recalls the old theory of Stahl to the effect that "any body brought to a state of putrefaction transmits very easily this state to another body still free of corruption," and likens his opponents to disciples of Liebig unwilling to accept the researches of Pasteur; the author's views are clearly and simply explained in this volume, which will be welcomed both by medical bacteriologists and biologists.

The lapse of three years has brought a demand for a third edition of Dr. J. A. CROWTHER'S *Molecular Physics*.<sup>7</sup> Like other books written on this attractive subject, it deals with the discoveries on the constitution of the chemical atom made by the physicists who enlarged the work which had come to a standstill in the hands of chemists. While other books have been written on the theory reciting the conclusions established and indicating the methods by which they were reached, Crowther's work is distinguished for the manner in which it takes the reader through the earlier stages of the genesis of the modern theory, the practical difficulties encountered, how these were surmounted, and how sometimes erroneous inferences prevented advance. For the reader who is not a specialist in this branch of physics such a narrative plan is the best, especially when the story is told in the facile manner which is the author's peculiar gift. Full mathematical treatment would not be in

<sup>4</sup> *Sterility in Woman: Its Causes and Treatment*. By Robert A. Gibbons, M.D., M.R.C.P., C.M., F.R.C.S.E. London: J. and A. Churchill, 1923. (Demy, 8vo, pp. x + 244; 44 figures. 12s. 6d. net.)

<sup>5</sup> *Annals of Medical History*. (Quarterly.) Vol. iv, No. 4. Edited by F. R. Packard, M.D. New York: P. B. Hoeber; London: Baillière, Tindall and Co. 1922. (Pp. 323-405; illustrated. Subscription in Great Britain, 42 2s. a volume of four issues.)

<sup>6</sup> *The Bacteriophage; its Role in Immunity*. By F. d'Herelle, Pasteur Institute, Paris. Translated by George H. Smith, Ph.D., and Wilkins Company. 1922. (Med. 8vo, 84.25; other countries, 84.50.)

<sup>7</sup> *Molecular Physics*. By J. A. Crowther, M.A., Sc.D., F.Inst.C. Third edition. Textbook of Chemical Research and Engineering. London: J. and A. Churchill, 1922. (Cr. 8vo. pp. viii + 189; 22 figures. 7s. 6d. net.)



place in a book of this class, but since no description of the phenomena would be clearly intelligible without reference to mathematical relationships, the derivations of these is explained, and for the reader little skilled in higher mathematics the nature of methods by which the relationships are deduced is indicated. The chapter on Planck's quantum theory gives a lucid account of its derivation, and shows how in its application to atomic structure a great field of inquiry remains still unexplored.

Dr. F. A. MAGUIRE has brought together in a small volume entitled *The Anatomy of the Female Pelvis* his notes on pelvic anatomy for students of gynaecology.<sup>8</sup> In so far as this represents an endeavour to relieve textbooks of gynaecology of some of the matter with which they are commonly laden it is to be commended. The teaching is sound and lucid. It suffers, however, from the lack of free illustration which is characteristic of textbooks of gynaecology; and we very much doubt whether publishers would be justified in elaborately, or even adequately, illustrating a little book such as this, the demand for which is likely to be limited so long as the larger textbooks include pelvic anatomy in their purview.

Dr. WALTER GUTTMANN'S *Medizinische Terminologie*<sup>9</sup> has been enlarged and thoroughly revised. Seventy-three new figures have been added and thirty-three others replaced. Though this dictionary will be of use mainly to those who have some knowledge of German, it will be of some service to those who merely seek information as to the country and date of the author in the cases of eponymous diseases, symptoms, operations, instruments, and the like.

<sup>8</sup> *The Anatomy of the Female Pelvis: Descriptive and Applied.* By F. A. Maguire, D.S.O., M.B., Ch.M.Syd., F.R.C.S.Eng. Sydney: Angus and Robertson, Ltd.; London: The Australian Book Co. 1922. (Cr. 8vo, pp. 115; 4 figures. 6s.)

<sup>9</sup> *Medizinische Terminologie.* By Walter Guttman. Sixteenth to twentieth edition. Berlin and Vienna: Urban and Schwarzenberg. 1923. (Roy. 8vo, pp. vi + 1323; illustrated.)

## THE X-RAY DIAGNOSIS OF THE PATHOLOGICAL GALL-BLADDER.

### THE MACKENZIE DAVIDSON MEMORIAL LECTURE.

PROFESSOR A. W. GEORGE of the Massachusetts General Hospital delivered the Mackenzie Davidson Memorial Lecture on May 17th before a large audience composed of members of the Röntgen Society and the Section of Electro-therapeutics of the Royal Society of Medicine. Sir HUMPHRY ROLLESTON was in the chair.

Professor George commenced his lecture with a graceful allusion to Dr. Robert Knox and to other distinguished British radiologists.

There was a large number of cases, the lecturer said, in which indefinite shadows were present on the x-ray plate, only suggestive, so far as shape, size, and position went, of gall stones. By experience they had learnt that very often in such conditions the gall bladder did not contain stones. The shadows were due either to thickening of the gall bladder wall, inspissated bile, or very thick and dark bile. Such skiagrams were indicative of a pathological gall bladder, with or without stones. As time went on radiologists had begun to analyse and classify observations which they had regarded as secondary evidence of a diseased gall bladder. This indirect evidence was of the highest importance.

The normal and healthy gall bladder could not, in the great majority of cases, be rendered visible by x rays. Neither did it cause pressure upon the gastro-intestinal tract made opaque by a barium meal. When such pressure deformity was present it was almost always due to a pathological gall bladder. In the deformity due to a gall bladder there was a definite shadow which Professor George had termed a half-shadow; it was due to a concave or rounded surface pressing against a similar surface, the first part of the duodenum. Hence they found varying degrees of shadow quality in the photographic film. If the edge of the liver, a flat surface, pressed against the duodenum, the half-shadow was lacking. This difference was of great importance in diagnosis.

Why was the diseased gall bladder able to cause this pressure? Perhaps because at some time during the examination or examinations there was a tension within the gall bladder greater than within the barium-filled duodenum. The lateral view gave the position of choice.

Another important structure involved was the second

part of the duodenum. Very constantly in the normal individual this part of the duodenum extended downwards parallel to the vertebrae, till it became the third portion passing up behind the stomach. Frequently in gall-bladder disease the second part of the intestine was directed outward toward the liver, and in quite a number of cases the size of the gall bladder might be outlined by the position of the second part of the duodenum. Again, in pancreatic disease this part of the intestine was of great diagnostic importance. When the duodenum was in this position it was found to be due, save in very rare cases, to gall-bladder adhesions. This was a very definite and important observation.

Burnham of San Francisco pointed out in 1922 that in the lateral position a duodenum passing backward toward the vertebrae and forming an angle passing downward again to its normal position was significant of gall-bladder disease. Post-operative cases came in a category of themselves, and were most difficult to diagnose.

The next observation of importance was the pressure of the gall bladder upon the antrum of the stomach. This occurred as frequently as pressure deformity on the first portion of the duodenum and in a large number of cases the pressure would be found to involve both viscera at once. In this portion also the half-shadow effect must be noted.

Another point of interest was the transposition of the jejunum from its normal position on the left side to the upper right quadrant; this had frequently helped the lecturer in diagnosis. There was, however, one other possibility: peritonitis, especially of a tuberculous nature, earlier in life might be responsible for the condition. It was remarkably easy for the gall bladder to throw out adhesions and pick up adjacent structures.

A fourth observation of relatively common occurrence, but possibly not of such value as those preceding it, was the filling of the ampulla of Vater. In every case in which, through a series of gastro-intestinal plates or films, the ampulla had been demonstrated full of barium, there was disease either of gall bladder or pancreas; and changes in the pancreas often occurred secondary to lesions of the gall bladder.

There was frequently a change in the position of the proximal end of the transverse colon; something akin to a secondary hepatic flexure was formed, and to this the term "pseudo-hepatic flexure" had been given. Very often in the absence of all other signs this change in the transverse colon would be the only diagnostic sign pointing towards disease of the gall bladder.

Another diagnostic point which had been suggested by Carman, Burnham, and others was the so-called spasm occurring in the antrum of the stomach. The lecturer did not feel that this was entirely reliable. Perhaps it should be observed with the fluoroscope rather than with plates.

Many had asked what was the negative value of the x ray. He felt that since they had so much evidence pointing to a positive diagnosis the absence of all these observations should have some value. With a proper examination a diseased gall bladder could be in almost every instance demonstrated on the plate or film. Even cholesterol stones, if present in large numbers, could be shown. It might not be possible to recognize individual stones, but with increased density and some change in the shape of the gall bladder the radiologist could be reasonably certain he was dealing with a chronic gall bladder, with or without stones. Kirkland of Muncie, Indiana, had recently had an opportunity in the Mayo clinic of doing radiological work on cases diagnosed clinically as suffering from cholecystitis or cholelithiasis. Although the lecturer had not the exact figures, it was reported that a correct diagnosis was made by x rays in 92 per cent. of the cases operated upon, well over a hundred in number. He believed that from the moment infection took place there began changes in the gall-bladder wall and in the bile which would have their counterpart eventually on the x-ray plate.

The lecturer concluded with an earnest appeal for young men to approach the subject with enthusiasm and a real desire for technical excellence.

Dr. Knox proposed, and Sir ARCHIBALD REID seconded, a vote of thanks for a very remarkable lecture.



## British Medical Journal.

SATURDAY, MAY 26TH, 1923.

### NATIONAL HEALTH INSURANCE FINANCE.

It seems that National Health Insurance cannot touch anything that it does not complicate. The multitude of approved societies and their various types, regulations of all kinds, certification rules and forms, have perforce become familiar to a considerable number of officials, doctors, and insured persons; but it is doubtful whether more than five or six persons all told have explored the ramifications of National Health Insurance finance. Many more than this have essayed to do so, but they have retired dismayed from the task, or have sometimes been led to draw erroneous conclusions from the incomplete character of the materials available for their difficult researches. The Insurance Acts Committee has performed a service to others besides the medical profession by securing from an expert adviser the memorandum on the National Health Insurance Fund which is published in the SUPPLEMENT to this week's issue of the JOURNAL.

This report on the financial position of the fund discloses a number of remarkable facts and results. The first point to emphasize is that, although separate accounts and subordinate funds abound, there is the one fund, of which all these are parts and on which the soundness of the whole insurance scheme depends. It is upon the stability of the National Health Insurance Fund as a whole, and not upon the particular conditions of any of its subordinate divisions at any given moment or in any one year, that hangs the guarantee of the various benefits and payments as they mature. A second point which the investigation has brought out is the vastness of the transactions of the fund. The issues out of the fund since the Act came into force have probably approached 350 millions sterling. A third, and perhaps practically the most important, point is the demonstration of the amplitude of the reserves. It is by no means an easy matter to track these reserves or to make their addition, but it seems evident that the balances in the fund to-day are well over 100 millions.

It is of course essential to any sound insurance scheme that the reserves should be abundant. They have not only to meet all the ordinary liabilities as they become due but ought to be sufficient for extraordinary claims or entirely unforeseen circumstances. It is, too, the business of an actuary to make safe. He is wise if, within the margins of error with which he has to deal, he calculates conservatively. The Government actuary, the approved societies, insured persons, and, we think, insurance practitioners also, are to be congratulated on the present position of the fund. There seems to have been almost a conspiracy to ensure its affluence. In 1911 it would have been quite improper to base calculations on the hope that large numbers of persons would pay their premiums, in the form of stamps, and would then throw their policies, in the form of stamped cards, into the fire; but they did it.

No doubt most of them are wiser now, but stamps still disappear. No actuary could have allowed for the war; but it came, and with it the large number of deaths of which there had been no expectation, thus reducing the liabilities, while the credits given and funds accumulated to meet them remain. The rise in the earning power of money could not have been foreseen; but it occurred, and profits calculated at three per cent. worked out at five or more. No actuary could have relied upon extra Treasury grants to make good particular deficiencies or mitigate the effects of unforeseen circumstances; but they were voted to the extent of millions. Finally, at the beginning the actuarial calculations had to be based upon a sickness incidence gauged from such data as previous experience afforded; whereas in fact the sickness rate has proved to be far less than that legitimately anticipated from these data. This reduction seems to be not fortuitous but abiding, and there can be little doubt that it is largely due to the effects of the scheme itself, and to the accumulated results of the efforts of the medical profession in all its branches—preventive and curative alike. Millions have thereby been saved to the Insurance Fund.

There have naturally been some offsets to these advantages. It is true, paradox as it may seem, that the prolongation of the average life which has occurred does not benefit a health insurance scheme; and war's aftermath of prolonged unemployment has a deleterious effect on both credit and debit sides of the account. All approved societies are not in an equally flourishing condition, but there is no doubt at all that societies as a whole have done very much better than they had any reasonable expectation of doing, and that insurance funds as a whole are in a very healthy state.

The prime purpose for which the memorandum was obtained was that the Insurance Acts Committee and the profession might have reliable information as to the state of the National Health Insurance Fund in connexion with the consideration of the capitation rate of payment for practitioners. The amount of that payment cannot properly be held to be dependent upon the state of the fund; it must be determined on its merits and with regard to other considerations. But if the insurance scheme is to be in itself sound and solvent this charge, whatever it is, should be met from the insurance fund. It is not right or just that practitioners should be placed in regard to any portion of their remuneration in the position of residuary beneficiaries after all other charges have been met. If any priority were proper, the full charge for medical benefit, as the essential foundation of the scheme, should be placed before any other; and, the scheme being regarded as nationally advantageous, any necessary State contribution should be in sufficient proportion to meet all charges for guaranteed benefits. The memorandum shows that the present proportion of two-ninths is sufficient for this, and leaves a secure margin. There need be no talk about using the societies' money for medical benefit. The debiting of seven-ninths to the societies' account has always been in the nature of mere book-keeping; and we are all agreed that the other benefits to which insured persons are entitled and which approved societies dispense should not be endangered; but we claim that all legitimate charges must be met out of a properly constituted fund.

Some recent answers given in the House of Commons by the Minister of Health have a sinister appearance of attempting to belittle the reserves



available. Investigations such as those on which the memorandum by the Insurance Acts Committee's expert adviser is based do not justify any such attempt: the position must be fairly faced. It is certain that no medical service is worthy of State support unless it is a good one. It is certain that a good service must be and ought to be adequately remunerated. Fortunately it appears to be true also that the National Health Insurance Fund is in a position to afford such payment.

### THE COUNTRY PRACTITIONER.

Any attempt to compare the attractions of medical practice in town and country must have regard to the personal equation. If looked at from the financial point of view the prospects in a town must be, on the average, reckoned the better; but there is the other side. It is from every point of view fortunate that the average Englishman and Scotsman retains the love of open-air sport, which for the townsman finds its readiest outlet to-day in golf, or, when money is a little more plentiful, in a shooting syndicate, or both. The superior institutional facilities of the town—the hospitals, laboratories, and dispensaries—the opportunities for scientific intercourse and post-graduate study, and the means for education of a family, will determine the issue for the majority. A minority of young medical men, however, will look at the matter differently. Such men, while not failing to realize that the professional man, whether in law, church, or medicine, commonly makes a smaller income in the country than in the town, will yet find the more natural life, the rural road instead of the city street, the clean air instead of the urban smoke, the country pursuits in hours of leisure, the garden, the river, and the moor, make a strong appeal. Such an one will think that he may enjoy from the first some of those things the townsman promises himself as a reward of many years of toil in uncongenial surroundings. Moreover, in his medical work the country doctor may feel sure that there are opportunities for initiative which are forbidden to the general practitioner who passes his life within easy reach of operating rooms and consultants and specialists. It is to the interest of a patient in rural cottage or hamlet that his doctor should undertake emergency responsibilities and risks which the town doctor may properly pass on to others. And so, fortunately for the general welfare, a fair sprinkling of men who have done well at their university or hospital, and who might count on a successful urban career, yet determine to settle in the country, where, in addition to practice, they may take a large part in local affairs, and win the regard and esteem of a whole countryside.

So much for sentiment and inborn predilection. But to fill his place in the scheme of things the country doctor must have an income on which he can live and bring up his children. Dr. Williams-Freeman in his article on "The Plight of the Country Practitioner" (SUPPLEMENT, April 21st) maintained that the fight for a reasonable existence for the doctor in a country district is becoming more and more difficult. Improved travelling facilities which make it easier for him, by motor car, to get through his work may lead to the invasion of his territory by town practitioners. In this respect he suffers with others who minister to the needs of the country folk. The village shop, for example, is ruined by competition from the market town or the city, and such wealth as the land pro-

duces is not being spent in the place of its production. Moreover, the rural population continues to diminish. These are serious facts, and though it cannot be expected that the whole burden of medical loss due to far-reaching changes of a social and economic nature can be borne by the insurance funds, yet it is altogether right and proper, in the interests not merely of the doctor but of the rural community, that funds should be made available, so far as is reasonably possible, for amelioration of conditions which otherwise will tend gradually to deprive the country folk of the medical aid which is their due; failure to do this must in its turn hasten depopulation and so continue a vicious circle unchecked.

In view of such considerations it is satisfactory to note that at the special conference of representatives of Local Medical and Panel Committees to be held at the Central Hall, Westminster, on June 7th, one of the matters to be considered will be the recorded opinion of the Insurance Acts Committee "that no settlement with the Government would be satisfactory which did not allow of special provision being made for certain rural practices with small panels."

The problem bristles with difficulties; and Dr. Williams-Freeman is not so clear about the cure as about the disease. He suggests, but with some hesitation, increase of salaries under the Poor Law; that is not a very attractive proposition. Scotland is usually regarded as able to look after itself in matters of finance, and by means of the Highlands and Islands Medical Service Act it has achieved a large measure of success in dealing with the most sparsely populated and inaccessible areas in Great Britain. Outside the counties statutorily embraced in that Act there are similar difficulties in remote areas of Aberdeen, Banff, Dumfries, Bute, and elsewhere; the attention of Parliament was called to the position by representatives of these areas, with the result that the House of Commons made a small grant. The motive was to aid the public, not to subsidize the profession, but it is mainly through the profession that aid can be given, and so the doctor benefits indirectly. His lot is made easier by helping him, for example, to maintain a motor car, especially if he undertakes to utilize it for removal to hospital of urgent cases, where no ambulance service is available; or by providing him with a house of call and consulting room with essential equipment in a distant village where he will undertake to attend on certain fixed days, and where perhaps a district nurse can also have her headquarters. Where an arrangement of this sort is in force, and becomes understood by the inhabitants, it helps to save needless visits on successive days in response to messages from different individuals. We have heard of one village which is within range of two doctors resident widely apart, and where a common consulting room is used on one fixed day a week by one man and on another by the other. The control of such schemes is in the hands not of the Local Insurance Committee, but of the Scottish Board of Health, through its medical officers.

Circumstances in Scotland are no doubt somewhat different from those in most parts of England, and the cases mentioned are not just those contemplated by Dr. Williams-Freeman, but the principle is of general application—that a fund should be placed at the disposal of the central authority to alleviate conditions of exceptional local hardship in respect of medical attendance. The lowland Scottish method seems well worth investigation, and no doubt the conference will be glad to consider all feasible proposals which may be brought before it.



## NUTRITION IN ETIOLOGY.

EVIDENCE of the interest the profession is taking in questions relating to nutrition and its disorders is afforded by the fact that the last two British Medical Association Lectures that have come to us for publication deal with various aspects of the subject. Dr. Hugh Thursfield's lecture delivered before the Guildford Division, which appropriately came first (May 19th, p. 841), dealt with disorders of growth in a general way, while Dr. Pritchard's, delivered before the Oxford Division and published this week, was devoted to a consideration of the pathogenesis of rickets.

A great impetus to the investigation of the value of various articles of food was given by the shortage of food and the restrictions on its use which arose during the war, and much light has been thrown on the principles governing healthy nutrition, and on the various ways in which its processes may be disturbed, by recent researches into the action of vitamins and the causes of rickets. The investigations to which we refer have been made partly in laboratories in this country, in India, and in America, partly in hospitals and institutions, and partly, on a large scale, among the children of Vienna from 1919 to 1922 by the mission sent to that city by the Accessory Food Factors Committee appointed jointly by the Medical Research Council and the Lister Institute of Preventive Medicine.

The last annual report of the Lister Institute shows that much of the time of the workers there, and especially those in the department of experimental pathology, of which Professor C. J. Martin, the director of the Institute, is himself the head, has been given to investigations of this order. Not the least interesting of the observations have reference to the effect of light on nutrition, especially the disordered nutrition of rickets. The observations of Dr. Harriette Chick and her colleagues in Vienna were directed to ascertain the relative value of the administration of cod-liver oil, of exposure to the radiation of the mercury vapour lamp, and of outdoor treatment in the sun and shade respectively. Each of the three methods was equally effective in restoring normal calcification of bone and bringing about complete and rapid healing of the bone lesions. On the other hand, no child kept indoors without one or other of these special forms of treatment showed similar steady restoration of the bone to normal. The chief conclusions were: first, that diet and light are factors of primary importance in the etiology of rickets in infants, and that light, especially ultra-violet light, appears to enable the body to deal economically with certain specific food constituents, permitting normal bone development on a diet which, when exposure to light is less, leads to the development of rickets; secondly, that a diet containing an average allowance of milk, with carbohydrate additions, did not include sufficient antirachitic fat-soluble vitamins to prevent rickets in winter. In summer the increased sunlight rendered this diet adequate. And thirdly, that fat-soluble vitamins, as provided by cod-liver oil, play the same important part in human as in experimental rickets. One member of the mission to Vienna, Miss Margaret Hume, made the observation that ten minutes' daily exposure to ultra-violet light enabled rats to grow normally for some two months, even when deprived of fat-soluble vitamin. Subsequently she found that it was not necessary to irradiate the rats directly, but that if empty jars were irradiated and the rats introduced immediately afterwards the

same beneficial influence upon growth was secured. This observation the report rightly speaks of as "rather astounding," but after her return to this country it was twice repeated under careful control conditions. The experiments were so conducted as to ensure that it was indeed some influence temporarily impressed upon the air by the radiations which was responsible for the action. This was found to be the case. No interpretation of the observation is forthcoming at present, but, the report continues, "it is being sought after, for it may be surmised that herein may lie the secret of those subtle changes in climate to which mankind, and certain individuals in particular, are susceptible."

It is now well known that cod-liver oil of good quality may have what almost amounts to a specific action on rickets. Professor Drummond of University College and Dr. Zilva of the Lister Institute have been investigating a large number of samples of cod-liver oil collected in Norway, and have observed a variation in potency of about twenty-fold. It seems to be due to some biological factor still not ascertained. The ultimate origin of the vitamin found in active liver oils was traced to unicellular marine organisms which are consumed by copepods, larval decapods, and molluscs, which are consumed by caplin and squid, which in their turn are eaten by the larger fishes. During last summer Dr. Zilva visited Newfoundland, where facilities were offered by the Dominion authorities for the investigation of the methods of preparation of cod-liver oil there in use. Material was systematically collected from a number of fishing stations in the island, and laboratory investigations showed that Newfoundland oils are of very high and uniform potency, and that the method of preparation prescribed and enforced by the Newfoundland Ministry of Marine and Fisheries has no deleterious effect on the vitamin. The refining processes in use are up to date, and are favourable to the preservation of the vitamin potency. Dr. G. F. Still and Dr. Zilva are engaged in a clinical study of the therapeutic value of certain oils of which the vitamin potency has been experimentally determined. The observations of Professor Korenchewsky seem to be bringing us near to an understanding of the part played by a deficiency of calcium in the production of rickets. His latest results, published recently in our columns (May 12th, p. 802), tend to show that excess of calcium in the diet is not by itself sufficient to prevent rickets. The disease is produced in young rats by a deficiency of antirachitic fat-soluble vitamin alone, even when the amount of calcium and phosphate in the diet is more than sufficient for health. Rickets ensues if the young rats are given the deficient diet from an early age and the mothers are not too well fed during pregnancy and lactation. If, however, the mothers are given cod-liver oil or abundance of animal fat whilst the foetus is forming and the young are being suckled, sufficient stores of the antirachitic vitamin are accumulated by the offspring to carry them over the period of susceptibility to rickets. The suggestion is made that in industrial districts where rickets is prevalent experiments for the prevention of rickets should be instituted by giving cod-liver oil and calcium phosphates to mothers during pregnancy and lactation. Although the interplay of the various factors influencing the satisfactory deposition of calcium phosphates in the growing skeleton is still obscure the knowledge won will be of great service. The problem has existed ever since men took to living in crowded cities, but as long as rickets was regarded by some as an infective disease of unknown origin and



by others as attributable to undefined defects in diet or hygiene, efforts towards prevention were either paralysed or imperfectly orientated. As a result of the concentration of experimental work upon the problem for the short space of three years the main factors in the etiology of the disease appear to have been ascertained. The facts derived from clinical and epidemiological observations and from animal experiments now fit together into a coherent theory, and already provide sufficient sanction for preventive and curative measures against one of the most widespread and most damaging diseases to which an industrial population is subject.

#### THE OCTOCENTENARY CELEBRATIONS AT ST. BARTHOLOMEW'S HOSPITAL.

A PROVISIONAL programme of the series of events by which it has been decided to mark the eight hundredth year of the foundation of St. Bartholomew's Hospital is now published. For variety and interest it well deserves the attention and the personal attendance of every member of this great and famous school. On Tuesday, June 5th, there will be a service at the Priory Church of St. Bartholomew the Great at 10.30 a.m., when the Bishop of Chester will preach. Both the church and the preacher are intimately connected with the hospital—the church as the contemporary foundation, the preacher as the third son of Sir James Paget, one of the most famous teachers in the medical school. At midday there will be a solemnity in the hospital quadrangle which will last from half to three-quarters of an hour, and afterwards the official delegates will lunch with the Lord Mayor at the Mansion House. H.R.H. the Prince of Wales will receive the addresses presented by the delegates in the Guildhall at 3 p.m., and it may be remembered that he, too, has an hereditary connexion with the hospital, for his father, his grandfather, and his great-grandfather have honoured the hospital by acting as president, and have in similar manner shown a personal interest in its welfare. On Wednesday, June 6th, the Lord Mayor will open Bartholomew Fair according to ancient custom, causing the proclamation to be read announcing various pains and penalties to be incurred by evil-doers. The fair will be open from 2 to 7 upon payment of 5s. a person, but as the space is limited tickets must be bought beforehand, as no money will be taken at the gate. In addition to the various booths, where the old "shows" will be resuscitated, the Students' Union will maintain a series of stalls where "fairings" can be purchased at a price to suit all pockets to take home to the women and children as was the usual custom when travelling was bad and fairs were occasional. On Thursday also the price of admission to the fair will be 5s., but on Friday 2s. 6d. The fair will be open each day from 2 to 7 p.m. The old students' dinner will be held at 7 p.m. on Thursday in the Merchant Taylors' Hall, Threadneedle Street. The price has been fixed at 27s. 6d.; the secretaries have already given notice that early application for tickets is desirable, because the attendance is likely to be great, and, although the hall is one of the largest and finest in the city, the seating accommodation will be strained. There will be a series of tableaux in the Great Hall of the Hospital on Wednesday and Thursday afternoons, tickets for which will cost 10s. 6d. These tableaux, which have been arranged by Sir Aston Webb, P.R.A., are scenes to illustrate various events in the history of the hospital from its foundation to the present time. Each has been designed by a Royal Academician, the executants being students of the Academy school and of the hospital. The music has been especially composed by Sir Alexander Mackenzie, and will be performed by members of the Royal Academy of Music. At 8.30 p.m. on Thursday there will be a conversazione in the hospital and medical college,

during which Bartholomew Fair will be open to guests. Various interesting exhibits will be on view during the evening, details of which will be found in a souvenir programme to be bought at the bookstall in the fair. On Friday evening there will be a special meeting of the Rahere Lodge of Freemasons at the Freemasons' Hall in Great Queen Street, when those delegates who are Masons will be welcomed in the presence of H.R.H. the Duke of Connaught and the chief officers of the craft. On Saturday, June 9th, a cricket match, "Past v. Present," will be played at Winchmore Hill on the hospital ground, and on the same day the League of St. Bartholomew's Nurses will be "At Home" in the Great Hall from 4 to 6 p.m. A short and well illustrated history of the hospital has been written by Sir D'Arcy Power and Mr. H. J. Waring for presentation to the official delegates. Some extra copies will be on sale at the price of 10s. 6d., but as the number is strictly limited and the plates cannot be reproduced, early application should be made, by those who wish to purchase, to Mr. Geoffrey L. Keynes, F.R.C.S. Eng., addressed to the hospital. A memorial medal has also been struck by Mr. John Pinches from the design of Mr. Charles L. Hartwell, A.R.A. It will be given to the delegates and to the members of the various committees engaged in the celebrations, but will not be sold. All tickets for the fair and the tableaux must be bought in advance either at the box office just inside the gates of the hospital or from the usual theatre agents.

#### THE INTERNATIONAL SOCIETY OF SURGERY.

THE International Society of Surgery has its headquarters in Brussels and meets once in three years. It has already met in Belgium, in the United States, and in Paris. This year it will hold its sixth meeting in London under the presidency of Sir William Macewen, C.B., F.R.S., Regius Professor of Surgery in the University of Glasgow, and President of the British Medical Association. The Society consists of practising surgeons of consulting rank, who are elected on the nomination of a national committee for each country, the number of members from each country being strictly limited. Members alone can take part in the proceedings. On the present occasion the Society will hold its meetings in the rooms of the Royal Society of Medicine, kindly lent for the purpose by the President and Council, from Tuesday, July 17th, to Friday, July 20th. The proceedings will be opened by H.R.H. the Prince of Wales at 11 a.m. on Tuesday. The subjects for discussion are the surgery of the endocrine glands; arthroplasty; the remote results of operations for wounds and injuries of nerves; serotherapy and shock. The official delegates, on the invitation of the First Commissioner of Works, will be entertained at a luncheon presided over by Mr. Neville Chamberlain, M.P. The members have been invited to the Mansion House by the Lord Mayor; to the Royal College of Physicians, and to conversaziones at the University of London and at the Royal College of Surgeons. Sir William Macewen, as President of the Society, will receive the members at the Royal Society of Medicine on the evening of Tuesday, July 17th.

#### THE FUTURE OF MEDICAL RADIOLOGY.

A DINNER was given last week by the new binary star formed by the Röntgen Society and the Electro-therapeutic Section of the Royal Society of Medicine, mainly to honour Professor George of Boston, who during the afternoon had delivered the Mackenzie Davidson Lecture, an abstract of which is published at page 902. A number of commendably brief and informal speeches were made; Dr. G. W. C. Kaye of the Physics Department of the National Physical Laboratory said that the coming together of the two bodies had seemed a few years ago an impossibility. Dr. G. B. Batten had, earlier in the evening, described how the



original Röntgen Society, founded some twenty-five years ago, underwent a process of fission, the majority of its medical members splitting off to form the British Electro-therapeutic Society, which became the Electro-therapeutic Section of the Royal Society of Medicine, and how from the conjugation with the Röntgen Society many beneficent things were hoped. We are all rather tired of being told that the arts of diagnosis and treatment become every year more complicated, and there are murmurs that the chemists and the instrument makers and users are building a wall of partition between the patient and his physician, but we will all admit that radiology as applied to medicine can only approach perfection through the combined work of the physicist who ascertains the laws, the inventor who designs according to these laws, and the engineer who makes and the medical expert who uses the highly tempered apparatus required to give the final result, which when interpreted by the medical radiologist and the physician in consultation gives relief or cure to suffering humanity. Dr. Kaye, who, as has been said, congratulated radiologists on the degree of combination already attained between the various sorts of specialists who must work together, spoke immediately after Sir Archibald Reid, who outlined a still more ambitious scheme which, after some eighteen months' discussion and effort, is now approaching realization. It is proposed to establish an Institute of Radiology, where all workers may fgather and where they will find a library and museum. It is to be established in London, as the most convenient centre in Great Britain, and it is hoped to have it in working order at the opening of the winter session in October next. Mr. Thurstan Holland proposed a toast to the guests, which was acknowledged by Dr. Heyman, one of the teachers of gynaecology in the University of Stockholm, who has given much attention to the value of radiations in the treatment of diseases of women, and by Professor George, who gave some account of sister societies in America—the North American Radiological Society, which has some thousand members, and the American Roentgen Society, of a more severely scientific complexion.

#### TORQUAY AS A HOLIDAY HEALTH RESORT.

At this season of the year people's minds naturally turn to thoughts of holidays, and the question at once arises, "Where shall we go?" It is a suitable moment, therefore, to point out some facts which are apt to be overlooked. To those who seek a healthful happy holiday no foreign resort can offer greater attractions than those which are to be found on our own shores. Among the many beautiful places to be visited, mention may be made of Torquay. It supplies almost everything that the heart of man, woman, or child can desire; bathing, boating, golf, and tennis can be indulged in under ideal conditions, and for those who enjoy walking or motoring there are innumerable expeditions amid glorious scenery. Starting from Torquay in any direction, as the journey proceeds, one magnificent view after another is disclosed and the fleeting changes from wide-spreading landscapes to free and open moorland and from leafy lane to rocky coast charm the traveller. Torquay itself, set as it is on a hill overlooking Tor Bay, is perhaps at its best in early spring and late autumn, but because of its equable climate it is delightful at all seasons of the year. Mild in winter, and blessed with a high average of sunshine, it offers many attractions to those in pursuit of health and change at that season. In summer excessive heat is rare, for on the peninsula of Torquay cool breezes blow either from the sea or from off the moorland; a temperature of over 80° F., even in the warmest summer, is uncommon. The Corporation of Torquay has within recent years spent a large sum of money upon the Spa Establishment, which is situated on Beacon Hill overlooking Tor Bay. Here all the most up-to-date British

and Continental methods of balneological and hydrological treatment are administered; they include the Vichy and Aix douches with hot sea water, the seaweed bath, and the Dartmoor peat packs. In addition to these specialized forms of treatment there are available the usual pine and vapour baths, Nauheim treatment, concentrated sea-water baths, and a large tepid salt-water swimming-bath. The Electrical Department is equipped with the modern apparatus for the administration of the various forms of medical electricity and diathermy. Torquay also boasts that it has a radium water of high radio-activity, tasteless and odourless; it has a diuretic effect, and is believed to be an excellent solvent of uric acid. The equipment in the Spa Establishment is on the most up-to-date scale, and the dressing rooms, corridors, and cooling lounge are well furnished. No holiday or health resort is complete unless there are facilities for golf, and Torquay is blessed with two courses, a nine-hole course at Walls Hill and an eighteen-hole course at Pettitor. The latter belongs to the Torquay and South Devon Club, and is undoubtedly the better course; from the point of view of picturesque surroundings it must be hard to beat. Deep-sea fishing is to be had at all times of the year, and in season trout and salmon can be caught by those skilled in the art at various parts of the Teign and Dart. The Corporation of Torquay entertained during the week commencing May 14th representatives of the press from various parts of the country, and trips were arranged to the places of interest which abound in and around Torquay. A new marine drive is in course of construction, and will afford magnificent views of coastal scenery; when completed it will certainly prove to be one of the main attractions both to the resident and the visitor. The Mayor, Corporation, and other officials are to be complimented upon their enterprise, and their venture in this respect is bound to reap its reward. An excellent train service is provided by the Great Western Railway Company, and the journey between Paddington and Torquay, already rapid and comfortable, is to be further speeded up during the summer.

#### THE NEW SCHOOL OF HYGIENE.

THE Minister of Health, with the concurrence of the Trustees of the Rockefeller Foundation, has appointed a Transitional Executive Committee in connexion with the proposed School of Hygiene. The functions of the committee will be to appoint a Director, to arrange for amalgamation or co-ordination between the School and other institutions working in similar or closely related spheres, to prepare plans for the new School, and to begin building, unless in the meantime it has been possible to set up the permanent Governing Body. The members of the committee are: The Right Hon. Neville Chamberlain, M.P. (Chairman), the Right Hon. the Viscount Burnham, C.H., Captain Sir Arthur Clarke, K.B.E. (a member of the Port of London Authority since 1910, and an Elder Brother of Trinity House), Sir Walter Fletcher, K.B.E., M.D., F.R.S., Lieut.-Colonel Fremantle, O.B.E., F.R.C.S., M.P., Sir Harry Goschen, K.B.E. (banker), Sir George Newman, K.C.B., M.D., Sir Cooper Perry, M.D. (Principal Officer of the University of London), and Sir Arthur Robinson, K.C.B., C.B.E. (First Secretary to the Ministry of Health), with Mr. L. G. Brock, C.B., of the Ministry of Health, as Secretary. It will be remembered that at the end of February last year the Rockefeller Foundation offered to provide a sum of two million dollars (£400,000) towards the cost of building and equipping a School of Hygiene in London, subject to the condition that the British Government would accept the responsibility of providing for the staffing and maintenance of the school when established. The Government, through the Minister of Health, undertook to provide £25,000 a year. A small committee was set up to advise the Minister on the preliminary steps to be taken in regard to the site and planning of the school; a site was



acquired in Bloomsbury and sketch plans prepared. It will be noted that the Transitional Committee now appointed is authorized to begin building, and also to arrange for amalgamation with other institutions providing facilities for education in hygiene and public health, using those terms in their widest sense. The establishment of a school or institute of state medicine was recommended by the Athlone Committee, which proposed that the new school should be associated with the University of London.

#### THE JENNER CENTENARY IN FRANCE.

BRITISH appreciation of the work of Pasteur has its counterpart in French appreciation of the work of Jenner, and no finer tribute to the English pioneer in preventive medicine was paid during the recent celebrations than by the great meeting of the Académie de Médecine on January 23rd, as noticed in the BRITISH MEDICAL JOURNAL of February 3rd. A charming souvenir of that great gathering has now been issued by the Académie in the form of a small volume containing a full account of the proceedings. It is illustrated by eight beautifully executed plates, of which the subjects are Hobday's portrait, a bust of Jenner presented to the Académie by the Saint-Yves-Ménard family, an engraving after Boilly's picture showing the vaccination of a child in the middle of its anxious family, a series of Jenner medals, two autograph letters, an engraving presented by Sir StClair Thomson of the picture of the twenty-one founders of the Medical Society of London, into which a portrait of Jenner was painted in 1802, and a photograph of the centenary exhibition at the Académie. The souvenir does not seem to have been placed on sale, but it will be treasured by everyone who is fortunate enough to receive a copy. Its issue is a gesture of international courtesy and friendship in medicine which will be warmly appreciated here.

#### TREATMENT OF GENERAL PARALYSIS BY MALARIA.

THE fact that a remission of a chronic disease may occur after an attack of an acute specific fever has led to a number of attempts, made chiefly in Vienna and extending over the last fifteen years, to apply the principle to the treatment of general paralysis of the insane. Various fever-producing substances and infections have been used, but the best results have been obtained with benign tertian malaria. The method is described by Dr. W. L. Templeton, a member of the staff of the City of London Mental Hospital, Dartford, in this issue. The general paralytic is inoculated with the blood of the malarious patient, and in due course develops malaria. He is allowed to have ten or twelve attacks of fever, and is then treated with quinine; he is apparently always cured of his malaria quickly and safely. In more than half the cases so treated the symptoms of general paralysis disappear to a greater or less degree, and in more than a third of the cases completely, some of these for so many years that the patient may almost be regarded as cured. Cases of malaria are uncommon in this country, but benign tertian does occur, and we understand that the staff of the hospital at Dartford will be grateful if any practitioner who has such a case to treat will inform them; and explain to the patient the object with which he is asked to give blood, which must be obtained before quinine treatment is begun.

#### REMOVAL OF THE SPECIAL CONDITIONS OF SALE OF INSULIN.

ON April 21st, 1923, (p. 695), we published a statement by the Medical Research Council, setting forth the steps that had been taken to make insulin available for use in this country. At that time the supplies of insulin were inadequate to meet the demand that might be expected, and it became necessary to secure that the limited quantities

available should be distributed to the best advantage. The question was submitted by the Council to the Minister of Health, who appointed a committee composed of Sir George Newman (chairman), Dr. R. A. Bolam, Sir Walter Fletcher, Sir Humphry Rolleston, Dr. Alfred Salter, M.P., and Dr. McCleary (secretary) to advise him on distribution. On the advice of the committee the manufacturers were directed during the period of restricted production to supply insulin for use in this country only, and to those hospitals and to those registered medical practitioners who undertook to observe certain defined restrictions upon the use of insulin. The following additional statement can now be made. During the past four weeks the productive capacity of the British firms has considerably increased, and it is no longer necessary to maintain the restrictions upon the supply of insulin, which, therefore, may now be obtained from the manufacturing firms through the ordinary commercial channels. The Medical Research Council, however, considers that it may be advisable again to remind the members of the medical profession who desire to use insulin, of the great importance of making accurate blood sugar determinations, of correlating the diet, the blood sugar changes, and the insulin dosage in each case, and of avoiding the danger of giving insulin in cases of renal glycosuria or other non-diabetic conditions.

#### EARLY EDITIONS OF SIR THOMAS BROWNE.

It is a pity that Professor Monro did not put together his notes on the early editions of Sir Thomas Browne a few years ago, for they should have appeared amongst those contributions to medical and biological research with which his friends sought to honour the seventieth birthday of Sir William Osler. The notes would have appealed to him in his double capacity as a true lover of Sir Thomas Browne and as an ardent bibliographer. But even though late in time they are more than welcome, for they supplement and add to the work of Charles Williams. Professor Monro tells in simple words the difficult story of the early years of the *Religio Medici*; points out some additional means of distinguishing between the two editions issued in 1645; and shows that all the copies of the 1656 and 1659 editions are not alike. After a consideration of the different editions published in English to the time of Simon Wilkin, he turns to the translations and Continental editions. He records details of the different translations into Latin, Dutch, French, and German, thus showing how well it was known and how much it was appreciated by the scholars of the seventeenth century, when there was a real commonwealth of letters. Professor Monro then considers the treatises on *Vulgar Errors*, *Urn Burial*, the *Garden of Cyrus*, and the *Lesser Tracts*, including *Christian Morals* and the *Letter to a Friend*. The whole essay is a piece of sound spade work for which every friend of Sir Thomas Browne will be grateful. It appeared in the *Records of the Glasgow Bibliographical Society*, and the copy before us bears the imprint of Maclehose, Jackson, and Co., publishers to the University.

#### A MANCHESTER GIFT TO THE MEDICAL BENEVOLENT FUND.

DR. W. F. DEARDEN, writing on behalf of the trustees of the Manchester Medical War Financial Assistance Fund, instituted by the late Manchester Medical War Committee, has sent to the Financial Secretary of the British Medical Association a cheque for £230 to be paid to the treasurer of the Royal Medical Benevolent Fund. The donation is made through the British Medical Association because the Manchester War Committee was really a British Medical Association committee. The trustees of the Manchester committee have also sent £229 to the Royal Medical Benevolent Fund Guild through the Manchester Branch



Guild. The trustees have disposed of the surplus funds of the trust in this manner with the full approval of the original guarantors and subscribers. The cheque for £230 will be paid over to the treasurer of the Royal Medical Benevolent Fund, 11, Chandos Street, Cavendish Square, W.1, together with other sums collected through the British Medical Association.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

### Serious Illness of Mr. Bonar Law.

MR. BALDWIN SUCCEEDS TO THE PREMIERSHIP.

SERIOUS illness compelled Mr. Bonar Law on May 20th to tender his resignation of the Premiership, and on May 22nd Mr. Baldwin was asked by the King to form a Government and consented to do so. It is the custom when a new Prime Minister is appointed (though of the same party) that all his colleagues shall hand in their seals of office so that he may be free to reconstruct the Ministry.

The news of Mr. Law's retirement was received everywhere with profound regret in the circumstances. It is significant of goodwill in British politics that leaders of all groups united in expressions not only of sympathy but also of personal regard for Mr. Law, one of the warmest tributes coming from Mr. Ramsay MacDonald, leader of the Labour party, and therefore official leader of the Opposition in the Commons. Messages from abroad also manifested the appreciation of Mr. Law's sterling qualities of character by all nations with whom he had as British Prime Minister had relations.

Mr. Baldwin, before becoming Chancellor of the Exchequer last year, was President of the Board of Trade (1921-23), and was previously Secretary to the Treasury (1917-21). Still earlier he was Parliamentary Secretary (unpaid) to Mr. Bonar Law.

### National Health Insurance.

In reply to Mr. Jarrett and Mr. Hurd, who asked whether an independent inquiry would be held to ascertain how best to remedy defects revealed in ten years' working of the panel system, the Minister of Health said, on May 16th, that he was aware of recent criticisms of the panel system, which, in a service of this magnitude, were, he feared, inevitable. The revision of the terms of service of insurance practitioners, with a view to securing a more efficient medical service under the Insurance Acts, had been fully examined in consultation with the Insurance Consultative Council and the Insurance Acts Committee of the British Medical Association, and he did not consider that any useful purpose would be served by such an inquiry as was suggested.

Sir Kingsley Wood asked if the Minister was considering the very large number permitted to be on doctors' panel lists. Mr. Chamberlain, in reply, said he took it that this matter was being considered by the Insurance Consultative Council and the Insurance Acts Committee. Mr. Mardy Jones asked whether representation would be given in this inquiry to the medical aid societies which had been ignored up to the present, and which, he said, represented a very large proportion of the insured persons in this country. Mr. Jarrett also wanted to know when the result of the inquiry by the Consultative Committee would be made known. Mr. Chamberlain was unable to say when any decision would be reached. It would, he thought, probably have to be delayed for some little time.

In answer to Mr. Rhys Davies, Mr. Chamberlain stated that out of the disposable surpluses of approved societies in England, following the first valuation, the aggregate amount set aside for provision of the benefits under the scheme during the five years covered were as follows: Dental treatment, £495,000; optical treatment, £106,000; hospitals and convalescent homes, £979,000; medical and surgical appliances, £164,000; and nursing, £207,000. As regards the third item it was not possible to say what portion of the figure of £979,000 was allocated to convalescent home treatment, this benefit being included under the schemes with hospital treatment; but in addition the amount of £60,000 was set aside for the leasing and maintenance of convalescent homes by certain societies.

Mr. Chamberlain, replying to Sir K. Wood on May 16th, said that notice of intention to make a regulation reducing the amount of the administrative expenses of approved societies was given in the *London Gazette* on May 11th. The regulation would not be laid before Parliament until forty days after the date of the notice, but a draft copy would be placed in the library.

### Dangerous Drugs Bill.

The Lords' amendments to the Dangerous Drugs and Poisons (Amendment) Bill were considered in the Commons on May 16th and were all agreed to. On the same day the Royal Assent was given to the measure.

### Dangerous Drugs in Medical Prescriptions.

Sir E. Stockton asked, on May 15th, whether, in view of the increase of the drug habit, the Home Secretary was in possession of any information to show that there was any abuse of medical

prescriptions containing drugs, which prescriptions did not contain words prohibiting repetition. Mr. Bridgeman said that the regulation made under the Dangerous Drugs Act expressly provided that the drugs should not be supplied more than once on the same prescription, with an exception for cases in which the prescription explicitly directed that the drugs might be supplied at specified intervals on not more than three occasions; and in view of this the committee which considered the Regulations thought it unnecessary to require that the words "Not to be repeated" should be inserted in the prescription. To obtain or supply drugs on a prescription otherwise than in accordance with the regulation was an offence against the Act, and he had no reason to think that the regulation in question was not observed.

### Dogs' Protection Bill.

During a break in business near eleven o'clock on the evening of May 16th, when the orders of the day were read, and the Dogs' Protection Bill was called amongst them, Sir Frederick Banbury moved that the measure be then given a second reading. Lieut.-Colonel Nall began to speak on the measure—in its support—when Mr. Adamson claimed to move that the question be now put. The Speaker, however, refused the closure. Mr. Jack Jones then once more asked that the question be put, but the Speaker again withheld his consent, and it then being eleven o'clock the debate on the bill stood adjourned. Sir Frederick Banbury named Monday, May 28th, for the resumption.

**Small-pox Outbreak.**—Mr. Chamberlain, in answer to Mr. Becker on May 16th, said he was advised that the recent increase of small-pox might be attributed to the widespread neglect of vaccination and revaccination and to the fact that small-pox was a disease of seasonal prevalence, the maximum incidence usually occurring at the end of the first quarter of the year. The number of cases notified in April was 139, as compared with 215 in the previous month.

**Tuberculosis in Children.**—At the instance of Mr. Foot, Mr. Wood stated, on May 17th, that the relevant statistics of tuberculosis in children were divided into two categories—those of children ascertained at medical inspection to be suffering from pulmonary tuberculosis, and those of children suffering from crippling due to tuberculosis. According to the latest returns furnished by local education authorities, the number of children in the first category was approximately 20,000, of whom about 2,000 were in special schools, 11,000 were in public elementary schools, and 7,000 were attending institutions not certified by the Board or were not at school. In the second category there were 13,000 children, of whom 1,700 were in special schools, 6,500 were in public elementary schools, and 4,800 were attending institutions not certified by the Board or were not at school. Such of these children as were in attendance at public elementary schools were not suffering from tuberculosis in an infectious form. Provision was made in the code for the exclusion from public elementary schools by the school medical officer of any child whose presence might involve the spread of the disease.

**Disability Pensions.**—In answer to questions, on May 17th, the Minister of Pensions said that the pension regulations required that a man who had been on the pension list four years or more should be considered for final award; medical boards were instructed to furnish an assessment for the purpose of such final award, unless the man was likely to get materially better or worse within a period not exceeding two years. The boards were advised that cases of tuberculosis would, generally speaking, be found unsuitable for final awards, but that each case should be considered on its merits. The form in which the records were kept did not render it possible readily to distinguish between valvular disease of the heart and other forms of heart disease. The instructions relating to making of final awards recognized the probability that cases of valvular disease of the heart would deteriorate. Medical boards were, in fact, advised that cases of this nature would ordinarily be found unsuitable for final awards, but that each case should be considered on its merits.

**Water Supplies.**—Major Kelly inquired, on May 9th, whether the water supplies of the country are now sufficient to meet requirements in the event of another dry summer this year, and whether any national survey of water resources had been completed. Mr. Chamberlain said that the situation was such as to give no ground for anxiety at the present time. A survey of the water resources of the country was proceeding as rapidly as possible having regard to the staff available.

**Poison Gas: Experiments on Animals.**—The Under Secretary for War, replying to Mr. Lansbury on May 14th, gave the following particulars as to the animals which had been employed in the gas poisoning experiments at the Porton Experimental Station near Salisbury since February 23rd, 1922, when the last statement was made: cats 66, goats 48, guinea-pigs 118, mice 148, monkeys 23, rabbits 139, rats 209. None of the experiments had consisted in dropping bombs containing poisoned gas among these animals. They were always under an anaesthetic if it was in any way possible, and they were destroyed as soon as the objects of the experiment had been attained.

### Answers in Brief.

Out of 318 local education authorities in England and Wales, 297 have established clinics for the medical treatment of school children found to be suffering from physical defects. There are about 500 blind or partially blind children and about 6,300 crippled children for whom provision is not yet made in recognized schools or educational institutions, but it is hoped to make provision in the course of the next few months.



# THE NEW INSTITUTE OF ANATOMY AT UNIVERSITY COLLEGE, LONDON.

BY  
PROFESSOR G. ELLIOT SMITH, M.D.Syd.,

F.R.C.P.Lond., F.R.S.,

PROFESSOR OF ANATOMY IN THE COLLEGE.

In a previous article I gave an account of the circumstances in which the Rockefeller Foundation endowed the Department of Anatomy and provided for the extension of the Department of Physiology and also explained the general ideas that inspired the design for the new building. I propose now to give a brief sketch of the measures that have been adopted to give expression to these principles. Of the five floors in the building the lowest is devoted mainly to practical work in anatomy—that is, dissecting and radiography; the next floor to teaching accommodation and museums; the third and fourth to research in anatomy, histology, and embryology; and the top floor to teaching in microscopic anatomy.

The building, designed by Professor F. M. Simpson, F.R.I.B.A., faces Gower Street, and has a frontage of 154 ft. exclusive of the end gateway, which gives access to the south quadrangle. At the back it joins the physiology building. It consists of five floors and a sub-basement in addition, which contains the heating chambers, coke cellars, tank and specimen rooms. The students' entrance is in the south quadrangle at the basement level. On the same level are the large top-lighted dissecting room (55 ft. by 52 ft.), with prosectorium and annexe, the x-ray rooms, injection room, workshop, and cloak rooms for men and women students.

The rooms for the x-ray examination of the living subject and for the study of x-ray plates are close to the dissecting room, so that the students may be able, when dissecting any region of the body, to correlate the x-ray appearance with what they see and handle in their dissections. The x-ray equipment, the chief features of which are mentioned later in this account, has been superintended by Major Charles E. S. Phillips, O.B.E., who has spared no trouble in devising the best possible equipment for teaching anatomy by radiography.

The main entrance from Gower Street is at the ground floor level, and leads by an oak-panelled vestibule to the hall and central staircase which serves all floors. On the ground floor are the museum (52 ft. by 50 ft.) and preparation room, lecture theatre (48 ft. by 40 ft.), fitted with the latest Zeiss epidiascope, demonstration theatre, and rooms set apart for teaching and research in anthropology.

On the first floor in front are the Medical Sciences Library and periodical room, oak panelled, together 66 ft. long by 25 ft. wide, with book-store adjoining, the room for the lecturer in the history of medicine, the private room and laboratory for the professor of anatomy, dean's office, a series of research rooms, including the laboratory for comparative neurology. In the latter will be housed a collection of neurological preparations, the nucleus of which consists of sections made by the late Dr. Page May and Sir Victor Horsley, and others presented by the Central Institute for Brain Research in Amsterdam at the instance of Dr. Ariens Kappers.

On the second floor are located the research laboratories for the professor of embryology; and a lecture room seated for about ninety students, with apparatus for projection of histological preparations. In addition, on this floor are situated the advanced laboratory for histology and embryology, a small chemical laboratory, the laboratory for research in experimental embryology, and the microphotographic and dark rooms, whilst two rooms provide accommodation for the collections of preserved material and microscopical preparations. These rooms are well equipped for all kinds of photographic work, both macroscopic and microscopic. Professor J. P. Hill has made a very rich collection of mammalian embryos and aims at making as complete a series as possible of human embryos. For research in Comparative Embryology the Institute offers unique opportunities.

The main students' laboratory for microscopical anatomy (52 ft. by 50 ft.) is situated on the third floor. It extends across the width of the building and is well lighted by two continuous skylights facing north, as well as by windows facing the south quadrangle on the one side and Gower Street on the other. The laboratory affords accommodation for about ninety students; each student being allocated a

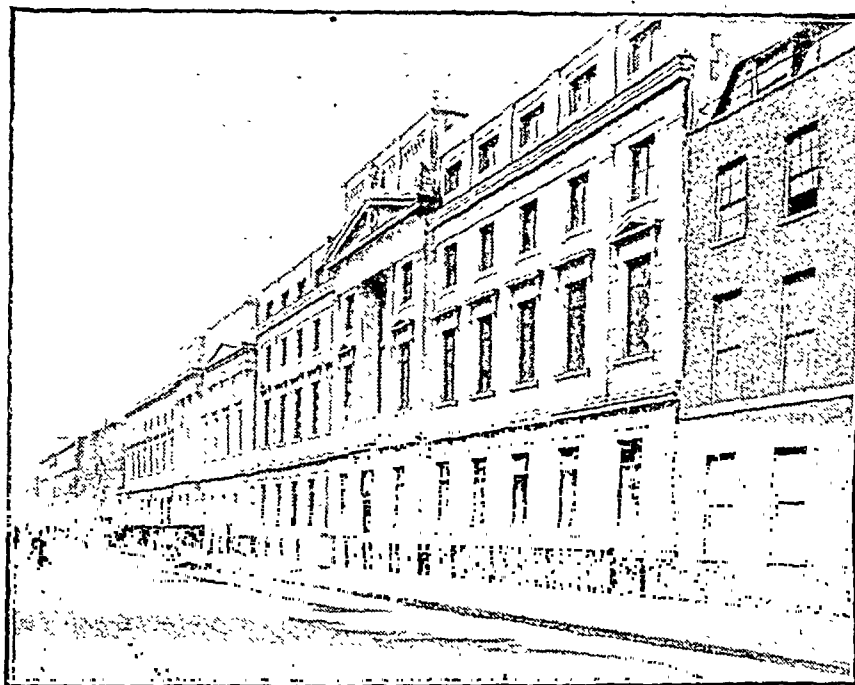
working place provided with a cupboard, water, gas, and electric light. Adjacent to the laboratory are the preparation room, the research laboratory for the assistant in histology, the modelling and aquarium rooms. Accommodation for the keeping of live animals is also provided on the third floor. Provision has been made of facilities for experimental embryology and for the study of degeneration effects in the nervous system.

A room (32 ft. by 24 ft.) is set aside for the cinematographic study of animal movements. For this purpose there is to be installed a cinematographic apparatus (so-

called ultra-cinema) designed by M. Nogues of the Marey Institute of Paris, by means of which it is possible to take up to 300 photographs a second of moving objects. This is perhaps the best method for the analysis of reflex movements and muscular adjustments such as those of posture. The film being projected at a rate of about 16 to 18 a second the whole movement is observed slowed ten to fifteen times, so that it will be possible to make out the different phases of which the movement is composed. Heavy electric leads are carried to this room so that brilliant illumination by arc or mercury lamps may be employed. In the summer months it will be possible to make use of direct sunlight, the flat roof being admirably adapted for the purpose of cinematography.

The x-ray department is equipped with the latest type of apparatus for radiography in all its medical branches. Facilities are provided for rapid work as well as for the study of movement and anatomical structure as revealed by the latest x-ray technique. The appliances include an arrangement specially designed to enable great sharpness of image to be obtained upon the photographic plate or film.

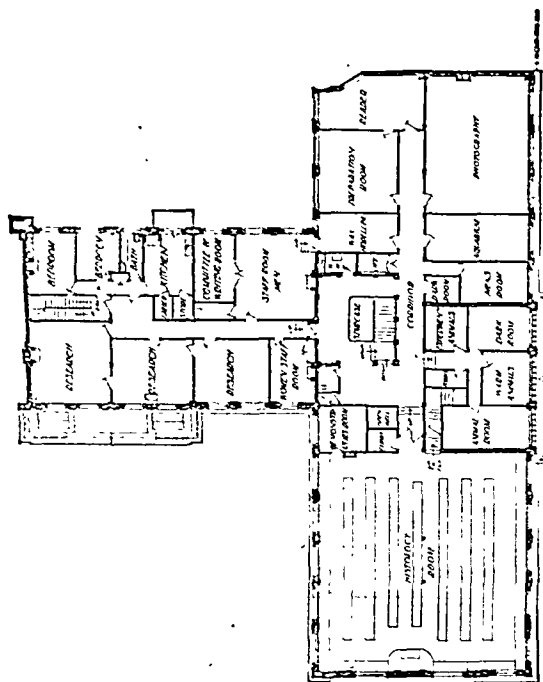
The power unit consists of a 10 kw. transformer x-ray set which supplies energy to the x-ray tubes, either when working from below or above the operating tables, or when used for fluoroscopy, and arrangements are made whereby the portable trolley control may be connected either at a position near the tables or at a separate wall plug adjacent



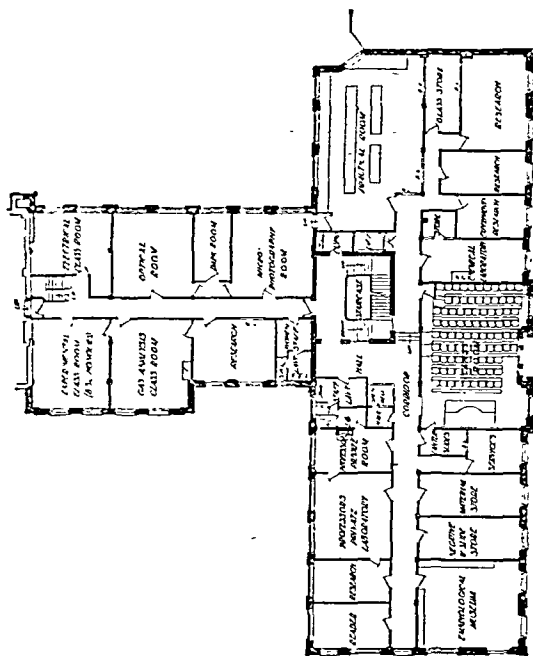
ELEVATION TO GOWER STREET.



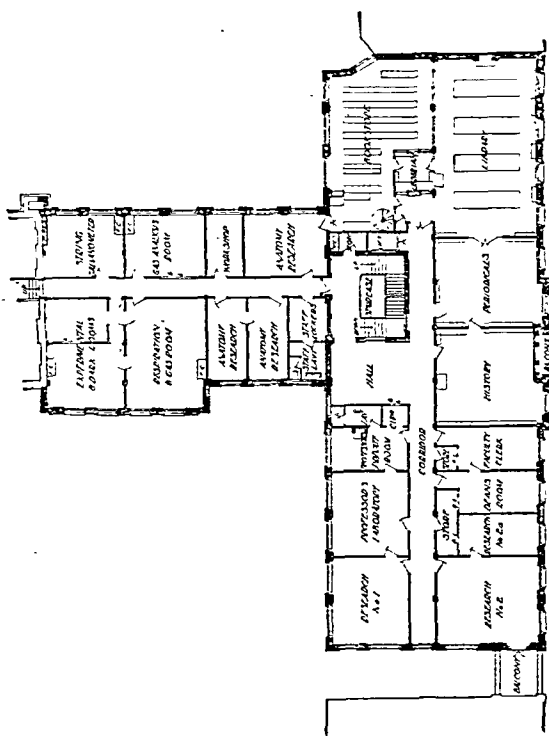
THIRD FLOOR PLAN.



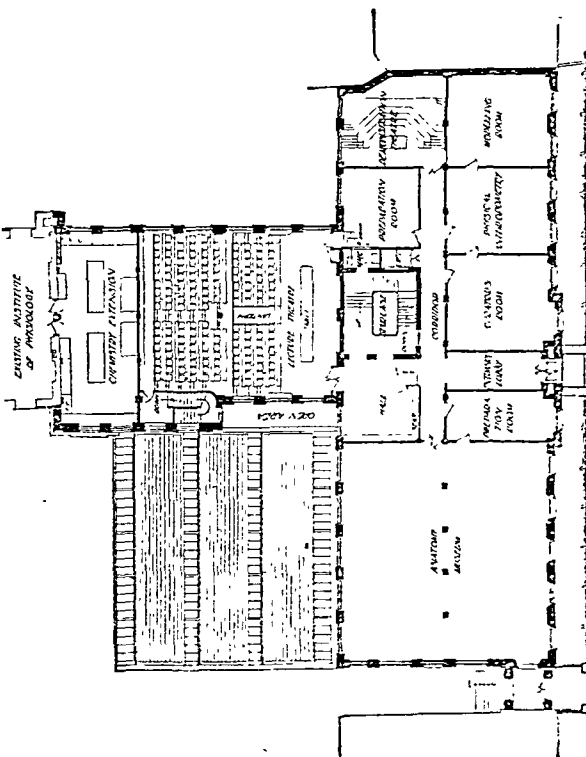
SECOND FLOOR PLAN.



FIRST FLOOR PLAN.



GROUND FLOOR PLAN.





to the fluorescent screening stand at the far end of the room.

One of the x-ray operating tables is fitted with automatically moving plate carriers beneath the top, which itself is hinged so as to render the tube box and diaphragm mechanisms readily accessible. The other operating table is fitted with the Bucky-Potter grid, and is the second table of the kind that has come to this country from the United States. As well as a large screening apparatus there is a heavy type tube stand for general use, and a number of minor accessories. Apparatus for the special radiography of the head is also provided.

The high tension overhead leads are made of nickel-plated tubing of sufficient diameter to reduce the formation of corona to a minimum, and a high tension switch actuated by strings serves to connect the transformer terminals with the set of leads required for each apparatus as desired. The protection of all engaged in the work of the department has been carefully provided for, and stray radiation is prevented from entering adjacent rooms by a covering of lead six feet high upon the walls. The lead sheet, carefully lapped at the joints, is hidden beneath stout boarding which serves to absorb the soft component of any secondary radiation which may be produced from the lead by stray radiation. The floor is covered with rubber. An adjoining dark room and large viewing room together with a plate store complete the department. The installation has been carried out by Messrs. Watson and Sons (Electro-Medical) Ltd., London, who not only did the work of equipping the x-ray rooms but gave Major Phillips the benefit of their experience in designing x-ray apparatus.

The Rockefeller gift has also rendered it possible to effect certain much needed alterations and extensions in the department of biochemistry, pharmacology, and physiology. On the ground floor the general biochemical laboratory receives an extension behind the anatomy theatre, providing additional places for advanced students in biochemistry. The biochemical research laboratories are also enlarged by taking in the whole ground floor of the pharmacology building, providing in this way two additional research laboratories and a private room for the professor of biochemistry. In pharmacology further accommodation for research is procured by dividing the present pharmacology lecture theatre into two laboratories. The pharmacology lectures will be delivered in future in the physiology theatre.

This department receives also two extra laboratories on the second floor of the physiology building in compensation for the laboratories it gives up on the ground floor to biochemistry.

A large part of the first, second, and third floors of the building connecting the present Institute of Physiology with the Institute of Anatomy is used for increasing the accommodation for research in physiology. On the first floor three additional laboratories are provided for research as well as two rooms which will be used as a workshop. On the second floor two laboratories are provided adjoining the main students' laboratory, for the use of advanced students. There are in addition three other laboratories set apart for research. The third floor of this connecting block contains three rooms allocated to the Foulerton research professor, the caretaker's apartment, and the common rooms for the staff of all the departments in the building.

On the three upper floors there is free communication with the Institute of Physiology. From the basement a tunnel leads under Gower Street to connect with the medical school.

The Gower Street front is entirely in Portland stone; the back portions in Arlesley brick with stone dressings to match the existing physiology and pharmacology buildings. The floor of the dissecting room, annexe, and prosectorium is of white mosaic, and the walls of white glazed brick. On the corridors is a strip three feet wide of quarter-inch cork carpet, with margins of white terrazzo in basement, and of oak or pitch pine on other floors. A dado of terrazzo, with green panels and white frames, runs up the whole of the staircase and along the sides of the principal corridors. The floors of most of the working rooms are cement covered

with linoleum. The steps and landing of the staircase are oak on concrete with iron balustrade, and the museum, library, periodical room, and entrance vestibule from Gower Street have oak floors.

A passenger lift runs from the basement to the top of the building, serving all floors, and hand-power lifts are provided from the injection room down to the tank room, and from the tank room up to the annexe of the dissecting room. The whole of the building is steel-frame construction.

It is the unfortunate result of this new development that the department of anatomy becomes separated from that of zoology and comparative anatomy, with the work of which a very intimate association and co-operation have developed. But the hope is still entertained of reuniting these departments by further extension of the Institute of Medical Sciences along Gower Street. Thus a new department of zoology would be added to the new Institute of Anatomy. In this connexion it is interesting to remember that only four doors away from the new building is the house in which Charles Darwin began the compilation of the notebooks upon which *The Origin of Species* was based. It would be singularly appropriate to erect upon this site a building which would be at once a permanent memorial to the great Englishman who revealed to the world a new intellectual horizon and a home for those subjects—biology, anthropology, and psychology—which were directly stimulated by his work. Professor Richardson, of University College, has given immediate expression to this hope in a sketch now being exhibited at the Royal Academy.

## Scotland.

### THE ASSOCIATION OF PHYSICIANS IN EDINBURGH.

The annual meeting of the Association of Physicians of Great Britain and Ireland was held in Edinburgh on May 18th and 19th, under the presidency of Dr. Byrom Bramwell. The discussions took place in the physiology lecture theatre of the university, and various laboratories were visited. On the afternoon of each day cases of unusual interest were demonstrated in the medical out-patient department of the Royal Infirmary. A dinner was held on Friday evening in the hall of the Royal College of Physicians.

### PRESENTATION OF PORTRAITS OF DR. BYROM BRAMWELL.

At a meeting of subscribers and friends, numbering some 200, held in the hall of the Royal College of Physicians of Edinburgh on May 19th, a portrait was presented to Dr. Byrom Bramwell. The portrait had been painted by Mr. David Alison, A.R.S.A., commissioned by over 250 of Dr. Byrom Bramwell's old students and friends. Dr. F. N. Kay Menzies, the honorary secretary and treasurer of the committee of subscribers, announced that as a much larger sum had been subscribed than was necessary for the original portrait, the committee was enabled to commission the artist to execute a replica, and hoped further to be able to issue photogravures at a later date to the subscribers. The original portrait was presented to Dr. Byrom Bramwell by Sir David Drummond, a former colleague in the Infirmary at Newcastle-on-Tyne. The replica was presented on behalf of the subscribers by Sir Humphry Rolleston, K.C.B., President of the Royal College of Physicians of London, to the Royal College of Physicians of Edinburgh, and was acknowledged by its president, Sir Robert Philip, who occupied the chair at the meeting.

### LECTURE BY DUTCH PROFESSOR IN EDINBURGH.

Professor H. R. Kruyt, who occupies the chair of physical chemistry in the University of Utrecht, last week gave a lecture upon the electric charge of colloids in the medical chemistry department of the University of Edinburgh. Professor Sir James Walker presided over a large audience. After paying a tribute to the fundamental researches of the English school of colloid chemists from Graham, its founder, to the present time, Professor Kruyt took as his central idea the proposition that the electric charge is the most important property of colloids, whether suspensoid or



emulsoid. Professor Kruyt gave an account of his own work on the stream-potential between two electrodes when water is forced through a capillary tube connecting the two electrode vessels; with pure water 25 volts can be obtained at moderate pressures; addition of very small traces of salts affects the potential and may even reverse the charge. In conclusion, he protested against the view of physiologists that proteins, and emulsoids generally, form true solutions which obey the solution laws.

#### THE ST. ANDREW'S AMBULANCE ASSOCIATION AND THE V.A.D. COUNCIL.

The Army Council recently extended a cordial invitation to the St. Andrew's Ambulance Association to nominate a representative to serve on the Central Joint Voluntary Aid Detachment Council. The Association has nominated Colonel Donald J. Mackintosh, C.B., M.V.O., of the Western Infirmary, Glasgow, and this appointment practically completes the constitution of the Council, which is now representative of every important ambulance organization in the country; it has been set up for the purpose of reviewing the Voluntary Aid Detachment organization.

#### END OF AN EDINBURGH MIRACLE WELL.

The members of the Greater Edinburgh Club last week made one of their excursions to the old church of Restalrig and the adjoining miraculous well of St. Triduana. The Rev. William Burnet, incumbent of Restalrig parish church, mentioned that he frequently received letters asking for bottles of the water, not only from all over Scotland, but from India and other parts of the world. St. Triduana was a Saxon saint, and her well has been a place of pilgrimage for persons afflicted with eye diseases for over a thousand years. The well building is a fine piece of fifteenth-century architecture, with groined roof supported on a massive central pillar. The water has now been completely dried up by the new Edinburgh sewer through the adjacent Craigintenny meadows, over which houses are being rapidly built.

#### THE CENTRAL MIDWIVES BOARD FOR SCOTLAND.

The examination of the Central Midwives Board for Scotland, held simultaneously in Edinburgh, Glasgow, Dundee, and Aberdeen, has just concluded with the following results: Out of 95 candidates appearing for examination, 87 passed. Of the successful candidates, 27 had been trained at the Royal Maternity Hospital, Edinburgh; 20 at the Royal Maternity Hospital, Glasgow; 3 at the Maternity Hospital, Aberdeen; 9 at the Maternity Hospital, Dundee; 7 at the Queen Victoria Jubilee Institute, Edinburgh; 4 at the Cottage Nurses' Training Home, Govan, Glasgow; and the remainder at various recognized institutions.

## England and Wales.

#### POST-GRADUATE COURSES IN LONDON.

THE Fellowship of Medicine has been proceeding with the suggested scheme of post-graduate teaching outlined in our issue of April 21st and already considerable progress has been made. The general non-undergraduate hospitals have taken up very heartily the idea of the suggested grouping for the holding of short refresher courses and in some cases spontaneous offers have been received from special hospitals wishing to be included in these groups. Dates have been agreed upon for these courses for a year hence, and there will be a course lasting for two weeks during each month of the year.

Such response has been received from the special hospitals with regard to courses in the various specialties that it has been no light task to fit them all in, but the dates have been so arranged that no two special courses in the same subjects shall be taking place at one time. The complete programme for the year will be published shortly, but a preliminary announcement is made here of the courses arranged for next month, namely:

A refresher course at the Prince of Wales's General Hospital and affiliated hospitals from June 11th to 23rd and a course on gastrointestinal diseases of children at the Children's Clinic, Western General Dispensary, from June 11th to July 5th. Copies of the syllabus and full particulars of both these courses can be obtained from the Secretary to the Fellowship of Medicine.

For those desiring work in ophthalmology, neurology, and dermatology, should a sufficient number of entries be received, courses beginning on June 11th and continuing for about four weeks will be available at the Royal London Ophthalmic Hospital, the West End Hospital for Nervous Diseases (provisionally), and St. John's Hospital for Diseases of the Skin respectively.

Application for particulars regarding these and future courses should be made to the Fellowship of Medicine, 1, Wimpole Street, London, W.1.

#### PUBLIC HEALTH OF THE CITY OF LONDON.

The report by Dr. W. J. Howarth, C.B.E., M.O.H. for the City of London, on the work carried out by his department during 1922, testifies to the progressive policy of the Corporation. A comparison of the report with that of one of his predecessors, say of twenty-five years ago, is an interesting study. Such questions as the prevention of tuberculosis and venereal diseases, the verminous condition of children, the fly nuisance, the inspection of hairdressers' establishments, the manufacture of ice-cream, are only a few of those dealt with by Dr. Howarth, but to which we find no reference in the reports of Dr. Sedgwick Saunders, who was M.O.H. during the final years of the last century.

The resident population of the city in 1922 is estimated at 13,363. The birth rate was 11.1 per 1,000, and the death rate 14.1 per 1,000; the infantile mortality rate was equal to 61 per 1,000 births. The vaccination statistics are instructive, for only 28 per cent. of the children whose births were notified to the vaccination officer were successfully vaccinated. In 1899 this percentage was 63, and in that year there were 10 conscientious objectors compared with 65 in 1922.

#### Tuberculosis.

The city tuberculosis dispensary at St. Bartholomew's Hospital is under the charge of Dr. F. H. Young, O.B.E., who is assisted by a tuberculosis nurse. During the past year 351 new patients attended the dispensary, of whom 133 were resident in the city; of the latter, 23 were found to be suffering from tuberculosis. Of the 218 patients resident outside the city, 75 were found to be tuberculous. Patients resident in the city are supervised and treated at the dispensary; those who are non-resident, but who work in the city, are informed that they can be treated and advised at the dispensary or transferred to the tuberculosis officer of their own district. The majority decide to remain patients at the dispensary. All non-residents who do not work in the city are transferred to their own tuberculosis officer. With regard to sanatorium treatment, Dr. Howarth says:

"Experience shows that when the disease is active, residence in an institution more quickly and certainly brings about arrest than when treatment is attempted at home on sanatorium lines, and that the lessons learnt in the sanatorium are sometimes put into practice by the patient on his return home to his permanent advantage."

"The principal difficulty encountered occurs on the discharge of a patient from a sanatorium with the disease arrested. The home environment to which he returns is often unsatisfactory; suitable occupation near his home may be practically unobtainable, even when remuneration is not the main consideration, and a very considerable benefit gained in some cases soon lost and the treatment in the sanatorium largely wasted."

#### Venereal Diseases.

At the venereal diseases treatment centre, the medical officer of which is Mr. Kenneth M. Walker, there was a considerable decrease in the number of new patients. In 1922 there were 583 compared with 758 in 1921 and 1,053 in 1920. Of those suffering from syphilis, 64 discharged themselves before completing the first course, and of the 320 patients with gonorrhoea, 132 gave up attendance before the end of the first course. A few beds are provided at the centre for in-patient treatment, and the number of days of such treatment totalled 170.

#### Smoke and Atmospheric Pollution.

In the year 1914 a critical examination of the air of the city was begun: an apparatus consisting of a large rain gauge is mounted upon the roof of one of the corporation's buildings in Golden Lane, and the rain water from a known area of surface is collected monthly. In June, 1922, the amount of deposit registered as falling in the city amounted to about 54 tons. Of this mass of dirt approximately 18 tons were soluble and 36 tons were insoluble, consisting of tar, carbon, and grit.



*Inspection of Meat.*

During 1922 the record amount of 463,074 tons of meat passed through the central markets at Smithfield, an average of about 1,800 tons a day. Thirty per cent. of the pork was supplied by British feeders, but Mr. Dunlop Young, veterinary surgeon to the corporation, considers this amount could be greatly increased if more attention were paid to scientific feeding, etc. He advises the pasteurization of all food which could convey tubercle bacilli to pigs in order to avoid the destruction of carcasses or portions of carcasses on the market. One ton in every 320 tons of meat paying toll in the central markets was condemned in 1922, compared with one ton in 169 in 1921. Of the fish delivered at or near Billingsgate Market during 1922, one ton in 107 tons was condemned compared with one ton in 88 tons in 1921.

*Milk Regulations.*

In discussing the provisions of the Milk and Dairies (Amendment) Act, 1922, Dr. Howarth expresses the opinion that the clause which gives power to a local authority to refuse to register a retailer will require attention with regard to the desirability of permitting basements to be used for the storage of milk; the practice of permitting churns to stand on the footway outside milkshops, and the means of safeguarding churns and lids; and the practice of keeping small milk receptacles containing a reserve supply on shop floors.

*Ireland.**TYRONE COUNTY HOSPITAL.*

DR. EDWARD THOMPSON, F.R.C.S.I., medical officer of the Tyrone County Hospital, in the course of his report recently published for the years 1921 and 1922, states:

"At present in Ireland and Ulster the condition of the hospitals and the whole Poor Law system is appalling. For years past the British Government had this question continually brought to their notice. A Viceregal Commission was appointed; the whole question was carefully investigated, and an admittedly admirable report was issued, which was immediately pigeon-holed, and nothing has resulted. A year or so ago another Hospital Commission took the place of the Viceregal Commission. It, also, has reported and urged the necessity of hospital reform. I understand the Northern Irish Government have the question under serious consideration . . . and that the result will be the abolition of the boards of guardians, who have always proved themselves unfit for their responsibilities . . . regardless of the general experience that no improvement can possibly take place without an increased expenditure, which, although considerable at the start, will result in increased efficiency, and a lowered cost in the future. . . .

"I wish particularly to refer to the table detailing the list of operations in the two years. There have been 127 operations for appendicitis alone, with 9 deaths. Considering that 75 per cent. of these cases were abscess cases—that is, the appendix had ruptured before admission to hospital—the result is surprisingly good, quite as good as in any hospital anywhere, and yet there are some doctors in the county, I am sorry to say, who cart off their unhappy patients long distances to some city hospital, and ignore the efficient surgical hospital at their doors for the treatment of these and similar acute abdominal complaints. The total mortality after all operations was 23, representing rather less than 4 per cent., which is about the average in all surgical hospitals. The annual expenditure is still too high, but is absolutely dependent on the contract price of provisions. When these fall the cost will be lowered and vice versa."

*FREE STATE ARMY MEDICAL SERVICES.*

The Irish Medical Secretary has made representations, with regard to complaints made by medical practitioners that they were called upon to afford gratuitous medical treatment to soldiers serving on outpost duty and to their dependants, to Major-General Francis J. Morrin, M.D., Director of Medical Services, who, in the course of his reply, stated:

"One medical officer is appointed to every 500 men, with extra assistance in the larger battalion areas. It is his duty to inspect and to care medically for these men. This scheme has been completed for all Ireland, and the Army has now, in proportion to its members, more doctors than any army in the world.

"Prior to April 1st it was the custom to employ 'part-time' medical practitioners at a rate of 10s. 6d. per diem. This meant an enormous financial involvement for the Army, as nearly every medical officer in the country was doing part-time work. This arrangement had to cease; it was uneconomic and most unsatisfactory from a military standpoint. The position of civilian medical practitioners now is: If engaged by the Command Medical Officer to do part-time work, for example, visit outposts, etc., he is paid 10s. 6d. for such days on which he arranges to visit. The appoint-

ment must be sanctioned by this office. If a doctor is urgently called on he receives 10s. 6d. for such call; of course, the necessity for the call has to be vouched for by the Command Medical Officer. Further, medical practitioners are requested to furnish all claims against the Army monthly.

"The capitation rate appeared to me as employing a professional man to do work by contract. I prefer to pay a minimum fee of half a guinea to any doctor employed. I am having instructions circulated to the Army that when men or officers consult, on their own account, civilian medical practitioners, they are liable for the fee. I am particularly anxious to see the medical services independent, but I am equally desirous of treating fairly the civil medical officers. Consequently any information or complaint you may receive I shall be most pleased to investigate at any time, when they shall have my very careful consideration."

*Correspondence.**IONIC MEDICATION AND THE CONSTANT CURRENT.*

SIR,—It is a pleasure to see that you have drawn attention to this subject by a leading article in your issue of May 19th. May I be permitted to comment on it?

First of all the constant current in a wire and in the tissues are two different things. In a wire the current consists of a movement of electrons; in the tissues it consists of a movement of ions. Ions may be defined as particles derived from salts and composed of atoms or groups of atoms showing an excess of positive or negative electricity as the case may be. The tissues and fluids of the body are in part composed of salts and consequently of ions, and when the current—so called—flows there is a movement of ions, and an exchange takes place between adjacent compounds. This is put forward as a suggested possibility in your article. It is the basic fact in ionization. To quote Professor Leduc, "Il n'y a pas de courant simple, il n'y a que des actions électro-ioniques."

The exchange of ions is accompanied by a movement of water from the positive to the negative electrode, and this is believed to be largely the explanation of the benefit resulting from ionization in cases where there is exudation as in a sprain, and also in cases where the exudation is becoming organized into scar tissue. In these exudates there is absence of vessels, or, at least, defective circulation. The fluid brought by the current is not immediately carried off, but the exudate is made more soluble and therefore can be more readily dispersed by movement or massage. There is abundant clinical evidence of the beneficial results which follow ionization in these cases. It is a pity that when the value of this treatment is being discussed, both from the theoretical and practical aspects, the evidence brought forward should be taken from cases of deeply seated disease, in which the condition existing is surmised rather than accurately known; and from cases in which this form of treatment can be applied only in an imperfect and unsatisfactory manner, in theory at any rate; whilst the evidence derived from cases to which in theory and in practice it can be satisfactorily applied, is passed over in silence. To proceed in this way is the very negation of the "experimental method" which aims at making the answer decisive by arranging that the conditions of experiment are simple and clear.

It is, I think, admitted on all sides that ions such as strychnine, chlorine, salicyl and iodine, which form soluble compounds with ions in the body, are carried away by the blood and lymph stream, and are not carried by electrical action to the deeper parts. This, however, does not imply that the action of the constant current in promoting an exchange between the normal ions of the fluids and the normal ions of the tissue cells does not take place. Ordinary nutrition implies exchange, and it is claimed that electrical action favours this exchange. Ions introduced electrically undoubtedly act on cells placed superficially—for example, cocaine so introduced produces anaesthesia. Why should we hesitate to believe that the normal ions of the fluids which are situated at a depth enter the cells with which they are in contact, when subject to electrical action?

No reference is made in your article to ionic medication in certain surgical conditions. The evidence there of benefit is convincing by its simplicity and decisiveness.

In conclusion, may I point out that it is comparatively



easy to gain a reasonable knowledge of the physical, chemical, and electrical factors involved in ionization, but it is hard work to unravel the conditions present in a disease labelled "sciatica," for instance, when presented for treatment. Until the factors in each case are recognized it is empiricism, perhaps quite justifiable empiricism, to treat the patient by any method whatever, including ionization.—I am, etc.,

London, W., May 19th.

A. R. FRIEL.

### THE EDUCATION OF MYOPES.

SIR,—The good common sense of Mr. Harrison Butler shown in his Middlemore lecture on refraction of the eyes<sup>1</sup> breaks down at one point, when he makes his favourite tilt against current theories of myopia. No one would wish to deny him that pleasure, but it is a pity he carries his hostility to a theory to such a length that he would (if he could) injure practical measures established for the benefit of myopes and proven to be of benefit to them.

He speaks of the myope school as "an inferior system." That is a libel on these classes. They are in no way inferior to the general school. They are placed in the elementary schools, and have the same trained teachers, who themselves receive special instruction in their particular duties and additional pay because of the heavier work entailed. The myope classes differ only from the general school in that class books, pens, and paper are not found in them, for these are replaced by charts, blackboards, screens, and chalk, by means of which the pupils read, write, and draw at arm's length in large size. A living teacher is better than a book, as Mr. Butler himself recognizes in his remarks on the teaching of retinoscopy. In the days when books were rare, was there no good teaching, and did no one learn?

Mr. Butler objects to the disbaring of myopes of more than 3D. from State school scholarships. On my evidence this disbaring is right and good. In a recent issue of the JOURNAL<sup>2</sup> I gave the facts upon which this practice is based. Between the ages of 20 and 60 years myopes of more than 3D. who did habitual close eye work were found to suffer breakdown from eyestrain or disease to the extent of 53 per cent., whereas myopes who did not engage in habitual close work suffered only to the extent of 9.4 per cent. The higher the degree of myopia the greater the rate of breakdown: those over 10D. suffered to the extent of 77.4 per cent. On these facts it is right to divert young myopes from scholarships which are generally introductions to lifelong careers of habitual close work. The limitation does not apply to certain trade scholarships.

Mr. Butler says he forbids music to myopes. I wonder why? Most instrumental music requires reading at no nearer distance than arm's length and with the eyes looking straight forward; under these conditions, with a good score and good light, music is a harmless and delightful means of extending the interests of these children; further, the cultivation of the ear is a diversion which saves the eyes.

Mr. Butler's strong common sense shown in so much of his lecture makes me think that once he has put his favourite "cock-shy" in its proper place he will appreciate the practical advantages of educational methods for myopes calculated to train them in the way they should go for the safety of their frail eyes.—I am, etc.,

London, W., May 19th.

N. BISHOP HARMAN.

### THE COASTAL MOSQUITO NUISANCE.

SIR,—Considerable attention has been directed to the mosquito nuisance at Hayling Island by J. F. Marshall, Esq., M.A., F.E.S., who has been making a special study of the subject for the last three years. Mr. Marshall has discovered that although a total of fourteen species of mosquito have been located at Hayling, the nuisance is caused almost entirely by one species, the *Ochlerotatus detritus*. The special characters of this particular species are that it breeds in salt, brackish, or non-salt water, it spends the winter in the larval state, it is a prolific breeder, and its larvae are to be found in stagnating sea water in enormous numbers all the year round. It lays its eggs not only in water but on ground in the vicinity of marshes. It seems to know instinctively that such

ground will come under flood, and it has a flight range of from two to four miles.

Mr. Marshall has demonstrated further how the nuisance can be dealt with by drainage and filling in, or where these measures are not practicable by the use of larvicide.

As a sequel to these findings at Hayling Island, investigations were instituted in the Gosport-Alverstoke-Leo districts and very similar conditions discovered. The same species of mosquito has been identified at Weymouth also, where it is no less troublesome. It would be interesting to know what other places along the coastline are affected by it.

As this particular mosquito is not a specific disease carrier, it is not considered incumbent upon the local health authority to expend large sums of money in its eradication. Its bite, however, in common with that of other species, is not only irritating but is at times the cause of boils, cellulitis, or even blood poisoning. I contend, therefore, that it is the duty of the health authority to supply the public with information as to how the nuisance can be abated. If it is sufficiently troublesome to justify active measures, the problem might be taken up, on the lines initiated at Hayling and just recently adopted at Gosport, through the medium of a mosquito control committee, consisting of interested residents assisted by the health authorities concerned.

The salt marsh mosquito nuisance has long been known in America, particularly in the State of New Jersey, and very thorough measures have been taken to deal with it. The Americans have discovered that it is a sound financial proposition, and where the work of eradication has been completed property values have gone up by from 25 to 300 per cent. Although conditions in this country may not yet be as bad as those in America the nuisance is already sufficiently severe to retard the development of certain desirable seaside resorts, and I am convinced that the community would welcome any assistance or advice relative to its abatement.—I am, etc.,

D. H. C. GIVEN, M.D., D.P.H.,

Surgeon Commander, R.N.

May 7th.

### NEW MENTAL TREATMENT BILL.

SIR,—I have never proposed that the rest homes outlined in my letter (March 24th, p. 536) should be uncontrolled. I specially stressed the fact that they would be run and controlled by the health committees (not the asylum committees) of local authorities and would be subject to the approval of the Ministry of Health. For this desirable and necessary purpose, grants in aid could be obtained from Parliament. Any risk of "the exploitation of such homes by unscrupulous and designing persons" can be effectually countered by the provisions of Section 315 of the Lunacy Act, which impose a penalty on any person detaining "an alleged lunatic" except in strict compliance with the requirements of the Act. However insane a man may be said to be, he cannot legally be deprived of liberty without judicial sanction. Health committees are every whit as competent to run hospitals for "uncertifiable" people (which are free from detention) as are asylum committees, and have a better right. The places will be free from "stigma," and on that account likely to be much more successful than homes under lunacy in preventing early cases becoming certifiable.

Since it is admitted that no bill is needed to permit a person to enter a hospital where detention is not practised, it is clear that the new Mental Treatment Bill is meaningless, unless detention is in view. But detention without check of judicial inquiry and appeal is in essence improper. If the boarder enters a mental institution on an absolutely "voluntary" footing, and has the right to leave it within forty-eight hours, why is there mention of a period of six months, which can be extended by the Commissioners to a year? If truly voluntary, he can stay as short or as long a time as he wishes. There is, moreover, no safeguard against his being secretly certified at any moment.

It is noticeable that in the new bill, which is confessedly designed to "supply machinery to deal with doubtful cases before passing them on to the machinery allowed by the present law," the safeguarding provisions of Section 315

<sup>1</sup> BRITISH MEDICAL JOURNAL, May 19th, 1923, p. 913.

<sup>2</sup> Harman: Standards of Vision for Scholars and Teachers in Council Schools. Ibid., January 13th, 1923.



will be liable [Cl. 6 (6)] to be suspended or annulled at the will of the Board of Control. The Board is also to be given power [Cl. 4 (3)] to discountenance or close down any rest home or hospital not under its own jurisdiction. This is a very serious matter. There can be no justification for extending the jurisdiction of the Board over harmless and uncertifiable people to their damage, and the throttling of any prospect of providing for them the kind of homes which they so greatly need for their speedy recovery.

The new bill will give short shrift to cases designated as "incapable of volition." The authorization of a minister of religion suffices for their committal after joint (not independent) examination by two doctors, one being a nominee of the Board, whose opinion will, of course, carry the greater weight. The large majority of these "no-volition" cases are due to toxic causes (puerperal, influenzal, etc.). These ought never to be sent to asylums. A more effective way of shielding them from "stigma" is to enforce upon infirmaries, hospitals, and maternity homes the obligation of providing means to retain and deal with their own delirious cases.

The provision of hostels run on a hospital footing for uncertifiable mental cases, quite apart from lunacy, will furnish an example of tackling the beginnings of insanity on the sound principles of preventive medicine; and no legislation is needed to bring about the desired end. By intercepting these cases on their way to asylums, it would tend to a very material reduction in our expenditure on lunacy administration, now amounting to £7,900,000 per annum.—I am, etc.,

London, E., May 12th.

S. E. WHITE.

#### BLOOD PRESSURE AFTER OPERATIONS.

SIR,—In an article recently published<sup>1</sup> by Professor Lehrnbecher on the changes in blood pressure resulting from operations of various kinds, he stated that the recording apparatus was affixed to either arm indiscriminately, as it made no difference from which side the readings were taken. Now although it is quite true that the blood pressure in the two arms is identical under normal conditions, my observations have convinced me that this does not hold good in cases of unilateral conditions, whether from operation or trauma. The results of a first series of 819 observations were published (after a preliminary communication in the *BRITISH MEDICAL JOURNAL*, 1918, ii, 132) in the *Quarterly Journal of Medicine* for 1920 (xiii, 148), and they showed that as regards the maximum pressures, differences of 10 to 18 mm. are found in about 83 per cent. of all cases, and above 20 mm. in about 12 per cent., the figures for the minimum pressures being respectively 81 and 20 per cent. Later on I confirmed these results by a second series of 1,897 observations,<sup>2</sup> and my brother, Dr. R. J. Cyriax, has also found that these differences were often present in pulmonary phthisis.<sup>3</sup> Professor Lehrnbecher appears, however, not to have had his attention drawn to the above articles, and thus did not exclude the source of error in drawing conclusions from observations on the blood pressure of only one arm. I sent a short notice to the journal in question, pointing out the fallacy, but the editor returned it regretting that he was only enabled to publish articles by its collaborators. I trust therefore that you will be able to insert this communication of mine in order that workers on blood pressure may once again be reminded that it is quite wrong in unilateral conditions, as well as many bilateral ones, to draw conclusions from unilateral blood pressure observations.—I am, etc.,

London, W., May 16th.

EDGAR F. CYRIAX.

<sup>1</sup> *Beiträge zur Klinischen Chirurgie*, 1922, part 2, p. 291.

<sup>2</sup> *Quart. Journ. of Med.*, 1921, xiv, 309; *Journ. of Obstet.*, 1922, xxix, 322.

<sup>3</sup> *Brit. Journ. of Tuberc.*, 1919, xiii, 73.

MESSRS. BAILLIÈRE, TINDALL, AND COX have issued a list of books on medicine and the allied sciences showing the net prices and the cost of postage. The list is classified and has an appendix containing a list of periodical publications. Copies can be obtained from the firm at 8, Henrietta Street, London, W.C.2.

#### Obituary.

LIEUT.-COLONEL JAMES CURRIE ROBERTSON,

M.B., C.M.G.,

Indian Medical Service.

LIEUT.-COLONEL JAMES CURRIE ROBERTSON, C.I.E., C.M.G., C.B.E., Bengal Medical Service, died at Simla on May 14th, aged 52, of heart failure following pneumonia. He was the son of Alexander Robertson of Kilmarnock, and was educated at Glasgow, where he graduated M.A. in 1890, M.B. and C.M., with honours, in 1894, and also B.Sc. with honours. He entered the I.M.S. in January, 1896, attained the rank of lieutenant-colonel in 1915, and was placed on the "selected list" for promotion in November, 1921.

Within a year of entering the service he had his first experience of active service, taking part in the Sudan campaign of that year, the Dongola expedition, for which he received the medal and also the Khedive's medal. Soon after his return to India he was deputed on special plague duty, and spent the whole of the rest of his service in sanitary work, for it was in such work that he was chiefly employed, even in the two campaigns in which he afterwards served. In 1901-2 he served in South Africa, where he was on special duty under the Director of Burgher Camps, and also took part in the operations in the Transvaal, receiving the medal with two clasps. In 1901 he was appointed to be a Deputy Sanitary Commissioner in the North-West Provinces, now the United Provinces of Agra and Oudh; in 1912 he was promoted to be Sanitary Commissioner with the Government of India, the highest post in the Sanitary Department. In February, 1915, he returned to military duty for service in the recent war. In 1916 he was at Malta, in charge of measures taken to deal with an epidemic of plague in that island, in which he was so successful that the Governor and Commander-in-Chief, Field-Marshal Lord Methuen, specially thanked the Indian Government for his services. In the following year, 1917, he was sent to Italy, and posted to Taranto, with the acting rank of colonel. The Italians had considered Taranto unsuitable for a military cantonment owing to the excessive prevalence of malaria in the town and surrounding province. But Robertson's antimalarial measures were so successful that Taranto was used as a British base for the movement of troops intended to take part in the operations further eastwards.

After his return to India he was appointed, on August 9th, 1920, to be Director of Hygiene and Pathology at Army headquarters, Simla. He had recently been granted furlough, and when attacked by his fatal illness was on the eve of leaving India, probably for good.

His services had met with recognition from the Government. He received the C.I.E. on January 1st, 1914, the C.M.G. on August 8th, 1917, and the C.B.E. on June 3rd, 1919. He was also decorated with the Italian silver medal *della saluta pubblica* in November, 1920, and appointed an officer of the Order of the Crown of Italy in September, 1922.

ARTHUR PEARSON, M.B., B.S.LOND.,

Tanganyika, Katanga, Southern Rhodesia.

WE regret to have to record the death by an extraordinary accident of Dr. Arthur Pearson, who, after being a student at Guy's and taking the diplomas of L.R.C.P. and M.R.C.S. in 1901, became a medical pioneer in Central Africa. He met his death on his farm, Long Meadow, twenty miles from Bulawayo, in an attempt to rescue a native boy who had been overcome by carbonic acid gas generated in a tank containing mealies. Dr. Pearson was trying to get the boy out by a rope which he lowered through the manhole, when he disappeared inside the tank. The turmoil set up by the natives attracted Mrs. Pearson, and as soon as a larger hole had been cut with hammer and chisel she put a ladder inside and herself went down into the tank, to find her husband lying on the mealies. She secured the rope about him and had him raised to the air, but artificial respiration was useless as he had broken his neck in his fall. The native who was lying beside him senseless was also got out, and recovered almost immediately.



Dr. Pearson had become well known to a great number of people from the Congo to the Cape. He first went to South Africa during the Boer war, and in 1903 took a position in the Congo as medical officer to the Tanganyika Concessions; later he became chief medical officer to the Union Minière du Haut Katanga. In addition to his ordinary medical work he devoted special attention to enteric fever and to the construction of native compounds, and wrote books on the subjects in conjunction with Dr. Mouchet. Of recent years his opinion as a consultant came to be valued over a very wide area.

His manifold activities carried him into fields outside his profession. Always a keen rifle shot—as a student he captained the Guy's team, and was a member of the Artists' Volunteers—he did much big-game shooting in Africa, but the hunting instinct was gradually supplanted by the wish to observe, his rifle gave place to field-glasses, and for many years past he was never happier than when, armed only for defence, he could watch the movements and habits of the fauna which teemed in his country. He came, too, to feel an ever-growing interest in the problems involved in bringing wild land under cultivation. It was, therefore, no real break in his life (though to some of his friends it seemed otherwise) when eighteen months ago he left the Congo and settled on a large farm which he bought in South Rhodesia, retaining only a consultative connexion with the Union Minière.

He was a man out of the ordinary, as this short record of his life shows. Of great height and powerful muscle, he had an almost feminine gentleness about him. His manner, though quiet and unassuming, was never allowed to mask the determination behind it, or to interfere with his quickness of decision and action. He was honest in mind and deed, and had no great patience with those whose methods are shifty. Perhaps it was this trait which made him prefer the more natural conditions of life which he found in Africa. Not that he was himself simple; he had an almost unerring insight into human character and motives, but he was happy among simple surroundings, and, with no great ambition for personal advancement in position or means, he found satisfaction in giving his best to that which came to hand each day. This gained him friends in plenty, and there are many who found that to see him was to trust him, and to know him was to love him.

He was born in 1876 at Cheltenham, and was educated at Berkhamsted School, and graduated M.B., B.S. Lond., with honours in medicine, in 1906. In 1911 he married Miss Horwood, of Tunstall, Suffolk, and leaves three children.

Dr. HENRY WILLEY, whose death on May 16th is announced at the age of 84, was in practice for some twenty-five years near Beckenham, Kent, and for many of those years was the trusted doctor of Charles Darwin, who was living at Down, near Beckenham. Dr. Willey, who received his medical education at King's College, graduated M.B. Lond. in 1864, and became a Fellow of the Royal College of Surgeons of England in the same year. After a most successful career in practice, he retired to Reigate. He is survived by his widow, a son, and three daughters.

## Universities and Colleges.

### UNIVERSITY OF LONDON.

Dr. JAMES CALVERT has been appointed to represent the University of London at the ninth annual conference on the Prevention of Tuberculosis to be held at Birmingham on July 12th and 13th.

Dr. James Fawcett has been reappointed the representative of the University on the council of the Lister Institute of Preventive Medicine for the period 1923-33.

### ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

The following 22 successful candidates out of 41 entered, having passed the requisite examinations, have been admitted Fellows:

B. V. Abhyankar, F. G. Beatty, I. J. Block, S. Bolton, Surgeon Commander H. F. Briggs, R.N., C. C. Bryan, A. F. Cowan, U. N. Das, G. C. Dixon, N. McO. Dott, J. Dunlop, R. S. A. Graham, J. B. Ifance, F. C. Hutchison, J. F. Jefferies, C. E. McQuade, A. G. Ord, D. S. Pracy, Major A. H. Proctor, I.M.S., J. Z. H. Rousseau, W. O. Stevenson, A. Watson.

The Bathgate Memorial Prize, consisting of bronze medal and set of books, was, after a competitive examination in *Materia Medica*,

awarded to Mr. D. B. Craig, and the Ivison Macadam Memorial Prize in Chemistry, consisting of bronze medal and set of books, was awarded, after competitive examination, to Mr. H. W. Bambridge.

### CONJOINT BOARD IN SCOTLAND.

The following candidates have been approved at the examination indicated:

D.P.H.—J. M. Blair, J. A. C. Guy, G. L. Johnston, Elizabeth C. Loudon, F. MacCallum, P. J. McDiarmid, D. O. Macdonald, K. D. Murchison, G. F. B. Page, A. G. Petrie, Ruth J. D. Ritchie, Marion Smellie, G. D. Steven, Marjorie Thomson, Ruby Thomson, P. Veyra, W. H. Wallace, Enid A. Williams. *Part I:* Marion B. Armstrong, Catherine McL. Buchanan, Helen Campbell, W. Campbell, A. C. Dewar, Kathrine Dunn, Margaret A. Galbraith, J. S. McL. Gray, Katharine J. Guthrie, J. L. Halliday, Mary N. Hendry, Catherine Hill, A. R. Lester, W. McKie, Peggy L. Mitchell, J. T. Moffat, G. W. Murray, D. T. Richardson, R. G. Shaw, C. M. Smith, Elizabeth N. Thomson, Sarah B. H. Walker, R. H. Williamson. *Part II:* G. Buchanan, J. G. Tait.

## Medical News.

A LETTER protesting against the false hopes raised by certain persons who make extravagant assertions that wireless is capable not only of relieving but in some cases of actually curing deafness has been issued by persons interested in the education and treatment of the deaf. It is signed by Lord Charnwood, president of the National College of Teachers of the Deaf, Mr. Richard Lake, F.R.C.S., Sir William Milligan, M.D., and Mr. Macleod Yearsley, F.R.C.S. The letter states that at present there are no indications that wireless is likely to be a cure for real deafness, though it may yet be proved that permanent improvement attends its systematic use in hard-of-hearing cases. Until systematic experiments have been conducted and trustworthy evidence is forthcoming that certain types of deafness can be alleviated by wireless, the recent reports of improvements must, the signatories consider, be disregarded; they add that the need for investigation is obvious.

THE Sharpey physiological scholarship tenable at University College, London, is vacant. Applications must be received by the Secretary of the College not later than June 23rd next. The value of the scholarship is £200; it is tenable for one year but is renewable; the scholar will be a member of the academic staff of the College, and will work in the department of physiology under the direction of Professor A. V. Hill, F.R.S., the newly appointed professor of physiology.

THE Dean and Professors of the Madrid Faculty of Medicine have recently paid a visit to the Paris Faculty of Medicine. On May 1st, the dean, Professor Recasens, gave an address on the new applications of radiotherapy in gynaecology, and Professor Cardenal discussed the treatment of acute diffuse peritonitis. On May 2nd Professor Aguilar dealt with general infections of dental origin and Professor Goyanes lectured on vascular surgery. On May 3rd Professor Hernandez gave an address at the Hôtel Dieu on the action of certain drugs on the secretion of gastric juice.

THE United Services Fund has erected a hospital on a site near Ascot for cases of surgical tuberculosis among children of ex-service men. The building provides accommodation for 150 patients in three wards, for babies, girls, and boys respectively. The hospital, which will be known as the Heatherwood Hospital, will be opened by Field-Marshal Earl Haig on Tuesday next, May 23th, at 3.30 p.m.

THE annual dinner of the Harveian Society of London will be held at the Connaught Rooms on Thursday, June 14th. Particulars can be obtained from the Honorary Secretary of the Society, Dr. W. E. Falconar, 40, Cleveland Square, W.2.

AT the annual meeting of the Röntgen Society, to be held on Tuesday, June 5th, at 8.15 p.m., in the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, Sir Oliver Lodge will be proposed for election as president, in succession to Sir Humphry Rolleston; papers will be read by Professor Sidney Russ, D.Sc., on the effects of x rays of different wave-lengths on animal tissue, and by Mr. T. Thorne Baker, F.I.C., on the establishment of a definite relationship between exposure and density in an x-ray plate.

IN the BRITISH MEDICAL JOURNAL for February 24th a review was published, under the title "The Virtues of Sea Water," of a book by Dr. J. Jarricot. Drs. George Barford, Dorothea Tudor, and L. A. Clutterbuck write to state that there exists in London, at 225, Euston Road, a sea-water dispensary which is a direct offshoot of and is conducted on precisely the same lines as the Dispensaire Marin founded in Paris by M. Quinton. The treatment is carried out by subcutaneous injections of sea water rendered sterile and isotonic; the members of the honorary medical staff will be pleased to demonstrate the methods employed to members of the medical profession.



THE Home Secretary has, by a regulation dated May 16th, revoked No. 1 of the Dangerous Drugs Regulations, 1922 (S.R. and O. 1922, No. 1087), which provides that a prescription for dangerous drugs may not be given for the use of the prescriber himself.

MR. HENRY CURTIS, F.R.C.S., on the occasion of his retirement from practice and resignation as surgeon, has been elected a consulting surgeon to the Metropolitan Hospital, London, E.8.

A DEPUTATION consisting of representatives of the British Medical Association, the Society of Medical Officers of Health, the National Association for the Prevention of Infant Mortality, the National League for Health, Maternity, and Child Welfare, the National Baby Week Council, the Association of Infant Welfare and Maternity Centres and its London Federation, the National Society of Day Nurseries, the Central Council for Infant and Child Welfare, the Central Committee for the Care of Cripples, the National Health Society, and the National Housing and Town Planning Association, was received on May 14th by Lord Onslow, on behalf of the Minister of Health. The deputation was introduced by Dr. F. E. Fremantle, M.P., and submitted the views of these societies with regard to the effect of an undue amount of smoke on the child life of this country. Lord Onslow, in reply, said that a bill dealing with the subject was at present being drafted, and he would be glad to have the observations of the societies upon it when it was printed.

DR. T. GERALD GARRY has severed his connexion with the Czecho-Slovakian spa, Pistany.

THE second congress of French-speaking pediatricists will be held in Brussels in September, 1923, under the presidency of Dr. Pechère. The subjects to be discussed are pneumococcal infections in childhood, the diagnosis and treatment of intestinal obstruction, and the treatment of abnormal children.

## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westminster, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westminster, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mcdisceara, Westminster, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

### QUERIES AND ANSWERS.

"M.D." would like to know if any reader has had experience of marked depression caused by tobacco.

#### TOMATOES.

"H." asks why it is sometimes stated that tomatoes should not be given to young children.

\* \* The objection seems to rest chiefly on the risk of intestinal irritation by the pips. The skin also is hard and indigestible, but can easily be peeled off if the tomato is dipped for a moment in boiling water.

#### INCOME TAX.

"A. K." has paid interest for some years on a loan for the purchase of personal effects and inquires what allowance, if any, is due (a) for interest paid, and (b) for past repayments of the amount borrowed.

\* \* a) An allowance and repayment in respect of the three previous years can be claimed on the amount of interest paid

on an advance from a bank—Income Tax Act, 1918, Sec. 36. No allowance can be claimed for other loan interest; "A. K.'s" right to recoup himself for the tax is to deduct income tax from the interest as he pays it. (b) No allowance is due.

#### Car Transaction.

"C. O. M." purchased a car in 1919 for £175 and sold it in 1920 for £200, buying another for £303; he has since bought a "second" car for £650, the £303 car being retained for use when required. If the car purchased for £303 was no better in type and condition than the first car was when "C. O. M." purchased it, he can claim the net cost—£303—£220 = £83—as expenditure incurred in renewing a car in the year 1920. No allowance is yet due for the last car purchased.

"J. M. D.'s" car transactions have been as follows:

1911 bought N. for £550.  
1916 sold N. for £100 and bought second-hand A. for £220; income tax allowance £120.  
1919 sold A. for £76 and bought F. for £250; income tax allowance £174.  
1922 sold F. for £60 and bought H. for £600, and the inspector offers an income tax allowance of £140.

\* \* This case raises a point of some interest, inasmuch as the type and quality of car was reduced and has since been raised again. Obviously if "J. M. D.'s" earlier allowances were restricted—as they rightly were—to the out-of-pocket cost because some portion of the original capital expenditure was not being replaced, that unreplaced value must be allowed for on the last transaction when for the first time it is replaced. Assuming that the H. was not, allowing for the difference in period, a superior car to the N., we are of opinion that the allowance should be as follows:

Gross expenditure, excluding the original car:	£
£220 + £250 + £600	= 1,070
Deduct receipts: £100 + £76 + £60	= 236
Total expenditure (net) on car renewals	834
Allowed on first two renewals: £120 + £174	= 294
	£540

The above shows the matter as a whole; an alternative mode of statement is that the criterion of value to be replaced is £550—not £250—and that to replace that value "J. M. D." now has to spend £600—£60. The inspector's method of calculation is open to attack by *reductio ad absurdum*; suppose "J. M. D." sold his car and for a year used a cycle and hired cars, would the inspector refuse him an allowance altogether for a similar car bought the year after?

### LETTERS, NOTES, ETC.

A CORRECTION.—In the article entitled "A Coroner's Attack on the Panel System," published last week (p. 875), it was stated by inadvertence that Dr. Burges was a member of the Insurance Acts Committee.

#### CUPPING.

DR. W. JOHNSON SMYTH (Bournemouth) writes: I would like to refer those interested in cupping to the BRITISH MEDICAL JOURNAL published September 28th, 1918, wherein my invention for very efficient cupping is explained. Recently I have used a small motor to "run" the machine, leaving both hands of the operator free. The vacuum is well maintained and the cupping most effective. Messrs. Aish and Co., Electricians, Bournemouth, will supply the apparatus.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 27, 30, 31, 32, and 33 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 28 and 29.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 215.

### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded. Advertisements should be delivered, addressed to the Manager, 429, Strand, London, W.C.2, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.



## A Clinical Lecture ON THE PREVENTION OF HEART DISEASE.

DELIVERED AT THE HOSPITAL FOR SICK CHILDREN, GREAT  
ORMOND STREET,

BY

F. JOHN POYNTON, M.D., F.R.C.P. LOND.,  
PHYSICIAN TO THE HOSPITAL, AND TO UNIVERSITY COLLEGE HOSPITAL.

IN this lecture I will consider a question which I believe to be at present the most practical in the whole range of the study of heart disease—the possibility of preventive measures. Curative treatment for the moment is almost at a standstill. Cardiac tonics have been studied with the greatest industry; we are not likely to learn more of the value of the salicylates in heart disease than we do now, and serums and vaccines are not yet effective.

There is, however, another line of attack, opened up by recognition of the fact that, excluding congenital affections, the major part of the heart disease we meet with in the young is infective in its origin. These infections may attack the whole heart, or predominantly the valves, pericardium, or myocardium. Their relative frequency in the young is very different. Some are rare—for example, the tuberculous. Others vary in relation with epidemic waves—the diphtherial, the influenzal, and that associated with scarlet fever. Pneumococcal and staphylococcal cases are unusual in this hospital, as also the syphilitic, but rheumatic heart disease is very frequent and very constant in its occurrence. This is particularly the case in London, and it is with London I shall be dealing. At this hospital we only see children up to 12 years of age, and many cases, it is known, occur between that age and 15, so that not even here do we get a complete picture of the frequency of rheumatic heart disease in the young.

### *The Gravity of Rheumatic Heart Disease.*

It is possible to give a clear idea of the havoc acute rheumatism causes in childhood, because in 1919-20 we had a bad outbreak, and with Dr. J. C. Spence and Dr. D. Paterson I made an analysis of the cases.

We have 100 medical beds, and these are for practical purposes almost always fully occupied. The average stay of a medical case is twenty-eight days, and the cost of each child £2 9s. a week. The number of cases of rheumatism admitted in the year 1919-20 was 172, and if they are imagined as one long case it would have occupied a bed in the hospital for twenty-nine years; or putting it in another way, all our medical beds (100) would have been filled for fifteen weeks. The average stay of each case instead of twenty-eight days was sixty, and in maintenance the outbreak cost the hospital £4,589. This expenditure is, after all, the least serious result. What arrests attention is that 66 per cent. of these children had signs of organic disease of the heart, 22 cases died, and 38 became complete invalids. Undoubtedly this was an outbreak of unusual severity, but each year we have many cases, and in every London hospital where children are admitted in any numbers there is the same story.

If we study the age incidence we are struck by the early commencement of the heart disease. In this attack the limits were 2 years and 12 years, which is our age limit; thirty examples of first attacks occurred at the age of 7. As soon as the school age is reached we find a steady increase in the frequency of incidence.

On the other hand, acute rheumatism is infrequent among children, of school age, of parents who are in better circumstances than the hospital class.

### *Cardinal Pathological Facts.*

There are some points on the pathological side of infective heart disease which are simple but yet outstanding. If the poisons attack the noble tissues—the muscles and nerves of the heart—these cannot be replaced if destroyed, and if they are partially damaged can only recover completely if that damage be slight. When the fibrous tissues of the heart's framework, the valves and the pericardium, are attacked

and destroyed they are replaced by scar tissue, and if they are the seat of prolonged irritation short of destruction they thicken and contract, sometimes shutting in small areas of necrotic tissue. There are two problems before us at the bedside; one, What evidence is there of active infection? the other, To what extent are the symptoms the result of scars due to healed lesions? With these two problems in mind we rapidly come to the conclusion that in the young some degree of active infection is almost constant. It is an axiom that the chief cause for a cardiac breakdown in a child is active—I do not say fresh—infection.

Diphtheria when virulent kills the noble tissues but does not produce scarring. Contrast with this a chronic relapsing rheumatic pericarditis, where as a result a grossly thickened pericardium is densely adherent to the heart and possibly to the surrounding tissues; a still more striking example of this type of change is seen in chronic tuberculous pericarditis, which may literally strangle the heart in its grip.

Here, then, we have two extreme examples: on the one hand the destruction of the noble tissues, and on the other scarring of the fibrous tissues; but in rheumatism we frequently see a certain grade of damage produced in both—there is myocardial weakness and scarring of the valves. I do not think we can ever get a real grasp of the problem of prevention unless we keep these two classes of injury before our mind, for it is injury to the muscle of the heart which particularly calls for prolonged supervision in convalescence, and the scarred valves disturb the work of the heart as a mechanical pump.

### *Diphtheria under Control.*

When we consider diphtheria—dangerous though the cardiac infection is—we recognize that it is a contagious and notifiable disease due to an accepted microbic infection. It is a disease on the whole as well under control and supervision as we can expect in a great community. Methods for detection and for treatment may no doubt advance, but already there is general recognition of the importance of careful supervision of the heart. It is, for example, well known that dangerous symptoms are particularly likely to develop in the third to the fifth weeks, with exceptions at either limit, and we recognize that most of the tragedies occur in cases in which the nature of the infection has not been recognized and the child for that reason has escaped from supervision. These missed cases must always occur in human endeavour, and in no way alter the fact that heart disease due to diphtheria is well supervised. Tuberculous heart disease is so uncommon in this country that though we recognize it in children's hospitals it bears no relation in frequency to other tuberculous lesions, and great efforts are, we know, made to keep tuberculosis under supervision.

Scarlet fever stands in the same category as diphtheria, for it is notifiable, and every effort is made to get the cases under supervision, but much of the heart disease connected with scarlet fever has, in my experience, arisen after the child has left the fever hospital, and it must be considered in the main under the same heading as rheumatic heart disease, to which I now come.

### *Rheumatic Heart Disease.*

We are now confronted with some obvious difficulties. Acute rheumatism is not notifiable, and I am not prepared to advocate that it should be at the present juncture. The cause of acute rheumatism is still under dispute. Many consider the problem unsolved and the infection unknown; some look upon rheumatism as non-infective, though likely to be complicated by infections which determine the manifestation, and some believe with me that it is a definite infection and a definite disease. Whatever view we may take we shall do well, in my opinion, to look upon rheumatic heart disease as infective, for it behaves in every way like an infective lesion. It is not necessary for the purpose of prevention to commit ourselves to a specific infection, for the moment that rheumatism is admitted to be an infective process the importance of prevention is manifest.

### *Prevention Often Can be Only Partial.*

Unfortunately the prevention of rheumatic heart disease can be attained only in a modified degree, for frequently the patient has already been damaged, and the most we can do



then is to stave off further attacks. This limitation it is essential to recognize, for at present we are unable to control rheumatic heart disease with any certainty. Some may demur at this and point to the specific action of the salicylates, but the present history of rheumatic heart disease in childhood does not bring to me any conviction upon this point.

My views are humbler, and they rest upon the belief that there are some obviously weak points in our general management of rheumatic children which can be much improved. If this improvement is a practical undertaking we shall, I hold, prevent much severe heart disease and many deaths from that cause, and further make many lives more useful to the State and much happier for the individuals. I believe also that with improvement we shall incidentally learn more of the life history of infective heart disease, and very probably in the future discover as a result valuable data which may lead to further advances. It must be remembered that year by year ceaseless investigation is in progress throughout the world of medicine, which may at any moment lead to some new discovery in therapeutics.

#### DEFECTS IN MANAGEMENT OF HEART DISEASE IN CHILDHOOD.

I shall now attempt to justify the main theme of the lecture by referring to what appear to me the weak points in our present management of heart disease in childhood.

##### 1. Imperfection in Medical Education.

The first point concerns our own profession. There seems to me some difficulty in the pathways of students who desire to gain a real clinical insight into the rheumatism of childhood, and I am speaking as a clinical teacher both at a general and at a special hospital.

Except in the largest general hospital there is no great opportunity for a student during his time in the wards to see many cases of acute rheumatic carditis, and yet there is no doubt that at this age rheumatic heart disease requires unusually careful observation. In the adult the later and closing chapters of heart disease are seen with their alarming and striking symptoms; in the child the detection of dilatation, of early endocarditis and pericarditis—that is, the dawn of heart disease—requires close attention and some special teaching. I believe it to be correct if I say that no one in this audience who has worked in a London children's hospital will deny that he left the hospital with a very much clearer idea of cardiac rheumatism.

Yet no one can appreciate the gravity and difficulties of the problems involved in the dawn of infective heart disease who has not a good clinical knowledge of rheumatism—not only cardiac rheumatism—in childhood. Recently this weak point has been strengthened by the greater attention paid to children's disorders in the final examination, and it will doubtless lead to general progress.

##### 2. Public Ignorance.

A second and very important point is the lack of appreciation by the public of the gravity of heart disease in childhood. This, I think, can only be combated by simple propaganda and instruction. The medical profession would be much assisted by a better instructed public, as one example will show. We all recognize that early heart disease is often most insidious, occurring without pain or any striking symptom. So remarkable is this that we recognize a group of cases of primary cardiac rheumatism which may come first under our observation with very definite organic disease and yet with no data to guide us as to its exact commencement or duration. Even now, although I am well acquainted with these facts I get cases in the wards which astonish me by the severity of the lesions and the absence of striking symptoms. If we recognize that this is a difficulty, how much more doubtful must be the feelings of parents, who see their children lying in bed without pain or distress and are told that convalescence must be slow and carefully supervised! If, however, they recognize that the disease is caused by poisoning due to a microbe and that the poison softens the heart muscle, they are more likely to appreciate the necessary care when emphasis is also laid upon the fact that the entire future of the child depends upon the heart muscle becoming once more firm and strong.

The instructions I picture should be simple and terse, in the form of a printed leaflet, such as has been used in this hospital with success for many other purposes. It would be most effectual if they were issued from some official bureau, but even issued by hospitals, provided they were uniform in character, these leaflets would be very useful. At first they would probably only reach the parents of rheumatic children, but in due course they would doubtless find their way into the hands of many parents with children.

These are some of the instructions that appeal to me:

##### *Specimen of Instructions.*

1. Rheumatism is caused by infection by a microbe and is a frequent disease in large cities.
2. In children rheumatism often attacks the heart, and is the most frequent cause of organic heart disease.
3. Pains in the muscles and joints in children should receive attention as possible warnings of rheumatism.
4. Sore throats are often associated with acute rheumatism.
5. Rheumatic heart disease is often painless and requires a doctor's examination for its detection. Shortness of breath and pain over the heart require immediate attention.
6. The heart when injured by rheumatism recovers slowly from the poisoning, and one of the greatest dangers to a child's future is for it to resume an ordinary life before the heart is firm.
7. Chorea or St. Vitus's dance is rheumatism attacking the brain, and its chief danger is the tendency for the heart to be injured by the rheumatism at the same time.
8. Great nervousness, dreaming of school work, alteration in disposition, and slight twitchings are often seen before the chorea has become definite, and are warnings.
9. Rheumatism often recurs, especially in the spring and autumn.
10. An occupation in life for a child with heart disease requires careful choice.

Needless to say, if propaganda is employed the exact degree of information and the wording would be of the utmost importance. These headings are only some of my own ideas upon the subject. Able minds in this country would soon hit upon the best mode of instruction for the public if they once decided that it was the correct step to take.

##### 3. Chorea and School Teachers.

A group of the public whom I think should be particularly approached by propaganda and simple lectures are the school teachers in the London County Council schools. It is possible that such steps are taken already and have escaped my notice. The reason for this action is the great amount of chorea in London during the school age. Chorea being cerebral rheumatism, it seems very probable that this frequency is in part due to overstrain and lowering of the resistance of the nervous system to infection. Now if in private practice we find a boy or girl at a private or public school flagging in health and becoming irritable and unequal to school life, still more if we find warnings of chorea, we advise a term from school and mental and physical rest. Chorea certainly is very rare among such children.

Fortunately for the children in the Council schools, Sir George Newman has taken up their cause with a large body of skilled assistants, but the enormous machinery required for the education of these masses of children and the frequent ignorance in the homes from which they come must result in many children attending in indifferent health, and even until they have definite chorea.

##### *Possible Steps for the Prevention of Chorea.*

I see very clearly the extreme difficulties of coping with such a problem, in the face too of the continual tendency of parents and children to take advantage of any relaxation of discipline. Yet I believe three steps would help:

1. The education of parents as already indicated.
2. Simple lectures on rheumatism and chorea in children to the school teachers.
3. I venture to think that an investigation on a large scale by the school doctors into the frequency of chorea in London school children, and into their histories immediately before their actual breakdowns, would give the medical profession most useful assistance. We should get a definite idea of the magnitude of the evil, and all of us would learn facts which would stimulate us to warn parents to call attention to ill health more promptly.

I cannot say whether or not some of the actual methods of education at present may not be at fault, but it is quite possible that a careful inquiry into the approved routine and character of the teaching may also lead to some useful suggestions. Rheumatic children are very sensitive, and may feel the strain of some particular kind or way of instruction to an extent which is not realized. If, then, as I believe, it will be found that the incidence of chorea is



much too high in London, it is possible that educational experts confronted by the facts will be able to modify some methods without any serious upset to the general machinery. The subject of chorea is well worth most serious investigation.

The school medical officers carry out valuable work for the cardiac children, and we see many cases caught up by them and sent to us for treatment. In that direction there has been a distinct advance in preventive treatment which has already proved encouraging.

#### 4. A Weak Point in Hospital Treatment.

There is great need for the establishment of an auxiliary hospital near London to which we can send rheumatic children for their convalescence. Our hospital, for example, is needed for acute cases, but we know too well how wrong it is to nurse a child through an acute carditis and then to send it out with a heart still enfeebled by half-healed lesions to a poor home; in consequence we often keep these children for many weeks, and even then not long enough. Yet in private practice we should not dream of choosing a hospital ward in this part of London for a slow convalescence. We need auxiliary hospitals, because skilful supervision is required, and rheumatism is notoriously treacherous. It is not only fresh air and sun that I look for in these hospitals. Rest is a necessary part of the treatment of rheumatic heart disease; but blind unreasoning rest is bad—for there is no better tonic for the young heart than exercise, and convalescence from rheumatic carditis should be a history of graded exertion and not aimless rest. The auxiliary hospital can supervise these graded exercises with every hope of success. The ultimate goal is plain—it is to send the child back to its home with a heart strengthened to the level of carrying on ordinary life; and if that is unattainable to ascertain the limitations and advise the parents. In this country hospital it would be easily arranged in the grounds to have level paths and gradients of different degrees. There would be massage provided, and arrangements would be made for education. Such an institution must be linked with the parent hospitals, and it is essential that the medical officer should be enthusiastic in the cause and realize the essentially practical aim of such a hospital.

#### 5. Suitable Employments for Cardiac Cases.

In America the care of cardiac patients, which since 1911 has been organized on a large scale, embraces adults as well as the young. I am here only dealing with the young children, but it is clear that any undertaking of this kind should not end abruptly at the age of 12 or 14 years, and there is one connecting link with the adult which is obvious. It is evident that though many cases of simple dilatation completely recover, and many slight mitral lesions also leave the heart practically as strong as before, in general terms rheumatic affections tend to lessen the reserve power. There are necessarily all grades of weakness to complete invalidism, and I have already indicated that our endeavour, while cases are under medical care, should be to ascertain these limitations as far as possible. Much of this labour will, however, be wasted if no organized attempt is made to study the various adult occupations in relation to physical exertion, and to make a practical schedule which can be within reach of parents who are placing their children with damaged hearts in the world. I am not discussing an abstract problem as to whether overexertion can strain a healthy heart, but content myself with the obvious fact that a damaged heart may easily be brought to rack and ruin by an unsuitable occupation. We want to prevent as far as possible a boy with a damaged heart becoming a coal-heaver or furniture-mover, and to give the child every chance of being placed in an occupation which will be suitable to his or her cardiac powers. So far as I am aware, in London there has been no organized attempt made to prevent by some accessible information the loss of the skill, time, and money spent on children with acute rheumatism that must follow the undertaking of unsuitable occupations. The suffering, the loss of life, and loss to the State from such mistakes must be very considerable. Parents no doubt do in many cases realize the dangers. I admit, too, that "needs must when the devil drives" is an ever-present obstacle; but there still remain, I believe; many who would be greatly assisted if the impor-

ance of occupation was included in instructions to parents, and better opportunities given to these damaged but active workers to select suitable occupations. In America this has been carefully investigated, and suitable lists provided.

#### 6. A Central Office.

It would be necessary to have a special central office, in touch with hospitals and country hospitals, schools, and parents, where this information would be obtainable, together with propaganda and syllabuses of popular lectures. Looking far forward, it is my hope that eventually the study of rheumatism in its broadest sense will have a centre in London, in which research upon this great subject would be continuous. Divorced from the great hospitals such an institution would be a dead thing; but I can imagine this condition of affairs. A young investigator has decided to take up this subject, and goes with suitable testimonials to this headquarters for the necessary training in technique and knowledge of the literature. This accomplished, he receives an official introduction to the authorities at one or more of the great hospitals, by which he will be enabled to study the special cases upon which he is intent. Whether or not he worked in this or that hospital laboratory or at headquarters would be a matter of detail. The headquarters would be the centre for the arrangement of propaganda, lectures, etc., and would be in possession of the literature on the subject and be itself equipped with suitable laboratories. This control institute would eliminate one of the greatest obstacles to research in this country—the rivalry of the great hospitals. Search for the truth and the best requires no rivalries and no schools where one line of thought is obnoxious and another idolized. Research wants freedom. If I could live again and had a request to be granted, I would ask to be educated on sound lines in technique and literature and then be given opportunities to think my own thoughts and make my own mistakes. Then also a centre for continuous study is far less wasteful than sporadic efforts, which are often lost with the death of the investigator.

#### 7. Local Foci.

Among the factors in the prevention of rheumatic heart disease removal of suspected local foci has not yet been mentioned. Up to a certain point I am a believer in local foci of infection, but I am sure that we still want to know more about the behaviour of infections in the human body before we can be dogmatic upon their exact value. The most important local focus in rheumatic heart disease is most probably the tonsils, and for nearly one hundred and fifty years the clinical importance of tonsillitis in relation to acute rheumatism has been recognized by physicians who have paid much attention to the disease. The following is a short account of the first complete observation that showed this suspicion to be correct.

A man, aged 28, came to hospital in June, 1900, suffering from acute tonsillitis, pains in the limbs, and mitral and aortic disease with dilatation and an excited action of the heart. There was a history of previous attacks of rheumatism.

Dr. A. Paine made a culture from the inflamed tonsils in the acid milk medium we used, and twenty-four hours later a minute strepto-diplococcus in association with other micrococci had grown in the tube. These were plated out on fresh blood agar and the diplococcus isolated. This, injected intravenously into a rabbit, produced acute carditis with endocarditis of the aortic and mitral valves, and the same diplococcus was isolated from these lesions in pure culture.

Even if the conclusions from this investigation are not pushed thoroughly home, it is apparent that from a case of acute rheumatism with heart disease a strepto-diplococcus, isolated by plating from the inflamed tonsils, determined an acute carditis, even to the point of reproducing similar valvular lesions. This result, coupled with later ones from chronic tonsillitis in children and supported by the researches of Fritz Meyer in 1901, when added to the long history of clinical observations laid the foundation of the view of the infective focus which has now such far-reaching application in rheumatic affections.

Nevertheless, caution is required in pressing this point too far, for removal of the tonsils, as is now well known, does not prevent further attacks, though I have no doubt in my mind that unhealthy tonsils should be removed in rheumatic children. It would be, in my opinion, a mistake to suggest the wholesale removal of tonsils in rheumatic children and



the United States and have been so wisely utilized there, it can hardly be doubted that a considerable economic saving would accrue to the community, while to the individual patient there would be given that truest source of happiness—the increased power of exercising an activity.

For much of the information in this paper I am indebted to the kindness of the Secretary (Miss M. L. Woughter) of the Society for the Relief and Prevention of Heart Disease, 370, Seventh Avenue, New York.

## ACUTE PAN-SINUSITIS: A SEVERE CASE.

BY

SIR STCLAIR THOMSON, M.D., F.R.C.P.LOND.,  
F.R.C.S.ENG.,

PROFESSOR OF LARYNGOLOGY AND SURGEON FOR DISEASES OF THE  
NOSE AND THROAT IN KING'S COLLEGE HOSPITAL.

MANY cases of acute suppuration in the accessory sinuses of the nose never apply for treatment, the majority being looked upon as merely part of a severe "cold in the head." Of those that do come under observation some are never diagnosed, and in others the original infection is overlooked or forgotten by the greater claim of the secondary infection to which it may have given origin.

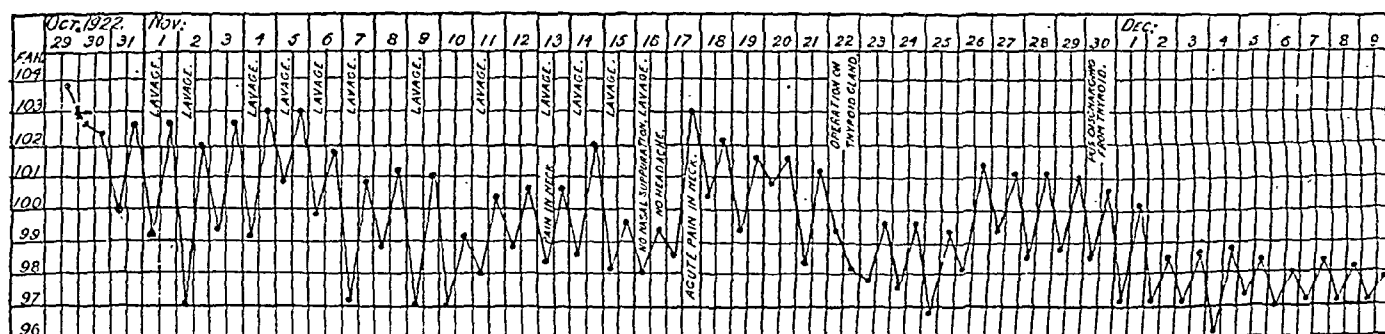
This helps to explain why many illnesses are dated, both by the public and the profession, from "a cold" or "chill." This head-cold, in such cases, may have been the primary infection, causing a sinusitis from which originated (a) symptoms in the neighbouring region (pharynx, eyes, ears, head,

Inhalations of menthol steam were frequently given. The expelled pus, examined bacteriologically by Dr. E. Burnet, produced a growth of staphylococci, streptococci, and pneumococci.

The flow of pus from the region of the frontal sinuses soon diminished and frontal headache ceased; the suppuration from the maxillary sinuses persisted, in spite of lavage; but the most persistent discharge and headache came from the sphenoidal sinuses. The sphenoidal sinusitis not only produced a bilateral parietal headache, but a still more intense ache in the typical situation of the occipital region and nape of the neck. Here the headache was so acute that we were very glad to have the opinion of Dr. Farquhar Buzzard. The sinusitis had persisted for nearly three weeks when he saw the case on November 13th. He decided that there was no invasion of the central nervous system.

During this long-drawn-out suppuration Dr. Giordani and I had been keeping a careful watch for secondary infections, but the eyes, ears, throat, lungs, heart, kidneys, and digestive tract remained unaffected. About the twentieth day the patient complained of pain on the right side of his neck, and we found the thyroid gland swollen and tender. This proved to be the beginning of the only secondary infection which the patient developed.

On November 19th—the twenty-fifth day of illness—both maxillary sinuses were lavaged and found quite clear; there was only a trace of muco-pus from the sphenoids; the headache had disappeared and the temperature was round about 99°. But the pain and swelling in the neck persisted; the temperature rose again in a few days to 103°, and, although



face), or (b) in more distant organs (lower respiratory and digestive tract), or (c) interference with general health (simulating typhoid, malaria, neurasthenia, etc.). Doubtless many a bronchitis or pneumonia, beginning with a "cold in the head," has owed its infection to pus in an accessory sinus.

It is quite uncommon for an acute sinusitis to run a course of any length without some secondary infection becoming the predominant disease. I have published two of my own cases of sphenoidal sinusitis in which death resulted with cerebral and ophthalmic complications, together with forty other cases recorded in literature.<sup>1</sup> All these forty-two cases were verified by a *post-mortem* examination.

But it is so uncommon for a sinusitis to remain acute for any length of time, without secondary infections, that I think it might be interesting to record the most severe and persistent case I have ever met with. The temperature chart alone indicates the length and severity of the resulting illness. The only complication was the rare one of an acute thyroiditis, and this did not develop until the third week of the sinusitis. (See chart.)

On October 31st, 1922, I was called by Dr. Giordani to see a foreign diplomatist. For four days previously his temperature had been raised, reaching even 104°. He looked very ill, complained bitterly of his headache, chiefly frontal, and was sweating freely. There was copious pus in both nostrils; all the sinuses were involved. The maxillary sinuses were lavaged and abundant pus expelled.

This lavage had to be repeated twelve times in sixteen days before the maxillary sinuses cleared. During this time the inflammation in the cavities was so acute that on certain occasions the abundant and clotted pus was uniformly pinkish. Discharge from the sphenoidal sinuses was encouraged by local applications of cocaine and adrenalin.

there was no definite suppuration, Mr. Legg, who had been called in consultation, thought it well to cut down and examine the thyroid gland. This was done on November 22nd—nine days after the first symptoms referable to the neck and in the fourth week of the sinusitis. The right lobe of the thyroid gland having been exposed through a transverse incision, punctures were made in various directions and the gland explored with forceps and dissector—but no pus was found. During the operation it was remarked that the connective tissues of the region were oedematous and the veins very distended. Two drainage tubes were left in place; local symptoms (pain and swelling) improved next day, and a week later pus began to escape from one tube and continued for a week, with a normal temperature (see chart). Cultures gave the same organisms as had been found in the nasal suppuration. The left lobe of the thyroid enlarged for a week—just as the right lobe was subsiding—but it caused no pain and went down in a few days.

On December 2nd, five weeks after I had first seen him, the patient was convalescent, but it was not until the end of January that he was able to come to my study for examination. Except for a little fistula in his neck no local symptoms of his severe illness remained. There was no trace of pus in his nose or throat, and transillumination of the formerly opaque maxillary sinuses showed that they were quite clear.

Although organically sound he was looking very shaky, and no wonder, for he had been a very sick man for three whole months. This prolonged illness, entailing fever, severe pain, and insomnia, had all resulted from an acute pan-sinusitis. Complications had, I believe, been averted because the case was diagnosed early and treated seriously. The local treatment has been described. The regular lavage



of the maxillary sinuses prevented stagnation in these cavities and its consequent back-pressure and reinfection of the deeper sinuses. The frontal sinuses drained spontaneously and were the first to clear. The drainage from the sphenoidal sinuses was encouraged by daily, or twice daily, introduction of strips of gauze (between the middle turbinal and septum) soaked in equal parts of 5 per cent. cocaine and adrenaline. I was very glad that I had refrained from any operative treatment on these deeper cavities. The traumatism entailed might only—in such an acute infection, and in the narrow and sensitive nose—have resulted in further blockage to the outflow and might possibly have spread infection to other areas through the blood or lymph streams. Pain, insomnia, fever, and other symptoms were treated on general principles. Local warmth (by woollen nightcap and radiant heat) gave relief.

I have never seen a fatal case resulting directly from acute sinusitis, diagnosed in good time, and treated on the lines described in this paper. In the two fatal cases of sphenoidal sinusitis which I have referred to, secondary infection of the meninges or cavernous sinus had developed before the patients came under observation.

The care taken of the present case was successful in fending off all complications, except the curious acute thyroiditis. This, I imagine, was an infection via the lymphatics, from the pharynx or tonsil, due to the pus descending from the sphenoidal sinuses.

The moral I venture to draw from this case is that all cases of acute sinusitis should be regarded with much more consideration than they generally receive. If carefully treated there are very few which would not recover completely. Most of the chronic cases seen in practice and requiring operative treatment commenced originally as acute cases. Had they then been treated carefully, they would not have drifted into the chronic infections which entail so much ill health and often demand prolonged attention and sometimes anxious operative measures.

The treatment of acute sinusitis is largely in the hands of the family physician. Except for exploratory puncture and lavage of the maxillary sinuses, operative treatment is rarely called for in an acute case.

## REFERENCE.

\* *Transactions of the Medical Society of London*, vol. xxix, 1905.

## OPTIC NEURITIS OF SPHENOIDAL SINUS ORIGIN: OPERATION: CURE.

(With Special Plate.)

BY

SIR STCLAIR THOMSON.

THERE are various causes of retrobulbar neuritis. I am able to give a very full report of a case in which the onset of this affection was rapid and the cause was undoubtedly suppuration in the sphenoidal sinuses.

*Previous History.*—A young man of 24 reported that, as a boy, he had worn glasses, but that on joining the army, during the war, he was told that glasses were not necessary. He served for three years in the army, chiefly on the Italian front, and during his service he developed a yellow-green post-nasal catarrh with occasional cacosmia. After demobilization in 1919 he noticed that he had more need of handkerchiefs and had to

the left sphenoidal sinus, owing to the prominence of the middle turbinal. There were numerous carious teeth, and the patient was at once sent to Mr. W. Hern for attention to them.

*Ophthalmic Report.*—On the same day he was examined by Mr. Treacher Collins, who reported as follows:

"Has had aching pain in left eye for three days, which then ceased. Eyeball still tender to pressure, but not so much so as at first. Experiences sharp pain on movement of his left eye upwards. Vision of right 6/9 partly; -1 cyl. 120°=6/6; 1 letter. Left 6/60 unimproved. Left pupil acts to light but does not maintain contraction 'hippus.' Ophthalmic examination shows marked swelling of the left optic disc, blurring of its margins, and obscuration of retinal vessels. The swelling of the disc = 6 D. Right optic disc normal. Field of vision in left eye somewhat contracted up and in (vide Chart 1)."

## Treatment.

The same evening the patient entered a nursing home, where he was given radiant heat baths to his head, for twenty minutes three times a day, with steam inhalations of menthol and eucalyptus every two hours, and a few doses of aspirin. The

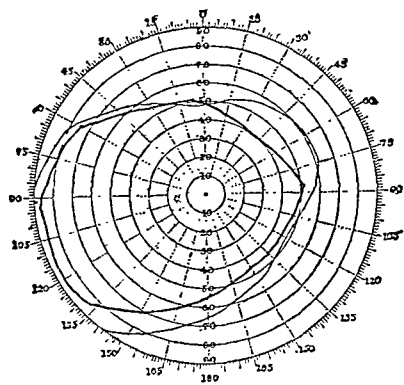


CHART 1.—Optic neuritis of sphenoidal sinus origin. November 28th, 1922.

wash his nose out. When fatigued he was subject to headache over the left eye.

*Sudden Onset.*—On November 20th, 1922, while on business in Germany, he felt depressed all day, and in the evening was surprised to find that he could not see anything clearly from the left eye. He consulted Professor Römer of Bonn on November 23rd, who found that there was inflammation of the optic nerve of the left eye, negative Wassermann reaction, and that an x-ray photograph showed some opacity of the accessory sinuses. A written report advised that the trouble was serious and threatened the eyesight, and that it was a question for a rhinologist whether the condition would abate with conservative treatment or require operation on the sinuses.

*Nasal Condition.*—On November 28th I found pus on the floor of each nostril and the roof of each choana. Exploratory lavage of the maxillary sinuses showed them to be clear. X-ray examination by Mr. Coldwell revealed marked obscuration of the frontal and sphenoidal sinuses. It was impossible to catheterize

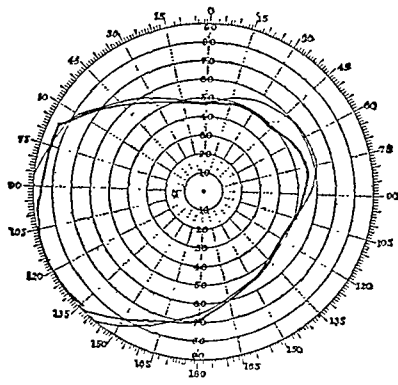


CHART 2.—Optic neuritis of sphenoidal sinus origin. February 17th, 1923.

left eye was kept covered so as to exclude all light. This treatment was continued for three days, but, as there was no improvement in his eyesight, I proceeded to operate on the sphenoidal sinuses on December 2nd.

*Operation.*—The area of the nose was prepared half an hour beforehand with strips of ribbon gauze soaked in equal parts of 5 per cent. cocaine and adrenaline, and tucked in between the middle turbinal and the septum. This rendered the nose so ischaemic that, when placed under a general anaesthetic, it was not difficult to introduce Killian's long duck-billed speculum between the septum and the middle turbinal, so as to snap and prise outward the latter body. This proceeding avoided the removal of a healthy and useful middle turbinal, with the traumatism attendant on its amputation. The ostium of each sphenoidal sinus was then well opened with punch forceps.

*Immediate Results.*—Four days were allowed to elapse for the nose to recover from the inevitable reaction. During this time there was no change in the eyesight, although the treatment



by radiant heat, steam inhalations, and rest was continued. On December 6th both sphenoidal sinuses were washed out with warm normal saline, and the patient at once noticed a remarkable improvement in his vision. Two days afterwards Mr. Treacher Collins reported:

"Vision of left eye = 6/18. Still much swelling of the optic disc. White lines in the retina to the outer side of the optic disc."

**Progress.**—Daily lavage of both sinuses was continued, clotted yellow pus being expelled. On December 20th the radiant heat baths were given up; the patient was sent out into the fresh air, and the washing of the sinuses was continued every two or three days. The discharge was examined bacteriologically and reported to contain—

"a large number of Gram-negative bacilli with a small number of cocci and diphtheroid bacilli. On culture these proved to be the pneumobacillus of Friedländer, *Staphylococcus aureus*, and a diphtheroid bacillus of the Hoffmann type."

Progress was continuous. By January 2nd Mr. Treacher Collins reported:

"Vision of left eye = 6/9 partly. Swelling of optic disc = 1.5 D. Two white dots now only seen in retina."

By January 16th he thought the swelling of the disc was less, and no retinal changes.

**Cure.**—By February 17th his report was as follows:

"Vision of his left eye is now better than that of his right. With -0.5 cyl. 90° he sees part of 6/6 and reads J.1 fluently. His field of vision shows only very slight contraction up and in (vide Chart 2). The swelling of the optic disc has subsided, but it still presents rather ill-defined margins, and has a filled-in appearance, no sign of physiological cup showing. The retina is quite clear."

The sphenoidal cavities had been washed out at decreasing intervals, and their interior had occasionally been painted with 25 per cent. argyrol. All suppuration in them has now ceased; the greenish-yellow post-nasal discharge has disappeared, and, as a result, the patient has gained in weight and feels better than he has done since the war.

In 1906 I published two cases in which I was able to demonstrate by *post-mortem* examination that ophthalmic complications (hazy discs and diplopia in one, with optic neuritis and complete ophthalmoplegia in the other) were due to suppuration in the sphenoidal sinuses.<sup>1</sup> This led me to a study of the literature of the subject, and I was surprised to find no fewer than forty other cases in which it had been shown by *post-mortem* examination that sphenoidal sinusitis had been the cause of cerebral death. Many of these cases had been accompanied by orbital or ophthalmic symptoms, and changes in the fundus had been noted in half of them. Fortified by this research I ventured to urge that "in all cases of apparently inexplicable retinitis, papillitis, and optic atrophy the nose requires exploration."

In the eighteen years which have since elapsed I have had a good many cases referred to me. In the majority, I must confess, I found no symptoms of suppuration in the sphenoidal or other accessory sinuses to explain fundus changes. On the other hand, in cases of affection of the orbit (so-called "orbital phlegmon," unilateral proptosis, etc.) the *causa causans* could, in the large majority of cases, be found in the nose or its accessory sinuses.<sup>2</sup> This led to my forming the opinion that while the nose was frequently the source of orbital affections, yet retinitis, papillitis, and optic atrophy were only rarely caused by sepsis in the accessory sinuses. In this opinion I was confirmed by certain cases of retrobulbar neuritis in which I opened the sphenoidal sinuses and found them free from suppuration. The observation that, in many of these cases, the neuritis disappeared only made me think that the cause of it must have been elsewhere. I did not think of claiming the cure as a consequence of opening a healthy sinus.

But, lately, other views have been put forward. It is now held that "the mere presence of pus in the sinuses may undoubtedly be the cause in some instances, but is by no means the usual or only one"; that "in only a small percentage of cases has pus been found"; and that "deflected septa with crowding of the chronically enlarged middle turbinate are the most usual findings."<sup>3</sup> We are even assured that "poor ventilation and faulty drainage are all important predisposing factors," and that "it is futile to longer believe purulent sinus disease the one and only etiological factor."<sup>4</sup> Quite recently nine cases of retrobulbar neuritis were treated by sphenoidal drainage.

In only one case (sixteen months' duration) no improvement had resulted. Yet in only two out of these nine cases was pus found.<sup>5</sup>

These and similar records would seem to warrant the exploratory opening of the sphenoidal sinuses in cases of retrobulbar neuritis, even in the absence of evidence of suppuration in these cavities or the neighbouring ethmoidal cells—when no other cause for the retinitis can be found, and the patient is threatened with blindness.

To suggest the opening of healthy accessory sinuses is a doctrine not altogether free from danger. I have been associated with cases of retrobulbar neuritis which recovered without operation on an accessory sinus and without any definite diagnosis of the cause of the condition. I would like to learn more of the disease from ophthalmologists and to hear from them what is the usual prospect of recovery. It seems a subject very suitable for a joint discussion from this point of view.

In any case, there can be no question as to our duty in opening and draining suppurating sphenoidal sinuses when associated with optic atrophy. In the case reported above operation was strongly recommended by two distinguished ophthalmic surgeons, and it had a double benefit—it averted blindness, and cured the patient of a chronic suppuration which had been poisoning him for some years.

#### REFERENCES.

- <sup>1</sup> Cerebral and Ophthalmic Complications in Sphenoidal Sinusitis, *Trans. Med. Soc. London*, xxix, 1906, and *BRITISH MEDICAL JOURNAL*, September 25th, 1906, p. 768.
- <sup>2</sup> St. Clair Thomson: The Frequency of Orbital Manifestations of Nasal Sinusitis, *The Ophthalmoscope*, April, 1908.
- <sup>3</sup> Leon E. White: Aeration of the Posterior Accessory Sinuses in Acute Optic Neuritis, *The Laryngoscope*, xxxii, May, 1922, p. 382.
- <sup>4</sup> *Idem*, *ibid.*, June, No. 6, p. 439.
- <sup>5</sup> Gavin Young: *Journ. of Laryngology*, December, 1922, and April, 1923.

## CYST OF THE RIGHT SUPRARENAL CAPSULE REMOVED BY OPERATION.

BY

SIR HAMILTON A. BALLANCE, K.B.E., C.B.,  
M.S., F.R.C.S.,

SURGEON, NORFOLK AND NORWICH HOSPITAL.

(With Special Plate.)

AN operation for the removal of a cyst of the suprarenal capsule is a rare procedure, and a cyst of this organ large enough to produce pressure symptoms is very uncommon; the following case, therefore, seems worth recording.

In August, 1921, I saw, with Dr. Wortley Quait of Mundesley and Dr. Burton-Fanning of Norwich, a lady, aged 49, who for many years had suffered from "indigestion." The trouble had been much worse for the last five years and was mainly characterized by pain in the back passing round the waist to the epigastrium. The pain had no relation to meals, and would often come on at night, when a little food would bring relief. Of late the diet had chiefly consisted of fish and milk foods, and there had been much flatulence and some loss of weight. The patient had been back wards and forwards between this country and the tropics for twenty years, and often when abroad she would be quite free from indigestion troubles for six months at a time. For the last six weeks there had been frequent vomiting, but a week might pass without any sickness, and after such an interval the patient would bring up a considerable quantity. There had never been hæmatemesis. Constipation had been very troublesome. The stomach was seen to be distended and visible peristalsis was present; there was no tenderness anywhere and no tumour could be felt. An x-ray examination showed that even after eight and a half hours a bismuth feed had not entirely left the stomach.

#### First Operation.

The abdomen was opened and an old ulcer of the first part of the duodenum, just beyond the pylorus, almost encircling the bowel and narrowing it, was found. The stomach was dilated and hypertrophied. A posterior gastro-jejunostomy was performed and the appendix removed. The gall bladder was healthy.

During the examination of the abdominal contents a large cystic tumour was found in the right hypochondrium occupying the cavity of the diaphragm and pushing the liver to the left and downwards, so that the gall bladder was in the middle line of the body and the edge of the right lobe of the liver on the level of the umbilicus. The kidney was displaced downwards, but the cyst was only slightly attached to the upper pole of this organ. At the conclusion of the gastro-jejunostomy it was deemed advisable to defer the removal of the cyst, and the abdominal wound was therefore closed. The patient made a satisfactory recovery from the operation, and examination of the right side of the abdomen a few weeks later did not reveal any abnormal swelling.



SIR STCLAIR THOMSON: OPTIC NEURITIS OF SPHENOIDAL SINUS ORIGIN.



Skiagram showing condition of sphenoidal sinus before operation. Inset: Sketch showing the relation of the parts. T, Sella turcica. S, Sphenoidal sinus. E, Perpendicular plate of the ethmoid.



SIR HAMILTON A. BALLANCE: CYST OF RIGHT SUPRARENAL CAPSULE REMOVED BY OPERATION.



Fig. 1.—Cyst as seen from the front. The yellow nodules described in the text are seen scattered over the cyst wall, and some of them are marked with crosses. The main mass of the suprarenal capsule is at the upper part of the photograph on the left side.

Fig. 2.—Section of cyst wall, low power. There is a layer of fibrous tissue on the outer and inner sides of the section. In the outer half of the wall are seen the glandular cell elements. The inner surface of the cyst at the bottom of the photograph is lined by a layer of flattened cells. Blood vessels are seen cut across in the wall of the cyst.

Fig. 3.—Section of portion of the cyst wall under a high power, showing adrenal cells; many have degenerated.

SIR G. LENTHIAL CHEATLE: EARLY AND CURABLE DISEASE OF THE BREAST.



Fig. 1.—Photograph of a plugged mammary duct outlet. A is a sebaceous island, the duct of which can be seen opening into the mammary duct outlet. At is another sebaceous gland. B marks the opening of the duct outlet on the surface of the nipple. C is the duct opening into its subject; the lumen of the duct is clearly seen to be quite patent.

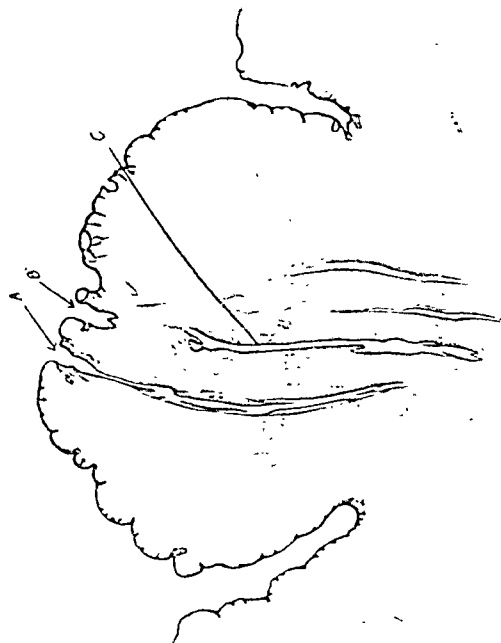


Fig. 2.—A lower power drawing from a section showing a mammary duct A, and its outlet on the surface of the nipple. Sebaceous glands are opening into the duct outlet. There is here seen to be a perfectly clear pathway for many kinds of irritating agents. The dilatation at the outlet is normal. B shows another outlet to the subjacent duct C.



in the right hypochondrium. The cyst appeared to be wholly in the hollow of the diaphragm and could not be felt below the costal margin during inspiration.

#### Second Operation.

Three months later the patient was again seen, as she had been complaining of distension and sense of pressure in the right loin, and by this time the right side of the abdomen was distinctly fuller than the left and dull on percussion. A large, smooth, ill-defined swelling could just be detected coming down from under the right costal margin on inspiration, and the right kidney could be felt in the iliac fossa.

With the patient on the left side an incision was made below the twelfth rib and the cyst exposed. To assist in its removal it was tapped, and was then peeled off from the surrounding tissues, to some of which, notably the peritoneum and the tissues in the neighbourhood of the vertebral bodies, it was very adherent, so that enucleation took a considerable time. The cyst separated easily from the kidney and it was not adherent to the liver. A very large cavity was left, occupying the arch of the diaphragm behind the peritoneum, which was not opened. Temporary drainage was allowed for and the rest of the wound closed.

Convalescence was uninterrupted, but at the second operation it was felt that, in view of the very firm adhesions of the cyst wall to its surroundings, it was fortunate that the removal of the cyst had not been attempted at the time of the gastro-jejunostomy.

#### Examination of the Cyst and its Contents.

The cyst contained two and a half pints of thin, amber-coloured, odourless, turbid fluid, which was neutral in reaction and became solid on boiling owing to its albuminous contents. It was estimated that the cyst, before tapping, measured 9 by 6 inches; the wall varied in thickness from one-eighth of an inch to that of a sheet of writing paper. The outer surface was smooth except where the adhesions had been dense, and irregularly distributed on the surface, especially over the lower part of the cyst, were slightly raised yellow nodules varying in size from a quarter to a sixteenth of an inch, which can be seen in the photograph (Special Plate, Fig. 1). Similar nodules have been noticed on cysts of the suprarenal capsule removed by other surgeons.

The inner surface was rather rough, yellowish-pink in colour, and, in places, covered with a white sebaceous-looking material. Some of the fluid from the cyst was forwarded to the Clinical Research Association so that it might be tested for adrenaline. The report received was as follows:

"We have carried out the only tests which, as far as we can ascertain, will assist in confirming the epinephric origin of the cyst. Chemically, the phosphotungstic acid test gives a faintly positive reaction for adrenaline. A similar positive might be given by uric acid. But by other tests both this substance and urea have been proved absent.

"The physiological tests (ciliary reaction and direct application under the microscope to the vessels of the mesentery of a pithed frog) both give a definitely, if weakly, positive reaction when the fluid is used. There is, in both instances, a specific sympathetic stimulation evidently due to some constituent of the fluid. As controls in these last experiments normal saline and a 1 in 5,000 solution of adrenaline were used, and we think there is considerable evidence that adrenaline is present in small amount of the cyst fluid. There are no cytological abnormalities, a few leucocytes and very occasional red blood cells only being present."

Sections of the cyst wall were made through some of the yellow nodules, and I am greatly indebted to Dr. Donald Hutchinson of Lowestoft for the beautiful microphotographs here reproduced. The section of the cyst wall under a low power (Fig. 2) shows adrenal cortical cells embedded in its outer half. There is a fibrous layer in the cyst wall externally and internally, and the inner surface is lined by a layer of flattened cells. The high power (Fig. 3) shows that many of the glandular elements in the cyst wall have degenerated.

Doran, in 1908, described a case of cyst of the left suprarenal capsule, in a woman of 62, which he removed by operation. The tumour was over 4 inches in diameter and contained about half a pint of thick blood-stained fluid. The specimen is in the Royal College of Surgeons Museum, where one or two similar specimens can be seen. He gives references to cases recorded in literature up to that date; further references are found at the end of this paper.

The size of these cysts varies considerably: Rolleston described one of the size of a cherry, and in Hartwell's case three quarts of dark reddish-brown fluid were removed.

#### PATHOLOGY.

Much has been written as to the true nature of cysts of the suprarenal: cystic adenomata, glandular cysts, serous and lymphangiomatic cysts, cysts depending for their origin on a primary haemorrhage into the gland (pseudocysts) have all been described. Terrier and Lecène give a useful classification in their paper. It is difficult to be positive as to the exact method of origin of the majority of these cysts as, when removed, they are often of large size.

Unless haemorrhage takes place into adrenal cysts in the course of their growth, the fluid will be found to be of an amber colour, as in the present instance; but, according to the records, haemorrhage occurs very frequently as these cysts increase in size, and this accounts for the dark reddish-brown contents usually found. Partly decolorized clots are often found adherent to the inner surface of the cyst. Haemorrhages into the adrenals have been found in the newborn, and Beadles has described extensive haemorrhages into these glands among inmates of asylums. Cysts of the suprarenal are found in the lower animals. It is well known that persons can remain in apparent good health in spite of the loss of one suprarenal capsule.

#### SYMPTOMS.

Unless haemorrhage occurs into a suprarenal cyst it may grow until it reaches a considerable size before giving rise to any symptoms which cause a patient to seek advice. There may be only a sense of fullness in the side or vague dyspeptic symptoms without any pain; but, if haemorrhage takes place, then pain may be very severe and the patient may become seriously ill. The rate of growth may be very slow unless haemorrhages recur.

#### DIAGNOSIS.

These cysts are most likely to be confused with tumours or enlargements of the kidney. It is remarkable how they tend to remain under cover of the costal margin in the hollow of the diaphragm until of large size, when they may be detected by palpation during inspiration. The kidney may often be felt below the cyst and then the diagnosis is much less difficult. Mobility from side to side is greater than from above down, and, as the cyst enlarges, it pushes the kidney downwards. A right-sided cyst pushes the liver towards the left; a left-sided one displaces the spleen and the tail of the pancreas. The size of the suprarenal may be so large as to extend across the abdomen to beyond the middle line and to reach downwards to the anterior superior iliac spine; the colon is pushed forwards, and the lower ribs may be bulged outwards. A hydatid cyst of the left lobe of the liver should be easily diagnosed from a right-sided adrenal cyst. One of the right lobe may cause great difficulty in diagnosis unless suppuration in the hydatid occurs, when other symptoms may arise which will make the diagnosis clear. A hydatid cyst of the spleen is much more mobile than a left-sided adrenal cyst. A pancreatic cyst is usually more centrally placed in the abdomen, and pathological examinations of the urine and faeces should aid the differential diagnosis.

#### TREATMENT.

Complete removal of the cyst is the right treatment to adopt and can usually be carried out. Some surgeons have explored these cysts through an incision in the rectus muscle or through one parallel to the costal margin. Difficulty has then been experienced in detaching the cyst wall from the structures in the neighbourhood of the spine, where it is usually most adherent. In these circumstances, after the removal of the anterior portion of the cyst wall, an attempt has been made to drain the posterior part through the anterior incision, with, in some cases, disastrous results because the attachment of the cyst to the edges of the incision has broken away.

Most surgeons who have tried a lumbar incision below the twelfth rib, as used for exploration of the kidney, have been quite satisfied with it, and I would suggest that it is the best to use. It can be extended forwards as far as necessary and, if thought desirable, the twelfth rib can be removed, as is not infrequently done in the course of a difficult kidney operation.

Evacuation of the cyst materially assists enucleation, and the lumbar incision then gives ample room and a full view during the dissecting away of the deeper portion of the cyst wall, which is the part of the operation where serious difficulty may be encountered.

Further, if for any unforeseen reason, such as dense adhesion to very important structures, or a sudden serious



condition of the patient, the deepest part of the cyst wall cannot be removed, then drainage through a lumbar incision presents no difficulty.

## BIBLIOGRAPHY.

- Doran: *Proc. Roy. Soc. Med.*, 1907-8, i, Surg., p. 201.  
 Hartwell: *Annals of Surgery*, 1909, xlix, p. 125.  
 Hedinger: *Ztschr. f. Path.*, Frankfurt, 1911, vii, p. 112.  
 Pacinatti: *Gazz. d. Osped.*, Milano, 1908, xxix, p. 847.  
 Potherat et Chambard: *Bull. et Mém. Soc. de Chir. de Paris*, 1903, p. 1187.  
 Rolleston: *Trans. Path. Soc. Lond.*, 1898-99, i, p. 214.  
 Pearce: *Trans. West. Surg. Assoc. Minneapolis*, 1916, xxvi, p. 329.  
 Major and Black: *Amer. Journ. Med. Sci.*, 1918, clvi, p. 459.  
 Ausenda: *Osp. Maggiore*, Milano, 1919, vii, p. 191.

## EARLY AND CURABLE DISEASE OF THE BREAST.

BY

SIR G. LENTHAL CHEATLE, K.C.B., C.V.O., F.R.C.S.,  
SURGEON AND LECTURER IN SURGERY, KING'S COLLEGE HOSPITAL.

(With Special Plate.)

SINCE the publication of my article on the proemial breast in the *BRITISH MEDICAL JOURNAL* of June 3rd, 1922,\* I have gained valuable information on the interpretation placed upon it by many of my readers. They have asked whether the breasts of patients whom they have sent to me were in what I termed the proemial state. From them I have been able to select instances of diseased breasts in stages which, under proper treatment, can be saved from becoming examples of the established proemial condition.

The most typical conditions of an early and curable disease are exemplified in one of my own patients. She was 26 years old, single, by occupation a saleswoman. At the time of the consultation her tongue, teeth, tonsils, bowels, and urine were normal. The breast had not been injured by a blow, and her stays were not high enough to touch it in any position which she assumed. The left breast was normal. She had complained of pain in the upper and outer segment of the right breast for three and a half months; the pain was increased at the time of her periods.

Palpation revealed an irregularly swollen duct which could be traced from the ampulla in the areola region to the part towards the periphery, where the gland was more tender than elsewhere. On observation of the nipple three minute raised yellowish dry spots could be seen, situated at the upper and outer margin of the nipple, and I concluded that probably one of them was the exit of the duct which belonged to the affected segment of the breast. I believed them to be points of exit of ducts which were plugged with dry epithelium and excretions, either from the breast or from the sebaceous glands which open into the outlet of the duct (Special Plate, Fig. 1). Acting on this belief I advised the woman to carry her arm in a sling and to put hot fomentations on the breast; but the most important part of my treatment was to make sure that she constantly soaked the nipple with hot sterilized water applied with cotton-wool. This treatment was continued for fourteen days until the plug in the outlet of each duct was macerated enough to enable me to remove it by wiping away the film that covered it, and by gentle pressure to squeeze it out. In two months the breast gradually became normal. I then advised her to keep the nipples clean always, by means of the same process, and to avoid all kinds of soap, powder, methylated spirit, hydrogen peroxide, and so on, for fear of irritating or plugging afresh the outlets. If soap be not properly washed away it dries and cakes and fills the outlet. In addition to this it must be realized that soaps are irritating and some brands more so than others.

My interpretation of the state of affairs in this woman's breast was as follows. The presence of the plug was detrimental in many possible respects—for instance, as an irritant it might have encouraged the local action of non-virulent micro-organisms upon the epithelial lining of the duct outlet, and in consequence the whole duct might have suffered a mild infection, or the products of a mild infection might have been disseminated in the same directions. The observations of Mr. A. J. Walton in 1914 and 1915<sup>1</sup> and those of Dr. A. H. Drew<sup>2</sup> suggest another possible explanation—that the products of epithelial irritation created by the plug in

the duct outlet caused changes in the epithelium throughout the distribution of the duct and acini. My belief is that the change was probably a desquamative hyperplasia of epithelium which distended this duct and caused the woman pain. I further believe that similar treatment applied to the breast in this early stage of disease will prevent it from becoming an established proemial breast. Thus the prevention of disease in the care of the breast can be taken a step further back than the proemial state.

Many authorities seem able to connect changes in a sebaceous gland with plugging at the outlet of its duct, but do not seem able to connect changes in the breast with a plugged outlet of a mammary duct. I do not understand why there should be this difference, and it is all the more incomprehensible when it is realized that many sebaceous ducts open into the outlets of a mammary duct (Fig. 2), so that any detrimental discharge from these sebaceous glands would open direct into the mammary duct at this point. In addition to this anatomical feature, there is this fact: in a previous article on cysts and primary cancer in cysts of the breast,<sup>3</sup> I pointed out the consummate case with which foreign material is distributed throughout the ducts of the breast when once entrance be gained. Further, to show what a definite pathway for entrance there is, I draw attention to the anatomical section in Fig. 2, which shows a complete duct in the nipple and the outlet on the surface. The duct lumen is seen distinctly throughout its course. The duct widens at its outlet, into which enter the openings of many sebaceous glands. To all intents and purposes each duct system of the breast may be regarded as a separate gland. This notion may create a doubt in the minds of those authorities to whom I have alluded.

It is essential that women should keep these duct outlets free from plugs. I say this for another reason: I have in my possession whole sections of a breast affected with the earliest Paget's disease of the nipple I have seen. Only half the top of the nipple is affected by the disease. There is no carcinoma in the deeper parts of the breast. The main focus of the disease is in a plugged duct outlet, from which the process is spreading into the duct and on to the surface of the nipple. Epithelial cells are invading deeper tissues and have entered lymphatic vessels. It is a typical case of Paget's disease of the nipple, and this section, together with many other reasons, convince me that Paget's disease of the nipple is carcinoma from the beginning. This is another investigation, on the writing of which I am at present engaged. I mention it here to emphasize the importance of keeping duct outlets clean and free from irritating agents.

## REFERENCES.

- <sup>1</sup> Variations in the Growth of Adult Mammalian Tissue in Autogenous and Homogenous Plasma, *Proc. Roy. Soc., B*, vol. 87, 1914. On the Variation in the Growth of Mammalian Tissue *in vitro* according to the Age of the Animal, *Proc. Roy. Soc., B*, vol. 88, 1915. The Artificial Production in Mammalian Plasma of Substances inhibitory to the Growth of Cells, *Journ. Exper. Med.*, August 1st, 1915, vol. xxii. The Technique of Cultivating Adult Animal Tissues *in vitro* and the Characteristics of such Cultivations, *Journ. of Path. and Bact.*, vol. xviii, 1914. On the Survival and Transplantability of Adult Mammalian Tissue in Simple Plasma, *Journ. Exper. Med.*, vol. xix, No. 2, 1914. The Effect of Various Tissue Extracts upon the Growth of Adult Mammalian Cells *in vitro*, *Journ. Exper. Med.*, vol. xx, No. 6, 1914.  
<sup>2</sup> Three Lectures by Dr. A. H. Drew on the Cultivation of Tissues and Tumours *in vitro*, Lectures II and III, *Lancet*, April 28th, 1923.  
<sup>3</sup> *British Journal of Surgery*, vol. viii, No. 30, 1920, Figure 113.

## POLYTHELIA.

BY

R. DOUGLAS HOWAT, L.R.C.P., L.R.C.S. EDIN.,  
L.R.F.P.S. GLAS.

CASES of polymastia (supernumerary breasts) are not uncommon. Goldberger<sup>1</sup> makes mention of some 262 such cases. Williams (Baltimore)<sup>2</sup> says: "Probably one in every few hundred women has one or more accessory breasts," and points out that the condition is usually regarded as an atavistic reversion, though it is not associated with any increased tendency towards multiple pregnancy. Ahlfeld,<sup>3</sup> on the other hand, holds that the distribution of the mammary tissue is to be attributed to the transference at an early period of development, by means of the amnion, of some of the cells which ordinarily go to form the breasts to other

\* See also the *British Journal of Surgery*, April, 1923, p. 436.



portions of the body. When polymastia occurs the supernumerary nipples are usually functionless. In numerous instances an hereditary influence has been traced.

Polythelia is a very much rarer abnormality. In fact, with the exception of occasional allusions to the condition, I have been unable to find any report of an authentic case in medical literature. In November, 1921, I reported in this JOURNAL a case of polythelia, in which the accessory nipple functioned; it occurred in my private practice. Since then I have been fortunate in securing the accompanying plate illustrating the case.

The woman, a primipara, aged 23, first recollected noticing the accessory nipple in early childhood and regarded it as a fleshy mole. It is about the size of a sixpenny piece, and is situated close to the left mammillary line in the inferior half of, and towards the periphery of, the left breast. It resembles the normal nipple of the same breast in everything but size, possessing lactiferous ducts and erectile tissue.



Even Montgomery's secondary areola is faithfully reproduced. There is no macroscopical evidence of a supernumerary breast. The right and left breasts are symmetrical except for the small accessory nipple on the latter, and no

demarcation of the gland tissue could be distinguished by inspection or by palpation. The condition has caused the woman no discomfort other than that, during the period of lactation subsequent to her pregnancy three years ago, there was a very free secretion of milk from the secondary nipple as well as from the normal nipples, the medical practitioner then attending her having dissuaded her from nursing the child.

There is no evidence of any hereditary influence. The woman, who is one of a family of

eleven children, is the only one exhibiting this abnormality.

#### REFERENCES.

- <sup>1</sup> Goldberger: Ein seltener Fall von Polymastia, *Arch. f. Gyn.*, 1855.  
<sup>2</sup> Whitridge Williams: *Obstetrics*, 1920, p. 937. <sup>3</sup> Ahlfeld: Spaltung der Anlage der Brustdrüse, Polymastia, *Die Missbildungen des Menschen*, Leipzig, 1899, 110-113.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### ACUTE OEDEMA OF THE LUNGS.

ACUTE oedema of the lungs is one of the most striking and terrifying emergencies with which the practitioner may be called upon to deal. The most tragically celebrated case on record is that of Charcot himself. During a journey he was seized with a sudden attack of suffocation, expelled a quantity of frothy albuminous fluid, and died in half an hour. Often the sufferer is dead before the doctor gets to him, and is found lying with an abundant frothy pinkish exudation filling the mouth and nose.

On February 23rd, 1923, on the R.M.S.P. *Desna*, I was called hurriedly about midnight to a gentleman taken suddenly ill. During the evening he had been well, dining in the saloon with the rest of us. I did not know then that he had not been in good health, but learnt subsequently that he was suffering from arteriosclerosis, or what I would prefer to call cardio-vascular breakdown.

On reaching the cabin I found him standing up struggling for breath, and bringing up an enormous quantity of frothy soap-sudsy expectoration, coughing it up, and brushing it away from his nose and mouth with his fingers. There was no time to make exhaustive inquiries; but his wife said he was 56, and that it was his first attack. The pulse was small and rapid, and owing to the râles in the chest the heart sounds could not be heard. Even during this rapid examination he became very much worse, and it was clear that unless something was done quickly the first attack would also be the last. I ran to the surgery for a knife and a bandage, picking up a steward on the way to help me. On again reaching the cabin the patient had fallen back exhausted but was still conscious. We put the bandage round his right upper arm, and cut across the first vein easy to get at. This was probably the anterior ulnar; the branches of the median are best avoided when in a hurry. He bled freely, the blood being at first very dark, although his face was pallid. I bled him well over a pint, and it was most gratifying to watch the change. The vivid colour and dyspnoea disappeared, the expectoration gradually ceased, and his dreadful anxiety passed off. At the end of the bleeding breathing, colour, voice, mental attitude, and pulse were all reassuring. It was surprising how the pulse improved; it was not necessary to inject camphor. Incidentally, why is camphor in oil so much used, when a saturated solution of camphor in alcohol is so much more convenient? I have used the latter for years and never found any disadvantage, and a much larger dose can in this way be given.

The patient did well afterwards; he was kept rigidly in bed on a spare milk diet until Liverpool was reached.

Neither the diagnosis nor treatment was difficult. As to the former, asthma, cardiac dyspnoea, angina pectoris, and pulmonary infarct might occur to one's mind, but the extraordinarily abundant frothy expectoration, coming on quite suddenly, was decisive. The acute oedema is evidently due to a condition of vascular engorgement in the pulmonary area, and partially draining the systemic veins gives the right ventricle time to deal with it.

VINCENT Moxey, M.R.O.S., L.R.C.P.,

Southampton.

Surgeon, Royal Mail Steam Packet Company.

#### SINUS THROMBOSIS FOLLOWING PNEUMONIA IN AN ADULT.

THE following case appears to be of interest on account of the difficulty presented in the diagnosis, and because the condition is unusual in the adult.

A woman, aged 35, was admitted under Dr. A. Stanley Barnes on April 11th, 1923. A letter from her doctor explained that on March 31st she was taken ill with symptoms referred to the respiratory system, and that when he saw her for the first time, on April 2nd, she had a dry cough and pleuritic pain in the left side. Next day it was evident that she had lobar pneumonia affecting the left base. The crisis occurred on April 7th; on April 9th the temperature, pulse, and respirations were normal and the patient felt so well that she asked to be allowed to get up. During the following night, however, she complained of severe headache and vomited several times; early next morning, while sitting up in bed, she had an epileptiform convulsion which left her with left hemiplegia.

On admission, some twelve hours later, she was in a semi-comatose condition, but could be roused sufficiently to speak a few words. The temperature was 97°F., the pulse 48, and the respirations 20. There was left hemiplegia with an extensor plantar reflex on that side, while the other plantar reflex was flexor and both knee-jerks were somewhat brisk. There was complete incontinence of urine. There were no retinal changes suggesting vascular disease, and except for the brachycardia no abnormality in the circulatory system was detected. The lungs also appeared normal.

A diagnosis of cerebral embolism was made, although it was realized that this would not account for the headache and vomiting prior to the convulsion.

On April 12th, about twenty-four hours after admission, she suddenly became worse. The face was flushed, the breathing stertorous, the coma more profound, and some weakness with an extensor reflex appeared on the right side. Lumbar puncture was performed, and 50 c.cm. of fluid under considerable pressure and deeply tinged with blood were withdrawn. On April 13th the temperature had risen to 100.5°, and lumbar puncture again yielded a blood-stained fluid. It was concluded that haemorrhage had taken place at the site of embolism.

The condition of the patient rapidly grew worse, the temperature fell below normal, the pulse rate rose to 136, and death occurred the same night.

At necropsy the heart (300 grams) was found soft and flabby, and considerable fatty infiltration was present in the muscle of the right ventricle. There was a slight degree of mitral stenosis, but no thrombi were present in the auricles and no vegetations on the valves. The aorta was normal. The lungs were intensely congested and oedematous. There was extensive *ante-mortem* thrombosis in all the dural sinuses and in many of the cortical veins, especially near the vertex. The surface of the brain was intensely congested and a considerable amount of free blood was seen in the meshes of the pia arachnoid. On section large areas of brain substance showed the condition of red softening. The largest, on the right side, involved the optic thalamus, the genu of the internal capsule, the lenticular nucleus, and the caudate nucleus, so extending into the lateral ventricle. A second area, 1 inch in diameter, was situated in the right frontal lobe, while yet a third affected



the left caudate nucleus. Small petechial haemorrhages in the substance of the brain and thrombosis of the veins of Galen completed the picture.

E. WESTON HURST, B.Sc., M.B., Ch.B.,  
House-Physician, General Hospital, Birmingham.

## Reports of Societies.

### RENAL INEFFICIENCY.

A MEETING of the Cardiff Medical Society was held on May 8th, with the President, Professor E. J. MACLEAN, in the chair, when Dr. R. CAMERON read a paper on renal inefficiency and its clinical detection.

Dr. Cameron limited the scope of the subject to the inefficiency associated with chronic nephritis, into the pathological and clinical classification of which he entered in some detail. Discussing the diagnosis of chronic nephritis, he pointed out the necessity for investigating the presence, severity, and progress of general clinical signs, renal symptoms, such as dropsy and uraemia, cardio-vascular symptoms, especially high blood pressure, in addition to carrying out examination of the urino and certain renal efficiency tests. The general clinical symptoms to be noted were weakness, loss of flesh—which might be masked by oedema—severe headaches, vomiting, and gastro-intestinal symptoms, recurring attacks of bronchitis and oedema of the lungs, with shortness of breath. In addition, there might be added symptoms indicative of kidney mischief—for example, dropsy, uraemia, and cardio-vascular changes; retinitis was present in 15 to 20 per cent. of cases. While the time-honoured clinical methods were still the sheet anchor in the investigation of the presence and gravity of renal disease, a most important new field had been opened up by the introduction of certain chemical tests—chiefly the diastase test, the urea concentration test, the blood urea test, and the urea concentration factor. In regard to treatment, it was important never to overwork a diseased organ. In renal disease the teaching had been to deny almost entirely protein food, since the kidneys were the organs which were chiefly responsible for nitrogenous excretion. In acute nephritis, where the functions were almost entirely suspended for a limited period, it was reasonable to carry out that rule; but in the chronic interstitial kidney—the azotaemic type—the kidney could excrete its nitrogen so long as not more than 94 grams of protein were taken in a day. Chittenden, the apostle of nitrogenous economy, said that 60 grams were necessary to maintain nutrition, therefore at least 60 grams should be taken, which allowed a balance of 34 grams. Large quantities of protein could be given in the hydraemic type, as it lessened the dropsy, was found to be well borne, and altered the whole outlook in life for the patient, who had hitherto been starved to no purpose. On the other hand, if the patient were dropsical and also showed signs of uraemia, it was safe to have a urea concentration test done repeatedly before loading his blood with amino-acids, the precursors of nitrogenous waste; a certain amount of protein he must have to replace tissue waste, but not too much to overtax his renal power.

#### Cavernous Angioma of the Face.

Mr. D. J. HARRIES showed a large cavernous angioma of the face, in a man aged 24 years.

The condition was present at birth and had it now occupied an area corresponding to the of the third division of the fifth nerve on the left the whole thickness of the left cheek below the level of the angle of the mouth, the left lower lip, and the anterior two-thirds of the left half of the tongue, and there was an offshoot running upwards in front of the ear. In April, 1923, the left external carotid artery and all the veins running down from the left side of the face were ligated; two weeks later the opposite side was similarly treated, and this had reduced the mass to about two-thirds of its original size. Mr. Harries intended to show the case again, after trying the effects of electrolysis. The case was interesting in that it suggested that the growth of the angioma might be controlled by the sensory branches of the third division of the fifth nerve; its extent could not be explained in terms of vascular or vasomotor distribution.

A MEETING of the London Association of the Medical Women's Federation was held at the Elizabeth Garrett Anderson Hospital on May 15th, with the President, Dr. LOUISA MARTINDALE, in the chair. Dr. OCTAVIA LEWIN, in a paper on personal hygiene and its place in school teaching, said that the subject was many-sided, embracing the physical, mental, spiritual, moral, social, domestic, and racial aspects of humanity, and that the problems were different in succeeding

### ATROPHY OF THE SKIN AFTER POLIOMYELITIS.

THE following case of atrophy of the skin is, I think, sufficiently interesting to be placed on record as showing an apparently rare sequel to an old poliomyelitis.

Mrs. S., aged 36, came to see me on account of an eruption on the left leg of several weeks' standing. She gave a history of acute poliomyelitis at 2 years of age, after which the leg below the knee was practically paralysed. At the age of 22 there was some recovery of the calf muscles.

On examination, the calf muscles were considerably wasted, and several scars on the foot showed where operations for tendon transplantation had been done many years previously. On the outer side of the leg, extending from a little below the knee to the ankle, was a diffuse erythema of the skin, and purple and crimson areas. The discoloration completely disappeared on pressure and returned very rapidly—evidently a vasomotor disturbance. The temperature of the skin varied at different examinations, being in a condition of poikilothermos. The affected skin was thin and shiny; the lower parts were swollen with oedema, while other parts were dry and scaly owing to the atrophy of the sebaceous glands. The patient complained of dull aching pain and "tingling" sensation.

I found sensation greatly modified or entirely absent. Epicritic sensation was absent. Protopathic sensation was present for touch, but there was definite thermo-anesthesia. The response to variations in temperature was interesting, as it closely resembled that obtained in a typical case of syringomyelia. There was absolute absence of appreciation between heat and cold. Moreover, stimuli normally giving rise to pain produced little or no response.

Apart from the old poliomyelitis there were no signs of any other disease of the nervous system, and I subsequently asked Dr. MacCormac, dermatologist to the Middlesex Hospital, to see the case. He agreed with me as to the diagnosis, saying: "I think there can be no doubt but that the condition is a trophic one associated with the old poliomyelitis."

Unless the two conditions have no relation to each other, is it not rather strange that a sensory disturbance of the skin should follow poliomyelitis? The former is probably the result of some degeneration in the posterior roots in the lumbar portion of the spinal cord, while the latter is due to a lesion actually in the grey matter of the anterior horn of the same segment. It is noteworthy, moreover, that the skin atrophy should have appeared after such a comparatively long interval of time as thirty-four years.

London, E.

A. ROBERT FOX, M.R.C.S., L.R.C.P.

### RUPTURE OF PERIANAL SKIN CAUSED BY A FALL UPON THE FEET.

THE following note of an accident which seems to be an unusual one in the human subject may be of some interest. A man, while riding upon a fire engine which was travelling at some speed, was thrown violently to the ground, landing upon his right foot. The impact was sufficient to cause a very bad compound, comminuted fracture of the right leg. When he was undressed at the hospital, the nurse noticed that there was something wrong with the anus, although no complaint of pain or injury had been made by the patient. On examination I found that the skin had been torn from its attachment to the mucous membrane throughout the whole circle of the sphincter, except for about a quarter of an inch on the left side posteriorly. The skin, showing all the perianal corrugations, had retracted from the anal margin, leaving the subcutaneous tissues bare for an inch or more from the anus. There was no bruising, and there had been very little bleeding. The trousers were not torn nor was there any evidence of his having been struck by anything in that region. I think the injury may have been caused by the sudden and very violent pressure upon the pelvic floor, due to the man's impact with the ground in the standing position. The muscular structures guarding the pelvic floor were taken unawares and overpowered, and the perianal skin so stretched as to be completely torn from its attachments around the anal margin.

The condition is well known to veterinary surgeons, as occurring occasionally in horses when landing on hard ground after jumping. It would be interesting to know if the condition is recognized as occurring also in men.

Nuneaton.

E. N. NASON.



decades of the individual's life. She gave instances that had come under her notice of inadequate provision of facilities for personal hygiene. These included insufficient lavatory accommodation in schools, absence of handkerchiefs and of the knowledge of their use, overtight clothing, and indiscriminate kissing of children even when suffering from infectious diseases. Dr. Lewin discussed the various sources from which education on personal hygiene might be expected, such as the parents, the teachers, the public libraries, and the press. In the *Encyclopædia Britannica* at the British Museum the pages dealing with disease were so thumb-marked as to be almost illegible. She also showed cuttings of the quack medicines advertised in one issue of a daily newspaper, which were so numerous as to cover a whole sheet of the paper. A discussion followed, in which Drs. JEVONS, PARSONS, FAIRFIELD, WILSON, ELSLIE, HANSON, LANE-CLAYTON, HUTCHINSON, and HANDLEY-READ took part.

## Reviews.

### INDUSTRIAL HYGIENE.

WHEN in 1895 Sir Matthew White Ridley, then Home Secretary, had the courage to depart from precedent and appointed Dr. (now Sir) Arthur Whitelegge, who was then medical officer of health for the West Riding, to be Chief Inspector of Factories, he probably did not fully realize the importance of his action. It was the first step in the practical application of preventive medicine in relation to industrial diseases. Dr. Whitelegge was extremely fortunate in his selection of Dr. T. M. Legge as the first medical inspector of factories; to his painstaking labours the workers in many industries are indebted for decreased incidence of certain diseases, and in some cases for actual immunity. His pioneer work undoubtedly stimulated others to labour in the same direction, and now industrial hygiene is recognized as an integral part of preventive medicine.

Medical officers of health will welcome *Industrial Hygiene and Medicine*<sup>1</sup> written by Dr. E. W. HOPE, M.O.H. for the city of Liverpool, in collaboration with two of the assistant medical officers, Dr. W. HANNA and Dr. C. O. STALLYBRASS. The introductory chapters contain an account of factory legislation in this country, and of the efforts made in the early part of the nineteenth century to improve the conditions of industrial workers. It is significant that legislation was at first directed to the shortening of the hours of work of children and young persons under 18 years of age. Later on efforts were made to prevent accidents by the fencing of machinery and in other ways, and to improve the general health of the workpeople by attention to the ventilation of workshops and to their general sanitary conditions.

Although the conditions had been studied early by a few medical pioneers, it was only in the closing years of the century that definite knowledge was won of the causes of certain diseases found to be incident to particular industries, and with this knowledge, attained by careful and prolonged investigations, it speedily became possible to make appropriate proposals for their prevention. These causes and preventive measures are discussed by the authors very fully and clearly, as will be seen from the headings of some of the chapters—industrial poisonings and their effects; dust as a cause of disease; industrial infection; and occupational affections of the skin and special senses. The chapter on industrial physiology sets out very clearly the present-day views of competent observers on this most important subject—important not only to the individual worker, but to the community generally. As is well known, the study of industries shows that in many a break in the ordinary spell of work has been followed by greater output, and the authors express the opinion that a four-hour spell of work is as long as can be endured without unnecessary fatigue. If, they say, a ten-hour day must be worked, it should either be divided into three spells, or, perhaps better, into two spells, each divided by an interval of fifteen minutes.

In a very informing chapter on industrial welfare schemes details are given of several which have been in existence for some years, and advice is offered as to the best way to

inaugurate and carry on such work. It is rightly insisted that the personality of the welfare supervisor is of the greatest moment. Neglect of this consideration may wreck the most carefully designed scheme. Quite appropriately in a work of this character a few pages are devoted to the question of workmen's compensation, and in an appendix will be found an epitome of British legislation affecting industrial hygiene, and the memorandum issued a few years ago by the Home Office on the duties of local authorities under the Factory and Workshop Acts. The duties of certifying surgeons are also included in the appendix.

A large number of well executed illustrations add to the value of the work. The bibliography at the end of each chapter is very complete and is evidence in itself of the immense labour entailed in the compilation of the volume. It is an excellent example of what can be done by steady team work. Indeed it is marvellous that so much information could have been brought together by three busy medical officers of health engaged in the public health administration of a large city and port. Their reward must be in the knowledge that they have produced a textbook which will take a distinctive place in the literature on industrial hygiene.

### NATIVE COMPOUNDS IN TROPICAL AFRICA.

DR. ARTHUR PEARSON, the circumstances of whose tragic death we recorded last week, had recently written a book in association with Dr. R. MOUCHET on the *Practical Hygiene of Native Compounds in Tropical Africa*,<sup>2</sup> based on experience gained by eighteen years of work in the Katanga. As the authors state in their introduction, it does not profess to deal with tropical hygiene in general, but only with its application to native compounds under the conditions met with in tropical Africa.

The first section, consisting of nine chapters, deals with the various aspects of the hygiene of compounds. It is difficult to assess the degree to which a native increases his risk of life by changing his village home for a compound; the authors believe that in the compounds of most industrial undertakings in tropical Africa the death rate reaches a higher level than that which the village would show if the true figure could be obtained for adult natives of working age, when especially they are tenanted by men who are for the first time brought into contact with Europeans and European standards of work. The degree of increase in risk to which the native is subjected is dependent on a number of factors, some of which it is within our powers to control, and it is these the authors discuss in their opening chapter, which deals with general considerations touching upon the native and compound life. As the result of a very interesting analysis of native life under natural conditions in his village, the authors reach certain general principles, relating chiefly to ensuring that the living conditions of the native are kept up to a certain standard as regards his dwelling hut, and to the importance of providing a diet ample in quantity and of sufficient variety; stress is laid on the necessity for attention to all details which may tend to diminish the pathogenic virulence of a compound environment, or which may serve to prepare and strengthen native recruits against this new environment. It is with the methods of application of these principles that the main bulk of the volume is concerned. Four chapters are devoted to the general situation and arrangement of compounds, to the types of construction, to the latrine arrangements and sewage disposal, and to the water supply. Each of these sections is illustrated by a number of admirable photographs and diagrams.

The authors distinguish between the diet and feeding of natives, because each presents distinct problems; by diet they refer to the composition of the rations issued, and by feeding to the manner in which the issue is made and the arrangements provided for consumption of food. This large and very important subject is treated in considerable detail, and the personal observations made by the authors in the Katanga compared with the results of experience in the Rand.

<sup>1</sup> *Industrial Hygiene and Medicine*. By E. W. Hope, O.B.E., M.D., D.Sc., in collaboration with W. Hanna, M.A., M.D., D.P.H., and C. O. Stallybrass, M.D., D.P.H. London: Baillière, Tindall and Cox. 1923. (Demy 8vo, pp. 766; 123 figures. 21s. net.)

<sup>2</sup> *Practical Hygiene of Native Compounds in Tropical Africa. Living notes from the experience of the first eighteen years of European work in the Katanga*. By A. Pearson, M.B., B.S. Lond., and R. Mouchet, M.D. London: Baillière, Tindall and Cox. 1923. (Cr. 4to, pp. xiv + 183; 49 figures, 44 plates. 22s. 6d. net.)



The next chapter deals with the maintenance of cleanliness. The authors state that a very excellent rough estimate of the cleanliness of a compound may be made by noting the number of flies, and they add: "If we were asked to name the two chief causes of mortality in the Katanga compounds, we would cite pneumonia and flies." Under this general heading such matters as cleanliness of the compound area and of the hut itself, attention to accessory installations, disposal of refuse, and provision for personal cleanliness are discussed. In dealing with hospital organizations, the authors consider the position, construction, and arrangement of the buildings and the organization of care for the sick. In a compound hospital the majority of beds provided should be placed in large wards; a useful method of distribution of beds (for every thousand natives in a compound) was found to be—36 beds in large wards, 12 beds in small wards, and 4 beds in isolation wards, giving a bed ratio to compound population of 5.2 per cent., which is ample in ordinary times. The authors remark that quite early in their work they noted that patients with pneumonia did better on the verandah than in the interior of the comparatively ill-ventilated ward of ten years ago. This conviction led to the design of a special type of ward, the essential feature of which is that the brickwork of most of the wall is not carried more than 1.2 metres above the ground, the space above being protected by mosquito wire gauze, so that the ward is practically an open-air shelter; in order to prevent driving rain from reaching the gauze, the roof is prolonged to provide a wide verandah shelter.

It has long been recognized both in South Africa and in the Katanga that the highest mortality is found among natives who have been recently recruited, and that the danger is greatest when the recruiting is from a race which has not previously worked in a great industrial centre. The various factors conducing to this special susceptibility are analysed and suggestions made with a view to meeting the difficulties which arise.

The second section of the volume contains two chapters: the first deals with the epidemic diseases of tropical compounds and the second contains a few pathological notes.

The book is full of interest, and contains much valuable information, and can be heartily commended. As Balfour states in the preface he has written for it, "there has been an urgent and increasing need for a good book in English, dealing with the sanitation of native compounds," and there can be no doubt that this work will receive the warm welcome which it certainly merits.

### BOTULISM.

UNTIL August, 1922, little active interest was taken in these islands in the subject of botulism. The public health student associated it with sausages on the continent of Europe and with bottled olives and similar articles in the United States of America, especially in California. He never expected to see, in this country at any rate, instances of the disease. The occurrence of eight cases, all fatal, in the Loch Maree tragedy was fully recorded in our columns at the time (August 26th, p. 394, September 9th and 16th, pp. 481 and 527). Dr. GERALD LEIGHTON has now written a book entitled *Botulism and Food Preservation*<sup>3</sup> in which much of the existing knowledge on the subject is well set out. For fuller details he refers the reader to a copious bibliography and to his official report to the Scottish Board of Health (1923). He has written not only for the medical profession but also for those interested in the preserved food industry and for "the intelligent educated general reader."

Before relating the incidents at Loch Maree the author, after stating the nature of botulism, gives its history, cause, symptoms, treatment, and prevention, in successive chapters. Some interesting remarks, based on the valuable work of Professor K. F. Meyer of California, are made on the world-wide distribution of the spores of *B. botulinus*. The part played by the spores, and the two types (A and B) of the bacillus and their toxins, in the causation of the disease is clearly and fully described. Of 64 samples of English soil examined by Professor Meyer—before any case

had been known in these islands—five were found to contain *B. botulinus*. From his researches in California he concluded that the bacillus type A is predominant in virgin soil and that type B is relatively frequent in more cultivated soils. The Loch Maree outbreak was due to type A occurring in a pot of wild-duck paste prepared in England.

The chapter on allied animal diseases, such as "limber neck" in fowls (United States of America), "grass sickness" in horses (parts of England and Scotland), "forage poisoning" in horses (Australia), and "Borna disease" in horses (Germany), is of much interest.

The arrangements made by the Medical Research Council in conjunction with the Ministry of Health to afford facilities in the University of Bristol for the examination of specimens from outbreaks of food poisoning of any kind not only in England and Wales but also, with the co-operation of the Scottish Board of Health, in Scotland, worked well when the Loch Maree outbreak occurred, and the services of the research workers at Bristol and their special knowledge of the causes of food poisoning of all kinds proved very valuable. The co-operation of workers in the Wellcome Research Laboratories on the causes of grass sickness enabled botulinus antitoxins to be obtained for identification of the type of bacillus isolated from the Loch Maree specimens. It is fortunate that types of botulinus antitoxin had already been prepared, though, as it happened, not in connexion with a human outbreak of botulism. For the lay reader especially there is a useful chapter entitled "Answers to questions" based on many inquiries as to the causes and prevention of botulism which have been put to the author.

Dr. Leighton gives the reassuring opinion that if certain necessary and relatively simple precautions be taken by all concerned it is extremely unlikely that other outbreaks of botulism in these islands will occur. He is to be congratulated on having collected so much information on this subject and on having put it into an interesting and readable form.

### BIOCHEMISTRY IN RELATION TO PHYSIOLOGY.

Mr. T. R. PARSONS, in his foreword to the *Fundamentals of Bio-chemistry in Relation to Human Physiology*,<sup>4</sup> explains that the object of his book is to give a short account of the more important principles of biochemistry which have been derived from the study of the chemical changes occurring in the human body. The book, he says, has been written as simply as possible so as to demand a minimum of previous knowledge of pure chemistry and of physics.

Biochemistry is naturally a very difficult subject to explain in a simple manner, but Mr. Parsons has succeeded in setting forth the salient principles of the subject in a remarkably clear and simple fashion. His experience as Demonstrator in Physiology in the University of Cambridge has helped him to adapt his book to meet the needs of students beginning the study of biochemistry and also of those medical men who may have forgotten most of their theoretical chemistry and wish to refresh their knowledge of the general principles of biochemistry. The first eleven chapters give a short account of the chemistry and metabolism of proteins, purins, fats, and carbohydrates; then the more general problems of metabolism are dealt with, and the concluding chapters are devoted to certain problems in physical chemistry.

The book is a short account of what the author considers are the salient facts of the subject. The selection must of necessity be arbitrary and no two writers would make identical selections, but nothing has been included in this volume that is not of real importance.

One of the most interesting chapters is that dealing with the mechanism of muscular contraction. A very clear account is given of the important recent discoveries as to the mode in which carbohydrates are utilized to provide energy for muscular contraction. This chapter concludes with a most interesting comparison between the muscle and an internal combustion engine. The author is to be congratulated particularly upon the clearness and brevity with which he deals with such problems of physical chemistry as

<sup>3</sup> *Botulism and Food Preservation (The Loch Maree Tragedy)*. By G. Leighton, M.D., F.R.S.E., Medical Officer (Foods), Scottish Board of Health. London and Glasgow: W. Collins and Co., Ltd. 1923. (Med. 8vo, pp. xiii+237; 10 plates. 10s. net.)

<sup>4</sup> *Fundamentals of Bio-chemistry in Relation to Human Physiology*. By T. R. Parsons, B.Sc. (Lond.), M.A. (Cantab.). Cambridge: W. F. and Sons, Ltd. 1923. (Cr. 8vo, pp. x+281; 23 figures. 1 plate. 10s. 6d. net.)



polarization, the reaction of fluids, osmotic pressure, and the properties of colloidal solutions. We do not remember ever reading a simpler and more concise account of the elementary facts regarding these difficult subjects.

The two chapters which are, perhaps, most open to criticism are those on vitamins and protective synthesis. The author tries to deal with vitamins in five pages, which is really an impossible effort at condensation. So many facts concerning vitamins are still uncertain that generalization on this subject is very difficult. The statement made on page 185 that the fat-soluble vitamin is present in most natural oils is obviously a slip. This vitamin is either absent from most natural vegetable oils or present only in minute traces. The chapter on protective synthesis in the body is also very brief, and it seems questionable whether it was worth while including so short an account of such a scattered subject.

These, however, are points of relatively small importance, and our general opinion of the book is that it is of a type that deserves a particularly hearty welcome. The present tendency of science seems unfortunately towards infinite subdivision by partitions of special vocabularies and refinements of technique. A book like the one under review, which makes the general principles of a difficult subject available for the first time to a large circle of readers, really plays an important part in the development of scientific knowledge.

### THE SUN CURE IN TUBERCULOSIS.

THE appearance of *Heliotherapy*<sup>5</sup> will be welcomed by all who are interested in what is called surgical tuberculosis, and have heard of its successful treatment by Dr. ROLLIER in his clinic at Leysin on an Alp at the eastern end of the Lake of Geneva. Knowledge of his method of insolation has already been available in numerous articles in Continental and British journals, and in *La Cure de Soleil* (see BRITISH MEDICAL JOURNAL, 1915, i, p. 936), which gave a more complete and systematic account; but in the volume before us the method is for the first time fully described in English. It would be difficult to praise too highly the way in which Dr. Rollier has presented his case. His clear account of the technique of graduated exposure of the body to the sun-rays; the detailed case-records of tuberculosis of every region of the body, illustrated by photographs and radiographs before and after treatment; the careful descriptions of splints and other immobilizing apparatus; the indications for operative intervention (how few they are!); the cases unsuitable for the sun cure; the emphasis on the combination of work and play as an important mental tonic; and finally the presentation of his analysed statistics (over two thousand cases of surgical tuberculosis) from 1903 to 1921—all these different parts of the subject are unfolded in a clear and orderly way which will enable anyone not previously familiar with the subject to grasp essentials, and those possessing a competent knowledge to examine the evidence critically and to draw their own conclusions. There follows a chapter on the scientific basis of heliotherapy which widens into a discussion of the physics of light and its biological action upon human tissues. This is from the pen of Dr. A. ROSSELET, who has long been closely associated with Rollier at Leysin. Finally there are chapters on radiological diagnosis and on radiotherapy and phototherapy.

Dr. Rollier emphasizes the association of good pigmentation with good prognosis, and gives detailed rules for the graduated exposures until the whole body can safely be bared to the sun-rays. He seems to hold that the conditions for this insolation are better in winter than in summer. In winter the whole day, with its brilliant sunshine and cold dry air, is available; while during summer often only the morning hours from six to nine may be used. Both he and Dr. Rosselet admit that besides the action of light other factors may be at work—the tonic effect of cold dry air upon the body surface and the influence of rest; the insistence on the work cure shows that the value of the mental factor is appreciated.

<sup>5</sup> *Heliotherapy*. By A. Rollier, M.D., with the collaboration of A. Rosselet, D.Sc., M.D.; H. J. Schmid, M.D., and E. Amstad, M.D. With foreword by Sir J. H. Gauvain, M.A., M.D., and C. W. Saleeby, M.D. Oxford Medical Publications. London: H. Frowde, and Hodder and Stoughton. 1923. (Demy 8vo, pp. xxii + 263; illustrated. 25s. net.)

The statistics for 1914-1921 are that of 2,167 cases of bone and joint tuberculosis 1,746 were healed.

We could only wish that *La Cure de Soleil* might have been translated into its obvious English, "The Sun Cure" instead of the clumsy pseudo-Greek "Heliotherapy."

### GUY'S HOSPITAL REPORTS.

THE second quarterly instalment of this year's volume of the *Guy's Hospital Reports*<sup>6</sup> is rather unusual in containing contributions on subjects recently much to the fore in its pages from men who are not members of that hospital school. Thus Dr. Adolphe Abrahams provides a note on occult blood in the faeces as a commentary on Dr. J. R. Bell's paper in the last number, which is also supplemented by Drs. Ryffel and Payne's article on the spectroscopic test for blood in the stools based on work in the Laboratory of Clinical Chemistry at Guy's. Professor Harvey Cushing describes the clinical features of intracranial aneurysms as a companion article to that of Dr. C. P. Symonds, who worked under him at this subject at Boston and correctly diagnosed a case before death. There is a joint account of two cases of Addison's anaemia; one with all the characteristic features had gastric carcinoma also, and thus fulfilled Drs. A. F. Hurst and J. R. Bell's anticipation that if subacute combined degeneration of the spinal cord is found in association with gastric carcinoma it would be among the 50 per cent. in which complete achlorhydria is present throughout the period of digestion. The other case is commented on by Dr. William Hunter as an example of septic anaemia rather than Addison's anaemia. Dr. G. W. Nicholson's instalment of his studies on tumour formation is devoted to the argument that so-called renal hypernephromas arise from the renal cells, and not, as Grawitz stated, from displaced adrenals, and that they do not lend any support to Cohnheim's theory of tumours. Like his previous papers this one is rich in original observations, ingenious argument, and knowledge of the literature. Dr. F. A. Knott, bacteriologist to the New Lodge Clinic, shows that hexamine is an active biliary antiseptic and that the bacteria in the bile cause a local rise in acidity around them up to a point at which a small amount of free formaldehyde may be expected, and that then the bacteria cease to multiply and finally die out altogether. Messrs. F. Cook and A. A. Osman have a preliminary report on the acidosis factor in pregnancy and in nephritis. The etiology and treatment of varicose veins are discussed by Mr. Philip Turner. An attractive feature of this number is the obituary notice of the late Sir Frederick Taylor by his colleague, Sir Charters Symonds, who, with sympathetic touches, shows the enormous debt that the medical school owes to its first Dean's work for fourteen years, and brings out his wide activities in other directions. His textbook on medicine held a prominent position for close on thirty years, and passed through eleven editions in his hands, thus surpassing the corresponding works of Bristowe, F. Roberts, and Osler.

### NOTES ON BOOKS.

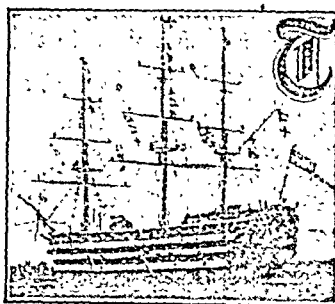
THE *Textbook for Fever Nurses*<sup>7</sup> by Dr. GRACE H. GIFFEN DUNDAS follows the syllabus of lectures drawn up by the Fever Nurses' Association; it is divided into three parts, the first dealing with anatomy and physiology, the second with the various fevers and fever nursing, and the third with practical instruction and ward work. In an elementary work of this kind illustrations are essential, and their absence in this book considerably detracts from its value. Two of the chapters are merely arid enumerations of the various bones, muscles, and viscera. The description of the various diseases is on the whole clear and accurate though somewhat fragmentary, but must be supplemented by lectures or larger textbooks. In view of the uncertain etiology of scarlet fever, small-pox, measles, rubella, and mumps the writer is too dogmatic in stating that each of these diseases is caused by an organism (vide pp. 93, 127, 134, 139, 140). An index should be added to the next edition.

<sup>6</sup> *Guy's Hospital Reports*. Edited by Arthur F. Hurst, M.D. Vol. lxxiii, No. 2. April, 1923, issued quarterly. London: Henry Frowde, and Hodder and Stoughton. 1923. (Roy. 8vo, pp. 117-25; 1 plate, 21 figures. Subscription: Two guineas post free for volume of 4 numbers; single numbers, 12s. 6d. net.)

<sup>7</sup> *Textbook for Fever Nurses*. By Grace H. Giffen Dundas, F.R.C.S., D.P.H.Camb. Edinburgh: William Bryce. 1923. (Fcap 8vo, pp. xii + 202, 4s. 6d.)



# NINETY-FIRST ANNUAL MEETING of the British Medical Association, PORTSMOUTH, 1923.



H.M.S. Victory at her old moorings.

THE ninety-first Annual Meeting of the British Medical Association will be held next month in the historic town of Portsmouth. On the afternoon of Tuesday, July 24th, Mr. C. P. Childe, F.R.C.S., senior surgeon to the Royal Portsmouth Hospital, will be inducted President in succession to Sir William Macewen. Mr. Childe will deliver his presidential address on the evening of the same day. The meetings of the Sections will begin on the next morning and will be continued on the two following days. The programme of the varied work they will do is published in the SUPPLEMENT to this issue. It will be observed that a Pathological Museum is being formed, to which members are asked to contribute specimens, and also that there will be an Exhibition of Surgical Appliances, Foods, Drugs, and Books.

The Annual Representative Meeting will begin on Friday, July 20th; after formal business it will deal first with the Annual Report of Council, which relates the work done by the Council and Committees of the Association during the past year. On this occasion arrangements have been made which will enable Representatives to make the journey from London to Portsmouth and the return journey also by car. The cars will start from London on Wednesday, July 18th; the route taken will differ on the outward and backward journey, but on both much interesting and picturesque country will be traversed.

Portsmouth, and Southsea its suburb on the east, are one town—Portsmouth being the business centre and the chief base of the Royal Navy, and Southsea a pleasant residential quarter with all the amenities of a seaside watering place.

## SOUTHSEA, PORTSMOUTH.

The Borough of Portsmouth embraces the whole of the Isle of Portsea and a portion of the southern slope of Portsdown, including Cosham. The island is connected to the mainland by one road only over Portsbridge, and by the railway, which crosses the creek a little to the east of the road. The creek joins Langstone Harbour on the east with Portsmouth Harbour on the west at the apical part of the Isle of Portsea, which is roughly triangular in shape. The base or southern border faces the Isle of Wight, from which it is separated by a channel of the sea, called the Solent. The most important portions of the borough on the island are known respectively as Portsmouth, Portsea, Southsea, Landport, Buckland, Fratton, Kingston, Copnor, Eastney, and Hilsea.

Portsmouth Town Station is centrally situated in Commercial Road, opposite the General Post Office. Close to the station on the south side of the railway is the Town Hall and the Municipal College. In the latter building the Reception Room will be provided, as well as the rooms for all the Section Meetings, and the quarters for the meetings of the Representative Body. Behind the College and to the north of the railway is Victoria Park, which can be entered by a gate on the north side of the Town Hall between the War Memorial and the railway. A five minutes' walk across the park brings us to the Naval Barracks, where, in the Gymnasium, will be housed the annual exhibition of surgical appliances, foods, drugs, and books.

Most of the motorists coming to the town will travel along the London Road, or part of it, and so enter the town by the same route that Nicholas Nickleby tramped. They will come through Landport, passing the Halfway House, and so along Commercial Road, with its strange mixture of old and modern houses and shops, and on the way will pass No. 393—the house in which Charles Dickens was born. The motorist will not be able to enter the old town of Portsmouth through the Landport or Town Gate, as described in *Nicholas Nickleby*, as the road has been diverted; from Commercial Road the journey will follow a newer road, past the terraces, which leads directly to the Common and sea front.

The Common and front and the view of the Isle of Wight across the silvery Solent are the charm and attraction of Southsea—a great asset of which the inhabitants are justly proud. The Common is a large open space between the houses and the beach, and is about a mile and a half long. On State occasions it is the site of brilliant military displays. Between the numerous paths that intersect it will be found on many days hundreds of the young men of the borough enjoying games of cricket or football. When standing on the open common in the exhilarating air we have on the west a lovely view of Portsmouth, with its old church tower overtopping the elm trees that hide the Garrison Church; the remnants of the old town fortifications; and, facing the Victoria Barracks, the nicely laid out Pembroke Gardens, open for tennis and croquet.

Here, too, at the west end of the Common is the Clarence Pier, and the Esplanade affords a continuous promenade extending eastwards to Southsea Castle; passing in front of the Castle it continues to Southsea Pier and onwards past Lump's Fort and Eastney Barracks to the Coastguard station—a distance of over three miles. Running parallel with the promenade is a good carriage drive.

Along the front are many memorials, the most important being the anchor of the old *Victory*. It used to stand on the other side of the Clarence Pier and then marked as nearly as can be the spot from which Nelson started on his last memorable voyage. The part of the front between the Clarence Pier and Southsea Castle is always somewhat busy and crowded in summer. In front of the Castle some quiet seats may be found and a good view enjoyed of Spithead, the great anchoring place for the fleets and the scene of the naval reviews. All sorts of craft can be watched passing up and down the Solent—big liners and dreadnoughts, little fussy torpedo boats and racing yachts, all add their share to an ever-changing panorama. Three strange circular structures painted in chessboard pattern rise from the water; they are ironclad forts erected by Lord Palmerston to defend the harbour and dockyard. That nearest Portsmouth is built on the Spit Bank, the next further off on No Man's Land, and the furthest off on the Horse Shoe Bank. The lightship nearest to us is the *Warner*, and beyond can just

\* Previous articles on Portsmouth and its neighbourhood appeared in the BRITISH MEDICAL JOURNAL of December 9th, 1922, p. 1137; January 13th, 1923, p. 77; February 10th, 1923, p. 253.



be made out one of the mystery towers, placed in this position since the end of the great war.

The Common has recently been bought by the Corporation from the War Office and on completion of the purchase schemes will be prepared for adding to its attractions and utility. Continuing our promenade eastwards from Southsea Castle, we come to another busy part of the beach, and Southsea Pier. This pier is the property of the Corporation and was opened in 1908 to replace one that was burnt down. From this pier, as well as from the Clarence Pier, boats run to the Isle of Wight, and during the season many other sea excursions can be enjoyed. Military bands can be heard on both piers, and other musical and variety entertainments are freely provided. Around the pier we shall find the beach busy, with plenty of sea bathing and boating in progress.

Close by the pier is the Canoe Lake Garden, where there are plenty of tennis courts, croquet lawns, and greens for bowls. On the lake are some canoes and swan-like boats for the use of little people; the real live swans were a gift from the late King Edward VII. The sailing of model yachts on the lake is vigorously practised, and is a sport rapidly growing in favour.

Just beyond Lump's Fort—now practically dismantled—is the Corporation miniature golf links. The large brick buildings a little further on are the Eastney Barracks, the home of the Royal Marine Artillery—more familiarly known as the Blue Marines. Passing in front of the barracks we come upon the only stretch of sandy beach the Borough possesses. The promenade stops at the coastguard outlook. The road turns inland and continues to Hayling Ferry, but our walk can be continued along the edge of the sea wall to Fort Cumberland and so round to the ferry, which crosses the outlet of Langstone Harbour and takes us to Hayling Island. The island is noted for its golf links, and here the match for the Ulster Cup will be played.

Southsea streets are somewhat tortuous and confusing. Palmerstone Road, which runs north from Southsea Castle, is the shopping centre. To the west of this road will be found Osborne Road, which is a business thoroughfare leading back to the Common and old Portsmouth. In it, overlooking the Common, will be found the "official hotel"—the Queen's. At the land end of Palmerstone Road by St. Jude's Church is Kent Road, running in the same direction as Osborne Road. It is a residential road, and off it will be found "Dovercourt," a club house kindly placed at the service of the lady members during the meeting of the Association. Grove Road is a continuation of Palmerstone Road and is quite rural, but Elm Grove, to which it leads, has forfeited its title to that designation. It was once the most picturesque road in the Borough, but now the elm trees and rocks are gone and the gardens in front of the old houses covered with shops. Sir Arthur Conan Doyle once lived in this road, and here, whilst in general practice, wrote *Under*

*the Red Lamp*. The continuation of Elm Grove is King's Road, a good shopping centre, and this leads us to the Terraces. Turning to the left and following the Terraces we shall come back to the Common and the sea; turning to the right we shall soon be in Commercial Road, now the chief business quarter of Portsmouth. Continuing straight on from King's Road we shall soon find ourselves at the top of High Street—once the most important of thoroughfares—and from it we can explore the old fortified town. The old fortifications were removed in 1876, and the two recreation grounds formed and levelled.

At the top of High Street on the left we shall see the house in which Buckingham was assassinated by Felton. Behind this house, on ground now occupied by the Cambridge Barracks, is the site of the old theatre, the scene of Mr.

Crummles's successes. On the opposite side is the old Unitarian chapel, which has in its burial ground a monument to John Pounds, the founder of ragged schools. Again, further down on the left, is the George Hotel, where Nelson rested just before he embarked on his last commission which culminated in the glorious victory of Trafalgar. Next the Old Guild Hall claims attention. It is now converted into a museum, which contains some interesting relics of old Portsmouth. Continuing our perambulation round the bend we pass the site of the Old Blue Posts and come to Point, where we can visit the Old Star and Garter and take ferry or floating bridge across the harbour mouth to Gosport, and so visit the great naval hospital at Haslar. A trip round the harbour in a motor launch will be both interesting and instructive, and if time and tide permit the trip may be extended so as to visit the old castle and church at Portchester.

From old Portsmouth we can take our way to ancient Portsea and the Royal Dockyard. In the yard we shall find the latest in steel armoured ships and relics of the old "wooden walls," the glory of the navy in the past; also in dry dock, undergoing internal structural repair, Nelson's old flagship *the Victory*.

The Portsmouth Corporation owns a fairly good service of electric trams that will be found useful for getting about in the town and its immediate neighbourhood. The Corporation electricity supply is one of the first started in England and was incorporated under the guidance of Principal Garnett. The water supply of the borough is very good; the water company obtains its supply from springs at Bedhampton, a few miles out.

For residents and visitors land excursions and sea trips are both numerous and varied. It is hoped to arrange visits for members attending the Annual Meeting to Southampton and the New Forest, Ventnor, Midhurst, Alton, Winchester, Salisbury, Brighton, Bournemouth, Farnham and Hindhead. Each possesses its own particular charm and attraction, and further to dilate on their respective merits would at the present be superfluous.



Photograph by)

[Elliott and Fry.

CHARLES P. CHILDE, F.R.C.S.,  
Senior Surgeon, Royal Portsmouth Hospital;  
President-Elect of the British Medical Association.



## THE SURGICAL CLINICS OF SWITZERLAND.

BY

H. S. SOUTTAR, M.Ch., F.R.C.S.,

DIRECTOR OF THE SURGICAL UNIT, LONDON HOSPITAL.

THERE is no better stimulus for a surgeon than to see how others meet the problems of his art, so when a short time ago I was invited by Professor Gask to join a small party of surgeons in a visit to the surgical clinics of Switzerland I gladly accepted. The party consisted of the directors of the surgical units at St. Bartholomew's, University College, St. Mary's, and the London hospitals (Messrs. Gask, Choyce, Pannett, and Souttar), and Messrs. Girling Ball, Gordon-Taylor, Kenneth Martin, and Morland. We left London on February 28th, and were exactly ten days in Switzerland. During that time we visited Basle, Zürich, Berne, and Lausanne. We spent every available moment in the hospitals and laboratories of these places and in attending lectures and demonstrations given to the students.

I believe it was the first occasion on which a party of English surgeons had visited the Swiss clinics. Nothing could have been more cordial than our reception; we were given every facility for seeing the regular work of the hospitals, and where, as in Zürich, the vacation had begun, special demonstrations were arranged for us. In general we began the day with a lecture demonstration at 8 o'clock and only finished in the wards at a late hour in the afternoon. We saw much that was new and interesting. We believe that the ideas and information we have brought back with us will be of the greatest use in our work, and we hope that they may be of some interest to others.

## Basle.

We arrived at Basle at 7.20 a.m. on Thursday, March 1st, and after breakfast made our way to the hospital, where we met Professor Hotz. He received us most cordially, and we found ourselves seated in the front row of his class of fifty students. The professor is a slight, alert man of medium height, 45 years of age, with a quiet incisive manner which rivets attention, whilst his unfailing sympathy with both his patients and his students marked a most attractive personality. After a few words of greeting to his visitors he proceeded with his regular morning demonstration.

A number of simple surgical cases followed one another into the theatre—a child with a dentigerous cyst, a woman with a sarcoma of the upper jaw, a child with an empyema which had discharged through a bronchus. Three students were called down to examine the cases, and the lecturer directed most of his questions and remarks to them. In the background were four assistants, in addition to the sister and the theatre attendant. For each case there had been provided every possible accessory in the way of photographs, radiographs and specimens, whilst the blackboard and epidiascope were in constant use. An hour later the students retired and the lecture room became an operating theatre. We saw two colloid goitres removed under local anaesthesia, with exquisite technique, practically no bleeding, and no pain. Several operations for appendicitis followed, but in these open ether was given by a nurse.

In the afternoon we visited the wards, where 150 beds are under the direct control of Professor Hotz. The cases were grouped according to diseases in small wards containing from three to ten beds—a most convenient arrangement, as thyroids and gastric cases, for example, could be studied and treated as separate groups. The surgical section included a full range of laboratories, x-ray and electro-therapeutic departments, as well as an out-patient department, all under the absolute control of the professor.

In the evening Professor Staelin, the head of the medical section, gave us an admirable demonstration on the treatment of chronic empyema in adults. It was illustrated by superb radiographs and charts, and a whole series of cases was provided for our inspection. It was a fine example of the class of work which can be produced with the help of a group of highly trained assistants, and it was an object lesson in the close co-operation which exists between the medical and surgical sections.

Next day we made an early start with a lecture at 8 a.m., and when I say that in the course of the day we fitted in five clinical demonstrations, watched two surgeons in their operating theatres, and visited the new Institute of Anatomy, I think it will be agreed that we did not waste our time. We were left with the impression of demonstrations superbly staged, of a great wealth of clinical material organized as is only possible when it is under the control of one head, and of apparatus and accommodation provided for teaching without any regard as to its cost.

For sheer technical perfection it would be impossible to surpass the demonstration given by Professor Hotz to a group of students just entering upon their surgical training. A case of tuberculous spondylitis with severe deformity was shown, and the results of such a deformity discussed from the point of view of anatomy and physiology in terms readily understood by his audience from their knowledge of these subjects alone. The demonstration was illustrated by superb specimens, both dry and bottled, and by diagrams, whilst cases of lumbar abscess and of paraplegia were brought in to illustrate complications. The preparation of such a demonstration must have involved a large amount of work both for the professor and his assistants, but it gave to the students a clear view of surgery as a reasoned science and a high standard for their own clinical study.

In the afternoon we visited the new Anatomical Institute recently erected and equipped by the Canton of Basle at a cost of £100,000. I have seen in England no school for the teaching of any subject that could in any way compare with it. An open position and fine architecture form a prelude to spacious dissecting rooms, research laboratories equipped with every modern appliance, and a lecture theatre which did everything but speak. As teachers ourselves under somewhat different conditions, we found it difficult to imagine what teaching must be like when the pressure of one button brings up a fresh blackboard or a new drawing, and another excludes daylight in a few seconds, where every possible dissection is ready to hand, and where one's voice is never drowned by the roar of traffic.

Near by we saw the foundations of the new maternity wing of the gynaecological clinic. It is to cost £200,000 and when completed will accommodate two-thirds of the women of Basle in confinement. What may not the future of Switzerland be when a small canton is prepared to provide such resources for the health of its children and the training of its medical men?

On Saturday we were privileged to witness a very remarkable demonstration. It is the custom on Saturday morning for the whole medical staff to meet in the lecture theatre of the pathological department. We found all the material from the operations and *post-mortem* examinations of the week neatly arranged on trays. Professor Roessle gave a rapid description of each case, occasionally referring to one of his audience for some clinical detail about his case.

Such a review by the medical and surgical staffs of their week's work must be a wonderful stimulus to efficiency. It supplied us with considerable food for reflection.

## Zürich.

The head of the surgical clinic at Zürich is Professor Clairmont, a pupil of von Eiselsberg of Vienna. He is a man of 47, of dominating personality, and a fine exponent of the minute technique of the Vienna school. We met him in his operating theatre at 8 a.m. on Monday, March 5th, and saw a varied series of operations including Lerich's operation on the brachial artery for Raynaud's disease in a woman of 38, a thyroidectomy under paravertebral anaesthesia, a laminectomy under local anaesthesia, a nephrectomy for tuberculosis, and a cholecystectomy. Each operation was carried out with the most elaborate ritual and extreme minuteness of detail, occupying a very long time in abdominal work. The professor was surrounded by a large number of highly trained assistants, one or other of whom, as a rule, completed the final stages of the operation.

In the afternoon we were shown round the hospital. The patients were grouped in small wards, containing from four to ten beds, largely in accordance with disease. The



most elaborate care was taken in the examination of the cases and in the keeping of records. We saw special rooms equipped for basal metabolism, for continuous bath treatment, and for the making of plaster casts. In one room we were shown a most remarkable collection of models of diseased conditions—for example, carcinomatous ulcers of the breast and face, chronic ulcers of the stomach, and deformities. The specimens were so perfect as to be almost indistinguishable from the original conditions. They were made of wax by an artist who is retained entirely for this purpose, and who uses a process of his own invention. In addition, two artists devote the whole of their time to the drawings of specimens and cases. We saw superb records—photographic, water-colour, and pencil. A small library, well equipped with modern literature and journals, is provided solely for the use of the assistants.

The x-ray department entirely eclipsed anything we had ever seen. For diagnosis there was a large department with many sets of apparatus, all of the most modern type. The rapidity with which extensive examinations could be carried out was very remarkable, the actual time occupied in discovering, examining, and photographing a duodenal ulcer being less than four minutes. It is true that we obtain equally good photographs, but at the cost of enormously greater labour to the staff. The apparatus for treatment was installed nine months ago by Siemens and Halske. It is entirely in duplicate, and so enclosed that injury to the operator is impossible. The transformer has an output of 500,000 volts and is placed in a room beneath. By means of an ionic quantimeter the dosage at any depth in the tissues can be measured with mathematical accuracy. To compare it with any ordinary apparatus is to compare the latest Rolls-Royce with the cars that made the first journey to Brighton.

#### Berne.

Professor de Quervain is a short, thick-set man of 50. He came from Basle to Berne in 1918, following Kocher, who had raised the surgical clinic of Berne to the premier position in Switzerland. Nothing could be greater than the contrast between Berne and the clinics we had just seen. The neat dexterity of Hotz, the irresistible driving force of Clairmont, were replaced by a slow technique and an entire absence of any regard for external appearances. But though the technique looked slow the operations did not occupy an excessive time and the condition of the patients next day was extraordinarily good. We saw two operations for goitre, one for appendicitis, and a resection of the stomach for carcinoma in a man of 59. In each case local anaesthesia was employed, assisted in the stomach case by splanchnic anaesthesia, and in the end by a general anaesthetic.

The Berne clinic differs from the others in that it only controls 100 of the surgical beds of the hospital (600 beds in all). Drs. Arnt and Wildbolz were in charge of the other surgical beds, and were evidently regarded by Professor de Quervain as equal colleagues. To the clinic are attached its own laboratories for clinical and pathological examinations, x-rays and microphotography, a large amount of the routine work being carried out by a sister. As might be expected in the home of thyroid surgery, great stress is laid on the investigation of basal metabolism, and a room was set aside for this purpose. The professor also told us of a series of experiments he is conducting on the effect of thyroid secretion on rats. They are placed under a bell jar and the air aspirated. The normal rat vomits when the pressure reaches 300 mm. of mercury. Rats fed on thyroid, or the blood of patients with exophthalmic goitre, react at 500 mm.; but rats given blood from cretins reach a pressure as low as 250 mm. before reaction occurs. The method is being used practically for testing the strength of thyroid preparations.

De Quervain left upon us the impression of a powerful brain devoted not so much to the technique of surgery as to its larger problems; the problem which at present absorbs him is endemic goitre and the cretinism which accompanies it. The Swiss goitres are of the colloid type; adenomata are uncommon, and Graves's disease is very rare. The contrast with English cases is very remarkable, since with

us enlargement of the thyroid is so frequently accompanied by excess of secretion, whilst in Switzerland the reverse is the case. An interesting attempt to control the disease is the addition to commercial salt of a small proportion of potassium iodide. In this form, or in chocolate tablets, iodine prophylaxis is now being tried in Switzerland on a large scale amongst the school children.

To spend a day in Berne is to realize how grave is the problem for the Swiss nation. A large proportion of the women seen in the street and many of the men have goitres. The two porters who carried our bags to the station were half cretins. A large proportion of the population is of the slow, phlegmatic, hypothyroid type, and big institutions have to be provided for cretins and mongols, unable to care for themselves. Yet even this has its compensations, for, as de Quervain pointed out to us, the Swiss were too phlegmatic to worry about the war. A thyroid secretion has apparently proved an expensive luxury to the other nations of Europe.

#### Lausanne.

We met Professor Roux in his lecture theatre at 8 a.m. on Friday, March 9th. He is a man of 66, with curly white hair and gleaming eyes. His energy is amazing, and from the minute when he began to lecture at 8 o'clock till he finished operating at 1.30 p.m. he never ceased to talk or to be the driving power of the whole clinic.

He starts every morning with a lecture demonstration at 8 o'clock (in summer it is sometimes 6), at which every student must be present. Cases followed one another into the lecture room to be demonstrated by Roux with a wealth of reminiscence and an incisive and apposite wit which I have rarely heard equalled. Two students were called down to examine each case, and for a nervous beginner it must have been a somewhat terrifying experience. We ourselves shared the students' anxiety, for more than once the professor turned to us and asked us in rapid French the views we held in England on some subject. Fortunately he did not press his questions too far, or I am afraid our French, at least, would have been unequal to the occasion. Always courteous, never disturbed by any mischance, we realized that in him there lived a great personality, stimulating all with whom he came into contact, adored by his colleagues and students, and almost worshipped in Lausanne.

The last case was that of a woman in bed with a large pelvic tumour. Having discussed for half an hour every possible diagnosis, Roux wakened up the woman, who had fallen asleep, and asked if she would mind if he made a little incision to see what the tumour really was. As she raised no objection an anaesthetist was called in, the lecture room was rapidly converted into an operating theatre and the patient transferred to a table. A generous incision revealed an enormous mass of carcinoma, apparently arising from the right ovary, and certainly involving everything in the neighbourhood. Nothing daunted, the professor proceeded to separate it from its surroundings with amazing speed and dexterity. He was soon standing ankle deep in swabs and debris, for everything found its way to the floor, but the tumour came out with very little damage to the patient, who was swept away into an adjoining room to have her abdomen closed by an assistant. The floor was swept up with a large besom, and in a breathless stream cases followed one another through the theatre, amongst which I at least noted two goitres, two appendix cases, and a very extensive gastrectomy. When half-past one arrived we were all in a state of collapse, but the professor seemed as fresh as ever. For five and a half hours he had never ceased for one minute to talk and to demonstrate.

Several motors were waiting for us at the doors of the hospital, and we were driven off by Professor Roux to a magnificent lunch. It was my fortune to sit beside the professor, and though he now looked old and tired, he continued to pour out reminiscences, whilst I gathered together all the French I could muster to stimulate him. He spoke of the difficulties of his early boyhood, and of the life of a poor Swiss peasant. He reminded us how Swiss chalets are all built on the side of a hill to face the south, and he told me that it is the custom for the father and mother to live and work in the sunny front room, whilst



the children live as best they can in the cold, dark, airless room facing the hill behind. But, said he, on a cold night they could always sleep with the cows, and many a night he had gone to sleep nestling against his father's cattle.

It seemed to me the finishing touch to a great personality. When the surgeons of to-day were boys at school Roux was one of the giants of surgery—a man whose name will live beside those of Lister and Paget, who to-day is the idol of his country, and yet could speak naturally and simply of his humble boyhood as a happy reminiscence. Professor Roux is a prince among surgeons, but it is not only as a surgeon that he will live in my memory.

#### SOME IMPRESSIONS.

From our short visit we gathered certain impressions which it may be well to summarize.

##### 1. Teaching.

In all the clinics we visited the teaching of the students centred entirely round organized demonstrations in the lecture theatre. In this respect it differs fundamentally from the methods we adopt in this country. In bedside teaching given to small groups of students by individual members of the staff, our students have an opportunity to which the Continental system affords no parallel. We, on the other hand, can give our students nothing comparable to the demonstrations we have seen abroad. We were all agreed as to the value of such demonstrations, prepared by highly trained assistants and perfectly staged with all the resources of the modern lecture theatre. As a stimulus and as a standard, both for the student and the teacher, they are of real value, and in my opinion no educational system can be considered satisfactory in which they do not take a prominent place.

##### 2. The Staff.

At each clinic the professor held a unique position, his assistants being essentially subordinates. Such a system lends itself to a co-ordination impossible for ourselves. On the other hand, the system depends for its success absolutely upon the personality of one man, whilst it greatly limits the opportunities and destroys the initiative of everyone else. If each of our firms had attached to it a paid assistant we should in a large measure obtain the advantages we saw of help for the teachers and training for the younger men without the disadvantages of centralization. The head of each clinic was given full opportunities for private practice. In Basle a private section was run by the hospital for the professor, definitely as a recompense for his services. In Zürich he was accommodated in a fine institution controlled by the Red Cross Society.

##### 3. The Hospitals.

The hospitals belong to the town or canton. So far as we could gather they do not depend on voluntary support. A charge of about 6 francs (5s.) a day is made for each patient, but the whole or greater part is defrayed by a national insurance, to which the whole of the working classes contribute. The fees of the students are for the most part paid from national sources, and the cantons and towns vote large sums for new buildings and equipment, both clinical and educational.

Every hospital we visited was equipped with first-class operating theatres, and with clinical theatres (usually many) far superior to anything of the kind we had ever seen. I have seen nothing in England to compare with the anatomical department just opened, or with the maternity department in course of erection at Basle.

It is most improbable that at the present day such equipment can be provided in England from private sources, and it was our unanimous opinion that our only hope of raising the equipment of our training schools to the level of Switzerland lies in the support of our hospitals by the State. The Swiss have recognized the health of their nation and the care of their sick as primary national duties, not to be left to the vagaries of private enterprise. And they have realized that a highly trained medical service is as valuable an asset as a nation can possess. I hope that we may soon be given an inspired glimpse into the obvious, and follow their example.

## THE SPAHLINGER TREATMENT.

We published three weeks ago (May 12th, p. 830) an article giving a general review of the position with regard to the method of the treatment of tuberculosis at which M. Henri Spahlinger has been at work for the last ten or twelve years. Reference was there made to the complete and partial serums and the complete and partial vaccines that M. Spahlinger had produced and had placed at the disposal of certain physicians, although material has not been made generally available.

It will be of interest to give some further particulars about the various products which, as has already been implied, can be classified under two headings, namely: (1) vaccines; (2) anti-serums. A great majority of the cases of tuberculosis treated are given vaccines. Serum is only used in rapidly progressive cases, or in special emergencies.

#### The Vaccines.

These products are essentially similar to the tuberculins, the use of which from time to time has been advocated. M. Spahlinger has modified and elaborated the methods for the preparation of tuberculin or vaccine, and claims to have obtained products which are more effective than other preparations. Tubercle bacilli are treated by various processes and four vaccines are made. The complete course of vaccine treatment consists of successive courses of injections of each of these four vaccines.

#### Preparation of the Serum.

What is called the complete anti-serum is made by mixing a large number of (partial) anti-serums, each obtained from a horse which has been subjected to some particular course of injections. The serum of each horse which is added to the mixture is called a partial anti-serum. The partial anti-serums are of different kinds; some are obtained by injecting tubercle bacilli or products of tubercle bacilli into horses, some by injecting other varieties of bacteria which are found associated with the tubercle bacilli in cases of mixed infections. The former group is further divided into bacteriolytic serums and antitoxic serums. The antitoxic serums are prepared by injecting products which are called toxins. These products are obtained from tubercle bacilli by somewhat elaborate methods.

The methods imply nothing new in principle and are essentially those which have been tried sometimes with and sometimes without success in other bacterial diseases.

It is sought (1) to produce active immunity against the tubercle bacillus and its toxins in the patient by the injection of a vaccine, and (2) to make an anti-serum which has antitoxic and bacteriolytic properties and to use this anti-serum to confer passive immunity on a human being.

These are the general principles which have inspired every worker from the times of Pasteur and Behring. The only novelties relate to the technical details and exact methods of preparation of the substances which make up the vaccine and of the various products which are used to inoculate the horses. The exact methods employed are secrets; at any rate the full details which would be needed by anybody who wished to work at the method have not been published. As regards the vaccine, an attempt is made to produce an active immunity by the injection of a series of substances obtained from tubercle bacilli. We do not know of any published experimental data which show that animals inoculated with these vaccines develop immunity against the tubercle bacillus. There remains the evidence to be derived from clinical observations on cases treated with these vaccines. On this point it is not yet possible to form an opinion; it is notoriously difficult to obtain satisfactory evidence unless a very large number of cases are treated and observed under strict experimental conditions, which are difficult to maintain in the ordinary course of medical work.

#### Effects of the Anti-serums.

It is claimed that the mixture of serums, which is called complete serum, contains both bacteriolytic and antitoxic serums. Antitoxic serums are prepared by injecting horses with preparations which are called ecto-toxins and endo-toxins. We have not seen any published experiments which



show, or attempt to show, that these substances are toxins in the sense in which bacteriologists use the word "toxin." In the case of diphtheria bacilli and the tetanus bacilli, as everybody knows, it is possible to prepare a bacteria-free toxin which when injected into animals produces the characteristic features of the disease in question. Nobody has ever succeeded in making a potent ecto-toxin from tubercle bacilli, and M. Spahlinger has not published any experiments which would support the claim that he has been more successful than other workers. The serums which he calls antitoxins are so called because they are obtained from horses which have been injected with substances which he calls toxins. We do not know of any published work which shows that these serums contained antitoxins, and as there is no evidence that M. Spahlinger has ever prepared an extracellular toxin, in the ordinary sense of the word, from the tubercle bacilli, it is difficult to say how such evidence can be forthcoming. The claim for the antitoxic properties of the serum is based on the fact that cases of rapidly advancing caseous tuberculosis have been arrested by the use of the serum. As to the value of such clinical evidence it is not possible, from the material so far published, to express any opinion. It is common knowledge that many cases of acute caseous tuberculosis do survive the acute stage and reach a chronic stage, when the patients are able to resume a more or less normal life. The cases of pulmonary tuberculosis showing the signs of large dry cavities, which may be seen in any out-patient department, are sufficient evidence of this.

It is, of course, possible that the elaborate and complicated methods which M. Spahlinger employs may possess advantages, but there is no laboratory evidence that they are any better than what has been done before, and the only evidence there is rests on the observations of some clinical observers who have been favourably impressed by the results which they are obtaining.

## THE DANGEROUS DRUGS AND POISONS (AMENDMENT) ACT, 1923.

### STATEMENT BY THE HOME OFFICE.

We have received from the Home Office the following statement, dated May 28th, 1923:

The Secretary of State desires to draw attention to the provisions of the above Act, which received the Royal assent on the 17th instant and came into force at once. This Act amends and amplifies the Dangerous Drugs Act, 1920, and amends Section 17 of the Pharmacy Act, 1868; but it should be noted that it does not vary the drugs to which the Dangerous Drugs Act, 1920, applies, and does not in any way alter the Raw Opium Regulations or the Dangerous Drugs Regulations which are now in force. The effect of its provisions may be summarized as follows:

*Section 1* gives increased powers of search. It empowers a Justice of the Peace to grant a warrant to search any premises and any persons found on the premises, in any case where he is satisfied that there is reasonable ground for suspecting that drugs are being kept illicitly, or that a transaction in drugs which will be contrary to the Dangerous Drugs Acts or the "corresponding law" in a foreign country ("corresponding law" is defined in Section 6) is being carried out or is in contemplation and that documents relating to the transaction are to be found on the premises; and the constable who makes the search may, on reasonable suspicion of any offence, seize any drugs found or any documents relating to a transaction of the character referred to. It also makes it clear that the existing powers of inspection in Section 10 of the Act of 1920 cover documents as well as books.

*Section 2*, Subsection (1), substitutes two new subsections (1) and (2) of Section 13 of the Act of 1920. The first re-enacts the existing Subsection (1), with the addition of two new offences, viz. (1) the making or using of false statements with a view to obtaining a licence or other authority under the Act, and (2) the aiding, abetting, procuring, etc., of the commission outside Great Britain of any offence against the "corresponding law" (see Section 6) of that country, or the doing of any act preparatory to or in furtherance of any act which if committed here would be an offence against the Dangerous Drugs Act. Under the second of these provisions, it should now be possible to deal effectively with persons in this country who organize the smuggling of drugs from the Continent to the Far

East, the United States of America, and other countries, but do not themselves handle any of the drugs in this country. It will be noted that the powers of search given by Section 1 extend to such cases.

New Subsection (2) increases the penalties under the old Act. It enables proceedings to be taken on indictment by or with the consent of the Attorney-General or by the Director of Public Prosecutions, in which case the penalty may be as much as a fine of £1,000 or 10 years' penal servitude, or both, and substitutes for the graduated penalties fixed by the Act of 1920 for first and subsequent offences on summary conviction a uniform maximum penalty of £250 or 12 months' imprisonment, or both. An exception is made for offences committed through inadvertence in connexion with the keeping of records or the giving or dispensing of prescriptions if not connected with any offence or intended offence against the Acts. In these cases the maximum penalty is a fine of £50. Persons attempting to commit, or soliciting or inciting another person to commit, an offence are made liable to the same penalties; and directors and officers of companies are made personally liable for offences committed by their companies, unless they can prove that the offence was committed without their knowledge or consent.

Subsection (3) of Section 2 makes clear two points about which doubt had been felt: (a) that in a prosecution under the Act it rests with the defendant to prove that he had a licence or other authority to do what he is charged with doing, and that the onus is not on the prosecutor to prove that he had no licence or authority; (b) that a term of imprisonment for non-payment of a fine imposed in addition to a penalty of imprisonment may be ordered to commence *after* the expiration of the sentence of imprisonment. Sections 3 and 4 are amendments of Section 17 of the Pharmacy Acts.

*Section 3* relates to the sale of poisons to registered medical practitioners, registered dentists, and registered veterinary surgeons. Under that Section purchasers of poisons included in Part I of the Schedule of the Poisons and Pharmacy Act, 1908, are required to sign the poison book. This provision had been very much neglected in the case of sales to doctors, and after consultation with the British Medical Association and the Pharmaceutical Society an alternative procedure has been laid down in the Section. This procedure is as follows:

(a) The doctor, etc., must furnish a signed order, bearing his name and address, and stating the nature and amount of the poison required.

(b) The chemist must be reasonably satisfied that the signature is genuine, and is that of a duly qualified doctor, etc.

(c) The poison, if sent by post, must be sent by registered post.

(d) The chemist must himself make an entry in the poison book, and must keep the original signed order for at least two years.

Special provision is also made for the supply of a poison to a doctor in an emergency.

This procedure will apply to sales to registered doctors, dentists, or veterinary surgeons of the dangerous drugs; and either this or the signature of the poisons book should be required to be observed. It should be noted that the provisions of Section 17 of the Act of 1868, and of Section 3 of this Act, apply equally to sales by wholesale dealers to doctors, dentists, and veterinary surgeons.

*Section 4*, Subsection (1), dispenses with the entry by a chemist in his prescription book of the particulars of medicines containing poisons dispensed by him as medical prescriptions issued under the National Health Insurance Acts, as these prescriptions are preserved by the Insurance Authorities, and are available for examination if required by the authorities. Subsection (2) strengthens the provisions of the law with regard to the labelling of poisons. The label must in future state the name of the poison (not merely, as previously, the name of the article, which might give no indication of the nature of the poison it contained), and, where the poison is only one of the ingredients, the proportion it bears to the other ingredients. An Order-in-Council will be issued describing the particulars to be given as to the proportion.

*Section 5* gives statutory sanction to the existing practice in calculating the percentage of a solid ingredient in a liquid preparation. It is the method used in the *British Pharmacopoeia*.

DR. KLEIWEIG DE ZWAAR, professor at the University of Amsterdam, has instituted a triennial prize of the value of 2,500 francs, which will be awarded for the first time in 1924 for the best work in physical or prehistoric anthropology during the preceding three years. Candidates should apply before November 1st, 1923, to the Secretary, École d'Anthropologie, 15, Rue de l'École de Médecine, Paris.



# British Medical Journal.

SATURDAY, JUNE 2ND, 1923.

## THE BRITISH MEDICAL ASSOCIATION.

THE British Medical Association, various and mutable, takes for its province all that concerns the medical profession—science, clinical medicine, public health, and material interests. The vast majority of its members are, in the nature of things, general practitioners, but from its earliest small beginnings in 1832 it has gone on the principle that, representing the profession as a whole, it was under an obligation to contribute to the advance of medicine. In the Memorandum of Association its objects are defined; we read there that the Association was established to promote the medical and allied sciences, to maintain the honour and interests of the medical profession, to circulate such information as may be thought desirable by means of a periodical journal, and to grant sums of money for the promotion of the medical and allied sciences. Another object is to hold periodical meetings of the members of the Association, and this has been fulfilled through the meetings of Branches and Divisions, and through Annual Meetings, which have been held without any intermission save that caused by the great war.

The Annual Meeting this year is to be held in Portsmouth, under the presidency of Mr. C. P. Childe, F.R.C.S., senior surgeon to the Royal Portsmouth Hospital, who will deliver his address on the evening of Tuesday, July 24th. The Sections, of which there are as many as sixteen this year, will meet on the three following days and will debate a large number of subjects of current clinical or scientific interest. Thus in the Section of Medicine there are to be debates on diabetes and on heart disease in early life. In the Section of Surgery there will be, among other discussions, one on the treatment of acute primary infections of the hand. One of the discussions in the Section of Neurology and Psychological Medicine, that on the sequelae of lethargic encephalitis, will be followed by a demonstration. In the Section of Diseases of Children there will be discussions on acidosis and alkalosis, and on summer diarrhoea. Modern methods of investigation of diseases of the stomach, the value of serological tests in diagnosis, and the part played by fungi in disease are the subjects selected for discussion in the Section of Pathology. There will also be a Pathological Museum, and it is hoped that many members will lend specimens, particularly if they have a bearing on the subjects for discussion in the various Sections. A full programme of the work of the Sections is printed in the SUPPLEMENT for this week.

The Annual Representative Meeting, which will begin on Friday, July 20th, has a full agenda paper. In the current issue of the journal of a certain professional organization a member complains that, whilst the provisional programme of his association's annual meeting has been published practically *in extenso*, the delegates are still in the dark as to the work that lies before them. The fact that detailed reports on the more vital issues of policy to be dealt with at Portsmouth have from time to time been circulated to the Divisions according to established custom is alone

sufficient to defend the British Medical Association from a similar charge. With the Annual Report of Council in his hands a representative would be better justified in reversing a familiar request and pleading for less matter and more art; but even so he would probably admit upon reflection that the art which can reduce the record of the year's activities to the volume even of the present report is by no means to be despised. For the Annual Report shows that while the Association continues to grow in membership, as indicated by an increase of over 700 in 1922, and in extent, with the formation of new Branches in St. Lucia and in Tanganyika, its vitality, as tested by the work actually performed and its ability to meet the changing needs of the profession, is amply sufficient to maintain that growth. Amongst the matters covered by the report a few may be distinguished as of more than ordinary interest.

We will place foremost among them the coming visit of the President of the Association to the first session of the Australasian Medical Congress to be conducted under the control of the Federal Committee of the British Medical Association in Australia. Sir William Macewen will, we know, receive a very warm welcome, and the augury is a happy one for the future relations of the central body of the Association and its Branches in the Dominions. At home the Guildhall conference between representatives of various bodies interested in National Health Insurance, and the consequent appointment of a standing committee to consider the various questions involved, maintains the tradition of co-operation in public service, while in another sphere the evidence given before the Lord Chancellor's committee on the law affecting insanity in connexion with criminal cases is of like significance. The successful parliamentary campaign for the withdrawal of the Dangerous Drugs Regulation prohibiting prescription of the drugs by a medical practitioner for his own consumption, and the excision from the Dangerous Drugs (Amendment) Bill of the distinction between a doctor "in actual practice" and other registered medical practitioners, shows the advantage of a close central scrutiny of all legislative and administrative proposals affecting the profession, and the possibility of speedy and effective co-operation in such matters between the Divisions, the central office, and the medical members of Parliament.

Amongst the matters for deliberation and decision two stand out as of primary importance: the hospital policy of the Association, and the proposed scheme for co-operation between the Association and the Society of Medical Officers of Health. The hospital policy is, in its essentials, that which was before the Representative Body last year at Glasgow. The work of the year has been mainly that of consolidation and definition, and while the need for decision as to the vital question of the staff fund in relation to payments made by or on behalf of certain classes of patients remains as urgent as it was twelve months ago, and not less controversial, it will at least be debated with less chance of misapprehension as to the actual point at issue.

Three years have passed since the Representative Body at Cambridge declined to accept the scale of public health salaries submitted by the Society of Medical Officers of Health, and the policy now submitted as agreed between the council of that Society and the Council of the Association is the fruit of three years' experience and deliberation. That experience covers both the short day of reconstruction and inflation and the succeeding period of economic depression and retrenchment; the resulting proposals



should therefore stand the test of the searching criticism to which they will rightly be subjected at Portsmouth. But, after all, the salary scale, though an essential portion of the policy to be considered, is not its only or indeed its chief feature. Neither the Association nor the Society is solely or even primarily interested in remuneration. The development of the powers and obligations of local authorities in regard to public health, abnormally accelerated by war conditions, no less than the continuous growth of preventive medicine, calls for a more authoritative and comprehensive expression of professional opinion than any yet promulgated. That an agreed statement of policy with regard to the development of public health services is presented to the Representative Body together with the new salary scale is in itself sufficient earnest of the future. Finally, the recognition by the Society that all medico-political work should, subject to certain safeguards, be left to the Association, together with the provision for direct representation of the public health services on the governing bodies of the Association, suggests a constitutional solution of a difficulty which at one time threatened a disastrous division.

The Association, through its Naval and Military Committee, keeps in touch with members serving in the Navy, Army, Air Force, and I.M.S. During the war and the years that immediately succeeded the armistice the work of the Committee was heavy, and many matters of importance to each service as a whole were dealt with, as well as a very large number of cases affecting individuals. The value to officers of all services of having a strong organization to take up their grievances when it has been found impossible to obtain redress through the ordinary channels is inestimable. The high-handed action of the Admiralty in retiring compulsorily Senior Surgeon Commanders before the age of 55 was strenuously opposed, but the means by which the rulers of the Royal Navy can be resisted are restricted by law and usage, even when their action amounts to a breach of agreement, which in the case of a private firm would be good warrant for legal proceedings. The Admiralty was not willing to receive a deputation from the Association, and memorandums stating the case for the officers met with a blunt refusal. As the Admiralty remained obdurate it was informed that the Association must advise medical men that if they entered the Royal Naval Medical Service they must realize that so long as the present policy is maintained the Admiralty could not be trusted to keep any engagement it might make with its medical officers.

An Army Order amending the Pay Warrant was issued in 1920, and it was found that Majors were to lose rather than gain in the amount of their retired pay as a result of the revision; some of them, indeed, stood to lose £44 a year. The matter was taken up with the War Office, and the net result was a further revision of the retired pay, which amounted to a gain of £75 all round. By this the Major of twenty years' service got back his lost £44 and received an additional £31 per annum. By the revision in 1920 of the pay of officers of the Indian Medical Service certain increases were received, and this improvement was due to years of persistent work by the British Medical Association. Owing to political and economic conditions the future of this fine service is uncertain, and the uncertainty, which is reflected in the recruiting, is in part due to the way in which the Government of India has played fast and loose. The difficulty all the medical services experience in obtaining recruits is well known, and the Association loses no oppor-

tunity of expressing its views on the reasons for the shortage. It is understood that army pay generally is about to come under review, and the Association will take steps to ensure that the pay of medical officers shall be dealt with satisfactorily.

The Association has been officially recognized as the mouthpiece of postal medical officers by the Postmaster-General, and in November, 1921, set up a special subcommittee to deal with matters of concern to them. Something has already been accomplished; it has, for instance, been decided that itinerant postal servants shall as far as is feasible be placed on capitation lists. The fee for such itinerant servants has been raised, and the rule fixing a maximum number of visits to be charged for has been abolished. The fee for emergency cases has been increased, and the half-yearly maximum of 13s. per case has been replaced by a 12s. maximum per quarter. The form of report for candidates for the postal service has been simplified, and the fee for making it raised, as has also the fee for special consultations. A strong effort has been made to obtain equal pay for whole-time post office medical officers, whether male or female, but it has not been possible to induce the authorities to depart from their established custom of paying a lower rate for its women employees than for its men.

Of the work which has fallen to the British Medical Association since the armistice none is more difficult, more complex, more subject to delay and disappointment than that on behalf of the members of the profession scattered amongst the various colonies and dependencies of the Crown, most of them working as whole-time or part-time servants of the several Colonial Governments. True, there has been some advance; but it has not been possible, notably in the case of the West Indian colonies, to consolidate the position which seemed to have been attained in December, 1920, when, after the repeated protests of the Association and the exclusion from the *JOURNAL* of advertisements of vacancies in these services, the report of the Egerton Committee was published and satisfactory assurances were received from the Colonial Office that effect would be given to its more urgent recommendations. Substantial concessions were then secured as regards pay and conditions of service, particularly in the West and East African groups, but, even in these more favoured areas, the immediate outlook is dark. We have recently called attention to the reduction of personnel in the Kenya Colony Medical Service and to its implications, more especially as regards security of tenure and the licensing of partially qualified medical practice. Now we learn, from the reply of the Under Secretary of State for the Colonies to a question by Dr. Fremantle in the House of Commons, that ordinances have recently been allowed which reduce the standard required for medical registration in British Honduras, the Turks Islands, and St. Vincent.

It is difficult to believe that the position now reached is exclusively determined by the financial difficulties of the several colonies. Indeed, there is available direct evidence that this is not the case. Other considerations are involved, and amongst these we would give a prominent place to the defects in the central machinery for dealing with the affairs of the Colonial Medical Services. Whilst agreeing with the Egerton Committee that a unified Colonial Medical Service, recruited by examination and administered by its own Director-General, is an ultimate rather than an immediate objective, we regret that more advance has not been made along the lines recommended by the Committee and urged by the Association; we are forced to



the conclusion that the existing expedient of a medical advisory committee is an insufficient safeguard for the interests of these services. A day will come when the medical and sanitary services will be generally recognized, in deed as well as in word, as productive services, and the successful development of agriculture and industry amongst a population crippled by preventable disease will be realized as dependent upon the adequate application of the principles of hygiene and sanitation. But the time is not yet, and until provision is made by the Colonial Office for the review of all matters affecting its medical and sanitary services by a medical department with a responsible professional head, those services must continue to depend in the main upon the British Medical Association as a means of bringing their needs and the needs of the communities which they serve before the distant authority which has the ultimate voice in determining the conditions of their development.

### PREVENTION OF HEART DISEASE.

IN a summary of Sir George Newman's memorandum on Recent Advances in Medical Education in England (BRITISH MEDICAL JOURNAL, May 5th, p. 772) we quoted the General Medical Council's recommendation "that throughout the whole period of study the attention of the student should be directed by his teachers to the importance of the preventive aspects of medicine." The idea of prevention of disease is to be a pervading influence guiding all clinical study and practice. In other words, the "cure" of health, using the word "cure" in its now almost obsolete meaning of care, is to be the ideal rather than the cure of disease. A feeling has crept into the profession, perhaps unconsciously, that the control of certain specific infections in greater or less part by the public health authorities signified that these diseases alone were considered to be preventable, and perhaps less has been done in the way of prevention of other diseases than might have been the case. Janeway, in the Shattuck lecture in 1916, said: "By as much as the proverbial value of prevention exceeds that of cure does the importance of study of the causes of disease surpass that of its manifestations, its results or its treatment." An attempt to discover the causes of disease has not been wanting in this country, but often any systematized attempt to make use of that knowledge has been absent.

In the case of disease of the heart it is noteworthy that the most that has been attained is not the cure of the disease but its care, and comparatively little is heard of its prevention. The natural history of diseases of the heart has been the subject of much study and already much is understood; the mechanism of the heart has been investigated in a way that has rid the symptomatology and the semeiology of many of their traditional inaccuracies; the pharmacopoeia of the cardiologist, after investigation and experiment, has been very much depleted, and the few drugs that remain to him are useful in the treatment of symptoms or of complications, but have little or no effect on the underlying disease. The futility of attempting cure is very generally accepted for most cardiac diseases, and it would appear that the ground has been sufficiently well explored to make practicable the adoption of preventive measures.

Dr. Poynton deals with a very important aspect of this subject (p. 919) in a lecture delivered at the Hospital for Sick Children, where the rheumatic type of disease naturally attracts most attention. The summary of his argument follows very closely the lines

that have been adopted by the Society for the Prevention and Relief of Heart Disease of New York, to which Dr. Moon refers when dealing with another side of the same subject (p. 922). The magnitude and importance of the problem are very vividly presented in some of the figures which have been collected by that society. Thus of 5,000,000 men examined for military service in the United States, over 200,000 were rejected on account of heart defects; in one of the largest insurance companies 2.4 per cent. were rejected for the same cause; of 250,000 children in New York schools 1.6 per cent. were found to have heart defects. In England and Wales, of 366,000 school children examined about 1 per cent. were found to have organic heart disease. Mortality tables present a similar picture, and place diseases of the circulation in an unenviable position at the head of the list of causes of death. In 1919 the total deaths in England and Wales from all causes were 504,203, and of this number 51,530 are registered as organic disease of the heart, while pericarditis, acute endocarditis, and angina pectoris account for other 3,112, and diseases of arteries, embolism, rheumatic fever, and chorea add an additional 15,671 to the list. For comparison one may note the figures in the same year for tuberculosis (all forms), 46,312; bronchitis, 45,543; cancer, 42,144; pneumonias, 38,949. Owing to the incidence in different age periods the comparative wastage from these diseases cannot be drawn from these figures alone, but it is obvious that the economic problem is one which demands serious consideration, particularly when one takes into account the years of invalidism that antedate the fatal issue in most cases of heart disease. With a causal condition that in the majority of cases is frankly infective something should be possible to mitigate the extent of these diseases, and in the rheumatic cases the limitation of reinfection would of itself be of immense value. Sufficient has already been done by the New York society to warrant an extension of their experiments. Thus a limited number of so-called "potential cardiacs," children who had had rheumatic fever, repeated tonsillitis, or chorea, but in whom there was no evidence of heart infection, were cared for and watched for an average period of four and a half years. In the rheumatic or throat cases there was no instance of heart involvement, while in the cases that had chorea, either alone or with rheumatic fever, 39 per cent. developed heart lesions, and this occurred in each case in association with a further attack of chorea. It would appear that the more general rheumatic manifestations could be controlled, but when the nervous system was implicated there was less chance of stamping out the infection. This so far supports the contention of Dr. Poynton that "the subject of chorea is well worth most serious investigation." The education authorities in different parts of the country should be in a position to supply valuable statistical information on many of the points with regard to the incidence of heart disease and some of the etiological factors in its production in those of school age, and the incapacity as regards school attendance that results from it. Much good could also be done by arranging to give definite advice to parents of such children on leaving school as to employment suitable for their physical capacity. In one of his reports Sir George Newman writes: "Recent inquiries have furnished abundant evidence of the fact that many children employed for the first time after leaving school break down physically from heart trouble. . . ." In later years a similar condition



obtains. The cardiac cripple, after a period of treatment in hospital which is frequently too short, goes back to his former unsuitable employment only to prepare for a subsequent and possibly last breakdown. No one will deny that years might be added to many lives by adapting work to incapacity, and while with the present amount of unemployment it would be difficult if not impossible to find alternative work for the cardiac cripple, the problem is one which in more normal times ought to be faced.

In any scheme for the prevention of heart disease there will be room for the co-operation of many forces, and practitioners, school medical officers, hospital physicians, venereal disease specialists, throat and dental surgeons, and district nurses would have to be enlisted. Additional auxiliary hospitals or convalescent homes would be required, as residence in ordinary hospital is necessarily too short and most convalescent homes object to the admission of cardiac cases; in any event there would need to be strict supervision of exercise and recreation.

Dr. Poynton outlines some avenues of attack while dealing more particularly with heart disease in the young. The attention of the student should be drawn immediate and remote effects as they affect the child so that he may appreciate the difference in their immediate and remote effect as they affect the child or the adult. The education of the public, and specially school teachers, in the causes that operate to produce these effects would lead to the earlier enlistment of medical aid when prevention would be most efficacious. In New York much good has resulted from the institution of cardiac clinics, where patients and potential patients are looked after and periodically examined, from the segregation of cardiac cripples in special schools or departments, and from convalescence hospitals, where those recovering from recent attacks have a prolonged period under daily observation.

The subject is to be brought before the Section of Medicine at the Annual Meeting of the Association, and the arguments and information contained in the papers by Dr. Poynton and Dr. Moon will serve a useful purpose by preparing the way. Sporadic and isolated attempts at dealing with a subject of this magnitude would probably prove very ineffectual, and some central controlling or advisory body would almost be necessary for efficient organization.

### THE SPHENOIDAL SINUS.

As recently as the last decade of last century there was to be found in a work on surgical anatomy—we have unfortunately mislaid the reference—a statement "that the surgical relations of the sphenoidal sinus might be dismissed in a few words, as it was evident from its situation in the depths of the head—in the very base of the skull—that it was not and never could be reached by surgical measures." This prophecy was almost as unhappy as Erichsen's *obiter dictum* that surgery had reached its final and ultimate limits, uttered in 1873, when Lister was still in Edinburgh working at the development of the antiseptic system.

Since the beginning of the present century the opening and draining of the sphenoidal sinus has come to be recognized by expert rhinologists as a proper operation in suitable cases. Moreover, growths have been removed from the sinus, and it has been traversed by the surgeon as a means of approach in attacking disease of the pituitary gland. But the wide possi-

bilities of disease which may result from septic invasion of this cavity are still perhaps not generally known, and the two articles by Sir StClair Thomson in the current number may well give food for thought. It was in this JOURNAL that, in 1906, he published an article in which the cerebral and ophthalmic complications of sphenoidal suppuration were illustrated by the records of no fewer than 42 *post-mortem* examinations. One of his articles in our present issue is of particular interest to the physician and general practitioner. It shows how suppuration in the accessory sinuses of the nose, and particularly in the sphenoidal sinus, may be the sole cause of an acute illness of several weeks' duration. The other throws light on the association of retrobulbar neuritis with nasal suppuration. It adds one more to the list of cases proving that the cause of an optic atrophy may be found in a suppurating accessory nasal sinus, and be prevented by draining it. Such records have appeared in this JOURNAL before.<sup>1</sup> How frequent this association may be has still to be ascertained. It has been suggested that retrobulbar neuritis may be caused by simple want of ventilation of the ethmoidal and sphenoidal cavities; that "the mere presence of pus in the sinuses is by no means the usual or only cause"; and that these cavities should be opened and ventilated in certain cases, even in the absence of suppuration. Even should a retinitis clear up after the opening of a healthy sinus, this is no definite proof that the condition of the sinus was the cause. The doctrine is not free from danger, and Sir StClair Thomson, though he quotes, does not support it. He is concerned with cases of undoubted suppuration.

Surgical treatment has been energetically criticized by Harvey Cushing, who states that "many unhappy consequences of indiscriminate and ill-advised operations on the accessory sinuses" have come to his attention, as he is often urged to see patients in *extremis* from meningitis the result of operation by inexperienced hands on the ethmo-sphenoidal cavities. These technical disasters should not occur, and are, we believe, unknown or rare in the hands of well experienced rhinologists. But Cushing also doubts the frequency of the association of sinus affection and visual disturbance, and protests against the latter being attributed to a cause in the nasal accessory cavities simply because other possible causes can all be excluded. As he observes, "when a retrobulbar neuritis is said to be accompanied by 2 or 3 diopters of swelling we are certainly dealing with something which a hyperplasia of the mucous membrane lining the accessory sinuses is not capable of producing."<sup>2</sup>

Surely this matter is one which might be advanced, if not settled, by ophthalmologists and rhinologists discussing it conjointly. The former can tell of cases where causes other than nasal were at work; of cases where no clear cause could be determined; and of cases which recovered spontaneously. The rhinologist can tell of cases in which he appeared to succeed, of others in which he failed, and of the local conditions he met with in the suspected accessory nasal sinus.

Such an investigation might be expected to bear fruit in London now that we possess the finest collection in the world of specimens of nasal anatomy. The Onodi collection, which was secured and presented

<sup>1</sup> Bronner, Adolph: A Case of Thrombosis of the Cavernous Sinus due to Empyema of the Sphenoidal Sinus. *BRITISH MEDICAL JOURNAL*, 1904, vol. ii, p. 1310.

<sup>2</sup> Fish, Henry Manning: A Study of Optic Neuritis in Connection with Nasal Accessory Sinus Disease. *Ibid.*, 1907, vol. ii, p. 1218.

Bradburne, A. Alison: Bilateral Optic Neuritis due to Sphenoidal Sinusitis. *Ibid.*, 1915, vol. i, p. 109.

<sup>3</sup> Accessory Sinus Disease and Choked Disk. *Journ. Amer. Med. Assoc.*, vol. 75, No. 4, p. 225, July 24th, 1920.



to the Royal College of Surgeons through the public spirit of British laryngologists, should go far in helping to settle this question. One valuable clinical point has already been learnt by all who have looked at these beautiful dissections—namely, in all cases of retrobulbar neuritis, even when unilateral, if a sphenoidal focus is suspected, both cavities must be opened and drained, for anatomical abnormalities are so common that the sphenoidal sinus on one side may be in contact with the opposite optic nerve. This illustrates one of the many lessons ophthalmic and nasal surgeons may learn from this unique collection, which is full of interest when studied in connexion with the results of clinical observation.

### THE APPEAL FOR CANCER RESEARCH.

We publish elsewhere (p. 947) the text of an appeal to the public to subscribe to a fund established by a body newly organized with the title "British Empire Cancer Campaign." It is addressed to the people of this country and of the Dominions. There is a proverbial saying that he who sees the end sees the means, and we are prepared to believe that it applies in this instance, but we confess to some hesitation, due, in the main, to the terms of the appeal itself.

Cancer is an implacable disease, and the dread of it is present somewhere at the back of the mind of many men and more women who have reached middle age, especially if they be at all introspective. About its cause we as yet know little, beyond the facts that it sometimes follows long-lasting irritation, and that some irritants seem more apt than others to produce it. But there are a multitude of cases to which this explanation can be applied with difficulty, if at all. In fact, we do not know that all the cases to which the term "cancer" is habitually applied are due to the same class of cause. This is one of the reasons which render the problem difficult even of approach. We cannot be sure that frontal attack is the right strategy. In the heart of man the time is ripe and over-ripe, but has scientific medicine reached the stage when the attack can best be delivered in this way? Have we advanced far enough in biochemistry, in cytology and immunology, and, it may be added, in the study of the invisible viruses, to be sure that the line of progress is not along the roads they open? The conclusion of some German investigators who entered on the quest with much enthusiasm was that scientifically the time was not ripe.

It is for reasons of this order that we hesitate to accept some passages of the appeal; they are no doubt guarded by other passages, but they may easily be read to promise too much and too quickly; before now enthusiasts speaking in the name of medicine have promised more than could be fulfilled. This is not to carp at the excellent aim of the promoters of the appeal, to which we do not doubt the public will make a generous response; there is no question that more avenues of attack can with advantage be opened up and larger forces employed in developing statistical and epidemiological as well as laboratory methods; and if we are content with a cure, as to-day well we may be, the help of the new and vigorous science of pharmacology, which already holds some hopes, must be enlisted. And there is radiology—radium and the intensive x rays. All this means money; it means men also, and wise direction. But from the money aspect alone the public has a right to be assured that the funds it supplies will be wisely expended. Here again we cannot help a certain hesitation; the signa-

tures of the appeal, many of them, are highly qualified to allege the seriousness of the problem, but, speaking quite frankly, we cannot think that they are equally competent to direct the measures that can best be taken for its solution. That perplexing task should be resigned to persons tried in the direction of research, well experienced in what has been picturesquely described as its "growing edge"—where, for instance, to continue the metaphor, the individualism of the living cell, and its power of maintaining itself and multiplying in an unwonted environment, is being watched and tested. There is no lack of such experienced advisers, and there is also, as is enumerated elsewhere (pp. 947-950), a respectable number of leaders experienced in this particular department of research.

The first duty of the promoters of this campaign is, no doubt, to obtain money by a fair statement of our present disastrous position to the public. The second, which should at once be undertaken, is to apply to the Imperial Cancer Research Fund, the Medical Research Council, and the Ministry of Health, asking them to take steps for the appointment of an advisory committee composed of men experienced in general medical research, reinforced by others specially skilled in this particular matter. Otherwise money, and what is vastly more important, time and energy, will be wasted.

### THE HISTORY OF BART'S.

"The history of St. Bartholomew's Hospital from its foundation in 1123 to the present day is a part of the history of England which has never before been written at length." With these words Sir Norman Moore opened the preface to his monumental *History of St. Bartholomew's Hospital*, which was published early in 1919 in two large volumes, of some 1,600 pages in all, with a wealth of sumptuous illustrations. The writing of it occupied his spare moments during more than thirty years of a life of remarkable activity. His son, Sir Alan Moore, says in an interesting memoir in the April issue of the *Dublin Review*: "The hospital records include many hundreds of mediaeval charters, each about the size of a half-sheet of notepaper, containing usually ten or twelve lines of contracted mediaeval Latin. All these he read, besides many others at St. Paul's, the British Museum, and elsewhere. He printed in full, or gave extracts from, more than five hundred belonging to St. Bartholomew's alone. Cartularies, journals, ledgers, and many other manuscripts had to be perused and their contents weighed. . . . Moore read the old records till, for him, mediaeval London lived again. He visited many places mentioned in the charters, talked with the inhabitants and discovered links with the past. His book is worthy of the great hospital and ancient city of which it tells so much." Norman Moore died six months before the octocentenary celebrations of the great foundation whose history he wrote, and it has fallen to other hands to prepare for this occasion a shorter chronicle and an anticipation of future progress bearing the title *A Short History of St. Bartholomew's Hospital, 1123-1923*.<sup>1</sup> The greater part of this handsome volume—well written, well printed on good paper, well illustrated, and well bound—is from the scholarly pen of Sir D'Arcy Power, whose intimate knowledge of the subject is known to all Bart's men and to every student of the history of medicine. There is no man better fitted for this labour of love, and his outline of the past and present of the hospital gives

<sup>1</sup> *A Short History of St. Bartholomew's Hospital, 1123-1923*. Past and Present, by Sir D'Arcy Power, K.B.E., F.R.C.S. The Future, by H. J. Waring, M.S., F.R.C.S. London: Printed for the Hospital, 1923. (71 x 9½ pp. xv + 201; 52 illustrations.) Copies may be had for 11s. (including postage) from Mr. Geoffrey Keynes, F.R.C.S., St. Bartholomew's Hospital, E.C.1.



a clear and graphic account of the progress of an institution which has remained for eight hundred years on the exact site where Rahere placed it in the reign of Henry I. As our readers must be well aware, Rahere established his hospital and his priory at the same time, and the neighbouring church of St. Bartholomew the Great—described by Dean Inge as “still the most beautiful parish church in London”—which held its own celebration in March, is participating in next week's ceremonies. The relationship between the kindred foundations is mentioned in the present volume, but the progress of the hospital naturally forms the leading topic. Sir D'Arcy Power's review of the past, based on original records, carries us rapidly but pleasantly down the centuries, beginning with the earliest days of the hospital and the objects of its founder. He discusses in turn the various features, functions and functionaries, and the customs and possessions, which helped to make St. Bartholomew's what it was and what it is. Next comes an account of the organization of the hospital and its medical college at the present day. Mr. H. J. Waring follows with a forecast of future developments, which puts vividly before the reader two alternative schemes of reconstruction; in this he has been ably assisted by a profusion of architectural plans by Mr. T. A. Lodge. So far as can be judged in the twenty-four hours between the receipt of the book and the time of going to press, this commemorative volume for next week's celebration is a work which all Bart's men and many others whom it concerns will wish to possess. A hasty turning of the pages gives us the idea that it is one of those few books which are worthy, in the words of Bacon, to be chewed and digested—that is, to be read wholly, and with diligence and attention. The pictures are of exceptional interest, and reproduced with great skill.

#### THE UNITED STATES AND THE OPIUM CONVENTION.

IN the issue of the JOURNAL for April 7th attention was directed to the reawakened interest of the United States of America in the traffic in dangerous drugs. While the League of Nations has been preoccupied with the consideration of what may be regarded as the “legitimate” use of opium and the other scheduled drugs, the House of Representatives has been inquiring and reporting to the President in favour of very drastic international action. Last January Mr. Stephen G. Porter introduced a resolution to the House of Representatives urging the President of the United States to seek “effective control of these drugs by limiting the production thereof to the quantity required for strictly medicinal and scientific purposes, thus eradicating the source or root of the present conditions, which are solely due to production many times greater than necessary for such purposes.” To this end the President was requested “to urge upon the Governments of Great Britain, Persia, and Turkey the immediate necessity of limiting the growth of the poppy and the production of opium and its derivatives exclusively to the amount actually required for strictly medicinal and scientific purposes,” and also to urge upon the Governments of Peru, Bolivia, and the Netherlands (in respect of Java) the like necessity to restrict the production of coca leaves in a similar fashion. In February the Committee on Foreign Affairs took evidence from medical officers of health, prison governors, and social workers which indicated an amazing growth of the abuse of drugs of addiction in the United States in recent years. There were reported to be more than a million addicts in the States; heroin was said to be largely employed by the vicious and criminal underworld, and it was asserted that even young persons were being introduced to indulgence in and abuse of these perilous narcotics. The Secretary of State for Foreign Affairs, Mr. Charles E. Hughes, has written to Mr. Porter saying that “the restriction of the commercial cultivation

of the opium poppy and the coca leaf to quantities exclusively required for strictly medicinal and scientific purposes is one with which I am in entire accord.” The President is requested to report the results of such action as he may take, on the lines suggested, by December next. From a recent bulletin issued by the League of Nations it would appear that some forty States have now brought the International Opium Convention of 1912 into force; nine others have signed but not ratified the convention (Argentina, Colombia, Costa Rica, Estonia, Latvia, Lithuania, Paraguay, Persia, and Switzerland). Four Powers had not, in March of this year, adhered in any way to the convention (Turkey, Afghanistan, Abyssinia, and Lichtenstein). On the other hand the United States, Germany, and the Free City of Dantzic, though outside the League of Nations, are nevertheless parties to the convention; and it is to be hoped that the Council and Assembly of the League may, before the close of this year, secure the more general and effective enforcement of the Opium Convention, now more than ten years old. Meanwhile, seizures of dangerous drugs in the course of illicit or fraudulent transit are reported from various sources. The Canadian Government seized 442 lb. of morphine cubes, 117 lb. of heroin, and 65 lb. of cocaine, falsely consigned as “cocoa powder” from Switzerland. Again, the smuggling of morphine into China through the French and British Post Offices is reported, and a Danish firm was found to have been exporting morphine and opium to Amoy at the rate of 300 kilograms a year, some of which appears to have been of British origin. It will be remembered the Home Secretary, in connexion with the recent conviction of H. M. F. Humphrey, has cancelled the licence of Messrs. Whiffen and Sons of Battersea (also trading under the name of J. A. Wink and Co.), and they will accordingly not in future be allowed to buy, manufacture, sell, or have any dealings in the preparations to which the Dangerous Drugs Act (1920) applies. There is evident need for keeping constant watch over the international traffic in these drugs, so long as the production continues vastly to exceed medicinal requirements and thus encourages illicit commerce. That the opium trade is not without its financial aspects is disclosed by the recent announcement in the House of Commons that the Straits Settlements, the Malay States, Brunei, and North Borneo respectively derive 37, 16.7, 16, and 12.3 per cent. of their revenues from opium. There is a good deal yet to be done before we can claim imperially that our withers are unwrung. As we learn that Mr. Stephen G. Porter is representing the United States at the meeting of the Opium Committee now in session, some interesting and, we trust, fruitful discussions are doubtless proceeding.

#### LEAGUE OF NATIONS HEALTH COMMITTEE.

THE sixth session of the League of Nations Health Committee began in Paris on May 26th, and the discussions which have taken place there show that co-operation in public health matters among the various Governments has greatly developed in the two years since the League Health Organization was founded. In the field of epidemiological intelligence and public health statistics considerable progress has been made in organizing a regular and rapid collection and distribution of information, and it is hoped by the League Health Organization that in time it will become a central clearing house for all such matters. Reports on the progress of the three committees of inquiry working under the auspices of the Health Organization were discussed. The first is a small committee of experts set up to investigate the prevalence of sleeping sickness and tuberculosis in tropical Africa since the war. The second is the joint subcommittee of the League of Nations Opium and Health Committees which deals with the present position of the subject as set out



above. The third is a joint subcommittee of the Health and Transit Committees, which is collecting information to serve as the technical basis for a conference between the various European States which have navigable inland waterways, for the purpose of co-ordinating and tightening up sanitary control and anti-epidemic measures without interfering with the normal working of these arteries of trade. Further reports which were discussed concerned the progress of the applied research work, which aims at international agreement as to the methods of establishing serological tests in order to facilitate international co-operation in improving the whole technique of immunization by serum injections. It is proposed by the Health Organization that a similar programme of research work, conducted in many countries on a common plan, should be instituted in regard to certain biological products used as drugs, such as digitalis, pituitary extract, and insulin. The question of further perfecting and developing the system of visits of international groups of public health officers to study the sanitary systems of one or two countries was also considered. The first of these study visits, so-called "interchanges," took place in Belgium and Italy, the second in Great Britain and Austria; a third (for specialists in the campaign against malaria) is at present taking place in Italy, and another visit is being arranged to the United States.

#### THE NATURE OF RICKETTSIA BODIES.

BODIES which have been regarded either as definite species of "Rickettsia" and named accordingly, or placed in this group as being of similar type, are now known to be of widespread occurrence among ectoparasitic arthropods, and fresh species are being discovered continually. Dr. H. M. Woodcock holds a different view from that of many authorities as to the nature of rickettsias, and in a recent paper<sup>1</sup> he describes the way in which structures morphologically indistinguishable from rickettsia bodies appear as granular end-products of the digestion or lysis of cellular elements. Although the rickettsias are usually classed with the bacteria rather than the protozoa, they differ from well known bacteria in two respects: they stain best with Giemsa's stain, but appear bright red to lilac instead of intense purple, and they can be cultivated only with the greatest difficulty, and usually in association with other organisms, such as flagellates, from the disintegration of which similar granules are produced. On morphological grounds it is impossible to distinguish the granular end-products of the digestion of cells from the rickettsia granules, nor does cultivation enable us to distinguish the true from the false. The rickettsia-like granules all appear to be of the same fundamental character; the morphological variations which occur may possibly be explained by the action of slightly differing enzymes in the case of different types of cell, or even in the same cell type on different occasions, and upon the different kinds of organic matter on which these enzymes act, such as haemoglobin, nuclear material, and parasites. The epithelial cells of the louse take in and absorb haemoglobin, which they metabolize in such a manner that no pigment is produced; and the intracellular rickettsias, in Dr. Woodcock's opinion, should be regarded as having been produced as the result mainly of an altered abnormal form of metabolism of the blood upon which the louse feeds. Diseases such as typhus, in which rickettsias have been demonstrated, are, he considers, due to pathogenic enzymes, and the granular elements are the inevitable witnesses of the digestion of the cells. For him the virus is the invisible pathogenic enzyme, attached or adsorbed to and carried by the protein particles or bodies of various kinds which are constantly found in such diseases. The virus of typhus in the blood is, he holds, intimately

associated with the platelets, and lice can be experimentally infected by inoculation with platelets, success being evidenced by the subsequent production of rickettsia bodies. Dr. Woodcock's argument is supported by a number of excellent photomicrographs showing the types of granules which result from cell digestion or lysis, and which he considers have often been mistaken for rickettsia bodies.

#### PASTEUR CELEBRATIONS IN FRANCE.

THE official French celebration of the centenary of Pasteur began in Paris on May 24th, when the many delegates from universities and institutions throughout the world attended a reception given by the President of the French Republic. On the following morning the delegates were welcomed by Dr. Roux at the Pasteur Institute; a bust of Pasteur erected in the gardens of the Institute was unveiled and wreaths laid at its foot by foreign delegates, who afterwards visited the museum and the crypt, where is the tomb of Pasteur. Later in the day there was a great meeting in the amphitheatre of the Sorbonne, presided over by the President of the Republic, who was accompanied by the Ministers, by members of the diplomatic corps, by members of the five academies of the Institut de France and the Académie de Médecine, and by foreign delegates, to the number, it is said, of some seven hundred. The proceedings began with the unveiling by M. Paul Appell, Rector of the University of Paris, of a marble tablet placed by the university in the Salle des Autorités, bearing an inscription stating that it has been erected on the spot where "le grand Français et le grand Anglais Lister se sont embrassés" to commemorate "cette étreinte fraternelle, symbole de l'amitié de deux peuples." Afterwards the Marquess of Crewe, British Ambassador in Paris, expressed the deep appreciation of this homage to Lister paid in the heart of the intellect of France. The popular celebration took place on Sunday, which was a flag day in Paris and the chief towns of France, and badges were sold for the benefit of the laboratories of France. In the afternoon the delegates attended a reception given by the City of Paris at the Hôtel de Ville. On Monday a visit was paid to Versailles, when a bust of Pasteur given by his daughter and son-in-law, Mme and M. Vallery-Radot, was unveiled in the Galerie de Glaces. The President of the Republic at the end of last week started on a tour, during the course of which he is taking part in celebrations at Arbois and Strasbourg.

Among the names in the short list of honours bestowed on the occasion of Mr. Bonar Law's retirement are those of Sir Thomas Horder, who receives a baronetcy, and Dr. Chichester Gould May, who is created a knight. They have shared the anxiety which the state of Mr. Bonar Law's health has caused during the last few months.

We regret to record the death on May 29th of Professor John Chiene, C.B., Emeritus Professor of Surgery in the University of Edinburgh. Professor Chiene, who was in his 81st year, resigned his chair in 1909. We hope to publish an obituary notice in an early issue.

SIR CLIFFORD ALBUTT will attend the annual dinner of the West London Medico-Chirurgical Society at the Café Monaco on June 19th to receive the triennial gold medal presented by the society to a distinguished member of the profession.

THERE is no better check on extravagant administration in public institutions than comparison with those of a similar character. This is only possible, however, if there is a standard system of accountancy so that the figures are really made comparable. With a view to securing such a standard method of book-keeping in tuberculosis institutions the Ministry of Health has issued a skeleton form of accounts (Form T.90) the adoption of which will make it possible to ascertain the average weekly cost of a patient not only for the whole of the services rendered but also under various subheads such as salaries, provisions, drugs, lighting and fuel, laundry, etc.

<sup>1</sup>Journ. R.A.M.C., February-April, 1923.



## CANCER RESEARCH.

We have received for publication the following appeal, which has been issued to the press this week by the provisional executive committee of a newly constituted body, the British Empire Cancer Campaign. The full list of the committee, with particulars of the institutions already engaged in cancer research which are willing to be associated with the new organization, will, we understand, be published at an early date. The appeal is made under the auspices of the British Red Cross Society, which will receive subscriptions.

## BRITISH EMPIRE CANCER CAMPAIGN.

30th May, 1923.

Sir,

Cancer, in spite of the advances which have been made, both in diagnosis and treatment, is still the most common single cause of death in persons over 30 years of age, and is becoming so in an increasing degree. During 1920, in England and Wales, nearly 43,000 persons over 30 and upwards died of cancer. In 1921, the last year for which the Registrar-General's figures are available, the corresponding number was 45,323. During that year one in every seven deaths from the age of 30 onwards was caused by cancer.

We are still ignorant both of the causation and cure of cancer. Many other diseases have yielded their secrets to patient investigation, and there is no reason to suppose that the problem of cancer will not eventually be solved. Yet thousands of suffering men and women, and those who suffer with them, are asking how long they must wait, and if there is nothing that can be done to hasten a discovery which will bring relief to those whose outlook is to-day so hopeless.

The answer to this question is clear. The first step towards finding the cure of cancer is to discover its cause. To find that cause no effort must be spared. Every possible line of research must be diligently explored. More men must be set free to devote themselves wholly to research, and their work must not be hampered or prevented by want of money.

Much research work is being carried on and considerable advances have been made in the technique of operations designed to remove the disease in its early stages or retard its progress in more advanced cases. All honour is due to those who have done and are doing the work, but a vast amount still remains to be done. Impressed by the need for immediate action, we have joined together to found a movement which will co-ordinate and support research on cancer throughout the British Empire.

This new concerted movement will be called the British Empire Cancer Campaign. It will be governed and directed by an Executive Council, the members of which will act as chairmen of small working committees, each dealing with a separate aspect of the cancer problem.

Medicine, surgery, human pathology, chemistry, physics, radiology, animal and plant pathology, hygiene and vital statistics, will all be represented by committees whose work will be co-ordinated by the Executive Council acting, in fact, as a central clearing house. The Council is anxious to make it clear from the outset that it has no wish to interfere with the work already being carried out. Individuals and institutions now working on the cancer problem will be helped and encouraged, and, where practicable, financially assisted.

In this way investigation can be carried out simultaneously along many lines, and the results of these inquiries will be brought into the common stock of knowledge. A discovery in any one branch will be made known to all, and may lead to discoveries in other branches. It is in this co-ordination of effort that our most confident hopes are placed.

No one can say with certainty that we shall succeed in our quest to find the cause of cancer, but a movement so broad must inevitably advance the knowledge which we have of this disease, and every step forward brings us nearer to our goal.

The British Red Cross Society has placed its organization and machinery at the disposal of the Council of the Campaign, and a generous donor has already given a sum sufficient to cover the preliminary expenses of this appeal. All future contributions will therefore be expended in encouraging, assisting, organizing and administering systematic research and treatment on a scale that has hitherto been impossible.

To do this a large sum of money will be needed, and we appeal with confidence to the British public in the United Kingdom and in the Dominions and Colonies overseas. During the war we had ample evidence of the capacity of this Empire for united and intensive effort, and in no field was it more effectively shown than in the relief of suffering and the prevention of disease. Is it too much to hope that the same spirit will animate our people when they are called upon to wage war

against an enemy that is in their very midst? We plead with all earnestness that we may be given the means wherewithal to carry through the task which we have set ourselves to accomplish, and thus to bring relief and hope to those whose lives are now darkened by suffering and despair.

The Fund will be administered under the direction of a strong finance committee.

Cheques should be made payable to the British Red Cross Society, crossed "British Empire Cancer Campaign," and sent to the Hon. Sir Arthur Stanley, G.B.E., C.B., 19, Berkeley Street, London, W.1, or to Lloyd's Bank, Ltd., 71, Lombard Street, or to any of their branches or agencies at home or abroad.

We are, Sir, yours faithfully,

ATHLONE.	F. L. HOPWOOD.
J. BLAND-SUTTON.	THOMAS HORDER.
NAPIER BURNETT.	ROBERT KNOX.
DAWSON OF PENN.	G. LOCKER-LAMPSON.
J. B. FARMER.	J. P. LOCKHART-MUMFERY.
F. E. FREMANTLE.	EDWARD MARSHALL-HALL.
RICHARD GARTON.	J. BEAUMONT PEASE.
CHAS. GORDON-WATSON.	BERNARD SPILSBURY.
R. A. GIBBONS.	ARTHUR STANLEY.
ALFRED GREENWOOD.	WILLIAM WILCOX.

Communications should be addressed to the Honorary Secretary, Godfrey Locker-Lampson, Esq., M.P., at 19, Berkeley Street, W.1.

The British Empire Cancer Campaign has been registered as a company limited by guarantee.

## CANCER RESEARCH NOW IN PROGRESS.

The appeal, it will be observed, promises to encourage, and help financially where practicable, individuals and institutions now working on the cancer problem, and distinctly repudiates any wish to interfere with work already being carried on. We have thought, therefore, that it would be interesting to put together from information at present available some particulars of the institutions engaged in such work.

## THE IMPERIAL CANCER RESEARCH FUND.

The Imperial Cancer Research Fund was founded in 1902 by the joint action of the Royal Colleges of Physicians and Surgeons; representatives of the Royal Societies of London and Edinburgh, the Royal Veterinary College, and other scientific bodies, and of several Government departments, were added to the Executive Committee, which is the governing body. From the beginning the main efforts of the Fund were directed to the development and extension of the experimental method to the study of cancer. Statistical investigations on the incidence of the disease in man at home and abroad were undertaken in conjunction with the Registrar-General's Office and through the Colonial and India Offices. An experimental study of the part played by heredity in modifying the incidence of cancer was undertaken and carried on for many years.

Coincidentally with the starting of the Fund, the foundations of the experimental study of cancer in laboratory animals were laid by Jensen and Borrel, and the workers of the Fund took a large part in its development. The detailed analysis of the phenomena of transplantation and the production of resistance to inoculation was carried out. In particular, the significant limitation of the resistant condition to prevention of successful grafting, and the failure of these reactions in animals spontaneously affected by the disease, were worked out and their importance insisted on. During the war, by rigid economy of effort, the Director, Dr. J. A. Murray, found it possible to maintain the essentials of the working organization. In consequence the other institutes at home and abroad which had suspended operations were able to call on the Fund for material enabling them to begin work again without delay.

Since the war, the experimental production of cancer by the application of tar has been energetically studied. The essential characters of cancer cells and the subtle distinctions between them and normal cells have been investigated by the method of tissue culture and by a study of the processes of respiration of surviving tissues. In addition an elaborate investigation of the relation of the growth of cancer to diet has been carried through, defining the effects of vitamin and other specific deficiencies both in normal animals and in those carrying inoculated tumours.



A summary of the published work in each year is given in the annual report, along with an account of the administration and financial position of the Fund by the Executive Committee and treasurer respectively. Full accounts of the investigations are published from time to time in the scientific reports, of which seven have already appeared (Taylor and Francis, Red Lion Court, Fleet Street, E.C.4).

#### CANCER HOSPITAL RESEARCH INSTITUTE, LONDON.

The Cancer Hospital, founded in 1857, possesses a well designed and well equipped Research Institute, built a few years before the war. For the last two years it has been under the directorship of Dr. Archibald Leitch, with whom are associated Dr. E. L. Kennaway as chemical pathologist and Dr. H. J. B. Fry as clinical pathologist. Working in close connexion with the surgical and radiological departments of the hospital they have unrivalled opportunities of being familiar with all sides of the cancer problem. The chemical and biochemical investigation of tumours and of serum from cancerous patients, histological examinations of tumours of all kinds, the study of cell and tissue changes under treatment by x rays and radium, and the detailed investigation of operative and *post-mortem* material from the point of view of practical surgical pathology, represent some of the numerous lines of research provided by the association of clinical and pathological departments. From the purely experimental side work has been proceeding on an intensive scale, mainly on inquiries into the causation of cancer. We published in the JOURNAL last December three important papers from the Cancer Hospital Research Institute on the experimental production of cancer, and we hope soon to publish two more. The research staff have been endeavouring to add to the number of substances which are capable of producing tumours, and though they have already contributed three or four such substances, we understand that scores of suspected agents have been tested. Studies of the early changes preceding and accompanying tumour formation, chemotherapeutic essays in experimental cancers, and the investigation of the conditions under which occupational cancers arise, constitute at present the main objectives. The striking feature about the Cancer Hospital is the particularly friendly co-operation between the surgeons, radiologists, and laboratory staff, so that each individual member is conversant with the observations and problems of the others. The governing board appears to be very progressive.

#### THE MIDDLESEX HOSPITAL.

The Middlesex Hospital Cancer Charity was founded in 1791 with the object of alleviating suffering and investigating the disease. Until 1900 its activities in the latter direction consisted chiefly in the compilation of records and publication of papers on cancer from time to time by members of the hospital staff. In 1900, largely owing to the initiative of Sir Alfred Pearce Gould, laboratories were opened for investigation of malignant disease by modern methods, and Mr. A. G. R. Foulerton was appointed director. On his resignation in 1903, Dr. W. S. Lazarus-Barlow was elected to the office, and held it until in 1920 it was merged in a Professorship of Experimental Pathology in the University of London, to which he was appointed. The avowed object of the change was to widen the range of activities available for cancer research and enable it to be taken up in any department of the Medical School that seemed advisable. It coincided with the establishment in the school of University Professorships in Physics, Chemistry, Anatomy, Physiology, and Pathology. Recently a University Reader in Biology has been appointed. From its first inception the charity has grown continuously, but benefactions have been mainly on the clinical side. Specifically for research the cancer laboratories (which were built and equipped by the trustees of the Barnato bequest in 1910) have to rely upon the income of a sum of £20,000 and £1,000 per annum for ten years recently given by Sir W. Veno, and for the remainder of the expenditure on annual voluntary contributions. The amount thus obtained is inadequate to the complexity and difficulty of the subject, and extension in many directions is possible and desirable. The assets for cancer research which the

Middlesex Hospital possesses are 92 beds in the charity dedicated to cancer patients and the resources of the Medical School completely equipped in all branches.

During the twenty-three years the laboratories have been in existence the advantage of their close association with the hospital wards has been shown by the very practical character of the researches carried out and by the names of those who have held assistantships or scholarships. Among those who have held appointments may be mentioned Mr. Sampson Handley, Mr. Gordon-Taylor, Mr. Victor Bonney, Mr. Somerville Hastings, Dr. Henry MacCormac, all of whom are now members of the honorary staff of the hospital; Mr. Cecil Rowntree, surgeon to the Cancer Hospital, Fulham Road; Dr. Archibald Leitch, director of the Cancer Research Laboratory at the Cancer Hospital; and Dr. J. C. Mottram, director of the Pathological Department of the Radium Institute. The practical character of the researches is indicated by the fact that all the records of the hospital have been worked up statistically and a number of monographs on cancer at the principal primary sites have been published; investigations have been conducted into the increase of cancer, and attempts made towards earlier and better diagnosis. Much work has been done in reference to radium and x rays and as to the production of cancer in lower animals by these agents. Research in the therapeutic value of radium or x rays has been instituted, and since 1914—though much interrupted by the war—investigations have been conducted, and are still in progress, with the hope of causing experimental animals to develop an immunity towards cancer. Sufficient success has been obtained in the case of transplanted tumours in rats to apply the principle, with caution, to man, and during the past two years it has been utilized in the treatment of selected patients in the wards. It is too early to speak of the results, but at least it may be said that they are hopeful. At the present time experimental endeavours are being made to facilitate the technique and heighten the degree of induced immunity. In these animal experiments, as always, the underlying thought in the mind of the investigator is that they must be applicable to the human sufferer. The Medical Research Council, in addition to the important allocation of radium mentioned below, has supplied the services of Dr. Helen Chambers for work in Dr. Lazarus-Barlow's department and of a whole-time assistant. In laboratories attached to a general hospital and medical school the practical as contrasted with the academic side of research comes to the fore, and this is the guiding principle of the work at the cancer laboratories of the Middlesex Hospital.

#### MANCHESTER.

Research work on the various aspects of cancer is being carried out in several departments at Manchester. At the Royal Infirmary, the new x-ray department is one of the most completely equipped of its kind in the country. With the advent of the intensive x-ray therapy a research committee was instituted, consisting of physicians, surgeons, radiologist, pathologist, and physicist, to investigate the effects of this form of treatment in cancer. For this purpose a research scholarship in radiotherapy for the intensive treatment of cancer has been instituted, and the first scholar spent six months on the Continent studying the latest technique in x-ray therapy. The new apparatus is all at the Royal Infirmary, where the investigations are in their initial stages, and two separate outfits for the intensive x-ray treatment of cancer are in use. Although it is too early to speak with any confidence, as the work has only been in progress for about twelve months, yet the initial response in carcinoma is considered to have been satisfactory. The late results cannot, of course, yet be stated. In sarcoma the outlook appears more hopeful, and in some cases the primary growth has apparently completely disappeared. Six beds are set apart at the Radium Institute and the Christie Hospital for patients undergoing intensive x-ray treatment for the relief of inoperable carcinoma. So far about 100 cases have been treated. At the Radium Institute thirteen beds are set apart solely for the treatment and investigation of cases of cancer; 668 cases of cancer were treated last year, and the whole work of the Institute is really an investigation into the cause of cancer. A new



research laboratory is shortly to be equipped; all the cases at the Institute are subject to pathological investigation, and careful records are kept which are available for statistical study. Results at the Institute show that 7½ per cent. of all cancer cases (many inoperable) under treatment are alive and well after periods of two to seven years. A special research into the physical chemistry of serum in health and disease has recently been undertaken with the help of the Institute's radium; it has been found that alpha, beta, and gamma rays have a very marked effect on serum. A technique has also been devised for following changes in the colloidal condition of whole blood, whereby only a very small quantity of blood is required for each determination. A natural extension of this work will be to follow the colloidal changes in blood due to the absorption of the products of the destruction of a tumour in a patient who is being treated with radium. In this way help may be obtained in prognosis and in judging the dose a patient will tolerate. The Committee of the Christie Hospital has recently received a gift of £1,000 to be devoted to research work, and it is hoped shortly to start a cancer research fund in Manchester. Investigations are being carried out at the Cancer Research Laboratory at the University on the metabolic functions of patients suffering from cancer and also into the chemistry of tumours. Considerable interest has been aroused in the question of the incidence of scrotal cancer among cotton-spinners in Lancashire. A paper on this subject by Mr. A. H. Southam and Mr. S. R. Wilson was published in our columns last November (page 971). Their attention was called to the matter by cases observed at the Manchester Royal Infirmary. They made some inquiries at a Manchester cotton mill; further investigations are in progress, and experimental work is under consideration with a view to getting this condition scheduled under the Workmen's Compensation Acts, if it should be proved to be due to the occupation. Statistics show that the death rate from cancer is steadily on the increase in Manchester, the annual increase being nearly 4 per cent. In a period of thirty years the death rate from this cause has doubled, and deaths are occurring at an earlier age. It is held that the hope of the future lies in research. Men and the brains can, we are assured, be found at Manchester to proceed with this work if more money is forthcoming.

#### LIVERPOOL.

There has been in existence in Liverpool for some time a committee for cancer research consisting of business men and scientists working in close association with the University. It has secured the services of the best men in all departments—chemical, biochemical, pathological, medical, and surgical—either as whole-time or part-time workers, and has the necessary laboratories with accommodation for animals and other equipment, and also the command of clinical beds necessary to enable it to conduct its inquiries. This small but well equipped and self-contained body is prepared to carry on the piece of work it has undertaken. It is entirely due to the initiative of Professor Blair Bell, who recently published a preliminary statement, giving his reasons for believing that lead salts possess an inhibitory action on the growth of malignant cells. He pointed out the practical difficulties and dangers which necessarily accompany the use of these toxic substances in treatment. Lead salts have, however, already been used on many occasions during the present inquiry, and those who have been closely associated with the treatment throughout are impressed with the belief that lead undoubtedly has a destructive action upon cancer cells. A preparation has not yet been found which can be pressed sufficiently to make the treatment specific. Some cases have yielded striking results, though the investigators as yet hesitate to speak of them as cured; many others have responded, but not to the extent of cure, and in some the toxicity of the remedy has been a difficulty. The Liverpool Cancer Committee has scope in Liverpool for a definite and, it is believed, important research, and it has a very enthusiastic body of men prepared to do their utmost to carry it to a successful conclusion, if that be possible. A good income is guaranteed for the next two years.

#### ABERDEEN.

In 1907 Sir Alexander McRobert, Cawnpore, India, established the Georgina McRobert Fellowship at Aberdeen University, for the investigation of the cause, prevention, and treatment of cancer. In 1916 this fellowship, as a result of a further gift from Sir Alexander McRobert, was merged in a larger foundation, the McRobert Lectureship in Pathology, with special reference to malignant diseases. The first appointment to the lectureship was made in 1920. Accommodation for a laboratory and funds for its equipment were provided by the University of Aberdeen, and work has been in progress since 1921. The staff consists of Dr. John Cruickshank, the lecturer, and one assistant, Miss J. L. Lockhart. The annual income from the trust is not large enough to allow work on a large scale to be undertaken. During the last two years the production of cancer in animals by the application of tar and other substances has been investigated. The results of this work have in part been communicated to various societies, and will shortly be published in full. A study of some of the biochemical activities of cancer cells as contrasted with normal cells has also been attempted. In this work Dr. Cruickshank has been in close association with the Imperial Cancer Research Fund. The scope of the laboratory work has been extended by the loan of radium from the Medical Research Council to Aberdeen Royal Infirmary, and to facilitate clinical research work Dr. Cruickshank has been appointed to the honorary staff of Aberdeen Royal Infirmary as Director of Radium Therapy and Research. Dr. D. W. Berry, a part-time worker under the Medical Research Council, is associated with Dr. Cruickshank in the investigation of the clinical effects of radium treatment, and assists in the laboratory work on malignant diseases.

#### GLASGOW ROYAL CANCER HOSPITAL.

The Research Department of the Glasgow Royal Cancer Hospital is directed by a Research Committee of five, consisting of three medical men and two laymen. The medical men are Sir George Beatson, Dr. Robert Muir, professor of pathology, and Dr. Noël Paton, professor of physiology in the University of Glasgow; the lay members are the Chairmen of Directors of the Hospital and of its House Committee. The Research Department was broken up by the war, and, owing to want of money, has only been re-established during the last two years. As soon as funds were available the chemical branch of the work was set in order under Mr. Currie, a biochemist. At present efforts are being concentrated on the biochemical features of cancer; last year Mr. Currie published a paper in the *Journal of Pathology and Bacteriology* on the condition of the fat in cancer patients, especially in the vicinity of the growth, and Sir George Beatson published in the *Lancet* a paper on the possibility of a pigmentary origin of cancer. Mr. Currie is also working at tar cancer in mice and studying the respective frequency of its occurrence under the different pigments of coal tar and the susceptibility of different coloured mice to develop the disease. Dr. Primrose is also working in the department, investigating in particular the internal secretions in relation to carcinoma and the growth of cancer tissue *in vitro*. A proposal has been made to the Committee of the Glasgow Hospital to co-operate with the appeal, but it will not come to a decision until after it has considered the views of its Research Committee.

#### THE MEDICAL RESEARCH COUNCIL.

A great deal of valuable research into the nature and treatment of cancer is being carried on in various centres with the assistance of the Medical Research Council. Grants are made towards the cost of inquiries now in progress at the Middlesex Hospital, London, by Dr. James Young at the Royal Infirmary, Edinburgh, at St. Mark's Hospital, and at the Glasgow Royal Cancer Hospital, as mentioned above. The Government has entrusted to the Council for medical research purposes nearly 5 grams of radium bromide recovered from military uses; the whole amount was lent in the first instance to workers at the Middlesex Hospital to carry out a series of initial experiments and therapeutic trials, and the results were published in one of the Council's Special Reports. Later on the whole supply was divided



and fractions allotted to a number of hospitals in England, Wales, and Scotland. Research committees have been established at the different centres, and the Council has appointed a central radiological committee, of which Sir Cuthbert Wallace is chairman, and Professor Sidney Russ, D.Sc., of the Middlesex Hospital, secretary. An important fraction of the radium is in use at the Middlesex Hospital, where it is being used both clinically and for pathological and physical investigations. At University College Hospital, London, the radium has been employed chiefly in the treatment of malignant disease of the uterus and of menorrhagia. The quatum supplied to St. Bartholomew's Hospital has been employed in the treatment of carcinomata of the uterine cervix, and the treatment of malignant growths of the nasopharynx, larynx, and oesophagus. At King's College Hospital the radium has been used for the treatment of cancer of the uterus and breast, rodent ulcers and naevi, and it has also been made available for experimental work on the effects of radiation on the body tissues, for which purpose the Council makes a grant for a part-time assistant. The fraction in use at the London Hospital is being applied to the treatment of diseases of the skin and of malignant diseases of the uterus. Other fractions have been allotted to the King Edward VII Hospital, Cardiff, and to the General Hospital, Birmingham, where observations are now being made. In all instances the observations on the effect and treatment are carefully controlled, and recorded with scientific precision. Reference is made above to the radium lent to the Aberdeen Royal Infirmary. One of the earliest allocations was to the Irish Public Health Council, under whose supervision radium emanation, prepared from a central laboratory in Dublin under the direction of Professor J. Joly, F.R.S., is issued to certain hospitals and private practitioners, and records are kept of the results obtained. A fraction has also been allotted for experimental purposes to the Radium Institute, London, where Dr. J. C. Mottram is studying the effects of radiation upon the testes, the pituitary gland, the thyroid glands, and the blood platelets, and upon fat absorption in the intestine. Dr. William Cramer and Dr. A. H. Drew of the Imperial Cancer Research Fund have been associated with Dr. Mottram in part of this work, and the Council has made a grant to Dr. A. N. Kingsbury of the Middlesex Hospital for co-operation in some bacteriological problems that have incidentally arisen. Finally, a fraction has been allotted to Professor Sir Ernest Rutherford, F.R.S., for experimental work at the Cavendish Laboratory of the University of Cambridge.

An inquiry is being made by the Statistical Department of the Council into the incidence of cancer in different trades. The Registrar-General has for this purpose made available data referring to 46,235 deaths from cancer among males, both occupied and retired, occurring in over 900 trades and professions in England and Wales during a given period. Particulars are thus being obtained for each trade as to the type of cancer, the site of the growth, and the age distribution among occupied and retired males. The analysis is being made by Dr. John Brownlee, director of the department, in collaboration with Professor E. L. Collis.

#### FOREIGN COUNTRIES.

The desire to attack the problems of cancer by intensive research has not been confined to this country. In the United States the most important organization is the Crocker Institute of Cancer Research at New York, which is now a department of Columbia University and produces very valuable work. It was in this Institute, for example, that the experimental production of sarcoma of the liver was accomplished in rats by the transmission of *Taenia crassicolis*. The laboratories are under the direction of Dr. J. C. Wood and Dr. William Woglom. Under their auspices is published the *Journal of Cancer Research*, the only special journal on the subject in the English language. We ought also to mention the Research Institute at Chicago, where the important experiments of Miss Maud Slye and Dr. Gideon Wells on the heredity of mouse cancer have been conducted.

France is badly off for specialist institutions dealing with cancer research; there are a few scattered places, but nothing adequate. The most efficient, perhaps, is the Hospice Paul Brousse, of which the director is Professor G. Roussy, an able and energetic pathologist, whose recent experimental

work has attracted favourable attention. The Association française pour l'étude du Cancer, founded in 1906, is a voluntary organization of pathologists and clinicians interested in cancer; it makes a gallant attempt to stimulate public interest and has a very distinguished list of members, both French and foreign. Its proceedings are recorded monthly in a *Bulletin* which contains the papers read at its meetings and short abstracts of foreign literature. Under the guidance of its secrétaire-général, Professor Roussy, it has become a most important journal and is probably now to be considered the premier organ of cancer research. It is publishing an atlas of beautifully drawn histological preparation of all kinds of tumours, which may possibly be the standard work of reference on the subject. The French Association has arranged to hold a congress in Strasbourg on July 23rd and 24th in connexion with the Pasteur celebrations there. The first subject for discussion—the experimental production of cancer—will be introduced by Professor Borrel of Strasbourg University, and continued by Professor Fibiger of Copenhagen, Professor Ichikawa of Japan, Dr. J. A. Murray, Director of the Imperial Cancer Research Fund, London, Dr. Archibald Leitch, Director of the Cancer Research Institute, London, and Dr. Pentimalli of Naples. The other subjects to be debated are the local and clinical reactions to cancer, and treatment by radium and  $\alpha$  rays of epithelioma of the skin and mouth.

In Germany ambitious plans were made previous to the war, and a special institute of experimental research in cancer was established at Heidelberg under the direction of Professor Czerny; it is an association with a home which receives patients suffering from or suspected to be suffering from cancer, or from tumours of other kinds. It was reported that some well known pathologists originally associated with the project withdrew, believing it probable that fruitful results were little likely to be reached until more was known of the structure and physiology of the healthy cell. Since the war the institute has been placed under the directorship of Professor Sachs, a former assistant of Professor Ehrlich, though Dr. Teutschländer seems to have carried out most of the experimental work on the genesis of cancer. Dr. R. Bierich presides over a small cancer research institute at Hamburg. Owing to the economic conditions prevailing in Germany, research work has suffered, and in no department more than cancer investigations. The Germans publish regularly the *Zeitschrift für Krebsforschung*, a well known though somewhat heavy journal of international repute.

In Holland a young and promising laboratory has been in existence for two or three years, conducted under the auspices of the Netherlands Cancer Investigation Society by Dr. H. T. Deelman. It was here that last October a small band of enthusiasts met round a laboratory table and submitted to each other their recent experimental investigations in malignant disease. They agreed to form a friendly society which, at the suggestion of Dr. Archibald Leitch, was, out of compliment to the Dutch hosts, named the "Leeuwenhoek Vereeniging." We understand that the members are in constant communication and indicate to each other the particular lines of investigation they are pursuing. The Society consists of Drs. Fibiger, Bang, Murray, Leitch, Rotgans, Deelman, Roussy, Peyre, Bierich, Teutschländer, Lipschutz, and Bloch.

THE fifth French Congress of Orthopaedics will be held in Paris on October 12th, when the following subjects will be discussed: (1) *Pes cavus*, introduced by M. Laroyenne of Lyons; (2) bone cysts (exclusion of hydatid cysts), introduced by M. Roederer of Paris; (3) congenital elevation of the shoulder, introduced by M. Delchef of Brussels.

A PUBLIC appeal is being made for funds to extend the National Library for the Blind in Westminster. The library began on a small scale in 1882, and has grown (including the Northern Branch at Manchester) to a collection of some 92,000 volumes in Braille and Moon types. The bulk of the volumes (14 in. high, 11 in. broad, 2 in. thick, and 5 lb. in weight), in addition to their cost, precludes the blind reader from possessing an adequate private library, and the National Library dispatches daily over a ton of literature to readers at home and abroad. Donations should be addressed to Captain Lachlan Maclean, National Library for the Blind, Tufnell Street, Westminster, S.W.1.



## UNIVERSITY OF DURHAM COLLEGE OF MEDICINE, NEWCASTLE-ON-TYNE.

### OPENING OF NEW BACTERIOLOGICAL DEPARTMENT.

The new building recently erected by the College of Medicine for the Department of Bacteriology was opened by Sir Frederick Andrewes, M.D., F.R.S., on the afternoon of May 25th. The ceremony was attended by a large number of people, including many members of the medical and dental professions, the members of the councils of Armstrong College and the College of Medicine, the Principal and heads of departments of Armstrong College, and the President, staff, and undergraduates of the College of Medicine, as well as by many men prominent in the public affairs of the district. The guests were received by Sir David Drummond, M.D., D.C.L., LL.D., President of the College of Medicine, in the King's Hall of Armstrong College, and, after being entertained at tea, adjourned to the Physics Theatre, where an address was delivered by Sir Frederick Andrewes.

Sir DAVID DRUMMOND offered a hearty welcome to Sir Frederick Andrewes and the visitors who had assembled to take part in the function. He explained why a new building was found to be necessary, and why it had been erected upon a site in connexion with Armstrong College rather than upon the site at present occupied by the College of Medicine. The accommodation in the latter had fallen short of the requirements, especially in so far as the more technical and practical sections of the curriculum were concerned, and the pressure had been felt most acutely in the department of bacteriology. The Council of the College in 1918 appointed a committee to consider the best method of meeting the requirements, and various proposals were made, amongst them to build upon the present College of Medicine site, but this was found to be impracticable on account of want of space. The Council of their sister college, Armstrong College, then made the magnanimous offer of a site adjacent to the agricultural department, and further offered to advance the capital necessary for the erection of the building, stipulating only that they—Armstrong College—should be consulted as to the design and structure of the building, so that it might readily be converted to their needs when the College of Medicine found themselves able to erect the new college upon the site recently acquired by the two colleges in Queen Victoria Road, next to Armstrong College and opposite the Royal Victoria Infirmary; the College of Medicine to rent the building and so to pay the interest upon the capital. This most generous offer was accepted by the Council of the College of Medicine with thankfulness, and he, as President, took the present opportunity to announce publicly the great debt of gratitude they owed the Council and their colleagues of their sister College, by whose liberality and generous outlook they—the College of Medicine—had been relieved of much of the inconvenience from which they were suffering from overcrowding. The University of Durham and the city of Newcastle-upon-Tyne had thus acquired a most important educational development in the shape of what, he ventured to hope, Sir Frederick Andrewes would find to be one of the best bacteriological departments in the country.

### SIR FREDERICK ANDREWES'S ADDRESS.

Sir FREDERICK ANDREWES, in outlining the place of bacteriology in the arts and sciences of the present day, said that to make the position of bacteriology clear, it was needful first to consider a little of the history and development of that science. Probably the first human eye which distinctly saw the organisms now known as bacteria was that of the great Dutchman, Leeuwenhoek, often spoken of as the "father of microscopy." This was nearly 250 years ago, and to Leeuwenhoek, and indeed to his successors for more than 150 years, they were merely objects of interest and wonder. They were regarded as animals, and with improvements in the microscope it was found that they varied in size and shape, so that Ehrenberg in 1828 was able to distinguish four different types. It was not until after the middle of the nineteenth century that their vegetable

nature was established. During the nineteenth century the foundations of bacteriology were laid. Two great discoveries opened men's eyes to the fact that these insignificant specks of living vegetable matter were after all of serious importance to man. It was found that they were the causes of various fermentations, and that they might be the causes of infectious disease. It was not until the rise of chemistry that the nature of fermentation could be understood, and then the microscope revealed that the mysterious substance which, when added to the fermentable material, initiated the chemical changes, owed its power to the presence of micro-organisms. An even more important impulse was given by the discovery of the relation of micro-organisms to infective disease. As early as 1825 a silkworm disease known as "muscardine" was found by Bassi to be due to a fungus, and in the following decade the parasites of favus and ringworm were discovered. The first bacterial disease to be identified was anthrax: the infecting agent was seen in the blood of infected animals by Pollender in 1849 and by Davaine in 1850. Of all the great names which stood out in the nineteenth century that of Pasteur must take the first place in connexion with bacteriology. For his chief claim to immortality was not that he was a great chemist—as he was—but that he founded a new science. Pasteur transformed bacteriology into an experimental science. He was the first to cultivate bacteria artificially and to bring them into the domain of the laboratory. The second great name in bacteriological science was that of Robert Koch. The principles of most of our modern methods were owed to the technical genius of Koch, who devised the means of culture on solid media and enabled the bacteriologist to make certain of the purity of his growths. No difficulties seemed too great for this man to overcome, as was well shown by his discovery of the cause of tubercle.

It was on the medical side that bacteriology first developed. As the new methods of study began to be applied, the actual causal organisms of the various infectious diseases which scourged mankind had been one after the other unveiled. The earliest discovered causes of infectious disease were fungi of a higher group than the bacteria, and for the causes of many diseases which in the most modern times received their explanation it had been needful to go still further afield. The first new light came from workers on tropical diseases. As early as 1880 Laveran had found the malarial parasite, which was shown to be a member of the animal kingdom, while before this a trypanosome had been found in rat's blood. Obermeier, too, had found in relapsing fever the spiral organism now bearing his name, though the exact nature of this and similar microbes was still a matter of some dispute. It soon became clear that some important tropical diseases were due to animal micro-parasites and others to organisms which could with certainty be referred either to the animal or to the vegetable kingdom, and which were grouped by Haeckel under a new kingdom—"Protista." Nor did matters stop there, for in recent years evidence had been brought forward to show that many specific fevers were due to viruses invisible or almost invisible under the microscope, and capable of passing through the pores of a filter so fine as to keep back ordinary bacteria. Bacteriology had to change itself into microbiology. The younger sciences of protozoology and protistology were now beginning to claim their own separate places in the field. Presently came a time when workers turned to the effects of pathogenic bacteria on the human and animal body. In particular they asked why some men and some animals were susceptible to a given infection and others immune. Pasteur himself had opened up this field of inquiry in relation to anthrax and rabies. But the mechanism by which immunity was produced was still obscure. Fortunately, the subject lent itself to the experimental method. First in the field was Metchnikoff, whose brilliant researches on the comparative pathology of inflammation led him to lay great stress on the destruction of invading bacteria by certain cells of the body, notably the leucocytes of the blood. It was now known that Metchnikoff was largely, but not wholly, right in this idea; phagocytosis seemed to be the main defence of the body against certain bacteria, but his doctrines soon suffered eclipse, owing to the discovery of the power of the fluid elements in the blood of an immune animal. It was even



found that the body fluids might become "antitoxic." Yet another science was thus founded—the science of immunology. It could now be affirmed that the body had many different means of defence.

What practical results had emerged? So far as medicine was concerned, any doctor would give an answer. Bacteriology had become an integral part of all that section of pathology—fully a half—which dealt with infective processes. The physician would say that without the knowledge of disease which had accrued from bacteriology, he would be still working by rule of thumb in a large part of his practice. What physician would fail to seek the help of the bacteriologist in a doubtful case of diphtheria, or neglect the use of antitoxin in the treatment of that disease? Ask, again, any surgeon what value he set upon aseptic methods in his art and what judgement he had formed of Lister's work in this respect. The name of Lister was honoured throughout the whole world. And what was true of surgery was true of obstetrics. It was all the outcome of bacteriology. While a multitude of diseases were not bacterial, it would scarcely be disputed that, directly or indirectly, bacteriology had saved more lives than all the other sciences combined. In the prevention of disease bacteriology performed two different services: it was able to trace the ways in which infectious diseases spread and to introduce measures by which human beings could be immunized. Once the infecting agent in any disease had been ascertained its distribution in nature could be searched out and the channels found by which it reached man. Consider the change in outlook when it was shown that malaria was exclusively transmitted by the mosquito, typhus by the louse, and plague habitually, though not invariably, by the rat flea. Certain diseases were known to be sometimes water borne, some were spread by milk, others by shellfish and other foodstuffs; in all such cases the services of the bacteriologist were invaluable. But the greatest service the bacteriologist had rendered was the attention he focused on the human carrier of infection. It was now known that many human beings might become so far immune that they were capable of harbouring and, what was worse, of disseminating the infecting agents of certain diseases in a fully virulent condition: the bacteriologist alone could detect these dangerous people.

Sir Frederick Andrewes then spoke of the service which immunology furnished to preventive medicine in devising means for rendering a population immune to certain diseases—at least for a time. The experience of the war was conclusive as to the vast reduction in the incidence and mortality of typhoid as the result of preventive vaccines and as to the marvellous diminution of tetanus which followed the serum treatment of the wounded. Yet, notwithstanding the attention which their importance had attracted, probably not one in a hundred of the existing species of bacteria bore any relation to disease. Take the process loosely described as fermentation: sometimes it was of importance to prevent such chemical changes, as in the preservation of food; in other industries it had proved possible to utilize the chemical powers of bacteria. Nature worked more economically than art, and the chemistry of these minute organisms was more subtle than that which the laboratory could accomplish. But it was in agriculture and allied industries that some of the most important applications of bacteriology were to be found. In the front rank stood the discoveries of the nitrogen-fixing powers of certain bacteria, especially well seen in the root nodules of leguminous plants, whereby the importance of these in the rotation of crops received a rational explanation. Again, milk was a particularly favourable medium for the growth of bacteria, so that the whole dairy industry was deeply concerned in questions of bacteriology. Thus bacteriology was a subject of high industrial importance, fully worthy of careful study even if it had no application to medicine. It must be taught in two stages. First must come the academic study of its general principles. For this purpose the situation of the laboratories opened to-day seemed admirably adapted, and the University might congratulate itself on such provision for the teaching of the subject. The second stage of teaching could only be carried out effectively in relation to the special arts and sciences to which bacteriology might be applied. It would be a mis-

fortune if the establishment of the central teaching of bacteriology in that institution led to any divorce from medicine, and he trusted it might have the contrary effect. The medical aspects of bacteriology could only be studied to advantage in close relation with medicine itself.

On the conclusion of the address Sir DAVID DRUMMOND moved a vote of thanks, which was very heartily received, and presented to Sir Frederick Andrewes a key with which he asked him to open the new building.

#### THE NEW BUILDING.

The building recently erected by the College of Medicine for the department of bacteriology is situated on the north-east side of Armstrong College and next to the building housing the department of agriculture, which was erected largely through the generosity of the late Dr. Clement Stephenson, F.R.C.V.S., in 1912. The building of these laboratories is, as a matter of fact, the first item in a much larger programme which comprehends nothing less than the removal of the College of Medicine from its present situation in Northumberland Road to a site which has been acquired in conjunction with Armstrong College at the junction of Queen Victoria Road and St. Thomas's Street. When this scheme for an entirely new College of Medicine is completed, the University Colleges of the City and the General Hospital will all adjoin each other, with very considerable mutual advantages to everyone concerned.

The building, which has been very skilfully and artistically designed by Messrs. Knowles, Oliver, and Leeson of Newcastle, is of fireproof construction and was built by Messrs. Pringle of Gateshead. It is built of red brick and stone in the style of the late Renaissance, and harmonizes with, though it does not repeat, the design of the buildings about it. The main laboratories are situated on the ground and first floors. Below there is a basement and in the roof accommodation is provided for experimental animals. There is a large and lofty entrance hall into which open a large laboratory to accommodate fifty students or more, a chemical laboratory, three small laboratories for special work, a dark room, and a room fitted as a writing room and office. Access is given by a staircase behind the door to the basement below. The main staircase, which is very well lighted by a large lead-glazed window occupying the whole width of the staircase, leads to the first floor, upon which are situated a large laboratory partly lighted from the roof and fitted for purposes of sterilization and the preparation of culture media, and four other spacious laboratories intended chiefly to accommodate the staff of the department. A small staircase leads from the landing to the animal houses above.

In going through the building the visitor is greatly struck by the amount of light in all the various rooms; yet this has been provided without in any way sacrificing the architectural amenities of the building. Moreover, the laboratories give a sense of loftiness and space. So far as the structure itself is concerned, it appears to be extraordinarily well adapted for the purpose for which it has been built. Considerable attention, too, has been devoted to the finishing of the building. The concrete floors are overlaid with wood blocks; the corners both of walls and floors are rounded, and the walls of the laboratories are tiled with white glazed tiles below and enamelled white above—this latter, of course, contributing materially to the lighting, which is so conspicuous a feature throughout. The benches are, as in the present laboratories, made of pitch pine covered with linoleum; incubators, water-baths, etc., stand on tables covered with asbestos sheets. The cupboards and bookcases are similarly constructed of pitch pine, stained and varnished, and have sliding doors. The animal cages on the top floor are raised some two feet above the floor and consist of reinforced concrete with stout galvanized iron wire tops and fronts. This method of construction was introduced into the College of Medicine some few years ago, and has been found eminently satisfactory in practice, for it allows of thorough cleaning and limewashing. In the basement are cloak rooms, store rooms, boiler house, etc., and a room for heavy centrifuges. The building is heated by steam on the atmospheric system and artificial ventilation is effected by means of an electrically driven fan placed on the roof, the air inlets being behind the radiators. The fan is capable of



extracting 5,500 cubic feet of air a minute, which is equivalent to changing the air of the laboratories four times an hour.

The standard set in these laboratories is high, and if it be maintained in the future the Newcastle Medical School will possess buildings second to none in the kingdom.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

### The New Government.

MR. BALDWIN'S Ministry was announced as complete, subject to one office, on May 28th. For a time Mr. Baldwin retains, along with the Premiership, the Chancellorship of the Exchequer, but his hope is that Mr. Reginald McKenna, who is convalescent from a serious illness, will be able to take this position (which has been offered to him) in the autumn. One addition has been made to the Government. Lord Robert Cecil has become Lord Privy Seal, an office which of late was linked with another, but which, having comparatively few duties, will enable Lord Robert to undertake service for the Government in connexion with the League of Nations, and also assist in debate in the House of Commons. Sir William Joynson-Hicks, who was Postmaster-General in Mr. Law's administration, has been made Financial Secretary to the Treasury and is thus available to aid Mr. Baldwin in the passage of the Finance Bill through its stages. Sir L. Worthington-Evans, who went out of office when the Coalition ended, succeeds at St. Martin's-le-Grand. One other change is of special interest to our readers. Lord Eustace Percy, who was Parliamentary Secretary to the Board of Education, has been appointed Parliamentary Secretary to the Ministry of Health, so that Mr. Neville Chamberlain may have assistance in the Commons in his arduous work. The Earl of Onslow, who was Secretary to the Ministry of Health and answered for it in the Lords, is now Secretary to the Board of Education.

**Coroners' Law and Death Certification (Amendment) Bill.**—This bill, which is designed "to amend the law relating to coroners' law and the certification and registration of deaths and burials," has now been printed. It was presented by Dr. Molloy, and is backed by Dr. Fremantle and Dr. Watts. Broadly it embodies a scheme of death certification based on the policy adopted by the Annual Representative Meeting of the British Medical Association in 1905; with proposals in the Draft Coroners' Bill approved by the same meeting; and the recommendations on burial regulations adopted by the Association in 1905. It is understood that in the present state of business the bill has no prospect of passage this session; but the publication of the text will tend to elucidate matters.

**Vaccination at St. Lucia.**—In reply to Mr. Rhys Davies, on May 28th, Mr. Ormsby-Gore said that the St. Lucia ordinances relating to public vaccination, which were passed many years ago, did not provide for exemption on grounds of conscientious objection. He had no information as to any legislation or administrative action taken or contemplated by the local Government, but inquiry would be made of the Governor.

## Scotland.

### FARMER'S RESPONSIBILITY FOR HEALTH OF WORKERS.

AT the beginning of this year a rather serious outbreak of typhoid fever occurred at Campbeltown, in Argyllshire; some two hundred persons were affected, and three died. The *Campbeltown Courier* of May 12th gives a full report of an action raised in the sheriff's court against a local farmer, under the Dairies, Cowsheds and Milkshops Order, for allowing a female worker (who was apparently the cause of the epidemic) to milk cows while suffering from an infectious disease. In the course of the epidemic Dr. Harvey Thomson, medical officer of health for Campbeltown, was able to trace the source of infection to a certain farm, and found on investigation that a woman employed there (whose husband was a scavenger) was suffering from typhoid fever. It was not alleged that the farmer knew that the woman was suffering from an infectious disease. Sheriff Macmaster Campbell, in delivering judgement, said that the facts and conditions were of such a description as to exclude the defence of excusable ignorance. A milk producer dealt with a commodity which was peculiarly and highly susceptible to contamination by the communication of infection. The obvious disability of an employer of milkers to detect the presence of infectious disease in any of his workers should induce care to ensure that his workers were in a sound condition of health, and where a

worker was ill reference should be made to a medical man to know whether it was safe or otherwise for the affected worker to proceed with the work of milking. The defendant in the present case should have got from his employee, when she sought to resume work after an illness, a certificate from her medical attendant that she did not suffer from an infectious disease and was otherwise fit to undertake milking. As the defendant was apparently the first person to be prosecuted in Scotland for this offence, the sheriff imposed a modified penalty of £1, with the option of seven days in gaol.

### HOME NURSING WORK IN FIFESHIRE.

Viscountess Novar, presiding at the half-yearly meeting of the Fife County Nursing Association at Dunfermline last week, stated that, as a whole, the progress of the Association had been most satisfactory; fifteen new nurses had begun work in the county and four associations had been resuscitated. At the present time the Association had sixty nurses at work in the county, but it was hoped to increase the number to eighty, as there was still a great deal of scope for organizing this service, particularly in the mining districts. One aim of the Association was to secure co-ordination between private nurses, voluntary nurses, and public health work, so as to prevent waste of effort and expenditure. The meeting was also addressed by the Countess of Elgin, who made an appeal for financial assistance.

### EDINBURGH SICK CHILDREN'S HOSPITAL.

The sixty-fourth annual meeting of contributors to the Royal Edinburgh Hospital for Sick Children was held on May 17th, Sir John R. Findlay, chairman of the directors, presiding. During the year 1922 there were treated in the wards 2,427 cases, as compared with 2,634 in the previous year; the average daily number in hospital was 108 and the average duration of residence 18 days. Of the total number of patients admitted 1,281 were medical and 1,037 surgical. In the out-patient department 2,811 medical cases and 3,121 surgical cases were treated, and 1,853 minor surgical operations performed. The number of further operations on in-patients was 879. The seaside convalescent home had been fully occupied during the year by 165 children, of whom 126 were medical and 39 surgical. In the medical report the staff expressed the opinion that the effects of unemployment and its attendant poverty had been strikingly manifest, both in the class of case and the condition of the patients admitted to the medical wards during the second half of 1922. Just as towards the close of the war there appeared an unusually large number of cases of tuberculosis, so, after twenty-four months of bad trade, the hospital was now experiencing an increased demand for the admission of patients on account of malnutrition and its results. The chairman stated that expenses continued to decrease and were now £2,000 less than they had been two years ago. There was cause for congratulation on the very handsome contribution made to the hospital funds by employees in offices and public works. Such subscriptions ought to be the mainstay of the finances, whereas legacies had to be drawn on to a very much larger extent than was desirable. This year the hospital had an unprecedented revenue from this source (£18,000).

### CARE OF INCURABLES IN THEIR HOMES

The annual meeting of the Royal Society for Home Relief to Incurables was held in the Council Chambers, Edinburgh, on May 18th. In moving adoption of the report for 1922, which was approved, Lord Provost Hutchison, who was in the chair, said that the society had had a long, honourable, and most useful career. Its work was not confined to Edinburgh, for its beneficiaries were situated in nearly every county in Scotland, and possibly its operations in outlying country districts were even of greater value than in a town, where people suffering from incurable disease could be received and treated in institutions. The society's work originally had been upon a small scale, but every year had seen an increase in its usefulness, till now there were nearly 500 annuitants on the roll. The yearly grant of £10 to each beneficiary was of assistance in securing better attendance and greater comfort. The amount of subscriptions received during the year was £2,176 12s.



## Ireland.

## SCHOOL MEDICAL SERVICE.

In the course of an article, specially contributed to the *Freeman's Journal*, a correspondent, "M. B. W.," states in connexion with the medical inspection of school children in Ireland, that even to the casual observer a vast amount of child suffering is apparent; and those who have to do with juveniles, either in or out of school years, know how long is the average standard of fitness. Defective vision and hearing, decayed teeth, adenoids, enlarged tonsils and other forms of throat and nose troubles, minor skin ailments—all these are apparent, and he who runs may read. There are the more serious ailments, such as heart or chest trouble, spinal complaints, and—most serious of all—the various forms and stages of tuberculosis which are operating amongst the children of school age, unchecked because unsuspected, and unsuspected because the machinery for their detection does not exist.

How many parents (the writer asks), even among those of education and experience, can detect with certainty the first signs of incipient disease? How much less able are those already overburdened mothers whose lives are little else save a ceaseless struggle against poverty and bad housing, and who are, at best, ill equipped for the struggle? The day has gone by when we could afford to believe that every woman was, by virtue of her womanhood, a suitable mother; and by virtue of her motherhood, a capable mother. We know now that the rearing of healthy children is the result, not of unaided instincts, but of knowledge, often painfully, always with difficulty, acquired. Where that knowledge is lacking, the result is suffering in one form or another; and it is the innocent victims who pay the price; but the community at large foots the bill ultimately in the shape of hospitals, sanatoria, lunatic asylums and prisons.

The case, therefore, for the medical inspection and treatment of school children rests primarily upon the needs of the children themselves. In the words of Sir James Craig, "A large proportion of the children attending the national schools are suffering from preventable and remediable disease; and an important fact to comprehend . . . is that many defects are unrecognized either by teachers or parents." It is in this fact, that the diseases are preventable and remediable in the main, that the chief strength of the children's case lies. Not every defect is curable; but at least the chance should be given to every child that if there is a defect it should be discovered in time. One at least of the tragedies of after-life can be removed—the tragedy of finding out that ill-health could have been prevented had the trouble been discovered and treated in childhood.

## WEXFORD LOCAL MEDICAL COMMITTEE.

A meeting of the medical practitioners of County Wexford was held recently at Enniscorthy. The question of the inadequacy of the salaries paid to medical officials in County Wexford was considered, and, after being fully discussed, it was proposed and passed that the following resolution in the form of an application be sent to the County Board of Health:

"That the salaries of the dispensary medical officers of the dispensary districts in County Wexford, and the salary of the physician to the County Home in Enniscorthy, are inadequate, and we ask that the salaries of the dispensary medical officers be fixed at £300 per annum, rising by £5 yearly to £400, and that the salary of the physician to the County Home be fixed also at £300, rising by £5 yearly to £400—both scales to be retrospectively applied."

A letter was read from Dr. Hennessy drawing attention to the complaints which are being made by the approved societies regarding the irregular and unsatisfactory manner in which certificates for sickness benefit are occasionally issued. The following resolution was passed unanimously:

"That the medical practitioners of County Wexford urge that medical certifiers should comply with the regulations issued by the Irish Insurance Commission with regard to the issue of medical certificates, and where it is not possible to do so, that an explanation to this effect should be recorded in the space in the certificate for 'remarks.'"

REPORT OF INTERNATIONAL RED CROSS ON IRISH  
INTERMENT CAMPS.

The International Red Cross Committee at Geneva has communicated the following note to the press:

"Thanks to the courtesy of the Government of the Irish Free State a delegation of the International Red Cross has been able to visit the Free State internment camps, in which about 12,000 prisoners are concentrated. The report which the delegation has presented to the International Red Cross Committee proves that so far as the healthy prisoners, as well as the sick and wounded, are concerned, the sanitary conditions of the camps, the nourishment and lodging, are, in general, very satisfactory."

It is understood that the investigation which led to the report took place during the first two weeks of the present month, and was carried out by a distinguished Continental medical authority, who has visited internment camps in various parts of Europe and has the widest experience of this work. It is considered probable that the reports made as a result of these investigations will be published in detail at an early date.

## Correspondence.

## THE COUNTRY PRACTITIONER.

SIR,—As is truly said in your leading article of May 26th (p. 904), dealing with the under-payment of rural practitioners with small panel lists, it is easier to demonstrate the evil than point out the cure. It may be well, therefore, before seeking for specific remedies, to consider the case on broad principles—principles which should be applied to the whole question of remuneration and not to that of rural practices only.

It will probably be conceded that the best professional work will be done by a man whose income is sufficient to place him above the anxieties and worries of a constant struggle for existence.

What, then, should be the standard of remuneration for general practitioners at large which will attract the right stamp of man in competition with other professions? And within our own profession what yearly income will render life in country practice as attractive as that in the navy or army, or overseas, or in the towns?

Let us take a man of five-and-twenty who has qualified fairly early, spent three or four years learning the practice of his profession under the varying conditions of human existence, broadening his views and learning his world, and who is prepared to marry and settle down to forty years of strenuous, responsible work both of mind and body. During those years I submit he ought to earn an average net income, after paying his taxes, large enough to ensure for himself, his wife, and an average family of four children the following benefits:

- (a) Rent and maintain a suitable establishment.
- (b) Feed and clothe himself, wife, and four children.
- (c) Educate four children.
- (d) Insure himself against sickness and disablement during his working life.
- (e) Provide a retiring annuity of £600 a year for himself at the age of 65, and for his wife if she survives him.
- (f) Provide an annuity of, say, £100 a year for one child after his death—this on the assumption that on an average one child out of the four will require assistance.
- (g) Provide the expenses of a holiday of six weeks a year.
- (h) Provide for some personal expenses.

Now let us try to put a value on these charges for a man living in a completely rural district—I will not do so in detail, as the calculation, though interesting, is too long and complicated for a letter—but spreading education expenses over the whole forty years, providing for d, c, and f by insurance premiums similarly spread, allowing for a locumtenent during his holiday, and £100 a year for his personal expenses, such a man will require about £1,350 a year after paying all wholly professional and travelling expenses and income tax.

Generally speaking all over the rural districts the insured population is about one-third of the whole, and assuming, what is not quite the case, that the mileage allowance and the 2s. for drugs meet the expenses under these heads, we may take the capitation fee as a net figure. To provide its share of the requirements of the rural practitioner the Insurance Fund should pay about £450 a year; to this must be added at least £50 to cover income tax, so that about £500 should be the share that ought to be borne by the National Health Insurance Fund if a rural practitioner is to be put on anything like an equality with other men of his own professional standard. This means at the present rate of 11s. (less 1s. 6d. deducted for patriotic purposes) a panel list of some 1,100, which is, of course, far above the available insured population of a really rural district.

I must not be taken to mean that if the insurance authorities do shoulder their proper burden the lot of the



country practitioner will be made equal to that of his town colleagues. The remaining two-thirds necessary to give him a proper income will still have to be made up out of a rural population engaged in a depressed industry—people who are and seem likely to remain, so far as money is concerned, in a state of chronic destitution. For this two-thirds he must wait for: better times, better organization of rural contract practice, and perhaps better pay for Poor Law work; but because the proper figure is unattainable I see no reason why it should not be stated fully, and why the Government should not be called upon to do its share towards solving the problem.—I am, etc.,

Weyhill, Andover, May 26th.

J. P. WILLIAMS-FREEMAN.

#### THE EDUCATION OF MYOPES.

SIR,—I have read Mr. Harrison Butler's excellent lecture on refraction with much interest, and with the greater part of it I am in entire agreement, but I am a little puzzled by one sentence about the treatment of myopia in children. Mr. Butler says: "In my private practice I allow myopes to continue their education, but I forbid music and novel reading." Why this ban on music? I am a myope myself to the extent of  $4\frac{1}{2}$  dioptres, and I may, perhaps, claim to have some practical acquaintance with music (piano and organ), but I cannot say that I have ever found that reading music was more trying to the eyes than reading a book—rather, perhaps, if anything, the reverse. If a short-sighted child has a real talent for music it would be positively cruel, and in my judgement quite unnecessary, to interfere in any way—not even excluding "examination training"—with the pursuit of what is and always will be to that child probably the greatest delight of its life. In the very rare cases where such interference or prohibition might be considered desirable it would surely be necessary also to stop entirely all reading and writing for a time. I am glad to see, however, that Mr. Butler says: "The objections to the theory that myopia is due to close work *per se* are to my mind conclusive."

Incidentally I would remark that, in my opinion, a moderate degree of myopia is a positive asset to an ophthalmic surgeon, as, when about to operate on the eye, he takes off his glasses because he sees better without them, and that is why I think he has the advantage over a hypermetropic, astigmatic, or presbyopic surgeon, who may be obliged to wear glasses in his operative work.

With regard to the wearing of glasses for reading in cases of a moderate degree of myopia—say up to about 3 or 4 dioptres—I have always left it to the patient to do as he or she likes. In my own case I have sometimes found it a relief to read with glasses, but much more frequently I have found myself, all my life, reading without them.

I think that the majority of medical men, including ophthalmic surgeons, are apt at times to be a little too dogmatic and too rigid in the advice they give to their patients, for we must all remember that, as Mr. Butler truly says, "the object of refraction is to make the patient comfortable, not the solution of a problem in optics."—I am, etc.,

Gloucester, May 21st.

E. DYKES BOWER.

SIR,—I do not propose to open a general discussion upon the relative merits of the many theories which have been advanced to account for progressive myopia; the subject is far too abstruse to be of general interest, and one more suited for treatment at a meeting of ophthalmologists than in the correspondence columns of the JOURNAL. I am in full agreement with Mr. Bishop Harman that rapidly advancing cases of progressive myopia require very special treatment, and that they are unsuited for any employment that calls for constant confinement indoors. At Coventry we try to educate such children in an open-air school, which has many advantages over an indoor school of the ordinary type. On the other hand, we must not forget that many of our most eminent citizens are high myopes, and it is doubtful whether they would have attained the position they hold had their elementary education been restricted. It seems to me that it is a great mistake to lay down an arbitrary standard of refraction as a qualification for holding a scholarship. If a child has been

carefully examined from time to time, and has been found to have a steadily increasing myopia, then it is right and proper for the State to consider him unsuitable to hold a scholarship; but the mere fact that he has 3 dioptres of myopia should not be a disqualification *per se*. In a certain proportion of children myopia becomes stationary, or at most reaches about 5 dioptres, and our universities would be deprived of many of their most learned professors had Mr. Harman's standard of education been applied to them.

As regards music, my lecture has suffered from the condensation necessary for publication, and I may not have made my view quite clear. In my private practice I see many clever children who are being educated at secondary schools, and who are suffering from slowly progressive myopia. The question arises, What is to be done with them? Is education to be given up, and are they to become hewers of wood and drawers of water? My answer is, certainly not. Some may become eminent men and women in spite of their disability. I find that in the case of girls many of them are working for examinations and at the same time practising the piano an hour a day and spending all their spare time reading novels. I advise that all extraneous reading must be given up in term time, and a choice must be made between music and examinations. If the child is likely to become a real musician let her give up examination work and take up music, but I forbid both. Novel reading must be reserved for the vacations. The main consideration is that the myopic child shall be encouraged to spend all spare time in the open air. The average myope is naturally studious, and is not disposed to games. This tendency must be resisted. Above all, a long rest is necessary after any debilitating illness.

As regards "current theories," the mere fact that a theory is "current" leaves it still a theory, and a fit subject for "cock-shies." Even the established and "current" theories of light and gravitation are being "tilted" at, and the German-made theories of myopia are not sacrosanct. In common with many other ophthalmologists I do not believe that close work *per se* is the cause of progressive myopia, but I am quite willing to change my opinion if the weight of evidence, carefully sifted and scientifically tested, conclusively points in this direction.—I am, etc.,

Birmingham, May 25th.

T. HARRISON BUTLER.

#### PERNICIOUS ANAEMIA.

SIR,—May I say at once that I welcome the letter of Dr. Gordon Ward, because I recognize him not only as a clinician of experience but as a skilled haematologist, and his contributions to haematological literature are well known. I would, however, assure him that I have had some clinical experience, and my book *Haematology in General Practice* was largely the outcome of the combined clinical and haematological study of a number of cases of anaemia from various forms of sepsis in hospital practice. I would not, therefore, like to be labelled as taking the exclusively pathological point of view. I have dealt with the whole question in my book, but I may perhaps briefly summarize my conception of the problem as follows:

In almost all forms of grave anaemia the bone marrow is affected by a toxin which is probably, though not certainly, bacterial in origin, the haemolytic streptococcus being, I think, the most usual offender. In some of these the bone marrow is affected beyond repair, in others recovery is possible when the focus has been eliminated and the toxin thereof combated by appropriate methods. The former are commonly classed as "pernicious," and the latter as "septic" anaemia. On clinical grounds alone it is at least very difficult to make the distinction, but if blood films are examined on repeated occasions the lethal type is recognized by the presence and persistence of the following signs: a low total red cell count (below two millions approximately), a colour index above 1, and megaloblasts in fair numbers—approximately 5 per cent. of white cells. In addition, polychromasia and leucopenia with presence of primitive forms of leucocyte are almost invariably present.

I lay stress on the persistence of these signs because I recognize that even in the lethal form periods of remission occur.



I suggest that as between the clinician and the pathologist there should be no question of domination of either, but of co-operation to their mutual benefit. To describe the pathologist as a "specialist in blood films" is an unkindly gibe.—I am, etc.,

A. KNYVETT GORDON, M.B., B.C., B.A. Cantab.  
London, W.C., May 19th.

SIR,—Dr. Knyvett Gordon has favoured me with a copy of his letter published above. May I at once make it clear that the implication that he lacked clinical experience was not intended to be conveyed, and is hereby unreservedly withdrawn. As a matter of fact his clinical experience is longer than my own, so that it would ill become me to question it.

But I am still far from agreeing that "pernicious anaemia" is a disease, clinically or pathologically, in which "the bone marrow is affected beyond repair." We differ fundamentally on the point of whether the bone marrow is or is not primarily affected. He thinks that it is. His book (of which he has also been good enough to send me a copy) contains the following: "The pathologist, however, restricts the term [pernicious anaemia] to a destructive lesion of the bone marrow leading to a fatal termination, though short periods of remission may occur." I, on the contrary, have written in my book (which is out of print or I would reciprocate the compliment), "Why the particular blood picture which we associate especially with this disease should follow intravascular destruction of blood is not yet determined, but as far as we know at the present it depends on the rate at which the destruction takes place, and on the presence in the body of the products of blood destruction, which seem to have a particularly powerful influence on blood regeneration." I admit that the view taken by Dr. Knyvett Gordon is, or has been, widely held. But I cannot find that it is consistent with the facts, especially the following facts:

1. That the erythrocytic marrow (assumed to be poisoned) increases greatly in area and activity.
2. That temporary benefit can often be obtained by splenectomy which, in my view, necessarily diminishes the amount of haemolysis (all this function can be assumed by other structures).
3. That the marrow can return to normal during remissions of several years' duration.
4. That no signs of degeneration are found in the marrow which are in any way comparable to those found in other diseases or which exist in the spinal cord, alimentary canal, etc., in this disease. I refer in particular to necrotic changes followed by fibrosis, and to atrophy.

Dr. Knyvett Gordon takes certain signs as criteria, *if persistent*, of "pernicious" and necessarily fatal anaemia. I agree, for one of these is a 2,000,000 red cell count, and no one can survive this indefinitely. But I would ask him whether he can point to any disease or syndrome in which these signs are *necessarily persistent*. Can he point to any disease, in fact, which is necessarily fatal even in the present state of our knowledge? If he cannot, what precise significance is the clinician to attribute to these criteria? There certainly exists a disease characterized in general by glossitis, intestinal lesions, nervous symptoms, which may be profound, and severe anaemia. His criteria are not, in the experience of a great many people, persistent in this disease, although usually present at some time. They are also present with less frequency in other conditions—for example, sprue, some helminth infections, severe sepsis, and cancer. In none of these do they help us in treatment, diagnosis, or prognosis. All that they tell us we can deduce from other indications. I feel that if we should discover next week a cure for what the clinician calls pernicious anaemia (that is, the Addisonian or glossitic anaemia of Hunter) no more would be heard of the significance of "megaloblastic degeneration."

This is where the clinician joins issue with the pathologist. Neither denies that such and such a blood picture occurs nor that such and such a clinical syndrome occurs. Both desire to employ the term "pernicious"; both have, in fact, employed it. But the conceptions to which they apply it do not coincide. They merely overlap. Hence great confusion has arisen, and it is apparent that one or other should give way. I claim, on grounds of priority for the name, and on the further ground that

pathology is merely a subsidiary study designed to serve the dominant purposes of clinical medicine, that the pathologist should give way. And when it comes to "pathological diagnosis" I am scandalized at the boldness of the daughter science, which ought but to play her part as a handmaid in the great art of clinical diagnosis, but who, with Dr. Knyvett Gordon's approval, is setting up a system of diagnosis of her own and demanding that the clinician study and admire it.—I am, etc.,

Sevenoaks, May 21st.

GORDON WARD.

## Obituary.

VAUGHAN HARLEY, M.D. EDIN., M.R.C.P. LOND.,

Late Professor of Pathological Chemistry, University College, London.

WE regret to announce the death of Dr. Vaughan Harley, which occurred very suddenly on May 21st at his country home, Walton Hall, Bletchley, Bucks.

Vaughan Harley was the son of the late Dr. George Harley, F.R.S., and was born December 28th, 1863. He studied medicine at Edinburgh University (bronze medal in pathology) and graduated M.D. with honours in 1886, being awarded the gold medal for the best thesis. The next two years were spent travelling round the world; during that period he worked for a time under Sir Patrick Manson. The succeeding four years were occupied in scientific study in Paris (under Pasteur and Roux), in Leipzig (under Ludwig), Turin (under Mosso), and in Vienna, Budapest, and Christiania. In 1893 the late Sir Victor Horsley invited him to return to London to organize the first department of pathological chemistry in England, in the pathological department of University College, London, and Harley made it a centre of research for post-graduate students. In 1894 he was appointed Grocers' Research Student and held this for four years. When Sir Victor Horsley retired in 1896 Harley was appointed Professor of Pathological Chemistry in University College, London, an appointment he held until 1919. During this period he published a large number of scientific papers and collected a band of enthusiastic workers in the laboratory. He took a keen interest in the incorporation of University College in the University of London and served on the committee engaged in raising the necessary funds. At the Annual Meeting of the British Medical Association held in London in 1895 he was honorary secretary of the Section of Pharmacology and Therapeutics. He was a Fellow of the Physiological Society and of the Chemical Society. In addition to his work as a physician Vaughan Harley was much interested in farming, especially in short-horns. For the last twenty years he applied scientific methods at his farm at Walton Hall and took a particular interest in forming the herd of shorthorns known as the "Notlaw" herd. He won numerous prizes at all the big shows, the best year being in 1918, when he won the championship, reserve championship, and Maclellan cup at the Birmingham spring show. He was the breeder of numerous prize winners under other names and his animals did very well in the Argentine. His Oxford Downs sheep were also successful in the show yard. In addition, he was a breeder of Shires and large black pigs. In 1911 he was elected a member of the council of the Shorthorn Society and served on it until his death, being vice-president in 1917 and president in 1918. He was also a member of the Shire Horse, Oxford Downs, and Large Black Pig Societies. Dr. Vaughan Harley married in 1905 Mary, eldest daughter of the late Canon Blagden, and leaves two daughters. He was buried at Walton Church, Bucks, on Friday, May 25th.

R. J. EWART, M.D., D.Sc.,

M.O.H. Barking.

WE regret to have to record the death of Dr. Robert John Ewart, M.O.H. for Barking, Essex. He was a distinguished student of University College, Liverpool, where in 1894-96 he held the Holt tutorial scholarship and the Junior Lyon Jones scholarship. He took the B.Sc. of the Victoria University, with honours, in 1896, and the diplomas of L.R.C.P., M.R.C.S. in 1899, graduated M.B., B.Ch. in



1899, M.Sc. in 1903, M.D. in 1904, and D.Sc.Lond. in 1918. He was senior house-surgeon to the Royal Infirmary, Liverpool. After a tenure of the Holt Fellowship of Pathology in the University of Liverpool he turned his attention to public health, and took the diploma of D.P.H. in 1907. He was first appointed Assistant M.O.H. Middlesbrough and later on to the office he held at the time of his death. He was a member of the British Medical Association and a fellow and member of the council of the Society of Medical Officers of Health. He was esteemed one of the ablest medical officers of health in the country, and it is difficult to understand why he had got no further than Barking Town. "It was," a friend writes, "like putting a race-horse in a four-wheel cab. He was a most delightful colleague, modest and unassuming, willing to take any amount of trouble to help those who asked his aid, and apparently quite unaware that he was a more knowledgeable person than anyone else."

We are indebted to Dr. MAJOR GREENWOOD for the following estimate of the high value of Dr. Ewart's contributions to the literature of public health.

By the death of Dr. R. J. Ewart our profession has lost one of its very small band of enthusiastic statisticians. Ewart's principal statistical work is contained in a series of memoirs published in the *Journal of Hygiene* (xiv, 453; xv, 127; xv, 208; xvi, 12; xviii, 95). His idea was that the age of the parents at the time of the birth of a child affected the latter's physiological characters, that the physiological make-up of a later-born child was essentially different from that of a child born earlier in the fertile period. He surmised that changes in the reproductive habits of the people correlated with the declining birth rate were not without influence upon the evolution and prevalence of tuberculosis and the zymotic diseases. Ewart took up this work in spite of grave difficulties. His data were scanty and he had to begin to acquire a knowledge of the difficult technique of modern statistical analysis at an age when few very busy men—and he was a very busy man—care to tackle a new subject. The data available—mainly collected by himself at Middlesbrough and Barking—were meagre and open to criticisms which none urged more strongly than he did himself. It is not therefore surprising that he failed to establish conclusively any important proposition, although in some matters he created a fair presumption that his views were just. But his papers are full of valuable suggestions from which some later investigator with more material will derive advantage. Incidentally, some of Ewart's memoirs contain valuable contributions to the general statistical study of epidemic disease. I would particularly instance the paper printed in the fifteenth volume of the *Journal of Hygiene* (pp. 208-256), which contains one of the best statistical studies of scarlet fever and diphtheria with which I am acquainted.

It would be very easy for a critic having the advantage of wider training and experience in research, above all having had the advantage of time and leisure, to point the blemishes in Ewart's work. Ewart had very little time to devote to pure science and naturally made some mistakes, as every single-handed worker must. I believe he will be remembered as an original-minded investigator, a real student of nature. Of the keenness and skill with which he carried out his administrative duties others can speak more authoritatively than I, but several members of the staff of the Lister Institute will recollect how he contrived to save the lives of some babies in his district in a time of milk shortage by a pretty application of a scientific idea. He did not live long enough to secure wide recognition, but long enough to prove to all who knew him that they have lost a man worthy of the highest traditions of the public health service.

J. G. OGLE, M.D., B.Ch.Oxon.,

Reigate, Surrey.

THE announcement of the death of Dr. John Gilbert Ogle, of Reigate, will be received with deep regret by his numerous friends. He was the son of the Rev. J. A. Ogle, vicar of Sedgeford, Norfolk, and came of a medical stock, his grandfather having been Regius Professor of Medicine

at Oxford, and his uncle, William Ogle, the well known scholar and physician, who was Superintendent of Statistics in the Registrar-General's department. Dr. J. G. Ogle was educated at Haileybury College, Keble College, Oxford, and St. Bartholomew's Hospital, where he held the post of house-physician to Sir Dyce Duckworth. Afterwards he was house-physician at the Royal Chest Hospital, London, and at the Radcliffe Infirmary, Oxford.

He took the diploma of L.R.C.P. and M.R.C.S. in 1888 and graduated M.A. and M.B., B.Ch.Oxon. in 1889; in 1891 he proceeded to the degree of M.D.

He practised in Reigate from 1891 to 1914 as a member of the old established firm of Ogle, Walters and Pegg, the successors of Holman, Walters, Hallows and Berridge. When he retired owing to ill health his loss was deeply felt, not only by his partners and colleagues, but also by his many patients and friends. His skill in his profession was only equalled by his great care and kindness. In fact it may truthfully be said of him that he never failed to seize any opportunity for doing kind and generous acts, and he was greatly beloved by all.

Dr. Ogle was twice married, firstly to Miss E. M. Perfect of Lewes, who died in 1919, and secondly in 1921 to Miss Dorothy Hunter.

## Universities and Colleges.

### UNIVERSITY OF CAMBRIDGE.

APPLICATIONS for the E. G. Fearnside's scholarship for clinical research on the organic diseases of the nervous system must be sent to the University Registry before June 20th. The scholarship is open to graduates in medicine and to graduates in arts who have passed Part II of the Natural Sciences Tripos.

### UNIVERSITY OF LONDON.

A COURSE of four lectures on tropical hygiene will be delivered by Dr. Andrew Balfour, C.B., C.M.G., at St. Bartholomew's Hospital Medical College, E.C., on June 12th, 14th, 19th, and 21st, at 5 p.m. The lectures are addressed to advanced students and to others interested in the subject. Lord Stanmore, treasurer of the hospital, will take the chair at the first lecture.

## Medical News.

THE Duke of Connaught will distribute the prizes at St. Thomas's Hospital Medical School on Wednesday, June 13th, at 3 p.m.

THE annual meeting and dinner of the Cambridge Graduates' Medical Club will be held at Gonville and Caius College, Cambridge, on the evening of Friday, June 22nd, with Sir H. K. Anderson, M.D., F.R.S., Master of Caius, in the chair. The honorary secretary is Mr. R. Davies-Colley, C.M.G., M.Ch. (10, Devonshire Place, W.).

A TWO weeks' refresher course in general medicine and surgery will be given, under the auspices of the Fellowship of Medicine and Post-Graduate Medical Association, at the North-East London Post Graduate College (Prince of Wales's General Hospital), Tottenham, from June 11th to 23rd inclusive. It will include demonstrations in clinical and laboratory methods with special demonstrations each Saturday at the North-Eastern Fever Hospital and the London County Council Mental Hospital respectively. A clinical lecture will be given every day at 4.30 p.m. A course of eight practical lecture demonstrations on gastro-intestinal diseases of children will be given by Sir William Bayliss, Dr. Bernard Myers, and Mr. E. T. C. Milligan at the "Children's Clinic," Western General Dispensary, from June 11th to July 5th. A special course in neurology will be given at the West End Hospital for Nervous Diseases from the middle of June till the end of July, and should a sufficient number of entries be received courses will also be held in ophthalmology and dermatology at the Royal London Ophthalmic Hospital and St. John's Hospital for Diseases of the Skin respectively. Beginning on June 11th, Dr. Gustave Monod, M.R.C.P.Lond., will give a short course of clinical demonstrations (in English) on practical hydrology at the Thermal Hospital in Vichy. The subjects to be dealt with will be hepatitis, gout, diabetes, obesity, etc. Further particulars regarding these courses, copies of the syllabus, and tickets of admission can be obtained from the Secretary to the Fellowship of Medicine, 1, Wimpole Street, W.1.

DR. J. WRIGHT MASON, on the completion of forty years' service as surgeon to the Hull City Police Force, has been presented by the serving and retired members thereof with a silver rose bowl and Mrs. Mason with a gold wristlet watch.



THE next meeting of the North-Western Tuberculosis Society will be held at 3 p.m. on June 7th at the Tuberculosis Offices, Joddrell Street, Hardman Street, Deansgate, Manchester, when Dr. H. de Carle Woodcock (Leeds) will read a paper on the diagnosis and treatment of tuberculous glands. Any medical practitioner interested in the subject is cordially invited to attend.

THE sixth edition of the *Aids to Ophthalmology* by Mr. Bishop Harman has been translated into Polish by Dr. W. H. Melanowski, one of the teachers of the University of Warsaw. The Polish edition makes a book of 300 pages and is printed in good type of rather larger size than the English edition.

THE third and last block of the United Services Hospital at Ascot was declared open by H.R.H. the Duke of Connaught on May 29th, when the whole hospital was thrown open for the inspection of many interested visitors. The funds for this building have been derived from the large profits made by the Army and Navy Canteen Board out of the money expended by naval ratings and army rank and file, and the benefits of this hospital are intended for the children of ex-service men who suffer from surgical tuberculosis. The great experience of the consulting surgeon to the institution, Sir Henry Gauvain, has been freely drawn upon, and the design of the buildings and equipment owes a great deal to the lessons learnt at Alton. The buildings here, however, are of a much more substantial and permanent character than at Alton and at some other "open-air" hospitals, and unlike some of these, the wards can be entirely closed if it is thought desirable to do so. There is accommodation in the three wards for 138 patients, and there are 12 beds in the isolation annexes, making in all 150. The treatment block contains plaster, splint, and x-ray rooms, all of which are admirably adapted for their purposes. Nearly all the beds are already occupied and the appearance of the patients showed the good effects of the open air treatment and of such sunshine as our climate has lately allowed us. The country house Heatherwood, in the grounds of which the hospital has been built, now serves as a charming residence for the nurses. The soil is sandy and dry and the situation elevated. The sewage is treated in a disposal plant consisting of a settling tank and filter bed, and the effluent is distributed over fields at a distance from the buildings. The hospital has its own power station and is thus self-contained.

EXPERIMENTS made three years ago indicated that breathing for five minutes daily of air containing small amounts of chlorine acted as a preventive of influenza. Further tests made at the University of Arkansas recently upon nearly 300 persons are stated to confirm this conclusion.

DR. T. S. HIGGINS, M.O.H. for St. Pancras, who (as recently announced in our columns) has been appointed medical officer of health at Cape Town and lecturer on public health at Cape Town University, was presented on May 28th by the St. Pancras Borough Council with a gold watch.

THE second International Congress of Military Medicine and Pharmacy opened on May 28th at Rome. H.M. the King of Italy and Signor Mussolini, President of the Council, attended the opening ceremony, and General Diaz delivered an inaugural address. The British representatives at the Congress are Lieut.-Colonel D. S. Harvey and Major Dawson.

THE annual general meeting of the Society for Relief of Widows and Orphans of Medical Men was held on May 23rd, with Dr. F. de Havilland Hall, President, in the chair. The annual report which was submitted to the meeting showed that the invested capital of the society now amounts to £146,650, only the income from which may be used for the payment of grants and expenses. £4,407 10s. was distributed in grants during the year, and the expenses were £335. At the present time there are 51 widows and 4 orphans in receipt of relief. Relief is only granted to the widows and orphans of deceased members. Any widow left with an income of £125 or under, and any orphan with an income of £60 or under, is eligible to receive relief. The average relief given is £80 per annum to each widow and £50 per annum to each orphan. Special grants are also made to enable orphans to learn a profession or trade. The society was founded in 1788, and incorporated by Royal Charter in 1864. Membership is open to any registered medical practitioner, who at the time of his election is resident within a twenty-mile radius of Charing Cross. The annual subscription for a member who at time of election is under 40 years of age is £2 2s.; if over 40 but under 50, £3 3s.; and if over 50, £4 4s. There are special terms for life membership. All particulars may be obtained from the Secretary at the offices of the society, 11, Chandos Street, Cavendish Square, W.1. The society is both a provident and beneficent one. Were it not for the income derived from investments the society would not be able to make the grants, as the income from subscriptions about pays the working expenses. These work out at about 6 per cent. of the income.

## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology*, Westrand, London; telephone, 2630, Gerrard.

2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand, London; telephone, 2630, Gerrard.

3. MEDICAL SECRETARY, *Mediscera*, Westrand, London; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus*, Dublin); telephone, 4737, Dublin, and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate*, Edinburgh; telephone, 4361, Central).

### QUERIES AND ANSWERS.

#### ACCIDENT OR ILLNESS?

"PASCE" submits the following question: "Does a septic finger following a scratch, wound, or 'hang-nail,' necessitating opening under general anaesthesia three times and on the third occasion avulsion of the nail, constitute an accident or an illness?"

\* \* The form of this question is not very clear, but we are advised that if the scratch, wound, or hang-nail arises out of or in the course of employment and if proper notice is given, in all probability there would be grounds for a claim under the Workmen's Compensation Acts. If the condition arises in a private person and he is insured, everything would depend on the terms of the policy. It would perhaps be advisable to consult a solicitor.

### LETTERS, NOTES, ETC.

#### QUININE SALICYLATE.

DR. NINIAN M. FALKNER (Dublin) writes: Many years ago I was requested by a leading consultant in Dublin to prepare some quinine salicylate; this I readily accomplished in the pharmacy of my dispensary. My friend published a note of the incident in the *Dublin Journal of Medical Science*. Since then the insolubility of this salt has come before me, and when occasion permitted I have made rough experiments; the outcome of these was to find that with tinctura quinae ammon. (B.P.) and sodium salicylate a permanently clear mixture can be obtained.

R. Tr. quinae ammon. (B.P.)	...	...	...	...	℥ ss
Sodii salicyl.	...	...	...	...	gr. x
Glycerini	...	...	...	...	5 ss
Aquam	...	...	...	...	ad 3j

Ft. mist.

I presume, although I have not verified the reaction, that a double salicylate of quinine and sodium is formed, soluble in dilute ammonium hydrate. I hope to investigate this further, but there are analogies in Nessler's reagent and Liebig's test for cyanogen to support this view. I have given this to many of my friends and used it largely during the war in the base hospital to which I was attached, principally in influenza.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 47, 48, 49, 52, and 53 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 50 and 51.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 227.

### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, W.C.2, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.



## The Oliver-Sharpey Lectures

ON

## THE ACTIVITY OF THE CAPILLARY BLOOD VESSELS,

AND ITS RELATION TO CERTAIN FORMS OF TOXAEMIA.

DELIVERED BEFORE

THE ROYAL COLLEGE OF PHYSICIANS OF LONDON

BY

H. H. DALE, M.D., F.R.C.P., F.R.S.,

HEAD OF THE DEPARTMENT OF BIOCHEMISTRY AND PHARMACOLOGY UNDER THE MEDICAL RESEARCH COUNCIL.

## LECTURE I.

It is fitting that the Oliver-Sharpey Lectures should deal with the application to medical problems of some physiological development of current interest. Among fresh developments of recent years has been a rather remarkable awakening of interest in the function of the capillary blood vessels as an active factor in the circulation. But a few years ago discussion of a possible activity of the capillaries was almost limited to the question whether their primary function, of facilitating chemical interchange between the blood and the tissues, involved an active secretion, or could wholly be explained by the physical processes of filtration, osmosis, and diffusion. There were not wanting, indeed, records in detail of appearances seen under the microscope, which were difficult to interpret except by attributing to the capillary walls an independent power of contracting, relaxing, and maintaining a tonus. But the prevailing tendency was to find alternative explanations for these appearances, or, in so far as a contractile function of the capillaries was admitted as a possibility, to regard it as a remnant of an embryonic condition, which, if it persisted in the fully differentiated vascular system of the higher vertebrates, played no real part in the regulation of the blood stream.

As long ago as 1858 Lister,<sup>1</sup> in his classical work on inflammation, described appearances which, I think, we should to-day not hesitate to attribute to active changes in capillary tone; but tradition was strong enough to lead him to interpret them as secondary to changes of pressure, produced by changes in the tone of the arterioles. Stricker,<sup>2</sup> in 1865, was the first observer to claim that changes in the capillary lumen took place independently of the blood pressure, since he was able to see them in the nictitating membrane of the frog, even when excised from the body. The soundness of the observation was challenged by the authority of Cohnheim,<sup>3</sup> and a series of workers—Golubew,<sup>4</sup> Tarchanoff,<sup>5</sup> Severini<sup>6</sup>—who confirmed and extended Stricker's observation, were so far reluctant to attribute the narrowing of the capillary lumen to contraction of the wall in the ordinary sense, that they described it as due to the swelling of the nuclei of certain fusiform elements, which produced a partial or complete blockage.

In contrast to these, and in conformity with the most recent observations, was the description given by Rouget<sup>7</sup> of special flat contractile cells, applied to the outside of the capillary endothelium, and encircling the vessel by delicate protoplasmic processes. Roy and Graham Brown,<sup>8</sup> whose elaborate investigation was published in an early volume of the *Journal of Physiology* (1879), produced convincing evidence of the independent tone and contractility of the capillaries, but, apparently in ignorance of Rouget's work, were content to ascribe the function to the capillary wall as a whole. Rouget's work, indeed, was practically forgotten until Mayer,<sup>9</sup> nearly thirty years later, repeated and confirmed his observations, describing not only the special form of contractile cell seen on the true capillaries, but all intermediate forms between this and the true plain muscle fibres of the arterioles and venules respectively. Steinach and Kahn<sup>10</sup> then renewed observation of the living capillaries, and demonstrated contraction in response to stimulation, the contraction being in accord with the descriptions given by Rouget and by Mayer, in that the endothelial wall was seen to become folded and creased by an external con-

stricting force. They added the important point that the capillaries, like the arterioles, have a motor nerve supply from the sympathetic system.

This body of direct evidence, produced up to the year 1903, seems to have had little effect on physiological teaching. Attention being naturally concentrated on the picture of the capillaries, as that part of the vascular system in which the blood performs its respiratory, nutritive, and cleansing functions, it was apparently assumed that their walls had become so differentiated to facilitate filtration, diffusion, and osmosis, as to have lost the primitive contractile function, so that their state of patency or collapse was held to be determined entirely by the pressure in the arteries or the veins. For the next fourteen years this conception was only disturbed by observations which did not seriously influence the general trend of opinion. The observations of Heubner<sup>11</sup> on the type of circulatory collapse, produced by certain metallic and bacterial poisons which injured the capillary wall, were apparently not regarded as having a bearing on normal conditions. Langley's<sup>12</sup> suggestion that the intense local ischaemia produced by adrenaline seemed to involve an active participation of the capillaries in the vasoconstriction, and<sup>13</sup> that this intrinsic capillary tone might be of importance under conditions of very low arterial pressure, seemed to lie rather aside from the main current of interest in the physiology of the circulation. From the point of view of the normal regulation of the blood flow, the rôle of the capillaries was regarded as one of passive obedience to external forces; and to emphasize the contrast between this view and that to which the work of recent years had led us I entitled these lectures "The activity of the capillary blood vessels."

A feeling of dissatisfaction with the accepted teaching seems to have been in the scientific atmosphere in the early years of the war; for about the year 1917 evidence pointing in another direction began to appear from at least four different and independent sources. Early in that year Cotton, Slade, and Lewis<sup>14</sup> published a very important communication on the reaction of the capillaries in the skin of man, as exhibited in the phenomena long known as "dermatographism"—the local vasomotor response following non-traumatic pressure. They showed that both the red and the white tache, representing reactions to different degrees of pressure, or different degrees of sensitiveness, and often appearing alongside one another in the same individual, must be attributed to intrinsic relaxation and contraction of the capillary walls, since they were produced, often with little or no impairment, in a limb with the circulation completely arrested by closure of the arteries. Only the diffuse flush, surrounding the tache, was obliterated by arterial obstruction, and, like the flush developing round a painful, punctiform stimulus, which it closely resembled, must be attributed to reflex relaxation of the arterioles. They found, further, that, in a limb in which the circulation had been brought to a standstill, a small injection of a dilute solution of adrenaline still produced an area of characteristic pallor. Mere constriction of arterioles or venules containing stationary blood could not thus empty the capillaries, so that Langley's suggestion that these also contracted actively in response to adrenaline was definitely established, and, by inference, the motor sympathetic innervation of their walls, described by Steinach and Kahn, was confirmed.

Later in the same year Ebbecke<sup>15</sup> published, in *Pflüger's Archiv*, a paper which, owing to conditions then existing, only later became available in other countries. It covered much of the same ground and led him to conclusions, concerning the local vasomotor reactions of the skin vessels, very similar to those of Cotton, Slade, and Lewis. He added the important point that a closely similar reaction of the capillaries, by dilatation, to stroking pressure, could be observed on the surface of viscera, such as the liver and the kidney. Both these sets of quite independent observers noticed that a pronounced local dilatation of capillaries, thus produced, might result in a local oedema, with formation of a raised wheal. This increase of permeability, accompanying full relaxation of the capillary wall, is, as we shall see, a point of very general importance. In his long and suggestive paper Ebbecke also reviewed a wide range of phenomena in which the varying tone of the capillaries might participate,



mentioning, in this connexion, the action of poisons like peptone and histamine, and some of the features of the anaphylactic reaction.

It was this last aspect of capillary function—the connexion of changes in capillary tone with the action of certain poisonous protein derivatives—which at this same period had forced itself on the notice of my co-workers and myself. But it will be convenient if I depart a little from strict chronology, to mention another group of investigations which was also, at this same time, proceeding independently—namely, the beautiful series of observations by Krogh, which, though by accident their publication began a little later, were already in active progress, and which, with the help of his fellow workers in Copenhagen, have continued to the present day. Fortunately Professor Krogh, by the recent publication of his Silliman lectures,<sup>19</sup> has made it unnecessary that I should give more than a general review of his work. We may note that he had been led to this question by yet another entirely different route, his original problem being that of the oxygen supply to the voluntary muscle fibre. He was impressed by the difficulty of accounting for the adjustment of the blood supply to the widely varying needs of the active and the resting muscle for oxygen, unless the capillary vessels were actively contractile, so that, with a large proportion closed and impervious to blood in the resting muscle, there would be a large reserve of potential channels, the opening of which would meet the need for a relatively enormous increase of blood in close relation to the muscle fibres, during and after contraction.

By an ingenious method of intravital injection with Indian ink Krogh was able to give a clear demonstration of this adjustment. He counted and measured the capillaries open to the blood flow in the resting and the working muscles of frogs and small mammals, and his figures show an impressive contrast. One actual count of the open capillaries in a guinea-pig's muscle at rest showed only 85 per square millimetre, while in the muscle at work no less than 2,500 were counted in the same area—a ratio of 1 to 30. Still more impressive was the disparity between the volumes of blood in the muscle capillaries under the two conditions, calculated from measurements of the sectional areas and lengths of the capillaries open to the circulation. The blood volume, given as a percentage of the muscle volume, varied from 0.02 per cent. in the resting muscle, to 5.5 per cent. in the active muscle, and 15 per cent. in the muscle with all the capillaries fully dilated. In other words, the volume held by the capillaries open for transmission of blood in a normal, resting muscle, may be as little as one 750th part of the total capacity of the whole capillary network in the muscle, if all were fully dilated. We may note the obvious inference. If we suppose that, under normal conditions of rest, the capillary vessels in the voluntary muscles hold at any moment no more than 1/750 of the blood in circulation, if all, for any reason, were simultaneously relaxed to the fullest extent they would accommodate the whole of the blood in the body.

Having become convinced of the importance of this variable intrinsic tone of the capillaries in regulating the flow of blood, Krogh and his fellow workers proceeded to investigate its finer mechanism, by physiological studies carried out under the microscope, with the aid of the facilities for illumination now available. They have confirmed, on all points, the description given by earlier workers, such as Steinach and Kahn, of the response of the capillaries to minutely localized stimuli by variations of their proper tonus. They have demonstrated the possibility of making an individual capillary relax by gentle local stimulation. They have confirmed, as also has Hooker<sup>20</sup> of Baltimore, the presence of a motor supply to the capillaries in the sympathetic nerves, and have added the highly significant observation that stimulation of true sensory nerve fibres, arising in the dorsal root ganglia, not only causes dilatation of arterioles, as Nicker<sup>21</sup> had first shown, and Bayliss<sup>22</sup> much more convincingly, but independent relaxation of the capillary walls as well. The dilator effect on capillaries of stimulating sensory roots was first described by Doi,<sup>23</sup> working in Starling's laboratory. Krogh and his colleagues have related this sensory supply to the spread of the capillary dilator reaction from a punctiform stimulus, which disappears when the nerves are degenerated. Krogh<sup>19</sup> suggests the existence of a peripheral nervous network, formed by

anastomosis of these branches from sensory fibres. There are here many points of detail still needing elucidation.

Of at least equal interest is the fact that Vimtrup,<sup>24</sup> at Krogh's suggestion, has reinvestigated the minute histology of the capillary motor mechanism, and has fully confirmed and extended the descriptions of contractile cells given by Rouget and by Mayer. It seems no longer possible to question the presence of these flat, branching contractile cells; applied externally to the endothelial wall of the capillary, and girdling it with fine processes. Equally certain seems the continuity of this contractile coat of the capillaries with the plain muscle coats of arterioles, on the one hand, and venules on the other, all intermediate forms between the fully differentiated plain muscle fibre and the flat, branching Rouget cell being found at the transition in either direction. There are vessels, indeed, in the subcapillary plexuses of the skin, which from their size would be counted veins, but from their structure must rank as giant capillaries (Krogh<sup>19</sup>).

Such evidence is making it inevitable that we should abandon the conception of contractile function, active regulation of the blood flow, as ceasing abruptly where an arteriole opens into the capillary network. We cannot longer, I think, regard the capillaries as passive, membranous tubules, opening or collapsing merely in response to rise or fall of pressure, whether internal pressure of the blood, as has generally been assumed, or external pressure due to swelling or deturgescence of the surrounding tissues, as in the view put forward by Leonard Hill<sup>25</sup> in a highly suggestive lecture. I think we must accept it as established that the capillaries have their own contractile coat, continuous with the plain muscle coats of the arterioles and venules—more delicate and less fully differentiated than these, indeed, but similarly supplied with motor and inhibitor nerve fibres.

This contractility of the capillaries being accepted as proven, we have to inquire into its function and its significance for the control of the circulation. It can hardly be doubted that its normal function is a fine adjustment of the circulation, supplementing the relatively coarse adjustment effected by the varying tone of the arteries. We have seen that, under normal conditions, only a small proportion of the capillaries in any tissue must be regarded as simultaneously open for the transmission of blood; and we must suppose that, as the metabolic demand shifts from one cell or tissue unit to another, some capillary paths close down, while others open. The fact, demonstrated by Krogh, that the capillary tone is not only under nervous control, but finely responsive to chemical stimuli, obviously fits it for that purpose.

These results of direct observation of the individual capillaries correspond in a very striking manner with conclusions to which my fellow workers and I had found ourselves driven by evidence of a very different kind, and which, indeed, we had already put forward a few months before the publication of Krogh's investigations began. Dr. Laidlaw and I<sup>26</sup> had been interested and puzzled for some years by the action of the intensely active base histamine, which reproduced a type of action exhibited by a large group of poisonous protein derivatives—a complex of symptoms which, at the outset of our work, had recently come into renewed prominence in the guise of the so-called "anaphylactic shock." The occurrence of a kind of toxæmic collapse in a proportion of severely wounded soldiers<sup>27</sup> had given, in the early years of the war, a new keenness to our desire to clear up outstanding difficulties in the action of histamine, which was capable of producing a condition in many ways so similar.

The main difficulty was briefly this. It was a powerful and general stimulant of plain muscle, of that of the arteries, so far as direct evidence could show, as well as of other organs. When added to blood or a saline solution perfused through the vessels of any excised organ it produced, in accordance with expectation, a simple retardation of the flow and diminution of the organ volume, by increasing the arterial resistance. Yet, when injected in a small dose into the vein or artery of an anaesthetized animal of the same species, it caused a simple fall of arterial pressure, having all the features of a pure vaso-dilator effect—that is, an action due to diminution of the peripheral resistance to the circulation.

There have been several attempts, some of them quite recent, to explain this paradox by representing this depressor



action of histamine as due, not to vaso-dilatation, but to constriction at some point on the venous side of the circulation, retarding the return of blood to the left side of the heart. These various constrictor actions—on the hepatic veins (Mautner and Pick<sup>28</sup>), on the pulmonary arterioles (MacDowall<sup>29</sup>), and on the mesenteric venules (Inchley<sup>30</sup>)—do doubtless occur. Indeed, their occurrence was explicitly recognized by Laidlaw and myself as playing a minor part in effects seen at different stages of the action of large, shock-producing doses of histamine. But we satisfied ourselves that they were not seriously concerned in the evanescent effects produced by small doses. These in every respect—in the increase of the heart's output, the accentuated volume-pulse in a limb, the bright red flush which can be seen by simple inspection of the exposed intestine—resembled those of substances causing arterial dilatation.

A somewhat complex investigation, in which I had the great advantage of co-operating with Professor A. N. Richards<sup>31</sup> of Philadelphia, drove us, in the face of the accepted physiological teaching, to the conclusion that this depressor action of histamine was due to a vaso-dilator action, not on arterioles, like the long familiar effect of nitrites and the more recently studied effect of acetylcholine, but on the capillaries. The failure hitherto to demonstrate this action of histamine on the artificially perfused organ was attributable to the fact that, under the conditions of such an experiment, the capillaries had not retained any of their normal tone, so that further relaxation was impossible, and only the constrictor effect on arteries appeared. By finding the conditions necessary for the artificial maintenance of the capillary tone—namely, the presence in the perfusion fluid of red corpuscles, to maintain a free supply of oxygen to the tissues, and a small proportion of adrenaline—we were able, in the perfused organ, to demonstrate the vaso-dilator action of histamine as in the whole animal. The perfusion pressure fell, the volume of the organ increased, and the venous outflow was accelerated. Venous constriction would not produce such an effect, since it would impede the outflow and raise the perfusion pressure. Arterial dilatation might do so, but it could be shown that this did not occur; a preparation consisting only of the arteries, down to the finest branches which could be separated from the tissues, perfused under identical conditions responded to histamine with simple constriction, while nitrites and acetylcholine caused prompt and wide relaxation.

There remained only, as the site of this demonstrated vaso-dilatation, the capillaries and possibly the microscopic arterioles immediately preceding them. Between these our methods could not distinguish; and, indeed, the evidence now to hand as to the structure and behaviour of the capillaries makes it doubtful whether the distinction would be a logical one. No sharp line, apparently, in relation either to structure or function, can be drawn between the ultimate arterioles and capillaries. At some point in the vascular system the response to histamine changes from the constriction, seen in the finest separable arteries, to dilatation; and whether we think of this change as occurring where vessels are still anatomically called arterioles, or at the level where arterioles are branching into capillaries is of comparatively little moment. That the capillaries share in the dilatation seems to be beyond doubt (Doi<sup>32</sup>).

The evidence I am putting before you is nearly five years old, and I have forborne to trouble you with details. My immediate object is to point out to you that it involved somewhat new assumptions, concerning the nature of the capillary circulation, which the more recent, direct evidence has fully upheld. We were accustomed to the diagram in which the gradient of the blood pressure fell ever more steeply as the blood passed into finer and finer arteries, to become suddenly flattened and almost horizontal where the arterioles branched out into the relatively enormous capillary network. This conception, and the corollary that change in the tone of the capillaries, if it occurred, would have little effect on the peripheral resistance, and hence on the arterial pressure, would be inevitable on the view that a large proportion of the capillaries were regularly open for the passage of blood. Our conception of the capillaries as the site of an important part of the peripheral resistance, so that the steep

portion of the pressure gradient was shifted to cover the arterial side of the capillary zone, necessarily involved the assumption that only a very small proportion of the available capillaries are simultaneously open under normal conditions, so that no great and abrupt increase, of the total sectional area of the path open to the blood, occurs in passing from arterioles to capillaries. This assumption, which was vital to our argument, was unfamiliar at the time, and, I believe, made it difficult for many to accept our conclusions. Krogh's work has provided its much needed justification by direct evidence.

There was a further inference, of much greater significance, to which this conception of the capillary circulation necessarily led us. In dealing with the simple vaso-dilator action of small doses of histamine we had supposed that the small proportion of capillaries which, at the moment, were actually transmitting blood, underwent a dilator relaxation, with an effect resembling an arterial dilatation in all but quantitative details. If such a reaction should spread beyond the immediate path of the blood and involve the whole of the capillary network, so that all the capillaries in the body became simultaneously relaxed, the mere capacity thus developed should, we argued, be sufficient to accommodate practically the whole of the blood at the periphery, where a large part of it would lie stagnant, removed from effective circulation. I have already shown you how Krogh's actual measurements, subsequently published, have given a quantitative reality to this conception of the capacity of the generally dilated capillaries. The condition so produced would correspond exactly with that which Laidlaw and I had for some time been studying, and which followed the injection into an anaesthetized cat or dog of a large dose of histamine.<sup>32</sup> The circulation failed, in this instance, not because the peripheral resistance was low, but because the output from the heart gradually fell to minimal proportions. The muscular action of the heart, and the tone of the arteries remained good; the output, and with it the blood pressure, failed because the blood was accumulating at the periphery in dilated capillaries and venules, while the larger arteries and veins were alike collapsed and empty. The shortage of the blood available for circulation was accentuated by a phenomenon which, again, the more recent work of Krogh has brought into the scheme of the general physiology of the capillaries. We found that the capillaries became not merely relaxed in tone but abnormally permeable. We were inclined, not realizing the importance of the contractile cells as responsible for capillary tone, to regard the relaxation and the morbid permeability as due alike to poisoning of the capillary endothelium, as Heubner also had assumed in describing a very similar condition. It would appear from Krogh's observations that not only the diameter of the capillaries, but the power of the endothelial wall to retain the constituents of the blood is conditioned by the maintenance of an adequate tone by the Rouget cells. Loss of capillary tone, however produced, seems to result in oedema in the area of relaxation. To what extent the abnormal permeability, which we observed, is the result of the loss of the supporting tonus of the Rouget cells, directly modifying the porosity of the endothelial filter, and to what extent, on the other hand, it is due to a poisonous action on the endothelium, or to secondary nutritional changes, caused by the inefficient circulation, is a matter on which evidence is incomplete and difficult to procure. That increase of permeability due to relaxation of tone is an important factor, is strongly suggested by the rapidity with which the loss of plasma through the capillary walls appears; within a few minutes of the injection of histamine as much as one-half of the plasma may have passed from the blood vessels, probably leaving many of the capillaries clogged with a viscid corpuscular cream.

This picture of the histamine shock, which I believe to be the picture of a condition having a wide pathological and clinical importance, was drawn by us chiefly from data obtained by macroscopic methods—measurements of blood pressure, of blood volumes both general and local, of changes in corpuscular content. It has been closely confirmed by the microscopic observations of Hooker<sup>30</sup> and of Rich<sup>32</sup> in America. Inchley<sup>30</sup> has quite recently raised the question of constriction of the venules as the essential factor in pro-



## LIMITATION OF EFFORT IN HEART DISEASE.

[THE BRITISH  
MEDICAL JOURNAL]

landing; then out of doors—walking, or in chair or vehicle, but sleeping on the ground floor, or carried upstairs, though walking down; then walking up a short flight of stairs once a day, then twice, but always walking upstairs first and then down, before walking down and then up—and one begins with not more than half a dozen steps, perhaps at first taken walking backwards. The same rule applies out of doors on gentle inclines and later on steepish hills—always up first and down back, and always turning back as soon as distress begins. The plan, of course, is obvious and is used by every practitioner, but such patients need "rules" more perhaps than any other class of case. They often feel so well (within their limit) that not only are they prone to give up taking their digitalis, with disastrous results, but are apt to think that they can do anything, and that restrictions are needless. And restrictions are *always* needed. The doctor's aim should be to lead them as far as is safe in the path of freedom, and then to tell them to keep within this limit, possibly with the hope of further liberty later on.

I have found it convenient to divide the extremes of human effort into seven degrees: (1) Complete rest in bed. (2) Movement on the level. (3) Quiet ordinary life. (4) Mild gardening, gentle golf, and slow hill-climbing, or easy manual labour allowed. (5) Any effort short of extreme exertion. (6) Full liberty of full health. (7) Exceptional effort only possible for athletes in training.

With regard to cardiac cases, the first four come into fairly consideration, and occasionally the fifth. But it must be supposed that one jumps from one stage to the next; progress must always be gradual, and in the early phases of convalescence from heart failure the greatest caution is needed, each step being taken tentatively, with the knowledge that one may have to go backwards and forwards before giving liberty on the next platform. Further, such patients have their good days and their bad days, and must be cautioned when off colour, or on a very hot day, or a very cold day, or after a bad night, or after some unsought strain, either physical or emotional, to go easy for a day or two, and not push on with the idea that it is "giving in" to do less to-day than they did yesterday. Again, women must regard the menstrual periods, and should take a day or two gently at these times, and perhaps take a midday breakfast in bed as a rule, and never to undertake exertion; and some require to take a rest day once a week, while all must be cautioned not to undertake exertion immediately after meals, and never to hurry. All must be careful also to feed simply, to take mild aperients if needed, and to avoid, as far as possible, catching colds and the like. Subject, however, to these limitations, and to such as may be indicated by individual susceptibilities, requirements, and inclinations, many cases of marked heart failure—with or without fibrillation—who may have to be kept in bed perhaps for several weeks, may be given the hope that they will eventually be able to live a life of usefulness and of enjoyment.

I have a patient, aged 55, who has had fibrillation for at least ten years, who has a somewhat enlarged heart with definite valvular and myocardial disease, and who has had an attack of paraplegia with aphasia (embolic). Yet he has married in the interval and has two children. He drives his own motor (self-starter), goes out for a quiet day's shooting on fairly level ground, and lives a very satisfying life. It is comforting to know that second attacks of cerebral embolism are extremely rare, and this assurance has been of the greatest benefit to this patient, who at one time suffered much from continual apprehension that another "stroke" was inevitable.

## THE HEART'S ENERGY AND RESERVES.

The amount of blood in an average human adult body is about 8 pints and weighs about 10 lb., and the whole of it is driven through the entire circulation, at the normal pulse rate, once in every 40 seconds, in an individual at rest (Haldane). This means that twelve pints of blood (six by each ventricle) are propelled by the heart every minute, or over two thousand gallons, weighing about ten tons, per diem—a truly prodigious display of energy. And yet this is but a minimum, which is increased several fold as muscular work is undertaken; for, given sound muscle wall and healthy coronaries, the reserve capacity of the heart is very large. Of course, as age creeps on there is some loss of elasticity, and the margin is reduced, while in a damaged heart this is further encroached on. Yet such is the reserve that many seriously damaged hearts, even in advanced age, possess margin sufficient for the calls of a quiet life.

Another way of appreciating the amount of work performed by the heart is to compare it with the hand, which can, with a Higginson syringe, only pump a pint and a half of water a minute, and which, even when working a Junker's inhaler at 60 or 70 contractions a minute, tires after two or three minutes, so that one is glad to change the hand. Of course, the comparison is not a fair one, for the hand is a marvellous mechanism, and is capable of playing five or six hundred separate notes on the piano in a minute, while, on another score, it is seldom recalled that the "tireless heart" rests for about twelve hours out of the twenty-four. Between each beat it pauses, and whether it beats fast or slow, it rests for about half the time, though at high rates it is diastole which is chiefly encroached on. The value of securing, if possible, a pulse of moderate rate in a weakened heart is obvious, and is further appreciated if one considers the number of systoles that can be saved in a day; for while a normal pulse rate means about a hundred thousand systoles per diem, a pulse of 100 is roughly half as much again. In relation to cardiac muscular exertion this would mean one and a half times as much work; and though the rapid pulse of fever and debilitating illness probably obeys other laws, there can be no doubt that high frequency in a resting patient means waste of cardiac effort. Rapid action reduces reserve capacity, but unfortunately, apart from fibrillation, our means for dealing with this state are singularly meagre, and often ineffectual.

## INDIVIDUAL SYMPTOMS AND LESIONS.

Before passing to some brief remarks on individual conditions, I would pause to observe that it is chiefly or general lines that the possibilities of effort limit in individual cases are best judged. Prior to the advent of gross evidence, such as swollen legs, albuminuria, enlarged liver, and obvious cyanosis, heart failure is generally ushered in by breathlessness or pain. In either case, no matter what the lesion, reduced effort as an initial step is essential; and, whatever the lesion, the amount of restriction must depend on the urgency of the symptoms, which, if severe, point to a preliminary period of rest in bed for a few days or for a few weeks, and seldom, in recoverable cases, for longer; while in many instances the initial limitation need not be so extreme. Each case must be judged on its own indications. There are, however, a few special conditions which require a special word.

The two varieties of arrhythmia which give direct guidance on effort limitation having been already discussed, a very few words will suffice for the remainder.

*Extra-systoles*, easy of recognition, and the commonest cause of irregular pulse in adults, occur in hearts both healthy and diseased, but in an otherwise healthy heart they do not call for restriction of effort. *Heart-block* of marked degree generally imposes its own limits, but the minor phases, if detected, indicate caution. *Paroxysmal tachycardia* is generally disabling during the attacks, which always start and end with absolute suddenness. Between the paroxysms the patient may do what he can manage comfortably, and may be trusted to do nothing which his experience proves to be unwise.

Much the same may be said of the *anginas*, though, in progressive cases, a period of five or six weeks of complete rest in bed often brings a respite, and delays advance. Attacks of true cardiac asthma commonly occur at night; and these patients are seldom pulled up by immediate distress, as are the sufferers from angina. But the symptom always means serious myocardial disease, and indicates continuous limitation of effort. For congenital heart defects no rules can be laid down; they range from the negligible to the rapidly fatal. But loud murmurs of congenital origin may be heard in hearts which are physiologically quite efficient for ordinary occupations. *Pulsus alternans* is seldom recognized, but is of grave import, and demands the utmost caution.

In acute fevers of all kinds the more completely the patient is kept at rest the better, and the heart should be watched for the intrinsic complications so common in rheumatic fever, but not uncommon in influenza, diphtheria, scarlet fever, and other microbial infections. In convalescence there may be difficulty in deciding whether we



are dealing only with toxæmia, or whether the heart is more seriously affected. If there has been pericarditis or endocarditis, or if the intermissions of minor heart-block are detected, one can hardly be too cautious in the guidance of convalescence; but, with the "poisoned heart," so common after influenza and other acute infections, even though there may be a systolic murmur and perhaps some dilatation, it is a mistake to keep the case in bed after the temperature has been normal for a day or two. In such states the heart recovers its tone much more quickly if the patient is got up and got out pretty soon, and encouraged to take such exercise as brings with it a sense of well-being.

The *rare lesions* give us certain indications, the chief being that while those causing systolic murmurs may be treated on general lines, and the murmur often ignored, the diastolic murmurs always carry a special warning, because the lesions giving rise to them (mitral stenosis and aortic regurgitation) are apt to be progressive, and also because, apart from any previous myocardial change, both lesions interfere with the efficient nutrition of the heart through its coronaries. Such patients may feel very well and equal to anything, but, while they may be allowed to undertake ordinary efforts according to their inclinations, they should be warned against excessive strain, and precluded from occupations involving sudden or severe effort.

In *infective endocarditis*, whether acute or subacute, the patients are generally so ill that the question of allowing effort hardly comes in. But if it should arise, the sufferer may safely be allowed to be in or out of bed—indoors or out of doors—as he prefers. Up to now no cure has been discovered, and as these diseases are invariably fatal the sufferer should be allowed to live the life that brings him most comfort and contentment.

I have left to the last the terrible thing called "blood pressure." I have used the instrument since long before it was a fashionable adjunct to the consulting-room, and occasionally I get useful information from it; though, if one makes a guess at the systolic pressure before taking it, it is easy to be fairly right nine times out of ten. Sometimes one finds the pressure lower than was anticipated; but "blood pressure" means to all patients "high pressure," and it obsesses many doctors, and needlessly alarms many patients. One sees people die of cerebral hæmorrhage with a pressure of 150, while many people with a pressure of 180 to 220, or even more, live for years in excellent health, until "the fear of death" is put into them by some member of our profession, who tells them they have passed the "danger level," and they live ever after with the feeling of the rope around the neck. And "well set-up" people come to us and in reply to the inquiry as to what ails them, simply say "blood pressure." I am looking at a note reading thus: "Mrs. H—, March, 1915, æt. 80—B.P. 220—Sep. 1918, B.P. 180." She took no precautions and few drugs, and she ate and drank what she liked, moved about as she liked, and died in 1921 of bronchitis and patchy pneumonia. I could cite many similar cases, and such people may only feel at their best when their pressure is highest, which is reasonable, as it is then that their coronaries fill best and that pressure is sufficient to force the damaged glomeruli, for the kidneys are seldom unaffected. By all means let early arteriosclerosis be recognized and reasonably treated and dieted; but do not let us put the fear of death into such people, or unduly limit their activities. All tissues retain their elasticity and life longer if they are kept in active use; and my belief is that these cases live longer and in better health if they are allowed to take such exercise as they find agreeable.

#### CONCLUSION.

In conclusion I turn to one or two more generalities, and the first is that every one of us is sure to make mistakes; for, apart from those which we ought to avoid, there are two sources of error which may be unavoidable. People sometimes die suddenly of heart disease who have never had a symptom, and some such cases have been examined within a few months or weeks of their death by the ordinary methods without any abnormal sign being discovered, or anything to suggest that an examination by electro-cardiograph (which might have shown something) was indicated. I have seen many sudden deaths from heart disease, but only two of this kind in which a necropsy was made. In one there was a ruptured aneurysm of the left ventricle, while the other showed degenerated heart wall, especially on the right side.

The second source of error is of happier augury, for we

all occasionally see patients who we think will not survive for many weeks, but who live for years.

I have to-day seen a lady of about 70, who ten years ago was at death's door. During all these years she has had fibrillation, extreme cyanosis, and dyspnoea, and grossly oedematous legs, which often ooze; yet she is marvellously cheerful, and goes up and down stairs on the sly, when she can cheat her guardians. Of course she has been taking digitalis all the time. Had I lost sight of her I should certainly have supposed that she had been dead for many years.

Though mistakes will be made, I believe, however, that it is possible, by a careful all-round survey, to be right in nine cases out of ten; and I think that in framing a prognosis, and with it general rules for effort guidance, the general practitioner who has kept abreast of the times, and who has formed the habit of making short notes, has somewhat of an advantage over the specialist who only sees cases in hospital and in consultation. For we can follow up our cases for ten or twenty years, and watch the slow and often surprising sequence of events—an invaluable experience which is, in the majority of their cases, automatically closed to the specialists, who, I believe, often conclude that the patients of whom they hear nothing are dead. But I am very familiar with the great difficulty of following up cases seen in consultation. The doctor in charge always says he will let one hear how the case goes on, and he means to do so. I fear we are all offenders in this matter.

I began with a warning on an old subject (enlargement) and I end with a warning, which time will prove to be right or wrong, upon a new subject. When the stethoscope had revealed the various heart sounds, and their meaning became gradually elucidated, conclusions based on the integrity of the valves dominated cardiology for many decades and led to views many of which are to-day discredited.

With the advent of the polygraph and the electro-cardiograph, the myocardium has come to its own, and it now dominates. This is, in my view, as it should be; and yet I would venture to predict that some of the anomalies of myocardial activity revealed by the electro-cardiograph, and on which discouraging conclusions are now based, will be proved by time to be either of a temporary nature or else of comparatively minor importance, and well within the great reserves which the heart possesses. As an example of the kind of harm that may be done, let me cite a final case.

A lady, aged 36, suffered from palpitation and irregular pulse, and her doctor, unable to differentiate the rhythm, sent her to a specialist, who examined her very thoroughly. I have seen his very excellent report. The irregularity proved to be of a very unusual kind in a person of her age, being a mixture of sinus arrhythmia and extra-systoles. These, he said, might be safely disregarded, and a skiagram showed a heart of normal size. So far no harm had been done; but the blood pressure was high for her age (155) and the electro-cardiograph showed left-sided preponderance, and from these data he concluded that the myocardium was permanently damaged, and enjoined that "for the rest of her life she must keep this fact in mind and live well inside her limited capacity for effort." She has always lived on these lines, for she has no taste for sport, and has no temptation to undertake excessive toil. But she received a shock, and now suffers from "heart upon the brain." She is becoming neurasthenic, and, finding herself easily tired by efforts which two months ago were not only tolerated but enjoyed, is convinced that her decline of vitality is due to heart disease, that her days are numbered, and that she can never live a normal life again.

The baneful and far-reaching effects of fear should ever be before us, as should be also the tonic effects of hope and reassurance, and the possibilities of improvement which come to all muscles, the heart included, when allowed free activity within the range of pleasurable reaction.

Each case must be looked at all round: no single sign should be given undue weight; but if there is any one point which may be allowed to override the others it is the one to which least attention is often paid—and that is the physiological capacity of the heart, as proved, not so much by set tests, as by careful inquiries and cautious experiment as to the individual patient's capacity for effort in the ordinary calls of life.



THE INFLUENCE OF THE THYROID GLAND ON  
THE RESPONSE TO ADRENALINE.

BY

D. MURRAY LYON, M.D.

(From the Department of Therapeutics, University of Edinburgh.)

At the present time a series of satisfactory tests for functional efficiency is amongst the most urgent needs of the practical physician. Unfortunately most of the tests introduced are so elaborate and require so much apparatus that they can only be performed in well equipped hospital laboratories, and are consequently lost to the general practitioner and his patients. One of the best examples of this need is in the so-called border-line cases where the diagnosis lies between a minor degree of thyroid overactivity and a neurosis. The estimation of the basal metabolic rate gives a measure of the thyroid activity, but this method of examination is confined at present to hospital practice.<sup>1</sup> A close relation between the state of the thyroid gland and the action of adrenaline has long been known to exist, and Goetsch has made this the basis of his test for hyperthyroidism.

In animal experiments it has been shown that removal of the thyroid gland lessens the response of the subject to a subsequent injection of adrenaline, and conversely that the administration of thyroid<sup>2,3,4,5</sup> enhances the adrenaline reaction. Stimulation of the cervical sympathetic, by causing active secretion from the thyroid, produces a similar effect.<sup>6</sup> In these cases the thyroid hormone is believed to sensitize the sympathetic nerve endings to the action of adrenaline. Eppinger and Hess,<sup>7</sup> Barker and Sladen,<sup>8</sup> and Lehmann<sup>9</sup> have shown that these results hold good for man also. Goetsch<sup>10</sup> gives as a standard a dose of 0.5 c.cm. of 1 in 1,000 adrenaline chloride subcutaneously, and notes in the patient the changes produced in the blood pressure and pulse rate. The typical positive reaction is "a rise of about 10 points in pulse or in systolic pressure or in both, together with certain clear-cut subjective and objective symptoms" (palpitation, tremor, apprehension, etc.). The merits of this reaction have been widely discussed and much adverse criticism has appeared.

Plummer<sup>11</sup> believes that thyroxin quantitatively controls the rate of cellular metabolism, but he has pointed out that the supposed relation between thyroid and adrenals can be explained on grounds involving the rate of blood flow, entirely apart from any other action. A similar position is taken up by Kendall<sup>12</sup> when he states that, "if viewed purely from a consideration of the physics involved, the injection of adrenaline into a subject with a normal basal metabolic rate will be necessarily different from injection of the same quantity into a subject with a metabolic rate 30 per cent. above normal." Aub<sup>13</sup> also rejects the theory of specific sensitization and decides that the thyroid is not an essential factor in the action of epinephrin and that the effects of thyroxin and epinephrin are distinct and not interdependent. It is interesting to note that Marine and Lenhart<sup>14</sup> continued to get an increase in metabolic rate after administration of adrenaline to rabbits previously deprived of the thyroid gland. Sandiford,<sup>15</sup> who reports 46 observations in 39 patients, found no relation between the intensity of the adrenaline reaction and the condition of the thyroid; and she doubts if there is any sound physiological foundation for the belief. Other observers have found that positive reactions are frequently obtained in non-goitrous subjects. A number of physically fit, ~~unselected~~ students examined by van Wagenen<sup>16</sup> showed ~~an increase of 10 per cent.~~ in 20 per cent., and Tomkins, Sturgis, and Wearn<sup>17</sup> found 65 per cent. of positives in cases of irritable heart (in which condition the basal metabolic rate is normal<sup>18</sup>). Herring, reviewing the subject, sums up the position thus: "The specific action of the thyroid in sensitizing tissues amenable to adrenaline, though not improbable, is not yet proved."<sup>18</sup>

The present position<sup>19</sup> of the adrenaline test appears to be that a negative finding is valuable in definitely excluding hyperthyroidism, whereas a positive result is of less significance, since it is frequently got in cases where no evidence of an overacting thyroid exists.

*Details of Investigation.*

The question has recently been investigated in a number of patients in the medical wards of the Edinburgh Royal Infirmary. The cases examined include four hypothyroid

patients, seven with exophthalmic goitre, three asthmatics, five diabetics, and several others who showed no obvious sign of endocrine disturbance (some fifty examinations in all). The subjects, having fasted overnight, were allowed to rest quietly with the mask adjusted for thirty to sixty minutes before the records were started. When the pulse rate and blood pressure readings had fallen to a steady level a sample of expired air was taken for the estimation of the basal metabolic rate. A subcutaneous injection of 0.5 c.cm. of a 1 in 1,000 solution of adrenaline chloride (P. D. and Co.) was then given, and thereafter the pulse and blood pressure were estimated at two-minute intervals, and the expired air was collected over successive ten-minute periods for an hour.

TABLE I.

Metabolic Rate.*		Blood Pressure.			Pulse.			Diagnosis.
Bas.	Max.	Bas.	Max.	Inc.	Bas.	Max.	Inc.	
122	143	140	160	20	104	137	33	Exophthalmic.
120	150	148	183	35	105	152	47	Exophthalmic.
120	150	142	186	44	102	148	46	Exophthalmic.
120	152	135	157	22	106	131	25	Treated myxoedema.
119	154	125	150	25	71	86	15	Neurasthenia.
118	153	135	145	11	100	132	32	Asthma.
63	72	115	120	5	78	94	16	Untreated hypothyroids.
64	123	119	132	13	57	78	21	
64	73	110	139	29	69	111	42	

Bas. = Basal; Max. = Maximum; Inc. = Increase.

\* In order to facilitate comparison the Du Bois normal is taken as 100 and the figures found are given as 122 and 63 instead of the more usual + 22 and - 37.

The influence of the state of the thyroid on the character of the response to adrenaline has been investigated in two ways: (a) by comparing the reactions in different subjects, and (b) by examining the same individuals on more than one occasion.

(a) *Reactions in Different Individuals.*—When viewed as a whole, these show little relation to the activity of the thyroid as determined by the basal metabolic rate. A large cardiovascular response may be present in a patient with a low metabolism and vice versa. The majority of the subjects gave a positive response as estimated by Goetsch's criteria, and only four showed an increase of less than ten points in the blood pressure. The lack of uniformity can best be shown by a comparison of patients with approximately similar basal metabolic rates. Two such groups are recorded in Table I. It will be noticed that even in the cases of untreated hypothyroidism all the reactions save one are greater than ten points.

(b) *Reactions in the Same Subject.*—If it be true that thyroxin sensitizes the body to the action of adrenaline the effect should be evident when the amount of the thyroid hormone in the patient is varied. Table II gives the results of the examination of four subjects before and after the administration of thyroid extract. Two of the patients (1 and 2) were cases of myxoedema with very low metabolic rates; the other two suffered from asthma. Of the latter, No. 4 showed rather high basal figures, while No. 3 was

TABLE II.—Cases Given Thyroid Extract.

Case.	Date.	Metabolic Rate.		Blood Pressure.			Pulse.			Diagnosis.
		Bas.	Max.	Bas.	Max.	Inc.	Bas.	Max.	Inc.	
1	Aug. 23	64	123	119	132	13	57	78	21	Myxoedema.
	Oct. 4	106	163	120	140	20	69	91	22	
2	June 2	63	72	115	120	5	78	94	16	Myxoedema.
	July 5	120	152	135	157	22	106	131	25	
3	Aug. 22	107	135	136	150	14	98	124	25	Asthma.
	Aug. 31	118	153	125	146	22	100	132	32	
4	Aug. 25	114	144	156	203	12	105	131	23	Asthma.
	Oct. 12	142	165	192	225	33	118	148	30	



TABLE III.—Cases of Hyperthyroidism before and after Treatment.

Case.	Date.	Metabolic Rate.		Blood Pressure.			Pulse.		
		Bas.	Max.	Bas.	Max.	Inc.	Bas.	Max.	Inc.
5	Aug. 9	120	159	143	183	35	105	152	47
	Sept. 1	120	163	143	186	44	102	148	46
	Nov. 1	102	142	142	152	10	78	124	46
6	Aug. 21	122	157	140	160	20	104	137	33
	Sept. 23	112	140	122	152	30	88	122	34
7	July 31	140	199	160	191	31	120	139	19
	Aug. 30	125	160	141	182	41	95	108	13

normal. The effect of the thyroid in raising the general activity of the body is evident in the increase of basal metabolic rate, basal pulse rate, and basal systolic pressure readings, while in those observations made after the giving of thyroid extract its sensitizing effect is shown in the great increase in the pulse and pressure seen in all instances except one.

Confirmation would be expected in cases of exophthalmic goitre examined at different phases of the disease. The results shown in Table III at first sight seem contradictory. The cases were first examined shortly after admission to hospital and were re-examined when the clinical condition had improved. On the subsequent occasions the basal metabolic rates had fallen greatly and the slowing of the pulse was even more marked, the reduction in the case of the basal systolic blood pressure being less evident. In case No. 5 the reactions to adrenaline agreed very closely on two occasions when the basal metabolic rate stood at 120. On the third examination, though the basal levels were much reduced, the post-adrenaline increases in metabolic rate and in pulse rate were practically the same as before treatment. Cases 6 and 7 showed a definite reduction in metabolic response, but in both patients the post-adrenaline blood pressure rise was greater and the pulse acceleration was little affected. Such results would suggest that the thyroid controls only the basal levels, while the reaction to adrenaline depends on some other independent mechanism.

Experimental proof of the interrelationship of the thyroid and the suprarenal seems to be complete. Adrenaline stimulates the thyroid to activity, and the thyroid hormone controls the rate of activity of the body tissues, including the adrenal glands. It is also believed that the thyroid sensitizes the sympathetic nerve endings on which adrenaline acts, so that an increase in thyroid activity should lead to an increased reaction to adrenaline. The existence of such a relation is more difficult to prove in the case of man. Table I has shown that the movements of pulse and blood pressure in no way parallel the activity of the thyroid from case to case, and even when allowance is made for size, body weight, age, and sex (as is done in computing the basal metabolic rate) no better results are obtained.

The effect of an injection of a drug must depend to a great extent on the rate of its absorption, and a good deal of the difference between individual cases may be explainable on this ground. In some persons the maximum rise is produced within six minutes after injection, while in others twenty or thirty minutes elapse before the highest point is reached. This can only be explained on the basis of a wide difference in the rate at which the adrenaline reaches the tissues on which it acts. The rate of absorption is closely related to the circulation rate, being most rapid in the hyperthyroid cases (where the venous blood often looks pink and arterialized) and slowest in those with deficient thyroids. The rate of absorption, then, has an extremely important influence on the result, for where the maximum occurs early it reaches a very high level, since a great deal of the adrenaline is in action at once. On the other hand, where absorption is slow only a limited quantity of adrenaline can be reaching the tissues at one time and its stimulating effect must be much less.

It is said that adrenaline acts quantitatively and that the injection of a series of similar doses produces uniform responses without fatigue. Hunt<sup>20</sup> showed that as increasing doses were given the response elicited was always a little less than was expected. This question has been reinvestigated<sup>21</sup> with regard to the blood pressure, and it has been found that the relation between the quantity of adrenaline and the effect

produced is logarithmic. It has also been found that when uniform doses are given the magnitude of the response depends upon the level of the blood pressure from which the reaction started—for example, a dose of 0.2 c.c.m. adrenaline given when the pressure stood at 136 gave a rise of 63, but a similar dose given at 246 produced only an increase of 18 mm. It will thus be seen that a rise of ten points in the blood pressure does not represent a uniform quantity of adrenaline under all circumstances—for example, to produce an increase of pressure from 190 to 200 requires a great deal more of the drug than to raise the level from 110 to 120. When applied to Table II this principle will have the effect of magnifying the increases actually obtained after the administration of thyroid; and in the case of Table III the apparent anomaly will diminish if not disappear, since the relatively large responses from a lower basal level are of less value than if from the original higher basal levels. Even when this allowance has been made, the differences in Table III fall far short of those in Table II, suggesting that the adrenaline sensitive mechanism still remains hypersensitive when the thyroid activity diminishes. (This might lend support to the view that the thyroid changes in exophthalmic goitre are merely secondary to a hypertonus of the sympathetic system.) If the two mechanisms are entirely independent, as Aub believes, an increase in thyroid activity would merely raise the basal levels and the adrenaline effect superimposed on these would have the same value whatever level the reaction started from. This does not fit the facts. The thyroid certainly does control the resting levels of pulse rate, metabolic rate, and systolic pressure, but it also sensitizes the tissues to the action of adrenaline.

Some of the points discussed may help to explain the comparative failure of Goetsch's reaction as a clinical test. The responses obtained from the injection of adrenaline reflect principally the tonus of the sympathetic system, which may or may not depend on the state of the thyroid. It would seem too that the criteria accepted are too low, since so many apparently normal persons give positive reactions.

#### Summary.

In a comparison of the metabolic and cardio-vascular responses to the injection of adrenaline in patients having similar basal metabolic rates no relationship between the reactions is obvious.

If individuals are examined on different occasions when their metabolic rates have altered, a change in the degree of response to adrenaline is noticed.

Administration of thyroid to a patient leads to an exaggeration of the reaction to adrenaline.

In cases of exophthalmic goitre a fall in basal metabolic rate is not accompanied by a very great reduction in the sensitiveness to adrenaline, and it is suggested that this depends on a persisting hypertonus of the sympathetic system.

#### REFERENCES.

- <sup>1</sup>Meakins and Davies: *Edin. Med. Journ.*, 1922, vol. 23, p. 1. <sup>2</sup>Marine and Lenhart: *Amer. Journ. Phys.*, 1920, vol. 54, p. 243. <sup>3</sup>Asher and Flack: *Zeit. f. Biol.*, 1910, vol. 55, p. 83. <sup>4</sup>Oswald: *Centralbl. f. Phys.*, 1915, vol. 30, p. 509. <sup>5</sup>Santesson: *Skand. Arch. f. Phys.*, 1919, vol. 37, p. 125. <sup>6</sup>Levy: *Amer. Journ. Phys.*, 1916, vol. 41, p. 492. <sup>7</sup>Eppinger and Hess: *Vagotonia* (New York), 1915. <sup>8</sup>Nervous and Mental Disease Publishing Co. <sup>9</sup>Barker and Sladen: *Trans. Assoc. Amer. Phys.*, 1912, vol. 27, p. 471. <sup>10</sup>Lehmann: *Zeit. f. Klin. Med.*, 1914, vol. 81, p. 52. <sup>11</sup>Goetsch: *New York State Journ. Med.*, 1918, vol. 18, p. 259. <sup>12</sup>Plummer: *Med. Rec. (N.Y.)*, 1918, vol. 94, p. 567. <sup>13</sup>Kendall: *Trans. Assoc. Amer. Phys.*, 1918, vol. 33, p. 324. <sup>14</sup>Aub: *Journ. Amer. Med. Assoc.*, 1922, vol. 73, p. 95. <sup>15</sup>Sandiford: *Amer. Journ. Phys.*, 1920, vol. 51, p. 407. <sup>16</sup>Van Wagonen: *Journ. Indust. Hyg.*, 1922, vol. 3, p. 313. <sup>17</sup>Tomkins, Wear, and Sturcis: *Arch. Int. Med.*, 1919, vol. 24, p. 267. <sup>18</sup>Peabody and others: *Amer. Journ. Med. Sci.*, 1921, vol. 161, p. 503. <sup>19</sup>Herring: *Endocrinology*, 1920, vol. 4, p. 577. <sup>20</sup>Goetsch: *Endocrinology*, 1920, vol. 4, p. 339. <sup>21</sup>Hunt, R.: *Amer. Journ. Phys.*, 1901, vol. 5, Proceed., p. 7. <sup>22</sup>Lyon: Records to be published shortly.

THE French Association for the Advancement of Science will meet at Bordeaux from July 30th to August 4th, with Professor Sabrazès as president of the Section of Medicine and Surgery, and Professor Auché as president of the Section of Public Health. Further information can be obtained from the Secretariat of the Association, 23, Rue Serpente, Paris.

AN international leprosy conference will be held at Strasbourg from July 28th to 31st, when the following subjects will be discussed: (1) new statistical data, (2) etiology, (3) pathology, (4) treatment, and (5) social and individual prophylaxis. Communications should be sent before June 10th to the General Secretary, Professor Marchoux, 95, Rue Falguère, Paris.



RECTAL PAPILLOMATA IN SCHISTOSOMA  
HAEMATOBIIUM INFESTATIONS.

BY

H. C. SINDERSON, M.B., CH.B., M.R.C.P. EDIN.,  
D.T.M. AND H. LOND.,IRAQ HEALTH SERVICE; PHYSICIAN, NEW GENERAL HOSPITAL, BAGHDAD;  
ANDE. A. MILLS, M.B., CH.B. EDIN., D.T.M. AND H. LOND.,  
IRAQ HEALTH SERVICE; CHIEF PATHOLOGIST, CENTRAL LABORATORY,  
BAGHDAD.

## INTRODUCTION.

In his chapter on schistosomiasis in the latest edition of Manson's *Tropical Diseases* (1921) Manson-Bahr makes the following observation in relation to urinary schistosomiasis: "In a large proportion of cases, much more frequently than was formerly thought to be the case, the characteristic ova of *S. haematobium* may be found in the faeces (Fairley), though it has not yet been proved that they are capable of forming the intestinal papillomata so characteristic of *S. mansoni* infestations."

Our experience in Iraq is fully in support of the observation that ova of *S. haematobium* are commonly to be found in the



FIG. 1.—Longitudinal section from the hypertrophic adenomatous portion of the growth, showing the papillomatous prolongations and numerous deeply stained ova in the tissues. Fixed in formol saline and stained with Ehrlich's acid haematoxylin and orange "G." (x 44.)

faeces, but we hope in this note to demonstrate that it both can and does occasionally form intestinal papillomata. Our experience suggests, moreover, that the condition is not by any means a rarity. In the areas of Iraq infected with schistosomiasis rectal papillomata have been occasionally reported, but not until quite recently have we been able to obtain specimens for section.

Three of these growths have been sectioned; in addition to the case about to be described Dr. Braham and Dr. Perry have both sent specimens of rectal papillomata to the Central Laboratory, Baghdad, for examination, and in each case the ova of *S. haematobium* were found on section.

The present case mainly differs from the other two in that the signs and symptoms presented left little doubt as to the causation of the new growth prior to its removal, and that, as will be seen later, adult worms in addition to ova have been found in the papilloma removed.

The patient, Hassan ibn Bairam, aged 26, a Kurdish coolie from Erbil, was admitted to the New General Hospital, Baghdad, on January 24th, 1923, with a diagnosis of "anaemia"; he complained of increasing shortness of breath on exertion for three months. He stated that he left Erbil for the first time six months previously, and had since been engaged in coolie work on the new cantonment in the course of construction at Hinaidi just south of Baghdad. He was insistent that he had been free from any symptoms whatever pointing to a urinary or rectal lesion until three months previously, when he first noticed a burning pain on micturition, and a month later a few drops of blood at the end of micturition. A week later he noticed the passage of blood and mucus by the rectum, a symptom which steadily increased in frequency up to the time of his admission to hospital. There was a history of occasional attacks of fever in Kurdistan, probably malarial.

## Clinical Examination and Course of Illness.

The patient was a well built man with a pale "bisquit colour" complexion, and was obviously very ill on admission. The spleen was just palpable on deep inspiration; haemic bruits were to be heard on auscultation of the heart, and a few râles at both pulmonary bases. The temperature was 100° F., and the pulse 96. The result of a total and differential blood count was as follows: Haemoglobin 60 per cent., red blood corpuscles 3,235,000 per cubic millimetre, giving a colour index of just under 1. There was a moderate degree of leucocytosis (13,800); the percentage of the respective white elements present being—

Polymorphonuclear leucocytes	...	...	55.4 per cent.
Lymphocytes	...	...	26.6 "
Large mononuclear leucocytes	...	...	5.2 "
Eosinophil leucocytes	...	...	12.8 "

The patient at the time of admission was passing from six to ten motions daily. Naked-eye examination of the stools showed the presence of both blood and mucus, the former dark in colour, free, and greatly in excess of the latter. Microscopically the presence of an enormous number of the typical ova of *S. haematobium* containing active miracidia was noted.

Examination of a centrifuged deposit of urine showed many pus and red blood cells and a large number of live terminally spined ova. Digital examination revealed a papillomatous growth in the rectum just within range of the finger, and the presence of the tumour was confirmed by sigmoidoscopic examination. The growth was removed by Dr. Woodman on February 7th, and under intravenous administration of sodium antimony tartrate the patient is making very satisfactory progress.

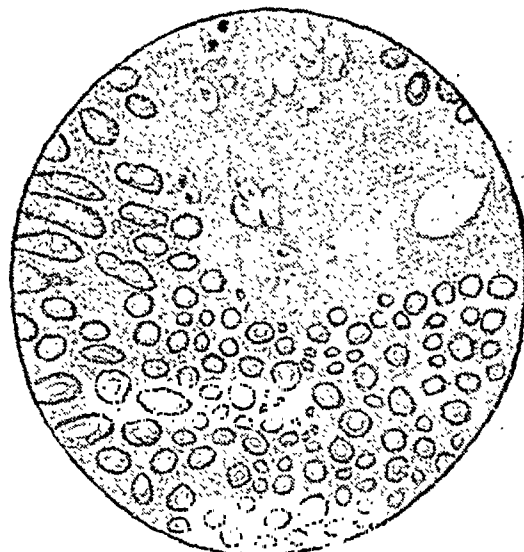


FIG. 2.—Transverse section of the adenomatous portion of the growth. Tissue fixed and stained as in Fig. 1. (x 44.)

It is of interest in this case to note that though the infestation was heavy it was apparently of quite recent origin. Erbil is a town in Kurdistan, and as far as is known schistosomiasis does not exist in that country. The presence of an enlarged spleen in a Kurd is quite usual; so rife is malaria in Kurdistan that a Kurd with a non-palpable spleen is quite a rarity.

As to the exact origin of the infestation there is little to help in the history, but everything points to it having occurred either in the neighbourhood of Baghdad, where a focus of this disease undoubtedly exists, or en route from Erbil, though the chances of infestation north of Baghdad would appear to be remote. The degree of eosinophilia is higher than our average in urinary cases of infestation by *S. haematobium* in Iraq, but is possibly to be accounted for by the heaviness of the infection present in this case.

It might here be noted that, as far as our investigations have gone, *S. mansoni* does not occur in either Iraq or Kurdistan.

## PATHOLOGY.

A specimen of faeces and the polypoid growth removed at operation were submitted to the Central Laboratory for examination.

## A. Examination of Faeces.

Examination of the specimen of faeces revealed the presence of the typical terminal-spined ova of *S. haematobium* in large numbers, many containing miracidia showing considerable activity; pus cells and red blood corpuscles were present in moderate numbers.

## B. Examination of the Polypoid Growth.

Microscopically the mass approximated in size to that of a small walnut; it was greyish-white, of firm consistence,



and presented a somewhat nodular surface showing considerable congestion, and in places what appeared to be small areas of superficial ulceration. No marked resistance was offered to the knife. On section the tissue showed a solid core with a marked peripheral radiating structure which on microscopical examination was found to correspond to the hypertrophic adenomatous portion of the growth.

#### Microscopic Examination.

1. *The Peripheral Portion of the Growth.*—Sections taken from the periphery of the polypoid growth show an advanced hypertrophic condition of the rectal glandular tissue, with the formation in places of long papillomatous prolongations of the mucosa. The supporting structure is loose, and consists of delicate strands of fibrous tissue, between which are to be seen numerous cells of the mononuclear type. Young thin-walled blood vessels are plentiful and in a condition of marked engorgement. In several places small collections of ova with deep-staining miracidia are to be seen in the interglandular tissue, and it is of interest to note that in the neighbourhood of such collections the cellular content of the tissue changes, the majority of cells in these situations consisting of polymorphonuclear leucocytes of the eosinophil type. In the transitional area between the adenomatous and the more centrally placed portion of the tissue are collections of ova

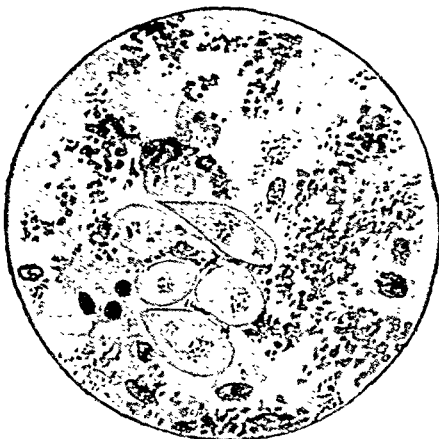


FIG. 3.—Section showing collection of embedded ova, one of which shows the terminal spine mentioned in the text. Fixed in formal saline and stained with Heidenhain's iron haematoxylin and orange "G." ( $\times 205$ .)

which, from the failure of the miracidia to take the nuclear stain, would appear to be of less recent date. In such areas we find that the particular stimulus determining the calling forth of the eosinophil polymorphonuclear elements has ceased, the cells found in these particular areas being chiefly of the mononuclear type. Here also stimulation of the fibroblastic elements has taken place, with marked increased production of fibrous tissue and resulting attempts at encapsulation. Sections taken from certain superficial portions of the growth fail to show the adenomatous structure above described; it is replaced by a tissue presenting the appearance of granulation tissue in which numerous ova are present; blood vessels are numerous, and ulceration of the surface is apparently occurring. It is from areas such as these that ova would appear to be liberated into the lumen of the bowel.

2. *The Central Portion of the Growth.*—In this area the glandular structure above described is entirely absent. On the other hand, the fibrous tissue elements show considerable increase, forming a well marked stroma in which numerous ova of various ages are embedded. Here again variation in the cellular content of the tissue is to be noted; in the proximity of ova containing miracidia which stain well the infiltrating cellular type is that of the eosinophil polymorphonuclear leucocyte. In the neighbourhood of ova showing degeneration of the miracidia, evidenced by the absence of nuclear staining, the predominant cell is that of the mononuclear type. In some of the sections ova are present in very large numbers; in one particular area as many as sixty were visible in the field given by an objective Leitz No. 3 with ocular No. 2.

Apart from the fact that numerous terminal-spined ova

were found in the stool it was considered necessary to search sections in the endeavour to find an embedded ovum cut longitudinally through the middle line showing beyond any doubt the presence of the terminal spine. In due course a fine specimen was found (Fig. 3). The complete contained miracidium is unfortunately not shown, but the specimen demonstrates the terminal spine very clearly. No evidence whatever has been obtained after prolonged search of any ova showing the slightest suggestion of a lateral spine.

Certain structures were seen lying within the blood vessels which lead us to think that they were the transverse sections of the terminal portion of a trematode worm. Further search in other sections from the same tissue finally led to the discovery of typical transverse sections of the helminths themselves lying within the blood vessels and presenting the characteristic arrangement of the male and female worms. A portion taken from one of these sections is illustrated in Fig. 4.

From the histo-pathological examination the polypoid growth would appear to be of the nature of a papillo-adenoma, the stimulus producing this hypertrophic condition of the rectal mucosa being the presence in the tissues of numerous ova of *S. haematobium*, and also possibly certain toxic substances secreted by the adult worms themselves whilst lying in the terminal ramifications of the haemorrhoidal vessels.



FIG. 4.—Transverse section showing the helminth lying within the blood vessels; numerous ova can be seen in the surrounding tissue. Fixed in formal saline and stained with Ehrlich's acid haematoxylin and eosin. ( $\times 44$ .)

#### CONCLUSION.

The case under consideration would appear to prove the ability of *S. haematobium* to produce rectal papillomata.

The fact that after very careful search no trematode ova other than those of *S. haematobium* have been found in the urine, faeces, and tissues is, we think, fairly conclusive evidence of a further and previously unproved manifestation of infection with *S. haematobium*.

The accompanying illustrations were kindly drawn from the actual specimens by Mrs. Sinderson, and depict the main points of pathological interest mentioned in the text.

## A TWO-LOOP BUTTON SUTURE.

BY

W. G. SPENCER, M.S., F.R.C.S.,  
SURGEON, WESTMINSTER HOSPITAL.

BEFORE I adopted the suture to be described I had had to experience the unforeseen bursting open of abdominal wounds. This happened after both suturing in stages and the insertion of deep through-and-through sutures. After gastro-jejunostomy or a similar aseptic operation, in weakly patients, somewhere about the tenth day the abdominal incision opened and bowel prolapsed. A cough, vomit, strain at stool, tympanites, merely sitting up in bed, were the immediate causes of the accident, but it could then be noted that there had been an absence of repair. In septic cases, entailing the insertion of a drainage tube, and an undermining of the abdominal wall by suppuration, the



sutures simply cut out; this was followed by the death of the patient.

The suture has prevented such accidents, and there appears to be less tendency to late ventral hernia. I had tried various methods to be found in books before lighting on this one, of which I have not been able to find a similar description. By it the layers of the abdominal wall can be brought into apposition, each to each, and so held during healing, without tension or necrosis, or on the other hand of yielding. The patient can get up, and the sutures need not be taken out for five weeks. In the case of suppuration fomentations can be put on whilst the sutures continue to hold. The method has been applied also secondarily, after an abdominal incision otherwise sutured has burst open, and sound healing has followed. My description applies in particular to the closure of a median abdominal incision, but with modifications I have used the procedure for the closing of other incisions, including cases of ventral hernia and sliding scrotal hernia. The sutures can be inserted even although the abdominal wall is only partly relaxed by the anaesthetic.

#### The Method.

The soft parts under the skin are held a little everted by Lane's tissue forceps, the skin being retracted as required by a blunt hook. A strand of strong fishing gut has one end threaded through the eye of a semi-circular needle and held by a slip-knot; upon the other end clamp forceps are put on to serve as a stop. The needle is entered (Diagram 1, A) one-third of an inch (1 cm.) from the right margin, through the skin and out through the subcutaneous tissue, the suture being drawn through up to the stop. The needle being then carried across to the left side is made to penetrate the anterior sheath, the left rectus muscle, its

posterior sheath, and the parietal peritoneum, not more than two-thirds of an inch (2 cm.) from the cut edge. The needle is next passed (Diagram 1, B) on the right side through the parietal peritoneum, outwards through the right rectus and its anterior sheath. A second loop is now inserted about half an inch (1.5 cm.) distant lengthwise from the first loop, the object being to include about one inch of the incision by each suture. The needle is passed (Diagram 1, C) on the left side from the anterior sheath

to the parietal peritoneum. Finally the needle is pushed from the parietal peritoneum on the right side outwards (Diagram 1, C, D) to emerge through the skin about a third of an inch (1 cm.) horizontally outside the point of entry.

The two ends of the suture are drawn upon until, as tested by the thumb and finger, the margins are brought into apposition without constriction or puckering (Diagram 2, E). Then (Diagram 2, F, G, H) the suture ends are knotted over "buttons"; I have used short lengths of well boiled catapult elastic, but rolls of gauze and other things will serve. The skin is thus approximated, and is further held together by a fine continuous suture which can be removed after a few days. At the time or at subsequent dressing a single layer

of gauze may be slipped under the "buttons" to protect the skin. The sutures should not be taken out until about three (better five) weeks, the patient meanwhile getting about. When doing so the knot is drawn upon sideways, and one end snipped through flush with the skin, into which it withdraws. Later on—whether the same, the next, or the third day—after loosening by the patient's breathing and movement, the suture can be readily withdrawn without liability of breaking or of leaving buried a portion of the fishing gut.

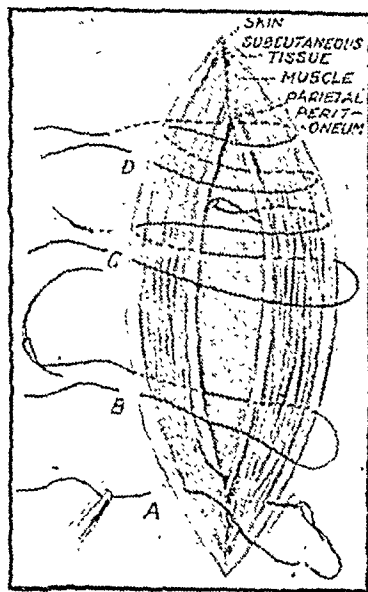


Diagram 1.

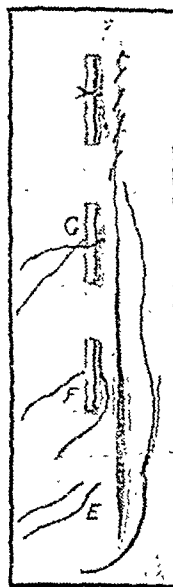


Diagram 2.

## HERPES ZOSTER WITH LOCALIZED MUSCULAR PARALYSIS.

BY

CECIL WORSTER-DROUGHT, M.A., M.D.CANTAB.,  
M.R.C.P.,

LECTURER IN NEUROLOGY, BETHLEM ROYAL HOSPITAL; ASSISTANT  
PHYSICIAN, WEST END HOSPITAL FOR NERVOUS DISEASES.

MUSCULAR paralyses in the affected zone accompanying or following an attack of herpes zoster are very rare; especially is this the case in herpes of the trunk. As the essential lesion in herpes zoster is situated in the posterior root ganglion of the spinal nerve supplying the affected area (Von Bärensprung, 1861<sup>1</sup>) and consists in an inflammation of the ganglion sheath with round-celled infiltration and extravasation of blood into the ganglion itself (Head and Campbell, 1900<sup>2</sup>), it is somewhat surprising—when one considers that it is at the posterior root ganglion that the tubular meningeal sheaths of the anterior and posterior roots blend—that the inflammatory process does not spread more frequently to the neighbouring anterior root and result in localized paralysis. That paralysis of muscles in the affected zone is more often met with in herpes of the upper limb than in herpes of the trunk is probably accounted for by the fact that the anterior and posterior roots in the lower cervical region have an even closer relation to each other than have those in the thoracic region. In this connexion, however, it is to be noted that D. W. Montgomery<sup>3</sup> advances a different explanation. He believes that herpes zoster is caused by a specific virus—probably streptococcal, as was originally suggested by Rosenow and Oftdale—which reaches

the posterior root ganglion from the skin by way of the perineural lymphatics. The fact that the lymphatics of the sensory nerves are more accessible from the surface than are those of the motor nerves accounts for the rarity of an associated paralysis; in the case of the limb and ocular muscles, however, the motor nerves are more superficial, a distribution which is considered by Montgomery to explain the relatively more frequent occurrence of motor complications in these situations. In herpes ophthalmicus, ocular palsies as a complication are said to occur in 7 per cent. of cases.

In an extensive search of available literature I have been able to find very few recorded cases of paralysis accompanying or following herpes zoster of the trunk. Gowers<sup>4</sup> mentions the occurrence of motor complications in herpes zoster, and points out that it is necessary to distinguish between immobility from hyperaesthesia and true paralysis. Ebstein<sup>5</sup> in 1895 collected 20 cases of paralysis complicating herpes zoster, but this series includes no case of herpes of the trunk in which the paralysis followed and was confined to the muscles of the affected zone. The 20 cases consist of 6 of paralysis of certain muscles of the upper limb, 1 of the lower limb, 9 of facial paralysis, 3 of facial paralysis together with other cranial nerve palsies, and 1 of ascending myelitis following herpes of the trunk. Hewlett<sup>6</sup> in 1906 pointed out that although 75 per cent. of cases of herpes zoster affected the trunk, he had found only one case in which muscular paralysis occurred. F. Taylor<sup>7</sup> (1895) recorded a case of herpes on the right side affecting the region of the tenth, eleventh, and twelfth ribs posteriorly and extending to the umbilical region anteriorly, which was followed, about four weeks after the appearance of the eruption, by paralysis of



the abdominal muscles on the same side. Söderbergh<sup>6</sup> (1919) described a case of herpes involving the fifth and sixth thoracic segments with slight paralysis of the external oblique on the same side. Several cases of ocular palsies following herpes ophthalmicus and of facial paralysis complicating facial herpes have also been recorded.

In the following case a typical attack of herpes zoster affecting the area of the twelfth thoracic nerve was followed twelve days after the appearance of the herpetic eruption by paralysis of the muscles in the lower part of the abdominal wall of the same side.

A man, aged 61, in December, 1921, while in Australia, had an attack of pain originating in the precordium and radiating down the inner side of the left arm. About a week later he suddenly developed right-sided hemiplegia and aphasia. Both the paresis and loss of speech, however, rapidly improved, and by the time he left Australia in February, 1922, his speech was practically normal and he complained of no weakness in either the arm or leg.

When first seen (May 19th) the only signs indicating that the patient had had hemiparesis was that the right ankle-jerk was considerably brisker than the left, and the right plantar reflex was less definitely flexor than the left. The cranial nerves, arm and knee jerks, and abdominal reflexes were all normal. He had a certain degree of chronic middle-ear deafness, bone conduction being greater than air conduction, and the tympanic membranes opaque and somewhat indrawn.

The cardiac apex beat was not felt; the area of cardiac dullness extended half an inch external to the nipple line; the first sound was normal, the second accentuated in the aortic area. Pulse 80, regular, right equal in volume to the left; palpable arteries not unduly thickened; blood pressure, systolic 130 mm. and diastolic 80 mm. Hg. X-ray examination showed a slight uniform dilatation of the aortic arch. The patient complained of no particular symptoms.

When seen again (August 5th) he had a typical left-sided herpetic eruption extending from the spine in the lumbar region across the crest of the ilium to the upper gluteal region and round to the groin, just reaching the anterior aspect of the thigh—the area corresponding to the total distribution of the twelfth thoracic nerve. The history was that eight days earlier (July 28th) the boat on which he was leaving England to return to Australia collided with another in mid-channel during the night. He received no injury, but being awakened put his overcoat over his night attire and went on deck to ascertain what had happened. The collision necessitated his return to England. Two days later he began to experience severe pain of a neuralgic character in the left loin which radiated towards the groin; the eruption appeared on the fourth day of pain. The patient was not taking arsenic.

Ten days later (August 15th) he stated that a "rupture" had developed in the affected region, and that for the last few days the side had felt somewhat numb. There was a marked "bulge" in the lateral abdominal wall, immediately above the iliac crest. The local musculature was flaccid and failed to contract either on voluntary effort or on coughing; either act resulted in the umbilicus being drawn over towards the right side. To faradism there was no response in the affected muscles. The patient now complained of pain radiating from the loin to the hypogastrium, but said that the region of the hip and groin felt numb. On testing a narrow area of cutaneous hyperaesthesia was found just above and almost parallel with the groin, while below this area and extending backwards to within two inches of the spine was a zone—now fading eruption—of anaesthesia to and pin-prick, the area of loss to pain and enclosing that of loss to light touch (anaesthesia of root type over a portion of the cutaneous area supplied by the twelfth thoracic nerve).

Other physical signs—nervous and circulatory systems—showed no change from those previously described, with the exception that the systolic blood pressure was now 120 mm. The Wassermann reaction (blood-serum) was negative.

## REFERENCES.

- <sup>1</sup> Von Bürensprung: *Ann. des Char. Krankh.*, 1851, ix, 41. <sup>2</sup> Head and Campbell: *Brain*, 1900, xxi, 353. <sup>3</sup> Montgomery, D. W.: *Arch. of Dermatol.*, 1921, iv, 815. <sup>4</sup> Gowers, W.: *Diseases of the Nervous System*, 1899, vol. 1, 198. <sup>5</sup> Epstein, W.: *Vierteljahr. Archiv*, 1895, cxxxix, 505. <sup>6</sup> Hewlett, A.: *California State Journ. Med.*, April, 1905. <sup>7</sup> F. Taylor: *Guy's Hospital Reports*, 1935, lii, 57. <sup>8</sup> Söderbergh, G.: *Acta Med. Scandinav.*, 1919, cii, 225 (*Med. Science Abstr.*, 1920, i, 513).

THE International Congress of Medical Hydrology and Climatology will be held at Brussels from October 20th to 22nd.

ACCORDING to the official report recently published, during the first six months of 1922 29,264 cases of cholera occurred in the three Soviet republics of Russian Europe, 4,953 in Caucasus, 1,864 in Asiatic Russia, 2,139 on the railways, 45 on the rivers and canals, and 840 in the Red army.

THE triennial prize of 1,800 francs instituted by Mme d'Ault du Mesnil in honour of her husband for the best unpublished work on prehistoric anthropology will be awarded for the first time in 1924. Candidates are required to send three typewritten copies of their manuscript to the Secretary, École d'Anthropologie, 15, Rue de l'École de Médecine, Paris, before December 31st, 1923.

## Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

## HAY FEVER TREATED BY SINUSOIDAL CURRENT TO THE SPINE.

THE following record, which applies to a case treated last summer, may be of interest at a time when this distressing malady is prone to attack its victims.

On June 2nd, 1922, a man aged 33 came to me in a typical attack of hay fever. In previous summers he had tried all the usual remedies, and had been examined and treated by competent nose and throat specialists, but in spite of treatment the trouble was wont to run its course without abatement. He knew exactly the week in which the complaint would commence every year, and it was severe enough to keep him from business while it lasted.

An indifferent pad 4 by 6 inches was applied over the sacrum, and an active electrode, 1 inch in diameter, held over the seventh cervical spine. The sinusoidal current was gradually turned on until he took as much as he could stand without discomfort. Within three minutes there was an improvement. He commenced to take deep inspirations, the general distress lessened, the tickling in the throat and the inflammation and irritation in the eyes subsided. In an incredibly short time, certainly not more than five minutes, he pronounced himself quite normal. The current was turned off, then reapplied twice at intervals of five minutes.

There was no unpleasantness from the current, but he noticed a peculiar metallic taste in the mouth. At subsequent sittings he stated that the relief seemed to come as soon as he felt this metallic taste. We discovered later that the metallic taste could be produced by applying the active electrode to various areas in the cervical region, but the relief only came when the pad was held over the seventh cervical spine.

On the day following his first treatment he motor-cycled to business and back without goggles, and felt perfectly well till on his way home, when the symptoms returned, but in a mild degree. Similar treatment was employed, with the same beneficial result. He remained free from trouble till June 9th, and was treated on June 10th. Subsequently he received treatment on June 13th, 14th, 17th, 26th, 29th, and again on July 10th—altogether nine treatments. During this time the discomfort was much less, he slept well and went to business daily.

The result is probably produced by some action on the sympathetic system. Whether one may hope to produce a permanent cure is problematical, but the method seems worthy of extended trial.

THOMAS MARLIN, M.D.,  
Medical Officer in charge Electro-therapeutic  
Department, University College Hospital.

## TWO CASES OF ACUTE INTUSSUSCEPTION IN CHILDREN: RESECTION: RECOVERY.

ON March 7th, 1923, at the Royal Liverpool Children's Hospital I operated on a boy, aged 2 years, who had suffered from periodic attacks of pain in the umbilical region and vomiting which had become persistent. The symptoms had lasted for seventy-two hours. He showed signs of abdominal distension, had visible peristalsis, and a tumour palpable in the subumbilical region. At the operation I found an ileo-ileal intussusception which was irreducible and gangrenous. I resected 18 inches of ileum and performed a lateral ileo-ileal anastomosis. He made a complete recovery.

On March 22nd, at the same hospital, I operated on a boy, aged 10 years, who for thirty-six hours previously had suffered from periodic attacks of severe abdominal colic accompanied by vomiting which had become persistent. In this case there was a large visible tumour extending from below the umbilicus to the right iliac fossa. This intussusception was also quite irreducible and gangrenous. On attempts being made to effect a reduction, the outer coat commenced to split in several places. I removed the whole mass (which consisted of 3½ feet of ileum), infolded the ends, and as the distal infolded end was close up to the ileo-caecal valve I performed lateral ileo-colic anastomosis. This boy has also made a complete recovery.

In a paper I read before the Liverpool Medical Institution in November, 1922, I stated that 66 per cent. of such cases began as ileo-ileal intussusception. These are examples of cases that remain ileo-ileal. An interesting feature of these two cases is that neither patient passed any blood per rectum.

The importance of the periodicity of the colic in intussusception cannot be exaggerated. It is invariably present in the early stages of the attack.

Liverpool.

W. A. THOMPSON, M.Ch., F.R.C.S.Ed.



## Reports of Societies.

## THE MORTALITY OF COAL AND METALLIFEROUS MINERS.

At a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine on May 25th, the President of the Section, Dr. R. J. REECE, in the chair, Professor E. L. COLLIS read a paper entitled "An inquiry into the mortality of coal and metalliferous miners in England and Wales."

Professor Collis remarked that the mining community consisted for the most part of a compact body of men who did not change their occupation, were employed underground in dimly illuminated and artificially ventilated workings, had to put forth considerable muscular energy, and were exposed to the dust of the materials worked. Notwithstanding a general similarity of working conditions, the rates of mortality of different groups of miners differed widely. In coal mining, pneumonia, bronchitis, and accidents were responsible for rates of mortality considerably above the standard of all occupied males; diseases attributed to alcoholism and phthisis were, on the other hand, less deadly amongst coal miners than in the Lancashire field. When the separate coal fields were considered it appeared that the rate of mortality in the Lancashire field much exceeded that in any other, and was nearly double the rate of Nottinghamshire coal miners. The conclusion seemed forced that although local conditions must be held to contribute something to the differences, inquiry within the industry was needed to ascertain why they were so accentuated, particularly, perhaps, in the instance of phthisis. The age distribution of phthisis amongst coal miners brought it into line with the type affecting workers exposed to silica dust, but the unusually low absolute prevalence of the disease needed explanation. Possibly Mavrogordato's work provided the clue; he exposed one group of guinea-pigs to silica dust alone, a second to silica dust followed by coal, and that "once silica is fixed in the lung tissues, coal exerts no eliminative effect. If anything the influence is in an opposite direction, but that a prior or even simultaneous exposure to coal dust appears to set up a condition in the lung which is inimical to the fixation of silica." With regard to mortality attributable to alcoholism, the order of the fields did not correspond to their order in respect of other causes of death. The miner was a "convivial" rather than an "industrial" drinker, usually taking no alcohol until the day's work was over. There appeared to be a relation between the depth of working and the mortality from alcohol. Bearing in mind the strenuous nature of the task and the heat of the workings, it might be that the provision of drinking water underground would appreciably lessen consumption amongst coal miners. Cancer was not an exceptionally important cause of mortality amongst coal miners; cancer of the stomach and liver was the only form which showed a rate appreciably above that of the standard. Passing to the three forms of metalliferous mining, tin, lead, and ironstone mining, it was remarked that the two former stood out because not only was the general rate of mortality in each excessive, but in each the same groups of disease were prominent—phthisis, respiratory diseases, and occurred exclusively in Cornwall, not only contained quartz dust lay in a rock largely made up of quartz, so that much age distribution of phthisis was in accord with what was recognized to occur amongst men exposed to the dust of silica. Recent work by Gye, Purdy, and Kettle on the toxicity of colloidal silica lent interest to the somewhat high rates for Bright's disease. The conclusion suggested was that silica dust was gradually converted into soluble silica in the lungs and caused the well known fibrotic changes, but some escaped into the blood to be excreted by the kidneys, which were consequently similarly affected. The phthisis mortality was excessive at Greenside, where the veins of lead ore occurred in granite, but not at Keswick, where the ore

was in a limestone rock. Phthisis among haematite miners appeared statistically to resemble in a modified way fibroid phthisis and might be due to oxide of iron. Other workers, such as boiler makers, exposed to iron oxide exhibited a similar statistical type. This distribution was not found in iron carbonate miners. Alumina dust, judging from the mortality data for slate quarriers, resembled iron oxide and silica in its effect on the lungs. A point mentioned in the incidence of phthisis upon coal miners received some support from the facts of the ganister industry. Ganister is a quartzite rock found underlying coal and overlying fire clay. Best ganister, which contains over 95 per cent. of other material used for lining steel furnaces. The dust to which the workers were exposed was nearly pure silica, and which contained veins of fire clay was made into second grade refractory materials used for coke ovens. The dust had no excessive mortality from phthisis. The theory had been put forward that the influence of coal was due to some organic substance and that this substance might be washed down from the coal into the underlying fire clay, where it was retained, this accounting for the protective action of the fire clay; it might be that the substance was of a nature to prevent silica becoming colloidal. An interesting point in connexion with tuberculous silicosis, first noted amongst metalliferous miners, was its low power of infecting contacts not themselves exposed to silica dust, such as the wives and children of the miners.

The paper was discussed by the PRESIDENT, who remarked that one factor of the low mortality from phthisis of coal miners might be their comparatively high standard of diet. Dr. R. J. Ewart—whose untimely death they all deplored—had called attention to the correspondence between the rising curve of food consumption and the decline of phthisis. It would be of interest to learn whether the Lancashire field, where, from the tables shown, it seemed that the phthisis rate had varied little of recent years, differed in the matter of food consumption from the other fields. Sir KENNETH GOADBY spoke of the high sickness rate experienced by the miners. Dr. BROWNLEE fully concurred with the reader of the paper in emphasizing the chemical as opposed to the crudely physical theory of the mode of action of silica. Dr. GREENWOOD wished to associate himself with the President in calling attention to the loss epidemiological science had sustained by the death of Dr. Ewart, a most brilliant and original-minded investigator. Dr. McKAIL referred to the difficulty of interpreting accidents statistics, and Dr. McVAIL urged the importance of making fuller use of the morbidity data in process of collection under the National Health Insurance rules.

Professor COLLIS, in his reply, paid a tribute to the work of Dr. Ewart, the news of whose death had saddened a pleasant evening.

PSYCHIATRY IN CANADA.  
*The Maudsley Lecture.*

The quarterly meeting of the Medico-Psychological Association of Great Britain and Ireland was held at the rooms of the Medical Society of London on May 24th, under the presidency of Professor GEORGE M. ROBERTSON of Edinburgh. After transacting Association business—during which it was announced that the new President will be Dr. Nolan of Downpatrick Asylum—an adjournment was made to the Barnes Hall of the Royal Society of Medicine, to hear the Maudsley Lecture by Dr. C. K. Clarke, Professor of Psychiatry in the University of Toronto.

Dr. CLARKE said that in a developing country, where population was sparse and territories enormous, the cost of building and maintaining institutions for the care of the mentally ill was a heavy burden, and it was a wonder that anything of the kind was done. And among immigrants from the Old World there was an undue proportion of defectives and mentally diseased who looked to the Terra Nova for a solution of their troubles. There was no reason why a



young country should burden itself with the weaklings of other nations, and he agreed with a close scrutiny of immigrants. The activities of the National Committee for Mental Hygiene enabled the mental state of the country to be accurately assessed. The population of Canada had not progressed rapidly, because it had been bled white by the emigration of their best youth, and those who had been induced to take their place had not always even come up to the average. However, the migration north into Canada of the men of the Nordic type was doing much to redress this. Especially did child immigration need watching, as it contained an undue proportion of mental weaklings. Of 5,800 children referred for examination to the national mental hygiene psychiatrists—they were special cases—1,386 were mentally subnormal to such a degree that they could not acquire the ordinary school education. Only 25 per cent. of these were Canadian, 33 per cent. foreign-born, the remainder being children of recently arrived immigrants. Nearly all the girls were persistently immoral, and the mothers mostly unmarried; a great burden on a young country. In his country the relations between general medicine and psychiatry had been anything but intimate, and superintendents of Canadian asylums had too often been politicians who received their reward not because of their psychiatric knowledge, but on account of their influence with the Government in power. And medical education ignored psychiatry to a great extent, providing but little instruction in it to the student. He spoke highly of the good effects of occupation for patients with mental conditions. In Toronto there was established a psychiatric outdoor clinic at the General Hospital, and in a short time most of the agencies in that city were working for it. Psychology there could now be said to be coming into its own. Psychiatry had a good many sins to answer for, and it could not be said to have kept pace with the progress in medicine. In Canada there were outbursts of enthusiasm in certain circles over psycho-analysis, Freudian theories and sex problems, but it was when the war broke out that the neo-psychiatrists, the neuro-psychiatrists, the psycho-neurologists, and psychological healers of all kinds found themselves, shell-shock being their particular fad. Many of the mentally diseased could become useful hewers of wood and drawers of water, and by a careful study of industrial misfits more could be done than had been thought possible. The staffs of asylums, as a rule, were so small that research and study could not be carried on in the best way possible. The work of national mental hygiene in a large clinic had shown that the road to complete success was in the early prevention of mental disease. He congratulated his colleagues in this country on the establishment of a mental hygiene association in Great Britain; psychiatry had never before had such an opportunity to prove its worth, to show the people how to lead better and saner lives. Psychiatrists must no longer be mere custodians of people overtaken with dire calamity, but aggressive leaders who were ready to show their mettle in a great cause. In Canada more good had been done by the mental hygiene movement in five years in improving the care of the insane, the study of defectives, and educating the public to the importance of these problems than in the preceding six decades. The victims of psychosis could nearly always be detected at an early age, and it was most important to learn how to steer the subjects of it clear of the tragedy ordinarily awaiting them. Eugenics as taught by some ultra-modern teachers would prove not only difficult, but impossible. The psychiatry of the past had proved sadly disappointing, and he asked whether the ratio of actual recoveries had increased in the last fifteen years. And the relations between law and medicine in psychiatric matters in Canada were most unsatisfactory, hence the well advised psychiatrist hesitated before appearing in court to give evidence in criminal cases, chiefly because the law had not yet recognized that mental disease was, ordinarily, a distinct entity; and in murder trials the *McNaghten* decision "still works overtime." It was necessary for psychiatrists of the new school to force the issue, and already the thin end of the wedge had been inserted. Here the mental hygiene movement stepped in and taught the community what was their duty in such matters. If Maudsley's *Responsibility in Mental Disease* could be made a legal textbook, a much saner policy would be developed in dealing

with mental disease and defect; the law must be advised to meet the psychiatrist more than half-way.

Speaking of the future, Dr. Clarke maintained that the time had come to revise the methods of teaching psychiatrists. The University of Toronto had developed an optional course of five years in psychology and psychiatry. The young graduate had been ill equipped in these subjects, and the specialty had very few prizes to offer, hence it was not regarded as attractive. Asylums had too long been closed corporations, and a great awakening factor was the war. For the young psychiatrist, the best early training in the specialty was to be obtained in outdoor clinics and psychopathic hospitals, rather than in institutions, for in the latter the herding of "chronics" often interfered with the research and study of the individual. A course of options for the University of Toronto had been outlined, providing for sixty hours a year in special training extending over five years; the fifth and sixth years of the course being largely clinical. Men taking this course would not fall easy victims to the many fads extant, and the adoption of the caravan system of educating the public would prove invaluable. They also intended to follow the lead of this country in the matter of post-graduate courses. And the realm of research must be invaded as never before; there must be co-operation between School Boards and Public Health Departments; in Toronto that was already the case. With their experience in intelligence tests, he claimed they were in a position to estimate their value, as well as appreciate their inadequacy; but their apparent simplicity had stimulated the ambition of many amateurs, whose activities were very likely to be harmful. Group tests had proved to be of little value. At the present time in psychological and pedagogical circles there was a warm discussion on the supernormal child, a term which was unfortunate and unscientific. Some of the very brilliant children were found to be on the verge of a mental and physical collapse. The psychiatrist of to-morrow must be educated along different lines from those hitherto followed; even the institutional physician must be trained to grapple with the problems presented by social misfits; he must be in a position to advise regarding the mental hygiene of the community. Voluntary clinics had robbed the institutions of much of the stigma formerly associated with them, and the admissions to them were on the increase. The importance of prevention must never be forgotten. To do all that was here pointed out as desirable, it was obvious that psychiatrists must be emancipated from much of the administrative work which was now their portion.

In conclusion Dr. Clarke declared that psychiatry must show the public its just reasons for existence, its readiness to adjust itself to the new order of things, and to do something more than care for those who fell by the wayside.

Dr. SOUTAR, in proposing a vote of thanks to the lecturer for his address, said it was recognized that it contained a message of the highest importance and value, and was not only helpful, but hopeful. While Dr. Clarke's enthusiasm had driven him, it had never stamped him. Notwithstanding the distance of Canada from us, the same problems confronted both countries, and in the dominion they were faced under more favourable conditions, for while tradition might be an excellent thing in itself, it was apt to exert a "strangle hold" on progress, and the Canadians were freer than we were from preconceptions, behind which we were apt to find ourselves entrenched. The lecturer rightly took the view that psychiatry was not a subject concerning only a small section of the community; its importance was so great that there was need for those who had been trained in it to go out amongst the public and instruct them in matters which would tend to the maintenance of their sanity; that the function of the psychiatrist to-day was not only that of mind mender, but that of mind tender.

Dr. HELEN BOYLE (Brighton) seconded the proposition and spoke of the kindly hospitality she received when visiting Canada. Dr. Clarke was a member of the International Committee of Mental Hygiene, of which branches were now established not only in this country, but also in France, Belgium, and China.

The vote, having been supported in a few words by the PRESIDENT, was carried by acclamation.



## Reviews.

## SIR RONALD ROSS'S MEMOIRS.

THE volume entitled *Memoirs, with a Full Account of the Great Malaria Problem and its Solution*,<sup>1</sup> by Sir Ronald Ross, is in substance an autobiography. It is as recently become popular to write an autobiography instead of waiting for someone else to write a biography. Which is the better method of the two is open to doubt. Some men—though this is rare—have even forbidden the publication of any detailed account of their life and work altogether. Sir James Bower was a notable example; in his will he expressly stated that no biography of him should be published as a separate book. Sir Ronald Ross's memoirs are voluminous; with its index the book contains over 550 pages. It is divided, like all Gaul, into three parts: Part I, India; Part II, Malaria; Part III, The Fight for life. Appendices deal with honours and awards, and honorary membership of societies, and there is a final section giving references to writings on malaria and mosquitos, to mathematical papers by the author, to literary works by the author, and a variety of other subjects. The first part is interesting in one respect—namely, that it shows what the author's bent was; before he took seriously to medicine and science he seems to have spent most of his time studying mathematics, writing poetry, dramas in verse, and romances. Little is said about medical work as such. The second part, to which readers will turn with special interest, describes the four years of the author's life which were almost entirely devoted to investigations on malaria; it is written clearly and with much dramatic force.

It may truly be stated that the story related in these pages is fascinating, and that it will be of great value to future historians of science. We find first the young man who had dabbled with malaria in India, who had even looked for the new Laveran parasites, but had failed to find or recognize them, who comes to London on leave, sees Professor Kanthack, then pathologist at St. Bartholomew's Hospital, and is sent by him to Dr. Patrick Manson. Here the romance begins. Within a few minutes Manson has shown the inquirer Laveran's "crescents," and a few days later the other forms of the organisms, in a patient in Charing Cross Hospital. All doubts at once fled, and one day soon afterwards, when walking along Oxford Street, Manson made the pregnant remark, "Do you know, I have formed the theory that mosquitos carry malaria just as they carry filariae." The author of the memoirs replied that he had seen the same conjecture in one of Laveran's books. Impressed, however, with Manson's arguments, he determined to test the hypothesis thoroughly on his return to India. From that time the research began, the two men corresponding with each other constantly, thus helping each other with mutual suggestions and advice. From April, 1895, to February, 1899, Ross wrote 110 letters to Manson, containing almost a thousand words each. Manson could not spare the time to reply so voluminously, but nevertheless sent out much useful advice and fought for his disciple in many other ways at home. Many of these letters are given in full, and form the cream of the narrative. In them Ross is constantly giving credit to his preceptor in generous terms. "What a beautiful discovery is this! I can venture to praise it because it belongs to you, not to me" (p. 276). Again, at the end of his report on the cultivation of proteosoma (p. 288): "These observations prove the mosquito theory of malaria as expounded by Dr. Patrick Manson; and in conclusion I should add that I have constantly received the benefit of his advice during the inquiry. His brilliant induction so accurately indicated the true line of research that it has been my part merely to follow its direction." Yet again, "I was and am a hero-worshipper and he [Manson] and Laveran were my heroes. He [Manson] almost alone had helped me in the long fight, and I swore to give him all the credit I

may have acquired in return. So! Let the cup of gratitude spill over rather than be stinted." It is pleasant to record these passages, but it is equally pleasant to be able to say that it was the untiring energy, keenness, indomitable perseverance, and courage under adversity of Ross that carried the research to its final successful conclusion. Many times the want of sympathy and help from his own service would have damped the enthusiasm of even the most virile, but he kept on and did not give way. What fate could have been more cruel than, on the eve of success, to be banished to Kherwara? Yet here again his friend in London was with him, and by judicious representations at home had the sentence quashed. Then comes the final scene, the Calcutta work and fame. Yes! no doubt it is a fine story, an epic of scientific research.

Part III is entitled "The Fight for Life"; it is dull compared with the chapters just described. A tendency to polemics creeps in. The attempts of the Italians to pirate his work were deplorable, but unfortunately such attempts are not unknown in science even in Britain. It is difficult to know how to deal with such people—perhaps better to ignore them altogether than enter into direct argument with them. After all, posterity will judge, and Sir Ronald Ross may rest assured that his own countrymen know well what he has done, and in future generations his name and Manson's will hold the highest niche in scientific research and momentous discovery. Even for the present Sir Ronald has not fared so badly, as is shown by the list of honours and awards (p. 525). Though he has not amassed a fortune he has won fame and honour—and, after all, what is higher than honour, even though adorned with its laurel wreath alone?

DIAGNOSIS AND CONTROL OF TREATMENT IN  
DIABETES.

PROFESSOR HUGH MACLEAN, in his monograph entitled *Modern Methods in the Diagnosis and Treatment of Glycosuria and Diabetes*,<sup>2</sup> aims at giving to the busy general practitioner a short and concise account of the present state of our knowledge of diabetes and glycosuria, with special reference to their clinical aspects.

The most important consideration which the author dwells upon is the necessity for studying the variations in blood-sugar concentration in normal and in diabetic individuals. This undoubtedly is an aspect of diabetes which offers the greatest obstacle to the home treatment of the disease. Whether the average general practitioner has the time to carry out his own blood-sugar analyses is a question that we should not care to answer offhand, but the method Dr. Maclean describes for performing the estimation with 0.2 c.cm. of blood obtained by skin puncture simplifies the technique greatly. Accuracy is, of course, demanded, but with practice there is no reason why reliable analyses should not be obtained by anyone capable of very ordinary chemistry. It is obvious that the modern treatment of diabetes cannot be controlled by estimations of the urine sugar alone; indeed, it is almost the case nowadays that all quantitative analyses must be carried out on the blood sugar, the amount of sugar in the urine being of secondary importance.

Dr. Maclean follows Marcel Labbé in insisting that diabetes is not only a carbohydrate derangement. Defects in fat and protein metabolism may play an equally large part in the malady. He rightly emphasizes the effect of fat in the diet in producing ketonuria, and says that it is easy enough to get rid of glycosuria by giving large amounts of fat with protein instead of carbohydrate, but the resulting acidosis may be much worse than the glycosuria.

His observations on the time when maximum blood-sugar concentration occurs after ingestion of sugar reveal a remarkable difference between the normal individual and the diabetic. In the normal the maximum is reached in from thirty to sixty minutes after the ingestion of glucose; in the diabetic the rise is slower and the fall is slower, so that the maximum may not be reached before

<sup>1</sup> *Memoirs, with a Full Account of the Great Malaria Problem and its Solution*. By Colonel Sir Ronald Ross, K.C.B., F.R.S. London: J. Murray. 1923. (Med. 8vo, pp. x+547; 11 plates. 24s. net.)

<sup>2</sup> *Modern Methods in the Diagnosis and Treatment of Glycosuria and Diabetes*. By Hugh Maclean, M.D., D.Sc., M.R.C.P. London: Constable and Co., Ltd. 1922. (Demy 8vo, pp. xi + 153; 8 figures. 12s. net.)



two and a half hours, and the fall may scarcely have begun after four and a half hours.

Sugar tolerance tests described by Professor Maclean will be found to provide a rapid means of estimating the character and gravity of a given case of glycosuria, a necessary preliminary to embarking on treatment. These tests are also essential to a correct prognosis. It is interesting to find that a positive Gerhardt's reaction with ferric chloride is of more importance than the nitro-prusside reaction of Rothera, as indicative of a serious condition. Professor Maclean suggests that the minimum number of tests necessary for the treatment of grave cases of diabetes might be thus given:

1. Fehling's test for glucose.
2. Diacetic test with ferric chloride.
3. Estimation of ammonia in urine by formalin method.
4. Fridericia's estimation of  $\text{CO}_2$  in alveolar air.
5. Sellard's sodium bicarbonate test.

The chapters on dietetic treatment are clear and concise; the tables of diets and of food values will be found most helpful. On one point the author fails perhaps to be quite definite enough in his instructions. He gives precise figures for the minimal requirements of protein and total calories, but he does not offer a ready method of reckoning the proportion which fat should bear to the carbohydrate and the protein in the diet. Woodyatt's plan of allowing the amount of fat to be equivalent (in grams) to twice the carbohydrate and half the protein would have been worth mentioning.

Brief reference is made to insulin, but this remedy was not obtainable at the time the book was published. Dr. Maclean's suggestions will be found to lose little or none of their value even when the supply of insulin is freely available. In fact, any practitioner who wishes to make trial of insulin will do well to use Maclean's book as his principal guide.

#### SURGICAL GRAFTS.

THE possibilities of surgical grafts in man arouse both both speculative and scientific interest. Professor MACCLAIRE in a volume entitled *Les Greffes Chirurgicales*<sup>1</sup> has attempted to deal with the subject in an encyclopaedic manner. He has not failed to note every type of graft that has ever been essayed in the human body or in animals. It must, however, be confessed that the book as a whole gives rather the impression of a catalogue of monographs than of a critical survey of a complex and interesting subject. The detail of different techniques which have been employed in the carrying out of various implantation operations is only sketched, and little or no attempt is made to appraise the value of different methods. There is no definition of the histological or other evidence which should be required before classifying a graft as a success; this lack is particularly noticeable in relation to the implantations of various glandular organs.

The section on bone grafts is limited to a few pages. In view of the established value of implants of this character and the extensive study of the subject which has been forced upon us by the great war, very scant justice is meted out to it. Various forms of nerve grafts receive full notice, perhaps more than the doubtful success of such procedures warrants.

An extensive bibliography of the subject, covering some fifty pages, is included in the volume and forms a very useful part of the work.

#### APPLIED ANATOMY OF THE ABDOMEN.

DR. RAYMOND GRÉGOIRE has written an attractive book on the medico-surgical anatomy of the abdomen. He divides the abdomen into two arbitrary portions, a thoraco-abdominal region, and a subthoracic region, the dividing line running horizontally at the lowest level of the tenth rib. He admits the heterodoxy of his divisions, but says with some truth that the more usual partitioning into hypochondriac parts, iliac parts, and so forth, is inconvenient

clinically. He includes the pelys in his subthoracic region, in so far as the coils of small intestine and colon are concerned with it, but unfortunately has not described the rectum. Much could be said against Dr. Grégoire's empirical divisions, but there are none the less arguments in their favour, and if the author has given us a good book otherwise we need not question him too closely on these points.

The volume we have received for review is the second,<sup>2</sup> containing an account of the abdominal wall, small and large intestines, and omentum. The excellence of the book lies in the accuracy of its anatomical facts, and in this respect it is well up to the high standard of descriptive anatomy in France. Considerable care is taken with the account of the linea alba, and more than ten pages are devoted to the umbilicus alone, its development, and the reason for the various malformations and hernia which appear there. This section is well thought out. The position of the loops of small intestine is described, and reference made to Mall's experiments on the return of the intestinal coils to their normal positions after they have been disturbed at operation. Amongst the most satisfactory features of M. Grégoire's book is the description of the large intestine. He describes the ascending colon as fixed in the vast majority of cases; indeed he gives the percentage as 90. He is led, therefore, to describe the mobile right colon as abnormal, an opinion on which many would join issue with him, although the decision is admittedly difficult, not alone on questions of fact, but also on points of interpretation, of physiology as well as anatomy. The right colon, according to M. Grégoire, extends to a point on the transverse colon where the second part of the duodenum crosses behind it. The division is made on grounds of peritoneal fixation, instead of on the more common ground of development, vascular supply, and supposed colonic sphincter. We realize, therefore, that M. Grégoire, when he speaks of mobility of the right colon, is talking of a considerable portion of gut.

The description of the arterial supply of the colon is particularly good, and we are glad to see a workmanlike account of the "critical point" of Sudeck or Hartmann. M. Grégoire explains this greatly overemphasized point in surgical anatomy and gives the real reason for its importance, which is this: If the surgeon ligatures the superior haemorrhoidal artery low down he is working near the gut. If he works along the mesosigmoid near the bowel he will cut into and destroy the anastomotic loops which run parallel with the bowel and not far from it, and so greatly endanger the vitality of the bowel. If, on the other hand, he ligatures the superior haemorrhoidal artery high up he is more likely to keep well away from the gut. Should he fail to do so and disturb the vascular loops he will still get sloughing of the bowel, in spite of his first high ligation.

The illustrations are separately printed to face the pages of print and this allows them to be of unusually large size—a great comfort to the reader.

#### PSYCHO-ANALYSIS.

*Studies in Psychoanalysis*<sup>3</sup> is a translation of a book by M. CHARLES BAUDOUIN, whose name is familiar to psychopathologists in this country on account of his work on suggestion and auto-suggestion. The volume is divided into two parts; the first is concerned with theory, and the second with an account of the analytical study of twenty-seven concrete cases. The author does not strictly adhere to Freud's theories; his psychological outlook is based on his own experience and the teaching of other psychologists, such as Jung, Adler, and Flourney, as well as that of Freud. Generally speaking, throughout this book more stress is laid on the normal than on the pathological, and, in the view of its author, analysis is a method of education or re-education rather than a curative method. The outline given of an affective theory of the association of ideas is a useful contribution to normal psychology. The process of "condensation" which Freud has recognized and described in dreams is here exhibited as a general law of the imagination rather

<sup>1</sup> *Anatomie Médico-chirurgicale de l'Abdomen. II. La Région Sous-thoracique de l'Abdomen.* By Raymond Grégoire. Paris: J. B. Baillière et Fils. 1922. (Roy. 8vo, pp. viii + 123; 75 figures, 60 plates. Fr. 29.)

<sup>2</sup> *Studies in Psychoanalysis.* By Charles Baudouin. Translated from the French by Eden and Cedar Paul. London: George Allen and Unwin, Ltd. 1922. (Demy 8vo, pp. 352. 12s. 6d. net.)

<sup>3</sup> *Les Greffes Chirurgicales.* By Dr. Pl. Maclaure. Paris: J. B. Baillière et Fils. 1922. (Roy. 8vo, pp. 312; 102 figures. Fr. 25.)



than as a mechanism peculiar to the thought processes in sleep. In showing that the same laws are operative in dreams and the waking state, M. Baudouin draws an interesting parallel between the conceptions formulated by Freud on the one hand and Ribot on the other, and thereby indicates some useful points of contact between psycho-analysis and conventional psychology.

As regards the practice of psycho-analysis, the author is of opinion that it is inevitable that suggestion should influence the analysis, however careful be the attempt made to exclude it. He himself advocates a combination of auto-suggestion and psycho-analysis, a method of treatment which has been commended by Dr. William Brown in this country. Dr. Eden Paul and Mr. Cedar Paul, the translators of this book, provide a useful introduction.

### NOTES ON BOOKS.

THE aim of *L'Année Médicale pratique*,<sup>6</sup> edited by Dr. CAMILLE LIAN, is to give a concise and readable account of the most important acquisitions in medicine, surgery, and obstetrics in a series of articles written by thirty contributors, with references to current literature appended. French work naturally receives the greatest attention, but foreign literature, especially that of the United States, has also been laid under contribution, though we have found barely ten references to British journals. The volume should prove a useful work of reference to those who wish to gain some acquaintance with recent French medicine.

The fifth revision of the *Pharmacopœia of the Royal Northern Group of Hospitals*<sup>7</sup> is a useful little production, which contains a number of valuable practical hints. It is divided into sections—dermatological, children's, etc.—and is provided with a good index. The *Pharmacopœia of St. Thomas's Hospital*<sup>8</sup> for 1922 is rather more elaborate, and is more than twice the size of the other; it is interleaved with blank pages for additions, and has nearly a hundred pages of notes and memoranda on the *British Pharmacopœia*. A section deals briefly, but to the point, with the treatment of cases of poisoning, and some useful comparative tables of weights and measures (metric, imperial, and apothecaries') are also given.

The second edition of Dr. HEINRICH LEHDORFF'S<sup>9</sup> short textbook of children's diseases includes an account of Pirquet's system of feeding, the doctrine of avitaminoses, and Finkelstein's classification of nutritional disorders.

In the review published last week (p. 931) of Hope's *Industrial Hygiene* the price was erroneously given as 21s.; it should have been 25s.

<sup>6</sup> *L'Année Médicale pratique*. Revue annuelle des acquisitions cliniques et thérapeutiques. Publiée sous la direction du Dr. Camille Lian. 2me année. Paris: A. Maloine et Fils. 1923. (Fcap. 8vo, pp. xviii + 484. Fr. 18.)

<sup>7</sup> *Pharmacopœia of the Royal Northern Group of Hospitals*. Fifth revision. London: Waterlow and Sons, Ltd. 1922. (Cr. 16mo, pp. 64.)

<sup>8</sup> *Pharmacopœia of St. Thomas's Hospital*. Compiled (under the direction of a committee of the medical and surgical staff) by J. A. Jennings, pharmacist to the hospital. London: H. H. G. Grattan and the bookstall, St. Thomas's Hospital. 1922. (Cr. 16mo, pp. 176. 3s. net. 3s. 2d. post free.)

<sup>9</sup> *Kurzes Lehrbuch der Kinderkrankheiten*. Von Dr. Heinrich Lehdorff. Zweite umgearbeitete und vermehrte Auflage. Vienna and Leipzig: Josef Sáfár. 1922. (Roy. 8vo, pp. 276.)

### THE LATE DR. A. G. SIMMINS.

THE following additional subscriptions have been received by the Committee whose appeal on behalf of the children of the late Dr. A. G. Simmins was published in the *BRITISH MEDICAL JOURNAL* of April 21st, 1923, page 696. The fund, opened, has almost reached £1,000. Cheques and pounds by post should be sent to the Treasurer, Simmins add that I have the Royal Northern Hospital, Holloway, N.7. during the inquiry of the London Stock Exchange. Private collection per indicated the time to follow management of the Hospital for Sick Children, Great am a hero-worshiper of Lloyds; with the promise of more to follow. my heroes. He [Fergus, and O'Neil. the long fight, at E. R. Carling, F. J. Cleminson, Mrs. A. M. Glover, Edith Hudgell, C. P. Merriam, W. Turner,

<sup>1</sup> *Memoirs, with a F. Solution*. By Colonel Sir D. Saner, G. Stewart, O. Thomas. 1923. (Med. 8vo, pp. x+5. A. S. Blackwell, Dr. Boden, E. A. Cockayne, Lake, A. H. Levy, J. D. R. Munro, W. H. Sir J. Herbert Parsons, P. M. Rivaz, A. C.

Roxburgh, P. Smith, H. C. Snell, A. G. Sutton, W. E. Tanner, A. H. Tubby, G. E. O. Williams:

<sup>25</sup>—Anon (2), A. G. Campbell, Country G.P., Dr. Friel, J. T. G., Lieut. Colonel L. W. Harrison, Sir Thomas Horder, Barty King, Marquess of Northampton, F. W. Price, E. Telsall, E. E. Ware.

<sup>26</sup> 10s.—Mrs. Sington.

<sup>27</sup> 5s.—R. Anderson, H. R. Andrews, A. Beran, Stella Churchill, E. S. Clow, H. Davies, R. Gillbard, J. A. Glover, G. Graham, A. Griffith, Violet Hort, Lord Islington, C. E. Jenkins, C. MacMahon, W. H. McMullen, J. R. Munro, S. Payne, W. R. Reynell, D. D. Ritchie, A. S. Woodwark, L. W. Yealland.

<sup>28</sup>—Anon.

<sup>29</sup> 10s.—T. G. Wilson.

<sup>30</sup> 7s. 6d.—W. J. Smyth.

<sup>31</sup> 2s.—B. H. Barton, H. B. Brackenbury, J. Burnford, Aldo Castellani, W. F. Castle, H. Crampton, P. J. Clausen, Drs. Dora Celebrook and Henrietta Davies, O. B. Dansie, G. H. Davy, M. Donaldson, Gertrude Edie, P. P. Ellison, L. S. Fry, Wm. Gayes, W. S. George, R. M. Going, D. H. Griffiths, Ivy E. and A. C. Haslam, Lieut.-Commander L. B. Hill, W. H. Hooton, A. Howell, Sir Arthur Keith, J. B. Kennedy, H. D. Lauchlan, C. A. Lawrence, M. Longinotto, A. A. Parson, Mrs. E. W. Paudley, A. R. G. Pocock, G. H. Ransome, L. H. Robertson, B. B. Sharp, E. Shaw, C. Smeeton, G. H. Spencer, A. Starling, R. H. Steen, J. G. Stevens, J. Taylor, Dr. Uthoff, Sir Jenner Verrall, S. H. Waddy, K. Walker, C. P. White, R. Wilkinson, A. E. M. Woolf.

<sup>32</sup>—Anon, W. O. McKane, N. W. Powell, G. Taylor, W. L. Watt.

<sup>33</sup> 11s. 6d.—Mr. and Mrs. O. Adamson.

<sup>34</sup> 10s.—Lieut.-Commander A. C. Walker.

<sup>35</sup> 1s.—I. Bennett, O. Berkeley, G. Black, G. M. Blair, Captain H. Bloxome, A. W. Bourne, S. Bree, Vice-Admiral E. F. Bruen, C. Clayton, R. Cook, D. M. Connan, Emily S. Cooke, H. Dixon, Dorothy Dobbin, G. J. Dudley, T. R. Elliott, J. Fletcher, A. S. Gubb, J. S. Hall, A. G. Henderson, R. K. Howat, Hunterian Society, "In Memory of Donald," F. N. Jaboor, Mrs. M. Jenkins, Captain E. B. Jones, J. G. Jones, T. O. Last, L. M. Ladell, E. A. Leviscur, A. G. Levy, W. S. Loder, C. J. R. MacFadden, R. Marshall, F. N. K. Menzies, Major A. H. M. Mitchell, P. H. Mitchener, G. B. Morley, M. Mottram, W. Oats, H. Robertson, G. R. Rudkin, A. E. Rutherford, W. Sandol, C. H. Sedgwick, H. Sharman, A. W. Sheen, G. B. Siddall, F. W. Strugnell, H. Sutherland, L. T. Thorne, W. Tyson, H. J. Van Praagh, L. A. Walker, Dr. Westman, S. Wickenden, W. O. Williams, C. W. Wigram.

<sup>36</sup>—Anon (2), R. B., G. S. E. (Board of Trade), Lieut.-Colonel G. F. Gubbins, W. Kaula, A. G. M. Paget, L. C. Reynolds, Lieut.-Commander L. Warren, Colonel D. Wilkie.

Amounts under £1: Total £1 12s. 6d.

## INQUIRY ON VENEREAL DISEASE.

### REPORT OF LORD TREVETHIN'S COMMITTEE.

A YEAR ago the then Minister of Health appointed a committee to inquire into certain aspects of the problem of venereal disease with a view to an authoritative pronouncement on its medical aspects. The committee was appointed in response to a proposal by Lord Dawson of Penn, who suggested as the subject for inquiry two questions: (1) What, in the present state of knowledge, are the most efficient medical measures for preventing these diseases? and (2) How far is it ethically justifiable to apply such measures? Sir Alfred Mond approved the suggestion, and in January, 1922, Lord Dawson got together a Committee of Selection, which secured the services of a Committee of Inquiry consisting of Lord Trevethin, late Lord Chief Justice of England (chairman), Mr. T. J. Tomlin, K.C. (vice-chairman), Mr. C. J. Bond, F.R.C.S., Surgeon Commander Reginald Bond, R.N., Dr. John Brownlee, Professor Bulloch, M.D., F.R.S., Dr. D. S. Davies, Professor G. Dreyer, M.D., F.R.S., Group Captain Martin W. Flack, Director of Medical Research, R.A.F., Dr. F. E. Fremantle, M.P., Dr. Dorothy Hare, Professor H. R. Kenwood, M.B., Sir William Leishman, F.R.S., Dr. F. N. K. Menzies, Sir Frederick Mott, M.D., F.R.S., Dr. Morna Rawlins, Dr. J. H. Sequeira, Sir Bernard Spilsbury, and Mr. Kenneth Walker, F.R.C.S. On the advice of the Committee of Selection the instruction for the Committee of Inquiry was as follows: "To consider and report upon the best medical measures for preventing venereal disease in the civil community, having regard to administrative practicability, including cost."

The Committee of Inquiry has now presented its report,<sup>1</sup> which is signed by all the members of the Committee except Professor Bulloch, who resigned his membership at an early stage of the proceedings. In the first paragraph it recalls the circumstances of its appointment and its terms of reference; in the second it states that it has had twenty-eight meetings and that there have been in addition seven meetings of subcommittees; and in the third it reports that it has examined a large number of witnesses, has received written statements, and has consulted a large quantity of literature, both British and foreign. The remainder of the report is as follows:

4. It will be observed that under the terms of reference the functions of the Committee are confined to the considera-



tion of medical measures. Having regard, however, to the origin and nature of venereal diseases, the Committee feel that, in relation to the civil community, medical measures alone can never operate as an absolute preventive of disease, but their success must always depend largely upon the attitude towards them of the community and the co-operation of the community in securing their largest effect. This co-operation can only be hoped for if full knowledge of the nature of the problems to be faced becomes common property.

5. Although, therefore, we are confined by the terms of reference to the consideration of medical measures, it may not be out of place to indicate our view that there are other measures which should be employed contemporaneously with medical measures, if such last mentioned measures are to be made a success.

6. For example, the extension of knowledge as to the nature of venereal disease and its consequences is of the first importance; the community should as far as possible be made to appreciate:

(a) That promiscuous intercourse is the main cause of the prevalence of venereal disease;

(b) That there is no absolute preventive except continence, and a single exposure may result in infection;

(c) That a large number of the sufferers from venereal disease are innocent persons, especially women and children;

(d) That syphilis is a disease of great gravity, which, if not treated in its early stages, may have serious results, including affections of the circulatory system and of the nervous system, as, for example, general paralysis of the insane;

(e) That syphilis is transmissible by a mother to her children, and is a frequent cause of miscarriages, stillbirths, and deaths in early infancy, and, in children who survive, of mutilating deformities, deafness, blindness, mental disease, and other defects;

(f) That gonorrhoea is a more serious disease than is commonly believed, and, if not promptly treated, may have serious after-consequences;

(g) That gonorrhoea is a frequent cause of sterility and serious pelvic disease in women and a cause of blindness in children born of women suffering from gonorrhoea;

(h) That the presence of these diseases in the community is a menace to the maintenance and advancement of the physical and intellectual standard of the race.

7. Again, in addition to the spread of knowledge it is necessary that measures should be pursued which will diminish those conditions of life which tend to foster promiscuous intercourse and the spread of disease.

8. Dealing with medical measures strictly, they appear to fall into two categories:

(a) Medical measures for preventing disease in, or minimizing the risk of disease to, persons exposed to infection; and

(b) Medical measures for rendering non-infective and curing diseased persons.

9. With regard to head 8 (a), highly controversial questions are involved. It is established that in the laboratory, under conditions approximating to those which obtain in intercourse, disinfectants will destroy both *Spirochaeta pallida* (the germ of syphilis) and the gonococcus (the germ of gonorrhoea), and we think that a man who after exposure is thoroughly and promptly disinfected by disinfectants of appropriate nature and strength runs little risk of infection. The chance of failure, however, increases rapidly as the interval between exposure and the application of disinfectants lengthens, and the conclusion seems to be that in syphilis such disinfection as mentioned above within an hour would generally be successful, and that in the case of gonorrhoea it has a prospect of success after a longer interval.

10. It seems, however, to be agreed on all hands that it is extremely difficult for a woman to disinfect herself, and that the prospects of success from disinfection by another person, however skilful, are in the case of a woman less than in the case of a man.

11. The question of disinfection falls to be considered under two headings:

Disinfection by the person himself (hereinafter called self-disinfection), and

Disinfection at the hands of a trained person (hereinafter called skilled disinfection).

Obviously the chances in favour of success are greater in the case of skilled disinfection than in the case of self-disinfection, but we see no reason to doubt that an intelligent man, if furnished with reasonable instructions, could in favourable conditions effectively disinfect himself.

12. The foregoing conclusions as to disinfection of the individual do not, however, carry very far in determining the question whether it is advisable for the purpose of preventing venereal disease in the civil community to introduce any system or measures for affording to the general public facilities for disinfection. From the nature of the case there is very little direct evidence to assist a conclusion. The matter is largely one of speculation, influenced in each case by the views which the exponent holds generally in regard to the tendency of human nature and on questions of a moral and social character.

The important evidence available under this head is derived from the experiences which have been obtained from measures taken in the fighting forces of our and other countries. We have had placed before us a large body of evidence of this character relating both to self-disinfection and skilled disinfection.

Where satisfactory results were recorded, a great difficulty arises in determining how far those results were due to the prophylactic methods employed, or were influenced by other factors in the case—such, for example, as regulation of hours of leave of absence, control of or exclusion from dangerous places, liquor control, imposition of penalties upon men becoming infected, the provision of facilities for recreation, and the moral effect in time of war of appeal for restraint on grounds of patriotism.

Further, the prevalence of disease among women has probably varied widely in different areas and it has rarely been measured.

Where, however, satisfactory results were not recorded, discipline appears to have been defective or the control slack or the medical supervision or instruction inadequate or lacking in enthusiasm, and there is much force in the argument that in any large community a condition of control and influence affecting the life and conduct of all its members such as obtains in a military body under efficient command is essential to securing substantial results from any system of disinfection.

13. We think, however, that we are justified upon the evidence in coming to the following conclusion:

That a community where there has been efficient instruction and where there is such a condition as arises from the control and influence mentioned above substantial results may reasonably be expected to follow from prophylactic measures, but that the actual result is often less favourable than has been claimed.

14. It must be remembered that to a large extent exposure to infection takes place in conditions in which prompt disinfection is either impossible or can only be carried out at great disadvantage. Further, the application of disinfection by a man to himself after exposure demands an effort and care which the circumstances do not tend to promote. It is urged by some that any system of disinfection would tend to increase the number of exposures and to raise the disease rate. We have received no evidence of facts in support of this view, and we are inclined to think that those who hold it attach too much weight to the deterrent effect of the fear of disease. But, however this may be, upon the evidence which we have heard we conclude that the success of any general public facilities for self-disinfection is likely in the civil community to be very small. At the same time, in face of the fact that disinfection in the case of an individual user, if properly and promptly applied, will in all probability be successful, we do not think that there is any justification for putting obstacles in the way of individuals who desire to procure the necessary disinfectants. The law does not to-day prevent the sale of sheaths, which afford by mechanical means a measure of protection against venereal disease, and we think that the law should be altered so as to permit properly qualified chemists to sell *ad hoc* disinfectants, provided such disinfectants are sold in a form approved, and with instructions for use approved by some competent authority. We suggest that the Medical Research Council should be invited to undertake this task. We think, how-



ever, that the commercial advertisement of *ad hoc* disinfectants should be prohibited.

15. We may add that from a medical point of view the instruction by medical officers of venereal disease clinics of male persons attending such clinics in the preventive use of disinfectants would afford a useful means of educating the community.

16. In conclusion on this head, our view is that money spent on a general system of providing facilities for self-disinfection would certainly be less profitable than money spent either on treatment of disease or on those measures of education and improvement of social conditions to which we have referred above.

17. With regard to skilled disinfection, its chances of success must necessarily be much limited by reason of the time that will generally elapse between exposure and disinfection. The cost of any general system of skilled disinfection would be large: it is a system which is wholly inappropriate to rural districts or small towns, and we do not recommend its adoption as part of any general system.

18. With regard to head 8 (b), the treatment of disease, we have reached the following conclusions:

(i) That, speaking generally, the general medical practitioner is not yet adequately equipped with the most advanced knowledge of venereal diseases and their treatment to enable him to deal competently with all the cases that come before him, and that an improvement in medical education in regard to venereal disease is necessary; and

(ii) That the work of existing venereal disease clinics is of high value, and that the system is one which ought to be encouraged, extended, and improved.

19. With regard to clinics, one of the difficulties in practice arises from the tendency of patients to cease treatment before they have completed their course. According to the statistical evidence the amount of this defaulting is serious, but a closer investigation carried out in some treatment centres shows that by no means all the patients who have discontinued attendance before completing treatment were infectious. A large number of syphilis cases attending these centres were from the commencement of the treatment past the infectious stage. Further, in gonorrhoea cases the standard of cure suggested by the Ministry of Health is very high, and to comply with it patients must be treated long after all bacteriological evidence of the presence of gonococci has disappeared. Many cases classed as having failed to complete treatment appear to have ceased attendance with negative bacteriological tests for gonococci, and it is reasonable to suppose that a fair proportion of these were not infectious. The conclusion is that from the point of view of the public health the defaulting is not so serious as the statistics make it appear. It remains, nevertheless, an important factor in the spread of venereal disease.

20. The question of defaulting is a topic which necessarily leads to the consideration of the question of compulsory notification of venereal disease. Apart from any statistical value which may result from notification of disease, notification itself is of little assistance unless it is supported by a system of compulsory treatment, and, if necessary, detention. It is a fact that the stigma which venereal disease carries renders many sufferers reluctant to submit themselves to treatment, and sufferers will surely be led into concealment by any measures which threaten publicity. The principle of the present system is, by maintaining secrecy, to encourage sufferers to come to treatment and to continue treatment; and we think that in the present state of public opinion any system of general compulsory notification of venereal disease would tend to concealment and would prove a backward step.

21. It has been suggested by some that in order to secure unbroken attendance of patients at clinics a modified form of notification, supported by appropriate compulsory measures, should be applied to those who have once attended the clinics in order to secure their continued attendance; but in our view such a system would be more likely at the present time to deter than to encourage attendance, and it seems difficult to justify the imposition of a penalty on those who have come for treatment while leaving untouched those who make no effort to seek treatment.

22. There is another grave difficulty in the way of any form of notification reinforced by measures to compel treat-

ment, that in the present state of knowledge there is no standard of non-infectivity or cure generally accepted by the medical profession, and until this has been attained it is difficult to see how any system involving notification and compulsory measures of treatment could be applied.

23. One main objective, in our view, should be the improvement and extension of the present clinic system. There are many respects in which we think improvement might be made: The provision of more suitable accommodation, the extension of hours of sessions, including greater facilities for intermediate treatment of gonorrhoea, more adequate provision of beds for in-patient treatment, the establishment of more hostels for women attending clinics and living under social conditions which render it difficult for them to treat themselves in their homes, and the establishment of more homes or hospital beds for the treatment of children.

24. As it is agreed that it is essential for the prevention of disease that there should be widespread knowledge among the community of the nature and consequences of these diseases, it follows that the importance of giving repeated personal instruction and warning to patients attending the clinics cannot be overstated. We think that this duty must always devolve mainly on the doctors, but that it might well be supplemented by trained social workers, who for this purpose and that of giving general advice and assistance should be attached to the staff of the clinic.

25. It has been shown that if syphilis is detected in the pregnant woman, treatment during pregnancy is remarkably successful in securing healthy offspring, and gonorrhoeal infection of the infant at birth may generally be prevented if the danger is known. Increased facilities for medical supervision of women during pregnancy is desirable, and may in part be obtained by an extension of the system of antenatal clinics, and by the instruction of midwives, who would refer suspicious cases to a doctor. In this connexion we would also call attention to the importance of including instruction on venereal diseases in the general training of midwives and nurses.

26. All improvements must no doubt be limited by the funds available, but it would facilitate the provision of more adequate accommodation if a system of capital grants such as have been made in connexion with the treatment of tuberculosis were available in proper cases.

We are not in a position to make recommendations more specific than the above, and we have therefore confined ourselves to indicating some of the directions in which improvement is possible.

27. There seems to be unanimity amongst those who have given evidence before us as to the desirability of making patients who can afford to do so pay for their treatment at the clinics, but in view of the importance of encouraging attendance for treatment we do not think that any compulsory step can usefully be taken at present to secure this result.

28. We think it would be desirable if a practical scheme could be worked out that, with a view to providing treatment for patients in rural areas or districts where clinics are not easily available, a panel of medical practitioners should be constituted through whom treatment could be provided. This might be done by a development of the present system, under which the free issue of salvarsan substitutes is made to certain approved practitioners. It would have the further advantage of increasing the number of practitioners with experience of the treatment of venereal diseases.

29. Some evidence has been adduced before us in regard to Poor Law infirmaries, and we think it necessary to organize more thoroughly the methods which obtain at the present moment in Poor Law infirmaries for the treatment of venereal disease. It would, of course, be desirable from the medical point of view that those who enter Poor Law infirmaries suffering from venereal disease should be detained for treatment and cure, and indeed a recommendation to this effect was made by the Report of the Royal Commission on Venereal Diseases, but the uncertainty as to the standard of non-infectivity and cure, to which we have already referred, seems to us a difficulty in such a measure. The same observation would apply to any proposal for the detention after the expiration of their sentences of prisoners



found to be suffering from venereal disease. We doubt whether at present any more can be done than through the agency of social organizations, such as the Prisoners' Aid Society and others, to endeavour to influence the sufferers to obtain and continue proper treatment at the clinics.

30. In connexion with the spread of venereal disease we think that the close attention of the authorities concerned should be given to the following points:

- (1) The entry into this country of persons suffering from venereal disease may be a serious source of danger;
- (2) The treatment of seamen suffering from venereal disease is a matter of great importance and requires special organization; and
- (3) There are found to be a considerable number of persons suffering from venereal disease among mental defectives, and the present arrangements for their control and treatment are inadequate.

31. We do not in this Report discuss many proposals which have been made to us with reference to alterations of the existing law with regard to venereal disease—as, for example, that it should be made a statutory offence knowingly to do any act calculated to expose any other person to infection, and the enactment of measures preventing the marriage of persons suffering from venereal disease. Such topics as these do not strictly fall within the terms of reference.

32. We think that properly and promptly applied disinfection in the case of an individual man would almost certainly prove effectual, but that so far as the community at large is concerned no sufficient case has been made to justify the introduction at the public expense of a general system of facilities either for self-disinfection or skilled disinfection, and wherever there is a limited amount of public money available, we have no doubt that money spent on

(a) Treatment of disease;

(b) Continuous education of the community in regard to the nature and dangers of venereal disease and the importance of seeking prompt and skilled treatment; and

(c) The elimination of those conditions of life which tend to foster promiscuous intercourse and the spread of disease

will be money better spent than any money expended on establishing a general system for affording facilities for disinfection.

33. Notwithstanding what we have said above we are of the opinion that it may well be that in certain areas special measures for the prevention of venereal disease would be justifiable—for example, measures for dealing with defaulters, or in a large seaport town public ablution centres for disinfection in the neighbourhood of docks—and we think that local health authorities who are able to make to the Ministry of Health a special case for some such special measure should be allowed, at any rate for some limited period, by way of experiment, to carry out the measures they propose under the present system, by which a contribution towards the expense is made by the State. In this way there may ultimately be built up a body of experience of great value in determining future policy.

34. It is right to add that, so far as conclusions can be drawn from the available figures of attendances at clinics, venereal disease is once more, as it was before the war, substantially declining.

35. In this Report we have directed our attention exclusively to syphilis and gonorrhoea. Soft chancre is a purely local affection and does not exercise any sensible influence on public health.

36. The views and recommendations recorded above have been based on the existing medical knowledge as to the prevention and treatment of venereal diseases, and the Committee realize that certain modifications might be called for in the light of important new knowledge of which there are indications.

37. We desire to record our thanks to the witnesses who have furnished the Committee with evidence and to the Ministry of Health and its officials for their assistance.

We also desire to express our appreciation of the valuable service rendered to us by Mr. H. A. de Montmorency, of the Ministry of Health, who has acted as Secretary to the Committee.

## CANCER RESEARCH.

### THE BRITISH EMPIRE CANCER CAMPAIGN.

#### THE PROBLEM TO BE SOLVED.

It is unquestionable that our knowledge of the etiology of malignant disease is imperfect, so imperfect that no system of prophylaxis has as yet even reached the stage of serious discussion. It can, of course, be said with perfect truth that we do not at present possess an absolutely sure defence against any other of the great killing diseases except small-pox and enteric fever, but no rational person doubts that our defences against, for instance, tuberculosis are far stronger than a generation ago. In the case of tuberculosis, the improvements of our means of resistance have not been the product of any one technical method of research, but have been based upon a combination of clinical, experimental, and epidemiological discoveries. Before the isolation of the bacillus of tuberculosis made possible the employment of an exact experimental technique, much information respecting the general etiology of the disease, its geographical and economic concomitants, the conditions of its spreading, etc., had been accumulated. *Pari passu* with contemporary experimental work, this statistical and epidemiological knowledge has been extended and made more exact, has served both as a control of and stimulant to experimental work. The same remarks apply, with still greater force, to the case of enteric fevers, where our prophylaxis has been so brilliantly successful. In research upon cancer, the liaison between experimental and observational investigation has been far less complete. The laboratory investigations of experimentally induced or naturally occurring cancers in animals other than man have in point of accuracy and sagacity attained a standard unsurpassed in any other branch of medical research.

As was pointed out in commenting on the matter last week, it is not certain that the method of frontal attack is that most likely to lead to the desired result. In the study of the etiology and pathology of cancer it is necessary to take the widest possible view, for the clue may come from biochemistry, cytology, or immunology, or possibly the study of invisible viruses. The notes on cancer research in various places in this country published last week (p. 947 et seq.) show that the need for this is generally understood. It will have been seen also that it is now more freely recognized that laboratory workers should receive greater assistance from the clinician and the vital statistician. Up to very recent times, this lack of support was inevitable, because the materials for an epidemiological or statistical investigation of the malignant diseases were meagre and imperfect. They are still far inferior to what can be had in some other branches of medicine, but it is now certain that differences of rates of mortality from particular forms of malignant disease which characterize several European nations are too great to be explained as mere variations of accuracy of record. That point having been established, and we think it has been established, the questions at once suggest themselves whether national differences of opportunity for resort to early surgical treatment are sufficient explanations or whether etiological significance attaches to differences of national habits of life. Answers to such questions, if unequivocal, would suggest possible lines of experimental investigation. Nature, as Lord Moulton once said, always answers the question the experimenter asks her—not the one he meant to ask, but the one he did ask. Such inquiries as we have indicated cannot solve the problem—or rather problems—of cancer, but are one way in which the experimenter can be helped to ask the right question. Plainly, the realization of these ideas, which, we believe, inspired the appeal published last week (p. 947), involves not only the availability of a large sum of money but also, as we have already pointed out, that of the best scientific advice in its allocation.

The following notes will serve to complete the account we gave last week of the institutions engaged in the investigation of cancer and its treatment.



## THE RADIUM INSTITUTE, LONDON.

The Radium Institute was opened at 16, Riding House Street, W.1, in August, 1911, and is, therefore, just completing its twelfth year of work. It owes its existence to the generosity of Lord Iveagh and the late Sir Ernest Cassel, and is possibly the most lavishly equipped radium institute in existence. It possesses both an out-patient and an in-patient department, operating theatre, chemical, physical, and pathological laboratories, photographic and x-ray departments. Its medical work is concerned chiefly with the treatment of inoperable and advanced cases of malignant disease in which there is no possibility of further surgical intervention. Much pioneer work has been accomplished in radium therapy, and the annual report furnishes a yearly record of the cases treated, the technique adopted, and the results obtained. A comprehensive and effective type of cross-indexing of all patients is used, which permits of immediate reference to any case or group of cases, and information as to the possible benefit to be derived from the radium treatment of any disease is readily given to any medical practitioner. Full records of all cases are taken, supplemented when necessary by photographs and microscopical sections.

During the past twelve months much has been done in the direction of intensive radium therapy. Certain patients suffering from diseases such as lymphatic leucocythaemia, and lymphosarcomata, are being subjected to intensive radiation with quantities of radium ranging from half a gram to two grams or more. The results so far obtained have proved distinctly encouraging, though much care has to be exercised in the selection of cases subjected to this form of treatment.

The Chemico-Physical Laboratory has initiated many modifications and improvements in the preparation and handling of radium emanation, and dispatches are made daily to all parts of the United Kingdom of radium emanation apparatus for the treatment of patients suffering from cancer, who are unable, for any reason, to come to the Radium Institute. A detailed clinical report of each case so treated is, however, submitted to the medical staff of the Institute before any apparatus is supplied, in order that the appropriate dosage, screening, and exposure may be determined. Numerous researches have been carried out in the Pathological Research Laboratory, the most notable being those on the blood changes induced by prolonged radium irradiation, which were largely responsible for the formation of the x-ray and radium workers protective committee.

Further, the pathological research department has been responsible for contributions to the study of the part played by the lymphocyte in the production of cancer immunity, and of the susceptibility of the mucosa of the alimentary canal to radiations, and the production of definite modifications in the power of its resistance to bacterial and other infections.

## EDINBURGH.

A considerable amount of detail work bearing upon the cancer problem has been done in Edinburgh during past years. For example, the work of Stiles some thirty years ago upon the lymphatics of the breast and axillary lymph glands was an important contribution to our knowledge of metastatic growths and greatly influenced surgical procedure in cancer. Work on the breast has been conducted recently by Mr. John Fraser by tracing the histological changes that take place in various physiological and pathological states of this organ with a view to establishing those that approximate most nearly to malignancy. An investigation of the nature of the cancer cell, from the morphological point of view, is being carried on by Dr. J. W. Dawson, histologist to the Royal College of Physicians' Research Laboratory. This research consists essentially in a comparison of the varying character of the morbid cell as found in different parts of a cancerous growth, in which the cells have arrived at various stages of maturity. Lieut.-Colonel A. G. McKendrick, superintendent of this laboratory, has investigated the question of house infection from

a critical standpoint, and his results were published recently in the *Edinburgh Medical Journal* (March, 1923); he has reached the conclusion that the cancer statistics at present available afford no evidence of contact infection, or of infection resident in particular houses. The most systematic research recently published on cancer in Edinburgh is that carried out by Dr. James Young (*Edinburgh Medical Journal*, June, 1922, and September, 1922, and *Journal of Pathology and Bacteriology*, vol. xxv, 1922, p. 151). A special organism has been obtained by this worker from a number of carcinomatous growths of human origin, and cultivated under partial anaerobic conditions in a weakly acid medium. It was used for inoculation of mice and other animals; in two cases carcinomatous tumours developed in the mice and in twelve large lymphomatous growths. A further study of the organism, made on behalf of the Medical Research Council in the Royal College of Physicians' Laboratory, showed that it belonged to the coli-typhoid group.

THE NEW BUILDINGS OF UNIVERSITY COLLEGE  
HOSPITAL AND UNIVERSITY COLLEGE.

## VISIT OF THE KING AND QUEEN.

THE King and Queen on May 31st laid the foundation stones of the new obstetric hospital and the new nurses' home attached to University College Hospital and opened the new Anatomy Building of University College. These extensions, as already fully explained in these pages, are the result of the gift of the Rockefeller Foundation, amounting to £835,000 for the purposes of the Medical School and £370,000 for those of the College.

In preparation for the royal visit a pavilion was erected over a portion of Huntley Street at the side of the medical school, and so skilfully contrived and decorated that it was difficult to imagine that the proceedings were taking place in the middle of a public thoroughfare, and that the stones on either side ready to be lowered into position represented the outer walls of two buildings above opposite pavements. Among those present were: The French and Italian Ambassadors, the Netherlands Minister, the Counsellor of the American Embassy (Mr. Post Wheeler) and the staff of the Embassy, and Dr. G. E. MacLean, director of the American University Union in Europe. The academic robes of the large audience indicated not only London but many other universities. The staffs both of the college and the hospital were in full attendance, the passages were lined by sisters and nurses, and at the entrance a guard of honour was formed by the medical unit of the University of London Officers' Training Corps. The controller of the ceremony, who merited high praise, was Dr. A. M. H. Gray, vice-dean of the medical school.

Their Majesties, who were attended by the Minister of Health (Mr. Neville Chamberlain), were received on arrival by the Duke of Bedford (President of the Hospital), the Princess Mary Louise (Chairman of the Nursing Committee), Sir Ernest Hatch (Chairman of the General Committee), Mr. H. J. Waring (Vice-Chancellor of the University of London), Viscount Chelmsford (Chairman of the University College Committee), and the Mayor of St. Pancras. A bouquet was presented to the Queen by the little daughter of Dr. Sidney Martin, physician to the hospital. The members of the committee and the principal members of the staff of the hospital and medical school were presented by Sir Ernest Hatch, and the Vice-Chancellor presented the Principal of the University (Sir Cooper Perry), the Provost of University College (Sir Gregory Foster), the Dean of the Faculty of Medical Sciences (Professor Elliot Smith), and others.

THE DUKE OF BEDFORD extended a formal welcome to the King and Queen, and Sir Ernest Hatch read an address, in which he recited the circumstances of the Rockefeller gift, whereby, he said, the hospital and medical school were enabled to provide 120 additional beds for the purposes of the medical and surgical units, and 60 beds for the new obstetric unit, with adequate provision for laboratories, including a special laboratory for biochemistry, and to build



and equip a new nurses' home to provide accommodation incidental to these changes. University College also was placed in a position to proceed with a scheme for the erection of new buildings for anatomy and the allied sciences of histology and embryology, and for the extension of facilities for teaching physiology and pharmacology. The medical school and college were deeply sensible of the responsibility which these gifts involved; but he considered their record in the past, both in training medical men and women for the service of the State, and in advancing medical knowledge and practice through scientific method, was sufficient to inspire confidence that the trust they had undertaken would be fulfilled. The increased accommodation would impose an extra financial burden on the hospital, but the service which it would render to the sick, especially in the department of obstetrics, would become so much more effective that the fullest reliance could be placed on those who upheld the voluntary hospital system to furnish the funds annually required.

#### THE KING ON MEDICAL EDUCATION.

THE KING, after expressing his and the Queen's pleasure in the occasion, went on to say that this was no ordinary extension of a hospital or college. The vast scale of the new development would in itself render it remarkable. There could be few instances on record in which any foundation had received £1,200,000 from a single benefactor in a single gift. The magnificent generosity of the Rockefeller trustees was the more impressive since it was bestowed by citizens of the United States upon a college and hospital in London, and thus upon the people of Great Britain and the Empire. The selection of University College, London, to receive this princely endowment was not merely a high and well deserved compliment, and the creation of another tie of sympathy and friendship with the United States, but it was also the evidence and declaration of the conviction of those responsible for the gift that the progress of science and the welfare of mankind were not delimited by national or racial boundaries. It was not only the magnitude of the endowment which lent importance to the occasion. The buildings were designed for new and far-reaching developments in the traditional organization of British medical education. The college and school had been selected by the Rockefeller trustees for their benefaction from among many distinguished institutions, partly because their situation was central and yet afforded room for expansion, and partly because the close connexion of the hospital and medical school with the college provided favourable opportunities for that intercourse between medicine and other branches of learning which was the surest defence against the evils of a narrow specialism. But he understood that the trustees were chiefly influenced by the establishment at the college of what had come to be known as the "unit system" of medical teaching, and, being convinced of the value of this reform, they desired to supply the resources for carrying it out in an English university on a scale worthy of its importance both to education and research. The essence of the unit system, as explained in the memorandum on medical education in England, recently published by the Ministry of Health, lay in effecting the closest possible correspondence between the science and the art of medicine, between research and education, and between theory and practice, and, as a means to this end, in placing the chief branches of medical education each under the direction of a head who was free to devote his whole time to teaching, research, and hospital practice. No appreciation could be too great for the devotion with which eminent physicians and surgeons had given, and were giving, their services to the treatment of hospital patients and the training of students. But the advance of knowledge and the ever-rising standard of medical education had necessitated reorganization, which would give impetus to the more effective training and equipment of the British practitioner, with corresponding benefits to the health, well-being, and happiness of the people. The underlying principle was as old as Ecclesiasticus: "The wisdom of a learned man cometh by opportunity of leisure, and he that hath little business shall become wise." Its specific application to medical teaching and research was new, in this country at all events. In conclusion, his

Majesty referred to the Queen's particular interest in the maternity hospital and the obstetric unit of which it formed a part, and also in the manner in which the claims of the nursing service had been considered in allocating the endowment. He added that the privilege of accepting this munificent gift of the Rockefeller trustees imposed obligations upon the staff to fulfil the ideals which it represented and upon the public to furnish the necessary support entailed. It was inconceivable that Englishmen should decline to welcome this generous challenge from our kinsmen across the Atlantic to a friendly rivalry in medical skill, devotion, and beneficence. He cordially wished god-speed to this great enterprise.

#### The New Obstetric Hospital and Nurses' Home.

Dr. G. F. BLACKER (dean of the medical school) requested the King to lay the foundation stone of the obstetric hospital, and Dr. Herbert Spencer (senior obstetric physician) handed to the King certain articles to be placed within the stone, including the programme of the day, a newspaper and coins, and the current edition of the Hospital Report, and Mr. George Hornblower (architect of the hospital) offered the trowel. The stone was lowered into place, and the King, after carefully using the maul and the level, declared it to be well and truly laid. A similar ceremony for the new building of the nurses' home was then performed by the Queen, Mr. Paul Waterhouse, the architect, offering to the Queen the trowel, which had a detachable handle which could be used as a parasol-holder, and was carved on one side after the coast-line of this country, and on the other after the coast-line of the United States. The inscription on both stones testified to the generosity of the Rockefeller Foundation.

#### The New Anatomy Building.

Mr. H. J. WARING (Vice-Chancellor of the University) then requested the King to open the new Anatomy Building, which he did by pressing a button. Mr. Waring also read a letter from Lord Rosebery (the Chancellor), who wrote that the gift of the Rockefeller trustees was a magnificent donation which, made soon after the conclusion of the great war, could not but emphasize the friendship which existed between ourselves and the United States. "No more substantial or welcome mark of this feeling could have been afforded, which we appreciate all the more in these days of difficulty. The object of the gift is the promotion of medical education and research, and our university is naturally gratified that it should have been chosen for the benefits of this splendid gift. . . . The choice of University College and of University College Hospital Medical School as the direct beneficiaries of the gift is in full accord with the scientific tradition that has obtained both at the college and at the medical school since their foundation in 1827. We shall long cherish the memory of this supreme occasion."

At the conclusion of the main ceremony a procession was formed to the main entrance of the medical school, and in the school library their Majesties recorded their names in the visitors' book. Then they proceeded across Gower Street, under a pavilion borne by students, to the Anatomy Building, the museum of which was first visited, and here certain further presentations were made, including the architect of the building (Professor F. M. Simpson), the contractor (Sir James Carmichael), the vice-dean of the Faculty of Medical Sciences (Professor J. P. Hill), the Jodrell Professor of Physiology (Professor E. H. Starling), and the dean of the Faculty of Science (Professor D. M. S. Watson). After taking tea their Majesties inspected the building, entering the large lecture theatre, the room on the first floor which is to be devoted to the history of medicine under the direction of Dr. Singer, and the periodicals room and library; descending to the basement, they visited the dissecting room, the prosectorium, and the x-ray rooms, where a demonstration was given. Some anatomical preparations by Professor Elliot Smith also engaged their Majesties' attention. The royal visit lasted altogether nearly two hours, and, on leaving, the King and Queen again expressed their delight in the occasion, and referred particularly to the success of the planning and equipment of the Anatomy Building.



# British Medical Journal.

SATURDAY, JUNE 9TH, 1923.

## CANADA AND THE ASSOCIATION.

UNTIL the establishment of the Irish Free State, Canada was not merely the largest both in area and population of the British self-governing Dominions, but geographically the nearest to our own shores. Discovered by John Cabot, sailing from Bristol in 1497, the territory of Canada became a possession of Great Britain 160 years ago, and for more than half a century her various provinces have been united under the title of the Dominion of Canada. This vast country, the eldest of the daughter nations, with an area not much less than that of Europe and a population of nearly nine millions, is connected with us by innumerable ties, and these were strengthened by the war. This is particularly true of Medicine. As is well said in an editorial article in the current issue of the *Canadian Medical Association Journal*, "One of the results of the great war seems to have been a quickening of the more or less latent regard which the Mother Country, and each of the self-governing Dominions, have always entertained for each other in respect of their medical professions. . . . The great war did more perhaps than has been recognized yet to establish between the medical services of the mother land and the outlying Dominions that foundation of acquaintanceship and mutual respect upon which, if once it be laid, there tends to rise automatically a comely superstructure of active fraternity and goodwill. So that we are not surprised to find that within the last year or two the parent society, the British Medical Association, has arranged a greatly extended and more close relationship with the profession in New Zealand, Australia, and South Africa, as well as in the smaller British communities dotted all about the Seven Seas."

The same issue of our contemporary contains a letter from Dr. Alfred Cox, Medical Secretary of the British Medical Association. He expresses the regret felt by the parent body at the gradual loosening of the ties between our brethren in Canada and ourselves, and asks the Canadian Medical Association whether steps cannot be taken which would provide in some way for a continuing bond between us. In this letter Dr. Cox has managed to convey the feeling that underlies the two short paragraphs numbered 76 and 77 in the last Annual Report of Council, which refer to the possibility of devising such a link between the two Associations as, while strong in sentiment and mutual aid, would in no way fetter the autonomy of either body (SUPPLEMENT, April 28th, p. 132).

The desire for a renewal of friendly co-operation between the medical professions of Canada and the mother country is felt keenly by all who remember the Annual Meetings of the parent body held at Montreal in 1897 and at Toronto in 1906—the only occasions in ninety years on which the British Medical Association has met outside the British Isles. The war brought many of our Canadian colleagues and ourselves into very close touch, and we shall always remember their share in the work of the medical services of the Empire. In its efforts to maintain contact with the Dominion Branches the parent Association has never hampered the way in which they choose to conduct their own affairs; freedom in unity has been the working ideal. Bearing all this in

mind we ask, with Dr. Cox, Is it really inevitable that the bond between the Canadian Medical Association and ourselves shall become less close and finally disappear? We profoundly hope not, and we agree with him that, if our desire is reciprocated in Canada, the most practical way of getting something done is to open up communications between representatives of both sides, meeting informally. The qualities needed in representatives would be a willing mind, an accommodating disposition, and a sufficient knowledge of the constitution and internal working of the Association represented.

The attitude of Canadian practitioners may perhaps be gauged by the replies received to a set of questions lately sent out to the profession at large by the Associate Secretary of the Canadian Medical Association. One of the questions asked was whether an invitation should be sent to the British Medical Association to meet again in Canada, perhaps in 1926. Of 1,328 replies received, 28 said no, 1,227 said yes, and 73 left this particular point unanswered. It is expected that the question will come up at the annual meeting of the Canadian Association to be held next week in Montreal.

Rather than comment further upon a matter in which we feel strongly, we prefer to quote again from the sympathetic editorial article in the *Canadian Medical Association Journal*. The reasons for some form of affiliation between the Canadian and British Medical Associations, it says, "lie upon the surface, and like the bonds of Empire may be found to be all the stronger because sentimental. No close and binding arrangement involving much additional financial responsibility or any impairment of local autonomy, could be desired by either body. But an official connexion with the British Association and through it with the professions of the other Dominions has in it a great appeal to the imagination."

## THE UNITS OF A WHOLE.

THE KING, when he laid the foundation stones of the new obstetric building and the new nurses' home of University College Hospital, and opened the new Anatomical Institute of University College, performed, as head of the State, acts which had two aspects. In the one aspect his presence, accompanied by the Queen, was the national summing-up of all the expressions of gratitude the Rockefeller Foundation has received since its magnificent gift to University College, and the Medical School and Hospital associated with it, for the advancement of medical education. In the other aspect it was evidence of the King's interest in hospitals, and his recognition of the fact that one of the functions of a large hospital is to train medical students and to maintain a high standard of medical education, which, in these days, can only be attained by bringing clinical work into close and habitual relation with the departments of biological research upon which medicine relies. University College, the Medical School, and the Hospital, are constitutionally separated in a rather bewildering manner, but looking at them from the outside it may be seen that a very complete school of the preliminary, the intermediate, and the advanced subjects has been brought together, if not within a ring fence, at least in physical contiguity, and that a degree of co-operation is being achieved which will ensure to student and teacher the skilled assistance needed at the many points where the various subjects come into contact. There are already at work in the Medical School and the Hospital two units—medicine and



surgery—and the addition to the hospital of a large obstetric department will make it possible to complete the third element.

The London clinical units were founded in 1919 and 1920, with money provided by the University Grants Committee, on lines suggested by Sir William Osler and others, for two purposes—partly to encourage discovery in medicine, and partly to quicken the apprehension of students by contact with the "growing points" of the science. All universities except London had professors of medicine already, but it is matter of common knowledge that in the past, though they were excellent physicians of the usual hospital stamp, they were not wantonly prolific in discovery.

The Grants Committee prescribed that the directors of the units should be professors in the University, and the University made an innovation by insisting that they should surrender private practice. The same rule has been adopted in one or two other universities here and in one or two in America. It obtains nowhere else. The monastic life has certain obvious advantages, but also certain drawbacks, and it is a good thing that other experiments are being tried. Many men will refuse to make the sacrifice, but there is a race growing up in the units themselves to whom the academic life will make a greater appeal. We cannot yet tell which will be the more satisfactory plan. The question will provide its own answer in time.

These foundations, however, made a considerable stir, and led to a considerable amount of reorganization and improvement even where no formal change was made in the condition of the professoriate. There has been a general tendency, first, to study the old methods of medicine more closely as well as the newer, and secondly to bring the anatomist and physiologist into more active co-operation with the clinical education. The London units have turned out a considerable body of original work in these three years; they have formed centres round which collect all the young graduates, whether home-bred or foreign, who wish to carry on their studies; they have influenced the general body of students by classes and demonstrations; and their clerkships and dresserships have been sought by the best, since they both demand and give facilities for a somewhat higher and more elaborate standard of work. They are thus no doubt breeding the future staff of the hospitals, and are at the same time affording a good training ground for clinical teachers.

There is probably no subject on which men so readily drop into catch phrases as that of education. A year or two ago "to bring physiology into the wards" was the accepted cry, and now the demand is "to teach the beginnings of disease." Both are excellent aims, but whereas the former requires young teachers who have but lately quitted the laboratory, the latter requires ripe experience. It is some comfort to reflect that both have been the object of teachers of medicine ever since medicine has been taught. It may be confidently predicted that they will not be neglected in the future.

### THE VIENNA REPORT ON RICKETS.

*Studies of Rickets in Vienna, 1919-1922*, just published, and of which an abstract appears elsewhere in this issue (p. 987), is a document of more than ordinary interest and importance. It is essentially a clinical study; it touches important points of scientific matters which have recently been the subject of

laboratory experiments; it deals in an authoritative way with the prevention, early diagnosis, and treatment of rickets. It is a report that especially concerns the practitioner and those engaged in child welfare work, and it is worth while considering some of its main conclusions.

The Vienna investigation of rickets may be described as a hospital study of early rickets. A large group of young infants were observed for many months, and under very exactly controlled conditions of diet and environment; these children were free from rickets on admission; in those who developed the disease there was an unusually exact knowledge of the conditions of food and hygiene. The broad results of this study of rickets in hospital wards were that the disease, on the strict test of the radiograph, never developed from May to December; that in the intervening winter months (January to April) seventeen cases of rickets developed in a group of children fed on sweetened cow's milk without cod-liver oil; that in twelve of these cases the radiographic diagnosis was made at or under seven months of age; that in winter a large group of infants fed on dried milk and given cod-liver oil remained free from rickets. These results confirm previous investigations, both clinical and experimental, which have indicated the pre-eminent value of sunshine and of cod-liver oil in the prevention of rickets, even in children whose defective diet predisposed them to the disease. A further series of observations of breast-fed babies, under less satisfactory hygienic conditions, showed that rickets, clinically diagnosed, was common in winter and not rare in summer; and that here cod-liver oil, while of great value, was not a complete prophylactic.

The controversial question of the vitamin theory of rickets is left by the Vienna investigation pretty much as it was. The cow's milk used, both fresh dairy milk and dried milk, in the controlled diets, was poor in the fat-soluble growth vitamin A, as were also the human milks tested. Not much advance is likely to be made until a more satisfactory test of vitamin content than the present biological one is discovered. Meantime the significant fact remains that cod-liver oil is, of all substances, the richest in its content of fat-soluble vitamin A, and that at the same time it is, apart from light, easily the most potent agent for the prevention and cure of rickets.

Of the two agents—light and some unknown element in milk—light would appear the more important prophylactic, and Francis Glisson's old association of rickets with moist and foggy climates now appears as a shrewd guess that hit the very truth. It is interesting to reflect that the winter incidence of rickets in the northern hemisphere, which has now been established both in America and Continental Europe, is less marked in Great Britain and Ireland. That may be ascribed by critics this year to the absence of summer here; but, on the other hand, our milder winter season permits much more life and movement out of doors than in Continental climates. We may also remember Charles II's praise of the English climate as the finest in the world, allowing as it did a man to be in the open air "more hours of the day and more days of the year" than in any other country. If it is true that light is the best protection against rickets, we have certainly, in the mildness of our winter season, a better opportunity of taking full advantage of it than in the rigorous winter of Vienna and New York. Without a sufficient exposure to radiant light it is probable that even good human and cow's milk have a narrow margin of safety, and may permit that disturbance of the delicate machinery of



calcium metabolism which is the essence of rickets. The important practical lesson of this report is that there are two sure weapons in the prophylaxis of rickets—light and cod-liver oil; but that the surer of them is light.

The report contains a good deal about the familiar clinical stigmata of rickets, craniotabes, cranial bossing, the rickety rosary, and enlarged epiphyses at wrists and ankles. As these clinical signs were nearly always verified by radiographs, and sometimes by histological evidence (the really infallible test of bony rickets), and as there was a great opportunity of observing the earliest stages of developing rickets, these observations are of the greatest value and interest to the practitioner. Dr. Dalzell and Dr. Mackay imply that craniotabes was the earliest sign of rickets in Vienna; and it should be remembered that the majority of their cases, on the radiographic standard, occurred at or under the age of seven months. But craniotabes—a softening of the outer ends of the occipito-parietal sutures—was often observed between three and five months. Not only was it an early sign, but its persistence indicated that the disease was progressing. On the other hand, in older infants—nine months and onwards—it might be absent and yet definite rickets might be present elsewhere. The rickety rosary was a less early sign, and seldom seen before the age of five months; and here there was a possibility of confusion with slight normal beading, and with more definite enlargement produced by scurvy; in a series of histological investigations, however, the great majority of the cases of marked rickets were rachitic. Cranial bossing was of small value in diagnosis. Enlargement of the wrists and ankles seldom occurred before the end of the first year, and radiographic diagnosis could be made long before clinical enlargement could be verified. If these characters of rickets in Vienna are true also for this country, we have in them useful guidance for the clinical diagnosis of early rickets. Under six months of age the sign would be craniotabes with or without cranial bossing; after six months there would be added a marked enlargement of the costo-chondral junctions. The period of infancy at which rickets develops is of importance, for at different ages the criteria of diagnosis will change, and rickets will manifest itself in those parts of the bony skeleton which at the time are growing most rapidly. The observations in the report on craniotabes and the rickety rosary are important, and deserve the attention of the profession in this country. They indicate that rickets may frequently affect infants at an earlier period than has hitherto been recognized; and that in this early stage it may be diagnosed clinically in the skull and thorax with reasonable probability, before radiographic evidence can be obtained of rickets in the bones of the limbs.

#### THE GENERAL MEDICAL COUNCIL.

THE first act of the General Medical Council when it assembled last week was, by acclamation, to re-elect Sir Donald MacAlister, K.C.B., Principal and Vice-Chancellor of the University of Glasgow, to be for the fifth term President of the Council. It was a foregone conclusion, for the ability and impartiality with which he has discharged the duties of the high office are known to all. Under his control the work is so thoroughly prepared for the Council by the Executive and other committees that the sessions are shorter than they were, so that we hear no more of what at one time threatened to be a serious financial crisis. The session of the Council lasted five days,

and was mainly occupied with the consideration of disciplinary cases, but it dealt also with the important matter of certain forms of advertising and canvassing by medical men, raised by Dr. Bolam at the November session. The Executive Committee reported that it had considered the matter in consultation with the Council's legal advisers, and submitted a revised form of paragraph 5 of the existing warning notices. Dr. Bolam introduced what we believe to be a new term when he spoke of the practices to which objection was taken as "prepared publicity." Sir Jenner Verrall said that it was important that the Council should be able to deal with slight infringements of this nature, which called for warning rather than penalty, and both agreed that the revised notice met the case. Professor Harvey Littlejohn observed that it would be an advantage if the attention of final year students could be called by teachers to the Council's warning notices; he had himself taken care that students in his charge were fully acquainted with them. The President said that many other teachers already made a practice of applying for copies, and that every practitioner received a copy of the warning notices along with his certificate. Another warning notice, with regard to dangerous drugs, was accepted without discussion; both notices will be found in full in the report of the proceedings of the Council published in the SUPPLEMENT this week. By putting down a motion, which he eventually withdrew, Mr. Turner elicited some interesting information with regard to the exact meaning to be attached to the phrase sometimes used by Government departments that "regulations have been approved by the General Medical Council"; the phrase was used recently in connexion with the Dangerous Drugs Regulations, which were eventually withdrawn and modified. The General Medical Council is constitutionally a committee of the Privy Council, and it is rather surprising to learn that it has not got the right to call for advance copies of any proposed regulations or legislation affecting the medical profession. Apparently the form in which a Government department may request the advice of the Council may greatly restrict the power of the Council to give an effective opinion. Moreover, the Government department appears to claim the right to ignore advice tendered by the Council, its Executive Committee, or its President, as the case may be, and the regulations as finally issued may neither correspond to the draft submitted to the Council nor embody emendations suggested by it, although eventually the Government department concerned may claim that it has the approval of the General Medical Council. But, as the President observed, a Government department in a difficulty will use any argument. The discussion disclosed a defect in constitutional proceedings which ought to be remedied, but perhaps legislation by regulation has now fallen so much out of favour that this particular abuse of administrative power may not for the present recur. As has been said, the greater part of the time of the Council was occupied in the consideration of disciplinary cases, which, together with the decisions of the Council and the observations of its President on each, are or will be reported in the SUPPLEMENT. It will be observed that four of the eleven cases heard had to do with laxity or impropriety in certification, a duty which members of the profession cannot be too punctilious in performing.

#### THE WALLER MEMORIAL.

THE proposal to establish a permanent memorial to the Wallers will be welcomed by everyone who knew them. Augustus Waller was not only a physiologist of uncommon originality, among the first to blaze a path into several unexplored territories, but was also a most fascinating personality, a brilliant if erratic talker, with an enviable



faculty of making friends. His wife, who with complete self-forgetfulness ably helped in all his physiological work, possessed a gentle spirit which was the perfect complement of her husband's fiery temperament. She, too, had the faculty of making friends, and knew how to grapple them with hoops of steel. Their house in St. John's Wood, where was a large room with a table which contrived a double debt to pay, being convertible by the letting down of a counterpoised top from billiards to physiology, was always open to all physiologists, young and old, and the man or woman who went there was sure to return. Professor Sir Edward Sharpey Schafer was in the chair at a meeting held at the Royal Society of Medicine on June 1st, where the plans of the promoters of the memorial were made public. It was appropriate that he should preside, for he had watched the whole of Waller's career from a time before he began to teach physiology at the London School of Medicine for Women, and had known Mrs. Waller while she was yet a student there. Waller's great characteristic, he said, was a love of truth and hatred of humbug; his physiological work was extraordinarily original and always accurate, even when working over new ground. Mrs. Waller, a sympathetic friend and her husband's perfect helpmeet, having the keenest interest in his work, yet took her domestic place as wife and mother. It was impossible to think of one without the other, and in death they were not divided. Mrs. Waller, who had become seriously ill before her husband's death, survived him for only a few months. Professor Starling proposed a resolution to the effect that, in view of the life-long devotion to scientific research of Dr. and Mrs. Waller, and their connexion with the London School of Medicine for Women, the memorial should take the form of a research fund to be administered by the council of the school. He enumerated as the chief achievements of Waller his work on the electromotive changes of the heart, on the "characteristic" of muscle and nerve, and on the electromotive phenomena associated with psychical processes, as fundamental advances in physiology, which broke fresh ground and opened up new lines of investigation. His work would endure. It might be asked why a man who had contributed to the eternal fabric of science needed any other memorial. The answer was that those who remained desired some tangible memorial and reminder of their association with the Wallers in their great work. The motion was seconded by Miss Aldrich-Blake, Dean of the London School of Medicine for Women, who referred to Mrs. Waller's continuous interest in it, and by Miss Edgell, who had worked with Waller in the Physiological Laboratory of the University of London; she spoke particularly of Mrs. Waller's interest in education and her long period of service on the council of Bedford College. The resolution was carried unanimously. Professor W. C. Cullis and Professor J. S. Macdonald were appointed honorary secretaries, and Dr. J. A. Mellanby honorary treasurer. To him subscriptions may be sent at the Sherrington School of Physiology, St. Thomas's Hospital, S.E.1.

#### OCTOCENTENARY OF ST. BARTHOLOMEW'S HOSPITAL.

THE eight hundredth anniversary celebrations of the foundation of St. Bartholomew's Hospital began on Tuesday morning with a service at the Priory Church of St. Bartholomew the Great. The lesson was from Ecclesiasticus xlv, 1-15, and special thanksgivings were offered for Rahere, founder of the church and hospital, and for all who followed him in ministering to their fellow men. A special collect was adapted from the service in commemoration of founders and benefactors in the Latin Book of Common Prayer, issued in the year 1560, for use at

Oxford and Cambridge, and at Eton and Winchester. This was followed by an eloquent address by the Bishop of Chester, one of the sons of Sir James Paget. The next ceremony was held at noon in the hospital quadrangle in the presence of a large gathering. After a fanfare of trumpets, Canons Regular of St. Augustine, in the vestments of their Order, walked in solemn procession round the square singing the Latin hymn in honour of their patron saint; halted before the fountain to commemorate, with praise to God, the founding of St. Bartholomew's Priory by Canons Regular of St. Augustine near that spot in 1123; and retired chanting the 67th Psalm. A herald advanced and read, in ringing tones so that all could hear, a proclamation, declaring by command of the President, the Lord Mayor, and the Treasurer and Governors, that the ceremonies to mark so unique and auspicious an occasion should forthwith begin. Three episodes in the history of the hospital were then represented with excellent effect under the direction of Mr. Robert Atkins, to the sound of fanfares and other music by the band of the Welsh Guards. The first episode showed the return of Rahere from his pilgrimage to Rome, and his meeting with Richard, Bishop of London; the second showed the presentation by Henry VIII in 1544 of a Charter to the Lord Mayor and Commonalty of the City of London restoring to the hospital the lands alienated on the dissolution of the monasteries in 1537; the third illustrated the work of the hospital to-day and its war services. The figure of Rahere was admirably represented by Mr. Harvey, and Mr. Arthur Bourchier's Henry VIII was appropriately regal and haughty. The pageant was performed under a leaden sky, but no rain fell, and the sun smiled upon the later proceedings. After attending a luncheon party at the Mansion House the Prince of Wales, President of the hospital, visited the Guildhall to receive addresses from delegates representing the Archbishop of Canterbury and Bishops of the Church of England, the Universities of Great Britain and Ireland, the Universities of the Dominions and India, Universities of the United States, and the Learned Societies of Great Britain and Ireland and of America. The senior alderman welcomed the delegates on behalf of the Lord Mayor, whose recent injury prevented his attendance. Lord Stanmore, treasurer of the Hospital, presented to His Royal Highness a commemorative gold medal, and the Prince of Wales presented commemorative medals to the treasurer, to the chairman of the Octocentenary Grand Committee, Sir John Baddeley, and to Lord Bearsted to give to the Lord Mayor. The delegates—some sixty-five in number—then in turn mounted the dais and handed their congratulatory addresses to His Royal Highness. Next, brief messages were spoken by the Bishop of Worcester on behalf of the Church, by Sir Archibald Garrod on behalf of the home universities, by Sir Walter Fletcher on behalf of the learned societies, and by two other delegates, one (Dr. Alexander Primrose, of Toronto) chosen to represent the universities of the Dominions and India, and one (Dr. William Henry Welch, of the Rockefeller Institute and the Johns Hopkins University) representing the universities of the United States. The picturesque ceremony ended with an address of acknowledgement and welcome read by the Prince of Wales. The celebrations are being continued throughout this week.

#### MILK PROSECUTIONS.

LAST August we had occasion (vol. ii, p. 325) to comment adversely on the advice given by the Ministry of Health in Circular 325 with regard to the conditions under which prosecutions should be instituted in cases where adulterated milk samples had been obtained by local authorities under the Sale of Food and Drugs Acts. The circular was



understood by local authorities, in most cases county and borough councils, to direct that they should not prosecute a milk vendor found to be selling adulterated milk unless after examination of several samples he was found habitually to be adulterating his milk. From the point of view of the local authority this tended to render milk sampling under the Acts practically useless, and many local authorities have felt that if this were the intention of the Acts money spent on milk sampling would be wasted. Fortunately the present Minister of Health, who is a past Lord Mayor of the city of Birmingham, has had the good sense, no doubt as a result of his municipal experience, to see the hopeless position in which the local authority would have been placed had Circular 325 been acted upon. He has accordingly withdrawn Circular 325, and gives the following decision in Circular 399, dated May 16th, 1923: "From information which he has had before him it is evident that this Circular (325) has been widely misunderstood and to some extent misrepresented, with the result that it has not produced the effect which was intended. In the circumstances he has decided to withdraw the Circular, feeling that he can rely on the responsible local authorities to administer the Sale of Food and Drugs Acts with due fairness and consideration to the various interests concerned." This decision will be welcomed by all public health administrators; it should be regarded as evidence that in this matter the professional advisers of the Ministry have been consulted, and that their advice has been acted upon. Mr. Neville Chamberlain is to be congratulated upon the course he has followed.

#### SPIROCHAETES AND BLACKWATER FEVER.

LETTERS have been received from Dr. J. Gordon Thomson, Director of Protozoology, London School of Tropical Medicine, who is at present in Rhodesia investigating blackwater fever, in which he mentions that he has examined for spirochaetes the blood of six patients suffering from this disease. He adopted the method of triple centrifugalization of the blood used by Blanchard and Lefrou (1922), but so far has been unable to confirm their results or to demonstrate spirochaetes of any description. Examination of specimens with dark ground illumination, however, showed numerous fine threads or filaments, varying in length and thickness and possibly derived from the blood platelets, which simulated spirochaetes very closely indeed. Dr. Thomson has also attempted to make cultures—chiefly on Noguchi's medium—of any spirochaete which might be present, but his results have been negative. Inoculation of guinea-pigs has also failed to produce evidence of the existence of a spirochaete. Again, he makes mention of the fact that relapsing fever is fairly common among the native population, and that acute infective jaundice undoubtedly occurs, so it is quite possible that either of these diseases might be superimposed on an attack of malaria or blackwater fever. So far as he has gone Dr. Thomson is inclined to the view that blackwater fever is a manifestation of chronic malaria, and is due to some obscure haemolytic phenomenon caused by repeated attacks of malignant tertian malaria. In the parts of Rhodesia where malaria does not exist there is no blackwater fever, and, conversely, in the areas where malaria is prevalent blackwater fever is common.

#### WATER POISONING.

DR. J. S. HALDANE, F.R.S., who is director of the Mining Research Laboratory at Birmingham, has communicated to the Royal Society a paper by Mr. K. N. Moss on some observations made in that laboratory on the effects of high temperature and muscular exertion

upon colliers. They relate to the consumption of food and of oxygen, and to certain results of the profuse sweating induced. The mean daily energy value of the food consumed by the colliers investigated was 4,712 calories. Men working in hot mines consumed more food, and a larger proportion of salted food, than men working in cool mines. The oxygen consumption per minute in various kinds of work at the face by an efficient collier varied from about 1,300 c.cm. to 2,000 c.cm. In persons not acclimatized to heat the maximum amount of sweat lost per hour was about 1.4 lb., whereas in a collier accustomed to work in a hot place the maximum loss was 5½ lb. The actual loss per shift was obtained for a number of colliers. The sweat was found to contain about 0.2 per cent. of chloride, and the loss of chloride during a shift was very considerable. Men working in hot mines, at iron furnaces under certain conditions, and as stokers in ships, especially in the tropics, suffer greatly from a sensation of thirst, which appears to be in part due to a physical drying of the mucous membranes of the mouth and throat. They are therefore induced to take large quantities of water—so large as to be in excess of the real requirements of the body. They are subject to attacks of cramp, which they speak of as miners' cramp or stokers' cramp. The cramp is referred by the author and Dr. Haldane to a form of water poisoning of the muscles brought about by the combination of great loss of chloride by sweating, excessive drinking of water, and temporary paralysis of renal excretion.

#### HEALTH INSURANCE PROBLEMS IN AMERICA.

SINCE health insurance became a matter of State concern in Denmark, Germany, and Britain it has received much attention on the other side of the Atlantic, and in an essay lately issued<sup>1</sup> an American writer, Mr. Gerald Morgan, has discussed various aspects of the subject. His object is to arrive at a conclusion, or at least a judgement, as to what is best for his own country, and as an aid to this he passes in brief review what he understands to be the position in the European countries mentioned. As regards this country, however, his information is so incomplete and out of date and one-sided as to make comment needless. To Americans the essay will not give a correct representation of the position. While there is plenty of room for wide difference of opinion as to the merits and demerits of the British health insurance system, the writer, through lack of knowledge, does not give material on which his readers can form an unbiased judgement of their own. The later chapters of the book, however, are of real interest to students of health insurance. The author concludes that cash benefits should be entirely separated from medical benefits, because the contributions required for the former are actuarially calculable, while the cost of adequate medical benefit is bound to increase with advancing knowledge, so that even people above the wage-earning class cannot always be expected to be able to afford it. Cash relief, therefore, he holds, should be provided by insurance, while medical benefit should be State-aided for all concerned. He discusses two bills which have been before the legislature of the State of New York, one a Health Insurance Bill of 1920, and the other a Health Centre Bill of 1921; neither of them has yet become law. The second scheme in various respects brings to mind the interim report to Dr. Addison in 1920 by the Consultative Council on Medical and Allied Services. It is striking in respect that, as compared with the health insurance system in this country, it begins just at the opposite end, with hospitals, sanatoriums, dispensaries, laboratories, public health, nursing, periodical medical examination independently of illness, and the provision of

<sup>1</sup> *Public Relief of Sickness.* By Gerald Morgan. London: George Allen and Unwin, Ltd. 1923. (Crown 8vo, pp. 195. 7s. 6d. net.)



consultants and specialists. That is where it begins, and that is where it ends; it never gets down to the general practitioner, who as such seems outside of it, payment for his services being left to private arrangement between him and his patient, though the practitioner may in addition find a part-time place in the local health centre. Such centres would be established in suitable localities, and the cost would be borne by the State to the extent of about 25 to 35 per cent., and partly by the municipal authorities, while patients would contribute according to their means. Even in the United States, however, economy in public expenditure seems to have become an acute question, and, as already pointed out, the New York bill has not so far become an Act. The author considers various questions which would probably arise were the bill passed; they include the establishment of centres, the adequacy of treatment, and the relation of a centre to the patient, the doctor, and the taxpayer. The essay, in spite of its defects, is well worth perusal by those interested in the problems of medical sociology, which occupy so much attention in the present day.

#### ALMONER'S WORK.

THE annual report of the Samaritan Fund and the Lady Almoner's Department of St. Thomas's Hospital for 1922 contains an interesting account of the social service work of the hospital. The social service office was opened first in the casualty department, but in 1909 its work was extended to the wards with the assistance of trained workers supplied by the trustees of the Northcote Trust. The lady almoner rejoices in the "reproach" that is sometimes heard that "St. Thomas's Hospital makes a fetish of social work"; and her report certainly justifies her attitude. The work began with the appointment of an almoner to help the out-patients to carry out the recommendations of the medical staff, to arrange for convalescence, to raise funds for the urgent needs of the patient, as well as for the subsidiary purpose of directing patients ineligible for hospital treatment to suitable medical centres. As the work extended the governors placed the Samaritan Fund in the almoner's hands, so that its distribution might be based on an intimate knowledge of the patient's home circumstances. In the casualty department patients are sorted out, and many are returned to their panel doctors. Assistance, social advice, or financial help is given to convalescents. In the special departments for out-patients much work is done in supplying instruments, visiting and reporting on homes, keeping up attendances for physico-therapy, sending the district nurse to babies with ophthalmia, and so on. Work is done in connexion with a speech centre, a Northcote Trust hostel for women with venereal disease, and the tuberculosis department. Patients who have left the wards are followed up, and for this purpose the Northcote Trust office keeps a register of all cancer patients. The records of the lady almoner's office in maternity cases for the last ten years have been used in a special research for the Medical Research Council on the effects of maternal conditions and nutrition upon birth weight. From a perusal of the report the treasurer of the Samaritan Fund's pride in the thoroughness and efficiency of the lady almoner and her staff seems fully justified.

THE prizes at the London School of Medicine for Women were presented on June 1st by H.R.H. Princess Mary, Viscountess Lascelles. Miss Aldrich-Blake, Dean of the School, said, in an introductory address, that since the foundation of the school nearly fifty years ago more than 1,000 students had gone through it, of whom some 700 were at work in the United Kingdom and the rest in India, China, and the Dominions. Princess Mary subsequently took tea with the Dean and other members of the teaching staff, and afterwards the seven students who had taken the chief honours were personally presented to her.

#### BIRTHDAY HONOURS.

THE birthday honours list issued on June 2nd, in anticipation of the King's birthday on June 3rd, contains the list of honours the King has conferred on the recommendation of the authorities of the Navy, Army, and Air Force, of the Colonial and Foreign Offices, and of the Government of India.

##### K.C.B. (Military).

Major-General Owen Edward Pennefather Lloyd, V.C., C.B. (ret. pay), Colonel Commandant R.A.M.C.

##### C.B. (Military).

Surgeon Rear-Admiral Joseph Chambers, C.M.G.  
Colonel Walter Holland Ogilvie, C.M.G., I.M.S., Assistant Director of Medical Services, Presidency and Assam District, India.

##### Knighthood.

Dr. Hector W. G. Mackenzie, Consulting Physician to St. Thomas's Hospital, and a member of the Board of Examiners for the I.M.S.  
Professor William J. Ritchie Simpson, C.M.G., member of the Colonial Advisory Medical and Sanitary Committee.

##### C.M.G.

Dr. David Alexander, Director of Medical and Sanitary Services, Gold Coast Colony.

The Rev. Robert Laws, D.D., M.D., Principal of the Livingstonia Mission, Nyasaland Protectorate.

##### C.I.E.

Lieut.-Colonel Asher Leventon, Indian Medical Service, Superintendent, Campbell Medical School and Hospital, Bengal.

Lieut.-Colonel Thomas Hunter, Indian Medical Service, Civil Surgeon, Lucknow, United Provinces.

Lieut.-Colonel Robert McCarrison, Indian Medical Service, Medical Research Department, India.

Major David Patrick Johnstone, O.B.E., Surgeon to his Excellency the Governor of Madras.

##### M.V.O. (Fourth Class).

Henry Linnington Martyn, F.R.C.S.  
Frederic Jeune Williams, M.R.C.S.

##### O.B.E. (Military).

Major and Brevet Lieut.-Colonel Ralph Bignell Ainsworth, D.S.O., R.A.M.C.

Lieut.-Colonel Gerard Irvine Davys, M.D., I.M.S.  
Flight Lieutenant Christopher Thomas O'Neill, M.B., R.A.F.

##### O.B.E. (Civil).

Captain Thomas John Hallinan, R.A.M.C., M.O.H. Basra.  
Eldon Harvey, Medical Superintendent of the Lunatic Asylum and Health Officer, Western District, Bermuda.

Dr. Benjamin William Quartey-Papafio, Member of the Legislative Council of the Gold Coast Colony and formerly Assistant Colonial Surgeon.

##### M.B.E.

Captain Antonelli Francisco Bartholomeu Saldanha, I.M.S.  
Sardar Bahadur Divan Singh Duggal, Civil Surgeon, Punjab.  
Dr. Agnes Henderson (Central Provinces).

#### THE ETIOLOGY AND PREVENTION OF RICKETS.

OBSERVATIONS IN VIENNA BY THE BRITISH MISSION. Special Report Series, No. 77,<sup>1</sup> of the Medical Research Council, just published, gives the final and complete account of the investigations on rickets in Vienna, carried out from 1919 to 1922 by Dr. Harriette Chick and her colleagues under the auspices of a special joint committee of the Medical Research Council and the Lister Institute. It is, perhaps, the most complete study of human rickets from the side of prophylaxis that has ever been undertaken; and it is in the addition to our knowledge of those conditions of diet and environment that will prevent rickets that the greatest value of the report lies. But it also gives a careful description of the early clinical signs of rickets, controlled by radiographs of the bones, which constitutes a really important contribution to the diagnosis of the disease.

The appearance of this scientific clinical study of rickets is a counterpoise to the great mass of work on experimental rickets in animals in recent years, and may, perhaps, settle some points of controversy that have emerged from these laboratory investigations. Indeed, the first object of the Vienna inquiry was to investigate the influence of diet in the production of rickets, and especially with regard to the fat-soluble antirachitic vitamin of Mellanby; and only later was the scope of the inquiry broadened by the consideration

<sup>1</sup> Medical Research Council. Special Report Series, No. 77. *Studies of Rickets in Vienna, 1919-1922. Report to the Advisory Food Factors Committee of the Medical Research Council and the Lister Institute.* By Harriette Chick, D.Sc.; Elsie J. Daryll, M.B.; E. Margaret Hunter; Helen M. Mackay, M.D., M.R.C.P. (Brit. Memorial Fellowship); H. H. Smith, M.B.; Hans Wimbarger, M.D.; and M. Tarr, M.D. London: H.M. Stationery Office, 1923. (250 pages; 12 plates, and numerous charts and figures. 7s. 6d. net.)



of the various factors of environment and especially of sunlight.

Rickets was specially rife in Vienna after the privations of the war. The investigators were fortunate in being able to work in the University Kinderklinik under Professor Pirquet, where eventually sixty cots were allotted to them, in two separate hospitals, but under the same conditions of good hygiene and an altogether exceptional system of diet control. The fully organized investigation extended from November, 1920, to July, 1922; it consisted of a prolonged observation of some seventy young infants (the period of observation in most cases varied from six months to a year). They were the babies of poverty and the slums, and on admission the majority were in poor condition. They were all bottle-fed, and on one of two diets. Diet I consisted of the fresh undiluted milk of stall-fed cows, sterilized, and supplemented by large amounts of cane sugar; after 5 months of age, cooked starch was added as semolina and potato. Diet II was a full-cream dried milk, reconstituted by the addition of water, sometimes supplemented for young infants by addition of sugar, and at 6 months by addition of semolina, and at 9 months by potato. It was expected that this dried and tinned milk, obtained from grass-fed cows, would be richer in fat-soluble vitamin than Diet I; but actual experiment with rats showed that it had a low value in fat-soluble A, and in this respect was no better than the winter milk of the Vienna cows. Every infant on Diet II received also a daily ration of cod-liver oil, up to one and a half drachms daily of the pure oil, given in emulsion; so that Diet II, so supplemented, was notably richer in fat-soluble A than Diet I. Apart from their content in fat-soluble vitamins, the two diets differed in the proportions of organic constituents, expressed as percentages of the total calories, as follows:

Caloric Percentage.

	Protein.	Fat.	Carbohydrate.
Diet I ...	13	28	59
Diet II ...	20	45	35

The high carbohydrate content of Diet I and its lower content of protein and especially of fat will be noted. The caloric value of both diets was high; in both this exceeded the standards of Heubner and Holt; that of Diet I was 5 to 10 per cent. higher than Diet II, this being due to the heavy proportion of cane sugar in it. These diets were given to equal groups of infants, 34 on Diet I and 34 on Diet II, between November, 1920, and June, 1922; the two groups mingled indiscriminately in the wards, and enjoyed the same excellent hygienic conditions. If anything, the general health of the group on Diet II was better, and their rate of growth approximated more closely to the standard; it suffered less from respiratory troubles in the winter, but in summer was not less immune from gastro-intestinal disturbances than the Diet I group. But in both groups the standard of general health remained fairly good throughout. Freedom from rickets on admission was established both by clinical signs and radiographical diagnosis. Development of rickets took place as follows. Where the standard of diagnosis was the radiograph, no case occurred in Group II (that is, on Diet II); while seventeen cases occurred in Group I (Table 2, p. 43). Further, all these cases of rickets occurred in the winter season, between December 30th and May 2nd. The age in these positive cases was unusually young; of the seventeen, nine were under 6 months, and twelve under 7 months when diagnosed by x rays (p. 45). Thus, under similar and good conditions of hygiene in well lit and airy hospital wards, a marked tendency to rickets was shown by children on a special diet, but only during the winter season; the conditions of life in summer, the free exposure to sun and open air, neutralized the rachitic influence of diet.

It is important to add that when clinical standards of diagnosis—cranio-tabes, rib-beading, cranial bossing—were accepted, though radiographs were negative, there were additional cases. In summer ten such cases of clinical rickets occurred—five on Diet I, and five on Diet II; and two in winter on Diet I (p. 47). It is regrettable that detailed records of some of these cases occurring on Diet II—that is, on cod-liver oil—have not been included in the report. This question of the clinical stigmata of early rickets is of great importance to the practitioner; and the

careful and prolonged observations on cranio-tabes and the rickety rosary in young infants are not the least valuable part of the report.

Miss Daljoll and Miss Mackay lay special emphasis on cranio-tabes as the earliest sign of developing rickets, at least in infants under 6 months (p. 133); while enlargement of the costo-chondral junctions, though occurring later (between 5 and 6 months), was also of great value, though confusion might here be caused by physiological or by scorbutic enlargement. The records given show that in all cases diagnosed by x rays there were also present one or more of the clinical stigmata in the skull and thorax. It may be stated also that x-ray examinations of the ribs could not be made owing to technical difficulties; and one case is given where nine successive radiographs of the limbs failed to detect rickets, and yet at autopsy histological evidence of rickets at the costo-chondral junctions confirmed the clinical diagnosis of a rickety rosary (p. 48). In view of these facts on the clinical stigmata of rickets set forth in the report, the conclusion on page 66 that "in summer infants on both types of diet were protected from rickets" would seem to require some qualification.

The remainder of this absorbing report must be described more briefly. Treatment of rickets was studied in fifty-three cases, some admitted with the disease, some developing it on Diet I while in hospital. The standard of cure was radiographic evidence. Diet II (containing cod-liver oil) was curative in winter; Diet I failed to cure. Spontaneous cure was observed in spring and summer when the babies were much out of doors, on either diet. In winter and spring infants on Diet I were also cured by cod-liver oil, or by exposure to sunlight, or by the mercury vapour quartz lamp (p. 85). Treatment by sunlight (out of doors) was on the whole more efficacious than the mercury vapour lamp or cod-liver oil to open-air treatment accelerated cure (p. 84). health; but there was an impression that the addition of cod-liver oil to open air treatment accelerated cure (p. 84). It is important to note that excellent conditions of hospital hygiene in winter, with a diet of high caloric value (Diet I), did not effect a cure of rickets.

A portion of the report (Part III, No. 2, p. 115) deals with observations on rickets at the Landes Zentral-Kinderheim, a large institution for nursing mothers and infants. Here a study was made of a large number of breast-fed infants; but unfortunately radiographic diagnosis was not available, and where artificial feeding supplemented breast milk, this could not be so strictly controlled. Hygienic conditions also were less satisfactory. Nevertheless, the results were important, and on the whole confirmed those at the University Kinderklinik. In winter rickets was common, even in babies entirely fed on human milk; in summer, the disease was "not uncommon," but in a milder form. The use of cod-liver oil "greatly reduced the incidence of the disease in winter, but even in summer did not entirely prevent its appearance" (p. 128). "The imperfect protection afforded by cod-liver oil under less favourable dietetic and hygienic conditions" is admitted (p. 197); and in this connexion the development of slight cases of rickets at the Kinderklinik in children receiving cod-liver oil and in summer may be recalled (p. 47).

Part IV deals with laboratory tests on various milks in respect of their content of fat-soluble A vitamin, as tested by growth experiments on rats and guinea-pigs. These experiments, carried out by Miss Hume, though of rather negative character, were interesting and important (pp. 151, 152). They showed that the dried milk used in Diet II (at the time of testing it had been in tin for about two years) had a low vitamin A value—no higher than that of the average Vienna stall-fed dairy cows, either in winter or summer; also that the milk of special stall-fed cows on a controlled diet, both with and without green-stuff, was of low vitamin A value; and that the exposure of a stall-fed cow daily to sunlight did not increase the vitamin A content of the milk. Human milks obtained from the Landes Zentral-Kinderheim were also of low vitamin A value; the addition of butter and margarine to the mothers' diet produced no effect, but cod-liver oil after a considerable time produced definite improvement in some experiments. Suggestive results were obtained on rats fed on defective diets by radiations from the mercury vapour quartz lamp.



In conclusion, unstinted praise must be given to Dr. Wimberger for his account of the rachitic changes in the long bones, as revealed by x rays; and for the beautiful radiographs of rachitic processes, developing and healing. The successful reproduction of these delicate photographs is a real triumph. As to the other contributors who in association have furnished the body of the report, sincere congratulations and thanks are due. The best tribute to their work will be the honourable place which their report will certainly take in the literature of rickets. The generous hospitality of Professor Pirquet also will not be forgotten.

## VOLUNTARY HOSPITALS ASSOCIATION.

THE annual conference of the British Hospitals Association was held in Sheffield last week, when a number of subjects relating to the finances and administration of hospitals were discussed.

### THE FUTURE OF VOLUNTARY HOSPITALS.

A paper on this subject was read by Mr. H. J. WARING, surgeon to St. Bartholomew's Hospital, in which, after dealing with the origin and growth of voluntary hospitals, he urged that they should be expanded so as to provide satisfactory hospital treatment for those who could pay for what they needed but could not get it elsewhere. After noting the general practice of requiring contributions from patients he said:

The result of these contributions of patients to the hospital authorities and the payment by public bodies for medical services has changed the outlook as regards the medical staff. In the past, the medical staff of a voluntary hospital has given its services either entirely gratuitously or, in a few instances, each member of the staff has received a small honorarium for out-of-pocket expenses. It has always been understood, however, by the honorary medical staff of a voluntary hospital that the services given in this honorary capacity were to be for the necessitous poor, and not for patients for whom or from whom the hospital has received monetary consideration for treatment. Some hospitals in this way receive considerable sums of money. In my own hospital—St. Bartholomew's—last year the amount received in this way was nearly £30,000, about one-fifth of the annual hospital expenditure. On this account the position of the medical staff and finance ought to be reconsidered.

In the past resident members of the hospital staff and also junior members of the visiting staff have not been paid adequately for their services. . . . A newly qualified medical man has already spent in all probability five or six years in getting his qualification, and, having obtained it, it seems only right and proper that he should be properly paid for the services he renders to the hospital. The same statement holds good as regards the junior members of the visiting staff. In many cases they give a large amount of their time and energy to the investigation and treatment of hospital patients, often at a pecuniary loss to themselves. In my opinion, all junior members of a visiting staff of a general hospital ought to receive adequate payment for their services.

### VOLUNTARY HOSPITAL FINANCE.

SIR NAPIER BURNETT read a paper on voluntary hospital finance, in which he dealt with two sources of income—contributory schemes and insurance for middle-class patients within certain income limits. He quoted the definition of a voluntary hospital adopted by the Voluntary Hospital Commission—namely:

An institution managed by a responsible committee and partly or mainly supported from voluntary sources, the object of which is to provide medical and surgical treatment of a curative character.

It was, he thought, clear from this definition that the Commission desired to retain for hospitals government by a responsible committee and voluntary sources of support. Moreover, in his opinion, "any alteration in the character of the sources of support must in the long run tend towards alteration in the form of government."

### Contributory Schemes.

Sir Napier Burnett gave an analysis of the answers he had received from 105 hospitals which derive income from contributory schemes, and hoped thereby to help committees of management when considering the tendencies of this method of obtaining income. In 41 of the 105 hospitals contributory schemes had existed for over thirty years. "If payments by patients or potential patients are inimical to the voluntary system, a destructive process has (he said) been in progress at some hospitals for over fifty years." In many of these hospitals the organization of the contributory scheme is undertaken by

the hospital; in others by the local Hospital Saturday Fund, or by an outside committee. The rate of payment varies from a farthing to threepence a week. He had assumed that the aim was to raise an amount of money sufficient to cover the cost of treating contributory patients; if profit were aimed at the vexed question of the remuneration of the honorary staff would arise. Unfortunately few hospital authorities could give the number of the contributory patients treated, and fewer still even an approximate number of the contributors, so that it was difficult to estimate each hospital's liability. Sir Napier Burnett expressed the belief that doctors will continue to treat the indigent without payment; they will, he assumed, continue to treat gratuitously members of the class who had formed the great bulk of hospital patients for the last fifty years, most of whom now form the contributory class; but it could not, he said, be assumed that the medical profession will agree to any extension of free service. Detailed registration of patients by each hospital was, therefore, of the utmost importance, in order to estimate liability and to avoid friction in the future.

From the answers to his questions it appeared that in 74 of the 105 hospitals periodic payment entitles the contributor to free hospital treatment, in many cases covering also his dependants. Sir Napier Burnett suggested that a central body was needed to collect data, supply information, and bring the hospitals with contributory schemes into line. The fact that 70 of the hospitals imposed no limitation to the income of the contributors, and that collecting and contributing were on a varying basis or no basis at all, showed the need for a better understanding of the hospital situation. Of the 105 hospitals, 79 asked payment from patients who were not members of the contributory scheme; 44 hospitals did not attempt to correlate the support received with the district or area or contributing firm for which work was done.

Sir Napier Burnett summarized the inducements to join a contributory scheme as follows:

1. To help less fortunate comrades when in need of treatment.
2. To obtain treatment for the contributor and his family.
3. To enable the contributor to share in the management of the hospital.

Great care, he thought, should be exercised in according to contributors a share in management lest the scheme might result in handing over to one class in the community the entire control of the hospital. In order to maintain the voluntary system emphasis should be laid chiefly on inducement 1. In some newer schemes there was a tendency to pay too little regard to the older rules that only those suffering from complaints suitable for hospital treatment should be admitted, and then only if there was room. The hospital liability should be clear from the outset. Some schemes suffered from a failure to fix an income limit for contributors.

There were, he said, arguments in favour of each large hospital running its own scheme, but he thought this was less desirable with small hospitals, as the work required an organized staff and considerable expenditure. There was a lack of uniformity in the accounts. Sometimes the sums received from regular weekly contributions, from grants by employers, from social entertainments, and from church and chapel collections, were included under the heading "Contributory Scheme"; in other cases the money raised by two or three of the methods was added to "Donations."

Sir Napier Burnett concluded this part of his address by stating that a check upon the bona fides of the contributor was essential, and that apparently it would be necessary to return to some form of "letter" system.

### An Insurance Scheme for Hospital Treatment.

In the second portion of his address he outlined a scheme of insurance for hospital treatment for middle-class patients with incomes between £250 and £600 or £700 per annum. He proposed a premium of £2 a year. The cost of maintenance of all the insured patients in the hospital would be the first charge on the fund formed from these premiums. The second charge would be the remuneration of the medical staff for its services, an agreed percentage being paid into a medical staff fund. The balance, after paying these two charges, would represent the real insurance quota, or so-called profit of the



scheme. This should be utilized in the provision of increased accommodation and facilities for the treatment of middle-class patients. The amount of extra accommodation required for these patients would not be very large, and would be provided from the surplus funds as the scheme developed. He did not seem quite clear about the machinery required to run the scheme. He discussed the suggestion that some of the recognized insurance companies might provide the machinery of collection, but thought the company would seek to absorb the surplus funds as remuneration for its work. He hinted that the requisite machinery might be provided by the existing contributory scheme organization. Without further explanation he passed on to the advantages of his scheme—namely:

1. That a deserving section of the community would obtain the use of the equipment and facilities of the modern voluntary hospital.
2. That a fresh avenue of finance would be opened up.
3. That the hospital medical staff would obtain payment.

#### Some Comments.

In confining his remarks to the income side of voluntary hospital finance, Sir Napier Burnett has dealt with several controversial matters which are of interest to the medical profession. For example, there is the demand by contributors for representation on the board of management of the hospital. Sir Napier Burnett thinks that the demand can be minimized by emphasizing the first of his inducements to contribute—the assistance given to comrades in need of treatment. We are not sure that this will be effective, and we would have liked information about hospitals in places where contributors have already obtained considerable representation on hospital committees. Secondly, Sir Napier Burnett seems unaware of the proposals contained in the hospital policy of the British Medical Association. He stated that:

"Broadly the position of the medical profession with regard to hospitals is that: (a) they will treat without payment the indigent; (b) it may be assumed that they will continue to treat free those who have formed the great bulk of hospital patients for the last fifty years, and of whom the majority form the present contributory class."

This does not seem in accord with the opinion of the Council of the Association that:

"all payments made for hospital benefit (other than . . .) are in fact payments towards all the services of the hospital, whether medical or ancillary, and therefore a percentage of such payments should be passed" to a staff fund.

Again, Sir Napier Burnett predicts that "some return to the 'letter' system is inevitable." It would be interesting to know what kind of letter system he foresees. These and several other points are, to use Sir Napier Burnett's expression, slurred. Doubtless this was inevitable in the time allowed for his address.

The subject of the policy the profession should adopt with regard to voluntary hospitals will be discussed at the Representative Meeting of the British Medical Association at Portsmouth next month in connexion with the paragraphs in the Annual Report of the Council (SUPPLEMENT, April 28th, p. 143) and the numerous notices of motion contained in the provisional agenda published in the SUPPLEMENT of May 19th (pp. 199-200).

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

#### Mental Treatment Bill.

THE Mental Treatment Bill, introduced on behalf of the Government by Lord Onslow, was taken in Committee in the House of Lords on May 30th. The first clause, to enable a local authority to co-opt members on a visiting committee, providing that the number of persons so appointed should not exceed one-third of the committee, was approved with a drafting amendment.

In Clause 2, for extension of powers of visiting committees, Lord Onslow proposed a change in the subsection under which it was laid down that the visiting committee might undertake research in relation to mental disorder and its treatment subject to the approval of the Board of Control. It had been pointed out that this might be impracticable, and the reference to the Board of Control was therefore omitted.

In Clause 4, touching the temporary treatment of mental disorder without certification, Lord Phillimore moved to define a "minor" as "under sixteen years of age," his point being that

consent in respect of persons above that age should rest with the persons themselves. Lord Onslow said the Government would not be adverse from accepting the principle of the amendment, but felt that 16 was a rather early age at which to give this responsibility, especially in view of the possible state of health of the person to benefit. He suggested that 18 should be substituted and that the amendment should be withdrawn and considered again before report stage.

In Clause 5, relating to the discharge of persons detained in institutions under the measure, it is laid down that any person may at any time leave the institution upon giving the medical superintendent forty-eight hours' notice of intention so to do. Earl Russell moved to leave out "forty-eight hours" and to insert "three days." He said that if such a notice were given, say on Saturday at about midday, it might be impossible for the authorities to communicate with the friends of the patient, so that they should be ready to receive him as he should be received when discharged from actual care. The reason of the short period was doubtless to preserve the liberty of the subject, but that would not be seriously infringed by the change from two days to three, and as a matter of administrative convenience it appeared almost necessary. The Earl of Onslow said that at first he was very reluctant to accept this amendment, not because he did not admit the force of the argument, but that he did not wish it to be thought that it was desired through this bill in any way to restrict the liberty of a patient entering into these institutions in so far as it could be preserved with due regard to administrative convenience. But he had been much impressed by what Earl Russell had said, especially in regard to week-ends. He was therefore prepared to accept "seventy-two hours" instead of "forty-eight hours" as an amendment. This was agreed to.

On Clause 8 the Earl of Onslow moved an amendment to ensure that the Corporation of London should preserve its jurisdiction as a separate authority, and afterwards proposed a new clause to set forth that asylums provided by any public authority in England or Wales for lunatics or other persons of unsound mind should hereafter be called mental hospitals, and for reference in any public or local act or in any order, regulation, or other document issued the change should accordingly be made. The new clause was a small matter, but it introduced a new principle into the question of mental deficiency. Hitherto mental institutions had been described as asylums and the word had been associated with mental deficiency, and perhaps had contributed to the view that it was less a disease than an irremediable affliction. He had met the representatives of the nurses in mental institutions, who were anxious that this new nomenclature should be introduced into the statutes. Many alienists, and the Board of Control also, were anxious to adopt the title of mental hospital instead of asylum. The Ministry wished to emphasize the fact that mental deficiency was a disease like other diseases, and that institutions in which it was treated, and he hoped cured, were hospitals in the same way as other hospitals for bodily disease. Therefore he thought that if the title of these asylums were assimilated with the title usually associated with the hospitals for the cure of bodily disease popular misapprehensions might be corrected.

On the schedule Earl Onslow moved an amendment in the terms of statement to be annexed to a recommendation for treatment. The form as set forth in the bill began, "I am personally acquainted with, but am not related to, the above named XY." Lord Onslow proposed to substitute "The above named XY is personally known to me but I am not related to him." Thus a justice of the peace would not be prevented from giving a certificate through not being able to say he had known that patient for some time. The amendment was agreed to.

#### Education Estimates.

Presenting the Education Estimates, Mr. Edward Wood, on May 31st, referred to the grants for the higher education of ex-service men—a charge which has now ceased. Its results, he said, ought to have more than satisfied the keenest hope of those responsible. Out of all the entrants under that scheme to Oxford and Cambridge no fewer than 25 per cent. secured first-class honours, and in one particular college at Oxford, out of about fifty students, no fewer than six had been fortunate enough to secure Fellowships at other colleges. Two years ago the scheme was costing rather more than £2,000,000; last year £1,000,000; this year £300,000; and he was advised that about £100,000 spread over two years would wind up the last awards.

Mr. Wood said that the value of the school medical service was being increasingly realized by all concerned—the taxpayers, the ratepayers, the parents, the teachers, and the authorities. The total cost for the results obtained was not excessive. It worked out at something like 4s. 4d. a child in average attendance. In the opinion of those who had opportunities of judging, the prolonged trade depression had not had an adverse effect on the physique of the children. He could quote the opinion of more than one medical officer. For example, at Hull the school medical officer reported that in spite of the trade depression children were taller and heavier in the several age groups, and fewer children were reported by the teachers as mentally backward than in any year since the armistice. For the blind, the deaf, the physically and mentally defective among children of school age, provision could be made only through special schools. There were a large number of children for whom, at the moment, the Board was making no provision for any special schools. This was because the existing provision was so expensive. It was only by reducing the cost of these special schools to as low a figure as was compatible with efficiency that a substantial inroad could be made into the great blocks of children at present denied the benefits



to which they were entitled. With that object he had directed a review to be made to see whether the cost could be slightly lessened. In one respect it was in his power to bring some measure of assistance to areas financially hard pressed. In view of general economies which had been effected the Board proposed in the present year to extend the areas so helped.

Mr. Herbert Fisher (ex-Minister of Education) said that the presence of a large number of defective children in the elementary schools rendered it impossible for the education in those schools to be effective. As something like 40 per cent. of the mentally defective children in London schools were so trained as to be able to earn either the whole or a part of their living, he could not admit the proposition put forward in some quarters that the expenditure was unproductive. But only a very small portion of the field was covered. At the present moment 15,128 children were being educated in the special schools, day and residential, for the mentally defective. The total number of such children in England and Wales was 31,000. That meant rather less than half the number were being educated. If they could not be educated they should be handed over to the Board of Control.

#### Ministry of Pensions Estimates.

Major Tryon, on June 6th, presented the estimate of the Ministry of Pensions for the current financial year. The vote sought was for £73,655,246, as compared with an actual expenditure of £82,000,000 for the past year—a reduction of £8,344,754. The cost of administration had been brought down £2,000,000 a year for the last two years. This was attained by reduction in the numbers of the staffs and in salaries and bonuses in accordance with the fall in the cost of living. Pensions and allowances accounted for £65,533,000, divided as follows: for disabled officers and men, including allowances during treatment, £35,833,000; for widows of officers and men and orphan children £21,350,000; for dependants, £8,350,000. Causes of the decrease were the deaths of pensioners or their wives and children, the advance of children beyond the pensionable age, and the remarriages of widows. Two factors of increase were new claims, numbering 45,000 in 1922, as compared with 81,000 in the previous year, and larger pensions awarded by medical boards to pensioners whose condition had got worse. Major Tryon again touched on the charge made that secret instructions had been issued to medical boards to cut down pensions. He pointed out that this had been investigated by a committee, including ex-service men, who had unanimously found that the story was untrue; 95 per cent. of the doctors on medical boards were ex-service men. The average change in assessment was becoming less and less. In 1919 there was a net reduction of 0.8 per cent.; last year the net reduction was 3.9 per cent. The change was occurring mostly among the men with lighter disabilities. It was the result of medical and surgical skill, and ex-service men owed much to the medical profession in these respects. The Minister announced concessions in respect of the seven years' limit on widows' claims. The keystone of policy for the future should be stabilization and security for the pensioner.

Mr. Macpherson (ex-Minister of Pensions) observed that during the past three years the State had spent no less than £58,000,000 on medical treatment. He believed the boards were doing their work well; but it was said that some were wrong in their diagnosis and rough in their treatment of pensioners. The Ministry should make immediate and effective investigation into complaints.

Mr. Pielon, Unionist member for Stourbridge, who spoke standing by the aid of crutches, said that the Minister having assured them that pensions should be based on disability and not on earning capacity, he wanted to know why medical boards still asked whether a man was working.

After some further discussion, Captain Craig (Parliamentary Secretary to the Ministry) stated that the estimate of the cost of medical services for the year 1923-24 was £5,083,000, of which £3,797,000 represented the estimated cost of medical treatment and £1,286,000 represented boarding and administration. There would be a reduction this year of £1,502,000. On June 30th, 1920, the Ministry had 140,000 under treatment. In 1921 the number had risen to 155,000. In 1922 it was 110,000, and on March 31st of this year it was 80,000. The average cost per patient per day now was estimated at 8s. as compared with 8s. 5d. for the year 1922-23 and 9s. 7d. for the year 1921-22. The number of beds available was 8,000. Up and down the country there were 150 clinics and the Ministry had 37 hospitals devoted to various diseases. He referred to the achievements at Sidcup in dealing with cases of facial injury. He mentioned also that separate accommodation for mental cases was being provided by an institution lately established for the purpose in the west country. Already between 60 and 100 patients were accommodated there, and others were to be received elsewhere.

#### Insurance Medical Service.

In reply to Sir Kingsley Wood and Mr. Gilbert, on May 30th, Mr. Chamberlain said that a conference had been held with the Insurance Acts Committee of the British Medical Association to consider certain modifications in the terms of service of insurance practitioners, but no discussion has yet taken place with regard to the rate of remuneration after the expiry of the present payment, which fixed the rate at 9s. 6d. exclusive of payments in respect of drugs and mileage to rural practitioners. The improvement of the service had been a subject of consideration. Mr. Grundy asked whether it would be made a condition that similar treatment would be meted out to the panel patients as was given to

private patients, and that the queue that had to wait outside the surgeries should be accommodated with shelter. Mr. Chamberlain replied he thought that would be one of the terms of service under consideration.

Dr. Watts asked, on May 31st, whether the Minister of Health was aware that under their present arrangements panel doctors were compelled to keep records of their attendances and of the illnesses of their patients, which involved a great amount of clerical work and took up much time which might be occupied in examining their cases; and whether in framing the new terms of service the Minister would no longer require these records. Lord E. Percy said the Minister could not accept the suggestion that the keeping of the prescribed simple form of record need interfere in any way with the proper examination of patients, and he was not prepared to consent to the abolition of record cards.

In reply to another question, Mr. Chamberlain said that the scale of fees paid to chemists for dispensing insurance prescriptions would expire at the end of April next, and negotiations for its revision had not yet begun.

Lord Eustace Percy, on June 4th, said, on inquiry by Mr. Snowden, that the right to medical attendance was not affected by the previous neglect of an insured person to choose a doctor. Insured persons not infrequently put off selecting a doctor until they became ill, but they had a right to treatment immediately they were in need of it. The panel practitioners, therefore, were collectively at risk in respect of all insured persons entitled to medical benefit. The actual number of unassigned persons, which could not be precisely calculated, was roughly 700,000, but the proportion of those who did not avail themselves of the right to treatment when they needed it was relatively small and a diminishing number. The Minister of Health had no information as to the distribution of unassigned persons amongst different societies.

*The Deaths Registration and Burials Bill*, introduced by Dr. Salter on May 29th, was printed and issued on June 5th. It lays down that information of the death of any person is to be given to the registrar within two days instead of five as at present, and it must be stated whether or not such person has been attended in his last illness by a medical practitioner. A practitioner shall not be deemed to have been in attendance unless he has personally attended the deceased on at least two occasions, one such occasion to have been within eight days of the death. Where no practitioner has been in attendance the registrar is to give notice to the public certifier of deaths (an office to be created) and the latter shall, subject to the provisions of the Act, send to the registrar a proper certificate of death. A coroner holding an inquest shall, unless satisfied that some other practitioner will be present, require the attendance of the public certifier of deaths. The board of guardians of every Poor Law union is to appoint a public certifier of deaths for each subdistrict in the union. Only a registered practitioner may be appointed. There are a number of other provisions in the bill—touching the appointment and duties of public certifiers of death, conditions of burial, and forms of certificate. The measure has no prospect of passage this session, unless it were taken up by the Government.

*Cancer Research.*—Lord E. Percy stated, on June 4th, that financial assistance was at present given from public funds to cancer research through the Medical Research Council, which, in the last financial year, expended a sum of approximately £5,000 for this purpose, in addition to further large sums assigned to the support of other investigations not specifically directed towards the problem of cancer, but which might nevertheless provide the desired clue. The Council held on behalf of the Government a valuable stock of radium salt, of which fractions were in use for cancer research work at eleven different universities or hospitals in Great Britain and Ireland under co-ordinated schemes; and a special departmental committee was appointed by the Minister of Health in January last to survey the whole question and consider how the medical and administrative resources of the Ministry could best be utilized in the campaign against cancer. The question of further financial and expert aid would be considered from time to time as experience might show it could usefully be given.

*Pensions.*—The Minister for Pensions has stated (1) that there are only seven men from Scotland in the neurological institution at Ewell, and it would not be practicable to start a fresh institution for them in Scotland; (2) that the number of men on home treatment without allowances could not be stated, as home treatment was ordinarily obtained by a man from his panel doctor without the intervention of the Ministry; (3) that the Ministry is considering the propriety of acquiring from the disposals department the hospital at present empty at Gretna; (4) that a recent instruction from the medical branch was intended to secure in cases of alleged aggravation difficult to decide that an award under 20 per cent. should not be made without, where thought necessary, obtaining specialist advice as to the probable future of the case; (5) that members of the pensions appeal tribunals were for the most part whole-time doctors receiving yearly salaries—chairman £700, medical members £700, service members £250. Persons employed on a temporary basis were paid at the rate of three guineas a day in the case of chairman and medical members, and one guinea a day in the case of service members.

*Vaccination and Small-pox.*—At the instance of Mr. T. Williams, on May 30th, Mr. Chamberlain stated that the proportion of cases of small-pox in persons who had been vaccinated at some time in their life was 31.3 per cent. in 1921, 28.6 per cent. in 1922, and



19.5 per cent. in the first three months of 1923. The figures for the last two periods were subject to revision, but they tended to show that the bulk of the cases occurred in persons who had been vaccinated from forty to sixty years previously. The number of deaths attributed to vaccination, or to some complication following vaccination in the three periods, were 8, 7, and 5 respectively. No deaths had so far been registered this year as due to small-pox.

**Government Grants for Tuberculosis.**—Mr. Chamberlain stated, on May 30th, that the total amount paid from the Exchequer during the year ended March 31st last in respect of the tuberculosis scheme in England and Wales, including capital grant in aid of sanatoriums, was £1,985,042; the gross expenditure of local authorities in England and of the Welsh National Memorial Association during that year was estimated to amount to £2,945,155, exclusive of capital expenditure.

**Scarlet Fever and Milk.**—Captain Elliot informed Mr. Shinwell, on May 30th, that the Scottish Board of Health had obtained a report from the county medical officer regarding the outbreak of scarlet fever and other infectious diseases at Broxburn, West Lothian, and were making further inquiries. The number of cases was large. The outbreak of scarlet fever has been definitely associated with a milk supply which was sold over a wide area.

**Consumption of Methylated Spirits.**—Mr. Bridgeman informed Mr. Rhys Davies, on May 31st, that the number of cases in England and Wales in the year 1922 in which the condition of the person convicted of drunkenness was reported to have been due to drinking methylated spirits was 516 (250 males and 266 females). The figures were higher than similar figures for the previous two years. Statistics had been collected for only three years, and some part of the increase might be due to improvement in reporting. The denaturing of alcohol used for industrial purposes had always been considered, but extreme difficulty seemed to have been found in making this spirit unpalatable.

## England and Wales.

### KING EDWARD'S HOSPITAL FUND.

THE annual meeting of the President and General Council of King Edward's Hospital Fund for London was held on June 4th, with H.R.H. the Prince of Wales in the chair. According to the annual report for 1922, which was adopted unanimously, the total receipts for the year were £1,351,342, of which £250,000 was received from the Hospital of London Combined Appeal on account, £581,353 from the estate of the late Lord Mountstephen, £257,692 from the estate of the late Sir Thomas Sutherland, £73,720 from other legacies, £24,567 from gifts to capital, and £164,009 from general receipts. The total amount distributed to hospitals during 1922, including the first and second instalments of the special distribution from the Combined Appeal, was £470,000. Since the foundation of the fund a total net amount of over £4,286,000 has been distributed. The year under review has been exceptional owing to the large legacies received, the income from the munificent bequests by Lord Mountstephen and Sir Thomas Sutherland cannot fail to assist the fund greatly in its efforts to secure a permanent improvement in the financial position of the hospitals. During the year the amount spent on the administration of the fund was £8,607, or 15s. 8d. per £100 of the total received (apart from the Combined Appeal), as compared with £2 11s. 8d. per £100 in the previous year. Sir Alan Anderson, chairman of the Revenue Committee, presented the final report of the committee on the Hospitals of London Combined Appeal, which showed that the total receipts amounted to £481,639, and the total amount distributed to £413,214. Sir Cooper Perry, chairman of the Distribution Committee, presented its report on the final distribution of the proceeds of the Combined Appeal, with the list of suggested grants to hospitals, which the meeting approved; 120 hospitals in London and greater London participated in the grants. A report was presented from the Management Committee on the subject of hospital accommodation for accident cases, and it was recommended that a special committee should inquire and report on the methods at present employed for ascertaining where bed accommodation was available in hospitals in the metropolitan and neighbouring areas for accidents requiring admission, and on the proposal that daily reports of vacant beds should be supplied to the police and ambulance authorities. The Prince of Wales remarked on the success of the Combined Appeal, which was launched in a period of high taxation and severe trade depression. The sum of £500,000 had been set up as a sort of outside figure, and he did not

think that many people expected that the total actually raised would come to within £20,000 of that sum. The appeal succeeded, he said, first, because it had a good cause; secondly, because it had a good organization, and, thirdly, because this organization had a good personnel; he mentioned particularly the names of Sir Alan Anderson, chairman of the Organization Committee, and Sir George Lawson Johnston, chairman of the Executive Committee. In regard to the future, the hospitals were gradually succeeding in closing the annual gap between income and expenditure; the net aggregate deficit for the year was £380,000 in 1920, £210,000 in 1921, and £171,000 in 1922.

### LEEDS GENERAL INFIRMARY.

The Prince of Wales was in Leeds on June 1st, and, after visits to the University and the Ministry of Pensions Hospital, Beckett's Park, spent a considerable time at the General Infirmary. He was received by Mr. T. L. Taylor, chairman of the Board of Management, who presented Sir Berkeley Moynihan, senior surgeon, Dr. T. Wardrop Griffith, senior physician, and other officers. Arrangements had been made by which the Prince was able to make a thorough inspection of representative portions of the institution. A prolonged study was devoted to the range of operating theatres, where Sir Berkeley Moynihan explained in detail the arrangements for sterilizing the instruments, etc., the placing of the students for instruction, and the whole apparatus of modern surgery. The Prince then passed through groups of students and nurses to the new x-ray department, which is said to be one of the most completely equipped in the country, having been completely reorganized during the past two years. The equipment was explained by Dr. G. Cooper, director of the x-ray department, to whom the Prince put many questions as to the possibilities of the new x-ray methods of treatment of certain types of cancer, and the prospects of cure. The Prince afterwards stated that he had been much impressed by the complete organization of the institution, and expressed his interest in the correlation of modern science with curative treatment in all its branches.

### PUBLIC HEALTH AND EDUCATION.

A party of a hundred students from Leeds University, accompanied by Dr. Strong, professor of education, visited the West Riding County Hall at Wakefield on May 25th, in order to gain some insight into the work of the public health department. Dr. J. R. Kaye, county medical officer of health, in the course of an address, said that education of the public in health matters was now an essential feature of an efficient health department. The earlier public health Acts dealt with the grosser forms of insanitation, such as water, sewage, and environment. Now, however, measures of prevention were assuming a more personal or individual character. In proceeding along any lines of thought in relation to the prevention of disease or sickness it was necessary always to come back to the individual and his habits. Dr. Kaye then explained at length the work of the different departments, and the students inspected the county hall and the laboratories.

### SMALL-POX PREVALENCE.

In the four weeks ending May 26th, 107 cases of small-pox were notified outside of London. In the successive weeks the numbers were 33, 22, 34, and 18. The counties affected were Derby with 26 cases, Gloucester 28, Lancaster 9, Nottingham 11, and the North Riding of Yorkshire 5, the West Riding 27, and Lincoln (Kesteven) one case. In Derbyshire, Clowne had 9 cases, Heanor 8, Shardlow 8, and Bolsover 1; in Gloucestershire Cheltenham had 9 cases and various rural districts including Dean Forest 19 cases; in Lancashire, Nelson had 7 cases; in the North Riding of Yorkshire Middlesbrough had 5, and in the West Riding Doncaster had 8. The figures for May show a tendency towards reduction in the prevalence of the disease. The average weekly number of cases for the first thirteen weeks of the year was 40, for the four weeks in April 32, and for the four weeks to May 26th, 27. The total number of notifications outside of London since the beginning of the year has been 759.



## Scotland.

### SIR HENRY GRAY.

ON the occasion of his leaving Aberdeen, to become Chief of the Surgical Staff of the Royal Victoria Hospital, Montreal, a complimentary dinner will be given to Sir H. M. W. Gray by his medical friends on Wednesday, June 27th, at 7.15 p.m., in the Palace Hotel, Aberdeen. Mr. Wm. Anderson, F.R.C.S., 5, Albyn Terrace, Aberdeen, is acting as secretary of the committee which has charge of the arrangements.

### EDINBURGH ROYAL INFIRMARY PAGEANT.

The supporters of the Edinburgh Royal Infirmary have for some years past organized an annual pageant for the double purpose of collecting funds for this institution and of attracting public attention to its needs. The pageant held on May 26th, 1923, was on an unusually elaborate scale; there was a procession of bands, costumed figures, and decorated cars well over two miles in length, in which over 7,000 persons took part. The central feature was a pageant of the nations, in which twelve of the city schools participated; a great Red Cross drawn by six grey horses was also a striking part of the procession. The students of the University entered into the arrangements with great enthusiasm, and among other schemes they made an effort to collect a mile of pennies (representing £220) in Princes Street. The state of the collection was shown progressively by the position of the red posts along this street. Numerous friendly societies, unions, and individual commercial firms were represented by deputations on foot or in decorated cars representative of their special trades. A continuous collection was made from the crowd of spectators lining the route. The proceeds derived from the pageant on May 26th amount approximately to £3,200. Returns from entertainments, concerts, etc., held on the same day in outlying districts will, it is anticipated, yield another £1,000. The students of the University were particularly active, and raised over £480, including £72 representing one-third of the "mile of pennies" at which they had aimed in Princes Street.

### SCOTTISH ZOOLOGICAL SOCIETY.

The annual meeting of the Zoological Society of Scotland was held last week in the City Chambers, Edinburgh. Lord Salvesen, who presided, stated that in the course of the present summer the corporation electric tramways would be running past the gate of the Zoological Park at Costorphine, and a large area on the crest of Costorphine Hill, at present occupied by a golf course, would be added to the park. Accommodation would thus be provided for the gradually increasing stock of animals, and parts of the new ground would afford ideal surroundings for the carnivora, with backgrounds of rock and without bars. It was believed that the park would then be the largest zoological garden in Europe, and certainly, with its views over the Firth of Forth and the Pentland Hills, one with the finest situation. The council of the society had further come to the conclusion that, building prices being now stabilized, the time had come to proceed with the erection of a salt-water aquarium, which would occupy a site directly behind the main entrance. The financial result of the last year had been very satisfactory considering the adverse conditions of trade and the expenses entailed by the bad weather. Nevertheless expenditure had exceeded income by £390, but the income had increased steadily year by year since the commencement of the park ten years ago.

### LORD HIGH COMMISSIONER AT EDINBURGH HOSPITALS.

The Lord High Commissioner, Lord Elphinstone, as representing the King at the General Assembly of the Church of Scotland, last week paid a round of visits to the hospitals in Edinburgh. The institutions visited included the Royal Infirmary, where the wards of Sir David Wallace and of Professor B. P. Watson, as well as the hospital kitchen, were specially inspected; the Royal Maternity and Simpson Memorial Hospital; Chalmers Hospital; the Royal Blind Asylum; and the Church of Scotland Deaconess Hospital. At the last-named hospital

Lord and Lady Elphinstone were welcomed by Lord Sands, who stated that the hospital had been in existence for thirty years, having been founded as a memorial of Lady Grizell Baillie, the first deaconess of the Church of Scotland, and that one of its principal objects was to train workers for the foreign mission field and for mission workers in this country. The Lord High Commissioner, in reply, expressed the especial privilege that he felt in visiting the Deaconess Hospital on account of its connexion with the Church of Scotland; and Lady Elphinstone thereafter presented the prizes and certificates of training to the nurses who had been successful in examinations.

### ROYAL VETERINARY COLLEGE.

A large and representative gathering assembled in the Royal (Dick) Veterinary College, Edinburgh, when a memorial window was unveiled by Lord Provost Hutchison. Professor T. Hudson Beare presided, and in opening the proceedings said that the occasion was of exceptional interest since the college was about to celebrate the conclusion of its hundredth session. The memorial window was intended as a link between the old college and the new; it had been given by veterinary surgeons all over the world who had been trained at the old college buildings in Clyde Street.

## Ireland.

### HOSPITAL GRANTS AND PUBLIC HEALTH LEGISLATION.

IN reply to Sir James Craig, M.D., and other members of the Dail, the Minister (Mr. Blythe) for Local Government (Free State) said the responsibility for the matters raised had only just been transferred to his department, and he had not the time nor opportunity to give them very serious consideration. He admitted that the past few years had been very hard on these voluntary hospitals, but this was not the time to rush into proposals that might put a very serious charge on the State. He could promise, however, that the whole matter of hospitals and of medical assistance and relief would be considered very shortly in all its different aspects, and not, as it had been in the past, with one department looking after one section and another looking after another. Replying also to Sir James Craig, the Minister said a Public Health Bill was being drafted, but he could not say when it would be introduced.

### MEDICAL OFFICERS' SALARIES.

At a meeting of the Laoighis (Queen's) County Hospitals and Homes Committee the following resolution from the county dispensary doctors was received:

As your Committee intend rearranging the salaries of the dispensary medical officers of the county, the Leix medical officers consider it advisable that the salaries of each dispensary district be fixed on a homogeneous basis; and they would suggest an initial salary of £250, rising by £10 annually to £350 per annum, for each district; the same to be retrospective.

A member of the committee gave notice of motion to have the medical officers' application considered at its next meeting.

The medical officers of the Newtown-Hamilton and Crossmaglen (Northern Ireland) dispensary districts applied to the Commissioner administering the Newry Union that their salaries should be the same as those paid to the medical officers in the Newry Union, to which they had been recently transferred from the Castleblayney Union. The Commissioner decided, subject to the approval of the Ministry of Home Affairs, to place both medical officers on the Newry scale, which means an increase of £105 per annum for Dr. Dawson and £75 per annum for Dr. McBride, the two transferred doctors.

### MEATH HOSPITAL, DUBLIN.

At the annual meeting of the Meath Hospital the report submitted by the secretary stated that the year had been characterized by altered conditions necessitating drastic changes of policy, and by many disappointments. Bad trade and unemployment had affected the contributions



from employers and employees alike, while heavy taxation and the state of the country rendered it impossible for many subscribers to continue their support. The cost of upkeep of all hospitals had grown to an alarming extent, and the days of low or even moderate hospital charges had gone. The increased overhead expenses of a well appointed hospital were due in a measure to the costliness of the equipment and maintenance. For instance, the cost of the Meath Hospital nursing staff—wages, board, laundry, teaching, and examinations—now amount to more than the whole cost of the institution ten years ago. Although they started the year with a balance to credit of £201, the overdraft was £3,261. This was largely due to the amount received from patients—or perhaps it would be more correct to say on behalf of patients. During the year the amount paid by the War Pensions Committee for the treatment of ex-soldiers was £3,470, and for the year just closed the amount was only £993. The Ministry of Pensions had found that it was more economical and more convenient to send the ex-service men for treatment to two or three of the larger hospitals. There were on April 1st, 1922, 100 patients, and 1,376 were admitted during the year. Of these, 1,280 were discharged cured or relieved; 104 died, and 101 remained on March 31st, 1923. There were 6,584 accident cases treated as out-door patients, and the dispensary cases numbered 19,173, making a total of 25,757 extern cases.

## Correspondence.

### THE COUNTRY PRACTITIONER.

Sir,—All country doctors, and particularly the class known as village doctors, ought to feel grateful for a leading article in the *BRITISH MEDICAL JOURNAL* of May 26th, dealing with their position not only as panel practitioners, but as serving the country people in the rural districts. It is a truthful and sympathetic exposition of the situation, and nothing seems missed out.

The description of how he is being encroached upon, nearly squeezed out of existence by the changing conditions, social and economic, is only too true. Owing to excessive taxation the big country houses are standing empty; these, with their large staffs of servants, were once a main source of income to him. The new aristocracy of the present day, which has taken the place of the old, does not patronize the village doctor, neither does it trust him. They can, and do, bring their town's doctor when they need one, for twenty or thirty miles is nothing for a powerful car.

Then in these days the men in the country towns travel much further afield than in the days of horse and trap, and even the colliery doctors, who were never seen in the country districts, travel there by car to patients they have attended elsewhere. In other words, these men follow their patients, distance being of little object with perhaps only one reservation, which is that they are those who pay their bills; those who do not are left to be attended by the village doctor! To give one example only: a country town doctor with a good practice and a fairly large panel offered to attend a working man's wife eleven miles away in her confinement, where she lived two miles from a village doctor, but the woman did not know how she could get a message to him, say by night, if she took ill, and refused his offer; I rather regret to say he was an Englishman. It is an attempt to take the bread from another man's mouth. We have to live, certainly, but let us be not unmindful of others who have an equal right. The result of such incidents, which are increasingly common, is that the village doctor has a large number of poor people who are not worth running after by his distant neighbours, or who do not pay the bills they have received from the men who previously attended them. He has to be satisfied with "the crumbs which fall from the rich man's table."

I sincerely trust that all these facts will be remembered when the country doctor's case is under discussion at the forthcoming Conference.—I am, etc.,

May 30th.

"A VILLAGE DOCTOR."

### FROZEN SECTION OR LABORATORY INVESTIGATION OF CANCER OF THE BREAST?

Sir,—Dr. McKinstry, in a letter published on May 19th (p. 882), raises the question of the advantage of immediate diagnosis of tumours of the breast by frozen sections over the more methodical examination of the tumour in the laboratory. There is a great deal to be said for both methods, but grave disadvantages accrue to anyone who pins his faith always to one of them without realizing the limitations of each, for neither can always give the answer we require.

In the frozen section, if one gets a definite reply that the tumour is malignant, it is all the surgeon wants, and he can proceed with certainty. There is no doubt that this is a great advantage both to the patient and to the surgeon. But if the reply is that the section prepared in such haste is innocent, there should lurk in the back of one's mind the suspicion—which is a very real one—that another section might quite well give rise to a different opinion. I have had the verdict of innocence given me at an operation, though a more methodical investigation carried on later has reversed this opinion. It is a most unpleasant duty—it upsets the relatives and shakes their confidence—to tell them that all anxiety of malignancy is past, and then to rack their minds and the mind of the patient by demanding the performance of a more radical operation on account of the malignancy which has already been denied; yet this is the risk of the method.

For this reason all opinions given in such cases should be very guarded until the result of the more methodical examination is known; and this later investigation should always be carried out, and must be that by which the surgeon is ultimately guided. The recent work of Sir Lenthal Cheate has shown only too clearly that a mass may evince unmistakable signs of malignancy at one spot while showing nothing but innocent tissues at another, and that a very careful investigation of many sections is often necessary before giving a final opinion. In short, therefore, a positive reply by this method is final, but a negative reply is by no means so; this is a little difficult to keep in mind.

Frozen sections are, of course, easy to arrange in hospital work, but are not so handy or convenient in private practice, and therefore the methodical laboratory investigation is chiefly used. This has the disadvantage of making the surgeon rely to some extent upon the naked-eye appearances, and the fallacies of this I dealt with in a paper published in the *JOURNAL* (January 20th, 1923, p. 94) on "The diagnosis of indefinite masses in the breast." It may also lay the patient open to the risk of dissemination of the cancer cells through the cutting across of the infected lymphatics where the mass is supposed to be innocent and investigation later proves it to be malignant. The Johns Hopkins School goes so far as to state that if a person has a tumour removed, investigated in the laboratory, and the radical operation performed a few days later, that she will inevitably die of secondary growths started from this cause within three years. I have no hesitation in combating this view in the strongest possible manner, but nevertheless it has been seriously stated by enthusiasts.

I think, however, that reasonable precautions should be taken, and this may easily be done if the cut surface of the gland from which the segment has been removed is seared with the thermo-cautery. Even in cases where no suspicion exists, and the whole gland is removed subcutaneously, I am in the habit of applying the cautery to the axillary tail, which contains many lymphatics. If this procedure be carried out there can be no hesitation in waiting the two days necessary to receive the laboratory report.—I am, etc.,

DUNCAN C. L. FITZWILLIAMS, C.M.G.,  
M.D., CH.M., F.R.C.S.

London, W., May 28th.

### THE NATURE OF BLOOD SUGAR.

Sir,—We have Winter and Smith's own statement that their last publication<sup>1</sup> is "to correct any doubts which Hewitt's criticism may have caused," yet they devote more than half their article to adverse comments on certain work

<sup>1</sup>Winter and Smith: *BRITISH MEDICAL JOURNAL*, 1923, I, 894-895.



of my co-authors and myself. This work dealt with the behaviour of sugars in the intestine, and the question before us at present is the nature of glucose in blood. It may be briefly indicated now, however, that we confined our discussion to phenomena observed in relation to the intestine and did not extend our results to tissues generally, blood not even being mentioned. As to the validity of their calculations of amount of glucose absorbed, deduced by them from our Figures 1 and 2, I may point out that Fig. 1 does not refer in any way to the intestine, and Fig. 2 does not mention absorption. The basis of this criticism is thus imaginary.

Winter and Smith say that I have misquoted them as to their conclusion that the normal blood sugar is  $\gamma$  glucose. I admit that such may be the case, but perhaps there is some excuse, for on three consecutive pages of one paper<sup>2</sup> they consider this sugar to be:

- (a) "for the present undecided" (p. 109).
- (b) "some form of glucose" (p. 109).
- (c) "an unstable form of glucose" (p. 111).
- (d) " $\gamma$  glucose" (pp. 110 and 111), "and that it arises from the enolic form" (p. 110).

and now<sup>1</sup> they propound three additional conclusions—namely:

- (e) "that a reactive sugar is present in the blood"
- (f) "that there is no chemical evidence that  $\gamma$  glucose is formed in the body"
- (g) "that normal blood sugar is an equilibrium mixture of  $\alpha$ ,  $\beta$  glucose and a reactive sugar."

I agree that dogmatism is, perhaps, not desirable at present, but the above will indicate the indefiniteness of their conclusions, and in view of the accepted definition that  $\gamma$  sugars include reactive modifications with the oxygen ring displaced from the normal stable position, I leave to others the task of reconciling these contradictory conclusions.

Is it possible that Winter and Smith have adopted a nomenclature not in harmony with that in common use? Certainly their consistent employment of the expressions " $\alpha$ ,  $\beta$  glucose" or the " $\alpha$ ,  $\beta$  form" does not convey the impression that they imply a mixture of two distinct hexoses in solution. But perhaps they do not mean this. One of two alternatives seems unavoidable: either their terminology is unique, or they are dealing with sugars, so far as I am aware, not yet described in the literature. May I give one other example of perplexities with which any critic of these authors has to contend? They state<sup>2</sup> that they failed to obtain laevo-rotation, while in another paper,<sup>1</sup> discussing the same observations, they say, "in one experiment laevo-rotation was obtained."

Winter and Smith now quote the effect of insulin on blood sugar,<sup>1</sup> but as the action of insulin is, I believe, not yet satisfactorily elucidated, and as the nature of blood sugar is still obscure, I will refrain from joining with them in speculation as to how far the action of one unknown on another unknown supports any or all of their several conclusions. The production by insulin of a non-reducing dextro-rotatory sugar *in vivo*<sup>2</sup> is of more than ordinary interest, especially when one remembers the dissimilar results these workers had with the same materials *in vitro*.<sup>3</sup> My adverse criticism (objected to by Winter and Smith) of extravascular experiments with blood thus gains additional support. Incidentally, are they not in error when they state that destructive criticism invalidates experiment? The last word should surely be "inference."

It is well to point out that any mild comments of mine were made bearing in mind the known properties of hexoses, were on purely chemical grounds, and were directed to the method adopted by Winter and Smith for torturing the sugar of extravascular blood. One notes, therefore, with gratification that they now realize that their technique "admittedly is not perfect."

Perhaps it is now evident that any further discussion of the particular point at issue is of no value until we are in possession of experimental observations not only sound, but less fertile as a source of contradictory interpretation.—I am, etc.,

London, W.C., May 30th.

J. A. HEWITT.

<sup>1</sup> Winter and Smith: *Journ. of Physiol.*, 1923, 57, 1-10-112.

<sup>2</sup> Winter and Smith: *British Medical Journal*, 1923, 1, 12-13.

## WHAT IS A "DISEASED" TONSIL?

SIR,—I am prompted to ask this question after reading with great interest Dr. F. J. Poynton's most instructive lecture on "The prevention of heart disease." Under the heading of "Local Foci" he says, "I have no doubt in my mind that unhealthy tonsils should be removed in rheumatic children," and again, "it would be, in my opinion, a mistake to suggest the wholesale removal of tonsils in rheumatic children . . . when there is no evidence that they are diseased."

What is Dr. Poynton's definition of an "unhealthy" or "diseased" tonsil? It seems to me that this is a question of real practical value which has never been satisfactorily answered.

The presence of micro-organisms in the tonsillar crypts cannot be accepted as evidence of disease, for Davis has shown that although sterile at birth, they are infected within twenty-four hours and "plasma" cells make their appearance in the tonsillar tissue. Nor are we justified in assuming that because a tonsil is enlarged it is therefore "diseased." So eminent an authority as Mr. Mark Howell in the discussion which followed his paper on "Tonsillotomy versus tonsillectomy," read before the Laryngological Section of the Royal Society of Medicine in 1921, definitely stated that he did not consider enlargement *per se* evidence of disease. With this view many will disagree, but it is not possible that the enlargement is a physiological hypertrophy and evidence that the tonsil is effectually carrying on its function of resisting systemic invasion?

Again, is pus in the crypts sufficient proof that the tonsil is "diseased"? I think most of us consider that it is, but may not the pus be further evidence of the more or less effectual fight which the tonsil has put up against invasion? Personally, I think it often is, and my own small observations in the realm of comparative pathology would seem to suggest that this might be so. Tonsillitis in sheep is hardly mentioned in textbooks of veterinary surgery; we can, therefore, assume that it is a rare disease, and from the simple structure of the sheep's tonsils it is what we might expect; but in fully 50 per cent. of sheep's tonsils which I have examined *post mortem*, I was able to express a fluid showing all the characteristics of pus. This pus, I think, must be more physiological than pathological.

I am in entire agreement with Dr. Poynton when he says, "the wholesale removal of tonsils must mean occasional disaster to a healthy child, and the grounds for such a step as this must be absolutely sure." It is, therefore, all the more important to define clearly what is a "diseased" tonsil.

Personally, I regard a diseased tonsil as one which shows intracellular micro-organisms on section, but clinically I cannot always recognize it.—I am, etc.,

N. STUART CARRUTHERS, F.R.C.S. Edin.

Norwich, June 2nd.

## THE TREATMENT OF GENERAL PARALYSIS BY MALARIA.

SIR,—Dr. Templeton, in his interesting account in the *BRITISH MEDICAL JOURNAL* of May 26th, referring to the difficulty of obtaining the *Plasmodium vivax* in this country, says: "Attempts are being made to keep the parasite alive outside the body; so far it has not survived more than eight hours."

He does not refer to the cultivation of the parasites *in vitro*, but it has been cultivated in a suitable medium by several workers; and Drs. J. D. Thomson and H. P. Woodcock, writing in Byam and Archibald's *Practice of Medicine in the Tropics* (II, 1542), mention that "it is considered that there is no reason why the growth and multiplication of the parasites in the culture should not continue indefinitely, provided that fresh serum and corpuscles are added to the medium when necessary." Might not this method, then, give the necessary supply of the parasite for use in the treatment of general paralysis?—I am, etc.,

Aberdeen, May 25th.

GEORGE A. WILLIAMSON.



SIR,—In connexion with the article by Dr. W. L. Templeton (*BRITISH MEDICAL JOURNAL*, May 26th, p. 895) the following notes on the treatment as carried out in the Landes-irrenanstalt at Feldhoff-bei-Graz, Styria, may be of some interest. Here the malarial parasite has been transmitted through many successive patients in the asylum from the original stock obtained from a young malarial patient at Trieste.

From the median vein of a patient who has already received a malarial infection 2 c.cm. of blood are drawn during an interval free from fever; 1 c.cm. is injected subcutaneously over the shoulder-blade, and the remainder smeared over an area of about 4 cm. around the puncture after the skin has been excoriated with the needle. The first paroxysm takes place on an average eight days after inoculation. After nine paroxysms (in some cases the number may be twelve or thirteen according to the physical condition of the patient) daily doses of quinine are given, while salvarsan is administered concurrently.

The results are certainly remarkable. When visiting the institution on May 1st I was able to hear from a number of the patients themselves their own account of the treatment and its results. On admission the majority had been noisy, restless, and disoriented, and some had marked physical signs—for example, inequality of pupils, characteristic gait, etc. As a result of the treatment they had become quiet and rational, and capable of employment as shoemakers, clerks, etc., in the asylum. Some patients had been discharged to their homes, and had been able to resume their occupations.

It may, of course, be argued that the remission of the disease is temporary, but the fact that a restless, noisy, dirty patient can become quiet, docile, and clean in his habits is an enormous gain. The return to their homes and avocations, even if it lasts only four or five years, is a fact of great social importance and a tremendous saving of public money.

Figures, supplied by Dr. Weber, the chief medical officer of the section, show a remarkable reduction in case mortality. Since the treatment was begun, at the end of 1921, 56 cases of general paralysis have been treated at Feldhoff by this method. The following table shows the number of cases of general paralysis of the insane in the institution and the number of deaths amongst these patients in the successive years.

General Paralysis in the Feldhoff Institution.

Year.	No. of Cases.	Deaths			
		1920.	1921.	1922.	
1920	65	31	18	3	13 survive.
1921	75	—	32	14	30 "
1922	69	—	—	16	53 "

I understand that at Vienna Professor Wagner has treated 600 cases, and at Hamburg Professor Weygandt some 300 cases, with favourable results.—I am, etc.,

Birmingham, May 28th.

G. A. AUDEN, M.D., F.R.C.P.

#### MINERS' NYSTAGMUS.

SIR,—On May 5th (p. 757) under this heading I gave statistical evidence which conclusively demonstrated that in this district deficiency of light was not "the essential factor in the production of miners' nystagmus."

Last week I obtained details of the Plenmeller pit, the only pit I have discovered in this neighbourhood in which electric lamps are used alone. In 1922 there were 210 hewers, of whom 9 acquired nystagmus, and 304 underground non-hewers, of whom 4 acquired the disease. The percentage of nystagmus amongst the hewers compared with that amongst the non-hewers was therefore:

$$\frac{900}{210} : \frac{400}{304} = \frac{30}{7} : \frac{25}{19} = 4.2857 \text{ per cent.} : 1.3158 \text{ per cent.}$$

In my previous paper dealing with thirty-two pits, comprising 36,232 underground workers who used both oil

and electric lamps, the percentage of hewers who acquired nystagmus during 1922 was 0.9049, while the percentage of non-hewers was 0.2374.

The inference is that the percentage of hewers affected was 4.7 times greater, and that of the non-hewers was 5.5 times greater where electric lamps only were used. It may be thought that there is something special about the Plenmeller pit which I am neglecting; but to-day I heard from the representatives of the South Moor Colliery that twenty-five years ago electric lamps were used solely, and the percentage of their nystagmus cases was very high; but on abolishing electric lamps and installing oil safety lamps they had had no cases of nystagmus amongst the non-hewers, and hardly any amongst the hewers. Comment is unnecessary.—I am, etc.,

Newcastle-upon-Tyne, May 28th.

A. S. PERCIVAL, M.B.

#### ETHER VERSUS CHLOROFORM.

SIR,—Many years ago I pointed out again and again in the *BRITISH MEDICAL JOURNAL* that where ether is used, as in Dublin, New York, and throughout America, death under anaesthesia is extremely rare, whereas, where chloroform is used, as in London, death under anaesthesia is extremely common. And yet week after week the chloroform holocaust goes on.

It was Carlyle who said "Against stupidity the very gods fight in vain. There is in it an opulence of murky stagnancy, an inexhaustibility, a calm infinitude which will baffle even the gods—which will say calmly, 'Yes, try all your lightnings here; see whether my dark belly cannot hold them!'"

Can we wonder that it took Lister years to establish his principles in England, and that Jenner is still denounced by hundreds of thousands of his countrymen?—I am, etc.,

Kensington, W., May 26th.

J. McNAMARA, M.D.

#### DIPHTHERIA ANTITOXIN ON SUSPICION.

SIR,—Although the paramount importance of giving antitoxin in the early stage of the disease is well recognized by those who have seen much of diphtheria, there is evidence, unfortunately, that this fact is not so widely appreciated as it should be. A striking illustration is afforded by the experience obtained in one of the large metropolitan fever hospitals during the past year. Of 150 cases of diphtheria which proved fatal at this hospital during 1922, according to the report of the medical superintendent, no less than 46, or 30 per cent., died within twenty-four hours of admission, and 17 more, or 42 per cent., within forty-eight hours.

In view of the almost invariable success of antitoxin, if administered in the early stage of diphtheria, and the comparative harmlessness of the remedy even should its use subsequently prove to have been unnecessary, this record must be regarded as nothing short of deplorable. In some instances the delay in securing proper treatment is due to the failure of the patient's parents to call in a doctor, perhaps, on account of expense, or, possibly, by reason of their not realizing that he is ill. The general appearance of a diphtheria patient, especially in severe attacks, is occasionally very deceptive in the early stage, and even the medical attendant is apt to be misled, unless the throat be examined.

I am convinced, however, as the result of observations extending over many years of cases of diphtheria received into hospital, and a knowledge of the circumstances attending their removal, that the most frequent source of delay in treatment is the fatal practice of awaiting the result of bacteriological examination before deciding to give antitoxin, or sending the case into hospital. Hesitancy on the part of the practitioner to certify for removal before his diagnosis is confirmed is not unnatural, but the same objection does not apply to giving antitoxin. Until outside practitioners can be persuaded to administer serum on the mere suspicion of a case being one of diphtheria, the sad experience of patients being so frequently sent into hospital in a hopeless condition will continue to be a reproach to the profession.

It has been stated that a belief exists in the minds of a good many outside practitioners that the medical superintendents of the fever hospitals are averse to antitoxin



being given to patients before they are sent into hospital. I do not know on what foundation this belief exists, if, indeed, it does exist, but I do know that the fact is quite to the contrary. Speaking on behalf of all my colleagues in the Fever Service, I am able to assert that if serum were to be given to every case of suspected diphtheria at the earliest possible moment before being sent into hospital, such action on the part of the certifying practitioner would be warmly welcomed. It is with the object of removing any misconception on this point which may exist that I venture to trouble you with this communication.—I am, etc.,

F. FOORD CAIGER,  
Chief Medical Officer, Infectious Hospitals  
Service, Metropolitan Asylums Board.

London, S.W., June 1st.

### THE COASTAL MOSQUITO NUISANCE.

SIR,—I should be grateful if you would allow me to supplement briefly certain portions of the letter by Surgeon Commander D. H. C. Given, R.N. (May 26th, p. 915), in which he refers to the work of the Hayling Mosquito Control.

The "control" of mosquitos is a task which must be undertaken in three successive, and entirely distinct, stages. We have (1) to discover which kind or kinds of mosquitos are responsible for the nuisance existing in the district concerned; (2) to obtain the fullest information available relating to the life-histories, habits, etc., of the offending species, in addition to ascertaining to what extent such habits are influenced by local climatic and topographical conditions; and (3) to devise and apply measures of extermination based upon the knowledge thus gained.

As regards (1), special mention must be made of Mr. F. W. Edwards (Natural History Museum; London), who, as long ago as August, 1920, predicted that the salt water mosquito, *Ochlerotatus detritus*, would prove to be one of the species prevalent in a seaside district such as ours. Since that time a mass of evidence has been obtained showing this particular species to be practically the entire cause of the mosquito nuisance, not only of Hayling, but also of a large number of other seaside places on the south and east coasts of England.

As regards (2), any reference to the investigations carried on at Hayling would be incomplete, not to say misleading, unless associated with the name of Colonel S. P. James, of the Ministry of Health, the leading authority upon the subject of mosquito control. The assistance which we have been receiving from Colonel James during the past year and a half is of so diverse and extensive a character that it is impossible to do more in a letter such as this than to state that, but for the help in question, no work of any value could have been accomplished.

As regards (3), I need only mention that we are making steady progress with the task of applying the various remedial measures available, in the face of a variety of difficulties, of which those relating to the purely scientific branches of the work are perhaps the least formidable. Commander Given advocates that the inhabitants of mosquito-infested districts should proceed "on the lines initiated at Hayling and just recently adopted at Gosport, through the medium of a mosquito control committee consisting of interested residents assisted by the health authorities concerned." It is very important that the functions of public health officers in regard to the mosquito nuisance should be defined, for we should greatly welcome in Hayling any assistance which our health authorities might see their way to provide; up to now no aid of this kind has been forthcoming.—I am, etc.,

JOHN F. MARSHALL, M.A., F.E.S.,  
Hon. Director, Hayling Mosquito Control.

Hayling Island, May 27th.

### GENERAL PRACTITIONER AND CONSULTANT.

SIR,—There appears to be a growing tendency, especially among the younger specialists, to adopt a course, when patients are sent to them for consultation, which I and many other general practitioners consider objectionable. I refer to the practice of transferring a patient sent to them for their opinion to another specialist, without first

communicating with the patient's own medical man. This has occurred twice fairly recently in my own practice. The first case, a child sent to a physician, was transferred to a surgeon, without my knowledge and consent, an operation, which in my opinion was most inadvisable, being urged. Again, an obscure eye case sent to an ophthalmic surgeon was immediately transferred to a gynaecologist for examination and an opinion. The irony of this case was that the gynaecologist, not knowing that I was her doctor, wrote to and transferred her to a local colleague of mine. Now I am on the telephone and live within twenty-five miles of London and thirty-four minutes by rail, yet no attempt was made to consult my wishes in either case. I wrote expostulating to the ophthalmic specialist, and received a curt reply saying it had not even occurred to him to consider my opinion on a gynaecological point.

If this practice of transferring patients without their doctor's consent to another specialist is to grow, I am afraid it will make the majority of men in general practice less inclined to send their cases to their professional brethren, which, in my opinion, would be most unfortunate. One cannot help feeling that at a time when private clinics run by a number of specialists are being started in London, it would be most undesirable if the general practitioner felt that his cases would be transferred from one to another specialist without his consent. In conclusion, I should like to bear testimony to the fact that in my experience these cases are the exception, and that the majority of consultants treat one with every courtesy and consideration.—I am, etc.,

Woking, May 28th.

R. THORNE THORNE.

### REGISTRATION OF NURSES.

SIR,—The suggestion that women who have been nursing the sick for three years before November, 1919, should be admitted to the Register without taking any training into account seems to me deplorable. In my opinion the Register resulting will be absolutely farcical.

I suppose nurses, in self-defence, will have to register, but I hope they will one and all take good care to let the public know on every possible occasion that this registration is a "delusion and a snare."

The only status that a nurse should feel at all adequate to protect her high calling is membership of the College of Nursing. I for one will, on all occasions, draw a very material distinction between a so-called registered nurse and an adequately and fully trained nurse as proved by her membership of the College of Nursing.

May I appeal to the better instincts in our ranks to voice their indignation on behalf of those women who have taken the trouble to go through a course of severe and arduous training in our hospitals.—I am, etc.,

G. W. R. SKENE,

Chairman, Medical Committee, Willesden General Hospital.  
London, N.W., May 21st.

## Universities and Colleges.

### UNIVERSITY OF OXFORD.

At the commemoration to be held on June 27th it will be proposed in convocation to confer the honorary degree of Doctor of Science on Dr. Louis Lapicque, professor of physiology in the University of Paris, and on Sir Ernest Rutherford, F.R.S.

### UNIVERSITY OF CAMBRIDGE.

At a congregation held on June 2nd the following medical degrees were conferred:

M.D.—A. E. Clark-Kennedy.  
M.B., B.Ch.—L. B. Cole, C. C. R. Downing, C. P. Oliver, C. E. Whitting.  
M.B.—F. Allen.

### UNIVERSITY OF LONDON.

A MEETING of the Senate was held on May 16th. The following were constituted the boards of examiners for the first and second examinations for medical degrees in the session 1923-24; the examiners whose names are marked with an asterisk have been appointed chairmen of their respective boards:

*Chemistry*.—\*Mr. H. C. H. Candy (London Hospital Medical College) and Mr. J. A. Gardner (St. George's Hospital Medical School and London School of Medicine for Women), together with the external examiners.  
*General Biology*.—\*Dr. Doris L. Mackinnon (King's College) and Dr. E. J. Salisbury (University College), together with the external examiners.



**Physics.**—\*Mr. J. H. Brinkworth (St. Thomas's Hospital Medical School) and Mr. B. L. Worsnop (King's College), together with the external examiners.

**Anatomy.**—Professor E. Barclay-Smith (King's College) and Professor F. G. Parsons (St. Thomas's Hospital Medical School), together with the external examiners.

**Physiology.**—Professor H. E. Roaf (London Hospital Medical College) and \*Professor W. D. Halliburton (King's College), together with the external examiners.

**Pharmacology.**—Dr. V. J. Wooley (St. Thomas's Hospital Medical School) and Dr. O. F. F. Leyton (London Hospital Medical College), together with the external examiners (\*Professor A. J. Clark).

The following were appointed associate examiners for the M.B., B.S. examination for the session 1923-24:

**Medicine.**—Professor F. R. Fraser, Dr. Gordon M. Holmes, Professor F. S. Langmead, and Professor H. Maclean.

**Surgery.**—Mr. T. P. Legg, Mr. Gordon-Taylor, Mr. W. H. Clayton Greene, and Mr. H. S. Souttar.

**Obstetric Medicine.**—Dr. Eardley Holland and Mr. Miles H. Phillips.

**Pathology.**—Mr. T. W. P. Lawrence and Dr. S. Macdonald.

With reference to the medical curriculum for internal students it was resolved:

That, for the first medical examinations for medical students held in July and December, 1924, and for the second medical examinations, Part 1, for the internal students held in March and July, 1924, and March, 1925, arrangements be made to provide alternative sections of questions on the old and on the new syllabuses.

A similar resolution for external students was adopted by the Senate on March 21st, 1923.

Regarding the diploma in psychological medicine it was resolved:

That in the syllabus in anatomy, histology and physiology of the nervous system in the regulations for the examination for the diploma in psychological medicine for the words "Origin, chemistry and cytology of the cerebro-spinal fluid" the following be substituted: "Chemistry of the nervous system and cerebro-spinal fluid; Metabolism, vitamins and food in relation to nervous and mental diseases; Physico-chemical methods as applied to biochemical research; Blood and urine analysis; Acidosis, uraemia, uric acid; Physical concomitants of emotion; Methods of recording reflexes and tremors in man."

Regulation 3 for the diploma was amended as follows:

The examination for the diploma is open to any candidate whose name is in the *Medical Register*, provided that, before being admitted to Part B, the candidate shall have held for not less than six months a resident or whole-time appointment at an institution (or institutions) for mental diseases recognized for the purpose, or shall have attended for not less than twelve months the practice of such institution (or institutions), or such other practice as may from time to time be approved by the University.

The note prefixed to the regulations for the diploma in psychological medicine was amended by the addition of the following:

A candidate who has already been awarded the diploma in psychological medicine with special knowledge of either of the two branches, psychiatry or mental deficiency, will be permitted to offer himself for examination in Part B (ii) psychological medicine only at a subsequent examination, with a view to special qualification in the other branch of the subject, on payment of the full fee ordinarily payable for Part B of the examination, and if successful, shall have added to the diploma already awarded to him a statement that he has passed the examination with special knowledge of that branch also.

Sir Cooper Perry and Mr. H. J. Waring were appointed governors of the Imperial College of Science and Technology as representatives of the University.

Sir Joseph Verco, M.D., was appointed to represent the University at the Pan-Pacific Science Congress to be held at Melbourne in August next.

The following have been appointed staff examiners in the subjects of examinations for medical degrees for 1923-24:

**Anatomy.**—Professor T. Yeates and Professor E. Fawcett.

**Bacteriology.**—Professor J. W. H. Eyre.

**Chemistry.**—Professor W. H. Lewis and H. Forster Morley.

**Forensic Medicine and Hygiene.**—Professor A. Allison and Professor E. W. Hope.

**General Biology.**—Mr. A. Eastwood and Miss P. C. Esdaile.

**Medicine.**—Drs. J. Calvert, J. Fawcett, R. T. Williamson and C. R. Box.

**Mental Diseases and Psychology.**—Drs. R. H. Cole and W. H. B. Stoddart.

**Neurology.**—Sir Frederick Mott and Dr. E. Farquhar Buzzard.

**Obstetric Medicine.**—Professor T. Wilson and Dr. T. G. Stevens.

**Oto-Rhino-Laryngology.**—Sir William Milligan and Dr. Herbert Tilley.

**Pathology.**—Professor L. S. Dudgeon and Sir Bernard H. Spilsbury.

**Pharmacology.**—Professor J. A. Gunn and Professor A. J. Clark.

**Physics.**—Mr. A. Wood and Professor S. Russ.

**Physiology.**—Professor M. S. Pembrey and Professor G. A. Buckmaster.

**State Medicine.**—Dr. A. G. R. Foulerton and Dr. T. M. Legge.

**Surgery.**—Mr. O. H. Fagge, Mr. E. W. Hey Groves, Professor G. E. Gask and Mr. C. A. Nitch.

**Tropical Medicine.**—Dr. G. O. Low.

The following candidates have been approved at the examination indicated:

THIRD M.B., B.S.—†Una C. Garvin. †Winifred M. Gray. †Dulcie H. Lukis, †D. H. Patey (University Medal). Elsa Y. Adams, Sarah E. Andrews, O. A. Baker, J. C. Blake, Gladys L. Buckley, K. S. Captain, Gertrude B. G. Carden, Eva D. Cook, D. C. Corry, Eleanor M. Creak, A. J. Dodd, A. H. G. Down, Helen W. Duncan, V. Feldman, R. K. Ford, Christine P. Francis, A. J. Gardham, P. C. G. Garnham, F. A. Gaydon, G. N. Golden, Evelyn E. Gourlay, E. E. D. Gray, Gwenvron M. Griffiths, C. F. Harris, Marjorie F. Hayward, Evelyn N. Heather, Nancy M. Hield, E. G. Housden, G. H. Howells, Dorothy M. Howgate, Margaret G. Jones, Kathleen H. B. King, Edna I. Langston, B. L. Laver, E. A. Leviser, J. L. H. Livingstone, W. E. Lloyd, Barbara V. Lucas, A. N. Macbeth, Morland, A. C. Maconie, N. S. Macpherson, R. A. Madgwick, Phyllis M. Manson, Edith T. Marshall, Mary Michael, J. B. G. Muir, Ruth N. Parker-Gray, G. P. Patel, Enid M. Powell, Muriel Rawlinson, Dorothy S. Russell, Emily V. Saunders-Jacobs, C. D. Shapland, F. G. A. Smyth, Emma M. Store, R. O. Swaine, A. Walk, W. R. Ward, Cicely Weatherall, H. N. Williams.

\* Distinguished in Medicine.

† Distinguished in Surgery.

‡ Distinguished in Forensic Medicine. § Distinguished in Midwifery.

## UNIVERSITY OF MANCHESTER.

### Diploma in Bacteriology.

At the annual meeting of the Court of the University of Manchester approval was given to the institution of a special Diploma in Bacteriology. This is the first diploma in this subject instituted in this country, and the courses of instruction, which candidates will be required to attend before presenting themselves for examination, are designed to supply a thorough training in the general principles of the subject, together with advanced courses in one or more special branches.

Graduates in medicine and in science of any approved university may enter for the course, and the syllabus has been designed to meet the requirements of medical graduates who wish to qualify for bacteriological posts or to obtain a special knowledge of medical bacteriology, and of graduates in science who desire to take up some branch of bacteriological work.

The diploma will be awarded to candidates who have, after graduation in science or in medicine, attended the prescribed courses over at least one academic year, satisfied the examiners in the written and practical examinations, and presented a satisfactory thesis on an approved subject.

The course of study includes (a) courses of instruction in general bacteriology, including the morphology and physiology of bacteria and bacterial classification, the history of bacteriology, quantitative methods of bacteriological investigations, and elementary bacteriological chemistry.

(b) Special courses of instruction in two or more of the following subjects must also be taken (1) bacteriological analysis of water, milk, food, etc., (2) advanced bacteriological chemistry, (3) biometry, (4) parasitism, infection and resistance, (5) epidemiology, (6) comparative pathology.

The examination will consist of two written papers on the general subjects, together with an oral and practical examination, a written paper on each of the special subjects selected, together with such oral and practical examination as may be required by the examiners. Candidates must, during the second half of their course of study, select some subject to be approved by the professor, on which they must submit a thesis at the time when they present themselves for examination, or within three months from that date. This thesis must include a report on personal observations carried out in the laboratory.

The increased importance of bacteriology in human and veterinary medicine, in agriculture, and in other branches of applied science, makes it very desirable that an adequate course of training should be available for those who wish to undertake bacteriological work of any kind. It is impossible to include in the ordinary medical curriculum more than the rudiments of this subject, and practically no provision is at present made for non-medical students, such as those studying biochemistry and kindred subjects, to whom a knowledge of bacteriological methods would often be of the greatest service. It is hoped that the action of the University in instituting this new diploma will meet the needs of a considerable number of post-graduate students, for whom no adequate provision has hitherto been made, and will help to supply efficiently trained bacteriologists for the numerous posts for which they are now required.

### Delepine Research Fellowship.

Applications from medical graduates for the Sheridan Delepine Research Fellowship in preventive medicine, value £300 per annum, must be received by the Internal Registrar of the University by June 15th. The fellowship, which is for one year from October 1st, 1923, is founded in memory of the late Professor Delepine, and the candidate elected will be required to register as a research student of the University, and to devote the whole of his time to research in the department of bacteriology and preventive medicine.

## SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have passed in the subjects indicated:

**SURGERY.**—B. Basuny, W. A. Drake, E. W. Hicks, \*L. K. Htoo, W. J. Jameson, C. S. Laurence, J. Totton.

**MEDICINE.**—B. Basuny, A. J. Dowek, A. Gullertein, M. Hawke, J. Totton.

**FORENSIC MEDICINE.**—W. A. Drake, O. Sinanides, M. A. E. Somers, B. Zeitoun.

**MIDWIFERY.**—W. J. Jameson, W. R. H. Pooler, A. Vasudev, H. Whitby.

\* Section I. † Section II.

The diploma of the Society has been granted to Messrs. B. Basuny, M. Hawke, W. J. Jameson, C. S. Laurence, J. Totton, A. Vasudev.

A LONG series of post-graduate lectures in general medicine and surgery, and in various specialties, have been arranged by the University of Vienna for the months of July, August, and September. There will also be a refresher course from September 17th to 29th. Programmes can be obtained on application to the Bureau des Fortbildungskursus, Frankgasse 8, Wien IX.

THE Central Midwives Board for England and Wales met on Thursday, May 24th. A special meeting was held first, followed by the ordinary monthly meeting. Sir Francis Champneys presided at both. The business dealt with at the latter meeting consisted of the usual routine. The Standing Committee reported the receipt of a letter from the Registrar of the General Medical Council stating that the Penal Cases Committee of the Council, in a recent case before it, recognized the importance of ensuring that certified midwives should not be induced by medical practitioners to undertake operative procedure outside their province.



## Obituary.

JOHN CHIENE, C.B., M.D., LL.D., D.Sc., F.R.C.S.E.,  
Emeritus Professor of Surgery, University of Edinburgh.

A STRIKING figure of a past generation has gone with the death on May 29th of Emeritus Professor John Chiene, C.B., at the age of 80. Professor Chiene, since he gave up the Chair of Surgery in 1909, had lived in retirement at his country house, Aithernie, Davidson's Mains, near Edinburgh. His end was quiet and occurred after a few hours' illness, for he had been in excellent health on the preceding day.

Professor Chiene was born in Edinburgh on February 25th, 1843—a year celebrated in Scottish annals as the year of the "Disruption"; his father was Mr. George T. Chiene, an Edinburgh accountant, of a Fife family. He was educated at Edinburgh Academy, where at the ages of 16 and 17 he gained respectively the Ferguson and Mitchell Medals for Mathematics. Perhaps this early attention to mathematical studies directed his mind to trigonometry, for all his old pupils will remember his fondness in later life for the triangle. At school he played in the football "twenty" and in the cricket eleven, and at a later stage supported the Academical "twenty" of former pupils. A still more intimate interest in Rugby football was evinced by the fact that he was first President of the Scottish Football Union in 1873, and held the same office for a further period in 1877.

He spent a short period of study in Paris, Berlin, and Vienna, and after the usual medical course at Edinburgh took the M.D. degree with honours in 1865. The next year was spent as house-surgeon with Mr. Syme, then Professor of Clinical Surgery in the Royal Infirmary. Here one of his fellow residents was Mr. A. G. Miller. A previous house-surgeon with Professor Syme, eleven years before, had been Joseph Lister, who had left behind in Edinburgh an example of experimental work in surgery, controlling the results of his researches by microscopical observations. When Lister returned to Edinburgh in 1869 as successor to Syme in the Chair of Clinical Surgery, Mr. Chiene spent two hours or more daily in his wards, engaged in clinical study. This was repeated each year until Lister went to London in 1878, when Mr. Chiene was appointed junior surgeon to the Royal Infirmary. In the summer of 1875, when Lister was absent on the Continent, he left his wards and clinical lectures in charge of Mr. Chiene for two months. The nine years' association had an important effect on Mr. Chiene's work, for when later he became Professor of Surgery, one of the first developments he introduced was a laboratory for surgical pathology in connexion with the chair; he claimed that it was the earliest in Great Britain, and he continued to take a practical interest in it till his death.

During the period of his work in Lister's wards he was also engaged in teaching anatomy, and so he came under the influence of John Goodsir, another of the famous figures

in the Edinburgh Medical School. Shortly after graduation he had become junior demonstrator in Goodsir's class, and in a lecture entitled "Looking Back, 1907-1860," Professor Chiene gave the following account of his final association with Goodsir.

"In the end of February, 1867, my dear master, John Goodsir, sent for me, his junior demonstrator of anatomy, to his house at South Cottage, Boswell Road, Wardie, off the Granton Road. I found him lying on a camp bed in a narrow room (in which, I understand, Edward Forbes died), a small table at his side, and on the table his Bible and *Quain's Anatomy*. He asked me how his students were getting on, and bade me farewell. His last words were, 'Teach my students, Dr. Chiene. Good-bye.' He died shortly afterwards, on the 6th of March, and I have taken these words as my life-motto."

Goodsir was succeeded in the chair by William Turner (later Sir William), and by him Mr. Chiene was promoted

to the post he had held of senior demonstrator in the Anatomical Department of the University. Three years later, in 1870, Mr. Chiene began to lecture in the Extra-Mural School on operative surgery, and next winter on systematic surgery. In this course he tells us he introduced two things he had never seen before in a lecture room—coloured chalks for the blackboard, and a naked man on whose skin he delineated the flaps of amputations and other surface markings. The latter innovation was banned by some of the University authorities, though the prohibition was disregarded. The class was originally held in Minto House, which had been inaugurated by Syme and has been immortalized by John Brown as the scene of Ailie's operation in *Rab and His Friends*. As Minto House disappeared in the course of city improvements to make way for the new Chambers Street, Mr. Chiene and other lecturers found a resting place in the dwelling house at 27, Nicholson Square. Here the dining room of the house speedily proved too small for his growing class, and with the help of his fellow lecturers a classroom was run up in the front garden between a Friday and the following



Photograph by

[A. Susan Watson, Edinburgh.]

PROFESSOR JOHN CHIENE.

Tuesday. The class in surgery continued to grow and, beginning with 13 students, in a few years numbered 155, a large class for an extra-mural lecturer. In this he enjoyed the good fortune that had in several cases before his time proved the making of a young lecturer, since he was competing for the students' favour against the aged Professor Spence in the University, whose lectures, from the accounts of those who attended Chiene for instruction, were very dreary. In 1882 Mr. Chiene was elected to the Chair of Surgery in succession to Professor Spence, gaining the post by a narrow majority over the late Mr. John Duncan.

His early success with students was now shown to be due to special personal gifts as a teacher, combined with great simplicity and earnestness, a faculty for clear exposition, and a racy and genial humour. In the wards where his clinical teaching was carried out, sympathy and kindness of heart were characteristics that commended him both to students and patients. Along with this, however, he had a



capacity for direct speaking which gained for him among the students the sobriquet of "Honest John," and sometimes proved a cause of intimidation to the diffident or of offence to the high-spirited. He was dominated by his feeling of responsibility as a teacher. His lectures were directed towards inculcating the principles of surgery with relatively little regard for changing details of operations. As a result, to anyone reading over notes of Professor Chiene's lectures delivered thirty years ago, there appears to be very little requiring alteration in the light of fuller modern knowledge.

Another matter which receives, perhaps, too little consideration in present-day medical schools is that he taught rather with the object of rendering his students efficient for general practice than with the view that they should become specialists in surgery. The apophthegms which often cropped up in his lectures displayed a shrewd knowledge of human nature and keen perception of fundamental facts. Such sayings as "A pimple on a man's nose is of more importance to him than a sarcoma in his neighbour's thigh"; "Surgery is nothing but a knowledge of anatomy with common sense and a little bacteriology added"; "Find out all you can about your patient's lesion by asking questions with your hands behind your back; so soon as you touch him he begins to question you"; these were current coin with many generations of students. Favourite books were recommended to every class, such as Hilton's *Rest and Pain* and *The Meditations of Marcus Aurelius*; for Gilbert White's *Natural History of Selborne* Chiene had much the same lasting veneration that Sydenham entertained for *Don Quixote*. In clinical teaching Chiene was fond of drawing the attention of his dressers to two sketches hung in the side room of his ward for their benefit, one illustrating a mother bird feeding a nestful of gaping youngsters—the wrong kind of teaching—the other representing a new-fledged chick picking up grains of corn for itself—the correct method of gaining knowledge.

His publications were not many. A collection of *Lectures on Surgical Anatomy*, with 31 plates, was published in 1873, while he was still an extra-mural lecturer, and a small fasciculus entitled *Principles of Surgery* was issued in 1882, the year in which he was elected to the chair of surgery. He made also occasional contributions to periodical medical literature.

In 1900, when local patriotism was equipping hospitals in various parts of the country to aid the forces in South Africa, he went out as the senior surgeon of an Edinburgh hospital, becoming, soon after arrival in South Africa, Consulting Surgeon to the South African Field Force. A series of interesting letters recording his experiences were published in *The Scotsman* at the time, and he later received the decoration of C.B. in recognition of his services. In 1908 he received the degree of D.Sc. from Sheffield University, and in 1910, after his retirement, the Universities of Glasgow and Edinburgh both conferred the degree of LL.D. upon him.

An indication of the affectionate regard entertained for him was afforded by a dinner given in his honour in 1911 by the survivors of his sixty-two house-surgeons. Letters of appreciation were received from all, save one in a distant part of the world, and although some were dead and many were scattered to the ends of the earth, nearly forty were present in Edinburgh to celebrate the occasion. A plaque of his head cast in silver, the work of Mr. W. G. Stevenson, R.S.A., was presented to him at this time and a replica in bronze was provided for each of the old residents. About the same time his portrait was painted for a number of friends and admirers by Mr. Fiddes Watts, R.A.

In 1869 Mr. Chiene married Elizabeth Mary, daughter of David Lyall of Calcutta, who survives him, as well as two sons and one daughter. The elder son is a well known surgeon in Edinburgh.

The funeral took place on Friday, June 1st, at the Dean Cemetery, Edinburgh, and was attended by a large gathering representative of the medical profession and general public. At the grave a short service was conducted by the Rev. Dr. Stott, parish minister of Cramond. Among the pall-bearers were Principal Sir Alfred Ewing, K.C.B., LL.D. (representing the University of Edinburgh); Sir David Wallace,

K.B.E., C.M.G. (representing the Royal College of Surgeons, Edinburgh); and Sir Joseph Fayrer, Bt., C.B.E. (representing the Royal Infirmary of Edinburgh).

#### APPRECIATIONS.

By Sir HAROLD STILES, K.B.E., F.R.C.S.E., Regius Professor of Clinical Surgery, University of Edinburgh.

To one who has been pupil, house-surgeon, and subsequently for ten years a University assistant, to the late Emeritus Professor Chiene, it is a privilege, as well as a labour of love, to endeavour to pay tribute to his memory. That he possessed such a strong and many-sided personality, that he was such a well known and widely esteemed citizen, so highly reputed as a surgeon, so famous and beloved as a teacher, as well as so full of humanity, makes the task no easy one.

Chiene was appointed to the chair of systematic surgery in 1882. His reputation as an extra-mural teacher had been so great that the writer purposely delayed taking out a course of lectures in surgery until Chiene had become professor. One cause of his great success as a lecturer was the fact that he never wrote out his lectures in full. They were always thought out afresh each year. I well remember, when his university assistant, the mosaic appearance of his printed syllabus, which was crossed in all directions with jottings he had made at various times. Although he took a keen interest in the science and progress of surgery, he was not a laborious reader of the subject. He had, however, a great gift for weeding out the grain from the chaff of surgical literature. Like his great masters, Syme and Lister, he was an individualist; his lectures were founded almost entirely on his own observations and experience. He presented his facts in a simple, original, and logical manner and with such a fine sense of proportion that the student got a mental perspective of surgery and a grip of its principles well calculated to prove of lasting value to him in his future career. Few teachers accomplished so successfully the difficult task of lecturing to juniors and seniors in the same class, and few left such a deep and lasting impression of the principles which should guide the practitioner in dealing with the surgical conditions he would be most likely to meet with in general practice.

As a clinical teacher Chiene was equally successful and popular. It was a treat to see with what consummate skill he used to brush aside details and demonstrate how the cases illustrated the surgical principles he so forcibly laid down in his systematic lectures. No one could have been more earnest and conscientious in clinical teaching, and so convinced as he of its value, that it was a serious offence for a student to appear in his wards without his notebook and pencil ready to hand.

Chiene could not be regarded as a rapid or brilliant operator, nor would he have wished to be so considered. Having been a demonstrator, first under Goodsir and then under Turner, he was a good anatomist and could operate rapidly when the necessity arose, but he always put safety first, and anything in the shape of playing to the gallery was repulsive to him. His success as an operating surgeon was due in no small measure to the judgement—he knew what to do as well as how to do it. Unfortunately for him, however, in spite of his strong character and in spite of the fact that he had no lack of surgical courage, he was possessed of a sensitive and, in some respects, a nervous temperament, which made the strain of his operative work all the heavier; moreover, the anaesthetic was always a source of anxiety to him. It was this trait in his character that made him happier in the lecture room and wards than in the operating theatre.

When Lister left Edinburgh, it was Chiene who bore the brunt of the battle of "Listerism" which was being waged in the Edinburgh Royal Infirmary, just as it was Hector Cameron who fought it in Glasgow. Chiene's victory was all the more creditable considering the strength of the forces arrayed against him. Chiene was brought up in the school of anatomical surgery which prevailed at the time. His intimate association with Lister and the discovery of the tubercle bacillus by Koch in the same year as he was appointed Professor of Systematic Surgery, combined with his keen foresight and wide outlook, were doubtless the main



influences which determined him to set up a laboratory of bacteriology and surgical pathology in the University. This was the first teaching bacteriological laboratory in the United Kingdom, and, by establishing it, Chiene set the example, in the academic teaching of surgery, of cultivating the subject as a science so that its art might be better taught and promoted. Although he was not himself a laboratory worker, he spared neither time nor money to encourage research by his assistants. I am glad once again to state that I would not be occupying the Clinical Chair had it not been for the facilities which the laboratory afforded me for carrying on original investigations in surgical pathology and for the generous help and encouragement given by my chief.

During the later part of his occupancy of his chair, Chiene began to feel the effects of his strenuous life, and though destined yet to live beyond the allotted span, his honest and conscientious nature prompted him to sheathe his sword and hand over the command to a surgeon of the younger generation. That he felt the wrench keenly and sorrowfully is only human, and it was a great disappointment to his many friends that he so seldom emerged from the retirement of his charming retreat overlooking the Bruntisfield golf-links and the banks of the Forth.

Doctors, as a rule, have little time or inclination for public work outside their professional duties, but of Chiene it may truthfully be said that, in spite of his arduous routine work, he gave freely of his time and thought on behalf of many a project concerned with the welfare of the community. His commanding presence, his strong yet genial countenance, and his popularity made him a familiar figure to the citizens of Edinburgh. Chiene was more than a surgeon and teacher—he was a man of broad and statesman-like vision; he “reflected the human spirit always on the nobler side.” He possessed “those finer qualities of head and heart which count for so much in life,” and are such a valuable asset especially to a clinical teacher. It is safe to assert that his great natural ability, his strong individuality and lovable personality, would have assured him success in any sphere of life. He was an apostle of common sense, and was able to leave his lectures and clinics with an amount of shrewd and helpful everyday philosophy much appreciated by his pupils. The methods which he introduced and the influence which he exercised on the Edinburgh Medical School have been far-reaching in their beneficence. His name will go down to posterity as a man of wide sympathies and high ideals, as well as a great teacher and sound surgeon.

Chiene was a famous football player and the first President of the Scottish Football Union. To the present generation he was a familiar figure on the golf course and on the curling-pond. Like many of my contemporaries, I owe some of my happiest days and reminiscences to the foursomes in which I was privileged to take part with my old and revered teacher, in the days of old Luffness and later at Machriehish. The way Chiene played “with his head,” the moral support he gave his partner, and the miracles he performed with his “little black spoon” made him a tower of strength to his partner. He knew his Bible as well as most ministers, and many a text was quoted in his classroom and wards in support of a principle or rule of conduct. His favourite text for the golf links was: “In quietness and confidence shall be your strength”—the best motto also for a surgeon. If his partner should miss a short putt, he would say, “Never mind, Harold; just think how happy you have made Harry or Francis” (both of whom, alas! have crossed the bar before him). He loved to play a good old foursome because, as he said, it teaches us to “bear one another’s burdens.” He was a very “clubbable” man, and used to advise the young practitioners to join a social club as well as the local medical society. Full of pawky Scottish humour and a good raconteur, he was always a great asset to the several medical dining clubs for which Edinburgh has long been famous. Although not an orator in the true sense of the word, he was an original and attractive speaker.

Professor Chiene was particularly happy in his home life, which was very dear to him. Deep sympathy will be felt for his family, and for his devoted and courageous wife, who so ably and efficiently shared with him the burdens as well as the joys of a life so strenuous and useful, so full of honour, service, and achievement.

By Sir DAVID WALLACE, K.B.E., C.M.G., President of the Royal College of Surgeons, Edinburgh.

Mr. Chiene, prior to his appointment to the chair of surgery in the University, was a successful teacher in the extra-mural school, for which he always retained a keen interest, as he believed it went far towards equipping men for wider spheres of work. Teaching was his chief delight, and he was unflinching in his efforts to inspire students with the love of work. His ideals were high and always far removed from the merely commercial side of his profession. He inculcated them at every opportunity, both in the classroom and in the wards of the infirmary. He taught many generations of students; his classes in the eighties and early nineties were very large, and the members of them enthusiastic admirers of their teacher. His style was peculiarly his own—vivid and graphic pictures of the subject, and interest added to the description by whimsical and humorous illustrations and asides, many being Biblical in their origin. The human side was constantly kept in view, and in the wards the sympathy he showed to the patients, while keenly alive to the treatment of their physical ailments, was always apparent. Perhaps no teacher left deeper impressions upon his students than he did; his common sense and laconic statements being so much to the point and given in such a clear manner that they could not be forgotten. Innumerable doctors have been able, years afterwards, to recall his actual words and what he advised in the examination and treatment of cases, and have found them of inestimable value in their work. His teaching, while to a great extent based on anatomy, never lost sight of surgical pathology, in which early in his career he took a great interest.

Mr. Chiene never allowed private practice to interfere with his public services, and on many occasions refused to see a patient or go into the country in consultation, because he had his university lecture or infirmary work to do, and that he considered was his first duty. Nevertheless, for many years he had a large private practice; he gave much thought and care to his patients—many of whom became close personal friends. He early recognized the great importance of the mind over the body and that “a merry heart doeth good like unto a medicine.” He had numerous friends in many countries, who recognized his genial nature and appreciated the power of the man and his influence for good.

By A. G. MILLER, M.D., F.R.C.S.E., Consulting Surgeon to the Royal Infirmary of Edinburgh.

John Chiene was in the same class with me at the Edinburgh Academy. He was always well up in the class, of which the clerk was Alexander Moore-Stuart. He got a medal in mathematics. He was always good at games, in which he took an interest to the last. At college we did not see so much of each other because I began my medical studies a year before he did. We were more intimately brought in contact after graduation, when resident surgeons in the Royal Infirmary. He was with Syme, I with Spence. We were both hard worked, having charge of about seventy beds, but in the evenings we were often together. Chiene’s cheerful, kindly, and humorous disposition made him ever a welcome and pleasant companion. In many ways we were rivals, but always the best of friends, and this was largely due to his unflinching good nature.

Chiene’s devotion to anatomy and surgery made him well qualified for the posts he ultimately filled. I remember his saying to me in these early days of our professional life, “If you want to know a subject thoroughly, teach it.” For many years Chiene and Mitchell Banks and I exchanged greetings at the new year. After Banks’s death there were only the two who exchanged birthday greetings—for we were the same age all but two days.

After Chiene retired from active work I used to go down and see him occasionally at Aithernie. He was always the same—cheerful, friendly, and jocular. We often talked of the Academy days and of the sadly decreasing number of our old class fellows. It was a pleasure to see “Honest John” sitting in his easy-chair at the fireside with his little patience card-table at his elbow, and on the other side of the fire Mrs. Chiene with her kindly smile of welcome. Chiene married comparatively young, and had his home brightened by the charming lady who survives him. The two



were well fitted to each other. There was ever and evidently a strong and happy fellowship between them. In Chiene's character and conversation there was always a marked reverence and regard for holy things, as witness his little book, *The Master: His beliefs, His promises, His blessings, His prayers, His commands, and His warnings.*

Dr. FRANCIS RAYMOND MITCHELL HEGGS, of Mapperley, Nottingham, died from pneumonia on May 19th, aged 48. He was a native of West Bromwich, and received his medical education at the University of Birmingham and at St. Mary's and the London Hospitals. He obtained the L.S.A. in 1896 and the diplomas of M.R.C.S.Eng., L.R.C.P.Lond. in 1900, and subsequently served as house-surgeon to the Wolverhampton and Staffordshire General Hospital. He took great interest in army medical work, and while in the Isle of Wight served as captain in Princess Beatrice's Rifles. He received the thanks of the late Prince Leopold and Princess Beatrice for the assistance he rendered when the Prince was thrown from his horse. On the outbreak of war in 1914 Dr. Heggs, who attained the rank of major in the R.A.M.C.T.F., was among the early volunteers; he commanded the third 1st Notts and Derby Mounted Brigade Field Ambulance, and saw much service in France. He was severely gassed, and in consequence suffered from chronic bronchitis. Dr. Heggs, who was a member of the Nottingham Division of the British Medical Association, was by nature quiet and retiring. He was very popular with all with whom he came in contact. He is survived by his widow, three sons, and a daughter. Many friends and patients attended the funeral service.

## The Services.

### PENSIONS APPEALS.

We have received the following statement from the Ministry of Pensions, with a request for publication.

The Minister of Pensions desires to correct a misunderstanding which has arisen regarding the action of the Ministry consequent upon certain decisions by the Pensions (Assessment) Appeal Tribunals on appeals against final awards. It is erroneously supposed that the setting aside of a final award by a Tribunal implies that the award will be increased, or, if the appeal was against a nil disablement award or final weekly allowance, that a fresh award will be made at once. This is not the case. Under the War Pensions Act, 1921, the Tribunal is empowered to confirm, increase, decrease, or set aside a final award, and its decisions are equally binding on the Ministry of Pensions and the appellant. The setting aside of a final award ordinarily means that the Tribunal, without challenging the assessment, considers that the time has not yet come for the making of a final award. It does not necessarily follow that an increase in the current award will be due, or that a fresh award will be made if none is current. The man reverts to the position he was in before the final award was made. His case falls to be reconsidered under the Pensions Warrants by the Ministry, and where it is necessary to obtain a further assessment by a Medical Board of his degree of disablement this is done. In any event he has the right to claim re-examination on the ground that his condition has deteriorated. If the man's condition is found to have deteriorated, a fresh award is made; but if his condition has not deteriorated the current award remains in force. At a later stage, however, his case will again be considered with a view to a final award being made, and if the man is dissatisfied with such final award he can avail himself of a further right of appeal to the Pensions (Assessment) Appeal Tribunal.

### OPERATIONS IN WAZIRISTAN, 1920-21.

THE names of the following officers have been brought to notice for distinguished service during the operations in Waziristan, 1920-21, by His Excellency Lord Rawlinson of Trent, Commander-in-Chief in India, in a dispatch dated October 23rd, 1921:

**Commands and Staff.**—Colonel W. E. Hudleston, C.M.G., C.B.E., D.S.O. (late R.A.M.C.).  
R.A.M.C.—Captain (Acting Lieut.-Colonel) A. G. Biggam, O.B.E., Captain (Temporary Major) W. M. Cameron, Major (Acting Lieut.-Colonel) H. Harding, Captain (Acting Lieut.-Colonel) G. M. Ingoldby, Captain (Acting Major) J. M. MacKenzie, M.C., Captain (Acting Major) O. Popham, Captain (Acting Major) M. P. Power, M.C., Captain T. H. Sarsfield, Captain B. C. O. Sheridan, M.C., Captain R. I. Sullivan, M.C.  
**Indian Army Medical Services.**—Lieut.-Colonel (Acting Colonel) C. Hudson, C.I.E., D.S.O., Captain (Acting Major) J. B. Vaidya, I.M.S., Temporary Captain G. D. D. Wijesekere, I.M.S., 2nd Cl. Asst. Surg. W. G. Sherard, I.M.D., 3rd Cl. Asst. Surg. C. J. Smith, I.M.D., 1st Cl. Sub-Asst. Surg. Bashir Ram, I.M.D., 2nd Cl. Sub-Asst. Surg. Dayal Singh, I.M.D., 2nd Cl. Sub-Asst. Surg. Jawala Singh, I.M.D., 2nd Cl. Sub-Asst. Surg. Nand Lal Wig, I.M.D., 3rd Cl. Sub-Asst. Surg. Santan Singh Bisht, I.M.D., 3rd Cl. Sub-Asst. Surg. Somasundar Mudaliar, I.M.D.

Dr. Oguntola Sapara, Medical Officer, Nigeria, has been appointed to the Companionship of the Imperial Service Order.

Third class Assistant Surgeon George David Rodrigues, Indian Medical Department, has been awarded the medal of the Military Division of the Order of the British Empire, for services rendered in connexion with the military operations in Malabar, 1921-22.

### DEATHS IN THE SERVICES.

LIEUTENANT-COLONEL HENRY BRUCE MELVILLE, Bengal Medical Service (retired), died suddenly at Tain on April 15th, aged 59. He was the son of the late Robert Hayes Melville, of Partick, Glasgow, and was educated at the University of Glasgow, where he graduated M.B. and C.M. in 1885, also a member of the Medico-Psychological Association. After serving as a senior medical officer at the Crichton Royal Institution, Dumfries, he entered the Indian Medical Service as surgeon on September 30th, 1889, passing into Netley second and passing out first of his term. He became lieutenant-colonel after twenty years' service and retired on January 22nd, 1921. Most of his service was spent in civil employ in the United Provinces, where, at various times between 1898 and 1917 he filled the posts of civil surgeon of Fatehgarh, Faizabad, Masuri, and Naini Tal, and superintendent of the Lucknow Central Gaol, and from 1913 to 1915 that of civil surgeon to the new capital, Delhi. In May, 1917, he was appointed civil surgeon of Lucknow, and professor of midwifery in Lucknow University, and six months later residency surgeon of Kashmir, where he finished his service. He served on the North-East Frontier of India in the Lushai campaign of 1890.

Lieut.-Colonel John Stevenson, R.A.M.C. (retired), died recently at Hove, aged 75. He was educated at Glasgow University, where he graduated M.B. and Ch. in 1874; he took also the D.Sc. in 1875, the Fellowship in 1883 and 1890. After serving as resident medical officer at the Edinburgh Royal Infirmary he entered the army as surgeon on August 4th, 1878, became lieutenant-colonel after twenty years' service, and retired on November 2nd, 1898. After retirement he was employed at Berwick in 1889 and at Aberdeen in 1902-03.

Lieut.-Colonel Ernest Albert Churchward Matthews, D.S.O., I.M.S., died on May 8th, aged 40, from injuries received in a motor accident near Jerusalem. He was born on August 3rd, 1873, and educated at Cambridge, where he graduated B.A. in 1894, and M.A., M.B., and B.Ch. in 1899; he was a student at St. Bartholomew's, and took the M.R.C.S. and L.R.C.P.Lond. in 1898. He entered the I.M.S. on January 27th, 1900, and became lieutenant-colonel after nineteen and a half years' service. He served in the Mohmand campaign of 1908, on the North-West Frontier of India, receiving the frontier medal with a clasp; and in the recent war, in the operations in France and Flanders from December, 1914, to March, 1918; and with the Egyptian Expeditionary Force from April to October, 1918, being mentioned in dispatches (June, 1916, and May, 1918), and receiving the D.S.O.

Lieut.-Colonel William Malloch Hart, M.C., Canadian Army Medical Corps, died at Ottawa, after an operation, on April 17th. He graduated as M.B., Manitoba University, in 1907, and took the diploma of M.C.P.S., Manitoba, in the same year. He served in the C.A.M.C. throughout the war, becoming major on December 5th, 1916, and lieutenant-colonel on May 17th, 1918, and received the Military Cross on January 10th, 1917. He was employed on soldiers' civil re-establishment work at Ottawa.

Brevet Colonel Henry Aymer Haines, R.A.M.C. (retired), died at Strood, Kent, in April, aged 61. He was born at Mallow, and educated at Queen's College, Cork, graduating in 1882 as M.D., M.Ch., and M.A.O. of the Royal University, Ireland. He entered the R.A.M.C. as surgeon on January 31st, 1885, became lieutenant-colonel after twenty years' service, and received a brevet colonelcy on January 1st, 1917, retiring on May 2nd, 1918. He served in the Chitral campaign on the North-West Frontier of India in 1895, and received the frontier medal with a clasp.

Surgeon Lieut.-Colonel Hopetoun Currie Collier, R.A.M.C. (retired), died at Paignton, South Devon, on May 10th, aged 82. After taking the L.R.C.P. and S. Edin. in 1862, he entered the army as assistant surgeon in September, 1863. He became surgeon major on April 28th, 1876, and retired with an honorary step of rank as brigade surgeon in March, 1886. He served in the Abyssinian campaign of 1868, was present at the action of Arogee and at the capture of Magdala, and received the medal. In the old regimental days he served in the 4th Foot, the King's Own Royal Lancaster Regiment, and in the 16th Foot, the Bedfordshire Regiment, then known by the nickname of "the Peacemakers."

Captain Thomas Copeland Storey, M.C., R.A.M.C., died at Cologne on April 25th, aged 32. He was educated at the Middlesex Hospital and at Durham University, where he graduated M.B. and B.S., with honours, in 1912, and M.D. in 1916. He was in the Special Reserve of the R.A.M.C. before the war, having attained the rank of captain from April 1st, 1914; subsequently he took a permanent commission, being ranked as captain from April 1st, 1915. He served throughout the recent war, and received the Military Cross on July 26th, 1918.

Flight-Lieutenant Harold Wilbert Street, Royal Air Force Medical Service, died of pneumonia at Constantinople on April 21st. He was a Canadian, and was educated at Toronto University, where he graduated M.B. in 1918. He had only recently entered the service.



## Medical News.

EXCELLENT work has been done on behalf of the chemical industries of this country by the Association of British Chemical Manufacturers during the short period of its existence as an organized body. The members of the association are manufacturers, but the association is not a trading institution and is not concerned with profit earning for itself; its principal object is the advance of British chemical manufacturing industries as a whole. Nearly one hundred and fifty firms, representing a capital of over £100,000,000, are members. A sign of the activity of the association in promoting business facilities between manufacturers and purchasers is seen in the issue of a directory of its members with a classified list of their products and manufactures, including many medicinal articles and fine chemicals. Under the name of each article in the list appear the names of the firms who manufacture it. The directory also contains indexes to the list in French, Spanish, Italian, Portuguese, and German. The association offers to advise on all matters relating to the chemical trade and to make inquiry on behalf of intending purchasers for materials they have had difficulty in obtaining.

IT will be remembered that last year (JOURNAL, July 1st, 1922, p. 26) the Council of the British Medical Association made an appeal for the starving doctors of Russia, and this appeal was repeated at the end of December (SUPPLEMENT, December 30th, 1922, p. 233). Subscriptions were limited to five shillings, and nearly £2,000 has been raised. The condition of the members of the medical profession in Russia has not improved in the meantime, but, if anything, their want and misery have become worse. An appeal is being made in aid of Russian doctors and Russian medical institutions by an influential international committee; subscriptions should be sent to the secretariat of Dr. Fridtjof Nansen, 54, Rue du Rhône, Geneva, Switzerland. Another appeal, in aid of the Russian doctors and medical staff in the famine-stricken regions, has been issued by the Medical Aid Committee, of which Miss Margaret Llewelyn Davis is president; donations in money and in kind should be sent to the secretary of the Medical Aid Committee, 68, Lincoln's Inn Fields, London, W.C.2. It may not be amiss also to remind our readers that the fund opened by the Council of the British Medical Association is still open; subscriptions (of five shillings and multiples of five shillings) should be sent to Mr. Ferris-Scott, Financial Secretary, British Medical Association, 429, Strand, London, W.C.2.

THE annual meeting of the University of Durham Medical Graduates Association will be held in the College of Medicine, Newcastle-on-Tyne, on Monday, June 25th, at 5 p.m. The annual dinner will be held the same evening in the King's Hall, Armstrong College, Newcastle-on-Tyne, at 7.45 p.m. Durham medical graduates who are not already members of the association and who desire to join are requested to communicate with the Hon. Secretary (North), Royal Victoria Infirmary, Newcastle-on-Tyne.

In connexion with the courses of lectures arranged by the Fellowship of Medicine to which reference was made last week (p. 957), courses in ophthalmology have been arranged at the Royal London Ophthalmic Hospital and in dermatology at the St. John's Hospital for Diseases of the Skin, beginning on Monday, June 11th. These courses will consist of lectures and clinical demonstrations each day in the wards and outpatient departments. The programme for July includes a refresher course at the Royal Northern Hospital, in conjunction with the Central London Ophthalmic Hospital and the Royal Chest Hospital, from July 2nd to July 14th; a fortnight's intensive course in cardiology at the National Hospital for Diseases of the Heart, commencing on July 2nd; and a course of dermatology at the Hospital for Diseases of the Skin, Blackfriars, from July 16th to July 28th. Full particulars can be obtained on application to the Secretary, Fellowship of Medicine, 1, Wimpole Street, W.1.

THE League of Nations Union has arranged a conference on the international labour organization and industrial health to be held at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W.1, on June 19th and 20th. The conference will meet each day at 10.30 a.m. and adjourn at 1 p.m. for luncheon; it will reassemble at 2.30 p.m. and continue its sitting till 5 p.m.

A POST-GRADUATE course on tuberculosis (including surgical tuberculosis, by Professor A. Broca) will be held at the Hôpital de la Charité, Paris, under the direction of Professor Émile Sergent, commencing on June 13th. The fee is 150 francs.

PROFESSOR LEATHES is unavoidably prevented from delivering the Croonian Lectures before the Royal College of Physicians on the dates announced. The course is therefore postponed.

MR. NEVILLE CHAMBERLAIN, the Minister of Health, was the principal guest at the annual dinner of the Federation of Medical and Allied Services, which took place at the Langham Hotel on May 29th. Sir Berkeley Moynihan, who presided, referred to the family tradition of public service in this country as exemplified in the Chamberlains and others. It was surely a remarkable thing that Queen Elizabeth's great Minister should have had a direct descendant to serve Queen Victoria, and that the son (Lord Robert Cecil) of the Victorian Minister should be the latest but not by any means the weakest of the recruits to the new Ministry. Of all the men in the Government, Sir Berkeley Moynihan thought that the Minister of Health was least to be envied. Around the question of health had arisen many conflicts of opinion, and the Minister had to walk warily. On many questions upon which the medical profession had a right to pronounce, any further progress was limited by the extent to which the public was willing to co-operate; he instanced the campaigns against cancer and against tuberculosis. Mr. Chamberlain, in responding to the toast of his health, remarked that he had heard it said of a certain journal that it contained more truth on its cover than in its pages, and so far as his experience at the Ministry of Health had gone, he began to think that there was more "health" in its title than in its functions. He gave an amusing list of the varied questions, chiefly rent and rating matters, with which he had had so far to deal, and expressed the hope that presently he might arrive at some questions of health. Ever since he had taken any interest in public work he had felt that there was no greater benefit which statesmanship could confer than some measure which might lead to a general improvement in the health of the people, for upon their health depended their enjoyment of life and their prosperity. He was specially impressed by the extent to which research stood in need of encouragement. He once asked an eminent authority why there were so many more specialists on the Continent than in this country, and he was told that on the Continent there were many more endowments, whereas men in this country who were fitted for research had to carry on general practice for a livelihood. Some day a complete health policy for this country might be forthcoming, but it would have to be under a Minister who was fortunate enough to remain in office for more than a few months. It would require more adequate institutional accommodation, or, rather, a better distribution of the institutional accommodation already existing. We had in this country physicians and surgeons second to none, but the best use was not being made of their services. Sir Thomas Horder proposed the health of the other visitors, and responses were forthcoming from Lord Riddell and from Sir William Hale-White. The toast of "The Chairman" was proposed by Mr. Ernest Clarke and very heartily honoured.

THE KING has sent a donation of £100 to the fund that is being raised by the British Empire Cancer Campaign.

AT a meeting of the Royal Sanitary Institute, to be held at Cambridge on June 23rd, Mr. J. E. Purvis, M.A., Secretary to the State Medicine Syndicate, will open a discussion on the grading of milk.

THE Association of Economic Biologists will hold its annual field meeting at Cambridge on Friday, June 15th. Visits will be paid to the School of Agriculture, the National Institute of Agricultural Botany, and the University Farm and Plant Breeding Institute.

THE Section for the Study of Disease in Children of the Royal Society of Medicine will meet in Bristol on June 22nd and 23rd. On Friday afternoon (June 22nd) cases will be shown at the Bristol Children's Hospital, and afterwards, at a meeting in the department of pathology of the university, papers will be read by Dr. J. A. Nixon on the Schick reaction and diphtheria anaphylaxis, by Dr. O. C. M. Davis on certain urinary conditions in childhood, and by Mr. E. Watson-Williams on acute sinus disease in young children. There will be a dinner in the evening, and on Saturday a visit will be paid to Mr. Vesey's farm, Wincanton, to see the production of certified milk.

MESSERS. WATSON AND SON (43, Parker Street, London, W.C.2) have issued a list of second-hand x-ray and electro-medical apparatus.

APPLICATIONS for the Henry George Plimmer Fellowship in Pathology must be sent to the Rector, Imperial College of Science and Technology, South Kensington, S.W.7, by June 25th. Candidates must be qualified to pursue research in pathology (including morbid anatomy, protozoology, bacteriology, and allied subjects in either zoology or medicine or botany).



## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology*, Westrand, London; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate*, Westrand, London; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediscera*, Westrand, London; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus*, Dublin; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate*, Edinburgh; telephone, 4361, Central).

### QUERIES AND ANSWERS.

#### ACCIDENT OR ILLNESS.

DR. CLEMENT DUKES (Rugby) writes: In reply to the question of "Pasce" I am able to give him the information he seeks, as I have always kept accurate records of anything that concerned me in my life. I am insured in the Railway Passengers' Accident Assurance for £1,000, on the terms of £6 a week for total disablement, and £1 10s. a week for partial disablement. In December, 1889, I poisoned my thumb during an operation, and was partially disabled for fourteen days, and received £3. In February, 1915, I poisoned a finger in a similar way, was partially disabled for five weeks, and received £7 10s. Again, in May, 1920, by another poisoned finger from the same cause, I was partially disabled for three weeks, and received £4 10s. Further, on one of these latter occasions, when totally unfit for my work from my septic state, *The Practitioner* treated me with more than generosity from their fund.

#### INCOME TAX.

"EXES" has bought a half share in a practice previously worked by one practitioner only; the receipts have not yet materially increased, and "Exes" inquires what would be a reasonable addition to make to the expenses.

\* \* The liability to assessment is determined by the average profits of the practice during the three years previous to the year of assessment. If owing to the succession of the present firm to the previous proprietor of the practice the actual earnings for that year fell short of the sum assessed the firm can claim an adjustment to the actual profits. In neither case is any estimate of expenses required, inasmuch as either on the three years' average or on the current year's basis it is the amount of the profits after deducting actual expenses that is in question. Among the expenses to be included will be the cost of running and repairs of the additional car, together with the wages, etc., of a chauffeur, and a proportion of the expense of upkeep of our correspondent's house, provided that patients are seen there as well as in the surgery belonging to the practice.

"SIMPLEX" qualified in March, 1921; between that date and September, 1922, he earned sundry amounts as assistant or locumtenent; since then he has been in partnership. He is about to purchase a car and inquires as to the basis of his return and the allowance due for the cost of his car.

\* \* The firm is assessable in one sum—less the appropriate allowances for each partner—on the average profits of the practice after deducting expenses, for the previous three years. The tax payable by "Simplex" on that assessment will be on his fractional share of the assessment less his own allowances and reliefs. So far as the car is concerned, no allowance is legally due, as it cannot be regarded as an expense for income tax purposes; the cost of the car is an outlay of capital, and the

only allowance that arises out of the transaction is the inclusion of the net cost of replacement in any future year, when the car is replaced, among the firm's professional expenses.

#### Car Transaction.

"A. L." bought a 15.9-h.p. Star in July, 1914, for £375; he sold it in March, 1919, for £250, buying a Ford for £250. In December, 1919, a second (Ford) car was bought for £425, and in March, 1922, the first was sold for £90 and a 13.9 Calcott bought for £450.

\* \* In the circumstances we suggest that the car equipment may fairly be dealt with as a whole, the result being as follows:

1919.				
Expenditure	£250 + £425	...	...	£675
Less amount received for Star	...	...	...	£250
				£425
Deduct "improvement" cost, £575 - £375	...	...	...	£200
Amount allowable	...	...	...	£125
1922.				
Expenditure	£450 - £90	...	...	£360
Deduct "improvement" cost, £450 - £250	...	...	...	£200
Amount allowable	...	...	...	£160

### LETTERS, NOTES, ETC.

#### RAT-BITE FEVER.

DR. R. ROW, O.B.E., consulting physician, Gokuldas Hospital, Bombay, writes regarding a recent inquiry as to the occurrence of an eruption in rat-bite fever (JOURNAL, March 24th, 1923, p. 542) and encloses reprints of two articles published by himself upon the subject in the *Bulletin de la Société de Pathologie Exotique* (vol. xi, No. 3, 1918, p. 188) and the *Transactions of the Royal Society of Tropical Medicine and Hygiene* (vol. xvi, No. 4, October, 1922, p. 203). Dr. Row refers in the first article to the writings of Waghbhatt, who flourished twenty-three centuries ago, in which the cutaneous lesions produced by rat-bite are described (according to the Marathi translation) as follows: "Burning in the patches; nodular and urticarial eruption; petechial and even haemorrhagic patches on the body; oedematous condition, discoloration, and even ulceration of the nodules; lividity of the mucous membranes and haemorrhages." Dr. Row (in the *Bulletin*) goes on to say that, in his experience of the condition, after a definite incubation period of seven to ten days from the time of the bite a "secondary eruption" appears on the skin, consisting of a few purple spots or nodules (sometimes an extensive eruption), of an urticarial nature, tender on pressure. He gives photographs of a typical case.

#### SMOKING AND CANCER: PIPE OR CIGARETTE?

DR. FITZJAMES MOLONY (Porlock, Somerset) writes: An appeal from the British Empire Cancer Campaign states that one in every seven deaths over 30 years of age is caused by cancer, and that the latter is the most frequent cause of death after that age. It is a question whether cancer of the tongue and throat need be so prevalent. It is largely caused by pipe smoking. I have never seen a case in men or women who smoke only cigarettes, while it is increasingly frequent in men who smoke pipes. The explanation is simple enough. The force of a current of hot air or smoke is in inverse ratio to the size of the bore. In a small-bore pipe the current of air is strong enough to strike the epithelium of the tongue or throat with great force, and it may well be the starting point of cancer. For many years I have advised men over 40 years of age to give up their pipes and take to cigarettes. A pipe with an unusually wide bore is the only relatively safe pipe to smoke. A cigarette should be smoked without a tube or with a very wide-bored one.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 28, 29, 30, 31, 34, and 35 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 32 and 33.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 243.

### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, W.C.2, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *postes restantes* letters addressed either in initials or numbers.



## A Post-Graduate Lecture

ON THE

## TREATMENT OF UTERINE FIBROIDS:

## OPERATION OR RADIATION?

DELIVERED AT THE MANCHESTER ROYAL INFIRMARY

BY

WM. FLETCHER SHAW, M.D.,

LECTURER IN OBSTETRICS AND GYNAECOLOGY, VICTORIA UNIVERSITY,  
MANCHESTER; HONORARY ASSISTANT GYNAECOLOGICAL SURGEON,  
MANCHESTER ROYAL INFIRMARY; SENIOR HONORARY  
ASSISTANT SURGEON FOR WOMEN, ST. MARY'S  
HOSPITAL, MANCHESTER.

DURING the last few years there has been a flood of literature, chiefly from radiologists, pleading for radiation treatment of uterine fibroids rather than operation, and making the claim that the haemorrhage can be controlled by this means without any mortality; but from the first the more reliable authorities have recognized certain complications of fibroids as a contraindication to radiation, and this note of warning has been sounded more and more vigorously until now, when many of the radiologists advise operation in all cases in which there is no special contraindication to it.

At first sight radiation would seem to be a great advance in our method of treatment, but when the subject is considered more seriously there are found to be many fallacies and reservations.

In the first place, these papers usually discuss the subject as though haemorrhage was the only symptom. In the majority of instances it is the most obvious symptom, but it is by no means the only one to be considered, and in reviewing the whole subject the others must be conceded their due importance. Fibroids are very prone to undergo degeneration, and this is especially common about or after the menopause, so that many women who have safely passed the menopause require operation, and often an urgent operation, because of this complication. Along with this must be considered the liability of a fibroid uterus to become malignant: there is a considerable divergence of opinion upon the percentage of fibroids which become malignant, but there is no doubt that uteri with these tumours are more prone to this disease than normal uteri.

This aspect of the subject is entirely overlooked by many of the radiologists, who record their cases at too recent a date to allow this change to occur. There is no reason to suppose that when the menopause has been produced artificially by radiation the uterus is less liable to degeneration or malignant disease than one which has passed it naturally. Although my experience of radiation treatment of fibroids is small, I have once had to perform hysterectomy for urgent symptoms of degeneration six years after the menopause had been produced by this method. Before claims so extensive as those advanced by some authors are made it would be well to wait ten or fifteen years before recording the after-results. Moreover, good results are not claimed in the treatment of all fibroids. The cases must be carefully selected and radiation must not be used if the tumour is already undergoing degeneration or is complicated by inflamed appendages. How these conditions are to be diagnosed with certainty is not stated; the responsibility is to be left to a gynaecologist in each case, but, as every gynaecologist knows, it is often quite impossible to say before operation whether a fibroid is undergoing degeneration or is complicated by inflamed appendages.

One further point against treatment by radiation is the method of its action, which is supposed to stop menstruation through the action of the rays on the ovaries. In this way a young woman is as effectually sterilized as by a radical operation; whereas, if operation is undertaken instead of radiation, it is frequently found possible to do a myomectomy and leave a sound functioning uterus and ovaries.

Quite recently Giles<sup>1</sup> and Bonney<sup>2</sup> have usefully called attention to the advantages of myomectomy and pleaded for its more frequent use, although I think the operation is done much more frequently than they believe. It is such a well recognized operation that surgeons perform it in certain classes of case but do not trouble to write about it. In the

figures I quote later I am considering solely the advantages and disadvantages of operation and radiation, and as the risks and complications of myomectomy are about the same as those of hysterectomy I have not separated them. For these reasons I have always considered operation much the safer method of treatment, and would not consider radiation except in rare and carefully selected cases.

The only serious risk in operation for fibroids is the occurrence of embolism—fortunately a very rare accident, but a risk which is ever present, although an operator is lulled into a feeling of false security when no case has occurred for a long period. From this comfortable feeling of security I was rudely awakened by two fatal cases of embolism which occurred quite close together in my practice, and I was compelled to reconsider the whole subject very carefully, as it is a tremendous responsibility to advise a method of treatment which may be dangerous if there is an alternative treatment quite free from danger.

To form a reliable opinion of the relative results of these two methods of treatment it is useless to take a few picked cases; a sufficiently long series of consecutive cases must be taken, all treated by the one method, and the failures recorded. With this object I abstracted the notes of all the cases of uterine fibroids I had seen in the two years 1920-21—a period which included my two cases fatal from embolism.

In several of these cases the fibroids were so small and gave rise to so few symptoms that no treatment was advised, while in the remainder the only method of treatment was operation; so this can be taken as a consecutive series of cases treated by operation, and the number (138) is sufficiently large to give a fair average percentage of the risks of operation and the incidence of malignancy, degeneration, and other complications if the tumour is not removed. Amongst these cases were a certain number, undiagnosed before operation, with complications which could only have led to a fatal result if the whole series had been treated by radiation.

## Mortality.

In this series of 138 operations (hysterectomy or myomectomy) there were four deaths (2.9 per cent.)—two from embolism, one from shock within twenty-four hours of the operation, and one from acute nephritis. Operations upon uterine fibroids have a somewhat greater risk than other simple abdominal operations owing to the anaemic condition of so many of the patients. In this series I find recorded in the notes of five of these patients that they were so anaemic I hesitated to operate, and in three instances kept the patient in bed some time before operation; amongst these five occurred three of my fatal cases, two of embolism and one of shock. If these cases had been handed over to the radiologist the only fatal case would have been the one from acute nephritis, the cause of which was obscure.

However, in trying to hold the balance evenly between the two methods of treatment I must put these four deaths against operation, and I am also accepting the statement that with radiation there would have been no primary mortality.

## Malignant Disease.

Unfortunately, a microscopical examination was not made of all the specimens removed and it is quite possible that some cases of unsuspected malignancy were overlooked. Amongst those which were examined were five specimens of malignant disease of the body, all in women over 50 years of age, so it is quite probable the incidence would have been greater if all these fibroids had been unoperated upon until the patients had reached this age. In two of these cases the patients had ceased to menstruate and so the malignancy was suspected, but in the others there had been no period of amenorrhoea and the malignancy was only discovered in the laboratory.

If all this series of fibroids had been treated by radiation rather than operation the growth would have run its course and there would have been five deaths from this disease as against the four deaths from operation.

In addition to these five cases of malignant disease of the body there were three other cases with carcinoma of the cervix occurring along with fibroids of the body. I have separated these two groups as it is much easier to diagnose carcinoma of the cervix; nevertheless two of these patients



were referred to me by their own doctors on account of the fibroids, the carcinoma of the cervix having been overlooked in each case; had radiation been the recognized treatment for fibroids, the probability is that these growths would have remained undiscovered until a much later period, as the radiologist has no more special training in gynaecological diagnosis than the general practitioner.

#### *Degeneration.*

A degenerating fibroid may cause serious symptoms, either from the effect of the degeneration itself as in red degeneration, or because the degenerated tissue has become infected with organisms, or merely from the absorption of the products of degeneration. This last is, I think, much more important than is usually recognized, and accounts for the profound anaemia, often out of all proportion to the amount of blood lost, and the general ill health from which these patients suffer.

Unfortunately not all the specimens in this series were examined in the laboratory, but of those which were, twenty-one were reported as having undergone degeneration—cystic, red, calcareous, etc.; these degenerations occur much more frequently in fibroid uteri after the menopause when the blood supply is much diminished.

How often degeneration occurs in a fibroid after an artificial menopause produced by radiation I cannot say, my personal experience of this method of treatment being very small, but I see no reason to suppose its incidence to be less than in fibroids after a natural menopause, and I have seen one case which required operation six years after an artificial menopause produced by x rays. This complication is often overlooked in the papers advocating radiation, as the cases are too recent, and it would be useful to have some of these series reviewed ten or twenty years later.

It is impossible to say what would have happened to all these cases if they had been treated by radiation; I do not suggest all would have ended fatally, though probably some would; and certainly some would have required operation at a later date for urgent symptoms, when the patient's condition would make operation a much more serious matter. This danger is recognized by many radiologists, and the more experienced of them advise all cases of fibroid to be examined by a gynaecologist so as to eliminate degenerations of the tumour; but the great difficulty is to be sure without operation that a tumour is not undergoing degeneration, and the instances must be few in which a competent gynaecologist will take the full responsibility of saying there is no degeneration.

#### *Inflamed Appendages.*

This is a complication which precludes treatment by radiation, according to the authorities on this method of treatment. Of course, acute inflammation will usually give rise to acute symptoms which are easily recognized, but there are cases which only come under treatment after the acute symptoms have subsided. In this series there was only one case which could not be included in one or other of the categories, but there were several others with inflamed appendages complicated with degenerating fibroids or with adhesions to rectum or intestines.

#### *Adhesions.*

Adhesions firmly binding rectum, bladder, or intestines to the tumour contraindicate the use of radiation, and yet how often do we unexpectedly find these adhesions during an operation! The following case—one of the last in this series—is an instance:

An unmarried woman, aged 49, one year past the menopause, with no previous history of inflammation, was brought to me because of recurring haemorrhage. Examination revealed the presence of a fibroid uterus about the size of an orange, apparently quite mobile; there were no symptoms or signs suggesting degeneration, and it was just the case which would be referred to the radiologist if this form of treatment were used. I opened the abdomen and found both tubes and ovaries firmly adherent to the back of the uterus, but before I could find the tubes and the uterus, I had to separate the rectum and bladder from these organs and from each other. These adhesions were so firm that the rectum had to be cut off from the uterus and appendages, not stripped, as is usually possible.

In all probability these cases with unsuspected adherent rectum and intestines explain the damage to these organs which is occasionally reported after the use of x rays. In this series five cases are noted as having adhesions between the uterus and abdominal viscera. Though the number is

not very great, the frequent impossibility of diagnosing the presence of adhesions before operation greatly increases their importance.

#### *Retention of Urine.*

Seven patients, all about or past the menopause, were operated upon for this condition alone. In each case the uterine fibroid filled the pelvis, and had been allowed to drop into this position through atrophy of the tumour due to the menopause. I cannot say how far x rays would have still further diminished the size of the tumours and relieved the symptoms, but their application would have taken some little time, and have necessitated catheter treatment in the meantime. We must also bear in mind the action of radiation upon larger tumours, as the atrophy set up by this treatment may cause a fibroid situated above the brim to descend into the pelvis and set up acute symptoms.

#### *Wrong Diagnosis.*

Every gynaecologist knows the difficulty of making a correct diagnosis in these cases of pelvic tumour. This is recognized by the radiologists who have published their work up to this time, and the majority insist upon the necessity of an examination by a gynaecologist before x-ray treatment. I doubt whether this will be so in future. Even if a gynaecologist is consulted the risk is not entirely eliminated, and I have to confess to two bad mistakes made during the last two months. In both cases I diagnosed uterine fibroids, and fortunately advised operation, and in both cases the solid tumour proved to be carcinoma of the ovary. In both cases the tumour was not adherent and was removed, so that the patients have a very fair chance of being cured, which they would not have had with x-ray treatment.

#### *Conclusions.*

1. Small fibroids, not larger than an orange, which are not producing any symptoms may be left alone, but the patient should be kept under observation, as there is a possibility before the menopause of the tumour causing increased haemorrhage or increasing in size, and after the menopause of becoming malignant.

2. If the patient is very anaemic the tumour should be treated by radiation to stop the haemorrhage and allow her general health to improve, but the tumour should be removed later.

3. In all other cases the tumour should be removed by hysterectomy or myomectomy—myomectomy being preferred for women in the child-bearing period who desire a family and when a useful uterus can be left, panhysterectomy for cases with a badly lacerated cervix in addition to the fibroid, and supravaginal hysterectomy for the remainder.

#### REFERENCES.

<sup>1</sup>Arthur E. Giles: Indications for and Results of Myomectomy for Uterine Fibroids, *Proc. Roy. Soc. Med.*, Section of Obstetrics and Gynaecology, 1922, p. 13. <sup>2</sup>Victor Bonney: Scope and Technique of Myomectomy, *Journ. of Obstet. and Gyn. of the British Empire*, vol. xxix, No. 4.

## The Oliver-Sharpey Lectures

ON

## THE ACTIVITY OF THE CAPILLARY BLOOD VESSELS,

AND ITS RELATION TO CERTAIN FORMS OF TOXAEMIA.

DELIVERED BEFORE

THE ROYAL COLLEGE OF PHYSICIANS OF LONDON

BY

H. H. DALE, M.D., F.R.C.P., F.R.S.,

HEAD OF THE DEPARTMENT OF BIOCHEMISTRY AND PHARMACOLOGY UNDER  
THE MEDICAL RESEARCH COUNCIL.

### LECTURE II.

BEFORE we pass to some of the pathological applications of the knowledge now available concerning the active contractility and tone of the capillary blood vessels, there are a few additional points concerning its normal physiological significance which ought to be passed in review. Professor Richards of Philadelphia has found it possible by means of special lighting arrangements to see the capillaries between the tubules and in the glomeruli of the living frog's



kidney.<sup>4</sup> Dr. Leonard Hill<sup>2</sup> has independently, and for a somewhat different purpose, made observations on the same object. Richards and Wearn have noted the highly active contractile function of the glomerular tufts, some shrinking to small compass while others, previously shrunken, expand so as almost to fill Bowman's capsule. The fact which I have already emphasized, of the varying permeability of the capillary endothelium, with changes in tone of the supporting, contractile cells of Rouget, must surely have some bearing on these pronounced variations of tone in the capillaries of the kidney; but its exact significance remains to be explored.

Since Gaskell's<sup>3</sup> work on the regulation of the blood supply to skeletal muscle the association of vaso-dilatation with functional activity has been clearly known. The work of Chauveau and Kauffmann<sup>1</sup> on the masticatory muscles of the horse demonstrated the same phenomenon. Until recently, however, this dilatation was assumed to concern the arteries alone, and the chief matter of discussion was the relative importance in its production of nervous impulses and of the chemical stimulus of metabolic products. As we have already seen, there can be no doubt now as to the important part played, in this adjustment of blood supply to metabolic requirement, by intrinsic relaxation of the capillaries, or as to the control of the tone of these vessels by nervous impulses. When we come to the question of chemical control the evidence is not yet so clear. On the one hand, it is obvious that the capillaries, with their intimate relation to and constant chemical interchange with the tissues, must be specially exposed to any influence on vascular tonus which the products of metabolism may exert. On the other hand, the particular product of metabolism, carbon dioxide, which, since Gaskell's<sup>3</sup> experiments again, and as the result of repeated confirmation of his results (Bayliss,<sup>6</sup> Hooker,<sup>7</sup> Anrep<sup>8</sup>), has been credited with a potent vaso-dilator action, has not been demonstrated to have a pronounced effect on capillary tonus. Krogh,<sup>9</sup> indeed, as the result of recent experiments, comes to the conclusion that such acidity, due to increased tension of carbon dioxide, as can occur during life, "probably plays no part whatever as a regulator of the capillary circulation." Yet, since the time of Roy and Graham Brown<sup>10</sup> it has been obvious that capillary tone is powerfully depressed by some product of cellular action, which accumulates during brief stoppage of the circulation, so that the capillaries dilate widely when the blood is readmitted, and is formed with abnormal rapidity if the tissue is injured. What can such a product be? It will, I think, be quite obvious, from what I said in the last lecture, that a substance having the histamine type of action would fill the requirements; and the tendency to speculate in this direction is reinforced by the observation that a simple watery extract of almost any tissue in the body contains a substance, or substances, producing this type of effect. At the same time, in the absence of direct chemical evidence—which, it must be admitted, is practically beyond hope of attainment with methods yet available—I think that there is no warrant for the assumption which some have been ready to make, that small quantities of histamine are actually formed in metabolism.

In somewhat closer contact with experimental reality is the evidence as to the factors, other than nervous impulses, concerned in the maintenance of the normal, average tone of the capillaries. You will remember that Richards and I found that the presence of a small proportion of adrenaline in the perfused blood was necessary, in order to enable us to demonstrate the vaso-dilator effect of histamine with an artificial circulation. This suggested to us that a normal function of adrenaline, as continuously secreted into the blood in minute quantities, was the maintenance of a healthy capillary tonus against the dilator effect of metabolic products. The view was supported by an observation of my own,<sup>11</sup> that a cat which has been deprived of its suprarenal glands becomes extraordinarily sensitive to the shock-like effect of histamine, being killed by an injection which, in the normal animal, would produce only an evanescent, vaso-dilator fall of the arterial pressure. My former colleague, Dr. Kellaway, and Dr. Cowell<sup>12</sup> have confirmed this observation, and have given it much greater precision, in studying the effect, on the reaction to histamine, of destroying the

medulla of the suprarenal glands in cats, leaving sufficient intact cortex to enable the animals to survive, and to keep in most ways healthy, for weeks or months. They observed in such cats the effects of injecting, into the ear vein, a small dose of histamine, such as in a normal cat produces barely perceptible symptoms, with at most a slight evanescent rise in the corpuscular content, due to temporary loss of plasma from the circulation. In cats lacking the suprarenal medulla such injections of histamine caused pronounced collapse and long persistent rise of the corpuscular content of the blood. But such cats could be rendered for the time being normal, in their response to histamine, by preliminary treatment with hypodermic injections of adrenaline.

There is evidence, then, at least of an antagonism to, or a moderating influence on, the reaction of the capillaries to histamine, produced by the presence of adrenaline in the blood, in such concentrations as do not perceptibly influence the arterial blood pressure. The fact that in many animals the capillaries are under motor control from sympathetic nerves would lead to an expectation of such a tonic influence of adrenaline. Direct evidence, on the other hand, points rather to another hormone as concerned with the chemical maintenance of capillary tone. Krogh and Harrop,<sup>13</sup> in their perfusion experiments on the frog's leg, found evidence of the presence of some substance, not adrenaline, in mammalian blood serum, the presence of which maintained a good tone and normal permeability of the capillaries, while in its absence they became dilated and allowed the escape of fluid into the tissues. Krogh and Rehberg<sup>14</sup> have demonstrated a suggestive similarity, in several properties, between this diffusible substance in serum and an active constituent of the posterior lobe of the pituitary body. They resemble one another in stability, in their solubilities, their diffusion through membranes, and, apart from their tonic action on capillaries, in both showing the dilator action on the melanophores of the frog's skin, which Hogben<sup>15</sup> first observed with the pituitary extract. Finally, it should be noted that Pohle<sup>16</sup> had previously shown that removal of the pituitary gland in frogs was followed by cutaneous oedema. I do not think that the evidence for identification of the substance in serum with the pituitary extract is complete. In view, moreover, of the very wide differences exhibited by the capillaries of different species in their reaction to histamine and other substances, I think that Krogh is wise in deprecating a hasty assumption that all capillaries, in all species, are dependent for the maintenance of normal tone on the presence of traces of the pituitary hormone in the blood. This question of the relation of hormones to the functional condition of the capillaries is, indeed, only just being opened; and it is at least of interest to note that, in the case of both the endocrine glands which have yet been investigated in this connexion, the suprarenal and the pituitary gland, a presumption is already established in favour of their normally exercising an important influence on capillary tonus.

There is an intimate connexion between this question of hormonal control and some puzzling, but highly significant, observations recently made and published by my colleague Dr. Burn.<sup>17</sup> His observations were primarily directed to an entirely different question—that of the relation between the response of the sweat glands to pilocarpine and the integrity of their nerve supply. He found that degeneration of the secretory nerve fibres to the sweat glands of a cat's foot, produced by post-ganglionic section of the sympathetic fibres to the limb, in no wise impaired the sweating caused by pilocarpine. When, on the contrary, the whole of the mixed nerves to the foot were cut, so that sensory as well as sympathetic fibres were divided and degenerated, sooner or later the effect of pilocarpine on the sweat glands of that foot was, in the majority of cases, greatly reduced or obliterated. This was not due to the disappearance of other secretory fibres to the sweat glands, since it was clearly proved that none but those from the sympathetic system exist. A close association, however, was detected between the response of the sweat glands to pilocarpine and the dilator response of the capillaries in the same limb to histamine. When, as after degeneration of the sympathetic fibres only, the sweating response to pilocarpine was



maintained or exaggerated, the dilator response of the vessels to histamine was abnormally pronounced. When, after section of the whole nerve supply, the sweating produced by pilocarpine was reduced or suppressed, the dilator reaction to histamine had disappeared, although the arterial dilator reaction to acetyl-choline was produced as usual. I do not think that the meaning of this change in the capillary reaction, corresponding with the failure of the gland cells to respond to pilocarpine, is yet clear. Burn, adopting a line of argument which Richards and I had used, is inclined to ascribe it to loss of the normal tone of the capillaries. I do not think there is evidence, from the appearance of the skin, that the capillaries are abnormally relaxed. What Burn's results clearly show is that they have lost their normal responsiveness to histamine, and his further experiments bring out the very important point, that the dilator reaction to histamine can be restored, and with it the response of the sweat glands to pilocarpine, if the cat is treated for a few days with daily hypodermic injections of adrenaline. Again, therefore, we have suggestive evidence of an association between a high content of adrenaline in the blood and a satisfactory tone or responsiveness of capillaries, in this case of capillaries deprived of their normal nerve supply. The simultaneous loss of the normal response of the sweat glands, and its restitution by adrenaline, are probably, therefore, to be ascribed to varying states of nutrition of their cells; and this suggestion is confirmed by Burn's further and highly significant observation, that the loss of the dilator reaction to histamine is associated, not only with this depressed response of the sweat glands, but with a generally impaired vitality of the skin of the whole foot. Wherever this is exposed to pressure or friction in walking, the hair is lost, the skin becomes oedematous and loses its normal flexibility, and there is a tendency to ulceration. With the recovery of the reaction to histamine, under the influence of slowly absorbed doses of adrenaline, this malnutrition of the denervated skin disappears, and any ulceration begins to show signs of healing.

This obviously opens up very important questions as to the nature of the trophic changes in the skin following nerve lesions, and particularly of lesions involving the sensory fibres, with their function in relation to vaso-dilator reactions. The case of tabes dorsalis naturally suggests itself, and I believe there are many such conditions in which a systematic investigation of the capillary response to mechanical and chemical stimuli would be highly instructive. The naked skin of the human subject is far more suited to this type of investigation than that of any of the hairy animals usually available for laboratory experiment. The readiness with which the skin capillaries of the normal man react to histamine has been amply demonstrated by Eppinger,<sup>18</sup> and by Sollmann and Pilcher,<sup>19</sup> the latter observers recording the appearance of a capillary flush, followed by an oedematous wheal, when histamine was applied to the very lightly scarified skin, in dilutions as high as one part in 10,000. The modification of this type of reaction by defective innervation of the skin lies open to study, which could not fail, I think, to give instructive results.

There must, I suppose, be some kind of relation between this loss of dilator response, studied by Burn, and the failure of the inflammatory reaction to local irritation, demonstrated some years ago in Hans Meyer's laboratory by Ninian Bruce.<sup>20</sup> Bruce found that the inflammatory hyperaemia and oedema of the conjunctiva, following the application of mustard oil to the eye of a rabbit, was not perceptibly modified by previous section of the roots of the Gasserian ganglion. When the trigeminal nerve was cut peripherally to the ganglion there was no immediate modification of the inflammatory response, but, when time was allowed for degeneration of the sensory fibres with their terminal branchings, the inflammatory reaction to mustard oil was practically abolished. The same depressant effect on the inflammatory response was produced by local anaesthetics. Clearly, then, the reaction was not a central reflex; it persisted without impairment after the connexion with the brain had been broken, but could be abolished by peripheral sensory paralysis, with the central connexion intact. Bruce argued that it must be due to a peripheral

reflex of the axon type, through a branching of the sensory fibre to sensory endings, on the one hand, and to the blood vessels on the other, as Bayliss<sup>21</sup> had previously suggested in explanation of the vaso-dilator effect of peripheral stimulation of sensory fibres—the so-called antidromic vaso-dilatation.

Bruce's results were confirmed by Bardsy,<sup>22</sup> who only differed from Bruce in that he found that the inflammatory reaction was reduced to small proportions, not altogether abolished, by degeneration or peripheral paralysis of the sensory nerve fibres. Breslau<sup>23</sup> has more recently found that even the local inflammatory reaction to mustard oil of the human skin fails to appear if the sensory nerves to the area are degenerated, or paralysed by a local anaesthetic. At the time when Bruce and Bardsy's observations were published the arteries were still regarded as the only part of the vascular system presenting variations of tone having any significance. Arterial dilatation is, doubtless, a factor of importance in typical inflammation, but it can hardly be doubted, I think, that that of the capillaries is more important still. It is very questionable whether arterial dilatation alone, without relaxation of the capillaries, could produce a condition at all like that seen in inflammation. Axon reflexes to the capillaries are probably at least as important as those acting on the arteries.

In addition to this nervous action we have to take into account a chemical stimulation of the capillaries to dilatation; and this may appear almost immediately if the substance applied has itself such an action on capillaries, or as a later, indirect effect of dilator substances set free from injured or dying tissue cells, directly attacked by the irritant. Obviously the whole reaction, taking into account all these possibilities, may be a very complex one, and in different cases one or other of the various possible factors may be predominant. The whole question of the vasomotor mechanism of inflammation needs a newer and closer analysis, in the light of knowledge, of which some is already available, and much still to be obtained. I think it can hardly be doubted, however, that the result will be to bring active changes of capillary tonus into the centre of the picture.

Discussion of local skin reactions naturally brings to mind a whole series of trophic changes, erythematata and eruptions, with which the physician is familiar, and in the ultimate analysis of which a knowledge of capillary function will obviously play a principal part. I have not the time, if I had the knowledge, to enter upon a consideration of them now. I will merely point to the importance, in this connexion also, of the knowledge, newly accumulating, as to the close similarity in effect upon capillaries of appropriate nervous impulses on the one hand, and chemical stimuli on the other. Dilatation of capillaries, leading to excessive permeability and local oedema, has been experimentally demonstrated as the result of nerve stimulation, and as the result of the action of poisonous substances. There are many instances in which it may be impossible to determine which type of stimulus is at work. Even the correspondence of an eruption with the distribution of particular nerves is not absolutely decisive, if we admit the possibility that a virus or a toxin might descend from the centre to the periphery along the nerves, as the virus of rabies and the toxin of tetanus have been shown to ascend from the periphery to the nerve centres;\* or if, on the other hand, we suppose that small centres of capillary dilatation, produced by nervous impulses, may provide points of lowered resistance, where a generally diffused virus can settle, or a toxin accentuate a process already initiated. I indicate such possibilities merely to lay emphasis on the wisdom of avoiding the assumption that, because a phenomenon has some obvious relation to innervation, it is of necessity wholly nervous in origin.

Such considerations lead me naturally to a group of phenomena which have been the subject of much study and discussion during recent years. At the risk of a wearisome insistence, I must recall to you again the complex of symptoms which has received its most detailed analysis in the form in which it is produced by histamine. You will

\* For this interesting suggestion I am indebted to Dr. John Brownlee.



remember that it involved a simultaneous stimulation of plain muscle to contraction and of the capillaries to relaxation of their tone. We have considered the effects on the circulation, but have left out of view, up to the present, the equally striking effects produced by contraction of the plain muscle of hollow viscera, and particularly that of the bronchioles. The production of this complex by histamine might excite merely a laboratory curiosity. It becomes of practical interest when we realize that essentially the same combination of plain muscle contraction and loss of capillary tone occurs as the central feature in the action of a large class of protein poisons, and in the so-called anaphylactic shock. In different species, and under different conditions, one or the other feature of the action comes into the forefront of the picture; in the unanaesthetized guinea-pig the conspicuous feature in the action of these poisons, or in the anaphylactic shock, is the constriction of the plain muscle of the bronchioles, causing asphyxial death; in the anaesthetized dog it is relaxation of the capillaries, probably associated with constriction of the hepatic veins, leading to circulatory collapse. But with minor specific and individual variations in the incidence of its component factors, the action produced by this whole group of poisonous agents is fundamentally the same.

The application to human pathology hardly needs indication. It has frequently been discussed in recent years by those more competent than I, and the production, by the same normally or individually toxic agent, of urticaria and subcutaneous oedema in one case, and spasmodic asthma in another, will be very familiar to all of you. There was at one time a tendency, which I hope is dying, to regard the pronouncement of the word "anaphylaxis," whenever this symptom-complex was encountered, as giving absolution from further effort to analyse the condition. Such words are useful when they are used to define, and merely mischievous when they are used to shirk definition. At the same time, it must be admitted that there are points of similarity between the so-called "toxic idiopathies" seen in man, and the acquired specific sensitiveness to a foreign protein, which is properly termed anaphylaxis. I have on several previous occasions maintained, by evidence and arguments which I shall not inflict on you to-day, that the essence of the true anaphylactic condition is the location in the living cells of an antibody of the precipitin type, and that it is the intracellular reaction between this and the antigen which causes the anaphylactic reaction. In the case of the toxic idiopathies, I think it is certain that we have again a cellular sensitiveness, and we must assume that the specifically toxic agent, be it a pollen or an animal epithelium, produces in the sensitive cells changes similar to those which the anaphylactic antigen produces; but we have here but little evidence of the presence of antibodies in the strict sense. Indeed, but few of the substances responsible for these human idiosyncrasies can function experimentally as antigens, and some, such as the simple organic chemicals to which specific sensitiveness occurs—iodoform, antipyrin, etc.—certainly cannot. We cannot assume, then, that whenever a specific reaction of this type occurs an immunity process, involving the presence of an antibody, is at work. All that we can assume is that the protoplasm of an idiosyncratically sensitive cell has some kind of abnormality, whether due to the presence of a separable antibody or not, which causes it to react to its specific poison by the same kind of change as that with which the anaphylactic cell reacts to its specific antigen, or with which the normal cell reacts to histamine or to a naturally poisonous protein cleavage product.

For the main concern of these lectures the point of chief interest is the location of poisoning of this type, however produced, in the walls of the capillaries and in plain muscle fibres. I take this to mean that all these substances produce, either in all individuals or only in those specifically sensitive, the same kind of physical change in cell protoplasm; and that the predominance of visible response to them in the capillary cells, and in the plain muscle, is due to a special physiological sensitiveness of those structures to this type of change.

When a specific sensitiveness is produced to a normally innocuous substance, this is accompanied, apparently, by

a minor degree of enhanced sensitiveness to naturally poisonous substances producing these effects, as shown in some experiments by Dr. Kellaway and myself.<sup>22</sup> This corresponds with the clinical experience that the victim of a toxic idiopathy has capillaries, or bronchial plain muscle, which are to some degree abnormally sensitive to naturally poisonous substances of this class. If this means an enhanced physiological reactivity to a certain type of physical change, it would not be surprising, it would even be expected, that they should also show an abnormal responsiveness to nervous impulses which produce capillary dilatation on the one hand, or constriction of the bronchi on the other. I shall not venture into a discussion of clinical details, which are beyond the scope of an experimental worker. I merely want to emphasize again the fact that there is no experimental warrant for assuming that the two kinds of causation are mutually exclusive. The detection of a neurotic factor does not exclude a toxic one, and vice versa.

I must turn now to conditions in which there is reason to suppose that the whole or a large part of the capillary blood vessels in the body are simultaneously affected by toxic agents. I have given already a brief summary of the conclusions reached, by analysis of the circulatory failure produced by large doses of histamine. Here, again, histamine was chosen simply as a conveniently accessible and accurately measurable representative of a large class of poisons. Sir William Bayliss,<sup>21</sup> in the Oliver-Sharpey lectures a few years ago, gave a full account of the analogous condition of circulatory failure, caused by a general loss of capillary tone, which was studied during the war under the name of secondary wound shock, and attributed to the toxic action of autolytic products from crushed and lacerated tissue. I need only mention, therefore, this special example of what I suspect to be a much larger group of toxæmias resulting in circulatory failure, in which the most serious factor is this loss of capillary tone. A large number of bacterial products exhibit this type of action, including both soluble products and substances liberated only by lysis of the bacteria. In the local, protective, inflammatory reaction to them we probably have a complex of direct dilator action on the capillary walls and reflex dilatation of arterioles through the stimulation of sensory nerve fibres. When poisons like these are formed in such quantities as to be distributed, in effective amounts, through the circulation, so that all or a large proportion of the capillaries simultaneously lose their tonus, there arises the peril of circulatory collapse due to peripheral stagnation of the blood. The most obvious and striking example of such an effect, perhaps, is the cyanotic collapse seen in cholera, where the oligæmia is accentuated by the enormous loss of fluid through the permeable intestinal capillaries. Dr. Esther Harding,<sup>23</sup> who carried out a series of experimental observations in my department, has found evidence of this type of circulatory failure in animals dying rapidly after large doses of diphtheria toxin, and in the early collapse occurring in severe cases of human diphtheria, without respiratory obstruction, and before the toxin had affected the heart muscle. Many years ago Romberg and Pässler<sup>24</sup> put forward the view that the so-called heart failure in septicæmia was not due to defect of the muscular activity of the heart, but to a vasomotor collapse. With the knowledge then available they attributed the result to failure of the vasomotor centre, but, in the light of present knowledge, a direct impairment of capillary tonus suggests itself as a much more probable and sufficient cause of such a condition. Recently Olivecrona<sup>25</sup> has examined this possibility in experimental peritonitis and given definite evidence in favour of a loss of capillary tone as the principal cause of the circulatory defect and of the fatal issue. I believe that the same possibility is well worthy of consideration in the case of all types of acute septicæmia. The condition may be obscured by concomitant poisoning of the heart muscle, but its recognition must have an important influence on scientific treatment. It is obviously useless to stimulate a poisoned and labouring heart if the main cause of its inefficiency is not the weakness of its muscular action, but the failing return of blood by the systemic veins.



One could continue to multiply examples of conditions in which this dangerous complex may arise. Apart from agents directly toxic in themselves, the position is complicated by the fact that, when blood is subjected to injurious influences, as by contact with otherwise inert substances acting as "foreign" surfaces, so that processes are initiated in it which, outside the body, would lead to clotting, it acquires a toxicity of this type. (Cf. Novy and De Kruif,<sup>22</sup> Dale and Kellaway.<sup>23</sup>)

When you also remember that, apart from dilatation and increase of permeability of the capillaries due to loss of their contractile tone, effects at least superficially similar can probably be produced by substances which directly poison the endothelial wall and disorganize its delicate structure, it will be obvious that there may be difficulty in deciding as to the precise nature of a particular effect. Salvarsan, for example, as an arsenical derivative, may, and in some cases probably does, act as a direct endothelial poison. It is also a colloidal substance which, on injection, may be so precipitated in the blood as to initiate precoagulation changes. Both types of effect probably figure among the toxic effects which salvarsan occasionally produces.

Unfortunately methods of dealing effectively with dilated and permeable capillaries are not easy to find. The action of adrenaline, above mentioned, suggests itself; and there are cases in which it seems to have value. As a prophylactic or a remedy for the immediate, so-called vasomotor, reaction sometimes produced by salvarsan, for example, there seems to be no room for doubt that adrenaline is effective; and its effectiveness supports the suggestion, made on other grounds, that this type of reaction is due to capillary dilatation caused by precoagulation changes in the blood, and not to poisoning of the endothelium. Calcium has had a reputation for reducing the tendency to excessive permeability of the capillary walls. Krogh's recent evidence as to the tonic action of pituitary extract should find some therapeutic application. Experience during the war, however, presented as practically insoluble the problem of restoring the volume of blood in effective currency when once the capillaries had become thoroughly lax and permeable. Saline solutions, gum saline, or even blood itself, often produced but a temporary recovery of volume, the fluid escaping from the vessels, or becoming removed from circulation, almost as fast as it was infused into the veins. In some of Dr. Harding's experiments, in the investigation already mentioned, there could be seen what appeared to be a secondary, and rapidly fatal, accentuation of the toxic collapse, when blood which had lain stagnant in toxæmically dilated capillaries was washed back into circulation by an infusion. The therapeutic problem is a peculiarly difficult and complex one; but the first step towards its rational solution is a clear recognition of the nature of the condition calling for treatment.

## REFERENCES.

- <sup>1</sup> Richards: *Amer. Journ. Med. Sci.*, 163, p. 1, 1922.
- <sup>2</sup> L. Hill and McQueen: *Brit. Journ. Exp. Pathol.*, 2, p. 205, 1921.
- <sup>3</sup> Gaskell: *Ludwig's Arch.*, 11, p. 45, 1876; *Journ. of Anat. and Physiol.*, 11, pp. 360 and 720, 1877; *Journ. of Physiol.*, 1, p. 262, 1878.
- <sup>4</sup> Chauveau and Kauffmann: *Comptes Rendus*, 104, p. 1126, 1887.
- <sup>5</sup> Gaskell: *Journ. of Physiol.*, 3, p. 48, 1880.
- <sup>6</sup> Bayliss: *Journ. of Physiol.*, 26, Proc. Phys. Soc., p. xxxii, 1901.
- <sup>7</sup> Hooker: *Amer. Journ. of Physiol.*, 31, p. 47, 1912.
- <sup>8</sup> Anrep: *Journ. of Physiol.*, 45, p. 318, 1912.
- <sup>9</sup> Krogh: *The Anat. and Physiol. of Capillaries*, p. 131.
- <sup>10</sup> Roy and Graham Brown: *Journ. of Physiol.*, 2, p. 323, 1879.
- <sup>11</sup> Dale: *Brit. Journ. of Exp. Pathol.*, 1, p. 103, 1920.
- <sup>12</sup> Kellaway and Cowell: *Journ. of Physiol.*, 57, p. 82, 1922.
- <sup>13</sup> Krogh and Harrop: *Journ. of Physiol.*, 54, Proc. Phys. Soc., p. cxxv, 1921.
- <sup>14</sup> Krogh: *The Anat. and Physiol. of Capillaries*, pp. 156-167.
- <sup>15</sup> Hogben: *Proc. Roy. Soc., B*, 93, p. 318, 1912.
- <sup>16</sup> Pohle: *Pflüger's Arch.*, 182, p. 215, 1920.
- <sup>17</sup> Burn: *Journ. of Physiol.*, 56, p. 232, 1922.
- <sup>18</sup> Eppinger: *Wien. med. Woch.*, 23, p. 1414, 1913.
- <sup>19</sup> Solmann and Pilcher: *Journ. of Pharmacol. and Exp. Therap.*, 9, p. 309, 1917.
- <sup>20</sup> Bruce: *Journ. f. exp. Path. u. Pharm.*, 63, p. 424, 1910.
- <sup>21</sup> Bayliss: *Journ. of Physiol.*, 28, p. 220, 1902.
- <sup>22</sup> Barty: *Skand. Arch. f. Physiol.*, 32, p. 193, 1918.
- <sup>23</sup> Dale and Kellaway: *Phil. Trans.*, B, 211, p. 273, 1922.
- <sup>24</sup> Bayliss: *Intravenous Injection in Wound Shock*, London, 1918.
- <sup>25</sup> Harding: *Lancet*, 1921, i, p. 737.
- <sup>26</sup> Romberg and Pässler: *Deut. Arch. f. klin. Med.*, 64, p. 652, 1899.
- <sup>27</sup> Olivecrova: *Acta Chirurg. Scand.*, 54, 1922.
- <sup>28</sup> Breslau: *Deut. Zeit. f. Chirurg.*, 150, p. 50, 1919.
- <sup>29</sup> Novy and De Kruif: *Journ. of Infect. Dis.*, 20, p. 536, 1917.

ENDOCRINES, VITAMINS, AND  
SUBTLETIES.

ABSTRACT OF AN ADDRESS DELIVERED TO THE SUNDERLAND  
DIVISION OF THE BRITISH MEDICAL ASSOCIATION

BY

LEONARD WILLIAMS, M.D.

IN no branch of knowledge is it more difficult, certainly in none is it more necessary, than in ours, to get the spirit of the moment into its right perspective. Between the excited welcome accorded to new therapeutic methods on the one hand, and the obstinate impermeability to fresh ideas on the other, the plain man is apt to be bewildered, and it is well that he should occasionally pause to consider on what sort of ground he is standing and whether the pathway seems to be leading. It is with the hope of affording some help in this direction that I have prepared this paper, and such must be my excuse for the very comprehensive title.

## I.

In the matter of the first subject, endocrinology, I would like to emphasize at the outset the important fact of the interdependence of the glands which constitute the system. I am fond of comparing them to the eight rowers in an out-rigger boat, with the central nervous system as cox. These rowers are all pulling in the same direction; they are, nevertheless, some of them, pulling one against the other. Now, in our clinical dealings with these glands we are much too apt to regard each as an independent entity, instead, as we ought, of considering each as a member of a hierarchy, the whole of which is liable to be deranged when one of the members is seriously affected. As bearing on this generalization, let me indulge in another. It is the evil fashion to speak of "hyper" or "hypo" functioning of certain glands. Such a nomenclature expresses but a part of the truth, and that part a very misleading one. It is no doubt true that in the various degrees of myxoedema, for example, the thyroid is primarily at fault, but the outstanding symptom which brings the patient to the doctor may point insistently to failure of some other gland.

Quite recently a man of 45 came to me complaining of sexual impotence gradually acquired. He turned out to be a case of mild, atypical myxoedema, appropriate treatment for which rapidly restored his sexual capacity. It also restored his domestic peace, which had been seriously impaired by unfounded charges of infidelity.

Now, misleading as it generally is to speak of underaction of a particular gland, it is much more misleading—it is, indeed, generally a misstatement—to speak of overaction of any single gland.

Let us take the thyroid again. It has become a habit with many, who ought by now to know better, to speak of Graves's disease as synonymous with hyperthyroidism. Now, although the thyroid gland may be overactive in Graves's disease, it is so in common with other glands, notably the suprarenal, the pancreas, and the thymus, and the salient symptoms of the disease are due much more to the latter than they are to the thyroid, which, as you know, is frequently not even enlarged. Whatever else it is, or is not, Graves's disease is not a pure hyperthyroidism.

In the matter of underaction it is generally evident that one gland is primarily at fault; in the matter of overaction that is seldom the case, except where there is a definite and local organic irritant, such, for example, as suprarenal and pituitary tumours. The cause of overaction is generally a toxæmia which irritates not one gland only, but many, though in different degrees. In looking for a cause of underaction it is always well to remember the possibility of long-continued toxæmic overaction, leading to exhaustion of the gland or glands in question. This is a frequent cause of thyroid insufficiency, because the thyroid above all others is concerned in combating endogenous toxins. That it is a cause of pituitary insufficiency I hope to show presently. Then again we must always bear in mind that when we have given, say, thyroid extract with success, our good results do not necessarily mean that the patient was lacking in thyroid essence. The good results may mean, and in many cases



I am sure they do mean, that the extract has stimulated an opponent gland—say the suprarenal or the pancreas—to increased effort. So that in giving the extract we are not supporting a flagging thyroid, we are rousing a lazy suprarenal. We are, in fact, restoring the balance by indirect means.

With these preliminary reservations we can proceed to consider a few of the glands individually. First, then, as to the thyroid. Here we are entitled to speak of a primary insufficiency. We know that there are many clinical manifestations of this condition; such are the troubles in the skin and its appendages, the slow pulse, the sensitiveness to cold, the muscular fatigue, the mental hebeticity, the intestinal stasis, the menstrual disturbances, and in children night terrors and nocturnal enuresis. Hertoghe, of Antwerp, long ago pointed out that these and other symptoms might all be reduced to a causal common denominator which is expressed by the word "infiltration." The thyroid is the great activator of metabolism, and when the fires burn too slowly material is deposited in various tissues. We may call this material mucin if we like; its name is less important than the fact that it is a product of inadequate metabolism which is liable to be deposited, capriciously so far as we can see, in any tissue or system, thus giving rise to very diverse findings. Just as a person with a high blood pressure may bleed from anywhere, so a person with thyroid insufficiency may become infiltrated anywhere. The selection of the site of the infiltration is even more difficult of explanation than the selection of the site of the haemorrhage. And when we consider the matter, it is not difficult to realize that a very slight degree of infiltration may bring about serious results. A slightly infiltrated endocardium, an infiltrated intestinal mucosa, an infiltrated endometrium, may very easily produce a train of symptoms sorely baffling to the clinician who fails to remember slight thyroid insufficiency and its powers of depositing unwelcome material in unsuspected and unlikely places. With this general outline in view, it is possible to form a mental picture of the method of production of almost any of the many morbid manifestations which we have come to associate with thyroid inadequacy, but in so doing we must be careful not to forget the possible responsibility of other glands for some, at any rate, of the details of the complete picture. Of the thyroid, more than of any of its congeners, it may be asserted that when it fails to ring true, the others inevitably become jangled and out of tune. It is the leader of the glandular orchestra.

This statement, correct though I believe it to be, seems less so to-day than it used to seem. Some years ago it was thought that the parathyroids were mere accessory or supplementary or immature thyroids, and commercial manufacturers of thyroid extract included in the product thus labelled, not only the thyroid gland itself, but the embedded parathyroids. Since it became evident that the old view was incorrect and that the parathyroids were possessed of functions distinct from, and according to some observers even antagonistic to, the thyroid proper, manufacturers have been careful to separate these glandlets from the thyroid itself, with the result that when we now prescribe thyroid extract we are exhibiting the pure article, whereas in former days we used to exhibit thyroid *plus* parathyroid. This is liable to make a serious difference in our results, and when I now fail with thyroid where I confidently expected to succeed, I generally find that the addition of a small dose of parathyroid—say one-twentieth of a grain—brings about the desired result. There are, of course, still those who deny to the parathyroids any particular part in the endocrine hierarchy. In spite of these, however, clinicians have satisfied themselves that the extract of these despised glandlets, when orally administered, does bring about very satisfactory results in certain cases. Their action may be summed up by saying that they have a very favourable influence upon calcium metabolism and on certain conditions of auto-intoxication; for these glands would seem to have a very definite part to play in the defensive mechanism with which the endocrine system as a whole is endowed. Clinically, parathyroid medication has been found to be exceedingly helpful in the treatment of benign ulcers, both internal and external—that is, gastric and duodenal and varicose ulcers. It is certainly very useful in tetany and in that condition of chronic toxæmia which has been called

latent tetany.<sup>1</sup> Its use in Parkinson's disease may or may not be attended with good results. If it fails to do good in rickets the cause is to be sought in want of skill in guiding the necessary concomitants such as diet, air, sunshine, and the like. The unsightly and painful chilblain will more often than not yield to parathyroid medication where other remedies have failed.

I have said that in looking for a cause of underaction in any gland it is well to remember the possibility of long-continued toxæmic overaction leading to exhaustion of the gland in question. Let me take an illustration from the pituitary, and in so doing say at once that the chronic overaction may own causes other than toxæmia.

There are a fair number of people going about who are so much taller than the normal as to give rise to a suggestion of gigantism, men of over 6 ft. 2 in., and women of 5 ft. 10 in. To careful examination a certain number of these people will reveal present evidences not of pituitary excess but of pituitary insufficiency. They have grown rapidly, outgrown their strength as the saying is, in response to an irritated pituitary. At a given moment the relative pituitary hyperactivity dies down, to be followed by the relative insufficiency of exhaustion, and, although the balance may ultimately become redressed in some degree, that person's pituitary is always lacking in vigour, and without outside help will generally give rise to unpleasant symptoms. The preliminary excess is to be seen in the abnormal height, the spaced incisor teeth, the large hands, and the misshapen lower jaw, which is either receding or underhung, according to the age at which the pituitary excess began to die down. The existing insufficiency is evidenced: by intolerance of extremes of temperature, by late oncoming, irregular and painful menstruation, by absence of half-moons on the nails and other irregularities of pigmentation, especially little black moles, "beauty spots," dotted about the body. These people are as a rule mildly but definitely undersexed, and tend to become obese on and below the waist line. But it is not any of these things which brings them for advice. They come under our notice for indefinable departures from health—headaches, asthenia, lethargy, and the various symptoms which are classified as neurasthenia. They are fortunate if they escape the stuffing of the Strasbourg goose type and the spanking of the anecdotal and too familiar masseuse. In any case they will obtain no real relief until someone recognizes in them the stigmata of their pituitary debauch. Into the various causes of the preliminary pituitary excess it is not possible to enter here. I have already referred to the most important—namely, toxæmia, which is nearly always of intestinal origin, and I shall attempt to show presently that its correction is purely a matter of rational dietetics.

The interrelationship between all the glands of the endocrine system, which it is always so necessary to bear in mind, is nowhere better exemplified than in the association which they all seem to have with the organs of generation—the gonads, as they are conveniently called. Both in the male and in the female the gonads have been shown to have very intimate relationships with the thyroid, the pituitary, the suprarenals, the thymus, and the pineal. Indeed, when one comes to consider each gland separately, its importance, its alliances and ramifications, one is inclined to claim for each in turn the title of leader of the orchestra which I have applied to the thyroid. One is reminded of those detective stories in which the reader is led to believe that each character in turn is surely the real culprit. In the play of the endocrines I am as a rule firmly convinced that the thyroid is the "star turn," but whenever I contemplate the responsibilities of the gonads, this conviction weakens. The ancients who worshipped the phallus as the origin of life were animated by a sound if savage instinct; for latter-day science has taught us that the secretions of the testes come very near to fulfilling that claim.

The researches of Voronoff in testicular grafting,<sup>2</sup> which I have followed with the closest interest,<sup>3</sup> prove to my mind quite conclusively that the internal secretion of the male gonad can accomplish miracles beside which those achieved by thyroid extract in myxoedema pale into insignificance. It has been the fate of most of us to meet with completely negative results from the administration of testicular and ovarian extracts by the mouth, and some people have been moved by these failures to push the negation to the point of denying to the gonads in both sexes any really active internal secretion. Voronoff's researches have taught us this clinically important fact: that though quite inert when administered orally, presumably from destruction of the hormones in the intestinal tract, the internal secretion of the male gonads is extraordinarily active when applied in the form of grafts. These grafts must, however, be applied scientifically to situations in the human body where experience has shown they may be expected to survive.



And when they do survive, their beneficial effects are exercised by no means exclusively, nor even predominantly, upon the sexual capacity, but are displayed to an even greater extent in the muscular and mental and even arterial rejuvenescence of the patient. This chapter in endocrinology is only just opening, but when Voronoff's work has been freed from the salacious wrappings in which the lay press has so far concealed its scientific value, the activities and potentialities of the testicular hormone will go far to justify the primitive adulation lavished by the ancients upon the phallic emblem. The testicular hormone effects rejuvenation and prolongs life. There is here no question of putting new wine into old bottles, because Voronoff's results strongly suggest that the bottles themselves—the blood vessels—partake in the general rejuvenation, and he believes that the application of his methods will eventually result in prolonging the ordinary span of life to 100 or 120 years.

## II.

An inquiry as to why it is that man so conspicuously fails to attain to anything reasonably approaching such an age as 120 brings me to the second item on my programme—the question of vitamins.

There is an old and ugly saying that man digs his grave with his teeth—a very general recognition of the truth of which has impelled medical men for over a hundred years to dabble in the question of diet. Until recently the researches were directed to the discovery of substances in the dietary of civilized man which were responsible for the obviously detrimental effects upon his health. Haig indicted uric acid; Hare accused carbohydrates; other persons have arraigned other substances. The discovery of the vitamins has completely changed all this. It has shown that the real villain in the piece was not an intruder, but an absentee. Food is now seen to be harmful, not from what it embodies, but from what it lacks, and research workers are diligently dissecting the absentee so as to show us his component parts. Now I have no word to say against these researches, still less against the researchers. Nevertheless, I claim that this work, so far as we are concerned for the moment, is purely academic, and that attempts to utilize it in practice are liable to produce a false perspective. Our knowledge of these elusive vitamins is still very meagre. For a long time we admitted three only, as generally necessary to salvation; recently a fourth has been added, and it is as certain as anything can be that there are more to come. For the present, then, we must treat them as a whole, just as we should try and treat endocrines as a whole; for their various members are probably just as interdependent as the various ductless glands. To individualize them, as is now being done, is academically interesting no doubt; but it is dangerous. It is at least possible, it is even very probable, that they only attain to their maximum effect in the presence of one another; that there is in fact a vitamin balance which is just as important to the economy as an endocrine balance. We must therefore so frame our dietaries as to secure the inclusion not only of those already labelled, but also of those which still await isolation. In order to do this we must go back to first principles and ask ourselves what these vitamins really are. The answer is that vitamins are substances which are essential to growth, development, and the maintenance of health, which exist abundantly in raw foods and are relatively absent from cooked foods.

It has been the unfortunate fashion among some of the research workers to try and estimate the minimum amount of each known vitamin which will satisfy the demands of the economy. Now, what we want to arrive at is not the minimum, but the optimum, and I think the optimum in this case will ultimately be found very nearly to coincide with the maximum. Let me remind you that man is the only animal which is unable intuitively to select suitable food. It is obvious that he must at one time have possessed that power, and equally obvious that he lost it through the cooking stove. Whether or not Charles Lamb's *jeu d'esprit* concerning the origin of roast pork represents the real beginnings of cookery I cannot say. In any case it is certain that cookery is an art which, gaining on us gradually through the ages, has long since reached the point of overwhelming us. It is no longer our servant; it is now our tyrannical master. We think and speak and act as though all foods ought to be, must be, and shall be cooked. Cookery has permeated every class in the community, not only as a

practice, but as an article of faith, and has unfortunately succeeded in dragging the medical profession at the tail of its triumphal car. Now if we are to profit by the advent of the vitamins we must modify this attitude, rearrange our outlook, and abjure this molten image. Cooked foods must be placed in the same category with alcoholic drinks—that is, they must be classed as luxuries, moderate indulgence in which is not only permissible, but often even praiseworthy.

Our real foods, that is the foods which are proper to us, are those with which Nature has provided us—namely, raw foods, dairy produce, and uncooked fruits and uncooked vegetables. These should constitute the foundations of our dietetic edifice, our altar, on which the individual may offer up any burnt sacrifice of sheep and oxen, birds and little fishes, which fashion or taste may direct. Up to the present it has been our practice, and for many of us it will remain so until we die, incontinently to forbid our patients to eat raw foods in any form, with the result that we are just as far from the successful treatment of certain general or diathetic diseases, such as gout, rheumatism, and other forms of arthritis, as we have ever been. These maladies rank high amongst the so-called deficiency diseases—diseases, that is, which are directly due to an inadequate supply of vitamins to the economy. Nor do they by any means rank alone. I have satisfied others, and more than satisfied myself, that most of the troubles of the endocrine system are due to a similar deficiency and that hormone medication seldom or never produces its best results unless it is accompanied by an abundant supply of vitaminous foods.

It may be said that vitamins are to the endocrines what the endocrines are to the economy. But it is by no means in the relatively recondite department of endocrinology that you may confidently expect to reap rewards from insisting upon a plentiful supply of vitamins. In this direction the daily round, the common task, will furnish all you need to ask. Let me give two examples.

Arbuthnot Lane has rightly attributed all manner of minor maladies, to say nothing of major, to chronic intestinal stasis. Now anyone who is afflicted with this almost universal disability may very easily convince himself that simple stasis is due directly to vitamin deficiency. I could quote several cases of people who for years—in one case it was as many as thirty years—had never dared to go to bed without taking 2 grains of cascara or its equivalent, since taking to what may be called an intensive vitamin dietary, succeed daily, regularly, and royally in relieving their bowels without any assistance whatever. And there is another feature in this situation, which is supplied by the fact that although such a person never is constipated, he is above all others the one who can afford to be, for stasis in his case does not mean the lethal process of putrefaction; it means the benign function of fermentation. The *Bacillus coli* is like ourselves, he changes his character according to his diet. When stuffed with devitalized flesh foods he becomes quarrelsome and poisons his host, but when fed on live carbohydrates which are enabled by a rational dietary to reach him in an insoluble envelope of cellulose, he becomes lamblike and assists his host in disposing of enemies. The rational outcome, then, of Arbuthnot Lane's teaching is not so much laparotomy as rational dietetics. If the latter is followed out, the former becomes unnecessary.

My other instance refers to the fierce and fantastic fashion of the wholesale extraction of teeth whenever the gums are found to be disordered. The word "pyorrhoea" has become the plaything of the profession and the bane of the public. It ought to be neither, and will not be as soon as it is generally recognized that pyorrhoea is secondary to intestinal stasis, and that intestinal stasis, when it is not structural, is permanently curable by a vitaminous dietary. Several people, mostly youngish women with seemingly good teeth, have come to me asking what they might do to be saved from the dental forceps with which they had been threatened, and all of those who consented to play the dietetic part of Nebuchadnezzar are still wearing the denture with which Nature provided them, surrounded and supported by perfectly healthy gums. Whether the vitamins have any directly beneficial effect upon the gums themselves I cannot say; but I should think it highly probable. They are certainly very powerful in preventing the deposit of tartar.



## III.

There are many subtleties of a biological nature which I would have liked to touch upon, such as climate and environment generally, and their influence upon the physical make-up of individuals and races. But I must confine myself to one or two questions, fraught with difficulties and subtleties, which are forcing themselves upon our attention with ever-increasing insistence.

Of psychology we have heard a great deal during the last ten years. Much of what we have heard has been very illuminating and very helpful, but a great deal of it appears to some of us to be the purest balderdash. In an honest endeavour to sift the wheat from the chaff I have been struck with the responsibilities which have been fastened upon the unconscious or subconscious mind. At first I was inclined to think that the subconscious was a pure assumption, a convenient but rather desperate endeavour to explain the otherwise inexplicable. I have, however, been able to convince myself that the unconscious has a real existence, and that it is therefore legitimate to speculate upon its workings. And not only has it a real existence, but a definite and anatomical local habitation. To appreciate this fact we must once more return to first principles.

On looking back through the ages it is not difficult to realize that mind must have existed in the scale of evolution not only before man was moulded, but even before the vertebrates emerged. The ganglion cells which constituted the nervous system of the invertebrates were the ancestors of our autonomous or sympathetic nervous system. These ganglion cells were the organs of a mind, a very primitive and rudimentary mind no doubt, but quite adequate and effective so far as the needs of its possessor were concerned. The function of these ganglion cells was to control breathing, circulation, feeding, excretion, and reproduction, and the ganglion cells of our sympathetic nervous system are their lineal descendants, performing the same functions for us as the original ganglia performed for our invertebrate ancestors. Now, closely associated with these original ganglia, and practically coeval with them in the scale of evolution, are the endocrine glands. The system thus evolved was the organ of a mind. It received an impression and responded thereto by an act, which, by constant repetition became customary or automatic. If, for example, you inadvertently touch an object which is very hot, you remove your hand with great rapidity, long before the sense of undue heat has reached your consciousness. You perform, in fact, a reflex. The whole of our purely animal physiological life is dominated by these reflexes, situated in the sympathetic or vegetative system. The workings of our viscera, which normally never reach our unconsciousness, are the most orderly and best disciplined things we possess. It is therefore obvious that they must be under the guidance and control of something which for want of a better term we are compelled to call a mind.

Now this unconscious mind is not only automatic, it is also constructive. Arbutnot Lane has shown us how, in order to counteract undue mechanical strain in the adult skeleton, supporting bands of considerable ingenuity in design and complexity in structure are developed. Their manufacture is quite unconscious, but no one who has studied them could for one moment doubt that they are the result of thought. They are not haphazard; they are beautiful illustrations of the laws of mechanics. Moreover, if there be no such thing as an unconscious mind, how are we to explain the hypertrophy of organs in response to a special demand? How else are we to explain the phenomena of intuition, the process by which people, chiefly women, arrive at a correct conclusion by a jump, as it were? Such a person will tell you that she knows; she cannot tell you how she knows; she says she just knows. And, the devil of it, she does know! The reason is, of course, that the primitive, the visceral, the autonomous or unconscious mind gives information to the conscious, but like a wise judge it announces its conclusions but withholds its reasons. I feel that I must in passing emphasize the fact that our vegetative nervous system, this organ of our unconscious mind, includes practically the whole endocrine system. The ganglia of the sympathetic have the closest possible rela-

tionship with the suprarenals and, through these, with each and all the ductless glands.

Now, I am no psychologist, still less am I a psycho-analyst, but events during and since the war have brought home to me the fact that ordinary physicians cannot afford to neglect the operations of the unconscious mind. In my young days our elders spoke gravely of the influence of mind over matter. They did not know what they meant, and our intolerant youthful scepticism convinced us that the words meant nothing at all. Nevertheless, they do mean a great deal, and they are rapidly coming to occupy an honourable place in the domain of therapeutics.

When M. Coué came to London I went to hear him, and subsequently read the book by M. Baudouin which sets forth the principles of the New Nancy School, of which M. Coué is the originator. To the experienced psycho-therapist there is nothing new in this teaching, but to the ordinary physician there is. Or rather should I say that the ordinary physician will find in this teaching the orderly presentation of many facts and considerations of which he was previously cognizant, but so vaguely cognizant as to render his knowledge useless.

We are rapidly passing out of the sector of drug therapeutics in which most of us were brought up, and are being forced to take our bearings in fresh areas. Among these the area of rational psychology is by no means to be neglected. We know something about the anatomy of the unconscious mind; let us study its physiology. Suggestion is a strong living force, and auto-suggestion an even stronger. These forces should not be left to quacks and charlatans to play with. They should be studied, harnessed, and exercised by responsible medical men as a part of the ordinary therapeutic armamentarium. No one has a better opportunity than the general practitioner of utilizing these forces for the public benefit, because no one finds his patients in a more receptive or suggestible condition. Rational psychology should no more belong exclusively to the psychologist than digitalis should be the monopoly of the cardiologist.

## REFERENCES.

<sup>1</sup> See H. W. C. Vines, *Proc. Roy. Soc. Med.*, 1922, vol. xv. <sup>2</sup> *BRITISH MEDICAL JOURNAL*, October 21st, 1922, p. 763. <sup>3</sup> *Ibid.*, January 20th, 1923, p. 130.

## AN OPERATION FOR ATROPHIC RHINITIS (OZAENA).

(Preliminary Note.)

BY

JAMES ADAM, M.A., M.D.,

SURGEON FOR DISEASES OF EAR, NOSE AND THROAT, STOKHILL HOSPITAL, GLASGOW, AND GLASGOW ROYAL INFIRMARY.

THE pathogeny of atrophic rhinitis is still a matter of dispute; this is due possibly to want of attention to classification of cases and need not now be discussed. What is not in dispute is that, apart from epithelial metaplasia, undue width of nostril—that is, of the whole nasal passage from vestibule to choana, whether this width be primary or secondary—is an important factor in stagnation, drying, putrefaction, and fetor of the nasal secretion. Where the disease is unilateral it is in the wider nostril, or worse in it.

To prevent the formation of the stinking crusts characteristic of the disease various operative measures have been devised. Submucous injection of paraffin sometimes succeeds in narrowing the nasal passages sufficiently to enable the patient to cleanse his nose by blowing and so lessens crusting and fetor. But frequently, and especially in extreme cases, the mucosa will not hold much paraffin, even though the paraffin injection is preceded by one of anaesthetic fluid so as to create a pocket; the paraffin perforates the membrane when more than a little has been injected. Moure tries to meet this by prior vibratory massage of the mucosa for months so as to revivify it. In my hands the paraffin method has been on the whole disappointing. Translation of the inner antral wall toward the septum (Halle) seems rather a formidable measure, hardly likely to be generally adopted.

While paraffin may continue to be used for the less



severe cases, for others a more satisfactory method than either of those mentioned was suggested to me by a case in which the crusts were confined to the left nostril. In this girl, aged 14, the right nostril was occluded by a cone-like deviation of the quadrangular cartilage. The left nostril was extremely wide; at least an inch between septum and antral wall below the anterior end of the middle turbinal; turbinal atrophy was marked. The cone was resected through the right nostril with the idea of replacing it with its apex inverted towards the left nostril. Unfortunately the cone broke, but the pieces were pushed under the muco-perichondrium of the left side of the septum. The improvement that resulted was probably due to the freeing of the right nostril, as the left is still too wide, and it has been agreed to do the operation now to be described—transplantation of rib cartilage.

Flakes of cartilage are, with a wide, sharp gouge, taken from the seventh or eighth costal cartilage, and after incision and elevation of the muco-perichondrium of one side of the septum over the greater part of its extent and similar elevation on the inner antral walls between middle and lower turbinates, these flakes are introduced by suitable forceps—the swan-billed septal punch is excellent—into the pockets thus created, which are packed full. The incisions are closed by careful packing with bismuth gauze, which is left for four or five days.

Attention to the following points helps to guard against risks of septic infection, an important consideration in such cases with a closed wound.

Local anaesthesia should, if possible, be used. An intranasal douche with normal saline should be given before the anaesthesia till no trace of pus can be seen. The nose and face must be cleansed with spirit, and the vestibule painted with iodine tincture. The costal wound is closed with an anchor dressing before the nasal operation is begun. If local anaesthesia is used, then, before the costal operation is begun, the nose is anaesthetized with cocaine and an injection, at the vestibule, of eucaine or novocain solution. The pieces of cartilage as removed are laid on

sterile gauze and not touched except with instruments. They may be an inch or more long but neither broad nor thick; for to secure primary union and retention of the grafts the nasal wounds are best not more than 1 cm. long, placed vertically and just posterior to the skin margin, where they can be wiped with iodine.

I have done this operation in three patients, aged 15, 18, and 60 respectively—once under chloroform, twice under local anaesthesia—with primary union and retention of all the grafts in each case. All the patients expressed themselves pleased with the results in respect of comfort and diminution of discharge; but I am not satisfied, as the cavities are still too wide, though the result is better than could be got by any other method known to me. It is surprising how much cartilage can be packed into the pockets; the cubic capacity of the nasal airway is relatively great. To avoid necrosis of the septum the perichondrium can be safely elevated from one side only at one operation; this leaves the other nostril too wide. This defect will be met in future by storing the excess of costal cartilage in a subcutaneous pocket, whence it can be easily taken a month later for transplantation on to the second side of the septum.

Where only one nostril need be narrowed the operation would probably be better done from the other, narrower, nostril; a bevelled incision, longer than that indicated and carried right through septal cartilage but stopping short of perichondrium of the wider nostril, would allow complete elevation of the latter, thorough packing with transplants, and complete closure of the septal window owing to its bevelled edges and elasticity.

Any treatment of atrophic rhinitis, the ciliary brush being gone, can be only palliative. All that is claimed for the method here suggested is that in well developed cases it is more efficient than paraffin injection and less formidable than Halle's operation. The cases are too few and recent to judge results. The method is published that others who have more opportunity than I now have may try it and report.

## ACUTE OTITIS MEDIA WITH JUGULAR BULB THROMBOSIS.

BY

E. WATSON-WILLIAMS, M.C., Ch.M., F.R.C.S.E.,  
REGISTRAR, EAR, NOSE, AND THROAT DEPARTMENT, BRISTOL ROYAL INFIRMARY.

The following case presents some very uncommon features, especially the absence of any of the usual signs of mastoid disease. The notes given explain the main features.

G. G., a girl aged 10, on February 11th, 1923, complained of sore throat, vomiting, and some right earache, beginning suddenly on the previous day. I saw her on the following day; she then had flushed face, dry lips, very furred tongue, and slight tonsillitis; both tympanic membranes were pink but not bulging. There was a little pain in the right ear, and on deep pressure in the postaural sulcus some tenderness, such as an acute myringitis might produce, but no tenderness over the mastoid process, no redness nor swelling there. Constipation was present, the vomiting had ceased. Her appearance was suggestive of scarlet fever. Temperature 102°, pulse 126, respiration 24.

On February 13th, the right ear was discharging. There was epistaxis in the morning and some vomiting; constipation continued. The child looked and felt better. There were no mastoid signs; the tenderness in the post-aural sulcus had disappeared. Temperature 99°.

Left myringitis occurred on February 15th, with rise of temperature to 102.6°. There was discharge from the ear on February 16th; on this day the vomiting ceased.

On February 18th, vomiting began again, with some diarrhoea, general abdominal discomfort, and tenderness, but no distension.

Both ears were discharging; there was occasional slight right earache; no mastoid signs. The tongue and lips were very dirty and dry. The child was not well although the temperature was down to 99°. The case appeared to be possibly abdominal, and enteric was considered.

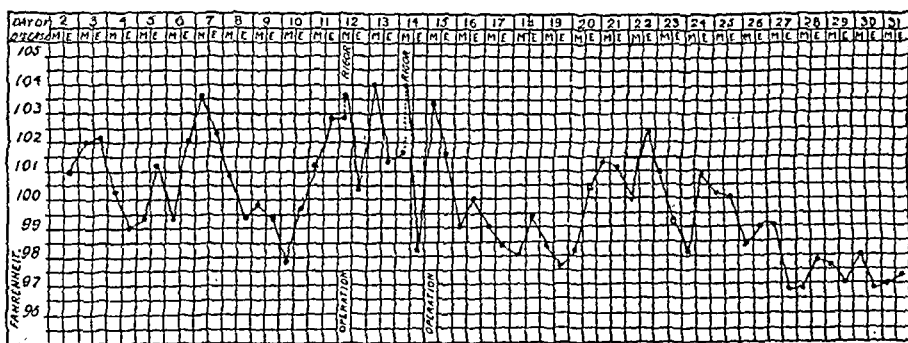
On February 21st, the temperature, after day, rose again, and the child had a rigor in there were no signs of mastoid abscess; but in the absence of any other reasonable possibilities, I decided to operate on the right mastoid, as there had once or twice been earache on that side. With the patient under ether, I performed the Schwartze operation. The mastoid cells and bone were absolutely normal; the antrum contained a very little mucoid material. I therefore exposed the ascending part of the lateral sinus; it was normal in colour and contained fluid blood; the wound was packed and left open. Lumbar puncture gave perfectly clear fluid

under slightly raised tension; 15 c.cm. were withdrawn. Pathological report: Slight increase of cells and globulin, no organisms, culture sterile.

On February 24th the temperature remained high and another rigor occurred. Ether was therefore again given, and I exposed the internal jugular vein; it was perfectly normal. The lateral sinus, however, was filled with recent clot to a distance of two inches behind the

genu. This was curetted out, as also the jugular bulb; and free bleeding was obtained from both ends. The sinus was packed off, and the jugular vein tied and divided. A small perisinos abscess was found superficial to the sinus, close to the bulb, and was drained. The bone surface was lightly rubbed with "bipp" and the wound packed. The pathological report stated that both clot and abscess contents grew streptococcus. Later that day the patient's condition was good.

Although subsequently the temperature rose again and I feared that the mischief was going to extend, it fell later by lysis, and convalescence was quite uneventful. Hearing was good in both ears. The child was discharged from the infirmary ward on April 3rd.





The course of events is on retrospect fairly clear: the jugular bulb was probably infected through the floor of the middle ear, the disease sparing the mastoid antrum and process. The result was a case very obscure right down to the discovery of the perisinous abscess, which did not exceed a pea in volume. I was not free from anxiety for some days after the second operation. The case well illustrates the necessity for operating sometimes on very slight local indications in the absence of other explanation of a severe infection.

For permission to publish these notes my thanks are due to Mr. J. P. I. Harty, F.R.C.S., who has recorded a somewhat similar case (*Bristol Med.-Chir. Journ.*, 143, September, 1921, p. 78).

## ADRENALINE AS A POTENTIAL FACTOR IN HYPERTHYROIDISM.

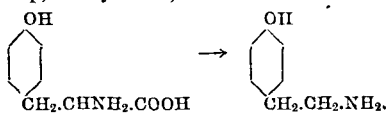
BY

D. J. HARRIES, D.Sc., M.D., B.S., F.R.C.S.,  
CONSULTING SURGEON, MOUNTAIN ASH HOSPITAL; SURGEON, CITY LODGE  
HOSPITAL, CARDIFF; ASSISTANT SURGEON, KING EDWARD VII  
HOSPITAL, CARDIFF.

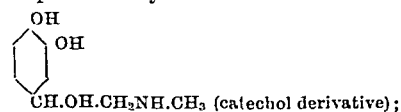
IN a former article (*BRITISH MEDICAL JOURNAL*, March 31st, 1923) I considered the relationship of the putrefactive group of intestinal organisms to the production of thyroxin. My present purpose is to consider the activity of the same group among the intestinal flora as a potential causative factor in regulating the supply of adrenaline. Berthelot isolated from the intestine a bacillus (*B. phenologenus*) which converts a solution of tyrosin into phenol. This represents a considerable advance in our knowledge of the intestinal flora, for although it had been known for many years that there existed in the intestine bacteria capable of converting the aromatic products of digestion into phenol, no specific function had been attributed to any specific and isolated species among these organisms. This observation suggests a concept which may be found to account for the production of adrenaline either from tyrosin, or else (more probably) from some hitherto unidentified aromatic body closely allied to tyrosin, and, like tyrosin, a product of digestion. Can we in the light of our present knowledge conceive of adrenaline as being produced from tyrosin?

### The Amine Producers.

These organisms have the power of removing COO from the COOH group of an amino-acid, converting it into an amine containing one carbon group less than the amino-acid from which it was produced. Apply this to tyrosin. If we limit the function of the amine producers to effecting the change just mentioned, tyrosin becomes, not a body of the adrenaline group, but tyramin, a lower member of the series.

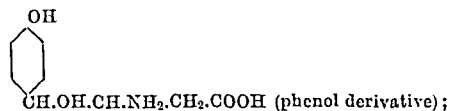


Adrenaline is represented by the formula—

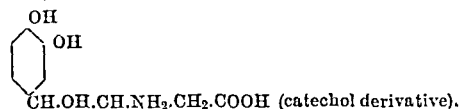


that is, it differs from tyrosin in containing an extra carbon group. If we still regard it as being a derivative of tyrosin, we must attribute an additional function to the amine producers—that of elevating the series by the addition of another carbon group; or else we must postulate a similar synthetic process as being carried out by some other agency, such as the cells of the adrenal glands. Now, as far as the amine producers are concerned, such a view of the question presupposes a type of activity which is, generally speaking, exceptional rather than characteristic among the metabolic processes brought about by micro-organisms. Their function is mainly katabolic; they split up complex into simpler bodies, the building up of complex from simpler bodies being relegated to various types of living body cells. If, then, we are to regard adrenaline as being produced from tyrosin, we

must assume the elaborative activity of some body cell (for example, the cells of the adrenal medulla) to be a factor in its production. On the other hand, if we are to regard adrenalinol as being more directly a product of bacterial activity in the intestine, we must postulate the existence of some precursor other than tyrosin. We must seek for its source in some unidentified amino-acid which is, like tyrosin, a product of digestion, and structurally allied to tyrosin (so closely allied to tyrosin as to escape detection by the analytical processes hitherto employed), but which is higher placed in the series than tyrosin. Such a substance will be represented by the corresponding amino-butyric acid, with the formula—



or, better still,



Both the above could be direct precursors of adrenaline, needing only the intervention of the amine producers to effect the change; but as regards the catechol derivative it is important to note that Ebstein and Müller have demonstrated the presence of catechol sulphate in the urine. Such a concept of the origin of adrenaline traces it to a common source with the other endocrine secretion, thyroxin. As explained in my former article, thyroxin is regarded as being derived from tryptophane. Let us consider what happens if this common source (that is, the products of digestion) is interfered with. Such an interference arises when the putrefactive organisms disappear from the intestine. This state of affairs makes itself manifest biochemically, by the diminution or disappearance of indican and all other organic sulphates from the urine, and, clinically, by the development of the familiar syndrome of hyperthyroidism. But what is significant from the point of view of the present investigation is that hyperthyroidism implies not merely changes attributable to thyroxin, but equally important changes attributable to adrenaline, a state of affairs which we should expect if adrenaline and thyroxin are traceable to a common source—the end products of digestion. The absence of all the organic sulphates shows, in fact, that tryptophane and all the aromatic amino-acids are regulated by bacterial action. We should expect, therefore, a part of the syndrome of hyperthyroidism to be really hyperadrenalism. How far is this the case?

It enunciates no new theory to state that hyperactivity of the thyroid gland is accompanied by a corresponding activity of the adrenals. Hitherto this has been explained on the ground of an interaction between the thyroid and the adrenals, the so-called balancing of endocrine activities. From the foregoing paragraphs, however, the phenomenon is more rationally explained, not by some *recondite* interaction, but by a simple increase in the source of their particular secretions. To emphasize this I would quote the following pregnant paragraph from Professor Swale Vincent's *Internal Secretion and the Ductless Glands*:

"It is doubtful whether a condition strongly resembling Graves's disease has ever been produced by the administration of thyroid substance to animals. But there can be little doubt that definite toxic effects can be produced by thyroid feeding. These are loss of body weight, gastro-enteritis, and diarrhoea, rather than tachycardia, nervousness, and exophthalmos."

A further important question to be considered in relation to hyperthyroidism is that of the increase in the basal metabolic rate, which is now so generally recognized to be an outstanding feature of the condition. There are two main factors affecting this increase. In the first place, it is due to the greater amount of amino-acids rendered available for absorption by the disappearance, or lessened activity, of the putrefactive group of intestinal organisms. In the ordinary course of events a part of the amino-acids would be converted into phenol, indol, and skatol, and would be excreted in the urine as aromatic sulphates. By being



absorbed, instead of being thus excreted, they exercise the typical effect of protein bodies on metabolism—that is, they stimulate metabolism to a degree considerably in excess of their mere calorific value. The same fate also overtakes the fatty amino-acids. The second factor to be noted is this: that if we can assume that the source of adrenaline is to be found among the amino-acids in the intestine produced by the digestive ferments, the failure of the putrefactive organisms still further to split up this precursor into an excretable substance again has a specific bearing upon the increase in the basal metabolic rate, for it is now generally conceded that adrenaline is the sensitizer of the sympathetic nervous system, "the katabolic nerve of the body."

## A CASE OF TORSION OF THE GALL BLADDER.

BY

HERBERT C. JONAS, M.D., B.S.LOND.,

SURGEON TO THE BARNSTAPLE AND NORTH DEVON INFIRMARY.

SINCE torsion of the gall bladder is, and from the nature of the case must always be, an extremely rare accident, every case is worth recording.

A woman, aged 67, under the care of Dr. Seal, of South Molton, was taken suddenly ill at 10 p.m. with acute pain, distributed over the abdomen generally. She vomited and was collapsed, but not with the intensity seen in a case of perforation; there was a slight action of the bowels during the night or the early morning. The pain was not relieved, and from about 8 a.m. she was unable to pass flatus. The vomiting increased, and became green with bile; it was never stercoraceous, and never offensive. Dr. Seal could feel a tumour on the right side of the abdomen on the following morning. There was no rise of temperature.

She was seen in consultation with Dr. Seal at 6.30 p.m., when her expression was anxious but not intensely so; the pulse was just under 100, of fairly good volume and regular. The general condition was such as to give any prospective surgeon a reasonable hope of a favourable result of surgical interference.

The abdomen moved badly with respiration, but still it did move. There was a distinctly visible swelling on the right of the middle line. There was no distension, and no visible peristalsis. The mass on the right side was sausage-shaped, with the lower end blunter and more pronounced than the upper. Its long axis was tilted so that the lower end was slightly to the right of the vertical and the upper to the left. It did not appear to move with respiration, and was freely movable in all directions; the hand could be got between it and the liver above the tumour. Auscultatory percussion gave no indications of any connexion with the liver.

It was obvious that some acute abdominal condition was present, and the history pointed more to an intestinal obstruction than either a perforation or an inflammatory process, and it was thought probable that it was a case of growth in the colon, although the fact that the lower end was the more defined and the upper the less mobile was rather against this.

The physical signs connected with the very obvious tumour were distinctly puzzling. The swelling was exactly in the position of the gall bladder, but it was movable, seemingly in all directions. The liver could be felt moving with respiration and the tumour seemed not to move with it. Auscultatory percussion failed to show any connexion between it and the liver. There was no history of any previous trouble in the gall bladder, and there was no temperature to suggest a cholecystitis. The question of torsion or volvulus was never considered.

### Operation.

The patient was with considerable difficulty persuaded to submit to operation; it was performed the same evening. Before the peritoneum was opened a dark red mass was seen, exactly like one sees when operating for extrauterine gestation. As soon as the peritoneum was opened a very little serous fluid escaped, and it was found that the tumour was a large gall bladder, quite black and nearly gangrenous from strangulation by two half-turns of the neck just at the edge of the liver. The turns were from left to right. After reducing the twist the gall bladder was removed with the greatest ease, since the point of constriction could be readily brought out of the abdomen, and the ligature could be applied to perfectly healthy tissue. The patient made an uneventful recovery.

The organ when removed was about the size and shape of a large pear. The walls were very much thickened, and it was quite black with extravasated blood. It was tightly distended with blood-stained bile, and it contained ten or twelve moderate-sized gall stones. Three of the larger of these were tightly lodged behind a valve or fold of mucous membrane; from their position and the thickness of the wall, they might easily have been overlooked during the course of an ordinary cholecystotomy.

Irwin in recording a case has collected seven previous ones, in only one of which were gall stones found. He also comments on the difficulty of diagnosis. Judging from the case under consideration, the difficulty would seem to lie chiefly in the fact that the possibility of its

occurrence is not taken into account. In spite of the fact that the tumour did not move with respiration, and that it seemed to be free from the liver, there is no doubt that at the time of examination the lower rounded end of the mass and its position were distinctly suggestive of gall bladder, and if the surgeon had in his mind the possibility of this condition being present it is more than likely that he would arrive at a correct diagnosis.

With regard to success of laparotomy, which Irwin also mentions, if all cases were as easy and straightforward as the one under discussion the surgeon could have nothing to fear, so far as mortality is concerned, beyond the ordinary anaesthetic risk.

## ILEO-COLIC INTUSSUSCEPTION CAUSED BY MECKEL'S DIVERTICULUM AND SIMULATING ECTOPIC GESTATION.

BY

H. H. GREENWOOD, B.S.LOND., F.R.C.S.ENG.,

HONORARY SURGEON, VICTORIA HOSPITAL, SWINDON.

THE two features in the following case which seem to warrant placing it on record are, first, the mimicry of ectopic gestation and the absence of the usual signs and symptoms of an ileo-caecal intussusception, and, secondly, the impossibility of reducing the intussusception by the ordinary methods, on account of the tight grip of the ileo-caecal valve.

A woman, aged 30, who had been married for three years, and during that time, and indeed all her life since puberty, had had no menstrual irregularity, ceased to menstruate three months before she was taken ill. As she was in good health at the time, she concluded that she was pregnant.

On June 16th, 1922, she was seized with acute abdominal pain, definitely located in the right iliac region, and occurring in spasms of variable duration; in the intervals she was not entirely free from pain. On that day she vomited once, but not afterwards. On June 18th she called in Dr. Young, who suspected a tuba

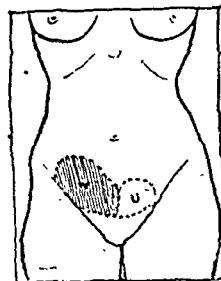


FIG. 1.—Diagram of abdominal findings; T=tumour, U=uterus.

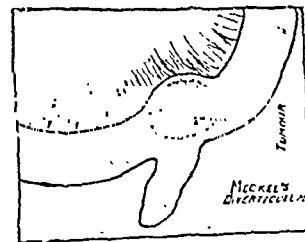


FIG. 2.—Diagram of removed ileum.

gestation, threatening rupture; when I saw the patient with him later in the day I concurred in the diagnosis and sent her in to Victoria Hospital, Swindon, for operation.

Her condition then was highly suggestive of a tubal gestation; she was in great pain at intervals, the spasms lasting only a few minutes, and her expression was one of "fear of impending catastrophe." The pulse was not rapid (80), but small and feeble, the temperature 98° F. There was no general distension of the abdomen, and rigidity was confined to the right rectus muscle below the level of the umbilicus.

The bowels had acted normally up to that time; there was no diarrhoea, neither mucus nor blood in the stools, no tenesmus, and no swelling typical of an intussusception. On bimanual examination the uterus, enlarged, but somewhat indefinite in outline, could be felt pushed over to the left by a large elastic swelling which bulged down into the right lateral fornix and was felt to be continuous with a similar swelling in the right iliac fossa. This abdominal swelling reached nearly to the level of the umbilicus, was tender, and did not vary in size. The rigidity of the rectus over it rendered precision of palpation impossible.

### Operation.

With the assistance of my colleague Dr. Young, at 9.30 p.m. a paramedian incision was made below the umbilicus, and the uterus, of the size of a three months' pregnancy, together with the appendages were found lying over to the left and physiologically normal. The appendix, presenting nothing abnormal, was drawn out of the wound. There followed the caecum, so mobile that it was easily pulled completely out of the abdominal wound after being dislodged from the pelvis in which it had lain. After packing off the rest of the abdominal contents the caecum was more closely examined; it was found to be very large and soft, and within its lumen could be felt a harder, more elastic, and slightly movable tumour. The entering ileum was also swollen to double its normal



diameter, its walls thickened and rigid. Realizing the existence of an intussusception, I followed the small gut upwards and came upon the commencement of the lesion some twelve inches from the ileo-caecal valve. Attempts to "milk" back the intussuscepted bowel were ineffectual, and I therefore removed the appendix, enlarged the opening so left in the caecum, and with two fingers inside the caecum reduced the protruding gut through the ileo-caecal valve. It was only by patient and careful manipulation that this could be done, so tightly was the small bowel gripped by the valve. The whole of the intussusception was then, with comparative ease, reduced, and as the last portion emerged a Meckel's diverticulum turned itself inside out, resuming its normal position and appearance. The wound in the caecum was then closed.

The diverticulum was on the antimesenteric border, was short, and its lumen wide. On each side of it the bowel was ecchymosed and of very doubtful vitality. Within the lumen of the gut, at the level of the diverticulum, there could be felt a soft swelling. I removed six inches of ileum, including the diverticulum, performed a lateral anastomosis, and after fixing the mobile caecum in its normal position by catgut sutures, closed the abdomen without drainage.

Recovery was uneventful, and the patient left hospital three weeks later free from symptoms, the pregnancy continuing normally. The pathologist reported: "The intussusception consisted of a portion of bowel in a state of acute congestion and commencing gangrene from strangulation of the blood supply. It contained in its cavity a mass of breaking-down blood clot."

## A CASE OF RAT-BITE FEVER.

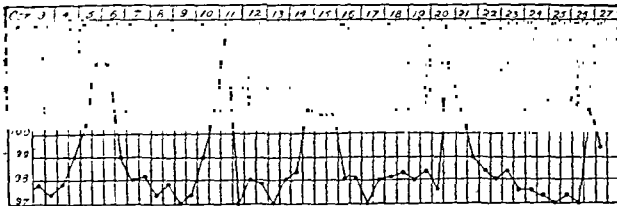
BY

J. ODERY SYMES, M.D.,

SENIOR PHYSICIAN TO THE BRISTOL GENERAL HOSPITAL.

RAT-BITE fever is not of common occurrence in this country, and the following case is so typical in character as to merit publication.

T. H., a boy aged 13 years, whilst on holiday in Devonshire was bitten on the left hand by a rat, on August 16th, 1922. The wound was not a severe one, and on the following day it was washed with carbolic lotion and dressed by a surgeon. It did not suppurate, and the doctor who saw the wound on August 23rd said it was doing well. It subsequently healed. About August 30th the wound was red and oedematous, and the temperature rose to 103° F. Two incisions were made near the wound, but no pus was found. During the following week the temperature rose again, but the boy was well enough to make a long journey to his home at Clevedon on September 7th. He was then seen by Dr. Hubert, who dressed the hand and found a little pus escaping. The wound healed rapidly, but from time to time until the date on which I saw him (October 11th) he



was subject to a rise of temperature varying between 102° and 104° F., coming on every three or four days, and lasting for two days. Each return of fever was accompanied by the appearance of a patchy erythematous rash all over the body. There was no lymphangitis. The scar was healthy, and not reddened. There were two small lymphatic glands palpable in the left axilla, and one in the left posterior triangle of the neck. The left hand was cyanosed. During the height of the fever there was a peculiar smell about the patient, reminding one of a hot wet dog. On one occasion there was a trace of albumin in the urine. He was brought to a nursing home under my care on October 12th, and 0.15 gram of novarsenobillon was injected intravenously on October 13th; further doses of 0.3 gram were given on October 18th and 26th, just before the rise of temperature might be expected. The fever which followed each of these injections was brief, and on the first two occasions only was accompanied by a rash which was of both an erythematous and urticarial character. The rash lasted for twelve hours. The blood was examined by Dr. Hadfield on October 14th. His report was as follows:

Red blood cells	...	...	4,100,000 per c.mm.
White blood cells	...	...	7,850 "
Haemoglobin	...	...	78 per cent.

There is no abnormality in the differential leucocyte count. The blood was examined by taking films and a thick drop. No parasites

were seen. There is, however, slight polychromatophilia. This and the anaemia are the only pathological findings.

The patient went home on October 19th and made a quick convalescence. There has been no return of fever. No parasite was found in the blood of this case, but it seems probable that the disease is identical with that seen in India, which is associated with a spirochaete discovered by Futaki in 1915 (*S. morsus muris*). The incubation period is usually two or three weeks. The initial wound heals normally in a few days, but later becomes swollen, painful, and red. Fever recurs every five or six days. The urine is increased in quantity, and contains albumin and casts. In India about 10 per cent. of untreated cases die. In any case convalescence is slow and there is emaciation and anaemia.

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### RINGWORM AND ITS TREATMENT.

ALL present methods of treating ringworm require prolonged supervision, and even x-ray treatment requires some three months. At the school clinics in Blackburn, in 1920, I experimented with various methods of treatment, and by the end of the year I began to get rapid results with the following method:

The hair is cut short, permitting a good examination of the whole surface, the affected parts are shaved, and then washed with ether soap, dried, and the following lotion applied: Calomel 5 grains, tinct. iodi (B.P.) 1 drachm; stir with glass rod—a reddish precipitate is formed. This lotion is poured upon small pieces of cotton-wool and applied to the ringworm area by gentle rubbing. The piece of wool is then discarded, clean white lint applied and bandaged. The child returns to the clinic the next day, the dressings are removed, the areas are washed well with ether soap, ammoniated mercury ointment (B.P.) applied, and a bandage again used. This process is continued until cure results, generally within fourteen days; the child is ready to return to school during the third week.

During 1921, 61 cases of ringworm of the hairy scalp, 2 involving the whole hairy scalp, forehead, and neck, were treated at the clinics by this method; the average number of days required for cure was eighteen. The shortest period was six days, the longest thirty-seven days; in this case two children at home were being treated for ringworm by the mother; this explained the fresh areas of ringworm on our patient's head which arose during treatment.

The calomel iodine lotion must be applied gently, and must be freshly prepared for each case. If rubbed in instead of gently daubed on, within a few hours' time the child suffers severe pain, due to a burn of the first or even second degree; in the first case a mild erythema, and in the second case erythema and small blisters, simulating erysipelas. I have only had three such cases, and those among my early cases. The best treatment of these early burns is to apply a mixture of olive oil 3 parts and castor oil 1 part. The lotion need be applied only once; it seems to penetrate and destroy the parasites perhaps by the liberation of nascent iodine. The further treatment described keeps the surface clean and rubs out all loose hairs. In several cases a chronic scurfiness continued, but cleared up when the oil application was used. All the 61 cases mentioned have been kept under observation and in no case was there any recurrence.

As the lotion is very active, I considered it necessary to limit the surface of application by dividing the scalp into six equal areas. On the first day the whole scalp is washed with ether soap, and dried. To area 1 freshly prepared calomel iodine lotion is applied gently, and ammoniated-mercury ointment rubbed into the remaining five-sixths; the head is then bandaged. On the second day the five-sixths part is washed with ether soap, and the lotion applied to another sixth part. The part to which the lotion was applied is then washed as a separate area, and ammoniated mercury ointment applied, and so on. On the seventh day the whole head is again treated as one area with ether soap wash, and ammoniated mercury ointment applied.

Ringworm of the body receives similar treatment, the child remaining at school, as the condition is cured within



forty-eight hours. When applying the calomel lotion care must be taken to prevent it running down the scalp.

I have to thank Mr. Holroyd, head of the Chemical Department of the Blackburn Technical College, for giving me the following analysis of the active lotion. He says: "The precipitate is mercuric iodine together with a little calomel. The filtrate from this precipitate contained a mixture of the chlorides and iodides of potassium and mercury. For purposes of convenience the mixture may be said to consist of potassium chloride 0.75 grain and mercuric chloride-iodide 2.95 grains."

JAMES ROBERTSON, M.B., D.P.H.,  
Assistant Medical Officer of Health and Medical  
Officer of Schools, Blackburn.

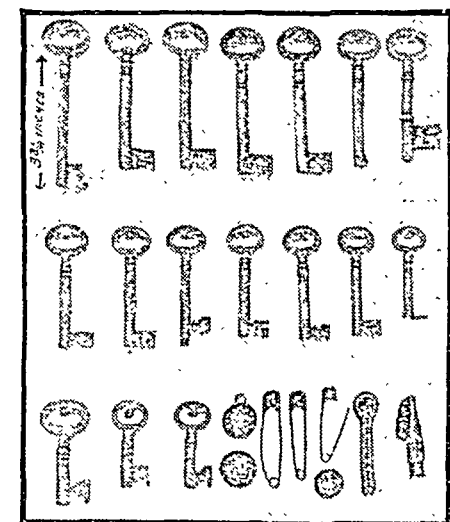
### FOREIGN BODIES IN THE STOMACH REMOVED BY OPERATION.

THERE have been many cases recorded of foreign bodies being swallowed and removed from the stomach by operation, but the following is perhaps worthy of record, not only on account of the number of articles found, but because of their size and the constancy with which the patient preferred a certain kind of article—namely, iron keys.

A woman, aged 27, who had been the subject of several abdominal operations, again complained of epigastric pain early in January, 1922, but knowing her neurotic nature I was inclined to lay little stress upon her subjective symptoms, and as her objective symptoms

were nil, I temporized. A few weeks later she again came to me, and I found slight tenderness in the right upper quadrant of the abdomen. She was vomiting frequently. I kept her in bed, and on deep palpation a movable mass was felt in the region of the gall bladder. A skiagram was taken, but as the plate was spoiled, and as the pain had become more acute again, I decided not to wait any longer.

I opened the abdomen by a vertical epigastric incision through the right rectus and found the gall bladder to be normal. While passing my hand down over the duodenum I felt a hard irregular mass,



FOREIGN BODIES IN STOMACH.

which proved to be the stomach. I lifted it out of the abdomen, and having opened it anteriorly in the prepyloric area, removed one by one the articles shown in the accompanying photograph. The stomach and abdominal parietes were closed in the usual way, drainage being provided for by means of a small rubber tube, left in the wound for forty-eight hours. The patient made an uninterrupted recovery.

She had not at any time given me the slightest hint as to her peculiar diet, and she must have been swallowing the articles for at least six weeks. The complete list is: 17 keys, the largest of which was  $3\frac{1}{2}$  inches in length; 2 coins (one with a ring through it); 3 safety pins (one open); 1 button; 1 engineer's split pin; and 1 pencil sharpener.

A. GEORGE BRAND, M.B., Ch.B.

Ayr County Hospital.

THE late Mr. Arthur Leaman Crossfield, of Oxtou, Birkenhead, who left personal property valued at £44,898, has bequeathed one-fourth of his estate to the Hospital for Women, Liverpool; one-eighth to the Hospital for Cancer and Skin Diseases, Liverpool; and one-sixteenth to the Liverpool Sanatorium, Delamere Forest.

IN a recent communication to the Royal Society Drs. Leonard Hill and Eidinow state that the biological action of light is accelerated by warmth, retarded by cold. This was found to be true for bacteria, infusoria, and human skin. By adequate exposure to cool air overaction of the sun on the skin can be prevented. The success of heliotherapy applied to children with surgical tuberculosis, depending as it does on exposure to sun and cool air, can probably, the authors think, be secured for cases of phthisis if they are no longer exposed in hot sun boxes, but suitably stripped and exposed in cool air.

## British Medical Association.

### CLINICAL AND SCIENTIFIC PROCEEDINGS.

#### CAPE OF GOOD HOPE (WESTERN PROVINCE) BRANCH.

THE Cape of Good Hope (Western Province) Branch was entertained by the medical superintendent and visiting staff of the New Somerset Hospital, Cape Town, on April 13th, when a clinical evening was held. Two sections were organized—one, surgical, in charge of Mr. C. C. ELLIOTT, and the other, medical, in charge of Professor A. W. FALCONER.

Mr. C. C. ELLIOTT showed cases of depressed fracture of the skull, depressed fracture of the supraorbital ridge, and, for diagnosis, a case of tumour in the right inguinal region in a male European. He also exhibited an excellent specimen of an excised Gasserian ganglion. Mr. H. A. MOFFAT demonstrated an old dislocation of the head of the radius, a fracture of the head of the radius, a fracture of the carpal scaphoid, and a tuberculous shoulder-joint. Mr. C. F. M. SAINT exhibited an interesting and unusual case of psoas abscess, with superimposed pneumococcal infection. He also showed a case for diagnosis, probably duodenal ulcer, and a tuberculous shoulder-joint. Dr. A. REITH FRASER exhibited a case of digital chancre in a coloured midwife, and one of granuloma inguinale in a Kaffir which had failed to respond to intravenous tartar emetic and intramine. Professor E. C. CRICHTON showed an interesting collection of pathological specimens. A series of radiograms exhibited by Dr. H. W. REYNOLDS included cervical ribs, fractured skull, fractured spine, bone graft, talipes calcaneo-cavus, and perforating gastric ulcer. Professor A. W. FALCONER conducted the medical section to his wards, where cases of amoebiasis, cerebellar tumour, and gummatous meningitis were demonstrated. Dr. D. P. MARAIS showed a specimen of a cerebellar growth *post mortem*; he also demonstrated a case of Addison's disease, and several cases of children indicating the value of heliotherapy in strumous conditions. Mr. D. J. WOOD's collection of eye cases included a rare example of glaucoma in a child 7 years of age. This was believed to be a record in the matter of age incidence, and tended to upset preconceived speculative theories regarding the etiology of glaucoma—a condition which had been taught to be unknown in childhood. Other cases included chalazion, tuberculosis of the conjunctiva, trachoma, and spring catarrh. There were sixty-nine members present.

On April 27th Dr. O. M. GERICKE read a paper entitled "In the days of Van Riebeeck." He outlined Van Riebeeck's medical and political career, and gave an interesting account of the establishment of a hospital at the fort in Table Valley in 1652, the nature of the various sicknesses in the valley, and the need for such an establishment. Van Riebeeck's contemporaries in Europe, the state of public health and sanitation in England, France, and Holland at that period, the universities, the teaching methods, the first London Pharmacopoeia, and the materia medica of the times generally were passed under review. The paper stimulated a keen discussion, in which Dr. DARLEY-HARTLEY, Dr. A. REITH FRASER, Dr. DE BEER, Dr. D. P. MARAIS, and Dr. R. SHARP took part.

Dr. R. A. BARLOW then read a paper on "Some surgical complications of influenza." He laid emphasis on the extremely large proportion of cases of influenzal bronchopneumonia which were followed by empyema, met with in the Royal Navy during the pandemic of 1918-19. The difficulty of making a diagnosis in this condition was due to lack of conformity with the usual textbook symptomatology. The advantages to be gained from delaying open operation until repeated aspiration had been fully tried out were clearly stated; in this connexion a certain measure of success had followed the use of intravenous eusol in septicæmic cases. Other complications discussed included appendicitis, perinephric abscess, surgical emphysema, and otitis media. Mr. C. C. ELLIOTT and Dr. D. P. MARAIS discussed the paper, and the President, Dr. C. M. MURRAY, thanked Dr. GERICKE and Dr. BARLOW for their interesting contributions.



## ULSTER BRANCH.

A CLINICAL meeting of the Ulster Branch was held in the King Edward Memorial Hall of the Royal Victoria Hospital, Belfast, on May 31st, with Mr. ANDREW FULLERTON, President, in the chair. The following cases and specimens were shown:

Drs. DARLING and PEDLOW (Lurgan): The specimens of an ovarian pregnancy, and a patient on whom Rammstedt's operation had been successfully performed.

Mr. MITCHELL: A case of grafting of sarcoma of tibia four years after operation, with x-ray photographs showing the progress of the case; and two cases of plating for fractured femur, with x-ray photographs.

Mr. IRWIN: A case of tibial bone graft for spondylolisthesis, and Mr. CRYMBLE a testicular tumour.

Dr. R. MARSHALL: A case of dystrophia adiposo genitalis, in a boy who was losing weight at the rate of about a pound a week under 2 grains of pituitary gland.

Dr. MCKISACK: A case of gumma of brain, where the symptoms had disappeared under treatment.

Dr. SMITH showed charts of the effect of insulin, and gave a demonstration of some experiments.

Dr. ALLISON exhibited charts showing results of fractional examination of stomach contents; the curves of duodenal ulcer and chronic appendix, as confirmed by operation, were often closely similar, and even x-ray photographs of opaque meals did not always differentiate. The two together formed a most valuable help.

Dr. CALWELL: A case of a young lad with mental deficiency, subject to petit mal, who was admitted with an attack closely resembling hystero-epilepsy, but which cleared up in a couple of weeks; and a case of a young girl, under-developed, who was admitted with sudden clouding of consciousness, from which, in about three weeks, she has suddenly recovered; also specimens from a case of hypernephroma of kidney with secondary deposits in brain, lungs, intestines, etc.

Mr. KIRK: A case of advanced scirrhus of breast treated with vaccines, colloids, and operation; two specimens of tuberculous ulceration of ileum successfully resected; recent case of excision of knee-joint; recent intertrochanteric fracture of femur, following accident, with x-ray photographs; a case of traumatic paraplegia.

Professor MACILWAINE: Some abnormal electro-cardiograms indicating lesions in the conducting system of the heart.

Dr. BOYD CAMPBELL: A case of subacute bacterial endocarditis, with the now classical signs of paleness, clubbing of finger-ends, petechiae, enlarged spleen; a non-haemolytic streptococcus was found in the blood.

Mr. HOWARD STEVENSON: A specimen of a brain with a large endothelioma of the right frontal sinus; a decompression had been performed three years before for headache, and a meningeocele had formed over the site, from which large quantities of clear cerebro-spinal fluid were taken from time to time, up to 300 c.cm. in a week; epileptic turns developed, in one of which the patient seriously injured his arm, and died. Microscopic slides showed the whorled arrangement of the tumour, and some typical psammoma bodies.

The PRESIDENT (Mr. Fullerton) showed the following among other cases: Subtotal cystectomy for malignant disease of bladder with implanting of ureter; hour-glass contraction of stomach treated by gastro-enterostomy; an obscure case of urinary obstruction; decortication of lung in a child 2 years old who had suffered from empyema for eighteen months; after-result of laminectomy for gunshot wound of spine—the hole in theca was covered by a thin layer of muscle; and chronic colitis treated by appendicostomy and vaccine.

THE seventeenth French Congress of Medicine will be held at Bordeaux from September 27th to the 29th. The subjects to be discussed include: Remote sequelae of meningitis (Professor Le Dantec of Bordeaux), relations between the sympathetic and the endocrine glands in pathology (Professor Pachon of Bordeaux and Dr. Perrin of Nancy), treatment of meningococcal infections (Dr. Dopter of Paris and Dr. Boidin).

THE Medical Congress held annually at Brussels under the name of "Les Journées médicales de Bruxelles" will take place this year from June 24th to the 27th. The following addresses will be given: Our knowledge of prehistoric man, by Professor Pittard of Geneva; the high traditions of army surgery in France, by Professor Forgue of Montpellier; ileocolic stasis, by Professor de Beule of Ghent; French medicine and social laws, by Professor Balhazard of Paris; new discoveries in the prophylaxis and treatment of syphilis, by Professor Levaditi; the fight against cancer in France, by Professor Bergonié of Bordeaux; and the medical profession and hygiene, by Dr. Rolot of the League of Nations.

## Reports of Societies.

## PRIMARY CANCER OF THE LIVER.

A MEETING of the Pathological Section of the Royal Academy of Medicine in Ireland was held on May 25th, with the President, Dr. W. D. O'KELLY, in the chair, when Dr. G. E. NESBITT described a case of primary cancer of the liver. The patient, aged 21, had a history of some injury to the back, from which he dated his illness. The only marked symptom at first was a large mass which could be felt in the liver. The patient died of haemorrhage into the abdominal cavity ten days after admission to hospital. Dr. J. H. POLLOCK described the pathological conditions. The point of haemorrhage could not be determined, but there appeared to have been a general oozing. The tumour was bile-stained, and there were metastases in the lung and mediastinum. The tumour also penetrated into the vena cava. Dr. V. M. SYNGE described another case of primary cancer of the liver, in a boy aged 17. When admitted to hospital the patient was suffering from vomiting and wasting. On examination it was found that he had considerable ascites, and a hard mass felt in the abdomen was thought to be a matted mass of tuberculous glands. At operation a number of small nodules were found studded over the peritoneum, while a larger obviously cancerous mass was attached to the liver; cancer developed in the operation wound. The boy lived for six months in hospital. At the *post-mortem* examination a large tumour attached to the splenic flexure was found to occupy the left lobe of the liver, and a great number of nodules were scattered over the peritoneum. The diaphragm was thick and leathery. No metastases were found in the lung. No primary focus was found elsewhere. The cell masses were mostly diffuse, solid collections of cells, and showed no lumen. The PRESIDENT recommended a careful search of the pancreas in these cases of liver cancer, as a small primary focus might possibly be found there. Professor A. C. O'SULLIVAN said that the second case was undoubtedly a genuine liver cell cancer, and he felt inclined to classify the other as also derived from the liver cells rather than from the bile ducts. Dr. Syngé's case resembled one which he had shown some years ago, in which the liver cells over a considerable area could be traced through a transition first into small abnormal cells like those of the bile ducts, and then into the diffuse masses of the tumour.

Dr. G. E. NESBITT described a case of sarcoma in an ex-soldier aged 30; it seemed to be a typical case of advanced pulmonary tuberculosis, except that the patient suffered from great pain in the right side of his chest. At the autopsy the primary growth was situated in the front wall of the thorax, probably arising from one of the bones, and there were metastases in the heart as well as elsewhere.

Dr. A. R. PARSONS described a case of pneumococcal meningitis, which was first diagnosed as tuberculous meningitis on account of a mistaken report on an enlarged gland of the neck which was incised. On lumbar puncture the turbid cerebro-spinal fluid was found to contain pneumococci. There was some improvement after lumbar puncture, but death eventually ensued.

Dr. B. H. MICKS gave notes on a case of encephalitis lethargica.

There was a sudden onset with vomiting, followed by severe neuralgic pain on both sides of the head and both upper extremities. Pain lasted for a week, accompanied by insomnia, and then the patient, a man aged 56, began to suffer from illusions and delusions, by which he was never dominated completely. A generalized persistent muscular twitching was observed, with slight lethargy, but no marked tendency to somnolence. There were no signs of meningeal irritation, no marked motor disturbances, and the optic discs were normal. Slight continuous fever was present, the highest recorded temperature being 102° F. on the day of death. There was slight leucocytosis, 10,500 per c.mm.; Wassermann and Sigma reactions were negative. On *post-mortem* examination round-cell infiltration was found around the vessels in the cerebral substance, but not around those in the meninges. There were well marked round nuclei in floor of the fourth ventricle and upper portion of the spinal cord. Death had occurred with all the signs of respiratory and cardiac failure.

The case was discussed by Dr. ABRAHAMSON, Dr. MACPETRIDGE, Dr. NESBITT, Dr. WIGHAM, and the PRESIDENT.



## Reviews.

### PROBLEMS IN TUBERCULOSIS.

*In Problems in Tuberculosis* Sir JAMES FOWLER follows up the success of his larger work on *Pulmonary Tuberculosis*, reviewed in our columns at the time (1921, ii, 599), by a consideration of some questions connected with the administrative side of the tuberculosis problem, and with the gracious courtesy of a senior dedicates it to Dr. P. C. Varrier-Jones of the Papworth Hall Colony and Village Settlement, in appreciation of his work. The solution of some of the great difficulties of the tuberculosis problem is shown to be the gradual transformation of the existing sanatoriums into settlements on the lines adopted at Papworth; this will require endowment, State or other; "The country has to maintain small-pox hospitals because it will not enforce vaccination, and it will have to maintain tuberculosis settlements until it rebuilds its slums." This is an aphorism which it would perhaps be unkind to commend to the attention of the Minister of Health. The organization of such a settlement is described with much wise advice as to the nature of employment that should be arranged for the convalescents.

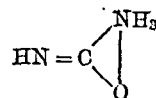
On the all-important subject of diagnosis Sir James makes some very important observations; while there is no trustworthy evidence that pulmonary tuberculosis is now detected at an earlier stage than it was formerly, it is often (in from 60 to 75 per cent. of the cases) diagnosed erroneously. Here he is supported by Dr. E. Rist's statistics from France (vide *BRITISH MEDICAL JOURNAL*, 1922, ii, 733), chronic bronchitis very commonly being the real disease. Among the reasons for this vast error are the absence of cases of pulmonary tuberculosis from the wards of general hospitals, and the increasing tendency to transfer the responsibility of diagnosis to radiographers who have not always the training in morbid anatomy necessary to enable them to correlate rightly the x-ray appearances with the structural changes. He advocates a school for the training of the future directors of sanatoriums, and considers a diploma in tuberculosis just as necessary for those who are to treat that disease as is a diploma in tropical medicine for those responsible for the care of tropical diseases. Throughout this attractively written book there are scattered *obiter dicta* which, as those in his last work appeared to him to be useful to the reviewers, have now been considerably collected at the end of the volume. His numerous readers will be glad to learn that they may look forward to a further volume from Sir James Fowler, dealing with bovine tuberculosis in man, or, as he prefers to call it, para-tuberculosis.

### UREA.

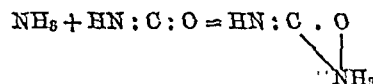
*The Chemistry of Urea*,<sup>2</sup> by Professor EMIL WERNER, is the latest addition to the well known series of biochemical monographs edited by Professors Plimmer and Hopkins. These little grey books have won a high place in the esteem of all those interested in biological problems, and any addition to their number is received with interest. Most of these—each from the pen of a master of research in some particular field—present a critical analysis of the trend of work in a large subject and are books of inestimable value; but there are monographs of another sort, of more limited scope but none the less valuable and having a charm of their own. These are those in which the author is concerned with some restricted subject that he has made his own and in which he presents a measured verdict of his own work and relates the story of the steady march of his researches. Such a monograph is the one under review.

We have all been taught that urea is the amide of carbonic acid. We call it carbamide. The natural fermentation of urea and its artificial hydrolysis agree to produce carbon dioxide and ammonia, do they not? What could be simpler?

And from the synthetic side much confirmatory evidence is surely available? Of course, the reactions of urea never quite fitted in with those of an amide but we were content to put these among the many "exceptions" in organic chemistry. Not so Professor Werner: in 1913 he challenged the conventional formula and suggested instead the cyclic structure:



This formula lacked the pleasing symmetry of carbamide, and it was not taken too seriously. But he set to work to reinvestigate the syntheses and the main decompositions of urea from the basis of the new structure. In this monograph we are given the history of this research and watch the results grow steadily into what must be conceded to be a very formidable argument. We would direct the attention of the compilers of textbooks to his book that they may make a few notes for their next edition. We might be content to leave the problem to the organic chemist satisfied with the knowledge that physiologically urea means ammonia and carbon dioxide minus a molecule of water. But the author will not have this at all. He finds that all the syntheses of urea, including Wohler's historical reaction, may be expressed as the union of ammonia with cyanic acid in its keto form:



This immediately brings urea into relation with ammonium salts in general and makes cyanic acid the most significant decomposition product. Serious consideration must, therefore, be given to the latter in relation to protein anabolism and katabolism. The researches of Fosse and others have shown that urea has a very wide natural distribution, even down to the lowest plant forms, so that a larger place may yet have to be ceded to it in any general plan of nitrogen metabolism, and we must be prepared to study therefore the claims of cyanic acid also.

A series of simple lecture experiments to demonstrate his views have been included in this fascinating monograph, which is completed by two appendices and an extensive bibliography. The first appendix is a critical survey of the proved methods for the detection and estimation of urea and full details are given, the second includes a brief discussion of the fixation of nitrogen as urea. Atmospheric nitrogen can now be economically converted into ammonia and the latter is at present fixed as ammonium sulphate. The possibility of fixing it instead as urea is attractive, for the latter contains nearly 50 per cent. of nitrogen and is an ideal source of this element for all plant life. The chemist would then have achieved one more step in the economic reversal of the cycle of nature.

### A NATIONAL HEALTH POLICY.

DR. HARRY ROBERTS of Stepney, before the advent of the Insurance Act, practised medicine in East London. Under the Act he and his partners have, he believes, one of the largest insurance practices in England, and it is matter for congratulation that such a man has had the inclination and possesses the literary skill to set forth his views on a *National Health Policy*.<sup>3</sup>

Dr. Roberts emphasizes his agreement with the report of the Consultative Council of the Scottish Board of Health, especially, we take it, because of its recommendation that "the organization of the health service of the nation should be based upon the family as the normal unit and on the family doctor as the normal medical attendant and guardian." As regards allegations of medical carelessness, he makes no attempt to defend the indefensible, but remarks: "After all, panel doctors are the same individuals as those known as general practitioners before the Insurance Act came into being. Those who neglect their duties now neglected their duties then, but no political

<sup>1</sup> *Problems in Tuberculosis: Administration, Diagnosis, Employment, Settlements.* By Sir James Kingston Fowler, K.C.V.O., C.M.G., M.D. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1923. (Demy 8vo, pp. ix + 54. 5s. net.)

<sup>2</sup> *The Chemistry of Urea.* By E. A. Werner, M.A., Sc.D., F.I.C. Monographs on Biochemistry. London: Longmans, Green and Co. 1923. (Roy. 8vo; pp. xii + 212. 14s. net.)

<sup>3</sup> *A National Health Policy.* By Harry Roberts. The Labour Publishing Company, 38, Great Ormond Street. 1923. (Crown 8vo, pp. 123. 3s. 6d.)



question being involved we heard less about it." Further, he holds that "the greatest fault of 'panel doctoring' lies in a quality which it shares with 'private' medical practice—the necessity which the doctor feels of pandering to the ignorance and superstition of his patients." This, Dr. Roberts says, is specially illustrated in the prescribing of drugs. He believes that "nine out of every ten bottles of medicine prescribed are entirely useless to the persons taking them, and are known to be useless by the doctors who prescribe them," but "patients, almost without exception, . . . insist on their bottle of medicine, and if one doctor will not give it they go to one who will." This, he urges, "is the dilemma which usually confronts the doctor," but after all he can "console himself with the knowledge that his medicine need be nothing more than a harmless placebo," and "he can accompany it with some good advice which without it would fall on deaf ears." No doubt the demand for and prescribing of drugs varies in different parts of the country, and while the problem is a general one it is probably most acute in an area like the east of London. Dr. Roberts ends his chapter on the panel system by declaring his objection to a State-controlled medical service. He also criticizes the attitude of Mr. and Mrs. Sidney Webb, who, "whilst recognizing the advantages of a free choice of doctors, propose to limit the privilege to the 'well-to-do'"; he expresses the hope that if ever the Labour party gets into power "it will tolerate no official medical service that is not the best available and equally for the use of every citizen of the country."

In a brief chapter on "Doctoring the Healthy" he records approval of "regular periodic examination of every man, woman, and child in the country who has no 'conscientious objection' to being seen by his doctor." That was a recommendation made to the Royal Commission on the Poor Law by its medical investigator, but objected to by that body lest it should result in hypochondriasis among those so examined. Dr. Roberts points out that in America there is now a rapidly growing movement in favour of such a system.

We have called attention only to parts of the essay which are of special interest at the present time, but the whole book is well worth perusal. Obviously the views expressed have a controversial aspect, but even where they may be found most open to dissent the vigour and frankness with which they are stated make the book interesting from beginning to end.

#### MICROSCOPICAL EXAMINATION OF FOODS AND DRUGS.

VEGETABLE microscopy applied to the recognition of materials for dietetic and medicinal use is a field in which among English workers Mr. GREENISH stands almost alone. Textbooks on the examination of foods usually give illustrations of the microscopic appearances of a few articles, such as pepper, coffee, and arrowroot, but the number of substances so noticed is seldom adequate, and little or no attention is given to methods of preparation or to the botanical relationships of the constituents. Work in this branch of technology has had a tendency to become individualistic, each worker exploring for himself to find suitable schemes of preparatory treatment. A volume such as *The Microscopical Examination of Foods and Drugs*, now in its third edition,<sup>4</sup> meets a real need: it is exceptional, if not unique, in providing systematic tuition in methods of preparation and guidance to the recognition of distinctive features.

The volume deals more especially with the methods applicable to the types covered by such headings as roots, stems, barks, leaves, seeds, etc. The fact that it gives under this system of treatment complete descriptions of important officinal products from seventy different plants will serve to indicate that it is a worker's as well as a learner's manual. In every instance the methods recommended have survived the test of experience. The subjects are very well illustrated by drawings which give views of prepared sections of tissues and also of the appearances

in the powdered state. The illustrations do not form a complete atlas of vegetable histology; that requisite is furnished in another work by the same author. A useful chapter on adulterants completes a very satisfactory volume.

#### AN AMERICAN TEXTBOOK OF PSYCHOLOGY.

PROFESSOR KNIGHT DUNLAP, who is one of the leading experimental psychologists in America, has written an introductory textbook for college students entitled *The Elements of Scientific Psychology*.<sup>5</sup> The author departs from many of the traditional formulae and conceptions of the older psychology, and insists on the necessity of submitting all working hypotheses to experimental tests and of rigidly defining psychological terms. He is an opponent of introspection as the term is generally understood, and considers that "it should be exclusively used to indicate alterations of one's own body through the visceral and somatic senses" (p. 28). It is difficult to understand how all the data discovered by introspection can be included under this definition. A visual hallucination, for instance, would appear to include purely mental content in addition to the kinaesthetic sensations which, no doubt, comprise part of the total experience. Professor Dunlap's treatment of thought and thought content contains much of interest to psychologists, but he tends somewhat unconvincingly to "explain away" the existence of the image by emphasizing the kinaesthetic processes or muscular content of thought. A considerable section of the book is devoted to sense perception, and a chapter is reserved for an account of the anatomical and physiological mechanisms involved in behaviour.

The book is not elementary and it will be found most serviceable by the advanced student of psychology. The publishers are to be congratulated on producing a volume which it is a pleasure to read and handle.

#### THE WORKMEN'S COMPENSATION ACT.

REVISION of the Workmen's Compensation Act appears likely at no very distant date. In May, 1919, the Home Office appointed a committee to inquire into the working of the present Act, to consider the question of establishing a national system of insurance against accidents, and to report what alterations in the law appear desirable. The report of the Committee was issued in July, 1920, and in May, 1922, a motion was made in the House of Commons calling upon the Government to introduce a bill to amend the Workmen's Compensation Act, 1906. The Home Secretary promised to discuss the possible lines of an agreed measure with representatives of employers and trade unions. In view of these facts the appearance of a work which sets forth as simply as possible a statement of the existing laws, an account of their working, and the problems they give rise to, is opportune. Mr. Joseph Cohen's *Workmen's Compensation in Great Britain*<sup>6</sup> is such a book. Of handy size, it should be of service to employers, trade union officials, law students, and those interested in social problems. Perhaps of most interest to medical men is the chapter dealing with reduction of accidents. We learn that in recent years the British Industrial "Safety First" Association has proved a valuable adjunct to the Factory Acts, by making and considering suggestions for reducing risk, and impressing upon workers the need for care and attention. Tables show that accidents have been reduced by 16 to 75 per cent. in different industries. In 1907, the number of accidents at Port Sunlight reported to the Home Office was 25 per 1,000 employees; in 1920 the figure had fallen to 7.8. Mr. Cohen does not discuss the proposal which has been so frequently advocated by medical men who have had much experience of the working of the Act—namely, that steps should be taken to settle more cases by reference to medical authority, and that greater use should be made of medical referees sitting as assessors. Neverthe-

<sup>4</sup>*The Microscopical Examination of Foods and Drugs*. By H. G. Greenish, F.I.C., F.L.S. Third edition. London: J. and A. Churchill. 1923. (Demy 8vo, pp. 385; 209 figures. 18s. net.)

<sup>5</sup>*The Elements of Scientific Psychology*. By Knight Dunlap, Professor of Experimental Psychology in the Johns Hopkins University, Baltimore. London: Henry Kimpton. 1922. (Sup. royal 8vo, pp. 358; 31 illustrations. 18s. net.)

<sup>6</sup>*Workmen's Compensation in Great Britain*. By J. L. Cohen, M.A. Cantab. F.S.S. London: *Post Magazine*, 9, St. Andrew Street, E.C.4. 1923. (Cr. 8vo, pp. 222. 6s.; post free 6s. 4d.)



less, the chapter on suggested reforms will be read with interest, and the book can be cordially recommended as a useful synopsis of the Workmen's Compensation Act and its working.

### ZOOLOGY.

BUT a short time ago the student and teacher of elementary zoology were alike confronted with the difficulty of finding a textbook suitable to their requirements. Now the difficulty is to select one, out of very many, which most nearly meets their requirements. Professor MEEK's *Essentials of Zoology*<sup>7</sup> caters for the medical and science student who is beginning the study of zoology. It seems remarkable that there should be a sufficient demand for so many elementary books on the subject, for while each may incorporate descriptions of "types" not included in others, still of necessity the anatomy of many—for example, frog and rabbit among vertebrates—is common to them all.

The distinctive character of Professor Meek's book is the inclusion of such forms as *Blatta*, *Taenia*, and *Distoma*; this is useful. A classification of the phylum is given at the commencement of each chapter dealing with a particular "type." This is a doubtful advantage. Schemes of classification differ, often widely, from one another, and are the cause of much confusion to the beginner. Moreover, to make the classification even moderately complete the author is compelled to introduce a number of terms like *Eurypteridae*, *Prototracheata*, etc., without any mention of the kind of animals to which they refer; to do so would too greatly enlarge the scope of the book. The anatomical descriptions are clear, and the book is both reliable and readable; there are numerous illustrations, though they are not always very good.

### NOTES ON BOOKS.

DR. A. W. FULLER, in his small book on *Anaemia*,<sup>8</sup> insists on the frequency of simple anaemia among countless numbers who are neither aware of it themselves nor are informed of what is really the matter by those whom they consult for other complaints. The treatment recommended is hypodermic injection of iron, arsenic, and strychnine in isotonic serum, the last addition rendering the injection painless. During the last two years the author has given 2,000 such injections. Stress is laid on the importance of rheumatism in the causation of this simple anaemia, and on the advisability of commencing the treatment of such cases with salicylate of sodium. The medical reader will not, we fear, get much information of value from this elementary work.

Dr. WALTER LIBBY's pleasantly written *History of Medicine in its Salient Features*<sup>9</sup> is based on his lectures to third-year students in one of the American schools of medicine, and is therefore not an exhaustive so much as a general introduction to the history of medical science and art. In twenty chapters the ground from the dawn of medicine in Egypt and Babylonia to medical science and modern warfare, as illustrated by the world war of 1914-18, is covered, and there is a pleasant biographical flavour conveyed by the short sketches of the makers of medical milestones; for example, in the chapter on "Harvey and the Revival of Physiology" and in that entitled "Science and Practice," in which the question where the physician's attention should be focused is illustrated by the lives of Sydenham and Boerhaave. For renal disease the British Hippocrates recommended various mineral springs, and among them those of the London suburb now known by his name. The chapter on the cell theory rightly contains an analysis of Virchow's achievements, and attention is directed to his doctrine of embolism, which is described as perhaps his greatest triumph. In the account of "the founders of bacteriology" Spallanzani's experiments in connexion with spontaneous generation are summarized, and lead on to Pasteur's work, and so to the chapter on antiseptic surgery, which contains a portrait of Lister and W. E. Henley's fine lines to "The Chief."

<sup>7</sup> *Essentials of Zoology for Students and First Year Students of Science.* By A. Meek, D.Sc. London: Longmans, Green and Co. 1922. (Demy 8vo, pp. xii + 325; 145 figures. 10s. 6d. net.)

<sup>8</sup> *Anaemia, its Causes and Modern Treatment, with a chapter on Neurasthenia.* By Arthur W. Fuller, M.D. Edin. London: H. K. Lewis and Co., Ltd. 1923. (Cr. 8vo, pp. vi + 64. 3s. 6d.)

<sup>9</sup> *The History of Medicine in its Salient Features.* By Walter Libby, M.A., Ph.D. London, Bombay, and Sydney: Constable and Co., Ltd. 1923. (Demy 8vo, pp. xi + 427; 9 plates. 15s.)

The volume entitled *The New Constitution of India*<sup>10</sup> contains two courses of Rhodes lectures; one of three, by Sir COURTENAY ILBERT, deals with the general principles which guided the framers of the constitution; the other, also of three, by Lord MESTON, is more particularly devoted to the workings of the new constitution, and traces the growth of the movement which preceded the change. In appendices are given lists of central and transferred subjects, and the text of the instructions from the Crown to the governors of provinces. Neither writer seems to have given any attention to the preservation of health and the prevention of disease.

The new number of *Brain*,<sup>11</sup> which is the first part of vol. xlvi, contains papers by Dr. F. M. R. Walshe, neurologist to the medical unit, University College Hospital, on postural reflexes in hemiplegia and associated movements, by Drs. Adie and Greenfield on dystrophia myotonia, and on iron in the brain by Dr. A. Gans, from the laboratory of a provincial hospital in Holland.

The International Labour Office at Geneva has published the first number of a *Bibliography of Industrial Hygiene*, which is intended to be a quarterly publication. Most of the writing on industrial medicine appears in current medical and industrial periodical literature, and such a bibliography of the scattered references to the subject should prove very valuable. The references are grouped under the headings of industrial hygiene, industries, hygiene of the worker, physiology, and pathology, and each group has many subdivisions. The subject headings are given in English, French, and German, and the titles of the articles in the original language.

*C.M.B. Examination Questions and Model Answers*<sup>12</sup> is a handbook which, in addition to giving model answers (reprinted from the *Nursing Mirror*) to questions set at recent examinations of the Central Midwives Board, includes a note on how to become a certified midwife, a list of institutions, homes, and midwives by whom pupil midwives may be trained, and an abridged list of the rules of the Central Midwives Board.

The Michelin Guide to Great Britain, 1923, retains all the well known and most useful features of previous issues. There is a section on the numbering of roads recently introduced into this country. The maps are retained, as also the plans of towns. On the back of one of the plans there are some striking illustrations of experiments made in France which prove to how great an extent solid tyres ruin the roads.

<sup>10</sup> *The New Constitution of India.* Being three Rhodes Lectures by Sir C. Ilbert and three by Right Hon. Lord Meston. Delivered at University of London, University College, session 1921-22. 1923. London: University of London Press, Ltd. (Cr. 8vo, pp. 212. 5s. net.)

<sup>11</sup> London: Macmillan and Co. (6s. a part; 24s. a year.)

<sup>12</sup> *C.M.B. Examination Questions and Model Answers.* London: The Scientific Press, Ltd. 1922. (Fcap. 16mo, pp. 125. 1s. 6d. net, 1s. 8d. post free.)

### THE STUDY OF VENEREAL DISEASE IN SCANDINAVIA.

THE transactions of the fifth meeting of the Northern Dermatological Society in Stockholm in June, 1922, have now been published in English, French, or German in *Acta Dermato-Venereologica* (vol. iii, fasc. 3-4). Of the twenty-eight original papers about half deal exclusively or principally with venereal disease. The standard of most of these papers is remarkably high, and they give a useful summary of the observations and opinions of the leading Scandinavian specialists in venereal disease.

#### GONORRHOEA.

##### *In Female Children.*

Dr. H. I. Schlasberg reports the results on 146 girls between the ages of 1 and 11 years, treated in hospital for gonorrhoea during the period 1912-20. In 106 cases the vagina and urethra were infected, in 11 only the vagina, and in 29 the vagina, urethra, and rectum. It is often said that gonorrhoea relapses in young girls because of neglected gonorrhoeal Bartholinitis, but though Dr. Schlasberg saw many relapses he could not trace one to this cause. Another reason why relapses are so common is said to be extension of infection from the rectum to the vagina and adjacent parts. But though Dr. Schlasberg found gonorrhoea of the rectum required longer treatment than gonorrhoea of the neighbouring structures, he saw only three cases of relapsing gonorrhoeal proctitis out of



the 29 cases in which the rectum was involved. Among the 135 patients with gonorrhoea of the vagina and urethra, 81 relapsed after the completion of treatment. In many cases there was more than one relapse, and the site of the reappearance of the gonococci was always the same. Not until twenty successive bacteriological examinations had been made should success of any given treatment be claimed; a lower standard is bound to bring many disappointments. The cervix was found to be infected in several cases, but Dr. Schlasberg considered it inadvisable to attempt local treatment of the cervix; when gonorrhoea of the vagina is cured the disease of the cervix usually clears up.

#### *Certification of Cure in Men.*

Dr. Björling, who discussed the question, When can gonorrhoea in the male be certified as cured? maintained that a negative bacteriological examination is of little value when there is a persistent discharge from the male urethra. In 16 instances he has known the husband to infect his wife after being certified, on the strength of a negative bacteriological examination, as no longer infectious. Though a man suffering from so-called "sterile post-gonorrhoeal catarrh" may marry and his wife may not have acute gonorrhoea, yet many such women develop signs of chronic gonorrhoea months or years later. Dr. Björling considers that as long as there is a urethral discharge, with leucocyte threads in the urine, the patient cannot be certified as non-infectious even when provocative treatment has failed to produce gonococci. Only when the urine has been perfectly normal for a month after completion of treatment are there reasonable grounds for assuming recovery from the infection.

#### SYPHILIS.

##### *Mercury and Salvarsan.*

Dr. O. Jersild has made an interesting comparison of his salvarsan with his pre-salvarsan era patients. In his private practice he treated 200 patients with mercury alone before the salvarsan era, and only in 40 of these cases was there no sign of secondary eruptions during the first two years; the majority of the eruptions occurred during the first year. The second group of patients, numbering 169, were given salvarsan and mercury, and in only 19.5 per cent. of these cases did clinical relapses occur during the first two years. Dr. Jersild considers that syphilis may ultimately be extinguished by the suppression of the infectious stages of the disease by salvarsan.

##### *Salvarsan Jaundice and Dermatoses.*

The statistics given by Dr. W. Holland with regard to salvarsan jaundice and by Dr. N. Nander with regard to salvarsan dermatoses have one important point in common. Both authors state that they have observed these complications more frequently of late, and suggest that the fault may lie with the recent consignments of salvarsan they have used. As Dr. Nander found, the solubility of different samples varied greatly, and while some were greenish others were dark yellow. At the University Dermatological Hospital in Copenhagen in 1914 only one case of skin disorder was traced to salvarsan; in 1915 and 1916 there was not one and in 1917 and 1918 there were only 3 such cases. But in 1919 their number rose to 10, in 1920 and 1921 there were 10 such cases, and in 1922 there were 11. Dr. Holland's paper on salvarsan jaundice tells the same tale. The first case was not seen till November, 1919, whereas during 1920 and the first ten months of 1921 he saw as many as 14 cases. In 4 of these cases the salvarsan was given for primary syphilis with a negative Wassermann reaction, and it is held that in these cases, at any rate, the syphilis could not be responsible for the jaundice.

##### *Abortive Treatment.*

Another brace of papers deals with the abortive treatment of syphilis. The paper by Dr. U. Müllern-Aspegren (Sweden) is more optimistic than the paper by Dr. H. Boas (Denmark). The former has come to the conclusion that when patients have been clinically and serologically free for two years after the completion of a course of abortive treatment with salvarsan and mercury, they may,

as a rule, be regarded as cured. Of 165 first-stage Wassermann-negative cases 141 were subsequently traced, and only 4 were found to have relapsed. In all 4 cases only two injections of salvarsan had been given. Of the 89 cases of syphilis in the first stage, in which the Wassermann reaction was positive, 81 were subsequently traced, and 8 were found to have relapsed. The inadequacy of the dose was thought to be chiefly to blame. This author has known only one case of relapse to occur more than a year after the completion of a full course of abortive treatment, and in this the reappearance of the disease may have been due to reinfection and not to relapse. Dr. Boas, on the other hand, states that even when a course of abortive treatment has been carried out under apparently ideal conditions, a relapse may occur even after as long an interval as seven years or more. A comparison of these papers suggests that the best system of dosage of salvarsan and mercury may not yet have been ascertained, and it is worth noting that Dr. Müllern-Aspegren gave as many injections of salvarsan after the Wassermann reaction had become definitely negative as he gave before. He advocates a minimum of eight injections of salvarsan, to be supplemented by fifteen to twenty injections of mercury. He has not had a serious salvarsan accident.

##### *Syphilis and Marriage.*

Dr. J. Strandberg deals with 250 marriages or equivalent unions in which one or both parties suffered from syphilis. His paper is so full of statistical tables representing various methods of grouping his material that it is rather difficult to see the wood for the trees. A point which he emphasizes is the great danger to the progeny when the mother, and not the father, was the first to contract syphilis. Of 19 women who were the first to be infected, as many as 18 passed the disease on to their progeny. On the other hand, among 18 marriages in which the husband was the first to be infected, only one yielded syphilitic progeny. In view of this and similar experiences, Dr. Strandberg insists that, in the matter of giving consent to marriage, doctors should enforce a more rigorous standard for women than for men. Provided the husband does not infect the wife there may be little danger to the progeny. But the wife may have long ceased to be infectious to the husband, and yet be capable of bearing syphilitic progeny. Another of Dr. Strandberg's conclusions is that many of the 250 unions were sterile owing largely to the use of contraceptive devices, the original object of which was to prevent transmission of the disease from one partner to the other.

##### *Prevention by Salvarsan.*

Dr. Karl Heden has treated with salvarsan twenty persons cohabiting with patients suffering from syphilis in an infectious stage; in none did signs of syphilis appear in spite of exposure to infection. In two cases this prophylactic treatment was instituted three weeks after coitus with a syphilitic patient; in the remaining cases the interval was two to thirteen days. In another series of thirty-six persons exposed to infection in the same manner, but not given prophylactic treatment, only six persons escaped infection.

##### *The Bismuth Treatment.*

Dr. Karl Marcus, of the St. Göran Hospital (Sweden), has treated 35 cases of syphilis with bismuth according to the method described in this JOURNAL (vol. i, 1922, p. 443). Marcus used the French proprietary trepol or a 10 per cent. emulsion of bismuth salicylate prepared by the hospital's chemist. Both preparations were given by intragluteal injection, seven to eight doses being given in each case. The clinical results were, on the whole, very satisfactory, and in the comparatively short observation period there were no relapses. Dr. Marcus concludes that intramuscular injections of bismuth are at least as effective as the mercurial and arsenical preparations, and bismuth seems to have the advantage of being comparatively non-toxic. Among 11 cases of recent syphilis the average interval required to make the Wassermann reaction negative was thirty-seven days, whereas for the 17 cases of secondary syphilis it was, on the average, as long as sixty-two days.



# British Medical Journal.

SATURDAY, JUNE 16TH, 1923.

## THE VENEREAL DISEASE REPORT.

IN presenting to our readers last week the report of the Committee on Venereal Disease, over which Lord Trevethin, lately Lord Chief Justice of England, presided, we transposed the signatures to the beginning, thereby emphasizing the fact that it was signed by all those who served on it. The Committee owed its existence to the initiative of Lord Dawson of Penn. By the publication of this report an unedifying wrangle between two bodies, upon both of which the medical profession was largely represented, ought to be brought to an end. The *Times* has called it "a treaty of peace between the two factions"; the word "faction" is severe, but we are not prepared to say that it is too severe. Any individual or organization that seeks to revive the squabble will deserve, and will, we believe, receive, the reprobation both of the public and of the medical profession. The National Council for Combating Venereal Diseases has accepted the report "as a document that can bring together all persons of good will in efforts to reduce venereal diseases," and we observe that the honorary secretary of the Society for the Prevention of Venereal Disease considers that the report should make co-operation between the two societies possible.

To assert that the moral and ethical questions have not been judged differently by individual members of the profession, as by members of the community in general, would imply blindness to obvious facts, but one good result of Lord Dawson's action has been to separate out an aspect of the matter with which members of the medical profession, by the nature of their calling, are specially concerned.

The great body of the medical profession has held aloof from the controversy, not because it was indifferent to the urgency of the problem, but for various good reasons. As we had to say in another connexion only a week or two ago, certain promises were being made in its name which it was not convinced could be fulfilled. It is one thing to bring evidence, as Metchnikoff did, that calomel cream, if thoroughly applied within a certain time after exposure, would prevent syphilis, and quite another, even if the evidence were accepted as conclusive, to be confident that in the actual conditions of promiscuous sexual intercourse the method would be efficacious. The instruction to the Committee "to consider and report upon the best medical measures for preventing venereal disease in the civil community" covered this, and the opinions it expresses are clear, though necessarily subject to several important qualifications. The Committee begins its consideration of this part of the subject with the statement that in the laboratory disinfectants will destroy the specific organism of both syphilis and gonorrhoea, and that a man who is thoroughly disinfected by disinfectants of appropriate strength and nature runs little risk of infection if this thorough disinfection is carried out within a short time after exposure. The Committee is also of opinion that though the chances

in favour of success are greater in the case of skilled disinfection (by a "trained person"), yet "an intelligent man, if furnished with reasonable instructions, could in favourable conditions effectively disinfect himself." The Committee points out that in the opposite sex it is not possible to speak with so much confidence, and frankly states that "it is extremely difficult for a woman to disinfect herself, and that the prospects of success for disinfection by another person, however skilful, are in the case of a woman less than in the case of a man."

These conclusions will, we believe, be accepted as medically sound, but, as the Committee admits, they do not carry us very far in determining the other question which nearly concerns the medical profession—the question whether it is advisable to introduce any system or measures for affording to the general public facilities for disinfection. The evidence before the Committee has led it to the opinion that the success of any such general facilities is likely to be small, but in view of its earlier conclusion—that disinfection in an individual, if properly and promptly effected, will in all probability be successful—it expresses the view that there is no "justification for putting obstacles in the way of individuals who desire to procure the necessary disinfectants." This leads it to recommend that the Venereal Diseases Act, 1917, should be amended so as to permit "properly qualified chemists to sell *ad hoc* disinfectants, provided such disinfectants are sold in a form approved and with instructions for use approved by some competent authority." The suggestion that such disinfectants should be freely sold by pharmaceutical chemists follows naturally, but the consequences of this relaxation of the law will have to be carefully considered. The proposed alteration would maintain the prohibition of commercial advertisements, and this condition seems to us to be essential if the other suggestion is to be approved by the medical profession. Granted so much, the difficulty arises of finding an authority to approve the disinfectant and the instructions to be issued with it. The Committee suggests the Medical Research Council. At first sight, at any rate, we find it difficult to see how such work comes within the scope of the Council; it might properly be invited to advise on the efficacy of disinfectants now in use or of others which may be introduced; it is, however, not a laboratory standardization that is wanted, but a practical method which will work in real life. Failing the Medical Research Council it is not easy to think of any existing official body which could draft a prescription and the instructions by which the disinfectant is to be accompanied, unless it be the Consultative Council on Medical and Allied Services; but the Ministry of Health might well hesitate before taking the responsibility involved, more especially as such official approval—however cautious and qualified its terms—would almost certainly be interpreted by the uneducated public as an official guarantee. The difficulty is very real, and is one on which the medical profession may properly have something to say.

The Committee expresses a feeling very widely shared in the medical profession when it decides against any system of general notification of venereal disease. But in the two following paragraphs dealing with "modified" notification, the Committee has not set out a complete scheme for conditional notification which has a certain amount of support. Any measures taken under this scheme would not be confined to patients at clinics only, but would be applicable also to every person who comes under treatment; it would provide that no notification what-



soever should take place unless the infected person had ceased attendance for treatment, and had neglected warnings given by his doctor, and that then, and then only, should he be notified to the medical officer of health, who should again warn him, and only resort to prosecution in the case of recalcitrants. This is the form of "conditional" notification which, we understand, is in force in the Dominions, and which the Committee of the New Zealand Board of Health has unanimously recommended for introduction into New Zealand. Whether any form of notification would cause concealment and a diminution in the number of those coming for treatment is a matter of opinion. The almost unanimous belief of the health officers in Canada and Australia is that it in no way diminishes the number of those who come for treatment. There is no doubt, however, that no form of notification can be introduced into Great Britain until both public opinion and the opinion of the medical profession are in its favour. The replies to the questions sent down to the Divisions by the Council of the British Medical Association<sup>1</sup> show plainly that in the general view of the profession notification is impracticable under present-day conditions.

The recommendations in paragraph 23 and succeeding paragraphs speak for themselves; in particular we note the recommendations for ante-natal treatment. With regard to the instruction of nurses and midwives in venereal disease, a letter appears this week in our correspondence columns from the secretary of the Central Midwives Board for England and Wales.

The Committee does not recommend the establishment at the public expense, save in exceptional cases, such as seaport towns, of a system either for self-disinfection or skilled disinfection, but considers that where public money is available it may be better expended on the treatment of disease and the education of the community, and on the elimination of those conditions of life which tend to foster spread of the disease. It is to be hoped that this strong expression in favour of continuous education will aid the strenuous campaign to impart knowledge and give instruction which has been carried on for the last seven years.

The conclusions arrived at in this report will be read with deep interest by everyone concerned in the problem of combating venereal disease. It seems to provide a starting point for work towards the common goal of reducing the incidence of this disease to negligible proportions, and should it, as it ought, be the means of ending unfortunate controversies which have so prejudicially affected the campaign against this disease in the near past, the Committee will indeed have earned the gratitude not only of the medical profession, but of all those interested in the welfare of the individual, the community, and the State.

## THE PHYSIOLOGY OF THE ADRENAL SECRETION.

THE suprarenal medulla has for long been generally considered the typical example of an organ of internal secretion, and it is frequently adduced as the endocrine gland concerning whose functions our knowledge is most complete. In recent years, however, an acute controversy has been proceeding in physiological journals concerning the importance of adrenaline

secretion, and numerous workers have denied that it is of any importance in normal physiology.

Professor E. Gley<sup>1</sup> has recently written a most interesting summary of the history of our knowledge of the functions of the suprarenal glands. He recognizes three periods: in the first the importance of the suprarenal glands was established; in the second adrenaline was discovered and its pharmacology was fully worked out; during this period the pharmacological action of adrenaline was rather rashly assumed to give an indication of the physiological action of the suprarenal glands—but we are now in a third period, which is one of doubt and uncertainty.

Brown-Séquard, as early as 1855, demonstrated the lethal effects of adrenalectomy, but the possibility of sepsis was held to render his results doubtful. Between 1893 and 1897 Langlois, however, conclusively proved that extirpation of the suprarenals rapidly caused death, but showed at the same time that administration of extracts of the suprarenals did not prevent death. As Gley says, "twenty-five years have passed since then, in the course of which many similar therapeutic attempts have been made, but there is not much to alter in the conclusions of Langlois." At about the same time, in 1895, Oliver and Schafer demonstrated the potent pharmacological action of suprarenal extracts, and this discovery was followed by the isolation of adrenaline, and thereafter all the wonderful pharmacological actions of this substance were explored. Gley suggests that these striking properties allured the investigators away from true physiology into pharmacology. It was generally assumed that the adrenaline secreted by the suprarenal glands produced the same effects in the body as those observed to follow the injection of adrenaline. The secretion of adrenaline was supposed to maintain normal arterial tonus, and Cannon elaborated the attractive theory that visceral changes attending emotions were produced, or at any rate reinforced, by the liberation of adrenaline. The third period, in which we now are, is one of criticism and doubt, and it has come to be realized that we have very little certain evidence as to the part played by the suprarenal medulla in normal physiology.

Gley's first conclusion is that adrenaline is not necessary for the normal functioning of the sympathetic nervous system; it has been shown that in animals from whom the adrenals have been removed the principal functions of the splanchnic nerve are manifested normally, and that asphyxia, which excites all the vaso-constrictor apparatus, produces its normal effects. His second conclusion is that adrenaline is not necessary for the maintenance of normal life. If one suprarenal be excised and the other denervated, though the animal is either deprived of adrenaline secretion or only minimal quantities pass into the blood, yet it remains alive and in perfect health, and presents all normal nervous reactions. These conclusions appear to be supported by the majority of recent investigators in this subject; furthermore, it is agreed that if the splanchnics are stimulated the suprarenal glands can excrete into the blood sufficient adrenaline to produce definite physiological effects, but it is also agreed by most workers that there is little evidence that the adrenaline secreted by an animal in a tranquil condition is sufficient to produce any definite physiological effect. Controversy at present centres chiefly round the question as to what stimuli are adequate to produce an adrenaline secretion sufficient to produce any effect in the body.

<sup>1</sup> SUPPLEMENT, April 28th, 1923, p. 160.

<sup>1</sup> *Revue de Médecine*, xl, 193 (1923).



Gley's conclusions do not meet with universal acceptance, and in the same issue of the journal that contains his article is a paper by Tournade and Chabrol<sup>2</sup> giving an account of elaborate and ingenious experiments upon animals with crossed circulations. They consider that they have proved that the adrenaline liberated by the suprarenal medulla, even without splanchnic stimulation, is sufficient to produce definite effects upon the blood pressure of an animal deprived of its adrenal glands. This experiment appears, however, a little inconclusive, for the fall of blood pressure after adrenalectomy is supposed to be due to lack of the adrenal cortex, and the effects might well be due to some internal secretion of the cortex. If this were so it would if anything increase the importance of the result, for our knowledge of the suprarenal cortex is even in a more unsatisfactory state than our knowledge of the medulla. We do not really know what is the function of the adrenal medulla, although we have a full knowledge of the nature of its internal secretion; as regards the cortex, we know that it is absolutely essential to life, but nevertheless do not know for certain whether it produces any internal secretion, for it is quite conceivable that it acts solely as a detoxicating organ.

### THE CONFERENCE OF PANEL COMMITTEES.

THE Special Conference of Local Medical and Panel Committees which was held last week, and a full report of which appears in the SUPPLEMENT to this issue, was of great importance because, although by the nature of the circumstances it could not come to any final decisions upon the terms of service for insurance practitioners from the end of this year, it affirmed the general policy which was to be pursued, and settled the lines on which the necessary negotiations are to proceed. This was the main purpose for which the Special Conference was called. The Insurance Acts Committee can now pursue its conversations with the Government with a clear indication as to how far the representatives of insurance practitioners are prepared to accept certain alterations of the terms of service that have been suggested. The results of these conversations, together with the proposals as to remuneration, will be presented to the Annual Conference, which should be held late in September or in October, and a final decision upon them will then be taken. Meanwhile, the Annual Representative Meeting at Portsmouth will have an opportunity, if desired, of considering such of the proposals as may be held to affect the profession outside the insurance service.

The important memorandum on the National Health Insurance Fund, which was published in the SUPPLEMENT of May 26th last, and upon which we commented at that time, was received by the Conference. Its bearing upon the question of remuneration was fully appreciated, but there was no detailed discussion upon the capitation rate of payment. Such discussion would have been premature and not helpful at this stage. It was significantly resolved, however, "that the full cost of remuneration of insurance practitioners, determined on the merits of the case, should be borne by the Fund, and that practitioners should not be placed in regard to any portion of their remuneration in the position of residuary beneficiaries after all other charges have been met"; and "that any rate of remuneration lower than that given as the result of the

1920 arbitration is less than adequate for the service rendered." A capitation rate of eleven shillings was then awarded as a result of a full and impartial skilled investigation. Any changes which have since occurred, such as the somewhat lessened devaluation of money, tending to justify any lower rate, may clearly be held to be counterbalanced by other circumstances, such as some of the improvements and widenings of the service now suggested.

The Insurance Acts Committee has undoubtedly acted wisely in trying to meet all the criticisms that have honestly, though sometimes on mistaken premisses, been levelled at the present service, even though in doing so it has gone beyond the official requests from the Ministry of Health; and the Conference showed equal wisdom in endorsing this action. Apart from some minor but important suggestions for dealing with inadequate surgery accommodation and for improving facilities for consultation, the three main proposals are that insured persons should be free to change from one doctor to another at any time; that there should be some further limitation in the number of persons for whom a doctor carrying on practice single-handed may accept liability, save in exceptional circumstances already proved to exist; and that there should be a restatement of the range of service contracted for, together with some alteration of the machinery for determining that a particular form of treatment is outside that range and so may legitimately be charged for. None of these things is free from difficulty—logical, administrative, technical, or practical—but the conditions which they are designed to remedy have been the subject of frequent and sometimes justifiable complaint, and may in particular circumstances bring considerable discredit upon the service. It is eminently desirable that no unnecessary restriction should be placed upon the free choice of doctor by patient, but care will have to be taken to prevent undue or improper influence being used to affect such choice. It is desirable, too, to minimize any temptation for a practitioner to assume liabilities which he is unable properly to meet, and to discourage practitioners from becoming wholly insurance practitioners without the wider experience of more general professional work; but in districts where the proportion of insured persons to the total population is very large there may be a danger of placing too severe a limit on a doctor's opportunities. Further, it is not in the interest either of the profession or of the public to narrow the scope of treatment described as "such as can consistently with the best interests of the patient be properly undertaken by a general practitioner of ordinary competence and skill." This scope is nowadays very wide; and it will be an advantage if there can be such a restatement of the insurance practitioner's duties as will secure for insured persons free of charge in every area all that ought to be included within the above description, while at the same time definitely excluding such services, and such services only, as should not be undertaken, except in case of urgent necessity, by practitioners without special training and experience. Whatever may be the exact form in which all these proposals emerge from the negotiations with the Ministry, they must be recognized as a sincere and generous offer on the part of the profession, and they ought to silence some of the commoner allegations made against the insurance medical service.

Apart from these very important suggestions to meet criticisms of the service from outside, the principal requests made by the Insurance Acts Committee and endorsed by the Conference on behalf of insurance

<sup>2</sup> Tournade and Chabrol: *Revue de Médecine*, xl, 222.



practitioners are: that the certification system shall be made more simple, especially by reducing the number of certification forms, and by a removal of the obligation to give certificates to insured persons not under the practitioner's own treatment; that special provision shall be made for rural practitioners in sparsely populated districts; that any terms agreed upon shall be secured for at least five years; and that increased diagnostic facilities of a special character shall be provided for insured persons, the method of provision and administration of such an extension of service and of the present "additional benefits" being made the subject of careful consideration. All these are of very considerable importance, and the last of them is obviously of great interest to the whole profession.

Another subject to which the Conference gave attention was the much misused phrase "unity of the profession." This was dealt with in the resolutions put forward by the Insurance Acts Committee and agreed to almost unanimously by the Conference. These resolutions expressed a strong desire for as great a degree of common action by the profession as possible in relation to National Health Insurance matters, and requested the Committee, within its constitution and powers, to co-operate as far as it effectively could with other medical organizations. They urged that the Committee should be made thoroughly representative of insurance practitioners in the way now recommended by the Council to the Representative Body, and asked for the fullest support for the National Insurance Defence Trust from all Panel Committees and practitioners. An amendment avowedly moved in the interest of a particular organization was defeated. It is to be hoped that the Conference will not be asked to go over this ground again. There probably always will be—and perhaps it is not altogether undesirable that there should be—a number of different organizations within the profession. They need not necessarily be antagonistic to one another. Even where their professional interests are not identical their actions can be harmonious, and in certain cases the British Medical Association has shown that amicable co-operation is possible over a long series of years. If certain practitioners prefer to organize themselves on technically trade union lines it is, of course, open to them to do so, though this does not differentiate them in any professional respect from other practitioners, and it is impossible to discover any basis for their claim that their particular political or economic views should secure for them special privileges in other organizations of the profession, or any reason for taking up the attitude that if such privileges are not granted they must maintain a continuous opposition. Common aims should ensure goodwill, and the Conference has indicated a line of policy in connexion with the revision of the terms of service for insurance practitioners upon which it should be possible for the whole profession to unite.

#### CO-OPERATION AMONG VOLUNTARY HOSPITALS.

SHEFFIELD has recently been filled with discussion on various aspects of the hospital question. Not only has the British Hospitals Association held its annual meeting in that city; reports have also reached us of meetings of the Sheffield and District Association of Hospital Contributors (otherwise the Sheffield hospitals' penny in the £ scheme), and of the Grand Lodge of the Sheffield Equalized Independent Druids. There seems to have been a general desire at all these meetings to retain the voluntary system of hospital

management, while increasing the sources of financial support. Lord Onslow, chairman of the Voluntary Hospitals Commission, expressed the opinion that the problem of making ends meet, and that of extending hospital construction which had been in abeyance for the last ten years, would be met in part by co-operation between the hospitals and other organizations interested in the matter. He disliked subsidies; but spoke highly of the success of the efforts of the Joint Hospital Council in Sheffield in finding a new source of income. Apparently about £60,000 a year is contributed by employees under what is called the penny in the £ system; 1,879 firms in Sheffield co-operate in the scheme, the number of contributors being 154,000, with an additional 35,000 in outlying districts. The contributions of the employees are supplemented up to the amount of one-third by the employers. There seems to be some fear that the system may lessen charitable contributions, and in some cases large employers of labour, such as the City Corporation, have not yet seen their way to pay their contribution as employers. Mr. Bedford, chairman of the Board of Management of the Royal Infirmary, pointed out that the penny in the £ system did not do away with the need for charitable subscriptions. According to the Master Cutler, Mr. R. W. Matthews, the work of the Joint Hospitals Council is leading to the growth of the "hospital conscience" in Sheffield, and the Council appears to be a very active body. There are said to be 3,000 patients on the hospital waiting lists in Sheffield; and to help in meeting the deficiency in beds the Council has set up a method for providing convalescent treatment, nursing facilities, and after-care. A list of suitable convalescent homes has been compiled; firms contributing to the hospitals appear to be charged 10 per cent. on their contributions as convalescent payment; and not only patients from hospitals, but also persons in whom illness can be prevented by a stay in a convalescent home are sent to these institutions. For nursing there is an arrangement with the Queen Victoria Nursing Association, and efforts are made to follow up patients when they leave the hospital. At the British Hospitals Association meetings much was said about the middle-class patient and his need for hospital help, which it was said could be met only by extension of the present accommodation. It was thought that it would pay hospitals to make provision for paying patients. According to Mrs. Wilkinson, a Councillor of Sheffield, the system of payment would lead to a tendency to public control. But with regard to the contributory schemes in Sheffield, very little evidence as to the representation of contributors seems to have been given. Professor Arthur Hall, while emphasizing the necessity for equality of treatment in the wards, whether patients paid or not, expressed the opinion that payment had not as yet affected the spirit of hospitals, because the staff did not know who were paying. Professor Hall made the interesting remark that the British patient does not want to go into hospital; he would rather be treated at home; consequently an extension of district nursing would be of great help in relieving the pressure on hospitals. Mrs. Wilkinson, while admitting the need for more maternity beds, explained the reluctance of women to go into maternity hospitals by the necessity they have of keeping supervision over their homes. Many women, even when seriously ill, kept their purses under their pillows—and with good reason! An effort was made at a meeting of the British Hospitals Association to obtain a vote in favour of the establishment of a central fund for provincial hospitals, to be administered on the lines of King Edward's Fund in London. The proposal was defeated; and there were several indications that even if some measure of co-operation is ultimately brought about, the provincial hospitals will maintain their autonomy and cultivate individualism for the reason given by Dr. H. L. Eason, that the problems of each hospital differ from



those of its neighbours. How this will affect Viscount Hambleden's vision of the possibility of voluntary hospitals taking a definite and permanent part in the scheme of National Health Insurance is not yet clear.

#### BRITISH ORTHOPAEDIC ASSOCIATION IN HOLLAND.

A MEETING of the British Orthopaedic Association was held at Leyden on May 24th, when twenty-four members from England and Ireland, with several Dutch visitors and one Austrian, were present. The programme of scientific work was provided entirely by Dutch orthopaedic surgeons, and included short papers and demonstrations by Dr. Alvares Correa, Dr. J. van Assen, Dr. W. F. Wassink, Dr. J. W. P. Fransen, and Dr. Murk Jansen. In the evening most of the members went to Amsterdam to attend the congress commemorating the twenty-fifth anniversary of the Dutch Orthopaedic Association. It was held under the presidency of Dr. Murk Jansen, and was of an international character. On May 25th Dr. Adolf Lorenz, of Vienna, gave a demonstration of his method of operating upon untreated congenital or acquired dislocation of the hip, illustrated by cinematograph films; this method was recently described by Dr. Lorenz in the *New York Medical Journal and Record*, and an abstract of the article appeared in our *Epitome* on May 19th, 1923 (para. 410). Sir Robert Jones gave an address on orthopaedic experiences during the war, Dr. F. Calot, of Berck-Plage, spoke on the nature of arthritis deformans of the hip, and Dr. F. H. Albee, of New York, read a paper on bone transplantation, based on 3,000 operations. The physiological treatment of infantile paralysis was discussed by Professor Biesalski of Vienna, the surgery of joints by Professor H. Spitzzy of Vienna, and plastic operations on joints by Dr. Putti of Bologna, in addition to eight papers by Dutch orthopaedic surgeons. Next morning, May 26th, the meeting discussed the social care of cripples and the methods of organization in Great Britain, Germany, Vienna, the United States, and Holland, the methods being described by Sir Robert Jones, Professor Biesalski, Professor Spitzzy, Dr. Albee, and Dr. van Assen respectively. The orthopaedic work of Holland is chiefly carried on in three centres—Amsterdam, where Dr. Correa is in charge; Leyden, where Dr. Murk Jansen has made a world-wide reputation; and Rotterdam, where Dr. van Assen is mainly responsible. At the Hague, while a certain amount of orthopaedic work is done, there is apparently no surgeon who devotes himself exclusively to this branch of surgery. The British visitors were most generously entertained; a largely attended dinner of the combined British and Dutch Associations was held at Amsterdam on May 25th, when one of the features of the evening was a lengthy humorous poem, read by one of the Dutch surgeons, wittily hitting off, in half a dozen languages, the characteristics of orthopaedic surgeons all over the world. On Saturday, May 26th, the party was taken for a trip on the Zuyder Zee, visiting Marken and Vollenham. As the dam that will enclose a large section of the Zuyder Zee will shortly be finished, this trip, which is very well known to visitors to Holland, will probably be impossible after the present year.

#### THE DIFFERENTIAL ACTION OF X RAYS.

AN account of experimental researches upon the effects of  $x$  rays of different wave-lengths when directed upon animal tissues was given by Professor Sidney Russ, D.Sc., at the Royal Society on May 31st and again at the Röntgen Society on June 5th. The object of the experiments was to decide whether, when equal amounts of  $x$ -ray energy of different wave-lengths are absorbed by animal tissues, equal effects are produced. If this is not the case, obviously it would constitute a proof of differential action—an effect to be clearly distinguished from the selective action of the rays themselves. A matter of outstanding

importance was to devise some method which would serve to measure the intensity of different beams of  $x$  rays used. The ionization method was chosen for this purpose, the ionization in an air-gap giving a measure of the  $x$ -ray energy absorbed in the tissues. One of the sets of wave-lengths selected for the purpose of the test ranged from about 0.45 to 0.3 of an Angström unit, the other was about 0.17 of an Angström unit. It was found that on replacing the air-gap by an ionization chamber in which it was possible for secondary rays to be excited by the primary beam, the basis of quantitative comparison was completely upset, and Professor Russ believed that this fact might account for some of the statements of other observers to the effect that a differential action did not exist. The animal tissues employed were the normal skin of the rat and Jensen's rat sarcoma. When the tumour cells are given a sufficient dose of  $x$  rays of the longer of the two wave-lengths, the subsequent inoculations of small pieces of irradiated tumour fail to grow, and this dose is called the lethal dose. When this same dose is given in the form of the shorter wave-lengths it is found that the dose is no longer sufficient to prevent subsequent proliferation of the sarcoma cells. By gradually increasing the dose the lethal effect is obtained, and in this case about 2.6 times as much energy has to be absorbed by the tissue as when the longer wave-lengths are used. When the skin of the rat is exposed in somewhat similar fashion it is again found that more of the short wave-length energy has to be absorbed by the skin in order to provoke the same kind and degree of reaction as that produced by the longer wave-lengths. In this case it was found that about six times as much had to be absorbed. Professor Russ considered that these numbers might perhaps be looked upon as therapeutic factors, and he went on to discuss the bearing of these observations upon the selection of the most suitable kind of  $x$  rays in the treatment of various forms of malignant disease. In the discussion at the Röntgen Society Dr. N. S. Finzi remarked that he could confirm from another method of measurement the same type of effect. On using the now despised Sabouraud pastille for measurement, he found that the dose to produce epilation of the scalp with unfiltered rays was 5 H, which was just sufficient to cause erythema, whereas if a filter of 0.8 mm. of copper were used the necessary dose rose to 15 H. Major C. E. S. Phillips said that the German school of radiologists had held generally that the therapeutic effects of radiations were simply a function of the amount of energy absorbed by the tissues, and this work by Professor Russ appeared not to be in agreement with that. He thought the feeling of most English physicists was that there must be some specific action, and it should not be exceedingly difficult, certainly not impossible, to suggest some physical basis for such an idea. Professor Russ, in replying on the discussion, agreed with the remark of one speaker that the reaction of the normal tissues was probably as important as the reaction of the cell the operator was trying to affect. But while the reaction of the contiguous normal structure which the malignant cell might be invading was of such great importance, it was very difficult to say anything definite on that subject at the present time. The fact was that the people who were entitled to speak on the subject held rather opposing views, and decisive experiments to establish the reaction of the normal tissues were not easy to devise.

#### PHYSIOLOGY AT HIGH ALTITUDES.

THE Research Institute for Alpine Physiology and Tuberculosis at Davos will be formally opened in the autumn. The building has been completed and the laboratory equipped; work has, indeed, been going on since the beginning of the year. Professor Loewy, who for many years worked with Professor Zuntz, is the director of the



institute, and is head also of its physiology section. The promises of financial assistance for establishing a bacteriological and physiological section warrant the hope that it also will soon be in working order. The laboratory is ready and the principal equipment installed. This section will be independent of the rest of the institute, both scientifically and financially. Twenty rooms have been provided for scientific work. There is a platform on the roof for irradiation, and a well appointed stable for animals. Rooms are provided for the study of respiration and for blood and gas analyses. There are also chemical laboratories, a dark room for spectral measurements and another for microphotography, an operating room for animals, a sterilizing room, and two large rooms for the library. The institute has been established by the members of the medical profession and the community of Davos, the Grison Association of Physicians, the Canton of the Grisons, the Swiss Association of Naturalists, the Swiss Red Cross, and the Swiss Association for Balneology and Climatology. Among those who have made gifts are the Arosa and the Engadine Associations of Physicians, and it is confidently expected that when the discussion on the tuberculosis bill has been concluded the institute will receive help from the Confederation. The board of directors consists of nine members, of whom five are physicians or naturalists. There is also a scientific advisory council consisting of professors in Swiss universities, and scientific workers recommended by them to undertake researches connected with tuberculosis and high altitudes, and the climate of high altitudes will be considered first in the assignment of working places in the institute. Scientific men of all nationalities, however, will be readily admitted to work under the directors of the several sections. The board of directors will decide whether papers founded on work done in the institute shall be published in scientific periodicals or in a separate volume. The physico-meteorological observatory at Davos, conducted for some time by Professor Dorno, will work in association with the new institute, but will retain its independence. The chief object of this observatory is to investigate the effects of the high mountain climate of Davos on the healthy and the sick, thus continuing the physico-meteorological researches already undertaken. The special character of the Davos Institute is that it will ensure close collaboration among workers in meteorology, physics, physiology, and pathology in a place where climatic conditions are favourable, where material for investigation is ample, and where the medical profession has had special experience in the matter. Dr. Mitchell Bruce, to whom we are indebted for this information, expresses the opinion that the institute deserves the support of scientific workers and medical men in this country, and the hope that some young workers in science, particularly in physiology, will take advantage of the offer to provide working places. Further information can, we understand, be obtained from Dr. Buol of Davos Platz.

#### MEDICAL HYDROLOGY.

THE course of lectures and demonstrations on medical hydrology—said to be the first of its kind in England—which was announced in our columns (April 28th, p. 735) has recently been concluded in London and Harrogate, and, although it was arranged at short notice, twenty-two medical men and women took part in it. Many efforts have previously been made to organize some systematic teaching in England on the actions and uses of waters and baths in medicine, and shortly before the war a memorial was presented to the Senate of the University of London. Last April a committee was formed representing the International Society of Medical Hydrology and the Section of Balneology and Climatology of the Royal Society of Medicine. A memorandum favouring the inclusion of some form of teaching on the subject at the University of London

was signed by seventy-nine medical practitioners at the different spas in England and by fifty-eight other practitioners, and was presented to the University Extension Board. The course which has just been concluded was arranged by the Extension Board in co-operation with this joint committee. The lectures were delivered at the University of London by Drs. Buckley, Edgecombe, Fortescue Fox, Leonard Hill, and Waterhouse. A demonstration on the applications of heat and cold was given at the laboratories of the National Institute for Medical Research, Hampstead, and short lectures on methods of treatment employed in military cases were given at the Ministry of Pensions Special Surgical Hospital, Shepherd's Bush, where a demonstration was given by Dr. Arthur Herbert on the preparation and uses of radio-active mud from New Zealand, and on hyperthermal baths. A very comprehensive and interesting programme was arranged at Harrogate, in which Drs. W. Bain, W. Brown, G. Holmes, Liddell, Miller, Pringle, Saberton, Solly, and others took part. The visitors were conducted by Dr. Campbell McClure. The various forms of treatment given at the Royal Baths were demonstrated and discussed, such as the uses of the different waters internally, sulphur baths, douches of all kinds, peat baths, local vapour baths, colon lavage, etc. The chemical and biochemical investigations and research work carried on at the pathological laboratory were explained, and an x-ray demonstration and discussion of cases took place at the Royal Bath Hospital. In the concluding lecture of the course in London, Dr. Fortescue Fox dealt with the applications of hydrology to incipient and chronic disease at different periods of life, and described the characters of British spas as compared with those of other countries. He pointed out that the climatic character of a spa affected the action of every kind of bath. At Strathpeffer the mean summer temperature was 12° less than in the valley of the Rhine, and equal to that of Leukerbad, at 4,600 feet. Harrogate and Buxton were 8° cooler than Nauheim or Aix-les-Bains, and had the same temperature as Bormio, near the Stelvio Pass, at 4,500 feet. Owing to their northern latitude the climate of some British spas had many of the qualities of high altitudes, as might be seen from the flora of the Highlands. The position of Britain on the north-westerly fringe of Europe, and its incomparable coasts, gave to the constantly changing atmosphere of these islands a stimulating quality, analogous in its effects to those of the effervescing bath. All these conditions were different on the Continent. The British spas were the most tonic in the world, and, if suitably utilized for preventive and curative treatment, were well adapted to the chronic ailments and infections of our own country, such as catarrh, tuberculosis, and rheumatism. If it were sometimes necessary for British invalids to be heated up, they might go to the Continent. On the other hand, Continental invalids, who often required the cooling and invigorating phase of treatment, could obtain it best in the British Islands. A third large class of invalids and convalescents for which the British health resorts should cater were those who had lost their health in tropical countries. Among the modern methods which required development at home Dr. Fox specified the utilization of the British eliminative waters, the employment of various forms of effervescing baths, and the external treatment of young subjects by salt waters.

#### THE RETREAT, YORK.

THE annual report of the Retreat for 1922 is the first presented by Dr. Henry Yellowlees, who succeeded Dr. Bedford Pierce as medical superintendent. The number of patients resident on January 1st, 1922, was 175, and 174 in December, 1922. Since the admissions numbered 109, of whom no fewer than 50 were voluntary boarders, it is



evident that the hospital has an influx of new patients large in proportion to the average number resident. It is fortunate in this respect, because a large number of admissions and discharges does much to create an atmosphere of hope and enthusiasm, which can only be maintained with difficulty in an institution containing chiefly chronic cases. The large proportion of chronic cases is a noteworthy and satisfactory feature. The recoveries were in the proportion of 24 per cent. of the number of cases admitted, or 22 per cent. if voluntary cases are included; 21 cases were discharged recovered, 37 relieved, and 28 not improved. Unfortunately Millfield House, a separate establishment intended for uncertified "borderland" cases, involves a financial loss at present, but the committee has decided not to withdraw from this lead it has given in the development of treatment. Dr. Yellowlees thinks it would be hard to overestimate the value of the work at Millfield; though he feels bound to utter a warning against the optimistic view that all, or even most, cases of mental disease are curable in their incipient stages, yet he is of opinion that treatment in these stages certainly increases the patient's chances, and records with satisfaction and thankfulness that in many cases early treatment at Millfield, so far as he could judge, definitely saved some patients from drifting into chronic mental illness. It is certainly to be hoped that this new scheme will meet with success, so that other institutions may be encouraged to develop along similar lines. It is greatly to the advantage of patients suffering from mild and curable forms of mental disorder that they should be treated entirely apart from the chronic insane.

#### THE ETIOLOGY OF BLACKWATER FEVER.

Of diseases which affect Europeans in the tropics, blackwater fever is to-day probably that which most urgently calls for investigation. It is a disease the knowledge of which has not progressed in proportion to that of other diseases in tropical countries; yet it takes annually a steady toll of Europeans in these places. Residents in so many districts are exposed to its incidence and so many interests are detrimentally affected by its prevalence that it seems that some concerted action towards the complete elucidation of the causes of it should be undertaken. The best means of approaching the problem of discovering how blackwater is to be eliminated from our tropical possessions, whether by the method of a travelling commission, or by the establishment in a blackwater area of a laboratory for its special study, or by endowing research work in already existing laboratories, has to be determined. Whatever method is adopted, it must be carried out in such a manner that all available modern means of investigation can be utilized, and the work should be organized on co-operative and progressive and, as far as necessary, permanent lines. Such an effort will involve considerable expenditure, but if the problem can be solved the cost will prove to be trifling in comparison with the result achieved. The study of the etiology of blackwater fever has lately received an impetus from the investigations of Blanchard and Lefrou, who discovered in the blood a spirochaete (*S. biliohaemoglobinuriae*) which they assign as a cause. So far, no one has been able to confirm the findings of the workers in the Congo, and we noted last week that Dr. J. Gordon Thomson also had had negative results. An experiment which has a bearing on the important question whether blackwater fever is due to a specific parasite is that carried out by Dr. Blacklock, Director of the Liverpool School Laboratory in Sierra Leone. He injected into a healthy adult European blood taken from the vein of a patient who was suffering from blackwater fever. The injection was made into the deltoid muscle on the fourth day of the disease; the amount of blood used was 1.5 c.cm.

The temperature of the patient at the time the blood was taken was 102.5° F., and it remained high until death five days later. Blacklock notes the following sources of fallacy: (1) the possibility that the parasite of blackwater fever is never present in the blood at all; (2) that it is present in such small numbers that the amount injected did not include the organism; (3) that it is present only for one or two days at the commencement of the disease; (4) that it has an unusually long incubation period; and (5) that the subject of inoculation was immune. With regard to the fourth possible source of fallacy it is to be noted that the inoculation was performed on December 4th, 1922, and no ill effects have occurred down to the present date, a period of over six months. Blacklock's experiment shows, therefore, that if there is a parasite of blackwater fever it may be very rare in the peripheral blood, even when the blood is taken on the fourth day of the disease and when the patient's temperature is high. It is evidence against a spirochaetal or other specific organismal origin of blackwater fever.

#### MILK UNDER SPECIAL DESIGNATIONS.

THE Milk and Dairies (Amendment) Act, 1922, empowered the Minister of Health to make regulations under which milk can be produced and sold under special designations, such as "certified," "Grade A (tuberculin tested)," "Grade A," and "pasteurized," thus ensuring to the purchaser certain degrees of purity. On December 9th, 1922, the Minister made an order embodying these regulations, and ten days later, having ascertained that there were difficulties connected with that part of the order relating to the pasteurization of milk, an amending order was made. We endeavoured to epitomize these orders in the JOURNAL of March 10th, 1923 (p. 433), but without making any comment on some of the difficulties which seemed to be connected with their administration. In other quarters criticism was not so sparing, and in a circular (408) issued from the Ministry on May 29th we are informed that representations have been made to the Minister as to the working of these orders, and that "after consideration it appears to him that certain amendments of the detailed provisions of the orders are desirable." A new order (No. 601, 1923) has accordingly been issued embodying these amendments and revoking the existing orders as from July 1st next. The original order required that every animal of the herds concerned should be subjected to periodical veterinary examination. It is now required that the milch cows only should be so examined, and a "milch cow" is defined as "a cow kept for milking purposes." Further, if a cow is found to be suffering from a disease which is not of a permanent nature it will be sufficient for the cow to be isolated, but in the case of a disease the injurious effect of which is likely to be of a permanent character the cow must, as at present, be removed from the herd. To meet the difficulties which have arisen as to the economical disposal of dry cows the provision as to separation of the herd has been altered so as to require that only the cows in milk belonging to the herd shall be kept separate from all other cows in milk. A very important alteration has been made in connexion with "pasteurized milk." The original order required that after pasteurization there must not be in the milk *B. coli* in one-tenth of a cubic centimetre or more than 30,000 bacteria per cubic centimetre, subject to the provision that, until January 1st, 1924, no test for *B. coli* would be imposed, and the maximum bacterial content might reach 50,000 per cubic centimetre. The day of pasteurization was required to be indicated on the vessel containing the milk. In the new order the bacteriological condition has been relaxed so as to remove the test for coliform bacillus altogether, and to provide that



the number of bacteria shall not exceed 100,000 per cubic centimetre; until the end of this year this limit is to be 200,000 per cubic centimetre. There is no longer any obligation to state the day of pasteurization on the milk vessel. Amongst what are described by the Ministry as "minor alterations" are some which will be welcomed by those who are called upon to administer the order. It is now made quite clear that a county borough council is an administering authority, and that a veterinary surgeon who makes the tuberculin test of an animal need only be approved by the Minister of Health and not nominated as required by the original order. In a circular (356) addressed to local authorities in December, 1922, the Minister expressed the opinion that samples of "certified" milk should be taken on the average at the rate of about one sample a month for each producer, the samples generally being taken from all the distributors concerned. It appears that a scheme has now been drawn up by the Ministry by which the sampling of the milk of each producer is divided between two or three authorities, the samples being taken more frequently in the summer than in the winter months.

#### AN AMERICAN PSYCHOPATHIC HOSPITAL.

THE first annual report of the Boston Psychopathic Hospital is a document of considerable interest to psychiatrists in view of the fact that hospitals with similar aims are now being developed in this country. Formerly a department of the Boston State Hospital for the Insane, the Boston Psychopathic Hospital was established as an independent institution "for the first care and observation of mental patients and the treatment of acute and curable mental disease" in 1920. In presenting his first report Dr. C. Macfie Campbell, the medical director, who was a pupil of the late Sir Thomas Clouston at Edinburgh, formulates the principles involved in the work of the hospital, and restates some of the main problems which it has to deal with, and the function it plays in the general health activities of the community. The main tasks, when the new status was instituted, were to build up the medical staff, to put the various laboratories into commission, to develop occupational opportunities for the patients, and to co-ordinate the social service department with the other activities of the hospital. It would appear to be somewhat to the disadvantage of the hospital that, to a certain extent, it has to be utilized as a clearing house for the disposal of a large number of patients. During the year under review the number of patients received in the wards was 1,937, and there has been a tendency on the part of the medical profession and of the community in general to regard the hospital as an institution in which patients only remain for a few days. As Dr. Campbell observes, it would be unfortunate if this mistaken opinion should become firmly fixed, for, if the hospital is going to undertake the treatment of acute and curable diseases, as well as the study of the nature, causes, and results of insanity, it is obvious that it must be prepared to care for the individual patient during a period of weeks or even months. If a hospital of this type with only 100 beds is utilized as a clearing house we cannot but feel that its usefulness must be diminished, as mental disorders, perhaps more than any other form of illness, cannot be either satisfactorily studied or treated in a few days. One of the problems of the medical work has been to make such arrangements with the other hospitals in the vicinity and with visiting consultants that the patient may be examined as carefully as if he had been admitted to a general hospital. It has fortunately been possible to make very elastic arrangements with the staffs of the hospitals in the adjoining area, so that these principles have been carried out. An endeavour is also being made to improve the nursing

personnel by introducing pupil nurses from general hospitals, and graduate nurses who may require special training in mental disorders. A social service department has been organized, as it is realized that in mental disorders environmental factors are of considerable importance. The work of this department has been closely co-ordinated with the work of the individual physicians, and the hospital keeps in close touch with the great number of social organizations which have problems cropping up from time to time requiring some psychiatric review. The account given of this psychiatric social work is most interesting, and its importance can scarcely be overestimated. The out-patient department, in which 1,075 patients were treated during the year, is the subject of a special report by Dr. Douglas Thom, the chief physician. He writes hopefully of his work, and is convinced of its social value. His experience leads him to express the view that in no way can the State do more for the mental health of its citizens than by a well organized out-patient clinic. "More and more we are finding," he writes, "that the out-patient clinic is becoming the pivot point from which preventive medicine, so far as it relates to the mental health of the community, is radiating. Ministers, teachers, judges, probation officers, physicians, and lawyers are daily turning to the psychiatrist for advice pertaining to the problems of human conduct. Not only are they coming to us, but they are permitting us to become part of their organizations." The hospital is discovering a wide sphere of usefulness in respect to nervous children, and it is satisfactory to observe that an increasing number of cases are being referred to it by the police or by the courts. Dr. Campbell indicates very clearly the attitude of the psychiatrist towards the delinquent—a matter which is apt to be unnecessarily complicated by metaphysical discussions—when he writes: "Some judges feel it is something of an intrusion on their territory for the psychiatrist to formulate an opinion as to the responsibility of the accused, and upon the soundest method of dealing with the accused. In some cases the individual psychiatrist may go beyond the proper limits of a purely medical opinion; this is not necessary. The psychiatrist has to state his opinion of the causes of the behaviour which he investigates, and he can state his opinion in perfectly objective medical or biological terms which involve no reference to such a complex and evasive conception as that of responsibility. He may also state the medical factors to be kept in view in the management of the case without neglecting the importance of other aspects of the case, such as the social and the legal, and without seeking to make the medical management of the case the dominant aspect." Reports of the out-patient department, the biochemical laboratory, the psychological laboratory, the neuropathological laboratory, the department of therapeutic research, and the nursing, social service, occupational therapy, and executive departments are given by those who are responsible for these various spheres of work. Altogether it is evident that the Boston Psychopathic Hospital is filling a definite need, and carrying out medico-social work of great value to the community.

#### MEDICAL RESEARCH COUNCIL.

DR. GEORGES DREYER, C.B.E., F.R.S., Professor of Pathology in the University of Oxford, has been appointed a member of the Medical Research Council in the vacancy caused by the resignation of Major-General Sir William Leishman, K.C.M.G., F.R.S., consequent on his appointment to be Director-General, Army Medical Services. The appointment of Professor Dreyer was made by the Committee of Privy Council for Medical Research, after consultation with the Medical Research Council and with the President of the Royal Society, by Order of Council dated June 11th, 1923.



## THE OCTOCENTENARY OF ST. BARTHOLOMEW'S HOSPITAL.

THE celebration of the eight hundredth anniversary of the Foundation of St. Bartholomew's Hospital was carried out from June 5th to 8th in a most satisfactory manner and on the whole under fairly good conditions of weather. In a large institution like St. Bartholomew's there is always abundance of talent available for every purpose; age was able to temper the exuberance of youth and young blood to stimulate the sluggishness of age. The tradition of centuries has resulted in an *esprit de corps* which proved of the greatest value. Everyone worked in harmony with his neighbour and did that part which was assigned to him without thought of fatigue and to the very best of his ability. It may be said in the words of the herald who used to proclaim the results of the tournaments in Smithfield, "The Treasurer has done well and the Clerk has done well, but to Sir Ernest Flower, Mr. Girling Ball, and Mr. Roth must be awarded the prize."

The celebrations divided themselves into several sections, some serious and formal, marking the real significance of an event without parallel in the history of English medicine; others appealing to the higher instincts of the aesthetic; and yet others for the baser sort. Former students, nurses, and friends of the hospital came in their thousands from all parts of the world and entered into the proceedings as members of one large and contented family.

### *Service at St. Bartholomew-the-Great.*

The formal celebrations began on Tuesday, June 5th, in the magnificent choir of the contemporary church of St. Bartholomew-the-Great, founded, like the hospital, by Rahere, Augustinian Canon and first Prior. The service had throughout the note of joy and rejoicing befitting the occasion: a processional hymn, a psalm, the lesson from Ecclesiasticus, the *Te Deum*, a few introits and the Lord's Prayer. The Collect in commemoration of founders and benefactors was adapted from that in the 1560 Latin book of Common Prayer. It was followed by an address given by the Bishop of Chester on the parable of the Good Samaritan. In a few words he paid tribute to the memory of his father, Sir James Paget, and, recalling the story of Rahere, he told how few institutions could show to their founders a record so wholly for good as that of the hospital. A charity which for eight centuries had continued uninterrupted to carry on the work designed by the founder, enlarged only in scope and improved by experience. A hymn, the Blessing, and the Nunc Dimittis concluded the service.

### *Solemnity in the Hospital Square.*

The large congregation then proceeded to the Hospital Square and witnessed a still more ancient ritual peculiarly consonant to the occasion. A procession of Augustinian Canons—to which order Rahere belonged—from the four houses now established in England, preceded by a thurifer, a cross bearer, two bearers of lighted candles, and some singing-men, came slowly round the square singing a hymn in honour of St. Augustine, the music of which is said traditionally to have been written by Rahere himself, for he was a skilled musician. The procession halted in front of the fountain, offered up a prayer, commemorated St. Bartholomew, and retired singing the psalm "*Deus misereatur nobis*." The rear of the procession was brought up by the two Abbots of the Order wearing black capes and gold pectoral crosses, the thirteen Canons themselves having short white surplices over their white habits and wearing birettas. The procession on the same spot which had presented a similar procession on the hospital on March 17th, 1123, celebrated the opening of the hospital on March 17th, 1123, when the staff consisted of eight Canons and four sisters. Eight hundred years later sisters, nurses, and staff had increased a hundredfold.

As the clock struck twelve a fanfare of trumpets and the roll of drums high up on the roof of the Great Hall was followed by the announcement of a herald who proclaimed in a loud and commanding voice that the ceremonial observances were about to begin. Immediately two little

processions of the sick and poor of London in the dress of King Henry I's days appeared in the square asking charity of two haughty nobles. They asked in vain, but at the very instant Rahere, just returned from a pilgrimage, passed by and the piteous little crowd appealed to him and were clinging round him when Richard Beaumais, the Bishop, came by, stopped, listened to Rahere whilst he drew in the dust a plan for the hospital, gained his consent to proceed with the undertaking, and received a blessing. Two centuries passed and the square was filled with a cheering crowd of citizens—who really did cheer *con amore*—with watermen, beefeaters, courtiers, and a jester. In the middle was the burly, bearded King Henry VIII, who gave to the kneeling Mayor and citizens a charter restoring some of the lands and revenues which he had taken into his hand a few years previously. As he was assuming to himself all the merit of his action, Rahere stepped forward and pointing solemnly upwards reminded him to give honour where honour is due. The bluff King—admirably impersonated by Mr. Arthur Boucher—fortunately took the reproof in good part and the whole assemblage did homage. The King retired, his court dispersed, and the scene was replaced by nurses and the wounded soldiers in hospital blue who have been only too familiar to the present generation, and to the singing of the hymn, "O God, our help in ages past," the solemnities ended. They were brightened by the brilliant academic costumes of the audience, who wore the gowns and hoods of their degree.

The delegates and staff to the number of 250 lunched with the Lord Mayor at the Mansion House, who, in spite of his recent accident, was present in a wheeled chair to receive them, the assembly being honoured by the attendance of the Prince of Wales, President of the hospital.

### *The Guildhall Ceremony.*

At three o'clock the President, H.R.H. the Prince of Wales, attended at the Guildhall to receive addresses from the delegates who had been chosen to offer good wishes from institutions in many parts of the English-speaking world. The delegates represented the Church of England, Universities of Great Britain and Ireland, Universities of the Dominions and India, Universities of the United States of America, and the Learned Societies of Great Britain and Ireland and the United States of America.

In the absence of the Lord Mayor, Alderman Lord Bearsted welcomed the Prince. Lord Stanmore, treasurer of the hospital, presented His Royal Highness with a gold medal which had been struck in memory of the anniversary from a design made by Mr. Charles L. Hartwell, A.R.A., and a copy of the *Short History of Bartholomew's Hospital*, which had been specially bound by Mrs. Loosely, a daughter of Mr. Henry Power, the first ophthalmic surgeon to the hospital. The delegates then came forward in single file, bowed, presented the address with which they were charged, and retired. Sir Archibald Garrod, Regius Professor of Medicine in the University of Oxford; Dr. Alexander Primrose, representing the University of Toronto; Dr. William Henry Welch, President of the Board of Scientific Directors of the Rockefeller Institute; Sir Walter Fletcher, F.R.S., secretary of the Medical Research Council; and the Right Reverend E. H. Pearce, Bishop of Worcester (and an "Old Blue"), made commendably short speeches of congratulation. His Royal Highness acknowledged the addresses, and in doing so took occasion to review briefly the history of the hospital and to express his satisfaction with the manner in which it had progressed.

The band of the Welsh Guards, under the direction of Lieutenant Andrew Harris, L.R.A.M., played selections of music both at the hospital and in the Guildhall. The formal proceedings being thus brought to a conclusion, the following days were devoted to various social and spectacular functions.

### *The Tableaux.*

A committee, of which Sir Aston Webb, P.R.A., was chairman and Mr. Richard Jack, R.A., honorary secretary, arranged a series of tableaux in the Great Hall of the hospital to illustrate notable events in the history of the

<sup>1</sup> See Review, BRITISH MEDICAL JOURNAL, June 2nd, 1923, p. 911.



ancient foundation. The subjects presented were: Rahere as a courtier; the crowning of the victor at a tournament in Smithfield, arranged by Mr. Charles Ricketts, R.A.; Rahere's dream; the building of the hospital by Rahere and the delivery of the Charter by King Henry VIII, arranged by Mr. Charles Sims, R.A.; a miracle at Rahere's tomb, and Harvey demonstrating the circulation of the blood to King Charles I, by Mr. Solomon J. Solomon, R.A.; Hogarth painting the pool of Bethesda, and war work by Mr. George Harcourt, A.R.A., were beautiful examples of colour and grouping. Where all were excellent it was hard to say whether one excelled the rest, but as a mere personal feeling, Mr. Solomon's tableau of a girl cured at the tomb of Rahere appealed most to the writer. Each tableau was revealed three times to the audience. Mr. C. S. C. Prance gave a short explanation of each situation before the curtain was drawn, and the music played by students of the Royal Academy of Music was selected by Sir Alexander Mackenzie.

At the conclusion of the first display of the tableaux the delegates were received at the Royal College of Surgeons of England by the President, Sir Anthony Bowlby, and a Vice-President, Sir D'Arcy Power, and were afterwards shown round the Hunterian Museum by Sir Arthur Keith, the Conservator, and Professor Shattock. In the evening, as mentioned below, an old students' dinner was held at Merchant Taylors' Hall; the delegates were invited and the hall was filled to its utmost capacity.

#### Exhibits.

Numerous valuable and interesting exhibits were to be seen in the Museum and Library of the Medical College, as might be expected in so ancient an institution. Foremost, perhaps, was the actual grant by Rahere of the Church of St. Sepulchre to Hagno, who succeeded him as Master of the hospital. The deed is dated 1137, and the seals were affixed in the presence of Rahere himself. There was also on view the Charter granted by King Henry VIII in 1544 and the Deed of Covenant between Henry VIII and the Mayor and citizens of London dated December 27th, 1546, as well as the Letters Patent of 1547. The beautifully illuminated Cartulary written by John Cok between 1456 and 1468, the Repertory Book, ledgers and journals were amongst the manuscripts shown, as well as a vellum MS. which once belonged to Reginald Colier, Prior of the Convent from 1435 to 1471; this was lent by the Right Hon. John Burns, who also lent a copy of the 1552 edition of *The Order of St. Bartholomew's Hospital*. There was also the indenture of apprenticeship of William Lawrence to John Abernethy dated April 30th, 1799, and a gold snuffbox presented to Sir William Lawrence by Sir William Blizard in gratitude for a successful operation for cataract "in the ninety-second year of his age." There was also a fine display of the plate belonging to the hospital, including a loving cup and the Renter's Mug, in which the tenants of the hospital were given refreshment when they came to pay their rents, whilst in the same case were the Renter's Pistols, which he carried when he journeyed to collect the rents. The Library also displayed a fine collection of portraits, prints, pictures, and other objects of interest connected with the hospital gathered by the pious care of Mr. Morrant Baker, Mr. Walter Jessop, Dr. Arnold Chaplin, Dr. Leonard Mark, and arranged by Mr. G. P. Baker, Sir D'Arcy Power, and Mr. Geoffrey Keynes. In addition to the specimens recently added to the Museum by Dr. T. H. G. Shore, the Curator, there was a remarkable exhibition of surgical instruments, either invented or used by former members of the medical staff from the time of Percivall Pott in 1745 to Mr. G. H. Colt in 1903. The instruments were selected and described by Mr. Alban Doran. Amongst the books the most notable was a copy of the first edition of Harvey's *De Motu Cordis*, lent by the Royal College of Physicians. There was also a copy of the original edition of the *Carmen de Sanguinis Circuitu* which was written by Robert Grove, afterwards Bishop of Chichester. It describes in elegant Latin hexameters Harvey's demonstration of the circulation of the blood on the dog "Senior." The description is so minute and life-like that Grove must have been present. It was lent by Mr. Sidney H. Badcock, who also showed the original copper-plate portrait of William Harvey engraved by

Faithorne to illustrate the first English edition of the *De Generatione* published in 1653. Mr. Badcock was able to trace the subsequent history of the plate.

#### Bartholomew Fair.

It was a happy thought to revive the ancient Bartholomew Fair as part of the octocentenary celebrations; and it was wise as well as happy to hand to the students of the hospital the duty of making the undertaking a success. Even before Rahere founded the Priory in 1123, a fair, then called the King's Market, was held regularly in the Smooth- or Smith-field, and every year from that time till 1855 a fair was held in the same place. This year once again the Lord Mayor proceeded in state through the city and proclaimed the fair, as so many of his predecessors had done before him. He did not, however, stop at Newgate Gaol for "a cool tankard of wine, nutmeg, and sugar." Nor did the City Treasurer pay a fee of three shillings and sixpence to the rector of St. Bartholomew-the-Great for making the proclamation in his parish. June 6th, the day chosen for the opening of the fair, was unfortunately wet, but this did not deter the Lord Mayor, still crippled by his accident, from opening the proceedings, nor did it prevent a very large attendance.

After the proclamation had been made the following address was read by Mr. W. Holdsworth, senior honorary secretary of the Students' Union:

My Lord Mayor,

We, the Students of the Medical College of St. Bartholomew's Hospital, in the City of London, desire to thank you most heartily in our own name and in that of the present assembly for your courtesy in coming amongst us to-day to open the mimic representation of that Fair which was held for so many years in the immediate neighbourhood of the place where we now stand, a Fair of much value to us as Students because, under the eye of our Masters, we learnt to treat many injuries and divers wounds which we might otherwise never have had the opportunity of seeing. "We feel, Sir, that your presence to-day is an additional proof of the interest which the Citizens of London have always shown in the welfare of their Hospital during the eight hundred years it has served them, an interest which has increased, were it possible, with the lapse of years. "We remember with gratitude that when in the past the fortunes of the Hospital were at their lowest ebb, the Citizens of London interceded for this their Hospital, and did establish it on so firm a foundation that it has been enabled, in the fulness of time, to obtain a foremost position amongst the great charities, not only of this metropolis, but of the world itself.

Sir,—We are grateful to you, and we know that so long as we are true to the great traditions we have inherited from the long line of our illustrious predecessors, we shall merit your esteem and continued confidence.

After hippocras had been drunk from a loving cup the Lord Mayor made a round of the fair, ordering the release of certain malefactors who happened to be incarcerated in the stocks. The fair itself was a very great success. The stalls were quaintly named and did good business. "Here is sold Sac and Petum of Virginia" had the identity of a tobacco stall; flowers were sold from "Sir Ernest's own Beaupot and Posy Booth." The side-shows were arranged with skill and enterprise. Magicians, astrologers, stilt-walkers, soothsayers, boxers, and "makers of sweet music" were very evident. Here was the representative of quackery through all the ages. Gowned in fur and chalk in hand, he described the growth of a corn in a manner entirely unauthorized by his professor of pathology, Sir Frederick Andrewes. His cure was marvellous. A learned man in Egypt had given him the secret with the hand of his daughter. "The remedy is here. The lady I left on the banks of the Nile." Here, too, was the palmer fresh from the shrine of St. James of Compostella, staff in hand and shell in hat, telling his tale to all and sundry, averring that he had gone bare-foot all the way when it was plain from the look of his feet that he had been shod and had had peas, and boiled peas at that, in his boots. And so the fun continued till seven o'clock on the evening of June 8th, when the fair terminated with the singing of the National Anthem. About £4,000 was raised by fair and tableaux, sufficient to cover the cost of the enterprise. The students, under the leadership of Mr. W. Holdsworth, are to be congratulated on managing the fair with the utmost success and dignity. High-spirited fun was everywhere at all times apparent; never was there any suggestion of rowdiness. Sir Ernest



Flower, whose was the older brain behind the show, must feel mightily pleased at the success of his efforts.

### *The Conversazione.*

On Thursday, June 7th, at 8.30 p.m., a conversazione was held at St. Bartholomew's Hospital. More than 3,000 guests were received by Lord Stanmore, treasurer of the hospital and president of the medical college; Miss McIntosh, C.B.E., R.R.C., matron of the hospital; Dr. T. W. Shore, dean of the medical college; and the Rev. W. F. G. Sandwith, rector of St. Bartholomew-the-Great. The old square of the hospital and the fountain, so essentially the centre of the life of St. Bartholomew's, had been gaily decorated with fairy lamps. Each department vied with the others in making its own branch of medical science interesting to the lay as well as to the medical mind. In the chemical laboratory Dr. W. H. Hurtley had hit upon the happy plan of allowing his students themselves to demonstrate striking chemical experiments, and remarkably well and enthusiastically did these youngsters do their work. The dispensary, with its demonstration of the making of drugs, was immensely popular. So varied and remarkable were the displays that it is not possible to do more than suggest their nature, but one side-show must not be forgotten. In a small room off the surgery was a representation of a Sairey Gamp: the comfortable figure, the poke bonnet, the hot and flushed face, the patient lying uncared for in the corner, the mug of gin and water, together with much histrionic skill, made a Dickensian picture which will never be forgotten by those who saw it. Miss Birch, affectionately known to generations of Bart's men as "Sister Scrubbing-Ladies," must be complimented on her demonstration of "ancient nursing." The heads of departments deserve congratulations on the value and interest of their exhibits, and the warden of the college, Mr. Reginald M. Vick, on his excellent staff work.

### *Rahere Lodge.*

The Masonic Lodge founded in 1895 for the convenience of Freemasons belonging to St. Bartholomew's Hospital held an especial meeting in the Freemasons' Hall on Friday, June 8th, in the presence of the Grand Master, H.R.H. the Duke of Connaught, and the Pro-Grand Master, Lord Amptill. Mr. W. Girling Ball was installed as Master of the Lodge by Dr. Harold Pritchard, his predecessor in the chair. Upon the nomination of Dr. R. J. Reece, seconded by Sir D'Arcy Power, the Duke of Connaught was elected an honorary member of the Lodge. In returning thanks, His Royal Highness recalled the fact that his brother, King Edward, when Prince of Wales, had personally constituted the Lodge twenty-eight years previously, and had honoured it by becoming an honorary member. Immediately afterwards H.R.H. the Prince of Wales was elected an honorary member upon the proposition of Dr. H. Morley Fletcher, seconded by Dr. Harold Pritchard. In the course of the proceedings, Mr. Ernest Clarke read a brilliant but short address on the history of the Lodge, pointing out that ten of the twenty-six founders survived and seven of the ten were then present in the Lodge. The Rahere Lodge, he said, was the first of the long line of hospital Lodges which had drawn into Freemasonry a large number of earnest men who had diffused the principles and tenets of the craft throughout the world. Upwards of three hundred and fifty brethren afterwards attended the banquet in the Connaught Rooms, where eloquent speeches were made by Lord Amptill and by Dr. George E. McLean, the delegate from the State University of Iowa, U.S.A.

### *THE OLD STUDENTS' DINNER.*

The annual Old Students' Dinner usually takes place at the beginning of the winter session, but the date was advanced, this year in order to coincide with the octocentenary celebrations. The dinner was accordingly held on Wednesday, June 6th, in Merchant Taylors' Hall, Threadneedle Street, lent for the purpose by the Master and Wardens of the Merchant Taylors' Company. The chair was taken by Mr. H. J. Waring, senior surgeon to the hospital and Vice-Chancellor of the University of London, who was supported by a company which numbered some 315, filling

the large chamber and overflowing into the gallery. Among those present were most of the consulting and active staffs. The guests included many of the delegates from the universities and learned societies of Great Britain and Ireland, the Dominions, and the United States, who had presented congratulatory addresses to the President, H.R.H. the Prince of Wales, on the previous afternoon during the Guildhall ceremony. Of these a considerable proportion are old students of the hospital, like the Presidents of the two English Royal Colleges and the Regius Professor of Medicine at Oxford; Sir Walter Fletcher, representing the Royal Society; Sir Joseph Verco, University of Adelaide; Professor A. J. Hall, University of Sheffield; Dr. Howard Tooth, University of Malta; and Professor A. J. Clark, University of Cape Town. Other delegates besides those mentioned among the after-dinner speakers were the Presidents of the Royal Colleges of Surgeons of Edinburgh and Dublin, and of the Royal Society of Medicine; the Vice-President of the Royal College of Physicians of Ireland; Sir David Drummond, representing the University of Durham; Mr. G. P. Newbolt, University of Liverpool; Professor Edward Fawcett, University of Bristol; Professor T. Sinclair, the Acting Vice-Chancellor of the Queen's University of Belfast; Professor J. Read, University of Sydney; Dr. D. J. Coffey, National University of Ireland; Dr. W. C. Quinby, Harvard University; Dr. A. Primrose, University of Toronto.

After the loyal toasts had been honoured, the Chairman proposed "Prosperity to the Hospital." He said that the history of the hospital might be divided into three epochs: the first beginning with its foundation by Rahere in 1123; the second in 1544 with Henry VIII's charter; and the third in 1901 when the momentous decision was taken to keep it on its ancient site in the City and to adapt it to modern requirements. Much had been done already in the past twenty-two years to carry out this intention, but much still remained to do; in particular, the question arose of how best to modernize the wards. The toast was replied to by Lord Stanmore, treasurer of the hospital and president of the medical college, who welcomed the great number of honoured guests now assembled to pay honour to St. Bartholomew's. The financial position, he said, was already much more secure, and this year the hospital would make both ends meet; but more money was needed in order to keep it in the front rank of the hospitals of the world. A reconstruction committee of five had been set up, consisting of two governors, two members of the medical college, with the treasurer as chairman. The toast of the Medical College was proposed in a witty speech by Sir William Lawrence, Bt., Senior Almoner, who took pride in the excellent relations between the governors, the staff, and the students. He coupled the toast with the name of the Dean, Dr. T. W. Shore, who on rising to reply was received with great enthusiasm. Dr. Shore began by remarking that Bart's was a blend of the very ancient and the extremely modern. Records of the attendances of students went back to 1662, but the real beginning of the school was about a century ago, when Abernethy was asked to take over the educational arrangements. Dr. Shore was proud to feel that throughout his own association with Bart's, a mere matter of 44 years, the keynote of the school had been progress. To quote one instance, it was the first to accept the offer of the Board of Education to assist in the establishment of clinical professorial units. The health of the guests had been wisely entrusted to Dr. Herbert Williamson, who has the gift of paying compliments in sparkling phrases; and the responses to this toast were entrusted to Field-Marshal Lord Methuen (delegate of the Bishop of Salisbury), Professor T. Kirkpatrick Monro (Delegate of the University of Glasgow), and Professor William Henry Welch (Delegate of the Rockefeller Institute and the Johns Hopkins University). As an ecclesiastical representative (Dr. Williamson had included him among the "guests spiritual") Lord Methuen spoke of the happy relations between the Church of to-day and modern Medicine; as a soldier he expressed admiration for the medical services, mentioning in particular his debt to Sir Archibald Garrod and Dr. Tooth at Malta during the late war. Professor Monro, in offering



the congratulations of Scottish Medicine to St. Bartholomew's, reminded his hearers that the Principal and Vice-Chancellor of his own University, Sir Donald MacAlister, had been a student and teacher at Bart's. Professor Welch, in an eloquent speech, said that Bart's in its octocentenary year was proud of the glories of the past, but its face was towards the future. He declared that the backbone of American Medicine was British, and America was now beginning to pay something of her debt to British Medicine.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

### The Mental Treatment Bill.

THIS bill was considered on report in the House of Lords, and a few formal amendments having been agreed to, the bill was ordered for third reading.

### Insurance Medical Service.

Sir Kingsley Wood asked, on June 6th, whether the Minister of Health proposed to make any independent inquiry into the panel system. Lord E. Percy said the Minister was independent and was always inquiring. Dr. Watts asked of what use were the records kept by panel doctors, either from scientific or other point of view, and what was the cost of the insurance fund; and whether the Minister was aware that the fact that these records had to be kept stopped many insured persons, especially when suffering from certain diseases, from consulting their panel doctors, and so allow these diseases to become much more serious owing to the lack of proper treatment. Lord E. Percy referred the honourable member to the report of Sir Humphry Rolleston's committee which was presented to Parliament (Cmd. 836 of 1920). The keeping of records was part of the terms of service of insurance practitioners, and was not separately paid for. Great care was taken to preserve their confidential character, and the Minister had no evidence in support of the suggestion contained in the last part of the question. In reply to Mr. Hurd, Lord E. Percy said that certain proposals for the revision of the terms of service of insurance practitioners, based mainly on recommendations of the Insurance Consultative Council, had been discussed with the Insurance Acts Committee of the British Medical Association, and that Committee had put forward certain suggestions. All the proposals would be discussed at a conference of representatives of panel committees throughout the country. Lord E. Percy has also stated that the desirability of revising medical certificate forms. Minister of Health has promised to be utilized to give Insurance questions.

**Insurance Dental Treatment.**—In answer to Mr. Scrymgeour, on June 6th, Lord E. Percy said that the payment of the whole or part of the cost of dental treatment was included among the additional benefits which an approved society was entitled to provide for its members out of a disposable surplus declared on its value. Several societies, with a total membership of nearly 7,000,000 insured persons, had already made such provision. The Minister of Health hoped that under the scheme arising out of the second valuation, which was about to take place, it would be made available for an even larger number of insured persons than at present.

**Cancer Research.**—Dr. Chapple asked, on June 6th, whether the Minister of Health would take steps to ensure that the scientific research effort now being made in Britain in the direction of discovering the cause and cure of cancer were not hindered by lack of funds, and Major Molloy inquired whether the Minister would endeavour to procure a large increase in the present inadequate subsidy granted by the Treasury for research, so that it might be co-ordinated so far as notification and clinical information as to incidence were concerned. Lord E. Percy referred members to the answer he gave on June 4th to Mr. Alfred T. Davies, which has been published in these notes.

**Infectious Diseases.**—Sir W. Preston asked, on June 6th, whether the Ministry of Health had any control over arrangements which county medical authorities made when dealing with epidemics and infectious diseases; and whether, if a county medical officer made improper or inadequate provision for handling cases, the Ministry of Health had powers to compel such officer to take proper steps. Lord E. Percy said that the duty of dealing with infectious diseases was imposed by law on the local authorities and district medical officers of health. The Minister of Health was, however, empowered to make regulations enabling the county council to provide hospitals for the isolation and treatment of the diseases. Such regulations, where made, placed on the district medical officer of health, subject to any directions which might be given to him by the county medical officer, the duty of securing the isolation and treatment of patients in hospitals and to take all the necessary steps for preventing the spread of the disease. The answer to the last part of the question was in the negative.

**Miners' Nystagmus.**—Mr. Mardy Jones asked, on June 11th, whether the attention of the Secretary for Mines had been drawn

to Mr. Frederick Robson's paper read before the South Wales Institute of Engineers, in which he advanced evidence in support of his theory that miners' nystagmus is caused by the inhalation of noxious gases given off in a coal face and not to the defective illumination of miners' lamps; and whether, in view of the character of the evidence submitted, the Minister would institute further inquiries into the whole matter. Lieut.-Colonel Lane Fox of his theory had been considered. Medical Committee concerned, able to accept that theory. He appreciated that Mr. Robson had devoted much time and care to the study of nystagmus, and every theory supported by evidence should be considered.

**Metropolitan Asylums Board Hospitals.**—Lord E. Percy informed Mr. Gilbert, on June 6th, that fifteen hospitals for infectious diseases, other than tuberculosis and venereal diseases, were maintained by the Metropolitan Asylums Board and the number of beds therein was 8,779. The total numbers of patients treated during the years 1920, 1921, and 1922 were 40,705, 55,324, and 41,819 respectively. The total net expenditure of the Board during the years ended March 31st, 1920, March 31st, 1921, and March 31st, 1922, was £1,872,013, £2,748,872, and £2,565,233 respectively. A rate of 9½d. in the £ had been levied to meet the expenses of the Board during the current financial year. The provision and maintenance of hospitals for infectious diseases formed only a part, though an important one, of the work of the Board.

**A Medical Officer's Salary.**—Lord E. Percy informed Sir R. Winfrey, on June 6th, that the reason why the Minister of Health refused to agree to a reduction in the salary of the medical officer of health for the Nutford and Launditch Union was that efficient service could not reasonably be expected from the medical officer of health in this extensive rural district for less than his present salary of £150 per annum, which was inclusive of traveling and clerical expenses.

**Disability Pensions.**—Major Tryon informed Mr. F. Roberts, on June 11th, that in the case of men invalidated from service it was an express rule of the Pensions Department that there was a prima facie presumption that the invaliding disability was due to, or aggravated by, the man's service. In the case of demobilized men he had, in accordance with the advice of the highest independent medical authorities in the kingdom, directed, in the case of certain diseases, in which the first overt symptom might not appear for some time after the original causation of the disability, that even though such symptoms did not manifest themselves until a year (in the case of tuberculosis), or, in the case of certain other diseases, even two years after the man's discharge from service, the disease might, subject to the proper diagnosis of the man's condition, be accepted as having originated in, or existed during, service without further evidence on the point. He was advised, however, that these principles could not apply to any and every complaint from which an ex-service man might suffer for the rest of his life, for the reason he had given in a previous answer on April 19th to Mr. Bennett.

**Tuberculous Milk.**—Mr. Adams asked, on May 30th, whether the corporation of Newcastle-upon-Tyne, in their weekly examinations for tuberculosis in samples of milk sold for use in that city, found that the highest proportion of positive samples was 10.4 per cent. in 1912, and the general control by the 3.6 in 1919, but that it stood at the relative high figure of 7 per cent.; and whether the Minister would take or propose measures for dealing more efficiently with herds in rural areas by transferring the duties in connexion therewith from the small local authorities to combinations of these, or to county councils. Mr. Chamberlain said he understood that the facts were as stated. The duty of taking measures to prevent the sale of tuberculous milk was placed on county and county borough councils by the Milk and Dairies (Consolidation) Act, 1915, but the commencement of that Act had been postponed till September 1st, 1925, by the Milk and Dairies (Amendment) Act, 1922. Section 11 of the Act of 1922 provided for the transfer to the county council of the powers and duties of a district council under that Act or any other enactments, orders, or regulations relating to milk and dairies, if the county council resolved that the district council had failed to exercise or perform any of those powers or duties and made complaint to his department.

**Answers in Brief.**  
The total amount paid from the Exchequer in respect of the tuberculosis schemes in Scotland during the year ended March 31st last was £339,509.

Lord E. Percy states that particulars are not yet available regarding vaccination in Leicester during 1922, but in the previous five years only 3.5 per cent. of the newly born children were vaccinated, the bulk of the remainder being exempted on account of statutory declarations by parents or guardians. No cases of small-pox had been notified in Leicester and there had been no deaths from that disease during the past five years.

During the past six months (four years after the armistice) 1,600 first claims on account of tuberculosis have been rejected on the grounds that the disability was neither due to nor aggravated by service, and 1,100 have been admitted.

The British Government is sending a delegation to the International Congress on Alcoholism the Danish Government has arranged to hold in Copenhagen in August.

Mr. Neville Chamberlain states that the average amount devoted by the Medical Research Council to direct cancer research has been approximately £5,000 during the last three years.



## England and Wales.

### VITAL STATISTICS OF ENGLAND AND WALES.

WE have received from the Ministry of Health a copy of a publication bearing the somewhat cumbersome title *The Registrar-General's Statistical Review of England and Wales for 1921. (New Annual Series, No. 1.) Tables, Part II, Civil.*<sup>1</sup> This volume, we learn, forms part of the annual series of statistical publications which, under the style of the Registrar-General's Statistical Review, will henceforth take the place of the Registrar-General's Annual Report. The change in form and name is governed by the provisions of Section 5 of the Census Act, 1920, which requires the Registrar-General from time to time to collect and publish statistical information regarding the number and condition of the population in the interval between one census and another. The tables for 1921 have been divided into two groups—medical statistics and civil statistics—and the whole Statistical Review will, from now onwards, be issued in three sections at different prices, entitled respectively: Text; Tables, Part I, Medical; Tables, Part II, Civil. The intention is to issue each section as soon as it is ready, instead of, as formerly, holding back the publication of the tables until the text based upon them has been prepared. The present volume consists primarily of those tables contained in the old series which have a general demographic interest. It includes also tables showing populations, births, deaths, infant mortality, and marriages in British Dominions, and other administrative statistics of various kinds relating to the social and civil condition of the population. The companion volume of medical tables has already appeared,<sup>2</sup> and the series will be completed for the year 1921 by the volume of explanatory text shortly to be issued. From the tabular matter now published it appears that the birth rate for 1921—22.4 per 1,000 persons living—was the lowest recorded since the beginning of civil registration in 1837, except for the war years 1915-19 inclusive. The 848,814 births consisted of 454,895 males and 413,919 females—that is, 1,051 males to every 1,000 females. Illegitimate births numbered 38,618, or 45 in every 1,000 births. The excess of births over deaths ("natural increase") was 390,185, or approximately 10 per cent. of the population. Marriages numbered 320,852, representing 16.9 persons married per 1,000 living. The figures for divorce were the highest ever recorded; the number of decrees *nisi* made absolute for "dissolution" were 3,458, and for "annulment" 64, making a total of 3,522. Divorced men to the number of 1,592, and 1,286 divorced women, remarried in 1921; 28,627 widowers and 29,141 widows remarried.

### ROYAL ALBERT EDWARD INFIRMARY, WIGAN.

The fiftieth anniversary of the opening of the Royal Albert Edward Infirmary, Wigan, was celebrated on June 4th, when Lady Mary Lindsay, daughter of the Earl of Crawford, acting for her mother, unveiled a commemoration tablet in connexion with the new operating theatre now in course of construction. The new building, which is to commemorate the jubilee of the Infirmary, forms a complete operating unit with all the conveniences of modern surgery. Around a small octagonal hall are arranged the operating theatre, with an annexe containing sterilizers, sinks, etc., an anaesthetizing room, surgeons' cloak room and dressing room, and a separate room for the large sterilizers. The heating will be partly by hot water and partly by steam, and the ventilation is taken by flues to a duct over the roof with an electric exhaust fan, and fresh air is admitted behind the radiators through filters so that it is cleaned and warmed as it passes into the theatre. Lord Crawford, president of the Infirmary, who presided at the opening ceremony, said that in the first completed year of the institution, fifty years ago, twenty major operations were performed, whereas during the last completed year the number of operations had risen to 1,335. The financial status of the Infirmary was remarkable; and was mainly based upon the system of weekly contributions; last year the income from these contributions amounted to

£17,000. This meant much confidence in the Board of Management and in the medical and nursing staffs. That confidence had been maintained ever since the Infirmary was founded, by the knowledge that its door was ever open, that its authorities were alive to the progress of science, anxious to keep the equipment up to date, and ready to serve the interests and comfort of the patients. The people of to-day ought to be proud to belong to an age which had devised marvels for the relief of human suffering. In an age which had produced Simpson, Lister, and Pasteur the tide must indeed be at flood which might lead forward to further victories. Colonel W. M. Roocroft, C.M.G., honorary consulting surgeon to the Infirmary, said that he first joined the surgical staff of the Infirmary in May, 1883, and he served until he had to relinquish his duties, owing to the war, on August 4th, 1914. The hospital had doubled the number of beds, and the number of operations was multiplied ten times as compared with when he was first on the staff. Many constructional alterations had taken place in the operating theatre and the question of a new theatre had previously been brought forward from time to time, but was frustrated by lack of funds. The improved facilities now available for the carrying out of modern surgical technique would be for the benefit of the institution and the well-being of the patients.

## Scotland.

### THE GIBSON MEMORIAL LECTURE.

The George Alexander Gibson Memorial Lecture will be delivered before the Royal College of Physicians of Edinburgh by Dr. W. T. Ritchie on Wednesday and Thursday, June 27th and 28th, at 5 p.m. on each day. The subject of the lecture is the response of the heart in health and disease.

### PUERPERAL MORBIDITY AND MORTALITY.

The Scottish Board of Health has appointed a Departmental Committee to inquire into the incidence of puerperal morbidity and mortality, with special reference to the causes contributing thereto, and to suggest any remedial measures. The composition of the Committee is as follows: The Right Hon. Lord Salvesen (chairman); Mrs. Mary Barbour, a member of Glasgow Town Council; Dr. R. C. Buist, honorary secretary Dundee Branch of the British Medical Association; Miss M. E. Cairns, Glasgow, vice-president Scottish Midwives' Association; Dr. T. F. Dewar, C.B., Scottish Board of Health; Miss A. M. Fraser, Assistant Inspector of Midwives and Chief Health Visitor, Motherwell and Wishaw Burgh, and Superintendent of the District Nursing Association; Dr. Matthew Hay, Professor of Forensic Medicine, University of Aberdeen, late Medical Officer of Health of Aberdeen Burgh, a Director of Aberdeen Maternity Hospital; Dr. B. P. Watson, Professor of Midwifery and Gynaecology, University of Edinburgh; with Mr. C. L. Farmer, Scottish Board of Health, as Secretary.

### EDINBURGH SURGICAL APPLIANCE SOCIETY.

An important Edinburgh war medical charity held its final meeting last week when Sir Montagu Cotterill, C.M.G., F.R.C.S.E., presided over the last annual meeting of the Edinburgh Surgical Appliance Society. The honorary superintendent, Miss Malcolm, reported on the activity of the Society since its inception in 1917, by the Scottish Women's First Aid Corps, for the purpose of supplying splints, drop-foot boots, and similar requisites to wounded men. Altogether in the six years of its existence some two thousand orthopaedic appliances had been manufactured and sent out. During the war the staff numbered 70; the work had been entirely voluntary. The chairman expressed the regret which the Society felt that the work now had to cease, and said that the medical charities in Edinburgh were losing an important adjunct to their work, and ample testimony to its value had been forthcoming from those who had benefited by it. A vote of thanks to the honorary superintendent was adopted with cordial unanimity.

### CONFERENCE OF HEALTH VISITORS.

The fourth annual conference of the Scottish National Association of Health Visitors, Women Sanitary Inspectors, and School Nurses was held recently in the City Chambers,

<sup>1</sup> London: Printed and published by H.M. Stationery Office, or to be purchased through any bookseller, 1923. Price 5s. net.  
<sup>2</sup> British Medical Journal, February 17th, 1923, p. 299.



Glasgow, under the presidency of Lady Leslie Mackenzie, the president of the association. Dr. A. K. Chalmers, M.O.H. Glasgow, gave an address on the causes of the decrease in the infant mortality rate during the last twenty years. He said that at the beginning of the present century there were no maternity and child welfare schemes as at present known, little organized effort to control tuberculosis, and none at all to deal on a large scale with venereal disease in the expectant mother and her offspring. It was a curious and significant coincidence that the awakening and afterwards the extension of effort on behalf of infancy and childhood had both been very definitely related to periods of war. The co-ordination of effort for the reduction of infant mortality began after the revelations of physical inefficiency at the time of the South African war, and the inclusion of a much larger field of child welfare was the work of recent years. He thought that in the future of social reconstruction the welfare of the child would fill an important place.

Professor B. P. Watson, professor of midwifery, Edinburgh University, read a paper on the value of ante-natal work, in the course of which he said that no branch of medicine was so encumbered and hampered by superstitions born of ignorance as that which was concerned with the care of the expectant mother. The social worker possessing the requisite knowledge could do much to overcome the prejudice against modern means of prophylaxis and treatment. In no department was preventive medicine more important than in midwifery, for practically all the disasters which resulted in the disability or death of the pregnant or parturient woman could be anticipated and prevented. In England and Wales there was an average of 3,500 deaths each year from childbirth, and in Scotland between 600 and 700. Then there was an enormous wastage of life in miscarriages and the birth of stillborn children. On an average, one pregnancy in every eight terminated in abortion, and under modern conditions that proportion was constantly tending to become higher. Three children out of every hundred were stillborn, and a considerable number born alive were so feeble that a further 4.5 per cent. died within the first four weeks of life. It was therefore very important that the pregnant woman should seek medical advice early. In the well-to-do and working classes this supervision should be exercised by the family doctor or the obstetrician, and for the poorer classes maternity centres should be established in every city and every district. These centres, where possible, should be in direct contact with an obstetrical hospital and should be staffed by physicians and by nurses who would follow up the patients in their own homes.

## Ireland.

### ANNUAL MEETING OF THE IRISH MEDICAL ASSOCIATION.

The annual meeting of the Irish Medical Association was held on June 6th in the Royal College of Surgeons, Dublin, when Senator W. J. O'Sullivan, M.D., occupied the chair. A warm vote of thanks was passed to Dr. Edward Magennis, the outgoing president. The report stated that the council of the Association decided to invite the Irish Medical Committee, as constituted in July, 1913, to be attached to the Irish Medical Association as one of its standing committees. The adoption of the scheme would not in any way prejudice the question of amalgamation with the British Medical Association, nor would it alter the broad lines on which the Committee was formed. The matter will be brought before a delegates' meeting to be held at a future date. Owing to the unrest in the country the Association has been greatly hampered in its work. It is hoped, however, that the activities of the Association may be renewed. Efforts were made to have the motor tax on doctors' cars considerably reduced, and while some slight change has been made in the method of rating, yet it affords no material advantage.

In his presidential address Dr. O'Sullivan said that, short as was the time for which the Irish Government had existed, it had already given solid assurance of its will and ability to grapple with the several economic questions

affecting the Irish people. There was, however, to be noticed an almost total absence on the part of the Irish Government of any disposition to request, or accept when given, the advice of the Irish medical profession on purely medical affairs. In the Free State were commissions dealing with most questions of national importance, with the one notable exception, the health of the people. It was, of course, true that, under the new régime, far-reaching changes in the Poor Law administration had been seen, and many of the changes had a great deal to recommend them, but so far as they included the medical services they had been decidedly for the worse. At the time these changes were being first contemplated their more serious defects were pointed out on behalf of the profession, but the warnings were unheeded, with the result that at the moment the efficiency of the medical services which were considered to meet the requirements of the less well-to-do classes were at a lower standard than they had been for the past twenty-five years. It could not be said that there was in the modern sense any live public health service. The prevention of the spread of infectious disease was altogether dependent on the medical attendant, who, in a large percentage of cases, might be the dispensary doctor, and who also was medical officer of health for his district. For the latter office he received generally about £20 a year, which seemed to suggest that he was not expected to knock up a very great row about public health. It must be admitted, Dr. O'Sullivan said, that the reputation of Irish sanitation was very bad; that, from the commercial point of view for a food-exporting country, was not reassuring.

### GRADUATES OF DUBLIN UNIVERSITY.

We have received the following letter, which is of interest to graduates of the University of Dublin. It points out that though resident elsewhere they retain their right to vote for representatives of the University of Dail Eireann.

Trinity College, Dublin,  
June 7th, 1923.

SIR,—All scholars, ex-scholars and graduates of Dublin University, whether resident in the Irish Free State or not, who desire to retain their Irish citizenship and their privilege of voting for representatives of their University in Dail Eireann, are earnestly requested to fill up and return to the Registrar of University Electors the forms of claim to vote which were recently sent out.

It is not the case that residence in the Free State is essential to entitle an elector to be placed upon the Register of University Electors, nor is an elector who happens to have a vote in a constituency in Great Britain or in Northern Ireland prohibited from retaining it. No University elector may be upon the register of any other constituency in the Saorstát, but an elector in Great Britain or Northern Ireland may also be upon the university register, provided he claims the rights of citizenship, of which one is the right to vote for the representatives of his university in the Saorstát and has the qualifications prescribed by the constitution.

It must be remembered that domicile is not tantamount to residence, as some persons appear to suppose.—We are, etc.,

E. H. ALTON,  
JAMES CRAIG,  
GERALD FITZGIBBON,  
WM. E. THRIFT.

The position with regard to the National University is the same. Graduates who have not yet received forms, or mislaid those sent them, should apply at once to the Registration Officer, Trinity College, Dublin, or to the Registration Officer, National University of Ireland, 49, Merrion Square, Dublin.

### NEW CANCER HOSPITAL, BELFAST.

The foundation stone of the new Cancer Hospital, Belfast, to be erected by the Belfast Board of Guardians, was laid by the Duchess of Abercorn on May 24th. Numerous speeches were delivered congratulating the board on its forward policy and its determination to do the best for those under its charge. The building will be of great help to the staff in their work, and will carry out the principle of the board as previously shown in the Consumptive Sanatorium at Whiteabbey, in the recently erected Children's Block, and in other improvements. The wards will face south, and there will be a flat garden roof.

AN examination of 445,000 school children in St. Gallen, Switzerland, for goitre showed that the thyroid was not palpable in 6.4 per cent., 31.7 per cent. had a palpable thyroid but no goitre, while 39.8 per cent. had a soft goitre and 22.1 per cent. a nodular goitre.



## Correspondence.

### PREVENTION OF HEART DISEASE.

SIR,—“The ravages of rheumatic heart disease deserve our close attention in London, and wherever there seems to be any ray of light that direction is worth exploring.” This sentence from the concluding paragraph of Dr. Poynton's admirable lecture on the prevention of heart disease (June 2nd, p. 919) encourages me to remark that light may, perhaps, be found in the unpromising atmosphere of this rather grimy city, for it is now nearly two years since the Birmingham Education Committee, on my advice, began an experiment to this end which has proved, I think, successful.

As Dr. Poynton points out, no physician can avoid noticing the frequent incidence of serious sequelae of rheumatism in children of the hospital class, and their comparative rarity in the children of the well-to-do. It seemed clear to me that this difference resulted almost entirely from the lack of adequate provision for the convalescence of the poorer child. Here in Birmingham we suffer in the same way as Dr. Poynton suffers at Great Ormond Street—we are torn between the desire to keep our rheumatic children in hospital and the constant urgent necessity for the admission of acute cases.

The experiment to which I refer began shortly after the opening of the Baskerville Residential School for Cripples at Harborne, within a few miles of the centre of the city. At that time I certified a few rheumatic children among my out-patients at the General and Children's Hospitals as “physically defective within the meaning of the Act,” and took them into Baskerville for periods of six or twelve months.

The considerations which induced me to choose a residential cripple school for the purpose were the following:

(1) Life in a cripple school is lived at a slow pace, which seemed peculiarly suitable for rheumatic children.

(2) One of the difficulties in an ordinary convalescent home is to ensure rest for the nervy rheumatic child. Example outweighs precept in the treatment of children, and I hoped that the unruly rheumatic girl might be induced to rest more willingly if next to her were placed a child totally immobilized for months in a plaster case or box-splint. This, indeed, proved to be the case.

(3) I was satisfied that rheumatic children do not do well while living a vegetable life—“of blind unreasoning rest,” as Dr. Poynton puts it. They are frequently unusually intelligent and tend to become neurotic if left without mental occupation. For this reason a school is preferable to a hospital. In passing, I may say that Miss Smith, the head mistress, to whom so much of the success of the school is due, has been engaged for some time on an inquiry to determine the best methods of education—very much in the way suggested by Dr. Poynton. At some future date, indeed, in collaboration with Miss Bridie, we hope to publish a report on the investigation of the changes of mentality in children resulting from various diseases.

(4) For obvious administrative reasons it is a great advantage to dilute the population of a cripple school with a number of children who can to a certain extent look after themselves.

So remarkable was the improvement of these rheumatic children at Baskerville (even of those who had shown none after long periods of treatment in hospitals and convalescent homes) that we have now decided to allot half the available beds to them. In all probability we shall have fifty places for them before long. We shall most certainly need more. I cannot discuss all the points raised by Dr. Poynton. We have not found elaborate control of exercise by graded walks and slopes necessary: simple dancing is very valuable.

It would ill become me to discuss imperfections of medical education, but I cannot forbear remarking that a curiously large number of rheumatic children have passed some time in sanatoriums and other places for the tuberculous, and that about 15 per cent. of the children sent to me for admission to the open-air schools are rheumatic.

My letter is already too long; my aim in writing it is

to indicate what can be done by a local education authority of courage and vision. It would be ungrateful of me not to acknowledge the support of Councillor Miss Martineau in this undertaking; only those who know what is involved in the defence of estimates at council meetings in hard times can appreciate how much of the realization of Baskerville is due to her.—I am, etc.,

Birmingham, June 8th.

A. P. THOMSON.

### DISEASED TONSILS AND HEART DISEASE.

SIR,—In your issue of June 9th (p. 995) Mr. Carruthers asks, “What is a ‘diseased’ tonsil?” It is a question which many of us must often have asked ourselves, but without arriving at a more satisfactory answer than if we had faced the old queries “What is truth?” or “What is fame?” Whatever replies we make must be influenced by “relativities.” In any discussion on disease of the tonsils few will dissent from the following statements:

1. It is impossible by mere inspection to say whether a tonsil is healthy or diseased.

2. A large tonsil may produce no other effects than those brought about by mechanical obstruction of the upper air passages, the middle-ear clefts, etc.

3. A small but buried and septic tonsil may be the cause of a number of local and constitutional symptoms, which vary in their situation as well as in their gravity.

In his second paragraph Mr. Carruthers says, with reference to the definition of an “unhealthy” or “diseased” tonsil, “that this is a question of real practical value which has never been satisfactorily answered.” I would venture to say that a practical solution is more easily given than any verbal definition which would include all the points at issue.

When a tonsil is “unhealthy” or “diseased” it will nearly always produce, sooner or later and in greater or less degree, local or constitutional symptoms.

In a child two of the common symptoms are enlarged glands behind the angle of the jaw—an evidence of infection from the tonsils—and mild bouts of pyrexia for which there may be no apparent cause—that is, the patient's general health is fairly good, and the fever lasts for only one, two, or three days.

In adults “diseased” tonsils are often small and buried between the faucial pillars, so that they do not arouse suspicion, but if the outer area of the tonsil be pressed upon foul-smelling purulent debris can often be expressed from the crypts. As a general rule adults are more liable than children to suffer from the more chronic constitutional symptoms of septic absorption, such as “muscular rheumatism,” “rheumatoid arthritis,” neuritis, various skin eruptions, and such diseases of the eye as keratitis punctata, irido-cyclitis, etc.

Such facts must be common knowledge to those who have given much attention to diseases of the throat, and I venture to state them because the practical answer to Mr. Carruthers's question is “the only thing that matters.”—

I am, etc.,

London, W., June 9th.

HERBERT TILLEY.

SIR,—In his very interesting lecture on this subject published in your issue of June 2nd, Dr. Poynton says, “It would be in my opinion a mistake to suggest the wholesale removal of tonsils in rheumatic children and those suspected of rheumatism, when there is no evidence that they are diseased.”

We have recently analysed the subsequent history of 144 patients admitted to Guy's Hospital for acute rheumatism; some of them had their tonsils removed, the others had no operation. Rheumatic infection recurred quite as frequently among the former as among the latter. The exact figures will be published in the next issue of the *Guy's Hospital Reports*, and they certainly do not support the belief that tonsillectomy is likely to prevent the recurrence of acute rheumatism. While we think that tonsils which are definitely septic ought generally to be removed, we entirely agree with Dr. Poynton that there is no justification whatever for the enucleation of tonsils as a routine measure in every rheumatic child.—We are, etc.,

G. H. HUNT,  
A. A. OSMAN.

London, W., June 8th.



## THE COMMITTEE ON VENEREAL DISEASE.

SIR,—In the Report of the Trevethin Committee, paragraph 25 (referred to on page 978 of your issue of June 9th), a recommendation is made that

"Increased facilities for medical supervision of women during pregnancy is desirable, and may in part be obtained by an extension of the system of ante-natal clinics, and by the instruction of midwives, who would refer suspicious cases to a doctor. In this connexion we would also call attention to the importance of including instruction on venereal diseases in the general training of midwives and nurses." (The italics are mine.)

I would point out that the Rules of the Central Midwives Board provide for both these desiderata. All pupil midwives are bound to receive instruction in venereal diseases, as Rule C, which prescribes the subjects of examination, includes amongst such subjects, the venereal diseases (syphilis and gonorrhoea) in relation to their signs, symptoms, and dangers in women and children and to the risks of contagion to others.

As to referring suspicious cases to a doctor, Rule E 20 requires a midwife in all cases of illness of the patient or child, or of any abnormality occurring during pregnancy, labour, or lying-in, as soon as she becomes aware thereof, to call in to her assistance a registered medical practitioner. Rule E 21 (2) (3) makes Rule E 20 particularly applicable in the case of a patient suffering from a purulent discharge or sores of the genitals. In fact, no midwife can fail to call in medical help and to notify to the Local Supervising Authority without rendering herself liable to have her name removed from the roll.

In addition, I would point out that all midwives on their enrolment receive, together with the Rules which regulate their practice, a copy of two leaflets drawn up at the request of the Board by the Chairman, Sir Francis Champneys, in 1916, setting forth in detail the signs and symptoms of these diseases, their dangers both to mother and child, and the necessity for prompt medical help. Copies of these leaflets I enclose.

The Board's Rules do not seem to be known to some of those who deal with matters of public health. It might be well, before making recommendations for the improvement of the training and practice of midwives, to ascertain what such training and practice include as a matter of fact. A few weeks ago I had to draw attention to advice of a similar nature given at a meeting of the Royal Society of Medicine with regard to cancer.—I am, etc.,

London, S.W., June 11th.

H. G. WESTLEY.

## DIPHTHERIA ANTITOXIN ON SUSPICION.

SIR,—I have read Dr. F. Foord Caiger's letter in your columns (June 9th, p. 996) with interest, more particularly as I have recently been dealing with a case, in which it was desired that all contacts should receive a prophylactic dose of antidiphtherial serum.

These I administered to seven persons; but I should like to know what the chances of anaphylaxis are, should any of these patients develop diphtheria, say, in two or three weeks, or later, and require a further dosage.

I am in the same quandary when I have to deal with a motor or other accident, complicated with much road dirt, in an ex-soldier who, wounded during the war, received the usual antitetanic injections. Up to a limit of eight days, I take it, there is very little fear of anaphylaxis with a succeeding injection of serum. After that there is, of course, a danger—but for how long does this danger persist? Exceptionally a case of anaphylactic reaction occurs with even a first administration of serum.—I am, etc.,

Sevensoaks, June 11th.

GERALD SICHEL.

## THE NATURE OF BLOOD SUGAR.

SIR,—We have read Dr. Hewitt's letter in the BRITISH MEDICAL JOURNAL, June 9th (p. 994), and find that there are two points which require explanation.

In our article of May 26th we wrote "figures 1 and 2." It should have been "figures 2 and 3." We tender our apologies for this and hope that he will now be quite clear as to our meaning with regard to his experiments.

The laevo-rotation referred to by us was obtained since our original paper was published.—We are, etc.,

W. SMITH

Cambridge, June 9th.

L. B. WINTER.

## PERNICIOUS ANAEMIA.

SIR,—In reply to Dr. Gordon Ward's questions:

1. The reason why the erythrogenic marrow increases in area and activity surely denotes an attempt on the part of the host to manufacture new red cells to replace those haemolysed in the circulation.

2. In pernicious anaemia the spleen is only rarely enlarged, and there is no evidence that in this disease haemolysis takes place mainly in the spleen. The statistics of splenectomy show that no patient has ever been cured and only a degree of improvement occasionally results.

3. Inasmuch as the patient is not dead, how do we know that the marrow can return to normal?

4. The histological structure of the bone marrow is entirely different from that of the spinal cord and alimentary canal, and one would hardly expect fibrosis, for instance, to occur.

I repeat that I deprecate the opposition between the clinician and the pathologist. My point was that clinical signs of this lethal change in the bone marrow are indefinite, and that the characteristic changes in the blood, to which I have referred, usually establish the diagnosis. I am not surprised that even Dr. Gordon Ward admits that this view is widely held. I find that in 26 cases of my own where these changes were found, and in which pathological opinion was sought because the clinical signs were at the time indefinite, 21 ultimately died directly of the disease, and in the remainder it was not possible to obtain a reply from the clinician. In none, incidentally, was combined degeneration of the cord, which Dr. Gordon Ward apparently regards as an important part of the syndrome, present.—I am, etc.,

A. KNYVETT GORDON, M.B., B.C.,

London, W.C., June 1st.

B.A. Cantab.

\*\* We cannot continue this correspondence.

## POLYTHELIA.

SIR,—Either supernumerary nipples (without a supernumerary mamma) are less rare than Dr. Douglas Howat's memorandum in the BRITISH MEDICAL JOURNAL of June 2nd (p. 928) would indicate, or I have been fortunate. I happen to have seen three cases at least in my practice, and all had the following characters:

1. Position: on the left side, below the normal mamma, the accessory nipple being internal to the normal one.

2. Size: small, much less than the normal nipple. In no case did the patient recognize the nature of the "birth mark," which caused no symptoms.

3. Sex incidence: all the cases were males.

These little appendages are not, of course, "rudimentary," as is too often stated; many writers fail to comprehend the difference between a rudiment and a vestige, though the former is a dawning structure, the latter a disappearing one. The accessory nipple is hardly even a vestige, but rather an atavism, throwing back to the multiple nipples of mammalian ancestors.—I am, etc.,

Sale, Manchester, June 9th.

GRAHAM RENSHAW.

## THE ENDOWMENT OF GENERAL PRACTICE.

SIR,—Medical practice, especially general practice, is the subject of a good deal of discussion at the present time, much of it prejudiced and ill informed, but all of it, well informed or ill informed, demanding careful consideration by the medical profession, if it desires to control its own development instead of having this arranged for it by politicians and other more or less well meaning people. Two questions are now in the forefront of all these discussions: the Hospital Saving Association's scheme, and the panel system of National Health Insurance.

The latter question—that is, its retention, with or without modification, or its abolition—is of the two certainly the more widely and hotly discussed by the public. The panel doctor is being held up to much, I believe undeserved, opprobrium, not altogether regretted by the non-panel practitioner, who assumes that he would do better for the other man's patients. The other question is receiving attention from a number of general practitioners, who consider that it will lead to the hospitals encroaching still further on



the field of the family's doctor work, an encroachment which they consider will not be to the advantage of doctor, patient, or the community.

If the family doctor could employ for all his patients the methods of diagnosis, and, above all, the methods of treatment, which are employed in a hospital, his contention that any encroachment of the hospital on his present sphere of work would be bad for the patient and the community would hardly need arguing; even under present conditions there is much to be said for the contention that the good family doctor, the member of that largest section of the profession on which devolves the main work of maintaining the health of the community, is the one from whom in the majority of cases the patient will obtain the greatest benefit. But if the general practitioner with his more intimate knowledge of the life and surroundings of his patients possesses in this respect a great advantage over the hospital doctor, yet in the matters of diagnosis and treatment he is placed at a great disadvantage. It is, no doubt, in great measure because he recognizes these hospital advantages that the patient seeks hospital treatment and not only because by resorting to a hospital he will save his pocket. Again, it is because he lacks these advantages and not from laxity in his work that the panel doctor is unable to deal with the ailments of many of his patients satisfactorily, and the non-panel doctor is in no better position.

I have been saying and writing this for the past three years, but now I learn that Mr. Waring, vice-chancellor of London University, has been saying much the same thing, only his cure for this state of affairs—namely, extension of hospital accommodation—differs fundamentally from mine. I would suggest the development of centres on the lines of the primary centres of Lord Dawson's much discussed scheme. The Kensington (B.R.C.S.) centre for physical treatment demonstrates the lines on which such institutions might be run without interfering with general practice, but modifications associating the general practitioner more closely with the work are required. To a great extent these centres would ultimately be self-supporting, but, if not, is it not foolish not to endow the work of the general practitioner in the same way as is the work of the hospital physician or surgeon?

Sir Thomas Horder, demonstrating the work of one of the new consultants' clinics, expressed his belief in "the urgent desirability of great and even drastic changes in medical practice." Again, I agree, but here also my remedy is different. The future of medicine, as experienced by the general public, must lie in the work of the general practitioners. Are they never going to take their proper place in the direction of medical progress? Are they always going to content themselves with destructive criticism of schemes developed by other sections of the profession? Let them but develop the spirit of co-operation and all other things shall be added unto them.—I am, etc.,

Kensington, June 10th.

HAROLD H. SANGUINETTI.

## Obituary.

### J. DELPRATT HARRIS, M.D.,

Consulting Surgeon, Royal Devon and Exeter Hospital.

MR. DELPRATT HARRIS of Exeter died on May 30th, aged 73. He belonged to an Exeter family which had long been associated with the Royal Devon and Exeter Hospital, his grandfather, Mr. John Harris, F.R.C.S., having been appointed surgeon to the institution in 1815.

John Delpratt Harris received his medical education at St. Bartholomew's Hospital; he took the diplomas of L.S.A. in 1871, and M.R.C.S.Eng. in 1872, and graduated M.D.Durh. in 1903. On the death of Mr. C. H. Roper in 1881 he became surgeon to the Royal Devon and Exeter Hospital, and in 1904 was appointed to organize and take charge of the new electrical department installed through the munificence of Mrs. Sanders of Stoke Hill. On retiring under the age limit in 1915 he was appointed consulting surgeon. In 1889 he presented the hospital with a portrait in oils of his grandfather, which now hangs in the board room. He also presented the institution with £100 for

investment in order to provide a sum to assist the orthopaedic department to supply appliances to patients on their discharge. The gift was a thank-offering for thirty-four years' health and strenuous work, and in memory of his family's long connexion with the hospital, but more especially as a memorial to his son, who, after having passed all his medical examinations, died in 1915 from meningitis whilst holding an appointment at a hospital in London; his death was a very heavy blow both to Mr. and Mrs. Harris. Mr. Harris enjoyed a large private practice, and during the war provided electrical treatment for wounded soldiers at his residence in Southernhay.

After his retirement from the active work of the Royal Devon and Exeter Hospital, Mr. Delpratt Harris wrote a comprehensive history of the institution; this was reviewed in our issue of May 27th, 1922 (p. 841). He was president of the South-Western Branch of the British Medical Association in 1903, and subsequently became a vice-president. He was also president of the Section of Electro-therapeutics of the Annual Meeting of the Association held at Exeter in 1907. Mr. Harris took great interest in local affairs, and was appointed a sheriff in 1897; for many years he was a justice of the peace. A man of much culture, he was an interesting companion, being well informed on many subjects. He was interested in astronomy, having inherited from his father a well equipped observatory; he also took great interest in music, and was a talented amateur violinist.

### GEORGE FREDERICK MURRELL, M.B.LOND.,

Physician, Royal Berkshire Hospital, Reading.

THE death of Dr. G. F. Murrell, at the age of 55, after a brief illness has cast a gloom over the whole of Reading. A few weeks ago he suffered from a carbuncle under the arm, from which he apparently recovered, and after a short change in the country resumed his work. It was obvious, however, that he was not well, and no doubt his resisting power had been severely diminished. At the end of May he developed cellulitis of the scalp, which proved to be of streptococcal nature, and spread rapidly, the end coming on June 5th with virulent bronchopneumonia and thrombosis of the cavernous sinus.

He was born at Ealing, and received his early education at University College School; afterwards he entered as a medical student at St. Bartholomew's Hospital. He took the diplomas of M.R.C.S., L.R.C.P., in 1890, and graduated M.B. of London in 1893. He subsequently held the posts of house-surgeon at St. Bartholomew's Hospital and house-surgeon and house-physician at the West London Hospital. After serving as ship's surgeon on two occasions, he settled in Reading in private practice in 1896. From the commencement of his career it was obvious that Dr. Murrell was imbued with the highest ideals of the profession, and it is not surprising that he not only made his practice a success, but also gained the respect of his colleagues, and the confidence and affection of his many patients.

In February, 1913, he was elected assistant physician to the Royal Berkshire Hospital, and had been physician since 1919. During the war, as captain in the R.A.M.C.T., he served first in Oxford, and afterwards as officer in charge of a large Section Hospital in Reading. He was a member of the Reading Division of the British Medical Association.

Outside his profession Dr. Murrell interested himself in many social activities, was Warden of his Church, a Past Master of his Masonic Lodge, and as a keen Conservative assisted in numerous elections that took place in the borough.

The news of his death came as a great shock to his numerous patients and friends, to whom he had endeared himself by the charm and beauty of his character, his intense sympathy with those in sorrow or in pain, and by those sterling qualities which are well described as typical of the "Beloved Physician."

A memorial service was attended by very many of his medical colleagues and a vast number of his patients and fellow citizens on June 8th; he was laid to rest at Chideock with every manifestation of sorrow on June 9th. He leaves a widow, two daughters, and a son to mourn their loss.



## Universities and Colleges.

### UNIVERSITY OF OXFORD.

THE following candidates have been approved at the examinations indicated:

D.P.H.—Part I: W. H. Butcher, W. Champneys, M. J. Saldanha.  
Part II: W. Champneys, Mary P. Wilson.

### UNIVERSITY OF CAMBRIDGE.

At the special congregation held on June 12th Dr. William Henry Welch, Director of the School of Hygiene and Public Health of Johns Hopkins University, and President of the Board of Scientific Directors of the Rockefeller Institute for Medical Research, received the degree of LL.D., *honoris causa*. In his Latin speech of presentation Dr. T. R. Glover, the Public Orator, described Dr. Welch as having dedicated the whole of his life to medicine, working to search out the secrets of Nature and to combat disease before it made its appearance; he was the high priest in the temple dedicated by Rockefeller to the goddess Hygieia Propugnatrix.

At a congregation held on June 8th the following medical degrees were conferred:

M.D.—S. L. Bhatia.  
M.B., B.Ch.—G. Haggood.

### ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

THE following have, after examination, been admitted as Fellows of the Faculty: Robert Alexander Anderson, George Dalziel, M.C., Leander Iowrie Fife, George William Hill, James Hogg Martin, and Sundar Das Soudhi.

### ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

THE following, having passed the necessary examination, have been duly admitted Members of the College: Jamna Vinayak Dhuraudhar and Francis Joseph O'Donneil.

## The Services.

### ROYAL COMMISSION ON INDIAN SERVICES.

THE promised Royal Commission on the Superior Civil Services in India has been appointed, with Viscount Lee of Fareham as chairman. The other members are Sir R. H. Craddock, late Lieutenant Governor of Burma; Sir Cyril Jackson; Sir Chimanlal Harilal Setalvad, barrister, vice-chancellor of Bombay University; Sir Muhammad Habibullah, a member of the council of the Governor of Madras, who has in various ways shown his interest in Mohammedan educational movements; Pandit Hari Kishan Kaul, commissioner of the Jullundur Division, Punjab; Mr. David Petrie, Indian Imperial Police Service; Mr. Bhupendra Nath Basu, vice-chancellor of the Calcutta University and a member of the Council of the Secretary of State for India; and Mr. Reginald Comland, Beit professor of colonial history, Oxford. The reference to the Commission is as follows:

1. The organization and general conditions of service, financial and otherwise, of the Superior Civil Services in India.

2. The possibility of transferring immediately or gradually any of their present duties and functions to services constituted on a provincial basis.

3. The recruitment of Europeans and Indians respectively for which provision should be made under the constitution established by the said Act and the best methods of ensuring and maintaining such recruitment, and to make recommendations.

Communications should be addressed to the Secretary to the Royal Commission, India Office.

## Medical News.

THE annual general meeting of the Research Defence Society will be held at the house of the Medical Society of London, 11, Chandos Street, Cavendish Square, on Wednesday next, June 20th, at 3.30 p.m. The chair will be taken by Lord Lamington, and Dr. C. W. Saleeby will give an address on sunlight and disease. The annual report draws attention to the efforts, dating from 1909, of the opponents of scientific medicine to prejudice the minds of members of the Labour party by spreading falsehoods and fostering distrust of the medical profession. The society is prepared to assist in meeting such allegations on the spot and has a considerable collection of lantern slides suitable for illustrating lectures.

The Prince of Wales will visit the country branch of the Royal National Orthopaedic Hospital, Brockley Hill, Stanmore, Middlesex, on the afternoon of Saturday, June 23rd, when he will lay the foundation stone of the nurses' home and formally open the new hut.

SIR ROBERT PHILIP, Professor of Tuberculosis in the University of Edinburgh, will be the speaker at the annual meeting of the Paddington Tuberculosis Dispensary at 8.30 p.m. on Monday, June 25th.

By the death of Princess Christian, aunt of the King, the hospitals and the nursing profession have lost a good friend. It is said that as a girl Princess Christian was anxious to take a full course of training at a London hospital, and she always showed a great interest in nursing and in public health activities. She was long president of the Royal British Nurses Association; she was one of the founders of the training college for children's nurses at Manchester, which bears her name; she took up and helped forward schemes for improving workhouse infirmaries and for providing nurses for the sick poor; and at the time of her death she was president of the National Health Society, in the work of which she was deeply interested.

THE annual dinner of the Indian Medical Service will be held at the Trocadero on Wednesday, June 20th. Tickets and all particulars may be obtained from the joint honorary secretary, Colonel J. J. Pratt, I.M.S.(ret.), 63, Addison Road, Kensington, W.14.

OWING to the necessity of carrying out extensive repairs and alterations, Westminster Hospital will be closed for in-patients from July 2nd next for about six months. Out-patients will be treated at Westminster Hospital Medical School, 12, Caxton Street, but no casualty cases will be dealt with. There is no record of the doors of this historic institution having been shut in the whole period of over 200 years since it was founded. Substantial improvements will be made in the wards and in the out-patient department, an additional operating theatre will be built; the x-ray, massage, and other departments will be brought up to date, and better accommodation for the nurses will be provided in a home outside the hospital. The cost will be about £45,000, for which a special appeal will shortly be made.

RECENTLY conferences of the Presidents of the various Sections of the Royal Society of Medicine have been held to consider whether the Sections might work together without interfering with their entire freedom of action, and as the first result of these conferences it has been decided during next session (1923-24) that the following discussions should be arranged upon dates to be settled later and announced on the diary cards: By the whole society—(1) the possible substitutes for cocaine, (2) the grading of the population from the point of view of bodily fitness, (3) chronic abdominal pain in nervous women. By the sections concerned—(1) the treatment of severe gastric and duodenal haemorrhage, (2) birth injuries, (3) the uses and limits of vaccine therapy, (4) vertigo, (5) the surgical treatment of pulmonary tuberculosis, (6) post-operative and puerperal mental disorders.

At the meeting of the board of management of the King Edward VII Hospital, Cardiff, on June 7th, it was announced that Royal assent had been given to change the name of the institution, which will in future be known as the Cardiff Royal Infirmary.

DR. T. H. C. STEVENSON, C.B.E., of the General Register Office, will read a paper on the social distribution of causes of death in England and Wales, at a meeting of the Society of Biometricians and Mathematical Statisticians to be held in the theatre of the Galton Laboratory, University College, Gower Street, on June 25th, at 8 p.m. Visitors will be welcomed.

DR. F. M. ROWLAND, C.B.E., of Lichfield, vice-chairman of the Walsall and Lichfield Division of the British Medical Association, has been made a justice of the peace for the city of Lichfield.

THE Glasgow Post-Graduate Medical Association has arranged post-graduate courses in the various hospitals of Glasgow during the summer months. Full particulars can be obtained on application to the Secretary, Post-Graduate Medical Association, the University, Glasgow.

THE annual general meeting of the Medico-Legal Society will be held at 11, Chandos Street, W.1, on Tuesday, June 19th, at 8.30 p.m., and will be followed by an ordinary meeting, when Dr. A. S. Woodward will read a paper on some attempts to defraud life assurance companies.

THE Mayor and Corporation of Harrogate will, on Saturday, June 30th, entertain a party of guests who will have travelled to Harrogate by the new pullman car train which the London and North-Eastern Railway Company and the Pullman Car Company have arranged to run in future between London and Leeds and Harrogate.

AT the annual meeting of the Nottingham Children's Hospital on June 6th Mr. J. D. Player announced that plans had been prepared, according to the suggestions made by Dr. Mackintosh, for the erection of an entirely new wing which would when completed afford accommodation for 68 beds, or double the number at present available. He also stated that he and his wife had handed to the trustee a sum which it was thought would be sufficient to cover the cost of building and equipping the new wing.



At the last meeting of the Oldham Board of Guardians the resignation was accepted, with regret, of Dr. Frank Radcliffe, visiting surgeon to the Boundary Park Hospital. Dr. Radcliffe, who is a member of the Council of the British Medical Association and a member of the Insurance Acts Committee, has held the post of visiting surgeon for over eleven years. The Chairman said that by Dr. Radcliffe's retirement the board and the patients in the hospital were losing the services of one who had served the public well and faithfully. It was resolved that a record of the board's appreciation should be made in the minutes.

A SERIES of free lectures to nurses on venereal diseases, by Mr. Leonard Myer, honorary surgeon to out-patients at St. Paul's Hospital for Skin and Genito-Urinary (Including Venereal) Diseases, were commenced at the hospital, Endell Street, Holborn, W.C.2, on June 8th, and will be continued on Fridays, June 15th, 22nd, and 29th, at 5 p.m.

The following promotions in the Order of the Hospital of St. John of Jerusalem in England have been announced:—As Knights of Grace: Major Arthur H. Johnston, O.B.E. (from Esquire), Dr. George H. R. Holden (from honorary Associate), Dr. Harry George Waters (from honorary Associate); as Esquires: Captain James Anderson, M.D. (from honorary Associate), Major Cecil Henry Elmes, C.B.E., V.D., M.B. (from honorary Associate).

DR. WILLIAM MACKIE, medical officer of health for Elgin, was entertained at dinner on June 1st to signalize the honorary degree of LL.D. recently conferred upon him by the University of Aberdeen in recognition of his eminent work. During the proceedings Dr. Mackie was presented with a silver salver of Chippendale pattern and Mrs. Mackie received a diamond ring.

THE annual general meeting of the Lebanon Mental Hospital, Asfuriyeh, near Beyrout, Syria, will be held at 11, Chandos Street, W.1, on Tuesday, June 19th. The chair will be taken by Dr. E. W. G. Masterman at 3.30 p.m. The director of the hospital, Dr. H. Watson-Smith, O.B.E., will be present to give information and Bishop Bury has promised to speak.

THE Medico-Legal Institute, which was inaugurated in the Place Mazas, Paris, on May 24th by M. Strauss, the Minister of Hygiene, combines in the same building the Morgue, the laboratory of legal medicine of the Faculty, and the laboratory of toxicology of the Prefecture of Police. The old Morgue behind Notre-Dame has now ceased to exist.

## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westminster, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westminster, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediscera, Westminster, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

### QUERIES AND ANSWERS.

#### INCOME.

"A. B. UGANDA" inquires as to the liability of a British subject residing abroad in respect of (a) interest on French Government stock, and (b) dividends on British railways.

\*. (a) He is not liable to tax in respect of this (non-British) income, and can claim repayment of any tax that may have been deducted. (b) He is entitled to claim in respect of the usual allowances, but only on a proportional basis; for example, suppose he has £750 from Uganda, £250 from France, and £250 from this country, then he is entitled to claim repayment in

respect of 250/1250 of the usual allowances. The income tax statutes do not now allow the British income in such a case as this to be treated as if it were the sole income of the claimant.

### LETTERS, NOTES, ETC.

#### AUTOGENOUS VACCINE IN PUERPERAL FEVER.

DR. JOHN VEITCH (Cowdenbeath) writes: In a note on the curative use of autogenous vaccines in puerperal fever (October 7th, 1922, p. 644) I remarked on the futility of stock serums and stock vaccines. Recently I encountered another case of puerperal fever, and I ordered an autogenous vaccine to be prepared. Unfortunately the patient died before the vaccine was ready, so I laid it aside. Some time later I encountered two cases of puerperal fever. I examined the discharge in both and found streptococci. Further, from the cachectic appearance of both patients I concluded that haemolytic streptococci were causing grave damage. I immediately made use of the vaccine I had in hand, which contained a great number of streptococci. The results were excellent in both cases. This indicates the possibility of almost instantaneous specialized treatment in puerperal cases. I took the precaution of having an autogenous vaccine made from one of the cases to be in readiness for future use.

#### CARDIAC DILATATION AND HYPERTROPHY.

DR. ERNEST KINGSOTE (London, W.) writes: I was very much interested in Dr. Claude Wilson's able article entitled "Limitation of effort in heart disease" in your issue of June 9th, p. 962, and was glad to see that he emphasized enlargement as a definite sign of heart trouble. Two points, however, strike one: (1) Where he states "It is often impossible to distinguish between dilatation and hypertrophy," and (2) "all the means at our disposal for estimating the size of the heart are open to fallacy. Percussion is perhaps the least reliable." To these I would briefly reply: (1) The dilated heart can be reduced in size, then and there, by a few resisted movements, whereas, of course, the hypertrophic heart cannot be so reduced; and (2) my pleximeter, described in *The Lancet*, 1896, claims to be an instrument of precision, wherewith a deep-seated organ, even when overlaid by an air-containing viscus, may be percussed out to the fraction of an inch. The pleximeter may be obtained from Messrs. Down Bros., surgical instrument makers, Thomas Street, Borough.

#### CHRONIC TRAUMATISM OF SOFT TISSUES.

DR. CHARLES J. HILL AITKEN (Kilnhurst, near Rotherham) writes: A year ago a middle-aged man showed me an ulcer on the outside of the terminal phalanx of his right ring finger. He had noticed it for some weeks and he was worried as a near relative had died of cancer. Under a simple dressing, kept on continuously, the ulcer healed in a few days. A month later the ulcer reappeared. I was puzzled until I noticed his fingers were peculiar in that they were short and curved inwards, the right little finger especially, so that when his fingers were in apposition the nail of this finger touched the outer side of the ring finger exactly where the ulcer was. With a simple dressing and attention to keeping the nail cut the ulcer vanished and has not recurred.

A man complained of redness and scurfiness on the upper edge of his ears. This had worried him for a month or two. A friend of his had developed cancer of the ear. I thought of trauma but did not discover what it was till the patient put on his spectacles, remarking, "I find them a nuisance as I am always taking them on and off." (He was presbyopic.) The legs were of steel, rather hard, slightly rusted, and the curl ends were a tight fit. I recommended a pair of rolled-gold spectacles and of a larger size. Very soon the redness and scurfiness passed away and have not returned. The ointment I gave him was never used—"Too messy and I always forgot."

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 29, 30, 31, 34, 35, and 36 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 32 and 33.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 267.

### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, W.C.2, not later than the first post on Tuesday morning, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restants* letters addressed either in initials or numbers.



# A British Medical Association Lecture ON THE CAUSE AND TREATMENT OF DYSPNOEA IN CARDIO-VASCULAR DISEASE.\*

(Abridged.)

BY

JONATHAN MEAKINS, M.D., F.R.C.P.E.,  
CHRISTISON PROFESSOR OF THERAPEUTICS, UNIVERSITY OF EDINBURGH;  
PHYSICIAN, ROYAL INFIRMARY, EDINBURGH.

DYSPNOEA is an extremely common symptom in cardio-vascular disease; it is, in fact, so common that it is almost held to be pathognomonic of some cardiac disturbance.

## NATURE AND CAUSES OF DYSPNOEA.

What is dyspnoea? The following short definition may be given: Dyspnoea is the consciousness of the necessity for increased respiratory effort.

How is dyspnoea produced? If we confine this question to the diseases under consideration we may say that it is usually produced by two causes: (1) want of oxygen; (2) carbon dioxide retention, relative or absolute. Either of these or both must occur in the cells, which represent the functioning units of the body. The types of dyspnoea produced by these two factors are somewhat different, and in order to explain the differences it is best to take them up separately. If either condition be produced suddenly the symptoms will be much more violent than if the process were an insidious one.

In oxygen want there is always the question of the quantity or partial pressure of carbon dioxide present in the blood and also in the cells. If the oxygen want is acute, there remains a certain amount of carbon dioxide which has to be got rid of, as oxygen want makes the respiratory centre more irritable than normally to a given partial pressure of carbon dioxide. This has an important practical application. In mines where there is a rapidly increasing amount of black-damp, the presence of a sufficient amount of carbon dioxide gives the miner warning, as it produces panting and respiratory distress. In slowly increasing black-damp without carbon dioxide he gets rid of the carbon dioxide in his body by moderate over-ventilation and may lose consciousness without any appreciable distress.

The uncomplicated effect on respiration of increased carbon dioxide is best shown in acidosis, such as may occur in advanced cases of diabetes mellitus. In such cases, although the carbon dioxide be not increased, the hydrogen-ion concentration of the blood is increased, and it is by acting in a similar manner that carbon dioxide influences respiration. If the oxygen saturation of the blood be decreased and the carbon dioxide increased respiratory failure is apt to occur very quickly. This is really asphyxia, as is found in acute obstruction of the larynx. In such circumstances there is the typical deep purple cyanosis of suffocation.

## Dyspnoea in Cardio-vascular Disease.

Dyspnoea in cardio-vascular disease may be produced in two ways. One may be called the pulmonary method, and the other the circulatory method. In the pulmonary method anything that interferes with the proper aeration of the blood as it passes through the lungs may produce it. If the lungs remain normal, there being no oedema, congestion, nor gross exudate into the pleural cavity, the arterial blood will contain a normal quantity of oxygen. There is no decline of oxygen saturation of the blood as it passes to the systemic arterioles. We have been able to show this quite conclusively by examining the arterial blood of many cases of auricular fibrillation, valvular disease, and myocardial degeneration with and without pulmonary complications. If oedema of the lungs should develop there will occur a decrease in the oxygen saturation of the arterial blood. This may usually be inferred from the physical signs

in the lungs and the degree of cyanosis. If oxygen be given under these conditions the saturation of the arterial blood will as a rule rapidly return to normal. Even at rest certain of these patients have violent dyspnoea, orthopnoea, and Cheyne-Stokes breathing. As soon as oxygen is given the symptoms disappear and the patients become quite comfortable. At the same time there is no immediate change in the character of the physical signs in the lungs. This would indicate that by increasing the partial pressure of oxygen in the alveolar air from 100 to 280 mm. the diffusion of oxygen through the swollen alveolar cells and the alveolar exudate is greatly increased. Such an increase would naturally be expected. For this reason the blood has less difficulty in becoming adequately saturated with oxygen. In auricular fibrillation we found no accompanying reduction in the pulse rate to account for this improvement. Certain cases had very pronounced cyanosis with delirium, but on inspiring air with a high partial pressure of oxygen the cyanosis and delirium disappeared and the oxygen saturation of the arterial blood returned to normal.

These are cases of what one might call the pulmonary type of dyspnoea and cyanosis in cardiac disease. It is the dyspnoea which occurs when there are numerous crepitations and perhaps *sonorous râles in the lungs*. These signs are due to swelling of the epithelium of the bronchioles and alveoli and exudate into the alveolar spaces—conditions which interfere with the respiratory function. On the other hand, there may be a moderate hydrothorax compressing part of one lung through which the blood is still circulating. If that be the case the compressed lung will not aerate, the blood returning would merely pollute the fully aerated blood from the rest of the lungs. It is only in cardiac cases with indications of such pulmonary lesions that the administration of oxygen will relieve the dyspnoea, cyanosis, and other pulmonary symptoms.

On the other hand, there is another factor which must not be overlooked. This is the influence of vascular engorgement on the respiratory movement and pulmonary ventilation. This point I will defer until I take up the question of the circulation as a whole.

## Effect on Cells.

We now come to consider how interference with the general circulation affects the cells of the various organs, because it is the cell, as it occurs in its aggregate to form the organic units or functioning organs, that gives rise to pathological symptoms or signals of distress. As is well known, interference in the local circulation, such as results from occlusion of an artery, may produce death of the distal portion. This is really local asphyxia. Such vascular interference may be partial or complete, and thus the consequences may vary in degree—as, for instance, hemiplegia or mental degeneration, gangrene of the toes or "intermittent claudication," rupture of the heart or angina pectoris. On the one hand the myocardium and the brain may continue to function normally until renal degeneration due to arteriosclerosis leads to a general breakdown. You may, on the other hand, have stenosis or obliteration of a coronary artery. If a sufficient quantity of the myocardium is asphyxiated then the myocardial symptoms may predominate. In other circumstances symptoms due to cerebral degeneration may play the principal part. If, however, the arteries are fairly healthy, but some valvular or myocardial lesion interferes with the general circulatory efficiency, then widespread symptoms may develop. In so far as such lesions reduce or limit the amount of blood circulated per minute in relation to the amount of work attempted, so symptoms occur. In the average individual at rest the blood flow per minute through the heart varies between 5 and 8 litres according to sex and development. An increased circulation is usually accomplished by an increase of the cardiac rate, but in some instances this is also brought about by an increased output per beat. The systole is more complete. Therefore not only is the rate to be taken into consideration but also the completeness of the systolic contraction. Barcroft and others have reported a case of acute paroxysmal tachycardia where the cardiac rate increased to 135. The minute blood flow was one-half what it was under normal conditions, and the output per beat decreased from 76 c.cm. to between 16 and 13 c.cm.

\* Delivered before the Dundee Branch of the British Medical Association, March 14th, 1923.



In cases of auricular fibrillation and flutter a similar sequence of events occurs, although the decrease in the blood flow per minute is not as a rule so pronounced. Usually when the ventricular rate is increased above 100 there is a distinct decrease in the output per beat. This, of course, becomes much more apparent as the rate increases.

In mitral stenosis without evidence of myocardial disease, such as great cardiac enlargement, there is a very pronounced decrease in the output per minute and also on each systolic contraction. This decrease is particularly obvious when the individual attempts to do work. Tachycardia very rapidly supervenes and the blood flow may increase from 2 litres to as much as 5 litres per minute. This as a rule makes it necessary that the pulse rate shall increase two and a half times—that is from 70 to 180. The output per beat has never yet been found to be increased in this condition. Such a limitation of cardiac output necessarily limits the amount of exertion possible; in fact, in certain cases merely walking slowly about the room produces severe symptoms.

It might be supposed that in patients with greatly enlarged heart, but without any evidence of valvular disease, as well as hypertrophy of the wall, the capacity of the ventricular cavity would be greatly enlarged. If such a heart were completely emptying itself at each systole the amount of blood circulated per minute would be much above normal. It is found, however, that this is not the case, the output per minute being approximately normal if there are no symptoms at rest. On exercise, however, the symptoms may become extreme, while the cardiac output per minute is but slightly increased, although the cardiac rate may be greatly increased. When cardiac failure occurs there is a sharp decline in the output per minute as well as in the output per beat. The obvious conclusion is that the ventricular systole in these circumstances is not complete. Instead of the ventricle expelling 100 c.cm. per systolic contraction, as is found to occur frequently in these cases of enlarged heart, the output per beat may be only 15 to 25 c.cm. This occurs in spite of the fact that physical examination may give evidence of the cardiac dullness being increased. This is probably what occurs in acute and chronic cardiac failure. In such circumstances the ventricle on each contraction does not completely empty itself, and there is consequently a residue of blood left in the ventricle at the beginning of the diastole. This corresponds to the difference in the capacity of the ventricular cavity and the amount expelled at each systole. As the amount of this residue increases, so the symptoms of cardiac failure become more pronounced.

This decrease of circulation rate, whether due to pathological tachycardia, mitral stenosis, or myocardial inefficiency, is probably one of the most important factors in the production of symptoms in cardiac disease, but the question naturally arises as to how a decrease of blood flow would produce symptoms. There are many other symptoms besides dyspnoea—fatigue, exhaustion, vertigo, cyanosis, vomiting, loss of consciousness, etc. All these symptoms may be produced by a deficiency of oxygen and an increase of carbon dioxide in the cells. It is well known that the rapid circulation of blood through a part keeps up the partial pressure of oxygen and diminishes that of carbon dioxide. If, on the contrary, the blood flow becomes slow, the partial pressure of oxygen diminishes and that of carbon dioxide increases. This brings about in the cell a condition of cellular asphyxia and acidosis. In such circumstances there occurs a swelling of the cell, and fluid, chlorides, bicarbonates, and other salts, pass from the blood into the surrounding tissues and tissue spaces. The blood coming from the part becomes more concentrated and acid. This, we believe, is a most important contributing factor in the production of oedema and other symptoms in cardiac cases.

Such a condition occurring in the cells would affect the respiratory centre as well as other portions of the body. The severity of the symptoms will be influenced not only by the degree of slowing of the circulation but, as has already been pointed out, by the suddenness of the disturbance. If the organism be given time to accommodate itself to the new conditions, or if the new conditions develop slowly, it will be found that the skeletal blood flow is very much reduced. This is brought about in order that the blood supply to the nervous system, suprarenals, heart, liver, and other vital

organs, may be sufficient. If the general blood flow is still further reduced symptoms will then develop even when the body is at physical rest. If exertion be undertaken the muscles as functioning organs will require an increased blood supply which can only be provided at the cost of the blood supply to the viscera. Therefore symptoms will appear even though they were not present during the resting state. Consequently it can be seen that the symptoms in cardio-vascular disease are merely an index of the ratio between the blood flow and the amount of work done at the moment. The severity of the symptoms in relation to the work done bears a direct ratio to the inadequacy of the general circulation. From the severity of the symptoms and the appearance of the patient one can obtain a much better working index of the severity of the lesion than from the physical signs.

#### *Late Symptoms of Cardiac Failure.*

As cardiac failure progresses symptoms appear even at rest. There may be constant cyanosis, orthopnoea, and varying degrees of Cheyne-Stokes breathing. It has been demonstrated by Haldane, Meakins, and Priestley that the recumbent position is more apt to lead to irregular respiration than is the upright one. Further, that any interference with the pulmonary expansion or ventilation aggravates this respiratory irregularity. This may be caused by anything which interferes with the action of the diaphragm, such as hydrothorax and ascites. In addition there is the important factor of pulmonary engorgement. The lung has somewhat the character of an erectile tissue, and with engorgement or exudate into its spaces its elasticity is very much diminished. That such limitation of expansion, and therefore of ventilation, occurs in cardiac cases is very well known and can be demonstrated by the great decrease in the vital capacity of the lungs. There is no disease where this is diminished to such an extent as in cardiac failure.

Therefore when the cells of the body, and with them those of the respiratory centre, are suffering from a more or less severe asphyxia due to diminished circulation, one of the natural responses is by an increased pulmonary ventilation. This can best be accomplished by the patient assuming the upright position. With this increased capacity for breathing, over-ventilation occurs and the amount of carbon dioxide removed is greater than the oxygen taken in. A period of apnoea, therefore, will ensue, which in its turn is followed by a period of hyperpnoea, and thus more or less pronounced periodic or Cheyne-Stokes breathing is produced.

#### *Dyspnoea in Arterial Disease.*

In cases of arterial disease without evidence of a primary cardiac lesion, dyspnoea, orthopnoea, and Cheyne-Stokes breathing may frequently occur. In these cases the interference with the blood flow results from arterio-sclerosis with diminution in the number of arterioles as well as a decrease in the lumen in the larger vessels. As a result increased blood pressure usually ensues. This in time may show a secondary decline due to myocardial failure, and consequently the local blood supply is decreased. There is cellular asphyxia, which in turn stimulates a temporary increase of the blood pressure and therefore of the local blood flow. This for the moment supplies the cells with the necessary quantity of oxygen, but the hyperpnoea resulting from the cellular asphyxia produces an increased elimination of carbon dioxide, and as a consequence a condition of acapnia is produced leading to a period of apnoea. In this manner periodic breathing is perpetuated. The acute attacks of dyspnoea and the violent periods of hyperpnoea in this type of periodic breathing are probably the symptoms which occur in so-called cardiac asthma.

#### *TREATMENT OF CARDIO-VASCULAR DYSPNOEA.*

In regard to treatment, it is necessary to have a clear understanding of the underlying conditions producing dyspnoea in order that the symptoms may be relieved. As they are fundamentally due to lack of oxygen in the cell it would be naturally assumed that they can be relieved by supplying oxygen. In cases where this lack is due to an exudate into the alveoli or swelling of the alveolar membrane epithelium, and in those cases where engorgement of the pulmonary tissues prevents adequate expansion, increase of the partial pressure of oxygen in the alveolar air by enriching



the inspired air with oxygen usually, if not always, gives relief. On the other hand, when the symptoms are due primarily to a slowing of the whole circulation or a circulatory deficiency due to a local vascular lesion, the administration of oxygen may have little or no effect. The reasons for this would seem to be self-evident. In certain cases, however, the administration of oxygen may give relief when not expected to do so; on the contrary, its failure to be efficacious is sometimes experienced when a good result would be most expected. A more thorough examination of these cases usually indicates that a combination of these causes is operative. To what extent either factor predominates may, however, be difficult to ascertain.

If the partial pressure of oxygen in the alveoli is to be increased the inspired air must be enriched with oxygen by the time it enters the nasopharynx. This necessitates the administration of a sufficient quantity of oxygen a minute by some apparatus which will ensure its being inhaled. The placing of a funnel one inch from the patient's face will not accomplish this. In our experience only two methods are efficacious—by the use of a fairly tight-fitting mask, or by introducing a rubber catheter through the nose into the nasopharynx. Through this catheter there is passed an adequate supply of oxygen. The supply is frequently regulated by, in lieu of some better method, bubbling the gas through a Wolff bottle or other similar contrivance. In order that a sufficient quantity shall be administered it must enter the bottle through a tube of at least 1 cm. bore, and the bubbles must be so rapid as not to be countable.

The use of oxygen, of course, does not remove the necessity for adopting all other means of treating cardiac failure, and by no means the least important of these is physical and mental rest. It is remarkable how patients do improve by good nursing and general comfort. It would appear that the reason for this is the conservation of circulatory energy for those vital organs which of necessity require a good blood supply.

The employment of drugs which increase the cardiac power is not to be ignored. Of these there is, to my mind, only one which is of value, and that is digitalis. The indications for its use and the method of its administration must be left for consideration at another time.

Many of the observations upon which these conclusions have been based were undertaken in the Department of Therapeutics, Edinburgh University, in collaboration with Drs. Davies, Dutrebande, and Fetter.

## THE EFFECT OF HEAT UPON OPERATIONS FOR EXOPHTHALMIC GOITRE.

BY

A. J. WALTON, M.S., F.R.C.S., M.B., B.Sc.,  
LONDON HOSPITAL.

THAT the results of operative treatment in many cases of exophthalmic goitre are satisfactory is now generally admitted. Until some fifteen or twenty years ago the danger of such an operation was, however, so great that few physicians felt justified in advising it. To-day the results have been so enormously improved that the mortality is no higher than that of other major operations. At the discussion of the Royal Society of Medicine in 1921,<sup>6</sup> and again at the meeting of the British Medical Association in Glasgow, it was generally agreed that the mortality was somewhere in the region of 5 per cent. In the hands of individual surgeons it has often been lessened considerably below this. Romanis<sup>7</sup> was able to show a mortality of only 2.4 per cent. in a series of 250 cases, and the latest statistics from the Mayo Institute published by Pemberton<sup>4</sup> record a series of 1,093 operations with 11 deaths—that is, a mortality of 1 per cent. All who have operated on large numbers of these cases feel, however, that in spite of their care and attention to detail there is an element of uncertainty in the result which is absent in other cases. My own experience has been that although these cases can be divided into definite groups, one of which has a higher death rate than the others, yet now and again a death will occur when least expected. This feeling of uncertainty and anxiety has been expressed also by Berry,<sup>2</sup> Dunhill,<sup>3</sup> and

Romanis,<sup>5</sup> and all are agreed that there is some factor which is at present not fully understood.

If the causes of danger in the operation be analysed, it is possible to appreciate not only what are the means by which so much improvement in the operative results has been obtained, but also which is the factor at present uncertain and to which attention must be given in future. Pemberton<sup>4</sup> has well analysed these dangers. He classifies them into the three following groups:

1. Those directly resulting from the disease and the effects of the disease.
2. Those directly due to accidents such as haemorrhage, pulmonary embolism, etc.
3. Those the joint result of disease and accident.

Careful attention to the technique of operation, to the limitation of haemorrhage, to careful handling of the gland, etc., have done very much to lessen the dangers of groups 2 and 3; so that the risks arising therefrom are in no way specially applicable to operations of exophthalmic goitre. In the first group the dangers are twofold. If the hyperthyroidism has been present for a long period, secondary changes will have taken place in the heart and kidneys, and the patient will stand any operative measures badly. In the future it is probable that risks of this nature will be almost negligible, for the condition will not be allowed to progress too far before operation is undertaken. At present, however, but little can be done to reduce the mortality. The secondary conditions can be readily recognized, but the operation must be undertaken in spite of them, with a full knowledge of its danger, in order to give the patient her one chance. It is the inclusion of so many such cases that, in my own series of 140, has maintained the mortality at about 5 per cent. In fact, at the present time the reduction of the mortality much below this figure would, in my own hospital practice, made up as it is so largely of ignorant patients, lead to the suspicion that advanced cases were being unjustifiably refused the benefits of operation.

The second danger in this group is the presence of hyperthyroidism. If a patient dies unexpectedly after operation there are nearly always presented symptoms of profound post-operative hyperthyroidism, and hence it is to this danger that attention must in the main be directed. The importance of not operating in the first six months of the disease, when the symptoms can be most easily controlled and often, indeed, cured by medical treatment, I have previously laid stress upon. The fact that every case must be carefully watched in a nursing home or hospital until the hyperthyroidism is at its lowest ebb, the importance of the basal metabolic rate as an indication of the extent of the hyperthyroidism, and the value of medicinal measures in reducing the hyperthyroidism before operation, have been noted by many operators. In fact, more has been done by attention to such details to lower the mortality than by any other step. All surgeons have appreciated the fact that chloroform in such patients is a deadly poison and must be avoided. Some surgeons, indeed, advocate that all general anaesthetics should be abandoned, but here there is not so much unanimity of opinion, for many, and among them myself, have felt that the nervous upset of the patients which is produced when they are conscious at the time of the operation will more than balance the benefit gained by omitting a general anaesthetic. My own custom is to obtain unconsciousness by a minimal dose of rectal ether, and to continue the anaesthesia by means of ether administered on an open mask. Even with every care in the use of such methods, and in the administration of large doses of fluid before and after operation, it will be found that there is a post-operative reaction. In the more satisfactory cases this is slight, but in others the temperature may reach 103° for two or three days, and the pulse may rise to 160. The patient will sweat excessively, will suffer from dyspnoea, and will show a very considerable restlessness which is only controlled with difficulty by morphine. I have previously directed attention to the fact that two distinct groups of cases may be recognized, although there is every gradation between the two. The one occurs in young females who have a large soft, smooth thyroid, marked exophthalmos,



and a rapid pulse, and sweat freely. Such cases I have described as the "vascular group," and as a rule they show only a moderate reaction and rapid improvement after operation. The second group I have designated the "nervous type." Here the patient is more commonly between the ages of 40 and 45; the thyroid is smaller and more nodular, the pulse is less rapid, though often more irregular, and the nervous symptoms are much more prominent. These patients show considerably more reaction and make a slow post-operative recovery. Even when these two groups have been recognized and separated, a careful study of the immediate post-operative results will show a very considerable variation in the reaction, and it is to one cause of this variation that I wish to direct attention in this communication.

It has long been realized that the thyroid secretion has a very marked effect on the heat regulation. All cases of myxoedema feel the cold very severely, while those of hyperthyroidism are in a like degree affected by the heat, so that they are much more comfortable during the cold weather. In my own cases the post-operative distress in hot weather has been much accentuated, and special precautions, such as the use of electric fans, of ice, and of cold sponging, have long been used. In spite of all such precautions it has been my steadily increasing opinion that the mortality during the hot periods has been abnormally high. A careful analysis of my cases from this point of view shows very clearly that such is the case. In my own series there have been two deaths, occurring respectively in the months of January and December. Both of these were in patients with advanced degrees of the disease and were dependent upon secondary cardiac changes. All the others occurred during the hot months of June, July, and August, and all were what may be described as unexpected deaths in that they occurred in patients who by no means showed a pre-operative hyperthyroidism in excess of the others and in whom all the usual precautions had been taken. They also all showed extreme post-operative reaction passing on to acute hyperthyroidism and death. In the accompanying chart I have plotted out the percentage mortality among the total cases operated upon in the individual months of the year, and it is seen that whereas in February, March, April, May, September, October, and November there is no mortality, in the three months of June, July, and August it is in the region of 20 per cent. The effect upon the curve in January and December of the two deaths mentioned above is also shown.

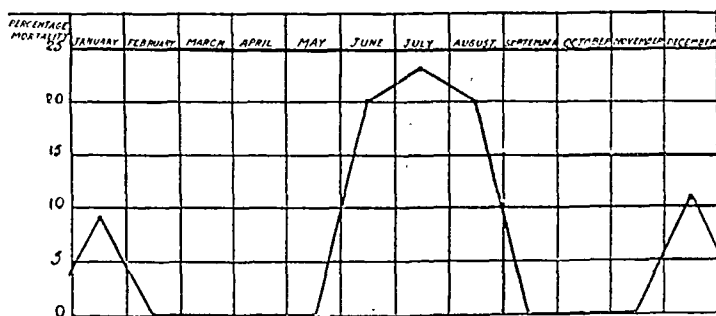


Chart showing the percentage mortality among cases of exophthalmic goitre operated upon in the individual months of the year.

These figures have been collected over a period of ten years, and hence are of considerable value, for it is unlikely that any accidental factor should give so marked an alteration in the mortality which occurs for these three months. Moreover, a mortality of 20 per cent. which is present when the cases operated upon in June, July, and August are considered alone, is one that is much too high and must in fact be considered as an unjustifiable risk. These figures have made it manifest to me—and I publish them in the hope that they will warn others—that no operation on a case of exophthalmic goitre should be undertaken in extremely hot weather, for under such conditions the risk in spite of all precautions is too great and can be easily countered by awaiting more suitable conditions. Fortunately from this aspect the English climate is so variable

that seldom would it be necessary to postpone operation for more than two or three weeks.

## REFERENCES.

- <sup>1</sup> Berry, J.: Discussion on Exophthalmic Goitre, *BRITISH MEDICAL JOURNAL*, November 11th, 1922, p. 911.
- <sup>2</sup> Berry, J.: Discussion on the Medical and Surgical Treatment of Graves's Disease, *Proc. Roy. Soc. Med.*, July, 1921, p. 4.
- <sup>3</sup> Dunhill, T. P.: Discussion on the Medical and Surgical Treatment of Graves's Disease, *Proc. Roy. Soc. Med.*, July, 1921, p. 9.
- <sup>4</sup> Pemberton, J. de J.: Mortality in Surgery of Exophthalmic Goitre, *Surg., Gyn., and Obstet.*, April, 1920, p. 458.
- <sup>5</sup> Romanis, W. H. C.: The Surgical Treatment of Exophthalmic Goitre, *Lancet*, March 11th, 1922, p. 471.
- <sup>6</sup> Walton, A. J.: Discussion on the Medical and Surgical Treatment of Graves's Disease, *Proc. Roy. Soc. Med.*, July, 1921, p. 42. A Consideration of Some Cases of Exophthalmic Goitre Treated by Operation, *London Hospital Gazette*, Clin. Supplement, April, 1914. A Consideration of Some Cases of Exophthalmic Goitre Treated by Operation, *Practitioner*, October, 1917.

## INTRAVENOUS INJECTIONS OF PEPTONE AS AN AID TO VACCINE TREATMENT.\*

(Abridged.)

BY

H. WARREN CROWE, M.D., B.Ch. Oxon.,

HARROGATE.

DURING the last eighteen months I have used intravenous injections of peptone in some seventy odd cases of patients who were very sensitive to vaccines, with satisfactory results. Patients to whom one could not give 100,000 streptococci or the same number of *M. deformans* without producing a reaction and general malaise, after peptone treatment were able to tolerate much larger doses.

For a good many years now Dr. Auld has given intravenous injections of peptone in cases of asthma, and claims a fair proportion of successful cases. It is fairly well established that most cases of asthma are due to an extreme sensibility on the part of certain cells of the body to a foreign protein. The slightest trace of this specific protein produces an attack of asthma. The disease, then, depends on a toxic idiopathy, and is strictly comparable with hay fever; urticaria, angio-neurotic oedema, and possibly a large variety of other diseases.

Apparently the poison may be air-borne and conveyed directly to the cells, as we suppose it to be in hay fever; or it may be derived from the blood stream, as is the case when food or certain intestinal bacteria excite the attack. There are a great many different proteins which are poisonous in this way. Susceptible individuals may be affected by several of them widely differing in source (Freeman,<sup>1</sup> Chandler Walker<sup>2</sup>). Dr. Auld<sup>3</sup> first brought forward peptone as a general non-specific immunizing substance, but its action in combating the cell sensibility is extremely obscure. There is no doubt that in some cases the effect is dramatic.

In Dr. Auld's present view, peptone acts by immunizing the system against any protein whatever, although itself incapable of acting as an antigen or producing any antibody, as he himself has shown by experiment. I cannot altogether subscribe to this view, because if peptone cannot function as an antigen, it does not seem to me possible that it should act as an immunizing agent.

It seemed a hopeful procedure to try the injection of peptone in other states of sensitiveness as well as in asthma. In my own experience the treatment of conditions like rheumatism, arthritis, and neuritis by streptococcal vaccine and *M. deformans* vaccine has frequently been rendered extremely difficult owing to sensitiveness—that is to say, that however small the dose given the patient gets a reaction and feels ill. Many cases have failed to benefit, or have obtained benefit only after very prolonged treatment with infinite patience and minute doses.

It is difficult to say why this condition of sensitiveness should arise; it may be that my method of giving frequent small doses excites sensitiveness, as some hold occurs in tuberculosis. On the other hand, patients are sometimes sensitive to the first dose. In a recent case half a million

\*Read before the Leeds Medico-Chirurgical Society.



stock streptococcus vaccine as an initial dose in a very chronic case of arthritis was followed by an acute flare-up of nearly every joint, lasting a week. In another case a similar initial dose of half a million *M. deformans* was followed by extreme suffering and four days' confinement to bed. Whatever the cause, hypersensibility to vaccine is an extremely troublesome and annoying complication of vaccine therapeutics. Dr. Pratt Johnson<sup>3</sup> regards sensitiveness to vaccine as an anaphylactic phenomenon comparable with toxic idiosyncrasy, and treats his cases by repeated small doses until this sensitiveness is overcome. He expects no real improvement until he can give large immunizing doses. I must, however, join issue with him in regard to his conception of a small dose. Ten million streptococci, which Dr. Pratt Johnson suggests as an initial dose, is, in my view, dangerously large.

I have tried many methods of getting over this sensitiveness. The first was combining the vaccine with beta eucaine lactate—a method quite successful in a proportion of cases. Sensitized vaccine I have used, and also detoxicated vaccine, but neither of these have I found satisfactory. Since using intravenous peptone I have had no further difficulty, except when the patient did not tolerate the drug. The following are given as some outstanding examples.

#### CASE I.

A male, aged 61, had a history of having had osteo-arthritis in the left hip-joint for twelve years, and in the right hip-joint for two years. He had acute pain on walking, but not much in bed. There was a large bony outgrowth over the left hip-joint and very considerable changes in the right hip-joint. Little movement was possible. This patient had very bad teeth and also a heavy infection of streptococci (four different varieties) in the faeces.

On December 27th, 1921, a dose of 500,000 of his dental vaccine was followed by a severe reaction lasting three days. He was extremely stiff, the pain was increased, and the weight dropped 2 lb. On December 30th injection of 500,000 of his faecal streptococci was followed by an attack of lumbago. On January 3rd, 1922, the dose was reduced to a tenth of a million and no reaction followed, but on the 7th of the same month a tenth of a million of his faecal streptococci was followed by a slight reaction.

From January 10th vaccines (dental and faecal streptococci combined with eucaine) were administered by his own doctor. The dose was always one-fifth of a million, and there was a focal reaction every time, lasting four to five days. Doses were given once a week. The general health improved. I then decided to give him a course of peptone. Simultaneously with this peptone a subcutaneous dose of vaccine of 500,000 streptococci was given twice a week. No reaction followed. The dose was then rapidly pushed up to 20 million without any trace of a reaction.

From December 27th, 1921, to March 19th, 1922, no progress was made whatever, and only very small doses could be tolerated. After the course of peptone which began on April 29th and was carried on until May 18th, doses were rapidly increased until the end of August—that is to say, within three months, 20 million could be tolerated.

#### Summary.

Osteo-arthritis of hip-joints. For three months reactions followed every dose of 200,000 streptococci. After peptone the patient was soon able to take 20 million without reaction.

#### CASE II.

Male, aged 47; a case of true rheumatoid arthritis involving the right wrist; twelve months' history. X rays showed nothing abnormal beyond some loss of calcium, but there was a very enlarged swollen joint, cyanotic in appearance, extremely painful, with gnawing and aching pains at night. The wrist was very tender and there was practically complete limitation of movement. Teeth had been extracted in the hope that this would cure the condition, but without result.

On January 13th, 1921, 500,000 *M. deformans* was given; this was followed by some pain in the left wrist. On January 21st he received a million *M. deformans*; there was some reaction the same night and the joint was worse for two days. Then an injection of a million *M. deformans* combined with eucaine was given; no reaction followed. On release three days later, 2 million combined with eucaine were injected; this was followed by reaction and swelling. The dose was then dropped on January 29th to half a million with eucaine. Again no reaction took place, but from this time onward to July 11th the dose had to be continually reduced owing to constant reactions, until extremely minute doses were given with eucaine. Even 20,000 *M. deformans* were frequently followed by a focal disturbance. On July 11th I decided to try detoxicated vaccine. It was specially prepared for me by the Genatosan Company. Fifty million *M. deformans* and, later, 100 million were not followed by a reaction; 200 million produced a reaction—exactly the same result as with ordinary vaccine, the only difference being in the nominal amount of the dose. Up to this time the urine had been sterile, but on July 15th I found a streptococcus in considerable numbers. A vaccine was made, and until the end of November small doses were continued, the patient being just as sensitive to the streptococcus as he was to *M. deformans*—that is, 20,000 streptococci produced a reaction, but the reaction of the streptococcus took a different form inasmuch as the areas surrounding the knee and hip-joints were affected, whereas when *M. deformans* excited reaction the wrist and feet always suffered.

On December 22nd a course of peptone was started. The vaccine doses when this was completed were very rapidly carried up to 5 million streptococci and 10 million *M. deformans*. It was after the course of peptone that real improvement started, and the patient rapidly progressed to complete cure. In this case occasionally a certain degree of sensitiveness supervened. One or two odd doses of peptone were then administered.

#### Summary.

A rare case of monarticular rheumatoid arthritis. For nearly twelve months minute doses caused reaction—for example, 20,000 germs. After peptone, doses were rapidly raised to 5 million streptococci and 10 million *M. deformans* without reaction, and the result was most satisfactory.

#### CASE III.

A female, aged 50, nine years ago had rheumatic pains in the left shoulder which moved about and were improved by massage. There was slight stiffness in the jaw and neck and some creaking. The wrists were swollen and fluid was present. The metatarsophalangeal joints in both feet were greatly enlarged. To my mind the condition was a typical streptococcal arthritis. X rays showed the teeth to be clear of any apical infection. The patient had been an extreme sufferer from hay fever for several years, and was also very sensitive to margarine and vinegar. Marked urticaria would appear after aspirin, presumably excited by the acetic acid radical. The mother, sister, and brother suffered from asthma, and one sister had had rheumatoid arthritis with extreme crippling for many years. This case is a particularly interesting one as demonstrating the frequent association between arthritic conditions and toxic idiosyncrasy—500 units of pollen vaccine on the skin produced a large wheal. In my experience it is the disease known as rheumatoid arthritis which is more frequently associated with conditions of sensitiveness, but in this case there was no symptom of that disease, except the slight creaking of the neck. The faeces were very heavily infected with a good many varieties of streptococci.

Treatment was commenced on April 13th, 1921. Alternating pollen and streptococcus vaccines were given to begin with, and then *M. deformans* vaccine was added in small doses of half a million. This was given on account of the suspicion that rheumatoid arthritis might develop. There was never any reaction, and the condition improved and cleared up apparently completely in the course of about three months. The doses were gradually increased from half a million to 10 million of combined *M. deformans* and streptococci. The pollen units were on an average 250. During the hay fever season itself they were dropped to 100. No hay fever developed.

The following spring the patient had a severe attack of tonsillitis. After that some symptoms of arthritis began to develop again, and she came under my charge once more in April, 1922. I treated her with pollen to prevent hay fever if I could, and found the skin less sensitive than it was before. The neck symptom was now very marked, and there were quite definite signs of commencing rheumatoid arthritis—pain and tenderness in the feet and weakness of the small muscles of the hands. I started to give vaccines of faecal streptococci, both from the old vaccines and from a new specimen, and combined them with *M. deformans*. The result, however, was not satisfactory, and although there were no definite reactions the patient felt ill. The hands grew more painful and weaker, and the feet were also tender. A little massage was given, but that made the condition worse. Under-water massage also had to be omitted for the same reason. I tried all sorts of doses, large and small, but the patient got steadily worse. I then came to the conclusion that possibly there were really reactions all the time, and that it was an atypical form of sensitivity with which I had to deal. Consequently peptone was given—on June 1st 0.2 c.cm. of a 2 per cent. solution, on June 3rd 0.4 c.cm., and on June 4th 0.8 c.cm.—together with 1 million streptococci; following this dose there was a very decided reaction and a drop in weight of 2 lb. lasting three days. On June 7th 1.4 c.cm. of a 2 per cent. solution was given with a million *M. deformans*. This was followed by a quite severe reaction lasting three to four days. On June 11th I repeated the dose of peptone with half a million streptococci; there was no reaction. On June 14th 1.4 c.cm. of a 2 per cent. solution and 100,000 *M. deformans* were given; again there was no reaction. On June 18th a million streptococci and half a million *M. deformans* were injected, and no reaction followed.

Now comes the interesting part of the case. The doses were carried on by Dr. Healey of Preston up to approximately two and a half million streptococci and a million and a quarter *M. deformans*. There was no reaction at all, but the patient still was getting no better. This time it was perfectly clear that there was no reaction, and I thought it worth while to push the dose, inasmuch as it seemed that the patient might have been desensitized completely by the peptone. On August 10th 4 million streptococci were given and 2 million *M. deformans*; on August 17th 6 million streptococci and 3 million *M. deformans*; then 15 million streptococci and seven and a half million *M. deformans*. No reaction followed any of these injections. I therefore sent three further doses—20 million and 10 million each. It was at this point that improvement began to set in.

#### Summary.

A successfully treated patient relapsed after an attack of tonsillitis. Treatment was very difficult owing partly to toxic idiosyncrasy and partly to sensitiveness to vaccine. Peptone injections marked the turning point of the disease.

It is quite clear in this case that the patient was desensitized, and so able to take larger doses, but that there was no improvement until after very considerable doses had been taken. Before the course of peptone it is probable



that the immunity mechanism was in a state of continuous irritability. Perhaps this may be the condition quite frequently when patients do not improve under vaccine treatment, and yet suffer no obvious reaction. So greatly was I impressed with the value of peptone injections, that it seemed possible that here might be a solution of the problem one often has to deal with—namely, that of the patient who can only come for 'three weeks' or a month's treatment, and then has to return to her own doctor to have her vaccines, and who for financial reasons will certainly not be able to return if the treatment does not succeed. The following case illustrates this. I started straight away with peptone injections, so as to prevent the development of sensitiveness. After returning home the patient's own doctor was able to carry on the treatment without difficulty.

## CASE IV.

On June 28th, 1922, I saw in consultation a case of general and severe arthritis, chiefly affecting the knee-joint, in a woman aged 48. She had not been out of bed for four months and was quite unable to walk, but happily there were no contractures. The knee-joints were at the time the worst parts, but practically every joint with the exception of the spine was affected.

Owing to financial and other reasons, it was impossible for the patient to come under my care except for a very short time. However, with only eight days to work upon, I started at once, on July 1st, with 0.1 c.cm. of a 2 per cent. solution of peptone. On July 3rd 0.2 c.cm. was given, on July 4th 0.4 c.cm., on July 5th 0.8 c.cm., on July 6th 1.4 c.cm., and on July 7th 1.4 c.cm., which I combined with half a million *M. deformans*. At the same time I had a bad tooth removed and cultured, and examined the faeces. There were nine varieties of streptococci at the apex of the tooth, and six varieties in the faeces. These were combined in one vaccine, and her doctor carried on with small doses, beginning with half a million combined streptococci and *M. deformans*. On September 29th much stronger doses were required. There have never been any severe reactions and the patient is improving.

## Method of Preparing Peptone.

Normal saline prepared from distilled water plus 1 per cent. carbolic acid is autoclaved in a flask at 120° C. for twenty minutes with a funnel fitted with rubber tubing and a clip. Vaccine bottles and caps are also sterilized. Ten per cent. of Armour's peptone is added to the hot carbolized saline and shaken up. The vaccine bottles are filled with the aid of the sterile funnel, capped and wired. After forty-eight hours a sample is removed and tested for sterility. When proved sterile, 1 and 2 per cent. solutions are put up in vaccine bottles already fitted with the requisite amount of 0.5 per cent. carbolized saline.

## Method of Dosage.

I have tried a good many different series of peptone doses, and find that for all intents and purposes the following method results in a fairly complete and satisfactory desensitization.

On the first day 0.1 c.cm. of a 1 per cent. dilution of peptone; on the second day 0.2 c.cm. of a 2 per cent. dilution; on the third day 0.4 c.cm. of a 2 per cent. dilution; on the fifth day 0.8 c.cm. of a 2 per cent. dilution; and on the seventh day 1.4 c.cm. of a 2 per cent. dilution; and thereafter, at three- or four-day intervals, 1.8 c.cm. two or three times. Having arrived at 1.4 c.cm., a subcutaneous dose of vaccine can be given at the same time, and this dose may be rather larger than the one the patient was sensitive to before treatment. No reaction will occur.

## Indications for Peptone Treatment as an aid to Vaccine Therapy.

From what has gone before, it will be clear that as soon as it is definitely determined that a patient is excessively sensitive to vaccines a course of peptone should be started without waste of further time; and secondly, if the patient is likely to be sensitive (and only experience, of course, can tell us when that will be) and can only give a very short time to special treatment, it is advisable to give a course of peptone before the vaccines are started.

## Contraindications.

Provided the proper form of peptone is used (Armour's No. 2 peptone, as recommended by Dr. Auld), there are very few contraindications to the use of the drug intravenously.

A few people seem to be unable to tolerate it, and after as small a dose as 0.4 c.cm. of a 2 per cent. solution complain of nausea and occasionally cardiac distress at night. In cases like this I have not pursued the treatment.

I should not give peptone to cases of grave anaemia or other serious constitutional diseases. The most important contraindication seems to be the presence of albumin in the urine, and especially any history of chronic or acute nephritis. In three cases I have seen recrudescence of nephritis which I think might be ascribed to the injections of peptone. On ceasing treatment, however, the symptoms have disappeared.

## Summary.

A good many cases of infections by streptococci and *M. deformans*, particularly in the arthritic group, become so sensitive to vaccines that treatment is very difficult and tedious. It is in these cases that intravenous peptone will do away with the sensitive condition, and enable treatment to be renewed.

Peptone provides the best method of overcoming the difficulty of sensitiveness in vaccine treatment.

In cases where sensitiveness is likely to occur peptone can be given as an initial course before vaccines are started.

The contraindications to the treatment are personal intolerance, grave anaemia, severe illness, and chronic nephritis.

## REFERENCES.

- <sup>1</sup>Freeman: Toxic Idiosyncrasies, *Lancet*, July 31st, 1920, p. 229.
- <sup>2</sup>Chandler Walker: A large number of publications in the *Journ. Med. Research*, 1916-20, vols. xxxv, xxxvi, xxxvii, and xl. *Journ. Amer. Med. Assoc.*, vol. lxi, p. 363, 1917; vol. lxxv, p. 782, 1920. The Cause and Treatment of Bronchial Asthma, *Med. Clin. N. Amer.*, vol. i, 1918. Treatment of Bronchial Asthma with Proteins, *Arch. Int. Med.*, vol. xxii, p. 466, 1918; Frequent Causes and the Treatment of Seasonal Hay Fever, *Ibid.*, vol. xxviii, p. 71, 1921. A Clinical Study of 400 Patients with Bronchial Asthma, *Boston Med. and Surg. Journ.*, vol. clxxix, p. 288, 1918. Sensitization and Treatment of Bronchial Asthmatics with Pollen, *Amer. Journ. Med. Sci.*, vol. clvii, p. 409, 1919. Bronchial Asthma, *Oxford Medicine*, 1919, ii, Part i, p. 115; Hay Fever, *Ibid.*, p. 143.
- <sup>3</sup>Auld: *BRITISH MEDICAL JOURNAL*, 1917, i, pp. 580, 749; 1918, i, pp. 195, 683; ii, p. 49; 1920, i, pp. 380, 657-570; 1921, i, p. 696; 1922, i, p. 835.
- <sup>4</sup>Warren Crowe: *Lancet*, February 11th, 1911.
- <sup>5</sup>Pratt Johnson: The Action of Vaccines, *Lancet*, October 7th, 1922, p. 751.

## CARBON TETRACHLORIDE AND OIL OF CHENOPodium IN HELMINTHIASIS.

BY

J. G. REED, M.R.C.S., L.R.C.P.,

DIVISIONAL MEDICAL OFFICER, SARAWAK CIVIL SERVICE, BORNEO.

AN article appeared in the *BRITISH MEDICAL JOURNAL* of July 1st, 1922, reporting favourably on the use of carbon tetrachloride for hookworm infection. The drug also expelled *Oxyuris vermicularis* in large numbers and some *Trichuris trichiura* and *Ascaris lumbricoides*. The drug acts as a moderate purge and it is not necessary to prepare the patients as for thymol treatment. Oil of chenopodium is soluble in carbon tetrachloride, and a mixture of the two was suggested for ascariis infection. Since then several other articles have appeared on the subject.

Treatment with the drug was commenced in the General Hospital, Kuching, in August, 1922, and the immediate results warranted its continuance. It has been given to 82 patients in the hospital. It has been given also to several school children and to one European; the results from the former have been very good, but they have not yet been tabulated as it is hoped to examine the faeces of all the school children in the near future, and to give treatment to those who require it. The European patient showed no ova in his faeces after one dose of m 60, and during the six weeks following he gained 5 lb. in weight.

The faeces of the majority of patients in the General Hospital, including all those who showed any signs of hookworm infection, have been examined in the pathological department. The films have been made direct from the faeces; three slides have been examined before the specimen has been considered to be free from ova, and, wherever possible, two such examinations have been made before the patient has been pronounced free from worms. Of course it is realized that such methods are not absolute—a fact which in a few cases has been demonstrated by post-mortem examination.

It has been found that carbon tetrachloride alone is a fairly efficient anthelmintic for ascariis, but in combination with oil of chenopodium it has a much higher efficiency and practically never fails. This combination is believed



to be somewhat more effective than carbon tetrachloride alone for a pure hookworm infection also. Doses up to 1 drachm of carbon tetrachloride alone are being given to adults. Formerly  $\pi$  80 were frequently given, but cases that were resistant to 1 drachm were usually found to be equally resistant to the larger dose. The dose is given first thing in the morning before eating, and no purge is given.

After trying various combinations the following standard treatment is given to adults: one ounce of castor oil is given at night, and the next morning a mixture containing 1 drachm of carbon tetrachloride, 1 c.cm. of oil of chenopodium, and 1/2 oz. of liquid paraffin. As a rule the faeces are examined again a week to ten days after treatment, and if necessary the treatment is repeated. The immediate effect on the patients does not seem to be any more marked when this mixture is used than when the carbon tetrachloride is given alone. Almost all the patients complain of feeling drunk for a time varying from a few minutes to a day. As a rule three or four motions are produced in the twenty-four hours following the treatment, and these often contain numerous worms (ascaris). Occasionally slight vomiting, headache, or pain in the abdomen occur.

The treatment has been given to Chinese, Dyaks, Tamils, and one Japanese, and the series of 84 cases contains one European and one Chinese schoolboy who were not in the General Hospital. Almost all the Dyaks examined have been found to harbour ascaris, and a large percentage hookworms also. In spite of this fact, almost all the very heavily infected cases, exhibiting extreme anaemia, oedema, and debility, occur in Chinese, and no death from ankylostomiasis can be recollected among the Dyaks at the General Hospital. The Chinese also appear to be somewhat more resistant to treatment. The results as regards actual clinical improvement among the heavily infected Chinese have been somewhat disappointing. In several the stools have been reported free from ova after treatment, and the patient has left the hospital without oedema and feeling much stronger, though probably with still a high degree of anaemia; only to return shortly afterwards with oedema again, though the faeces still show no ova. In many cases a weekly haemoglobin test by the Tallqvist method was made, but few showed a rapid or extensive rise. Many cases of this nature were heavy opium smokers. All cases were given *mistura ferri arsenicalis*, and many showed an immediate, rapid, and apparently permanent improvement, in contrast to the type of case mentioned above.

The drug appears to have no effect against *Trichocephalus dispar* and *Strongyloides stercoralis*, and specimens containing ova or embryos of these worms only, have been counted as negative. The drug has been given to patients with fever from various causes and has also been given in conjunction with courses of novarsenobillon and emetine injections, without ill results. In a few cases a full dose has been given on two alternate mornings. This caused no ill effects but did not apparently increase the anthelmintic power of the drug. The majority of the hookworms were of the species *Necator*.

In 35 out of the 84 patients treated two negative examinations of the faeces were obtained after treatment, and in 17 one only. In 26 instances the patients received several treatments, but still showed ova in the faeces or left the hospital before treatment was completed.\* Six patients died; they were as follows:

*Case 1.*—A Chinese, aged 54, was admitted on March 14th, 1922, with a heavy hookworm infection. He received in all 8 c.cm. of oil of chenopodium and 140 grains of thymol. Ova of hookworms were still reported very numerous. On September 1st he received  $\pi$  60 of carbon tetrachloride; on September 8th ova of hookworms and ascaris were reported as scanty. On September 15th he died. The necropsy revealed oedema of lungs and purulent bronchitis with numerous hookworms and trichocephalus in the intestines.

*Case 2.*—A Chinese, aged 38, was admitted on August 14th, 1922, with a heavy hookworm infection and a mild ascaris infection. He had marked ascites and cirrhosis of the liver. The abdomen was tapped ten times. He received three doses  $\pi$  60 of carbon tetrachloride, after which scanty ova of hookworms and

embryos of *Strongyloides stercoralis* were reported. On November 20th he died. The necropsy revealed typical cirrhosis of the liver of the alcoholic type and a few hookworms in the small intestine.

*Case 3.*—A Chinese woman, aged 26, was admitted on October 16th, 1922, with a heavy infection of hookworms and amoebic dysentery. The haemoglobin index by the Tallqvist method was 30 per cent., and later fell to 10 per cent. The dysentery cleared up under emetine, and she received three doses  $\pi$  60 of carbon tetrachloride, after which on one occasion no ova were found in the faeces. She was intolerant of any form of control and frequently left the hospital and returned. On February 1st, 1923, she died with diarrhoea and ascites. At the post-mortem examination about twenty hookworms were found in the small intestine.

*Case 4.*—A Tamil, aged 38, admitted November 13th, 1922. He harboured ankylostomoses, ascites, and *Trichocephalus dispar*. He received 1/2 c.cm. of oil of chenopodium with  $\pi$  60 of carbon tetrachloride. He then left the hospital, but returned on December 25th, his faeces showing ova of *Trichocephalus dispar* and hookworms, both very scanty. On January 29th, 1923, he died. The necropsy showed pyopneumothorax. No worms were found in the intestines.

*Case 5.*—A Chinese, aged 34, admitted on November 22nd, 1922, with subtertian malaria and an infection of hookworms. The malaria responded to quinine treatment, and on November 29th he received  $\pi$  80 of carbon tetrachloride. On December 5th he became mentally deranged, and later violent, so that he was removed from the hospital. On February 19th, 1923, he died of amoebic dysentery. The intestines were not examined for worms.

*Case 6.*—A Chinese, aged 64, admitted on December 7th, 1922, with epithelioma of the external auditory meatus. He also harboured hookworms, ascites, with which he was heavily infected, and *Trichocephalus dispar*. He was later found to be suffering from quartan malaria and developed amoebic dysentery. He received 1 c.cm. of oil of chenopodium in a mixture with  $\pi$  45 of carbon tetrachloride; after this no ova were found in his faeces. He died on December 27th. At the necropsy about six hookworms were found in the small intestine and numerous *Trichocephalus dispar* in the large. There were no ascaris. Macroscopically the heart and liver did not appear to be fatty.

I wish to express my indebtedness to Miss E. J. O'Driscoll, under whose supervision all the faeces examinations were carried out, and who made suggestions as to dosage. I also wish to thank Mr. W. E. le Gros Clark, Principal Medical Officer of Sarawak, for permission to publish the cases.

## AN EXTREME CASE OF DIFFUSE SYPHILITIC FIBROSIS OF THE LUNGS.

BY

F. PARKES WEBER, M.A., M.D., F.R.C.P.

In the work on *Fibroid Diseases of the Lung*, by Sir Andrew Clark, Dr. W. J. Hadley, and Dr. Arnold Chaplin (London, 1894, p. 84), it is stated that "syphilis is undoubtedly, etiologically, concerned in fibroid disease; but it is with extreme rarity that cases capable of being ascribed to this cause are to be met with." It is further stated that most syphilitic cases take "the form of patches of gummatous material with induration around them. In some few cases a diffused form is met with, much resembling pure fibroid disease."

It is of this diffused form that the following case is a most remarkable example.

The patient, a man aged 53 years, was admitted to the German Hospital on March 28th, 1923, under the care of my colleague, Dr. E. Schwarz. I saw him later during the temporary absence of Dr. Schwarz, by whose kindness I am permitted to publish the case. On admission the patient was thin and emaciated-looking, with dyspnoea and an extreme degree of "clubbed fingers." There was no fever. The history was that he had had a chance twenty years ago, and that his wife had had three or four miscarriages. He had had influenza in 1918, but had otherwise enjoyed fairly good health until about six months ago, when he commenced to suffer from shortness of breath. His wife thought he had been ill for a somewhat longer time. In the hospital, besides the dyspnoea and clubbed fingers, the chief sign was extreme dullness to percussion over the upper parts of both lungs, especially in the supraclavicular regions, and at the back, from the apices down to the middle of the scapulae, with breath sounds of vesiculo-bronchial type. At one part of the left back slight cavernous breathing was heard; over the bases there were some pleuritic sounds. The cardiac dullness was increased to left and right, and there was an accentuated pulmonary second sound. There was apparently no enlargement of the spleen or liver. The urine was free from albumin and sugar.

At first the case appeared to be one of chronic pulmonary fibrosis of tuberculous origin, with dilatation and hypertrophy of the right

\* The clinical reports of these cases have been omitted owing to pressure on space.



side of the heart, and with clubbed fingers connected with the chronic obstruction in the pulmonary circulation. Roentgen-ray examination of the lungs likewise suggested the changes met with in cases of diffuse chronic pulmonary tuberculosis. But the absence of crepitation and all signs of active pulmonary tuberculosis was remarkable. There was very little expectoration and in the scanty mucous sputum obtainable no tubercle bacilli could be found. The Pirquet cuti-reaction for tuberculosis was weakly positive, as it is in most adults. On the other hand the patient's blood serum (April 5th) gave a strongly positive Wassermann reaction. During a prolonged attack of the "cardiac dyspnoea" type the patient died on April 6th. From April 3rd there had been occasional slight fever.

The necropsy (Dr. Lang and Dr. Welsch) showed diffuse fibrosis of both lungs, especially of the upper lobes, so that little pieces cut from the upper lobes sank in water. In the middle portions of the lungs the fibrosis was not so extreme as in the upper lobes, and pieces did not sink in water. Over the lower lobes there was old pleurisy. The cavernous breathing heard (as above mentioned) over the left back during life was obviously due to solid fibrosed lung over a bronchus. The heart was hypertrophied, especially on the right side, doubtless owing to the obstruction in the pulmonary circulation. The wall of the right ventricle was relatively so thick as almost to resemble that of a left ventricle. There was an old calcareous patch in the arch of the aorta, and the left coronary artery was considerably calcified. Elsewhere in the body there was nothing special to note, excepting what suggested a small infarct under the capsule of the liver; it might have been of local syphilitic origin. A careful search was made for old tuberculous lesions, but no caseous or calcareous foci were found in either lung and there was nothing in the lymphatic glands to suggest old tuberculosis.

A microscopic section from the upper lobe of the left lung shows extreme fibrosis, with irregularly distributed lymphocytic infiltration, but no characteristic tuberculous feature. Professor S. G. Shattock, who kindly examined it, writes: "I should think that the fibrosis is syphilitic, because of the positive Wassermann reaction, and because of the diffuseness of the change and the lymphocytic infiltration of the fibrous tissue and comparatively unaffected state of the alveolar epithelium."

Besides Dr. Schwarz, I have to thank the house-physicians, Dr. Lang and Dr. Welsch, for their kind help.

Since reading a paper on acquired syphilis of the lungs at the Medical Section of the Royal Society of Medicine in November, 1916,<sup>1</sup> I have become inclined to think that syphilitic changes in the lungs occur more frequently than is even yet commonly supposed. In patients with old tertiary syphilitic lesions elsewhere it is not very rare by Roentgen-ray examination of the lungs to find appearances suggesting tuberculous changes, though all other signs and symptoms of active tuberculosis are absent, notably in regard to examination of sputum. In some of these cases I think that there are minor degrees of syphilitic fibrosis of the lungs present. I believe, moreover, that in some cases diffuse syphilitic fibrosis of the lungs commences insidiously, and runs an insidious and progressive course, the patient being supposed to suffer from ordinary chronic bronchitis and pulmonary emphysema with or without acute exacerbations.

## REFERENCE.

<sup>1</sup> F. Parkes Weber: *Proc. Roy. Soc. Med.*, Section of Medicine, 1916-17, vol. x, p. 23.

## VOLVULUS OF THE LARGE INTESTINE.

BY

A. H. SOUTHAM, M.D., M.Ch.Oxon., F.R.C.S.Eng.,

ASSISTANT SURGICAL OFFICER, MANCHESTER ROYAL INFIRMARY; HONORARY SURGEON FOR CHILDREN, MANCHESTER NORTHERN HOSPITAL.

ACUTE volvulus of the large intestine is one of the rarer and most fatal forms of intestinal obstruction. Out of 199 cases of acute colonic obstruction operated upon at the Manchester Royal Infirmary during the ten years 1913-22 there were only six cases of this nature; of these two died after operation. In the six cases the caecum and the sigmoid colon were each involved on three occasions. By the term "volvulus" is meant the twisting of the bowel upon its mesenteric axis, resulting in obstruction to the passage of the intestinal contents and arrest of the circulation in the involved loop when the torsion exceeds 180 degrees. A rare type of volvulus has also been described where the sigmoid colon is intertwined with a coil of small intestine.

## ETIOLOGY.

Torsion can only occur in that part of the large intestine which possesses a mesentery and where its base of attachment is narrow; such conditions are found in the

sigmoid loop, which is said to be implicated in about 70 per cent. of cases. Torsion is less often met with at the ileo-caecal region and is possible only when the caecum or ascending colon has some degree of freedom of movement. This unfixed condition may be of congenital or acquired origin. The congenital form is seen when the caecum and ascending colon have a mesenteric attachment to the posterior abdominal wall—a result of failure of obliteration of the foetal mesentery, which normally fuses with the posterior parietal peritoneum in this region and leads to fixation of the gut. Perhaps more often the condition is acquired and is found associated with a long history of constipation, where the bowel is more or less constantly distended, and the retained contents drag upon and elongate the mesentery, thus bringing the ends of the loop close together, as may not unfrequently be seen in the sigmoid colon. In Hirschsprung's disease (idiopathic dilatation of the colon), a condition which is characterized by lengthening and dilatation of the colon, and in which the most marked clinical features are constipation and meteorism, all the conditions favourable to the occurrence of volvulus are found. This disease, though more commonly seen in children than adults, is not so rare as is generally supposed, and it is not unlikely that it may be an important predisposing factor in the etiology of volvulus, when the disease pursues a chronic course. Cases of so-called megacolon in the adult have been recorded from time to time, and these may be examples of Hirschsprung's disease dating from infancy which have reached mature age, or the dilatation of the colon may only commence when adult life is reached. The anatomical arrangement of the redundant sigmoid invites kinks and twists, and it is not difficult to see how such cases may result in a volvulus.

One of the predisposing causes of torsion is a laxity of the attachments of the colon. In children, however, torsion is a rare occurrence, and at this period of life want of fixation of the bowel tends to predispose rather to intussusception. In elderly persons, on the other hand, intussusception is seldom met with, and with advancing age the liability of the bowel to become twisted appears to be greater.

The sex incidence is remarkable in relation to these affections of the colon; all of them occur more frequently in males—intussusception 70 per cent., volvulus 80 per cent., and Hirschsprung's disease 85 per cent.<sup>1</sup> This fact is difficult to explain. It appears not unlikely that the actual onset of volvulus is dependent on some disorder of the neuromuscular mechanism of the bowel. Keith<sup>2</sup> has demonstrated the presence of special neuro-muscular junctions, situated at certain points in the intestine, which he considers control its movements. It may be that, owing to some abnormal cause of irritation, this specialized tissue is thrown into a state of spasm and a temporary obstruction is set up. Acute distension of the bowel is thereby produced and a kink or twist may follow, when the bowel is freely mobile, as the result of irregular peristaltic action.

## SYMPTOMS.

The onset of the condition is generally acute, as both obstruction and strangulation will be produced. The sudden onset in a patient usually over 40 years of age, with abdominal pain, absolute constipation, and meteorism, is the combination which should suggest a volvulus. Abdominal distension is the most marked clinical feature of the condition, and in no other variety of intestinal obstruction is the distension produced so rapidly and to such a marked degree.

A tumour may sometimes be palpated, or the outline of the distended loop seen through the abdominal wall. Vomiting is not as a rule marked, as the obstruction is situated low down. Collapse appears later, and, where operation is delayed, death usually follows within a week.

## MORTALITY.

The prognosis depends on the time when operation is carried out, and recent figures show a marked improvement with earlier diagnosis and more prompt surgical intervention. Barnard<sup>3</sup> records a mortality of 93 per cent. out of



27 cases in thirteen years at the London Hospital. In a series of 9 cases at the Massachusetts General Hospital from 1893 to 1907 the mortality was 100 per cent. Richardson<sup>4</sup> records 16 cases (8 affecting the large intestine) operated on at the same hospital between 1908 and 1917, with a mortality of only 25 per cent.

#### TREATMENT.

The treatment is necessarily surgical. On opening the abdomen the volvulus presents as an enormously distended coil of gut, which appears almost to fill the abdominal cavity. The loop is delivered through the incision, and if healthy is untwisted, and a Paul's tube is then fixed in the summit and brought out through an abdominal incision. This allows the contents of the intestine to be evacuated and the easy reposition of the bowel. Further, the fixation of the bowel to the anterior abdominal wall by the Paul's tube prevents a recurrence of the twist, a complication otherwise liable to occur. Should the intestine prove to be gangrenous or impossible to untwist, the affected segment is resected and Paul's tubes fixed in the divided ends. Later, if the patient recovers, an anastomosis can be carried out.

The following three cases have come under my care:

#### CASE I.

The patient, a female aged 63 years, was admitted to the Manchester Royal Infirmary on January 23rd, 1921. She had been seized with abdominal pain three days previously, and the bowels had not been moved in spite of repeated enemata. On examination the abdomen was considerably distended, but no definite tumour could be detected on abdominal or rectal examination. The abdomen was opened by a right paramedian incision, and the sigmoid loop was found very dilated. It was seen to have undergone two complete twists on its mesenteric axis. These were untwisted without difficulty and a Paul's tube tied in the summit and fixed to the abdominal wall. The wound was closed, and the bowels moved subsequently each day. She was discharged from hospital seven weeks later with the colostomy practically closed.

#### CASE II.

A male, aged 50 years, was admitted to hospital on July 28th, 1920. He had been ill for five days with abdominal pain, constipation, and vomiting. His general condition was poor. The abdomen appeared very distended and a tumour was detected in the right side. Laparotomy showed this to be a greatly ballooned caecum which had a gangrenous patch on its anterior wall. The bowel had undergone one and a half twists. After detorsion a Paul's tube was fixed in the caecum through the gangrenous area and the wound closed. The patient failed to rally after the operation and died the following day.

#### CASE III.

I was asked, a short time ago, to see a gentleman, aged 67 years, whose illness had commenced with abdominal pain three days previously. He had suffered from chronic constipation, which had now become absolute, for many years. The abdomen appeared considerably distended, and on laparotomy an enormously ballooned sigmoid was found which had undergone rather more than one complete twist, whilst the remainder of the colon appeared both dilated and hypertrophied. The volvulus was untwisted, a Paul's tube tied in the apex, and the abdomen closed. He made satisfactory progress for six weeks, but subsequently succumbed to a sudden attack of heart failure.

It is still a debatable question among surgeons whether, in cases of acute intestinal obstruction, a general exploration of the abdomen should be carried out or a simple caecostomy performed. In sudden obstruction it may be impossible to exclude cases of volvulus, and caecostomy under such conditions would certainly be liable to end in disaster. Though cases of this nature are not common, yet it is under such conditions, where the pre-operative diagnosis may be uncertain, that the blind caecostomy is open to objection.

#### REFERENCES.

- <sup>1</sup> Barnard: *Contributions to Abdominal Surgery*, 1910. <sup>2</sup> *Lancet*, 1915, ii, p. 371. <sup>3</sup> Barnard: *Contributions to Abdominal Surgery*, 1910. <sup>4</sup> *Boston Medical and Surgical Journal*, 1920, vol. 183, p. 268.

## AUTOPLASTIC OVARIAN TRANSPLANTATION.

BY

J. H. NATTRASS, M.D., B.S.,

HONORARY GYNAECOLOGICAL SURGEON, WOMEN'S HOSPITAL, MELBOURNE.

THE following case is of interest because the patient has been under observation for thirteen years after an operation for transplantation of the ovaries, and because it was possible to make macroscopic and microscopic examinations nine years and seven months after the transplantation was performed. The clinical and histological evidence combine to show that the organs are still in a healthy condition.

On March 5th, 1911, a married woman, aged 17, was admitted for her confinement to the obstetrical department of the Women's Hospital, Melbourne. She had suffered from tuberculous disease of the hip, had gone on crutches since the age of 7, and presented a discharging tuberculous sinus over the right trochanter. Scars of healed sinuses were seen over the lower lumbar vertebrae and right buttock. Caesarean section was performed and a full-time female child, weighing 6 lb., delivered. In order to prevent further conception I transplanted the ovaries into the anterior abdominal wall. Three and a half years later I reported the case, with observations to date, in the *Medical Journal of Australia* of January 16th, 1915, vol. 1, No. 3. Since then the patient has been under continual observation; owing to the strenuous use of crutches a ventral hernia developed in the upper part of the scar.

The patient's health has been generally good. During the last five years she has gradually put on weight; her skin is fresh and her eyes are clear; the tuberculous lesions in the bones of the right lower extremity have practically healed, there being a little discharge only occasionally. The menstrual flow occurs every 28 days, with slight variations of two or three days on either side. She cannot remember ever missing a period. The duration is four days. There is no pain whatever in the region of the uterus, but some tenderness usually indicates which ovary is providing the Graafian follicle, it may be each ovary alternately, or either ovary two or three times successively. The pain has not been more than what would be called tenderness at any time, and is usually more marked in the subcutaneous graft than in the one more deeply placed in the rectus sheath. Sometimes slight swelling accompanies the tenderness. The sexual appetite is not decreased.

The right ovary, which was placed on the aponeurosis of the external oblique abdominal muscle, is easily felt; it feels a little larger than normal. The left ovary, more deeply placed in the rectus sheath, is more difficult to feel, but it can be located as a slight thickening, and each of them on pressure produces a sickening sensation. The uterus is normal in size. There is no leucorrhoea. There is no evidence of atrophy. Bartholin's glands are observed to function.

On October 15th, 1920, the patient complained that two days previously, during a fit of coughing, she suddenly felt a severe pain, with some swelling in the hernial sac. An irreducible strangulated hernia was at once diagnosed, and the patient was hurried to the Women's Hospital for immediate operation. After the hernia had been dealt with, and the peritoneal cavity closed, opportunity was taken to examine the graft in the rectus sheath. As its situation was so well known, a few touches with the knife were sufficient to reveal it, snugly contained in the sheath, and firmly adherent to the surrounding tissues. It had been placed in this situation roughly nine years and seven months before (March 5th, 1911). It was about 1½ inches in length, 1/2 to 3/4 of an inch in breadth, reddish in colour like the tissue around it, firm in consistence. Several Graafian follicles could be felt, varying in size, the largest being about the size of a small pea. Some follicles could be seen, greyish in colour, projecting slightly, and when pricked with a knife exuded liquor folliculi. A small piece was removed for microscopic examination. Sections of the graft showed its histology to be quite consistent with the clinical history of the patient. Perfectly formed Graafian follicles and corpora lutea in normal ovarian stroma can be demonstrated, whilst the abundant arteries, veins, capillaries, and nerves indicate how completely the graft has been adapted by its new environment.

April 28th, 1923: The patient, now in the thirteenth year of observation, is still menstruating regularly, and her sexual life is apparently normal.

This case is interesting, for the following reasons:

(1) The length of time during which the patient has been under careful observation—that is, nine years and seven months. (It is also thought that this is the only case on record where a human ovarian graft has been microscopically examined after being transplanted so long.)

(2) The sexual life of the patient has been quite normal. The grafted ovaries have apparently discharged their functions quite as well as if they had not been grafted. Opinions have been expressed by some<sup>1</sup> that a graft would not continue to function longer than a few months, or perhaps a year or two; but the information obtained from this case clearly shows that



the grafted ovaries may carry on their function for a much longer period.

(3) Except for a little tenderness, and occasionally slight swelling about the time of menstruation, not the slightest inconvenience has been caused by the grafted ovaries in their new location.

The conclusions resulting from the consideration of this case, especially when taken in conjunction with the reports on this subject by other operators,<sup>2</sup> demonstrate beyond all doubt that autoplasmic transplantation of the ovaries is a most valuable gynaecological procedure, and is a definite step forward in the conservative surgery of these organs. The simplicity of the operation, the ease and rapidity with which it can be done, the absolute assurance of success, if a few simple facts are observed,<sup>3</sup> justifies its use beyond all doubt in suitable cases.<sup>4</sup>

I am much indebted to Mr. W. J. Owen, of the Australian Institute of Anatomical Research, Melbourne, for preparing the microscopical sections, and for microphotographs.

#### REFERENCES.

<sup>1</sup> Crossen's *Operative Gynaecology*, 2nd edition, p. 462, para. 2. <sup>2</sup> Blair Bell: *Lancet*, October 30th, 1920; Crossen's *Operative Gynaecology*, 2nd edition, devotes forty pages to this subject. <sup>3</sup> Nattrass: *Med. Journ. of Australia*, January 16th, 1915, vol. i, No. 3. <sup>4</sup> Blair Bell: *Lancet*, October 30th, 1920; Nattrass: *Med. Journ. of Australia*, December 20th, 1910, vol. xv, No. 12.

## A CASE OF PITUITOUS CATARRH.

BY

SIR PERCIVAL HORTON-SMITH HARTLEY, C.V.O.,  
M.D., F.R.C.P.,

PHYSICIAN TO ST. BARTHOLOMEW'S AND TO THE BROMPTON HOSPITALS;  
AND

IVOR J. DAVIES, M.D., M.R.C.P.,

ASSISTANT PHYSICIAN, ROYAL INFIRMARY, CARDIFF.

Cases of that variety of bronchitis known as "pituitous catarrh," originally described by Laënnec, are exceedingly rare, and for this reason it appears to us of interest to report the following instance. The patient was under the immediate care of one of us (I. J. D.), and on February 9th was seen by us together in consultation.

The patient was a married lady, aged 34; her height was 5 ft. 2½ in., her weight 9 st. Her maternal grandmother had died of bronchitis, but otherwise the family history was unimportant. She was of a cheerful disposition, and had enjoyed fair health, except that since 1919 she had been subject to attacks of bronchitis. These occurred twice in 1919, and once each in 1920 and 1922, and were respectively of six, four, three, and two weeks' duration. In each the sputum was of the peculiar character seen in the present attack (1923), and there can be little doubt that they were also attacks of pituitous catarrh, though the nature of the malady was not recognized at the time.

The present attack commenced with a "cold" at Christmas, 1922. This was followed by bronchial catarrh, with the expectoration of some phlegm of the peculiar character to be shortly described. This lasted for about a week and then improved, but the cough and phlegm did not entirely disappear. In the middle of January, 1923, the bronchial catarrh became worse and she commenced to bring up larger quantities of the peculiar expectoration. There had been hitherto little, if any, pyrexia, and the patient had been getting up, though confined to the house. On February 5th, however, owing to the increasing cough and distress, she took to her bed, where she remained for the following three weeks.

On February 9th, when seen in consultation, her condition was as follows:

She was sitting up in bed, racked by a harassing cough. The lips were faintly cyanosed. Temperature 99.5°; respiration somewhat hurried. She was well nourished; tongue clean; teeth satisfactory; no pyorrhoea. Throat natural.

The chest was a little deeper than natural, but there was no marked emphysema. Heart natural; pulse 90, regular, soft.

Sonoro-sibilant râles were audible all over the lungs, with also some scattered moist sounds. There were no signs pointing to tuberculosis or of consolidation.

The abdomen, nervous system, and urine were natural.

The cough was very troublesome from continual efforts to bring up the sticky expectoration. At intervals of an hour or so a paroxysm would occur, and these attacks, especially at night, were often distressing, a good deal of cough being required to bring up a small quantity of phlegm.

The sputum, which was coughed up as a rule in small amounts at a time, was quite unusual in character, and quickly formed a thick, ropy homogeneous mass in the sputum pot. This was found

to consist of mucus, looking just like unboiled white of egg, as described by Laënnec, and was covered on the surface with a white froth. The mass of mucus was lightly streaked with small plugs, whitish or yellowish-white in colour, composed of muco-pus from the smaller bronchi.

The expectoration was expelled in small quantities at a time, varying from a teaspoonful or two to half an ounce. But later, when improvement set in and some sleep was possible, several ounces were expectorated in a short time, and more than once a mug of 6-ounce capacity was filled in a quarter of an hour. A bout of coughing would last until the sticky mucus was expelled, relief finally coming with the expulsion of one of the small plugs of muco-pus to which we have referred. For a period of a fortnight the average daily amount of sputum was 20 ounces, but on several days a greater amount was brought up, 30 ounces being the largest quantity expectorated in twenty-four hours.

A characteristic feature of the sputum was the ease with which it could be emptied from vessel to vessel, the whole flopping out *en masse*, leaving the sputum pot clean, save for a little froth near the rim. Its tenacious character was also well shown by the fact that if a small portion were seized with a pair of forceps, the whole mass could be pulled as a string from one pot to another.

The patient was kept strictly in bed, a steam-kettle was ordered, and poultices and antiphlogistine to the chest. Since the sputum was so sticky and difficult to bring up, belladonna seemed contraindicated in spite of the amount of expectoration, and a mixture containing sodium bicarbonate, ammonium carbonate, vinum ipecacuanhae, and syrup of squills was prescribed. Under this treatment the symptoms slowly improved, and the cough and phlegm gradually lessened, but it was three weeks before the patient was able to leave her bed, and four weeks longer before she could leave the house. At no time, we may add, did the temperature reach 100°, though ranging at night between 99° and 100°.

The patient's cure was finally completed by a stay of three weeks at Bournemouth, which she left on April 22nd, free from symptoms, and with her chest quite clear.

Dr. H. A. Scholberg, joint pathologist and bacteriologist to the Royal Infirmary, Cardiff, examined the sputum in more detail, and reported that the bulk of the material was, as its appearance indicated, mucus. He also found that a small quantity of albumin (but no globulin) was present, amounting to roughly just under 0.5 per mille, as measured by the Esbach's tube. The tenacious yellowish-white plugs were found under the microscope to consist of mucus and pus cells (with Gram-positive diplococci), clearly coming, in Dr. Scholberg's opinion, from the bronchioles.

Cultivation of the sputum showed the presence of no unusual organisms, but many colonies of streptococci and of *Micrococcus catarrhalis*, with a few staphylococci, were grown. Tubercle bacilli were not found, nor had they been detected at a previous examination.

#### Commentary.

In his original description of "pituitous catarrh" Laënnec wrote as follows: "I call that variety of catarrh 'pituitous' which is associated with an expectoration which is colourless, transparent, ropy, frothing on the surface, and which when the foam has been removed resembles white of egg diluted with water."

Defined in this way the case which we have described falls into this type of bronchitis, though in this instance there was but little "dilution" of the "white of egg" appearance. It is a variety which is, in our experience, extremely uncommon, and is one in which the stress of the malady would appear to fall upon the mucous glands of the bronchial tract, leading to very excessive secretion of mucus. In this connexion it may be of interest to add that the lady whose case we have recorded, for many years on first waking in the morning had been obliged to remove an accumulation of sticky mucus from the roof of the mouth, thus indicating possibly a perverse activity on the part of her mucous glands.

But few cases of pituitous catarrh are described in the literature, and it would appear to us from the clinical descriptions that in some of those published confusion has arisen between this variety of bronchitis and acute oedema of the lung, the abundant frothy sputum met with in each case having led to the mistake.

A careful investigation of the sputum should, however, at once distinguish them. In acute oedema of the lung, as we have shown elsewhere,<sup>2</sup> when the froth has been removed the expectoration will be seen to be yellow or amber colour; in pituitous catarrh it is like white of egg. In the former there is no mucus in solution, or, if present, it occurs in small and varying quantities, depending on the duration of the attack and the admixture of ordinary muco-purulent sputum; in the latter the secretion is chiefly composed of mucus, and thus is much more viscid. Thirdly, and most important, while the former contains so much protein as to become solid on boiling, whence the name "albuminous expectoration," the latter contains only a



trace of albumin. The diagnosis, therefore, should not be difficult, provided the sputum be carefully examined.

## REFERENCES.

- <sup>1</sup> *Traité de l'auscultation médiate et des maladies des poumons et du cœur*, par R. T. H. Laennec, troisième édition, tome 1, p. 151, Paris, 1831.  
<sup>2</sup> Albuminous Expectoration following Paracentesis of the Chest, by P. Horton-Smith Hartley. *St. Bartholomew's Hospital Reports*, vol. Ixi, 1905, p. 77.

## LACERATED KIDNEY DUE TO INDIRECT VIOLENCE.

BY

JOHN C. JEFFERSON, F.R.C.S.,  
HONORARY SURGEON, ROCHDALE INFIRMARY.

THERE are several points of interest in the following case, which will be discussed after the facts have been related.

Mrs. C., aged 53, was first seen on January 1st, 1923. She stated that thirty-six hours previously she had fallen from a chair on which she was standing, and immediately afterwards was seized with abdominal pain. She went to bed, and some time during the night vomiting commenced, and continued up to the time of my seeing her on the morning of the second day after the accident. She then appeared very ill. The pulse was 110 and rather weak, the temperature 100°. There were no signs of external violence. The abdomen was distended and acutely tender in its lower segments, particularly over the right iliac fossa. It exhibited an intense rigidity below the level of the umbilicus; above that level rigidity was not so marked. The liver dullness was not diminished; rectal and vaginal examinations yielded no information. The urine was scanty and high-coloured, but contained no blood. A diagnosis of peritonitis was made, though I was unable to determine its cause.

## Operation.

She was removed to hospital, where operation was at once performed. On palpation under the anaesthetic a fixed mass was felt in the right iliac fossa, passing backwards into the right lumbar region and upwards beneath the ribs.

An incision over the right rectus was made, and it was at once seen that there was a considerable quantity of free blood and clot in the abdominal cavity. The mass felt on palpation was found to be a haematoma around the right kidney. This haematoma had tracked downwards along the psoas, had stripped up the peritoneum, and lifted forwards the caecum and ileo-caecal valve; further, it had percolated into the lower part of the mesentery of the small intestine.

To the outer side of the ascending colon there was a small tear in the parietal peritoneum not more than one inch long. Through this blood had evidently made its way into the peritoneal cavity. It was interesting to note that the caecum, appendix, and terminal part of the ileum were deeply ecchymosed, and presented the appearance that they would have shown had they been involved in a recent strangulation. The blood and clots were rapidly cleared out, the rent in the peritoneum sutured, and the abdomen closed.

An incision was now made exposing the right kidney. The haematoma was cleared away, and, on gentle examination of the organ *in situ*, a laceration was felt on the anterior surface of the lower pole extending from the lateral border inwards towards, but not involving, the pelvis. As there was now no bleeding from the laceration its depth was not determined, and I contented myself with packing the cavity resulting from the evacuation of the haematoma and closing the wound as far as practicable around the pack.

## After-History: Recovery.

The patient's condition at the end of the operation was grave and continued so for two days, there being much post-operative vomiting. From then on, however, she made good progress. The packing was removed in two or three stages and a drainage tube substituted. Through this urine was discharged in small amount for five weeks. There was never any blood in the urine passed naturally. The patient left hospital at the end of the eighth week.

In the first place, the laceration was caused by indirect violence. In such circumstances the injury to the kidney may arise from acute flexion of the body with corresponding acute flexion of the kidney on its transverse axis (Thomson Walker); or where there is no such flexion but where the accident consists of a fall from a height on to the buttocks, the kidney may be injured by direct impact against the twelfth rib or transverse process of the first lumbar vertebra (Tuffier). In the case under consideration I think the laceration was produced by the first mechanism, for the distance from the seat of an ordinary chair to the ground would hardly be sufficient to cause it by the second method.

Secondly, though lacerations of the kidney usually radiate outwards from the hilum, in this instance the laceration was produced in the cortex only, and, though small, had given rise to much haemorrhage.

Thirdly, there was no haematuria so far as I was able to observe. There may, of course, have been blood in the urine when the patient, who was by no means an intelligent type, was not in a condition to notice it. On the other hand, since the laceration was in the cortex only, there may have been none at any time.

Fourthly, although the laceration was caused by indirect violence the peritoneum was torn and there was accompanying haemoperitoneum.

There is no doubt that haemorrhage had already ceased at the time of operation, but it is highly probable that but for the treatment adopted urine would sooner or later have found its way into the peritoneal cavity, with fatal results.

I employed treatment by packing, rather than suture of the laceration, in order to save valuable time. In this connexion it is interesting to note that Albarran has collected six cases in which packing was resorted to; all recovered (Thomson Walker).

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### LACTIC ACID IN THE TREATMENT OF CHRONIC ENTERITIS.

A NUMBER of cases of chronic enteritis are associated with excessive fermentation of the intestinal content. The condition frequently arises *de novo*, although in a certain proportion of cases it follows an acute stage.

It occurs in babies as a result of the food becoming contaminated by micro-organisms. The motions are frequently loose, green, and malodorous. This is usually associated with abdominal distension, excessive flatus, and attacks of screaming due to colic. There is nothing palpable abdominally. In adults the following syndrome is present:

(1) Colic of either the small or large intestine. The pain is variable in intensity, and usually moves from one part to another. In the small intestine it is usually referred to the region of the umbilicus. The large intestine may be definitely palpable and tender to touch. I have seen one case where the caecum was palpable.

(2) The stools vary in consistency and colour. There may be looseness alternating with normally formed motions or constipation. The stools may be paler than usual, or even greenish. They are frequently offensive, and are likely to be associated with excessive flatus.

(3) There may be an associated gastric dyspepsia. Where the condition has lasted some time mental depression, loss of weight, anaemia, and headache may occur as a result of toxic absorption.

Cases of the types referred to respond very well to lactic acid. The rationale of the treatment lies in the fact that *B. coli*, which is as a rule unusually active in those cases where the motions are unduly offensive, cannot grow in a concentration of lactic acid of more than 1 per cent.<sup>1</sup> The treatment is a result of Metchnikoff's teaching, and given in this way is a satisfactory alternative to curdled milk preparations. The latter cannot always be tolerated by patients,<sup>2</sup> and involves a certain amount of difficulty where there is not the proper convenience for making bacterial preparations.

The following prescription is useful for adults:

R	Ac. lact.	...	...	...	...	...	3ij
	Syr. aurant.	...	...	...	...	...	3j
	Aq.	...	...	...	...	...	ad 3viij

Sig.: 3ss t.d.s. p.c.

Where there is gastric dyspepsia the following may be substituted:

R	Ac. lact.	...	...	...	...	...	3ij
	Liq. strych.	...	...	...	...	...	℞℞
	Tr. card. co.	...	...	...	...	...	3j
	Aq.	...	...	...	...	...	ad 3viij

Sig.: 3ss t.d.s. p.c.

I. H. LLOYD-WILLIAMS, M.B., B.S. Lond.,  
M.R.C.S., L.R.C.P.

<sup>1</sup> *Archives of the Middlesex Hospital*, 1916.

<sup>2</sup> Herschell: *BRITISH MEDICAL JOURNAL*, 1910, i, p. 21.



## Reports of Societies.

### TREATMENT OF DYSMENORRHOEA.

At a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine on June 7th, with Dr. T. W. EDEN in the chair, Mr. L. G. PHILLIPS read a paper on the treatment of dysmenorrhoea, with an analysis of 100 cases.

Mr. Phillips said that fifty cases were treated with extracts of ductless glands, either alone or in combination with antispasmodics. Only four cases of this group came eventually to operation as they failed to be relieved sufficiently to carry on their work in comparative comfort. When the ductless gland tablets were omitted the painful periods often returned. Forty cases were treated by antispasmodics alone, and of these thirty-four were benefited and the remaining six came to operation. Ten cases were treated between the periods with bromides and salicylates, combined with laxatives and small nightly doses of luminal during the periods; all were relieved.

In treating the cases an attempt was made to interpret all the available information and to evolve a plan of treatment based on the recognition of the following clinical types:

In Type 1 dysmenorrhoea was a disease of faulty hygiene, upbringing, and surroundings. This type was thin, anaemic, constipated and poorly developed, with visceroptosis and faulty posture and breathing; they followed sedentary lives with little exercise and fresh air. The feeble musculature of the uterus was easily exhausted and gave rise to cramp and pain when called upon to make expulsive efforts in the exhausted state. The treatment was directed to the correction of these faults. The correct mental attitude was cultivated by teaching the patient that menstruation was natural and that she must continue to bathe and take exercise as usual. No constricting clothing should be worn and stays must not be permitted to do the work of the abdominal muscles. Constipation was corrected by drinking plenty of water and eating fruit, combined with abdominal kneading night and morning. Exercise such as walking or tennis, and special exercises designed to strengthen the abdominal wall, formed an important part of the treatment.

In Type 2 the dysmenorrhoea was functional. These women complained not only of menstrual pain, but generally of headache, nausea, and constipation as well; they were usually nervous and worried. Ten such cases were treated successfully by sedatives: bromides and salicylates between the periods; one to one and a half grains of luminal nightly during and just before the period; and general hygienic measures.

In Type 3 the symptoms suggested some form of obstruction as the causal factor. The pain resembled ureteral and biliary colic in its intensity and sudden onset, and subsided rapidly when the clot was passed, just as in biliary and ureteral colic the pain ceased when the stone was passed. Gynaecologists still continued to employ cervical splitting operations, such as anterior hysterotomy, for the relief of pain. In three cases of hysterectomy for dysmenorrhoea performed during the period the uterus was found to contain clots. Whether the intrauterine clot was normal and was not dissolved because of endometrial defect, or whether clotting *in utero* was pathological, must be decided before the pain could be treated rationally. It was reasonable to suppose that a uterus with a poorly developed musculature might be unable to expel casts or clots even through a normal os.

Type 4 was a type of patient in whom there existed signs of arrested development of the genital organs. They complained of pain in one or other iliac region alone, or before the central pain. Menorrhagia was as common as scanty flow, because an undeveloped endometrium and musculature were linked up with a normal ovarian stimulus. The obvious treatment was to stimulate development of the uterus, and this was often successful. In addition to the general hygienic treatment organotherapy and electrical treatment were useful.

In ten cases where medical treatment had failed two were cured by curettage and one by anterior hysterotomy. Hysterectomy was performed in two cases where the uterus contained clots and showed marked arterio-sclerosis, and the remainder (very severe cases) were sterilized by radium.

One hundred cases treated surgically were followed up and compared with 100 cases treated medically. It was found that 25 per cent. were cured and 50 per cent. were unaffected, while the best results were in cases treated by curettage. These results, however, were inferior to those obtained in the series of 100 cases treated medically. Mr. Phillips believed that most gynaecologists felt that the surgical treatment of dysmenorrhoea without physical signs was disappointing.

In the discussion that followed, the PRESIDENT said that he was particularly impressed by the small number of patients who came to operation; in his experience operation cured 50 per cent. and relieved to some degree 25 per cent. Mr. BONNEY pointed out that the figures of results of treatment of dysmenorrhoea were confused by the variety of causes. If dilatation was limited to cases of the "virginal type" of dysmenorrhoea the operative results would be much better. It was remarkable that very small uteri were so often associated with extreme haemorrhage, for which hysterectomy was required. Retroversion was often a cause of dysmenorrhoea in a virgin, and could be cured by reposition of the uterus. Dr. J. M. BRYDGE said that as a general practitioner he had been called upon to treat many cases of dysmenorrhoea, and found that while patients aged 24 or less could generally be cured, those over that age generally failed to respond to medical measures. There was a large element of suggestion about the treatment, and success was likely to follow care and perseverance. Many of the "masculine type" of women who suffered from dysmenorrhoea played too many games, and got better with rest.

A number of specimens were exhibited by Dr. HERBERT SPENCER, including a sarcomatous ovarian dermoid cyst, a ruptured carcinoma of the ovary, and a microscopical preparation showing the effect on the Fallopian tube of torsion of an ovarian tumour. Dr. RUSSELL ANDREWS described a case of carcinoma of the cervix associated with prolapse of the uterus in a woman aged 77. Mr. VICTOR BONNEY read a short paper on diurnal incontinence of urine in women. In its early stages, he said, this form of incontinence only occurred when women made some effort producing sudden violent abdominal strain, such as coughing or sneezing, but as it grew worse it was provoked by any movement which involved a sudden jerk. Clinical examination showed that the escape of urine was associated with an abnormal descent of the bladder and urethra immediately behind the symphysis pubis.

### MUSCULATURE OF THE AORTA AND CARDIAC VALVES.

At a meeting of the Edinburgh Medico-Chirurgical Society, June 6th, with Dr. WILLIAM STEWART in the chair, Dr. A. BLACKHALL-MORISON read a communication on the musculature of the aorta and of the cardiac valves, anatomically, physiologically, and clinically considered.

Dr. Blackhall-Morison compared the work of the anatomist and of the physiologist, and pointed out the generally insufficient study of the valvular apparatus of the heart. He made special reference to the valuable and largely forgotten work of H. S. Savory, published in 1851 and 1852. With slight modifications, as the result of modern methods of investigation, Savory's observations and teachings were still accepted. The advantages were emphasized of a comparative study of the subject by serial sections, stained by modern methods. Dr. Blackhall-Morison then described the anatomy and physiology of the right venous entrances; he regarded the superior vena cava and coronary sinus as para-auricular structures, and the latter as the venous heart of the coronary circulation. He explained the progressive nature and complex function of auricular systole, and maintained that the muscular action of the lower segment of that chamber persisted during ventricular systole. Specializations in local valvular musculature were described, and the grounds given for belief in a local nervous control in the heart. The mechanism of muscular closure of the mitral orifice was described in detail, and what the speaker believed to be a hitherto unnoted series of *rotatores basis aortae* was demonstrated. The difference of the aortic and pulmonary arterial musculature was dealt with, and the relations shown of the



auricular muscle to the aorta and posterior aortic valve, together with conclusions as to the function of these muscle bundles. The general principle of centro-peripheral nervous influence on the heart was discussed, and the myogenic nature of some cardiac irregularities was called in question. Finally, an explanation was suggested of certain clinical conditions and their physical signs.

The paper was illustrated by lantern slides and microscopic sections, and was discussed by Professor RUSSELL and Dr. W. T. RITCHIE.

#### *Extensive Resections of Small Intestine.*

Mr. PIRIE WATSON read a communication on extensive resections of the small intestine, illustrated by a case on which he had operated.

This patient, a woman aged 63, was admitted to hospital suffering from acute intestinal obstruction, the result of mesenteric thrombosis; at operation it was necessary to resect seven and a half feet of gangrenous small intestine (ileum). Her former good health was quickly regained, with no nutritional or digestive disturbance; on a mixed diet the faeces and urine remained practically normal.

The term "extensive" was by consent limited arbitrarily to resection exceeding 200 cm. (6 ft. 7 in.); because of individual variation in the length of the bowel this length might equal one-fifth or almost one-half of the whole small intestine. Above the 200 cm. limit metabolic disturbances were common. Mr. Watson then presented an analysis of seventy-three recorded cases, of which sixty-four were "surgical recoveries," the death rate being 12.3 per cent.; this latter figure was, in his opinion, probably too low, because as a rule only successful cases were published. Good "functional recoveries," in which no disturbance of general health or digestion resulted, were obtained in 64 per cent. of cases—a high figure when one considered not only the magnitude of the operation, but also the grave nature of the lesion for which operation was performed. In a survey of the recorded cases it was found that age was apparently an unimportant factor, equally good results having followed operation on patients at both extremes of life; this was in contrast to Flint's animal experiments, which showed that operation was better borne by the fully developed than by young growing animals. The morbid conditions necessitating extensive resections were mentioned. As regards methods of operating, the majority of cases had been treated by an end-to-end anastomosis, but recently lateral anastomosis was being preferred; in eight successful cases Murphy's button had been employed. With reference to the part resected, clinical records seemed to show that resection of jejunum was not more serious than that of ileum. Untoward post-operative symptoms were not always in direct proportion to the length of bowel removed, other factors being of importance, such as the length and condition of the remaining bowel, its power of compensation, and the condition of the patient prior to operation. It was necessary to bear these points in mind in forming deductions from the result of experiments on healthy animals. The metabolic disturbances which might follow operation were described. In this connexion it was stated that carbohydrates were digested with greater ease than fats or nitrogenous foods, the most suitable diet being one rich in carbohydrates and poor in fat. Metabolic disturbances were absent in proportion to compensatory hypertrophy in the remaining bowel. This compensation was occasionally unstable, Brenner's case being recalled, in which compensation broke down two and a half years after operation. In conclusion, the speaker urged that where the choice at operation lay between closing the abdomen and a heroic resection, the latter should be attempted as affording the only chance of saving life.

The communication was discussed by Mr. STRUTHERS and Mr. QUARRY WOOD.

#### *Exhibition of Specimen.*

Dr. H. L. WATSON WEMYSS showed a specimen of a large gastric ulcer from a man aged 39, admitted to hospital with haematemesis and profound anaemia. Medical measures were unavailing, and death occurred from haemorrhage before blood transfusion or other surgical treatment could be carried out.

## Reviews.

### TUBERCLE BACILLI IN THE BLOOD.

A HANDBOOK of the treatment of tuberculosis<sup>1</sup> which has been edited by Professor Ernst Loewenstein of Vienna contains articles by various contributors, but only that by Professor G. LIEBERMEISTER seems worthy of extended notice. His researches upon the changes found in veins, especially in the pulmonary veins, arteries, and lymphatics, and upon the presence of tubercle bacilli in the blood stream, will tend to modify current opinion.

Liebermeister assures us that with patience any master of methods can demonstrate the presence of tubercle bacilli in the blood in every case of open pulmonary tuberculosis and in many cases of early disease. He therefore supports Rosenberger's much criticized view. According to these authorities it is more consistent with histological and biological facts to look on the pulmonary lesion as a part of a general disease. No doubt in many cases tuberculosis may begin in the lungs, and it is not possible to say when it becomes general. This happens when the tubercle bacilli enter the blood stream, and there is no way of fixing the time of this event. In rabbits and other animals, if free tubercle bacilli in not too great numbers are injected into the arteries, the tuberculous disease may become concentrated in the lungs.

It seems to be proved that even in acute military tuberculosis there are not more tubercle bacilli circulating in the blood than in cases of open tuberculosis of the lungs. Tubercle bacilli do not increase and multiply in the blood stream—nor do pneumococci or typhoid bacilli. It may be that the production of antibodies in the blood inhibits the growth of the bacilli, and so prevents acute military tuberculosis. If the tubercle bacilli in the blood stream are free and few in number they pass through the capillaries apparently unchanged and remain inert. Some of them may reach the tissues by the lymphatics and still remain inert. But if they are numerous and form clumps or become agglutinated with leucocytes they tend, like cocci, to cause emboli in vessels, especially the smallest, and these, with their bacilli, produce military tubercles in organs. The emboli may be large enough to form infarcts, and then to produce perplexing results; for example, cases have been reported in which hemiplegic symptoms suddenly arose, suggesting cerebral haemorrhage. In other circumstances large numbers of free bacilli may escape into organs and cause acute tuberculosis, and the lesion, for example, in the meninges, may be very similar in its histology to the lesions caused by streptococci, pneumococci, or influenza bacilli; but careful examination of the inflammatory new formation may disclose myriads of tubercle bacilli in the tissues without any tubercles. Thus tuberculosis in an acute form may be mistaken for sepsis. At the other extreme free bacilli may escape into the tissues in small numbers and cause mitosis of the fixed cells of the organ or chronic inflammatory changes of varying nature and degree terminating in fibrosis.

Possibly these bacilli have been attenuated in their virulence during their long or short career in the blood. They may even be disintegrated by the action of the blood and its antibodies and then liberate locally toxins—mainly endotoxins—which cause mild local inflammations. These vascular effects and lesions can be directly seen in lesions of the eye (conjunctiva, iris, and sclerotic coat), and their histology is different from the tubercles in the choroid first observed by Cohnheim. The same effects may be seen in the skin, but not so clearly. Thus many eye lesions and skin lesions, chronic or mild in character and apt to recur, are nothing else than the effects of tubercle bacilli lodged in these organs. Liebermeister considers that there are good reasons for thinking that similar chronic and mild lesions frequently occur in other organs beyond the range of direct vision, and produce symptoms and disturbances which we fail to trace to the true cause, sometimes because we do not

<sup>1</sup> *Handbuch der Gesamten Tuberkulose-Therapie*. Herausgegeben von Professor Dr. med. E. Loewenstein. Band I, Teil I und II. Berlin and Vienna: Urban und Schwarzenberg, 1923. (Teil I: 74 x 104, pp. 283; 26 figures, 6 plates. Teil II: pp. 756; 30 figures.)



suspect tuberculosis, and often because the specific test with tuberculin is not used. These mild secondary lesions of tuberculosis are rarely associated with the tertiary manifestations. The general symptoms of early tuberculosis—such as digestive disturbances, anaemia, loss of energy, altered pulse rate and low tension, flushings, laryngeal catarrh, and in women amenorrhoea or metrorrhagia—may be the effects of mild lesions in the digestive tract, bone marrow, nervous system, larynx, and uterine mucous membrane respectively. Like some other observers, Liebermeister has found tubercle bacilli in several cases of callous ulcer of the stomach. It follows that the successful treatment of tuberculosis demands that we should attack the disease before it has developed the tertiary manifestations. This is only possible if specific measures are adopted both for diagnosis and treatment, because the appearance of tubercle bacilli in the sputum is a relatively late event. These are the views of Professor Liebermeister, and they are not very different from the views I expounded a quarter of a century ago, but it is satisfactory to find them confirmed by Professor Liebermeister.

But because tubercle bacilli are in the blood and even in the tissues it does not follow that there is definite disease. They may remain inert or they may cause merely slight symptoms and changes. In such cases the bacilli may be few, and the natural or specific resistance of the tissues may be fair or good. But this disposition and reaction of the invaded tissues exist, though they cannot be expressed in mathematical terms. Certain tissues, such as nervous structures, muscles, and the pancreas, resist infection. The lungs, kidneys, and lymphatic glands are prone to disease, and in certain families there is a special liability to disease of a particular organ. Certain diseases (influenza and paratyphoid B) favour infection by tubercle bacilli. Traumatism is often a factor—especially in the bones and joints and epididymis. The tubercle bacilli are in the tissues or in the blood before the injury, which may be toxic or chemical as well as produced by force. Further, in miliary tuberculosis, since the tubercles are generally of the same size and age, their formation must be favoured by some predisposing cause—that is to say, the relative specific immunity of the infected tissues must be depressed.

The frequency of lung disease may be due to oft-repeated mild infections, but the source of the infection may still be the blood stream. Liebermeister thinks it probable that, except in lupus, the blood stream is probably the chief source of the infective agent. It is interesting that in Australia abundance of sunlight seems to render the skin immune. On the other hand, in children organs beyond the reach of sunlight—such as lymphatic tissues—are prone to tuberculosis; in adults these tissues are less affected. Disposition of tissue is a variable and indeterminate factor. The effect of specific treatment in tuberculous diseases of the eye affords a visible demonstration of the value of tuberculin, and there is reason for assuming that similar effects may be produced when the lesions are out of sight. In fact, the more we realize that tuberculosis is a general disease the more reason there is for applying a remedy that affects the body as a whole, and the sooner the remedy is applied the more radical the cure is likely to be. Loss of resistance may activate the tubercle bacilli at any moment, and since there is no easy way of determining the degree of resistance which exists in organs or in the body, we should be alive to the need of constant efforts to create relative specific immunity. Absolute immunity we cannot at present hope to establish, but relative. Liebermeister holds that the ordinary sanatorium measures rarely if ever secure biological cure. His opinion is summarized as follows:

"It is far more difficult to heal the established disease of an organ than to cure the general symptoms produced by disease in the blood vessels. Therefore it follows that the success of treatment is the greater the earlier the stage of the disease in the organ and the more the general symptoms are in evidence. The general symptoms accompanying the secondary stage of tuberculous disease (Petruschky, Ranke) belong directly to the domain of active and specific treatment. The early diagnosis of tuberculosis by specific tests and the prompt use of specific remedies ensures the biological cure of tuberculosis which cannot be secured by non-specific measures."

He believes that many so-called rheumatic affections of the eye are the effect of the tubercle bacillus. The term

"rheumatism" embraces a medley of joint inflammations which differ radically in their etiology—some due to gonorrhoea, others to acute rheumatism, and others again to tuberculosis. In 1909 (Weber-Parkes essay) I advanced evidence to prove that erythema nodosum should be regarded as a tuberculous infection because it reacted to tuberculin and yielded to tuberculin treatment when salicylates failed. On similar grounds I concluded that there was an asthmatic form of tuberculosis.

The view now so strongly supported by Liebermeister that there is a haematogenous form of tuberculosis is well worthy of consideration. His essay suggests an explanation of many baffling forms of chronic disorder which, in the light of the researches here recorded, may possibly be subacute and chronic forms of infection with tubercle bacilli.

W. CAMAC WILKINSON.

#### POULSSON'S "PHARMACOLOGY AND THERAPEUTICS."

A VALUABLE service has been rendered to the English-speaking portion of the medical profession by the publication of a translation of Professor Poulsson's *Textbook of Pharmacology and Therapeutics*.<sup>2</sup> The English version has been edited by Dr. W. E. Dixon, and the translation is excellent. The *materia medica* and doses have been brought into line with the British and the United States Pharmacopoeias. Professor Poulsson's textbook is a standard work in Scandinavia and in Germany and therefore affords an excellent means of comparing the therapeutic practice of those countries with the opinions prevalent in England.

Pharmacology is a science with very wide boundaries, and it is always of interest to note to which portions of the subject the author of a textbook devotes chief attention. The book under review is written rather more from the point of view of the clinician than is the case with most English textbooks of pharmacology, for chief attention is devoted to the action of drugs upon man, although adequate attention is paid to the facts discovered from animal experiment. A full account is given of the effects produced by the therapeutic administration of drugs, and the toxic effects produced by poisonous doses are also dealt with fully.

The matter is classified roughly according to the pharmacological actions of the drugs, and groups of drugs producing similar effects are placed together. The translator has succeeded in maintaining an easy and readable style throughout and gives a concise and clear account of the important actions of each of the drugs dealt with.

The book is thoroughly up to date and deals with such recently discovered substances as ergotamine, insulin, the hydroquinine derivatives, and the bismuth compounds used in syphilis.

When the opinions expressed in this book are compared with those enunciated in the leading British textbooks, the reader is impressed chiefly with the large measure of general agreement that exists. On various points, however, differences in therapeutic practice are revealed. The statement which most surprised us was that "Nitrous oxide is employed only for very brief operations, almost exclusively in dentistry—where it has now been superseded by local anaesthesia—and for relieving the pains of childbirth." This statement is apparently intended to cover both the use of pure nitrous oxide and the use of nitrous oxide and oxygen. The practice of giving ether by mouth as a cardiac stimulant is referred to as well known, although it is not endorsed by the author. The use of camphor as a cardiac and respiratory stimulant in febrile diseases is also much more firmly established on the Continent than in this country.

These differences are on the whole exceptions, and in general the therapeutic measures recommended in the book are very similar to those employed in Great Britain. Moreover, the author has succeeded in maintaining a very fair

<sup>2</sup> *A Textbook of Pharmacology and Therapeutics*. By E. Poulsson, Professor of Pharmacology in the University of Christiania, English edition, edited by W. E. Dixon, M.A., M.D., F.R.S. London: William Heinemann, 1923. (Roy. 8vo, pp. xi + 519; 32 figures. 25s. net.)



balance between the opinions of the laboratory and the opinions of the ward as regards the action of drugs.

The textbook deals with all the drugs commonly used in clinical practice, and in addition discusses the action of organ extracts, vitamins, antitoxic serums, and vaccines. It is of interest to note that polyglandular therapy is not merely a local trouble confined to England, for the author remarks, "all sorts of mystic productions have been called to life by organotherapy, and manufacturers with a keen eye to business have very readily fallen in with the demand for a specific remedy for each organ. In this way one can obtain cerebrine for diseases of the brain, pulmonine for pneumonia and tuberculosis, cardine for heart disease, oculine for eye diseases, prostatine for hypertrophy of the prostate gland, kidney tablets for nephritis, etc. Discussion of these absurdities is superfluous." As this quotation indicates, the author maintains an attitude of healthy scepticism and does not mind expressing his opinion about preparations which he considers worthless. The only criticism we have to make is that the book would have been improved by the addition of more illustrations; there are only thirty-two.

The author gives no references, which is perhaps wise, since it would be impossible for reasons of space to refer to more than a small fraction of the literature in pharmacology; it is, however, satisfactory to note that he quotes the more important British and American work in pharmacology; this is a pleasant contrast to many of the textbooks published on the continent of Europe.

Detailed criticism of an extensive textbook such as that before us is of course impossible, but enough has been said to show that this translation of Professor Poullsson's work is a valuable addition to the textbooks of pharmacology published in English.

#### OPERATIVE TREATMENT OF GLAUCOMA.

A NOOK on the operative treatment of glaucoma by an authority of such a wide knowledge of the subject as Lieut.-Colonel H. HERBERT<sup>2</sup> is sure of a welcome from all those who are interested in diseases of the eye. At an early date the author was convinced of the inadequacy of the classical operation of iridectomy as a remedy for glaucoma, and, during the early years of this century he was one of the pioneers in devising other forms of operative treatment which might afford a better prospect of cure.

Much of the book is devoted to the description and to the advocacy of a measure which aims at the production of a subconjunctival iris-prolapse through a corneo-scleral wound, and at the incarceration of the uvea in the scar. The author claims that this form of operation affords a relative certainty of relief without risk of serious hypotony, is permanent in its effect, and is a safe proceeding if due care be exercised. He recognizes, however, that if proper precautions are not taken there is an increased risk of early infective complications, including sympathetic ophthalmitis; but he argues that this risk can be practically eliminated by ensuring an effective conjunctival covering, by avoiding unnecessary traumatism of the iris, and by paying proper attention to conjunctival antiseptics. Colonel Herbert claims that this form of operation has stood the test of time; and he suggests that "in Egypt, India, and the East generally, treatment by iris-inclusion might apparently with advantage become at once the routine practice for the great majority of primary glaucomas." It is assumed that a prolapsed iris, which becomes adherent to its conjunctival covering, is, by a thickening of the membrane, fully protected against the occurrence of a late infection or of sympathetic disease; but it must be noted that such an adhesion may not occur if there is an early leakage of aqueous in front of the iris, and that a dangerous rarefaction of the conjunctival covering may then develop and lead to loss of protection.

Some space is devoted to a discussion of the conjunctival changes associated with the passage of the aqueous through

a scar beneath the membrane, and to the evil effect which follows an over-stretching of the tissue caused by an inability of the fluid to diffuse readily into the surrounding subconjunctival tissue. The author considers that the aperture made in sclero-corneal trephining and the drainage afforded by the operation are the worst conceivable with regard to the danger of late infection.

It is difficult to accept Colonel Herbert's view that the iris-inclusion operation he recommends is relatively free from the risk of sympathetic disease. Many, if not the majority, of the operations on which he bases his conclusions appear to have been performed in India. Sympathetic ophthalmitis rarely occurs in that country, even in those cases in which one would most expect to see it. He admits that the prolapsed uvea does not always become attached to the covering membrane, and that localized vesicular changes may then develop in the conjunctiva and render the eye liable to a late infection. The deliberate induction of a prolapse of the uvea—even though it is protected by intact conjunctiva—must appear a most dangerous proceeding to the majority of ophthalmic surgeons; if the integrity of the covering cannot be guaranteed in every case, it will be judged to be all the less appropriate. The prospects of a patient attacked by sympathetic ophthalmitis are so dreadful that any operation which needlessly incurs the smallest risk of the disease should be condemned without hesitation.

The value of the author's criticisms upon the operation of trephining is qualified by his admission that he has never himself practised the method, and that his experience of the results of the operation is limited. His picture of the type of subconjunctival diffusion which ordinarily follows a properly performed trephining will not be accepted by those surgeons who have had experience of the operation. He acknowledges that the diversity of the results in different hands shows that imperfect technique has been responsible for some of the late infective danger. That this danger is often exaggerated is shown by the fact that some surgeons who were formerly inclined to magnify it have with further experience completely altered their views.

The author's wedge-isolation operation and small flap sclerotomy are of value, and his description of these and the discussion upon their indications will be read with interest. The book contains many valuable hints upon points of technique which are applicable to most operations in which the eyeball is opened; it will be read with pleasure by all ophthalmic surgeons, although it is likely that few of them will feel inclined to agree with the author in his views upon the safety of an iris-prolapse operation.

#### A VETERINARY ENCYCLOPAEDIA.

DURING recent years veterinary literature in England has been more inclined to specialize, and the textbooks which the general practitioner and the student have had as works of reference have been, with a few exceptions, translations from foreign publications. The truth, of course, is that the subject is so vast, and the veterinary surgeon of the present day has so many animals to deal with, that it is a matter of great difficulty to put together in a book of reasonable size even a summary of the different diseases to which each animal is liable.

It has to be remembered that the animal physician has to deal with patients whose anatomical arrangements vary very much, and whose digestive and other physiological attributes are often equally variable in individual species. For this reason the varieties of ailment are many, and the symptoms often of an entirely different character. Besides this, each class of animal has its own idiosyncrasies to drugs.

The veterinary profession owes Professor WOOLDRIDGE a debt of gratitude for the immense labour which he has put into the compilation of the *Encyclopaedia of Veterinary Medicine, Surgery and Obstetrics*<sup>1</sup> which has just been

<sup>2</sup> *The Operative Treatment of Glaucoma*. By H. Herbert, F.R.C.S., Lieutenant-Colonel, Indian Medical Service (Retd.). London: Baillière, Tindall and Cox. (Demy 8vo, pp. viii + 152; 31 figures. 10s. 5d.)

<sup>1</sup> *Encyclopaedia of Veterinary Medicine, Surgery and Obstetrics*. Vol. I. Veterinary Medicine; Vol. II. Surgery and Obstetrics. Edited by G. H. Wooldridge, F.R.C.V.S., M.R.I.A., F.Z.S. London: H. Frowde, and Holder, and Stoughton, 1923. (Cr. 4to: Vol. I, pp. xiv + 526 + xxiii; 143 figures, 1 plate. Vol. II, pp. viii + 450 + xxx; 205 figures, 4 plates. 45 s. net.)



published in two volumes; to it, in addition to his duties as editor, he has himself contributed a very large portion.

He has obtained the collaboration of a large number of colleagues, each a specialist on the subject on which he writes; in this way he has presented to his readers, whether medical or veterinary, a work which is up to date and of standard quality.

We cannot enter on a detailed consideration of the various sections of the book, but it is sufficient to say that they are of value, not only to veterinary practitioners and students, but also to pathologists who desire to study the comparative aspect of disease. The publishers have done their work well, and the plates are excellent.

#### SCIENCE AND PHILANTHROPY.

VARIOUS as are the types of men who do big things in pure and applied science, a certain resemblance in the temper of mind may be detected among them. They may be pricked on by ambition for fame, or money, or both, but the underlying influence ever acting is something else—easy to recognize but difficult to define, a mixture of curiosity to know why and of impatience to overcome an obstacle, a sort of pique because the problem is baffling. In the man of applied science the terms of the mental process seem to be, "The thing won't work: why won't it work? it shall be made to work." This is exemplified all through the life of Sir Alfred Yarrow which his wife has just written,<sup>5</sup> from the time when, as a boy, he rigged up a device to put out his aunt's candle, much to that lady's indignation. As a young man he undertook to build a steamboat for Lake Nyassa, fulfilling conditions other engineers had declared incompatible; later on he designed and built destroyers faster than any boats afloat, and finally—he was over 72 when it began—he made invention after invention during the war.

By reason of all his successes as an engineering inventor and constructor, Sir Alfred Yarrow became rich, and being a man in whom an ardent desire to help his fellows is combined with common sense and knowledge of the world, he studied the question of how a man might best dispose of his money with the detachment he brought to bear in designing a steamer to go up the rapids of the Nile, or in contriving how to get another knot out of a destroyer. One of his benefactions was the Yarrow Home for Convalescent Children at Broadstairs, an institution which has frequently been described in our columns. It is for the children of educated people, and the endowment was deliberately limited so that contributions from the parents should be necessary. Again Sir Alfred Yarrow made, subject to certain conditions, the initial gift which rendered possible the erection of the new out-patient department at the London Hospital; one of the conditions was that every out-patient (children excepted) should pay something towards the expenses of material, though medical advice should be free. It was found that nine out of ten patients were ready to give something; this was twenty years ago. Until the other day Sir Alfred Yarrow's chief gift to experimental science was the tank built at the National Physical Laboratory for testing the design of ships. This has been surpassed by the magnitude (£100,000) and by the conditions of the gift he made to the Royal Society last February. He directed that the fund should be administered for the Society with unfettered discretion "by the best people from time to time available," and "that the money should be used to aid scientific workers by adequate payment, and by the supply of apparatus or other facilities, rather than to erect costly buildings, because large sums of money are sometimes spent on buildings without adequate endowment, and the investigators are embarrassed by financial anxieties." The donor went on to record his "firm conviction that a patriotic citizen cannot give money, or leave it at his death, to better advantage than towards the development of science."

The book contains a large number of pictures which really illustrate the text.

<sup>5</sup> *Alfred Yarrow: His Life and Work*. Compiled by Eleanor C. Barnes (Lady Yarrow). London: E. Arnold and Co. 1923. Demy 8vo, pp. xv+328; illustrated. 10s. 6d. net.)

#### NOTES ON BOOKS.

WE have received the first two volumes of a collection of reports written by various members of the Pará Public Health Service and edited by Dr. H. C. DE SOUZA ARAUJO<sup>6</sup> to commemorate the centenary of the independence of Brazil. The first volume contains a frontispiece which appropriately consists of a portrait of Oswaldo Cruz, to whose pioneer work in the domain of sanitary science in Brazil we recently drew attention (March 3rd, 1923, p. 391). The history of rural sanitation in Pará down to 1920 is related by Dr. J. A. Dias Junior, who ascribes the remarkable decline within recent years in the prevalence and mortality of malaria to improved sanitation. Dr. B. L. Rutowicz gives a description of the hospitals at Belem, the capital of Pará; the water supply, sewage system, markets, and slaughter-houses of the town each forms the subject of a separate report. Special mention should be made of that by the director, Dr. J. Aben-Athan, on the recently established Institute of Hygiene at Belem, which combines the functions of a State laboratory with those of a Pasteur institute; it has seven sections devoted respectively to cop., . . . . . venereology, immunology, chemistry, . . . . . dermic products, and treatment of rabies. Three inquiries undertaken at the institute are reported—on the principal causes of error in the Wassermann reaction, on the results of treatment for rabies, and on a new method of cultivating the gonococcus and preparing antigenococcus vaccines. Considerable interest also attaches to the report by Dr. Araujo on the frequency and extent of helminthiasis and malaria in the State of Pará, as well as on the prophylaxis of other diseases, especially small-pox and plague. The second volume<sup>7</sup> is devoted to an account of the prophylaxis and treatment of leprosy and venereal disease in Pará. The editor describes the organization of the service for the treatment of venereal diseases and an institution recently established at Belem. The volume is illustrated by numerous photographs of the hospitals, sanatoriums, dispensaries, and municipal buildings of Pará.

We noticed the appearance of the seventh edition of Professor Hawk's *Practical Physiological Chemistry* only some sixteen months ago; the eighth edition,<sup>8</sup> which has now appeared, has been revised and some additions have been made. The book, however, remains very much the same as it was before, and is an excellent work for the student and of value to the general practitioner who wishes to become acquainted with present-day methods.

We have received a copy of the sixth edition of a *Tabular View of the Income Tax and Super Tax from 1842 to 1921*.<sup>9</sup> The information given is in a condensed but easily intelligible form and will be found useful by many taxpayers. The publication has been brought up to date and we can recommend it to anyone requiring an abbreviated statement for reference, though, in our opinion, something would have been gained by expanding the "Reminders and Advice" at the expense of crowding out some of the information as to the early income tax rates—for example, the fact that the maximum rate of tax fell from 7d. to 5d. in the £ in 1858 does not assist a perplexed taxpayer greatly in these days, nor is it conducive to that peaceful frame of mind appropriate to the task of rendering a return for income tax purposes.

"In Geography there is still much to be desired." So wrote Miss Barbara Pinkerton from her academy for young ladies on Chiswick Mall to the parents of Amelia Sedley, when Amelia and the last century were both in their teens. Geography was a very dry "subject" then, and the idea of making it a pleasure would have horrified Miss Pinkerton; it was not made very interesting in our own school days. Fortunate, therefore, is the child of to-day whose teachers put into his hands such attractive little textbooks as the *Junior Regional Geographies*, of which Book II, *The British Isles*,<sup>10</sup> has (for some reason or another) been sent to us for notice. According to the joint authors, Mr. W. H. BARKER and Mr. LEONARD BROOKS, the aim of this series is to furnish "a preparatory course for more advanced regional studies." It is intended for use in the upper classes of elementary schools and the lower forms of secondary schools.

<sup>6</sup> *A Prophylaxia Rural no Estado do Pará*. Pelo Dr. H. C. de Souza Araujo. Pará-Belem: Typ. da Livraria Gillet. 1922. (Med. 8vo, pp. 410; illustrated.)

<sup>7</sup> *A Prophylaxia da Lepre e das Doenças Venereas no Estado do Pará*. Pelo Dr. H. C. de Souza Araujo. Belem-Pará: Livraria Classica. (Med. 8vo, pp. 311; illustrated.)

<sup>8</sup> *Practical Physiological Chemistry*. By P. B. Hawk, M.S., Ph.D. Eighth edition, revised. London: J. and A. Churchill. 1923. (Med. 8vo, pp. xvi + 693; 197 figures, 6 plates. 24s. net.)

<sup>9</sup> *Income Tax—Tabular View, 1842-1921*. Published by Oliver and Boyd, Tweeddale. (Price 1s. 1d., post free.)

<sup>10</sup> *Junior . . . . . Book II, The British Isles*. By W. H. Barker, B.S. . . . . books, M.A., F.R.G.S. London: University of London Press, Ltd. 1923. (Cr. 8vo, pp. vii + 174; 48 illustrations. 2s.)



## British Medical Journal.

SATURDAY, JUNE 23RD, 1923.

### VACCINE TREATMENT OF TUBERCULOSIS BY A NEW METHOD.

As to the efficacy of vaccines in the treatment of bacterial infections there have been many opinions, but there must be few who have not felt some degree of disappointment at the slow and limited progress which has followed the classical researches of Pasteur and of Koch. The methods described by Professor Dreyer in the paper an account of which is given at page 1065 aim at the removal of one difficulty, and probably an important difficulty, in the production of active immunity.

If antibodies are to be produced it is essential that the antigen should come into intimate contact with the cells of the body of the patient. Dreyer assumes that the absorption of bacterial antigens is hindered by the fatty envelope by which the body of certain classes of micro-organisms is surrounded. This fatty envelope is intimately associated with the staining properties of those bacteria which we designate "acid-fast" or "Gram-positive." It is for this reason that antibody formation has been more readily evoked by the injection of Gram-negative bacteria, and that comparatively little success has been obtained by the inoculation of emulsions of acid-fast or Gram-positive varieties.

The essential feature of the investigations lies in the separation of the more soluble constituents of the bodies of bacteria from the relatively insoluble fatty and lipid substances which form the bacterial envelope. The greater part of the experimental data is concerned with the tubercle bacillus, and the methods employed in the case of this micro-organism are described in detail. Tubercle bacilli obtained from a glycerin broth culture are treated in the way outlined at page 1066, and eventually a product is obtained which is entirely non-acid-fast and is described as a "defatted antigen." In the case of Gram-positive bacteria, such as staphylococci and the anthrax bacillus, the object of the method is to obtain a product which has lost the property of retaining the stain by Gram's method.

The defatted antigens are either suspended in saline and used for the production of active immunity by injection, or digested with trypsin for the preparation of a reagent suitable for use in precipitation or complement fixation experiments. Rabbits injected with the defatted products of the tubercle bacilli developed antibodies which could be demonstrated by precipitation, complement fixation, and agglutination experiments. The published experiments show that animals injected with defatted antigen produce a serum which reacts not only with the defatted antigen but also with a recognized antigen of the usual type prepared from tubercle bacilli. For this purpose Boquet's and Nègre's antigen was chosen. On the other hand, the defatted antigen reacted *in vitro* not only with the serum of animals which had been injected with this defatted antigen, but also with the serum of animals which had been injected with an ordinary emulsion of living tubercle bacilli. Suitable control experiments,

in which normal serum and immune serums other than antituberculous serum were employed, were of course made. These experiments showed that the defatted antigen was specific, and could be used with success for the production in experimental animals of antibodies to the tubercle bacilli. Moreover, the antigen after treatment with trypsin proved to be a very useful reagent for the detection of antibodies in the blood of tuberculous animals. Apart from the all-important therapeutic possibilities of this new preparation, it seems probable that a significant step has been made towards obtaining a trustworthy serum test for tuberculous disease. It is worthy of note that, while well marked serum reactions took place in mixtures of the antigen both with the serum of animals injected with this antigen and with the serum of animals injected with living tubercle bacilli, the most pronounced reactions were obtained with the serum of animals which had been injected with living tubercle bacilli and were subsequently given doses of the defatted antigen.

The most interesting and at the same time most important of the experiments are those which related to the treatment of tuberculous guinea-pigs with defatted antigen. Full details are given of experiments on four guinea-pigs. These animals were infected with a strain of living tubercle bacilli. The culture which was used is, on the whole, of slight virulence, and has usually produced death in four to ten months after infection. In the first experiment described, treatment was commenced twenty-eight weeks after infection. The animal then weighed 630 grams, some 200 grams less than the average weight for its age. The spleen was large, and could easily be felt, and there were three or four enlarged glands in the inguinal region. Treatment consisted in ten injections of defatted antigen at intervals varying from three to thirteen days. The whole treatment occupied eighteen weeks. Two weeks after the cessation of treatment the animal looked perfectly healthy, and was of normal weight for its age (906 grams). As a result of treatment the animal gained 300 grams in twenty weeks. The spleen and glands seemed smaller. In two other animals satisfactory results were obtained. In the fourth animal considerable improvement was observed as the result of treatment, but the animal died shortly after the birth of young. The histological appearances of the organs of this animal presented an appearance of anaemic necrosis with fibrosis.

Encouraging results were also obtained by the treatment of tuberculous rabbits with the defatted antigen. Professor Dreyer is careful to point out that only time can show whether this beneficial effect is permanent, and that to attain certainty it will be necessary to watch the animals for a long period without further treatment, and then kill them and make a search for tuberculous lesions in their organs. Nevertheless, the results obtained are very striking. The susceptibility of the guinea-pig to the tubercle bacillus is well known, and the results already obtained are sufficient to justify considerable confidence in the value of the method.

As regards the treatment of human disease, a beginning has been made. A few cases have been treated at the Brompton Hospital, and 60 cases are under treatment at the London Hospital; the interim report on these cases by Drs. Fildes and Western is quoted in full at page 1067. They have observed in nearly all cases improvement which, in their opinion, is of an order which exceeds obviously that obtainable by any other form of treatment applicable to these conditions. It is, of course, too soon to attempt to express any



judgement on the results obtained on human cases of tuberculosis, but the experiments carried out on animals justify us in entertaining great hope of the efficacy of this method, and we shall look forward with the greatest possible interest to the full report of the first batch of cases treated.

The possibility of a cure for tuberculosis which is contained in Dreyer's work is of such outstanding importance that we have given little space to the consideration of the results obtained with other bacteria. But from a theoretical, and eventually perhaps from a practical standpoint also, the most interesting observations are those concerned with the anthrax bacillus. Pasteur had succeeded in attenuating the virulence of this micro-organism by growing cultures at 42° C. Dreyer has shown that when grown at this high temperature the anthrax bacillus loses its capacity to retain the stain by Gram's method. Moreover, by suitable experiments Dreyer has demonstrated that bacteria from cultures grown at 42° C. are more readily killed by both normal and anti-anthrax serum than bacteria from cultures grown at 37° C. The attenuation of virulence produced by growth at the higher temperature is thus associated with and presumably directly caused by the loss of the fatty envelope.

In this experiment may lie an explanation of such success as has been hitherto achieved by the vaccine treatment of bacterial infections. To many people it has seemed remarkable that a patient grievously ill from the presence of millions of micro-organisms in his tissues should be expected to benefit from the subcutaneous injection of a few millions of the same micro-organism grown on an agar slope. Dreyer has shown that the *Staphylococcus aureus* and the anthrax bacillus grown on artificial media have more resistance and a thicker envelope of fat when grown at 37° C. than at 42° C. It is possible that micro-organisms, when actively pathogenic in the human tissues, may have envelopes thicker still, and so possess still greater powers of resisting antibacterial substances than micro-organisms growing on artificial culture media even under the most favourable conditions which we can contrive. The favourable effect of the injection of a vaccine seems to be due to its providing the tissues of the patient with micro-organisms which are more easily soluble, and hence of higher antigenic value, than those already present in his tissues.

It is difficult to summarize the result of Professor Dreyer's experiments, and it is impossible to forecast the effect they may have on the further development of methods for the diagnosis and treatment of infective disease. But putting the matter at the lowest, he has made an important contribution to our knowledge of bacterial immunity, and has devised methods by which it may be obtained where hitherto it has been unobtainable. It is the originality of the methods employed and the nature of the results he has obtained which invest his communication with such great interest. It must be regarded, as we feel sure he would wish to have it regarded, as a preliminary communication. The experiments on animals are few, and the time during which these animals have been observed, having regard to the importance of the issue, is short. From the full details published it is clear that every effort has been made to avoid experimental error and the mistake of drawing premature conclusions which the facts so far established do not warrant.

It is only a tribute to the value and importance of Professor Dreyer's experiments and observations to say that we shall await their confirmation and extension with the liveliest interest. The results already obtained are few, but they are in themselves of the

greatest importance and sufficient to justify the fullest possible investigation of methods which have been employed with such striking success. It is evident that the investigation now reported is a milestone on the path of progress towards the cure of bacterial disease.

## AMBULANCE TRAINS.

FIVE years have not yet elapsed since the armistice, but many people seem already to have forgotten that the great war, endured for over four years, entailed fighting operations by the British on at least six fronts, and went through several fairly distinct phases. Furthermore, in discussions concerning its events and its possible lessons, even among those whose experience of matters was too personal not to be vivid, it is commonly easy to perceive that the speakers or writers, whichever they may be, fail to realize that, however active a part they played in matters, their experience of the war as a whole was in all cases inevitably limited either by space, owing to the nature of the work assigned to them, or by time, owing to wounds, sickness, or other causes. But for discussions on the subject to be fruitful, or for lessons to be soundly drawn, the knowledge on which the two are based should extend to all the fronts concerned and to all the phases that the war as a whole underwent.

This is why we are disposed to welcome the short history of the early days of British ambulance trains in France, by Colonel G. A. Moore, C.M.G., M.D.<sup>1</sup> It is of special value for two reasons in particular: in the first place because it deals with a phase of the war of which few, even of its veterans, had any experience, seeing that the whole British force at the time was not much larger than some of the latter-day army corps; and in the second place because here and there in its pages is to be found internal evidence—to adopt the phrase of the old theologists—that most of it must have been compiled almost contemporaneously with the events that it records. In the memory of most medical men who served in France, as in that of most combatants and most departmental officers and men, the term "ambulance train in France" must mean a long corridor train, of which all parts, when the internal doors were open, were visible from end to end, its different compartments fitted with close equivalents to ordinary ambulance vans, provided with heating arrangements, possessing facilities for the performance of operations when necessary, and carrying an ample staff of nurses. An ambulance train in France must seem to them to have been—as in fact for several of the later years it was—a moving hospital on wheels. But this, as some must recollect, and as Colonel Moore clearly shows, was not always the case. In the first six months of the war there were no hospital trains in France in the sense in which that term was used at a later date; the nearest equivalent to them was a train made up of carriages, 1st, 2nd, or 3rd, whichever could be got, in which the patients sat or lay on the ordinary seats to be found in such compartments. At an earlier period still the difference was even greater; there might be one or two passenger coaches, but the bulk of the train consisted of luggage and freight vans fitted up for lying-down cases by Brechot stretcher apparatus. That this was the case was no fault of the Army Medical Department nor even of the War

<sup>1</sup> *The Birth and Early Days of our Ambulance Trains in France, August, 1914.* By Colonel G. A. Moore, C.M.G., D.S.O., M.D. Second edition. London: J. Bale, Sons, and Danielsson, Ltd. 1922. (Med. Bro. pp. 24; 5 plates. 1s. net.)



Office. The two combined had gone as far as could be expected by providing in anticipation of a great war an adequate supply of Brechot apparatus, and by sending it over to France in one of the very first ships to sail after war was declared. To have provided hospital trains such as those eventually formed would have been impossible, partly owing to lack of knowledge as to the exact kind of vehicle required, partly owing to the impossibility of finding in England sidings sufficiently large to hold any considerable number of trains so lengthy as a hospital train. When the occasion for their use arose it was only little by little that exact knowledge was gained of the requirements in respect of accommodation, the number of patients that could conveniently be carried, the height of the carriages from the ground, the right kind of heating, the engine power required, and other technical details.

The change from the initial to the second form of hospital train was due chiefly to the immense energy of twelve medical officers and some forty-five of the rank and file told off for train work, but also to the good temper of the French officials of one kind and another. They allowed the English to beg, borrow, and steal coal carriages wherever they could find them, at a time when the French themselves were very hard up for like accommodation, owing to so much of the rolling stock of the French railways having been sent to the South of France to be out of the way of the enemy. Whether the British soldier actually gained very much by the change in respect of having his chances of eventual recovery increased is perhaps more open to question than might at first seem to be the case. The question is perhaps impossible of solution. There can be little doubt that his comfort was increased and suffering diminished, but the two classes of train did not bring down men in directly comparable condition. The later type carried men who for the most part had already received all the active surgical treatment they required; most of the occupants of the earlier trains arrived at the base straight from the field ambulances, the casualty clearing stations of the time being then few in number and embryonic in point of development. The patient was still more or less dull from the initial shock of his wound, but had undergone no further shock such as operation must cause. No doubt, of course, the later system was infinitely superior, inasmuch as among the men it brought down a much larger percentage finally recovered. In view of the introduction of air fighting, it is impossible to foretell what part of the mechanism of warfare will at some future date be useful, but remembering that front lines will always have to be cleared of sick and wounded, and that the Brechot apparatus can be fitted into any kind of vehicle on wheels, there is room for the belief that this apparatus or its equivalent will be found playing a part in future wars, whatever else may disappear.

#### THE ASSOCIATION'S HOUSE.

THE Supplementary Report of Council printed in this week's SUPPLEMENT contains a piece of information which, though necessarily guarded in its terms, will be recognized by every member as something of the greatest significance for the future work of the British Medical Association. We refer to paragraph 266, headed "Association Premises." The announcement is brief, but to the point. It will be followed in due course by a full statement which there is every reason to hope will receive the cordial approval of the Association at large. To those acquainted with the

work carried on at 429, Strand, it has become evident in recent years that these premises are inadequate for the greatly increased and still increasing activities of the various departments. One result of this has been that accommodation, originally meant for the use of members generally, has been absorbed for office purposes in order to meet urgent demands upon the limited space available. Meanwhile, and for the same reason, notwithstanding the growth in the number and work of committees and sub-committees, rooms intended for committee meetings have had to be taken over for business purposes. Expansion of the existing premises was found not to be feasible. The urgency of the situation was represented to the Council in April, and the Council, after full consideration, decided that the time had come when steps should be taken towards securing a British Medical Association building, not merely adequate for immediate office requirements, but sufficient to provide accommodation for future needs and developments. As a result of very full inquiries it was possible to make a definite report to the Council on June 13th, and the outcome—so far as can be announced at the moment—is recorded in the Supplementary Report of Council.

#### THE SERVICE OF EXPERIMENT TO PRACTICAL MEDICINE.

THE address Sir Walter Fletcher gave at the opening of the new biochemical laboratory at St. Thomas's Hospital well deserves to be read and filed for future use; it is printed in full at page 1068. He takes, if we may presume to say so, the right line in the discussion of the services scientific medicine is rendering to human welfare. It may be all very obvious to persons of scientific training, however far their particular line of work may be from biology or medicine, but we are apt to forget how small a proportion of even the educated public possesses such training. Sir Walter Fletcher instanced the use of insulin, which is obstructed by a regulation that animal experiments may be done at the medical college but not in the hospital, although they are done directly for the hospital and although the hospital cannot do its work without them. As he truly said, in tending the sick and suffering we can show no effective mercy without knowledge, and this knowledge can only be gained by the study and pursuit of truth. Ought we not to say boldly, as Sir Walter Fletcher implied, that the action of those who do all they can by falsehood and innuendo to hamper the advance of knowledge is, in this matter of preventing, curing, or alleviating disease, gross inhumanity? The excuse made for such persons is that they are ignorant. If only they would make barren ignorance their gaoler! But they do not. They rush from platform to platform shouting their infamies, revelling in false stories of cruelty until they come under a form of obsession not wholly unlike that of which the miserable sadist is a victim.

#### PREVENTION OF OPHTHALMIA NEONATORUM IN DENMARK.

WE have received through the Ministry of Health a communication written by Dr. Gordon Norrie, vice-president of the Royal Danish Board of Health and oculist to the Royal Danish Institutes for the Blind, after reading the final report of the Departmental Committee on the Causes and Prevention of Blindness. He rightly thinks that information on the methods established in Denmark for the reduction of ophthalmia neonatorum and blindness resulting therefrom may be of interest "in the country of his ancestors." In the Royal Lying-in Hospital at Copenhagen Credé's method was adopted as a routine practice in 1832, and with the best results. From the year 1835 he himself instituted propaganda with a view to making the method compulsory upon all midwives, and since 1900



every midwife is required immediately after birth to instil a solution of silver nitrate (1 in 150) into the eyes of the child. The midwife is forbidden to wash the eyes before the instillation, as it is considered that some infectious matter may thus be washed into the eyes; midwives are taught to wipe the eyelids with dry gauze or cotton-wool. In Denmark midwives assist at almost every delivery, and it is rarely that a doctor alone is present. A legally regulated midwifery system has existed since 1714; the midwives undergo a strenuous training for one year. He writes of them as "excellent." Until the year 1857 private effort provided for the training of blind children, but in that year the State opened the Royal Blind Institute (Det Kongelige Blindeinstitut) in Copenhagen. Education of blind children at the institute is not compulsory, but with rare exceptions application for admission is made in the case of every blind child, so that the figures for the institute give the number of blind children in the country. They are admitted at the age of 10 to 11 years; but for the past twenty-five years there has been a preparatory school at the seaside sixty miles from Copenhagen to which children from 6 to 7 years of age are admitted, and some two years ago at the same place a home for blind babies was opened. Dr. Norrie has charge as ophthalmic surgeon of these three schools for the blind. A table is given showing the difference in the incidence of blindness from ophthalmia neonatorum before and after 1900, the year of the institution of compulsory prophylaxis. In the twenty-five years 1875-99 the total number of cases was 55; the highest number (15) occurred in the quinquennium 1890-94, and the lowest (7) in 1880-84. In the first quinquennium after compulsory prophylaxis was established there were 16 cases, and Dr. Norrie attributes this failure to insufficient instruction of the midwives. In the succeeding quinquennia the number of cases were 3, 3, and 1, and there was one case in 1920. The expectation of blindness from this disease is now no more than one case every other year, a very good result for a country with a population of three millions and a quarter. He does not expect this cause of blindness to disappear altogether, for "it is impossible by prophylaxis to prevent the infection taking place at the time of birth." He adds that he has never seen a case of blindness due to small-pox, for in Denmark vaccination has been compulsory since 1810.

#### HYPERPLASIA OF EPITHELIAL AND CONNECTIVE TISSUES OF THE BREAST.

SIR GEORGE LENTHAL CHEATLE's researches on the changes which take place in the breast as a prelude to the later development of papillomata and of duct and acinous carcinomata have been reported in this journal (*BRITISH MEDICAL JOURNAL*, June 3rd, 1922), and the recent paper which he has published in the *British Journal of Surgery* (vol. x, No. 40, 1923) deals with the development of the hyperplasia of the connective tissues of the breast, which he classifies under three heads according to its relation to the layer of elastic tissue which surrounds the ducts and acini. "Hyperplasia intra-elastica" mainly occurs in the delicate connective tissue which lies immediately internal to the elastica in the ducts and acini, and occurs in breasts of women over 30; it may manifest itself as a diffused condition affecting the whole length of a duct and all or some of the acini from which it leads, or as a localized tumour in a duct or in the acini. The diffused type rarely occurs in breasts in which no other lesion can be discovered; it may be associated with carcinoma and multiradicular papillomata, but it is important to note also that it may be absent in breasts where carcinoma and papillomata occur. The localized condition is a tumour formation which is usually superimposed on the diffused condition above described. In its simplest form the tumour forms an oval swelling

inside the elastica which bulges into the lumen of the duct, and from the intra-elastica fibrous tissue large intracanalicular fibro-adenomata may develop. When growing in acini the connective tissue around the acini may undergo hyperplasia so marked that a collection of acini thus affected resolves itself into a distinct isolated tumour and forms a fibro-adenoma. The class of cases to which the term "hyperplasia elastica" is applied exists only in the diffuse form affecting ducts and acini. There is a combined hyperplasia of the elastica and the fibrous tissue with which it is intermingled, the growth being delimited at the margin of the fibrous tissue that immediately surrounds the ducts and acini. The process is usually widely distributed, and affects most of the ducts and acini in a breast, being accompanied by desquamative hyperplasia of the epithelium. Most breasts which contain carcinomata do not show enormous hyperplasia of the elastica, and the same may be said of breasts containing multiradicular papillomata; but Sir Lenthal Cheatele declares that he has been so impressed by the hyperplasia he has noticed in "proemial" breasts and in those suffering from Paget's disease of the nipple that he would be "most careful to examine the entire breast in which there was enormous hyperplasia of the elastica before passing the gland as free from carcinoma." The third class—"hyperplasia extra-elastica"—concerns the fibrous tissue immediately outside the ducts and the intralobular connective tissue of the acini, and includes many well known varieties of fibro-adenoma of the breast. This type can be subdivided into pericanalicular and periacinous tumours, of which there is both a localized and a diffuse form, and the intracanalicular tumours. Except in the type of the diffuse fibro-adenomatosis, which occurs after 30 years of age, all forms may grow in young and old breasts. Sir Lenthal Cheatele believes that it is exceedingly rare for carcinoma to originate in a localized fibro-adenoma. Unsuspected fibro-adenomata, often only just visible to the naked eye when examining a section of a whole breast, occur in at least 28 per cent. of all breasts containing carcinoma. There are no special clinical signs of the different types of tumours described, and the chief practical outcome of these observations seems to be that it is safer to take away the segment of the breast in which fibro-adenomata grow. Although the different forms of hyperplasia are described as three distinct classes, any one class may be complicated by the presence of some pathological changes of another order, and all the pathological changes to which attention has been drawn may, in fact, be phases of a consecutive evolution of disease. Lastly, the author insists that all hyperplasia of epithelium confined within the ducts of the breast is not necessarily benign.

#### THE HISTORY OF THE CARDIO-VASCULAR SYSTEM.

THE selection of the matter for an address, seldom an easy task, requires a broad outlook in order that the varying minds in the audience may all be interested. This is perhaps best accomplished by choosing a relatively common disease or condition and reviewing the most recent views thereon. In his historical sketch of the heart and circulation given before the Queen Margaret Medical Club Dr. G. A. Allan<sup>1</sup> of Glasgow has adopted this course. Beginning with Egypt, B.C. 1400, he points out that the word "heart" is derived from a Sanskrit word meaning "to leap," and that the Egyptians regarded the heart as the seat of life and the source of good and evil thoughts, and that the individual's claim to everlasting life would be tested by the weighing of the heart, which should not be removed from the body during the process of embalming. After glancing at the views of Hippocrates, Aristotle, and Erasistratus of Alexandria, who described the valves of the

<sup>1</sup>Allan, G. A.: *Glasgow Med. Journ.*, 1923, N.S. xvii, 296-313.



heart, Galen's doctrines on the cardio-vascular system, which held the field for 1,400 years, are explained. The first to dispute his authoritative statements was Leonardo da Vinci, who discovered the action of the cardiac valves and threw doubt on the passage of blood through the interventricular septum. The next advance came from an unexpected source—the bitter disputations connected with the Reformation—for in his *Restitution of Christianity*, which was responsible for his martyrdom, Michael Servetus (1553) clearly described the lesser circulation through the lungs. The weakness of the claim made for Cæsalpinus that he anticipated Harvey's great discovery is briefly explained, and then a quotation from Shakespeare is utilized to show the popular conception of the circulation at the time of Harvey's demonstration. In the three hundred years since then percussion and auscultation, of which the latter was advocated by William Stokes of Dublin in 1825 in his *Introduction to the Stethoscope*, are milestones which lead up to the use of instruments of precision; Dudgeon's sphygmograph of 1860 was expanded into Mackenzie's ink polygraph; Marey in 1876 laid the first foundation of Riva-Rocci's sphygmomanometer; and A. D. Waller's work in 1889 was followed by Einthoven's string galvanometer and Thomas Lewis's researches with the aid of the electrocardiograph. The description of the auriculo-ventricular bundle by Stanley Kent (1892) and by His (1893), Tawara's account of the auriculo-ventricular node (1904) and Keith and Flack's discovery of the sino-auricular node are further landmarks worthy of permanent recollection. In answer to the self-imposed question, "What amount of work is accomplished by the heart?" Dr. Allan calculates that during seventy years the heart drives out about 250,000 tons of blood.

#### VITAL CAPACITY.

Dr. JOHN HUTCHINSON, in 1846, suggested that the volume of maximum expiration following a maximum inspiration, which he called "vital capacity," was a valuable measure of physical fitness; he tried to establish precise quantitative relations between vital capacity and other physical measurements. From observations on 2,130 persons of varied classes, but all considered to be healthy, he deduced that for every inch of height from 5 ft. to 6 ft. eight additional cubic inches of air at 60° are given out by a forced expiration, and that the relation between vital capacity and weight was not linear throughout. He estimated that the effect of age was to decrease vital capacity by rather more than 1 cubic inch for each year. He also thought that the standing height was correlated with sitting height, and that the latter was approximately constant. He held that vital capacity was governed by the mobility of the chest rather than its volume, and endeavoured to show that disease affected vital capacity and might be detected thereby. Later Fabius of Amsterdam attempted to prove that stem length was more closely related to vital capacity than height, but the results he published do not bear this statement out. In 1858 Arnold of Heidelberg confirmed Hutchinson's conclusions, but attached more importance to chest circumference. In 1911 Dr. Edgar Schuster published in *Biometrika* the results of his observations on 959 Oxford undergraduates. The mean of the vital capacity for these was higher than in any of Hutchinson's healthy classes. Garvin, Lundsgaard, and Van Slyke investigated the vital capacity of tuberculous subjects. When their figures are examined in the light of variations in fit persons it appears that it was only in the more advanced cases of disease that the difference in vital capacity between the diseased and healthy could be regarded as far beyond the probable range of chance fluctuations. In 1919 Professor Georges Dreyer urged that stem length and not height was the appropriate correlate of vital capacity. Biological evidence led him to believe the constants to be in

proportion to body surface, and with Henson he published tables for the estimation of normal weight and vital capacity from stem length and chest circumference and for the estimation of vital capacity from weight. In a recent paper<sup>1</sup> in *Biometrika*, Cripps, Greenwood, and Newbold have made an attempt to show how closely vital capacity can be expressed as a function of stature, sitting height (stem length), and body weight, by linear equations or simple exponential functions. They obtained measurements of 1,238 candidates for commission in the Air Force. They analysed the sample and repeated the analysis on the measurements of candidates passed as fit. Very little difference was found between the constants of the whole sample and of this selection. From a comparison of the coefficients of correlation and the correlation ratios they inferred that the regressions were not strictly linear, though nearly so. A large number of technical analyses were made, involving the computation of many regression equations. The conclusions they draw are that, taking vital capacity as the dependent, and weight and height as the independent variables, multiple linear regression formulae gave slightly closer results than the "rational" formulae of Professor Dreyer, and that the former method has the advantage of showing the extent of the improvement in the estimate of vital capacity by the use of more independent variables. Their results agree substantially with Hutchinson's and show no advantage in the substitution of stem length for height. A further conclusion is that "upon the evidence now available it does not appear that either biometric or 'rational' formulae can deduce from the non-physiological or ordinary anthropometric constants, estimates of normal vital capacity confined within sufficiently narrow limits to possess real prognostic value in individual cases."

#### ANNUAL DINNER OF THE HARVEIAN SOCIETY OF LONDON.

AN unusual number of distinguished guests attended the annual dinner of the Harveian Society of London, held at the Connaught Rooms, Great Queen Street, on Thursday, June 14th. The President of the Society, Sir T. Crisp English, presided at the dinner, and 137 members and guests were present. The toast of the Harveian Society was proposed by Mr. G. K. Chesterton, who modestly described himself as a journalist. He dealt humorously with the profession to which he claimed to belong and warned his hearers against attaching too much importance to the heavily typed headlines which are designed to advertise the journalist's wares. The President replied for the Society, and said that the membership of the Society was now 314, and that the average attendance of members and guests at the meetings held during the past year was 54. Sir StClair Thomson proposed the health of the sister societies, which included the Royal Society of Medicine (represented by its President, Sir William Hale-White), the Hunterian Society, the Chelsea Clinical Society, the West London Medico-Chirurgical Society, and the Kensington Medical Reading Club, represented by their respective Presidents, Sir Bruce Bruce-Porter, Dr. J. Campbell McClure, Mr. A. G. Wells, and Mr. Debonnaire Maunsell. Sir William Hale-White replied in a speech which scintillated with many appropriate little anecdotes. The toast of the guests was proposed by Dr. Charles Buttar, who referred to the wide range of positions and professions of the guests. They included Lord Elphinstone, who, as Lord High Commissioner, represents the King in Scotland; Lord Montagu de Beaulieu, a member of the Road Board, interested in aviation and motoring; Mr. J. Monteith Erskine, Member of Parliament for St. George's, Hanover Square; Sir Robert Hill, Director-General of the Medical Department of the Navy; Sir

<sup>1</sup> *Biometrika*, vol. xiv, Parts 3 and 4 (March, 1923).



William Leishman, who shortly succeeds Sir John Goodwin as Director-General of the Army Medical Service; Sir Arthur Sloggett; Sir Edward Worthington; and Sir Hercules Read, Keeper of the British Museum. Literature was represented by Sir Anthony Hope Hawkins and Mr. G. K. Chesterton; art by Sir William Llewellyn and Mr. Ralph Peacock; the law by Sir Richard Muir, Sir Edward Marshall Hall, Sir Henry Curtis Bennett, and Mr. Claughton-Scott. The Borough of Paddington, in which the Society holds its meetings, was represented by Prebendary G. N. Sharp, the Vicar of Paddington, and the Mayor, Alderman H. V. Kenyon. In reply to the toast Lord Montagu spoke of his connexion with the Road Board, comparing the traffic on the roads with the circulation of the blood, with occasional aneurysms where the thoroughfares had been widened; Sir Anthony Hope Hawkins, in a witty speech, referred to the subconscious state; and Sir Richard Muir gave his views on doctors in the witness-box. He concluded with a story of how an expert medical witness was cross-examined by a medical man in the dock. He regarded this as one of the best pieces of medical cross-examination he had heard, for what the medical man in the dock did not know about abortion would have gone on a threepenny bit. The Harveian Society of London is to be congratulated on the success which has attended its activities since the war. The Society, which is one of the oldest of general practitioner societies, is now approaching its centenary, but it displays all the energy of youth. The inclusion amongst the guests at its dinner of so many representative men from other professions is a practice worthy to be copied by other medical societies, since it will tend to establish understanding between the medical profession and those with whom it is brought into relation in questions which affect the community.

#### OXFORD OPHTHALMOLOGICAL CONGRESS.

THE fourteenth annual meeting of the Oxford Ophthalmological Congress will begin on Thursday, July 5th, when, after a formal opening by the Master, Mr. Sydney Stephenson, a discussion on the relation of dental sepsis to diseases of the eye will be opened by Mr. W. R. Ackland of Bristol and Mr. W. Lang of London. A number of members have given notice of their intention to join in the discussion. In the afternoon several papers will be read, including one by Mr. Harrison Butler on the organization of ophthalmic clinics and hospitals. On Friday morning, after the reading of two papers—one of them by Dr. Lundsgaard of Copenhagen on the Flinsen treatment of conjunctival diseases—the Doyne Memorial Lecture will be delivered by Mr. H. Moss Traquair, assistant ophthalmic surgeon to the Royal Infirmary, Edinburgh; his subject is the differential characters of scotomata and their interpretation. Afterwards a paper will be read by Professor J. Van der Hoeve of Leiden. An afternoon meeting will be held to hear papers read. On Saturday morning a discussion on coal-miners' nystagmus will be opened by Mr. R. J. Coulter, ophthalmic surgeon to the Royal Gwent Hospital, Monmouthshire. The discussion is to be strictly limited to the diagnosis of the condition from the clinical point of view and its relations to the Workmen's Compensation Act. There will be two dinners, the one on Wednesday, July 4th, and the other—the annual dinner of the Congress—on Friday evening.

#### NURSING IN FRANCE.

THE Act which was passed in France in June, 1922, and amended in February, 1923, instituting a State diploma for French nurses, after a suitable period of study and examination, recognized the new standing that nursing had gained in France during and since the war. The foundation of a monthly professional journal has now given an impetus to

the improvement of educational facilities for nurses in France and the development of a corporate spirit among them. *L'Infirmière Française* is intended primarily for nurses, but makes an appeal also to medical practitioners and others interested in the organization of nursing. It is published under the patronage of the French Minister of Health, and under the scientific direction of Professor Calmette, of the Pasteur Institute, who contributes an eloquent introduction to the first number. The other articles cover a considerable range of subjects. Dr. Courcoux writes on the feeding of tuberculous patients and of patients with a predisposition towards tuberculosis. Dr. Raymond Grégoire discusses the first dressing that should be applied to a compound fracture until the surgeon arrives. Dr. Henri Paillard contributes an illustrated article on the care of the mouth during acute infectious fevers; shorter articles are on such subjects as domestic disinfectants, and on how to put drops in the eye. A section of the journal is devoted more particularly to the professional interests of the organized body of nurses. In the first number this section includes an article on the professional moral of nurses, and another on nursing in America; the Act instituting a nursing diploma is printed in full, with comments, and answers to correspondents are given. In future it is intended to discuss month by month questions of practical importance to nurses, the contributors including physicians, surgeons, general practitioners, nurses, and other specially qualified persons. It is hoped to aid in the development of the professional knowledge of all nurses, without overstepping the limits of their normal activities.

#### NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.

THE ninth annual conference of the National Association for the Prevention of Tuberculosis is to be held in Birmingham, the proceedings extending over July 12th, 13th, and 14th. There could be no more appropriate centre for this conference, for nowhere has the problem of tuberculosis been attacked more vigorously, and a tuberculosis service more efficiently and progressively administered, than in the great Midland city. The provisional programme lacks little of comprehensiveness either in the names of those who have promised to take part in the discussions or in the range of subjects embraced by the agenda. The wide field of activity covered by the programme of the conference indicates how great is the effort still necessary, more particularly in co-ordination of method in the common aim. Foremost of the subjects down for discussion is the very formidable problem of advanced tuberculosis, more especially with reference to the prevention of infection. This is a question that will have to be faced more courageously and dealt with more drastically than has hitherto been the case in this country. Hardly less in importance is the discussion on the industrial side of the question, which will occupy the morning session of the second day. There is great scope in this direction for the educational activities of the National Association, for the problem of tuberculosis in many trades is not so much a purely occupational question as one of the conditions under which work is carried on. The issues raised in this year's conference are fundamental, and the importance of the sociological aspect of tuberculosis cannot be too strongly emphasized.

THE honorary Fellowship of the Royal College of Surgeons in Ireland will be conferred on Monday next, June 25th, on Sir Harold Stiles, K.B.E., M.B., C.M., Regius Professor of Clinical Surgery in the University of Edinburgh. The ceremony, at which the President, Sir William de Courcy Wheeler, will preside, will be followed by the Charter Day dinner in the College Hall.



## A SPECIFIC TREATMENT OF TUBERCULOSIS.

ABSTRACT OF A REPORT ON  
SOME NEW PRINCIPLES IN BACTERIAL IMMUNITY AND  
THEIR APPLICATION IN REFRACTORY INFECTIONS,  
INCLUDING TUBERCULOSIS,

BY

PROFESSOR GEORGES DREYER, F.R.S.

(From the Department of Pathology, University of Oxford.)

In a lecture delivered at the Institute of Pathology and Research, St. Mary's Hospital, London, on June 14th, Professor Georges Dreyer set forth some new principles in bacterial immunity, stated their experimental foundation, and discussed their application to the treatment of refractory infections, and to tuberculosis in particular. The following account of Professor Dreyer's researches and results is founded upon the text of his full paper published in the current number of the *British Journal of Experimental Pathology*<sup>1</sup> (June, p. 146).

## GENERAL STATEMENT OF THEORIES AND RESULTS.

If the whole field of experience in bacteriotherapy and serotherapy, using those terms in their widest connotation, be reviewed, it will be perceived that in spite of the great successes obtained in some directions, notably as a consequence in this country of work done by Sir Almroth Wright and his colleagues, there is a disappointing lack of uniformity in the results. When an explanation of this is sought it is at once seen that, speaking in a general way, the great successes of bacterial therapy and prophylaxis have been won in that group of diseases—including, for example, typhoid and paratyphoids and plague—which are due to non-acid-fast and Gram-negative micro-organisms, whereas failure is the general rule in diseases caused by acid-fast and Gram-positive micro-organisms, such as *B. tuberculosis*. This generalization applies only to the bacterial bodies themselves, not to their soluble products such as toxins. The rule is not absolute; for example, partial success has been obtained with pneumococcal antiserum and with staphylococcus vaccines; yet failure is very far from rare with vaccines of Gram-negative bacteria such as the gonococcus. But although the rule does not hold absolutely, it is in the main correct.

## Bacterial Lipoids.

Since acid-fastness and Gram-positiveness have been clearly proved to be associated with the presence in the bacterium of certain waxy or fatty substances, which may be spoken of collectively as lipid or lipoidal substances, there was an *a priori* probability that the failure to produce immunization was due to them. Though little is at present known about the chemical questions involved, yet it seems possible that these substances protect the specific bacterial proteins and prevent their liberation from the body of the bacterium, thus checking or completely stopping the production of the sole adequate stimulus for the immunity reaction of the infected organism. Support for this view is to be found in certain work done by Douglas in 1921 at the National Medical Research Institute on the digestion by trypsin of bacteria extracted with acetone. He was invariably successful in digesting and obtaining immunity responses with Gram-negative bacteria, such as the dysentery bacillus, the typhoid bacillus, and the gonococcus, but the Gram-positive organisms either were not digested at all (staphylococcus) or underwent apparent digestion, but gave rise to no immune bodies (*B. welchii*).

## THEORY OF "DEFATTED" BACTERIAL ANTIGEN.

This being so, it was decided to attack the problem by attempting the removal (by extraction) of the lipoidal fraction of some representative acid-fast and Gram-negative bacterium. The tubercle bacillus was selected because it has a highly developed lipid constituent, and is, in many respects, a very robust and resistant micro-organism. A large quantity of tubercle bacilli was killed by heat and extracted with acetone. Though large amounts of lipoidal

substances were removed, the bacilli remained acid-fast. It was then recalled that a tuberculous tissue fixed with formalin often, when suitably stained, showed far fewer tubercle bacilli than the same tissue fixed with mercury perchloride. Various experiments made it plain that the bacilli could not be deprived of the quality of acid-fastness by formalin alone; in the preparation of tissues for section a number of other reagents are used, including fat-solvents such as alcohol, xylol, and chloroform. The suggestion, therefore, arose that the phenomenon might be due to the application of formalin and fat-solvents in succession to the bacilli, and this was found to be the case, the tubercle bacillus becoming non-acid-fast. As it was known that bacteria killed with formalin or extracted with acetone retain their antigenic power, there was good reason to hope that the residue of the tubercle bacilli after treatment with formalin and extraction with acetone would retain all or part of the specific properties of the bacillus and that this residue could be used for immunization. The truth of this expectation was established by numerous experiments. It was also found that it was possible to deal with other acid-fast bacteria in the same manner and to reduce Gram-positive micro-organisms to the Gram-negative condition.

## Retention of Antigen by "Defatted" Bacilli.

The next step was the demonstration of the capacity of the "defatted" bacteria to react with specific antisera, and this led on to the experimental proof of their antigenic action in the animal body, where they gave rise, on injection, to the production of well known "immune substances," such as bacteriolysins, complement-fixing bodies, precipitins, and agglutinins. It was next established that these antigens could exert definite curative effects on animals suffering from bacterial infection.

## Retention of Antigen by "Defatted" Bacilli.

In order to complete this section of the work it was thought desirable to ascertain whether this somewhat heroic process of extraction with formalin and acetone had a destructive effect on the essential antigen of Gram-negative bacteria. The *B. typhosus*, a rather sensitive micro-organism, was chosen; it was subjected to the same process as the tubercle bacillus, and it was found that it retained its ability to cause the production of immune substances. It has not been proved that none of the antigenic power is lost during the process, but it was clearly established that any loss that occurs is only partial and therefore unimportant. These observations were held to prove that the protective action of the lipid substances in the micro-organisms had a very important effect on the treatment by vaccines of the infections caused by the acid-fast Gram-positive micro-organisms, and that these "defatted" micro-organisms, when injected, would readily be digested by the body fluids, and their substances thus set free to produce the antibodies desired.

## NATURE OF "ATTENUATION."

At this point of the investigation a second and closely related train of thought suggested itself. No clear explanation has ever been given of Pasteur's classical demonstration of the immunizing properties of anthrax cultures "attenuated" by growth at 42° to 43° C. The new knowledge that "defatted" anthrax bacilli can be digested by trypsin, whereas the untreated bacilli are in the main not digested, justified the hypothesis that growth at 42° to 43° gives rise to a deficient formation of the normal "fatty" constituent, and thus renders the bacilli more easily susceptible to the digestive action of the body fluids. Such bacilli, when injected into the living body, would be, at least in part, readily disintegrated, and the release of their antigen would cause a rapid immunity-response in the animal before the Gram-positive, and therefore more resistant, bacilli developed in sufficient number to overwhelm the normal resistance of the body.

The prediction that growth at 42° to 43° would give rise to a weakening or disappearance of the Gram-positiveness of anthrax bacilli was verified by a few simple experiments not only for that bacillus, but also for a stock laboratory strain of *Staphylococcus aureus*.

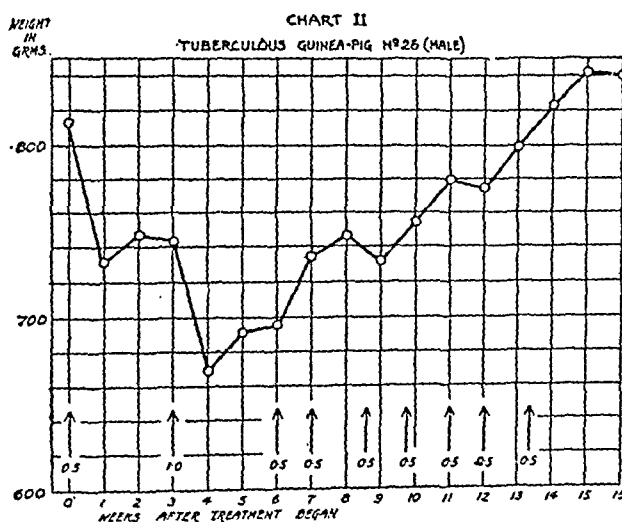
<sup>1</sup> London: H. K. Lewis; Toronto: The Macmillan Company of Canada. 7s. 6d.; annual subscription 42.



## POWER OF THE LIPOIDAL SUBSTANCES TO PRODUCE LOCAL REACTION.

The formalin-acetone process which produces a relatively complete separation of "fatty" substances from the specific proteins made it possible to throw light upon another set of unexplained phenomena. It was well known that the subcutaneous injection of dead tubercle bacilli or staphylococci caused a severe local reaction with infiltration and sometimes necrosis, often unaccompanied by any noteworthy general disturbance. The observations already detailed suggested that the local disturbance might be due entirely to the highly indigestible and irritating "fatty" constituents of the bacilli and not to their specific antigenic proteins.

Subcutaneous injection into suitable animals of the acetone extracts of tubercle bacilli and of staphylococci, previously treated with formalin, showed that the theory was completely in accord with the facts. The injection into normal animals of lipoids from tubercle and from staphylococci gave rise to infiltrations which might persist for a long time; in one instance the undissolved mass of lipoids ulcerated through the skin and discharged itself, while a larger dose of "defatted" bacilli than corresponded to the dose of lipoids caused no local reaction; this was an additional proof that the lipoids of the bactericidal body formed an important obstacle to the solvent and protective action of the body fluids.



The arrows show the date of injection and the quantity.

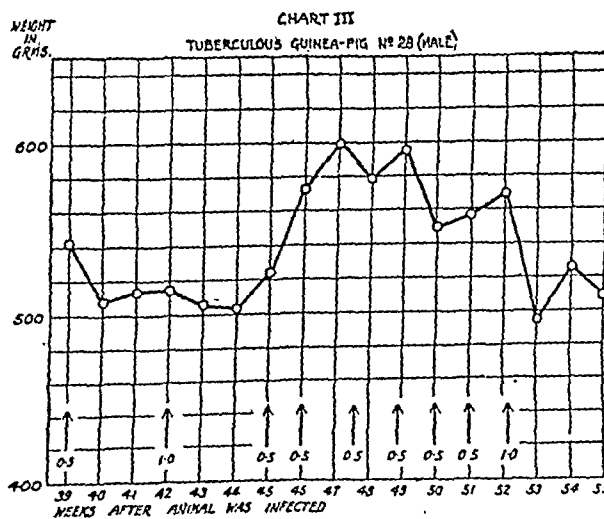
## THE METHOD OF PREPARING "DEFATTED" ANTIGENS.

The method by which Professor Dreyer prepares "defatted" antigens is fully described in his paper in the *British Journal of Experimental Pathology*, and those who propose to follow in his footsteps will refer to this; we propose here to give only some general indications. It is to be remembered that the term "defatted" is not intended to indicate that all the lipoidal substances present in the micro-organisms have been removed, but merely certain lipoidal substances, soluble in acetone after formalin treatment. In the case of the acid-fast and Gram-positive bacteria the indication that the extraction

has proceeded far enough for the purpose is the change of the staining reactions to non-acid-fastness or Gram-negativity respectively.

Tubercle bacilli are grown on the surface of glycerin broth or other suitable liquid medium for two or three weeks; the fluid is decanted off and the mass of tubercle bacilli ground up into a paste in an agate mortar with a few drops of formalin. More formalin is gradually added with constant grinding until 150 to 200 c.c.m. of formalin have been added to each 5 grams of bacilli weighed wet. The suspension of tubercle bacilli in formalin is heated in a flask to 100° C. for four hours, filtered, and the residue washed three or four times with a acetone. The suspension is then filtered through calcium-free paper and the residue extracted three or four times with acetone, and then in a Soxhlet apparatus. The insoluble residue is dried and ground in a sterile

mortar. A weighed quantity of the extract is ground up with sterile saline solution into a paste, more saline being added during the grinding; it is then centrifuged. The supernatant fluid is pipetted off and when diluted with saline containing formalin constitutes the antigen suspension. The actual weight of "defatted" organisms is ascertained by methods which are fully described, and the fluid suspension is so adjusted with saline that one cubic centimetre contains one-fifth of a milligram of dry "defatted" tubercle bacilli. Suspensions



The arrows show the date of injection and the quantity.

for use are made up to contain a definite weight of "defatted" tubercle bacilli per volume of fluid, the actual proportion varying with the purpose for which the injection is to be made.

## Digestibility by Trypsin.

Although it is generally accepted that proteins after treatment with formaldehyde cannot be digested with trypsin, this does not apply to the "defatted" micro-organisms, but the rate and completeness of digestion depend on a number of factors as yet undetermined. The irregularities appear to be more pronounced with the tubercle antigen than with the others.



### Production of Immune Substances by "Defatted" Antigen.

Four rabbits were injected with "defatted" tubercle bacillus antigen and developed, in varying degrees, anti-substances the presence of which in the serum was demonstrated by test tube experiments. These substances were complement-fixing bodies, precipitins, and agglutinins. So far as complement fixing was concerned, it was clearly established that tubercle bacillus antigen is specific in its reaction not only with the serum derived from a horse immunized with whole tubercle bacilli, but also with the serum of a rabbit suffering from tuberculosis. A precipitinogen was prepared by digesting "defatted" tubercle bacilli with trypsin, and proved to be specific in its reaction. It was also ascertained that the injection of "defatted" antigen into normal rabbits caused the production of specific agglutinins, and that these substances were present also in the serum of animals infected with tubercle bacillus, whether they had or had not received subsequent injection of "defatted" antigen.

### EXPERIMENTS ON INFECTED ANIMALS WITH "DEFATTED" TUBERCLE ANTIGEN.

Experiments were performed with a view of studying the therapeutic effects of "defatted" tubercle antigen on animals suffering from well defined tuberculosis. In his paper Professor Dreyer gives full details of an experiment on four guinea-pigs inoculated with tubercle bacillus of the human type, but of low virulence. Animals infected with it usually die in six to eight months after infection, the extremes being four to ten months, and *post-mortem* examination has invariably shown generalized tuberculosis affecting the spleen, liver, lungs, and lymph glands.

One guinea-pig (No. 4, male) was inoculated with this strain on June 15th, 1922; treatment was begun twenty-eight weeks later (December 29th, 1922). The animal was then under the average weight for its age, the spleen was large, and there were enlarged glands in the inguinal regions, three or four in the right and one or two on the left. Injections of "defatted" antigen were given at the dates indicated by the arrows in Chart I. Twenty weeks after the beginning of treatment the animal looked healthy, was of the normal weight for its age, the spleen was smaller, the glands on the right side had become smaller and harder, and on the left had practically disappeared, being replaced by what felt like a pad of fibrous tissue. This was forty-eight weeks after inoculation; had it been untreated the animal would have been expected to die within ten months (about forty-two weeks) from the date of infection.

Another guinea-pig (No. 26, male) was inoculated with the same strain of tubercle bacilli some months before treatment was begun. The animal, though it looked healthy, presented an enlarged spleen and large masses of glands in both inguinal regions. As will be seen from Chart II the animal, after an initial fall, steadily gained weight. Eight weeks after the beginning of treatment the glands in both inguinal regions had entirely disappeared.

A third guinea-pig (No. 28, male) thirty-nine weeks after inoculation with tubercle bacilli was greatly under weight, had an enlarged spleen, and large glands in both inguinal regions, one of which was ulcerating and discharging caseous material. Four days after the first injection the ulcer was smaller, and after six days more had healed. Within twenty-four hours after the second injection the scar had broken down, but healed again within a week; by this time the glands on both sides had become smaller. After the third injection the scar again opened in about sixty-six hours, but healed in six days. This occurred again after the fourth injection, and after the sixth and seventh. Four months after the treatment was begun the glands were greatly reduced in size, the ulcer was soundly healed, but the animal had decreased in weight (Chart III).

A fourth guinea-pig (No. 27, female) was inoculated and treated in a similar manner, but the experiment was vitiated by the animal becoming pregnant. After littering it went rapidly downhill and died on the fifth day. The cause of death was not ascertained; the heart blood was sterile. Its organs were carefully examined by Dr. A. G. Gibson, whose detailed report is published in the *British Journal of Experimental Pathology*. The organs affected were the inguinal and axillary lymphatic glands, the liver, the lungs, and the spleen. The lesions in all were tuberculous granulomata; very few tubercle bacilli were found in the sections. All the lesions, especially those in the liver, showed abundant fibrosis, and throughout there was an absence of the lymphocytic reaction seen in active tuberculosis. Dr. Gibson observes that "the presence of giant cells, together with the increase of fibrous tissue, lend support to the evidence which points to a tendency to heal."

Experiments were also made on four rabbits, three being submitted to a course of treatment with "defatted" tubercle antigen, while the fourth served as a control. These experiments, which have extended over three months,

are not yet regarded as complete. The animals were inoculated with living bovine tubercle bacilli: the results in the three animals treated appear to indicate arrest of the disease; in the control animal it had made slow progress. The conclusions Professor Dreyer draws from the results of treatment of animals are expressed in the following terms:

"The experiments just described justify, in my opinion, the conclusion that treatment with the 'defatted' antigen brings about a definite improvement, both general and local, in animals infected with *B. tuberculosis*. Additional evidence for this view is given by the guinea-pig No. 27 which died, for its organs show what seems indubitably to be a healing of tuberculous lesions. Of course only time can show whether this beneficial effect is permanent. In order to attain certainty on this question, it will be necessary to watch the animals for a long period without further treatment, and then kill them and make a search for tuberculous lesions in their organs."

### TREATMENT OF TUBERCULOSIS IN MAN.

The fact that small quantities of the "defatted" antigens were devoid of toxic action having been established, it was felt to be justifiable to begin to test their effect in minute doses on human patients and to attempt to ascertain whether their action would be more favourable than that of the various tuberculins and vaccines of the usual types.

Early in April Dr. A. C. Inman injected "defatted" tubercle bacillus antigen into two patients suffering from active febrile tuberculosis of the lungs and pleurae. The patients, who were in the care of Dr. Bosanquet, had been under observation for a long period and were steadily getting worse. They were selected as being cases only likely to improve if some extra aid could be given. No local or focal reaction followed the initial inoculation, nor was there any appreciable febrile reaction. It was then decided to undertake the treatment of a case of acute toxic pulmonary tuberculosis in a patient aged 21. No local, focal, or general reaction followed; the temperature became lower and there was some amelioration of the general condition. The doses used were very small. Professor Dreyer recognized that it is too early to express any opinion on the effect of the treatment on the disease.

Drs. P. Fildes and G. T. Western also used the treatment in some cases in the London Hospital in April and at the conclusion of his lecture Professor Dreyer read the following report from Drs. Fildes and Western:

We have under treatment with Dreyer's antigen 60 cases of tuberculosis. Among these are 36 cases of tuberculous adenitis, 11 cases of cutaneous tuberculosis, 4 cases of pulmonary tuberculosis, both active pyrexial and apyrexial, 3 cases of joint and bone tuberculosis, 1 case of peritonitis, 1 case of tuberculosis of the urinary tract, 1 case of irido-cyclitis, and 3 cases of epididymitis. Most of these cases have been under our personal observation for considerable periods, up to five years, and have been selected for treatment as having shown little improvement under treatment with tuberculin B.E. (Koch).

Improvement has taken place in nearly all cases, and is, in our opinion, of an order which exceeds obviously that obtainable by any other form of treatment which is applicable to these conditions.

We have not observed any toxic effect following on the inoculations.

With regard to the effect of these antigens on other bacterial infections, we have treated 6 cases of streptococcal infection such as septicaemia, erysipelas, and osteomyelitis, 17 cases of staphylococcal infections, such as syphilis barbae, furunculosis, etc., and 5 cases of gonorrhoeal infection. Undoubtedly the course of the disease in many of these cases has been satisfactory as compared with previous experience with vaccine-treated cases. The issue, however, has not always been so straightforward, and therefore an opinion based on three weeks' experience must be more reserved.

In due course a detailed account of these cases will be published.

Professor Dreyer expressed his thanks to Mr. R. L. Vollum for his assistance in the preparation of antigens and the performance of the tests; to Dr. A. D. Gardner and Dr. H. K. Ward for their help in many experiments; to Captain S. R. Douglas, F.R.S., for help in many ways; and to Drs. A. C. Inman, P. Fildes, and G. T. Western for their willingness to apply the antigens in cases of human disease.



## BIOCHEMISTRY AND CLINICAL MEDICINE.

*Address by SIR WALTER FLETCHER*

AT THE OPENING OF

## THE NEW BIOCHEMICAL LABORATORY AT ST. THOMAS'S HOSPITAL.

THE new biochemical laboratory at St. Thomas's Hospital Medical School was formally opened on June 15th by the Marquess of Cambridge, in the absence of the Duke of Connaught, owing to the death of Princess Christian.

SIR JEREMIAH COLMAN, chairman of the Dunn Trustees, in formally presenting the laboratory to the Hospital, explained that the late Sir William Dunn, a very successful South African merchant who amassed a large fortune, appointed the directors of the Commercial Union Assurance Company to decide after his death how a large portion of his estate should be distributed. The trustees had endeavoured conscientiously to carry out the duties involved, but, naturally, they were aware of their limitations as business men, and on scientific questions they had sought authoritative help from outside. In this connexion they owed a great deal to Sir Walter Fletcher, for whom no amount of trouble had been too much. The moneys of the trust were now exhausted or earmarked, but he was able to announce—what came as a complete surprise to the beneficiaries—that along with the gift of the laboratory the trustees would ask the hospital to accept the sum of £5,000 to equip it with scientific instruments and to provide a certain amount for future use.

*Sir Walter Fletcher's Address.*

SIR WALTER FLETCHER said: I have been honoured by the request that I should give a brief account of the origin of the laboratories just visited and inaugurated, and speak of the share they are designed to take in the work of this great Hospital. In that well arranged new building we have just seen Professor MacLean and his colleagues engaged in all the high and delicate ritual of the biochemical laboratory, and within it you will have noticed some of the instruments of precision and the carefully ordered arrangements of glass apparatus which, with the help of the benefactors, the Dunn Trustees, have already been provided there. It is not easy for the onlooker, however, at once to see the relation of this work to the great charitable purposes of the Hospital or to appreciate the vital importance that chemical work of this kind has for the patients in the wards, and for their relief from pain and danger.

The physician in his healing art has constantly endeavoured to increase his powers of insight into the human body and its hidden machinery. For nearly two centuries and a half he has used the microscope to gain better powers of vision into the minute structure of the living body. For a hundred years he has used the stethoscope to improve his powers of hearing the sounds of disordered mechanism within the body. In the last generation science has made progress at a rate never known hitherto in the world's history, and has placed new weapons in the hands of the physician almost undreamed of before. In particular, the growth of biochemistry has already given him many new means of studying the body machinery—for the body is fundamentally a chemical machine—and has allowed him to trace some of the causes and results of disease at which hitherto he could only make guesses. The apparatus of a well equipped chemical laboratory has now become as essential to the daily work of the physician as the stethoscope in his pocket, or as his microscope and all the aids of bacteriology. Without chemical equipment the merciful daily work of the hospital cannot properly be done. Without it, moreover, we cannot hope to make progress and to improve our power of helping the sick.

Nowhere has this been shown more clearly than in the biochemical work which has already been done at St. Thomas's Hospital by Professor MacLean and his colleagues. I will give a very brief illustration of this. It was work done in the former laboratory which brought the British armies during the war the first clear light to guide

the treatment and disposal of the many thousands of men who suffered from trench nephritis, the kidney disease which was one of the gravest causes of the loss of man-power during the campaign in France and Flanders. It was this work, again, which pointed clearly to the modes of prevention of that disease which were brought into successful practice before the close of the war. That great work was based upon biochemical observations made by Dr. MacLean with apparatus brought from this hospital and similar to that seen to-day. It never returned to the hospital, for his little biochemical laboratory at Etaples was eventually destroyed by a German bomb—but not before it had done its work. The same line of investigation pursued here since the last period of the war has brought other great benefits to the country. It led to the establishment of a just and scientific system by which the Ministry of Pensions is guided in dealing with the results of disease or inefficiency of the kidney. The Ministry of Pensions has been able to show that, owing to this scientific contribution from St. Thomas's Hospital, better justice has been done to the ex-soldiers, while economies have been effected amounting to hundreds of thousands of pounds. The country in this way alone has probably already saved in money more than it has spent in medical research work of all kinds.

Still another development of the same work more recently has notably increased the safety with which certain kinds of surgical operations can be performed, and the small death roll of the operating theatres here has been made smaller still.

Even at this moment the biochemical laboratory is engaged in the necessary chemical work without which the new treatment of diabetes by insulin could not be used. In every week, patients in these wards suffering from that disease have been brought from the miseries of starvation and pain to comfort and to new hope. What is being done by the help of insulin now in this hospital would have seemed miraculous only a year ago. It has to be seen to be believed, and when seen it stirs the heart and imagination of every thoughtful man. This merciful work, like all the rest of the modern healing art of the physician or surgeon, has been based upon, and depends at every point upon, experiments made with animals. No nobler service has been given to mankind by the animal kingdom than by those creatures whose lives have been used, not for the food or the clothing or the amusements of men, but for the diminution of pain and disease both in man and in other animals. These experiments, done by humane men under the careful safeguards maintained under statute by the Home Office, are necessary not only in research work but in the everyday charitable work of the hospital. The work of the biochemical laboratory, and now in particular the use of insulin for the treatment of the sufferer from diabetes, is hampered by an artificial regulation that animal experiments may be done in the Medical College but not in the Hospital, although they are done directly for the hospital and although the hospital cannot do its work without them. The distinction between the Medical College and the Hospital in this matter is a mere pretence. It should be recognized as an unworthy pretence incompatible with the intellectual honesty of this place. It dishonours, moreover, the service which the animals have rendered, and are rendering now, to the noble work of charity within these walls.

Progressive work like that for which the new biochemical laboratory is designed cannot be done by the physician who is answering the calls of a busy professional practice. Medical science, like every other branch of science, can only be advanced and can only be effectively and fully taught by those giving their whole energies to it. The Medical Research Council, which is charged by the Government with the duty of promoting medical research work throughout the country, found from the beginning of its work ten years ago that little or no progress in research was possible under the existing hospital arrangements, and near the close of the war they joined eagerly with the Ministry of Health in pressing for the establishment, at some at least of the chief hospitals, of what are now called University Clinics or professorial "Units." These were commended in eloquent terms by His Majesty the King a fortnight ago, when he spoke of the munificent gift which has come recently to the support of the units at another hospital from the Rockefeller



Foundation of New York. Without liberal money help from outside, these new centres of accurate study and higher teaching in medicine cannot do effective work. The Government grants made to them from public funds are barely adequate for the support of the men engaged. It is upon the hospitals that the burden of providing the laboratories and equipment has fallen, and this at a time when their funds are strained to meet the immediate requirements of the sick. The existing buildings of St. Thomas's Hospital were designed before the growth of science had made the need for laboratory work imperative for the proper help of the afflicted, and the necessary changes involved costly structural alterations. It is this which has made the recent benefaction of the Dunn Trustees so timely and valuable—though indeed the unavoidable structural work has necessarily absorbed much of the money needed for the heavy expenses of research apparatus and materials. The provision of this biochemical laboratory, however, by the foresight and generosity of the Dunn Trustees, together with similar aid they have given at two other great hospitals, is the first benefaction from any private British source which has been offered to meet and reinforce the munificent help already given to the medical unit system in London from America.

In tending the sick and suffering we can show no effective mercy without knowledge, and this knowledge can only be gained by the steady pursuit of truth. In the intimate association here between the wards and the laboratory we can truly say, in those ancient words, that here indeed

"Mercy and Truth are met together."

#### Official Thanks.

The CHAIRMAN (Sir Arthur Stanley), in gratefully accepting the gift, said that the further surprise donation of £5,000 for the purchase of scientific instruments would be most welcome. The maintenance of the Hospital was covered by subscriptions and interest on invested funds, but the constant difficulty hitherto had been to meet the demand for new laboratories and equipment consequent upon the progress of science. He added that research in general had no better advocate than Sir Walter Fletcher, and to him as well as to the Dunn Trustees the Hospital tendered its most sincere thanks.

Sir CUTHBERT WALLACE, Dean of the Medical School, expressed the great indebtedness of the school for the assistance received.

The MARQUESS OF CAMBRIDGE then distributed the prizes and certificates.

## Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

### NURSES' REGISTRATION ACT.

#### The Proposed New Regulation.

A DEBATE took place in the House of Commons on June 13th as to the proposed regulation by the General Nursing Council to settle how far nurses should be admitted to the Register without examination. Under the Act of 1919 the General Nursing Council has power to frame regulations, but these have to be laid on the tables of the two Houses of Parliament, and either House can present what is technically known as a prayer to His Majesty for change or rejection of such proposal. In the present instance the Nursing Council intended to deal with the matter by inserting after Rule 9 (1) *a fresh regulation prescribing that where a nurse was, on November 1st, 1919 (the date of the Act), engaged in actual practice and had also been bona fide engaged in nursing prior to January 1st, 1900, it should be open to the Council to accept, in each case, evidence of knowledge and experience for the purpose of registration.*

Dr. Chapple moved to vary this by prescribing that a nurse who was in 1916 in practice should be eligible for registration subject to producing the following evidences of knowledge and experience:

- "(a) A certificate of good character;
- "(b) A certificate signed by a matron of a general hospital or an infirmary or by two medical men setting out that the applicant has been in attendance upon the sick in the capacity of a nurse for a period of not less than three years prior to the 1st November, 1919; and
- "(c) A certificate signed by a registered nurse and by two medical men, one of whom shall be on the staff of a general hospital, setting out that the applicant has adequate knowledge and experience of medical and surgical nursing, and is competent to attend upon the sick in the capacity of a nurse.

"Provided that the Council may require the applicant, as a condition precedent to registration, to present herself for special inquiry before a medical officer, or officers, appointed by the Council."

In supporting this Dr. Chapple urged that every Act of this kind which had been passed had made provision for those practising bona fide at the time of the passage of the Act. Dr. Salter, seconding the motion, said he had no desire to lower the standard of nursing education. He did not mind how narrow the portal of entry was made for the future, but he pleaded for justice and fairness for highly qualified women who did not fulfil all the technical requirements of the Rule of the Nursing Council.

The Minister of Health (Mr. Neville Chamberlain), in the course of his speech, remarked that controversies of this kind almost invariably arose when an effort was made to stabilize a profession which hitherto had had no general standard; but there was a difference between the cases of the nurses they were now considering and the cases which had been previously dealt with, such as the midwives and the dentists. Under those provisions people could not practise their profession at all unless they came on the Register. That was not so under the Nurses Act; there was nothing in it to prevent a nurse from practising even if not on the Register. He did not deny that some hardship was inflicted upon certain nurses. But Dr. Chapple's motion—proposing that nurses who could obtain a certificate signed by a registered nurse and two medical men should have the right of entry upon the Register—appeared to him to go a great deal too far. That took away from the Nursing Council the discretion given to it under the Rule which he (the Minister) had approved. It must be remembered that about 27,000 nurses had already applied for entry upon the Register. They had done so on the understanding that the conditions were those laid down by the Nursing Council. If it had been suggested to them that it was possible to bring in a large number of other nurses with no hospital training he was not sure that they would have applied for registration. The facts of the situation had to be faced.

Dr. Fremantle explained why he differed from some professional colleagues who were supporting the motion before the House. Had he had anything to do with the framing of the Act of 1919 he would probably have shared their view; but neither he nor they had any part in drawing up that Act. It would have been better to include everybody up to the time of the passing of the Act and let them go on as bona fide members of the profession: all these persons would then have been brought within the discipline of the profession. But the ground was cut away by the decision of Parliament. True, Parliament laid down that rules should be made for the introduction of the bona fide nurse, but it said that the conditions she must fulfil were to be such as seemed satisfactory to the Nursing Council. The Council had said it would be satisfied with certain conditions for bona fide nurses as long as they practised before 1900, and it was believed that it would extend the date to 1910. For that reason he had put down an amendment standing in his name extending the date to 1910.

On a division Dr. Chapple's motion was carried by 101 votes to 81. Dr. Fremantle's amendment and another in the name of Major Barnett were held by the Speaker to have been disposed of by the decision.

### Insurance Medical Service.

Mr. Chamberlain stated, on June 13th, in answer to Mr. Adamson, that he intended to propose the renewal of the National Health Insurance (Prolongation of Insurance) Act for the year 1924.

Lord E. Percy stated, in answer to Sir Kingsley Wood on June 14th, that the Government could not at this stage undertake that when a settlement had been reached with the doctors under the National Health Insurance scheme an opportunity would be given for the discussion of the agreement before it came into operation. But even if no express legislation was necessary, Parliament would have an early opportunity for reviewing the terms of the agreement next session on the Vote on Account.

Mr. Bruford, Dr. Watts, Mr. W. M. Adamson, Dr. Salter, and Mr. Leach addressed questions, on June 13th, to the Minister of Health regarding trade advertisements on the back of medical certificates required to be issued by doctors under the National Insurance Act, the point being made that the medical profession strongly objected to acting as advertisement distributing agents of any particular foods. Mr. Chamberlain said that he would consult the Stationery Office as to the possibility of securing other advertisements without loss to the revenue when the present contract terminated, if there should still be room for advertisements on the form. Dr. Salter asked whether the Minister appreciated the fact that a medical certificate issued by a doctor was a document of a very personal and intimate character, with the word "Confidential" across it, and whether, in these circumstances, any kind of advertisement on a document of that sort in the hands of a patient of the less educated class was taken as a personal recommendation from the doctor. Sir Henry Craik asked whether it was the case that the sum obtained at the Stationery Office for this advertisement on millions of forms was £135 a year. Mr. Chamberlain said that was so. He recognized that objections were taken and would try to have the matter altered as soon as the contract was ended. On another question by Commander Kenworthy, Sir William Joynton-Hicks said that the revenue from advertisements on the various medical certificates was estimated at £405 per annum (including £270 from Form Med. 40). Commander Kenworthy remarked they had just been given a different figure, but Sir W. Joynton-Hicks replied that he believed the question was a different one.

### Small-pox.

Sir W. Preston asked, on June 15th, how many cases of small-pox there had been in Gloucestershire in January, February, March, April, and May of this year; and whether any special steps had been taken to cope with the disease in the county.



Mr. Chamberlain replied that the number of cases of small-pox which had been notified in Gloucestershire, including the city of Gloucester, during these months had been as follows: January *nil*, February *nil*, March 8, April 25, and May 31. There was, however, evidence to show that many cases had occurred in the city of Gloucester during the last two months which had not been recognized as small-pox by the medical officer of health and had not been notified. Special visits had been paid by medical officers of the Ministry of Health to the districts in which the disease had occurred, in order to assist and advise the local authorities and their officers. In the case of Gloucester, two of these medical officers had, at the request of the local authority, assisted in the diagnosis of cases and in the organization of suitable measures to meet the emergency, and these officers discovered a number of cases which had been incorrectly diagnosed or overlooked. He had since caused a communication to be sent to the local authority recommending the several special steps which should be taken to deal with the outbreak, and he understood that effect was being given to these recommendations. In reply to a further question Mr. Chamberlain said that no official employed by the Gloucester medical officer to distemper houses where small-pox had occurred had himself contracted the disease.

Mr. Rhys Davies asked, on June 15th, whether, when the recruiting regulations requiring intending recruits to promise to be vaccinated was reintroduced in January, 1919, the War Office possessed information as to small-pox in the army; and, if so, why repeated requests for such information had been refused. Lieut.-Colonel Guinness said that the complete statistics which had been asked for from time to time were not then and were not yet available, but the Department possessed sufficient information to be satisfied that the reintroduction of the regulation was desirable from a military point of view.

Mr. Lee asked, on June 13th, whether the Minister of Health had seen an expression of opinion by the medical officer of health for Chesterfield that the outbreak of disease in Clowne, Bolsover, Ilkeston, and other places in Derbyshire, which had been notified as one of small-pox, was not due to that complaint, seeing that its effect had none of the usual characteristics of face disfigurement and that no deaths had occurred. Mr. Chamberlain assumed that the reference was to certain statements in the annual report of the medical officer of health for Chesterfield for the year 1922; but in that report the medical officer acknowledged that his view was shared by only a very small minority. When similar statements were made last year an expert committee was appointed by the then Minister of Health to examine certain patients in Chesterfield and elsewhere who had been notified as suffering from small-pox. This committee arrived at the conclusion that the disease was, in fact, small-pox of a mild type, a conclusion supported by subsequent investigation undertaken by medical officers of the Ministry.

Mr. Chamberlain has supplied the following information as to the number of cases of, and deaths from, small-pox in Japan during the years 1915-20:

	Cases.	Deaths.		Cases.	Deaths.
1915 ...	17 ...	3	1918 ...	1,469 ...	285
1916 ...	256 ...	48	1919 ...	4,056 ...	1,115
1917 ...	5,122 ...	1,153	1920 ...	3,167 ...	844

The notification of small-pox is compulsory in Japan when the disease is prevalent or threatens to prevail, and hospital isolation is practised if deemed necessary.

**"Patent Medicine" Duties.**—In committee on the Finance Bill, on June 12th, Mr. Neil McLean urged either that the Patent Medicine Duties should be repealed or that the addition imposed in 1915 should be taken off. The amount realized by the tax for Great Britain in 1914, before the imposition of the additional duty, was £360,377. In 1921-22 the net receipts from the duty were £1,328,448, and the figures of the current year were, he understood, about the same. Evidently there had been no greater consumption during the year, but since these articles were largely bought by people who imagined themselves to be unwell, and who were sometimes deluded by fanciful, alluring advertisements, he did not think that the Government, if it reduced the tax, would suffer a great loss of revenue. Mr. T. Williams also objected to the tax, and suggested that as drugs were now costing so much more than they did previous to the war doctors were not using them as they would have done if prices had remained normal. Sir W. Joynson-Hicks explained that this was not a tax upon medicine imported into the country, nor on medicines used in hospitals or prescribed by doctors, but on what everybody knew as "patent medicines." Although the tax had been doubled, the consumption had not in any way been reduced. Mr. Short spoke against the duty, but on a division the Clause was approved by 231 votes to 119.

**Opium Traffic.**—The Home Secretary informed Sir Walter de Frece, on June 12th, that the main results of the meeting of the Advisory Committee on the opium traffic at Geneva were (1) that an agreement was reached with the delegation from the United States which would, it was hoped, have the effect of securing the co-operation of that Government with the States which were members of the League in giving full effect to the International Convention of 1912, and (2) that the Advisory Committee decided to make a recommendation for the adoption by agreement between the Powers interested of measures for securing a more effective application of Part 2 of the Convention which related to the suppression of the use of opium for smoking and a limitation of the manufacture of morphine, heroin, and cocaine, and of the production for export of the raw material from which the drugs were made.

**Assisted Milk Supply.**—Having ascertained, on June 13th, from Mr. Chamberlain, that the form of application for assisted milk supply used by the Hertfordshire County Council was in use by

other authorities with the consent of the Ministry of Health, Mr. Rhys Davies put a lengthy question as to the character of this form. He conveyed that under it applicants were required to supply birth certificates in respect of children under 3 years of age for whom assistance was asked; that the application had to be accompanied by a medical certificate stating that, by reason of ill health, the applicant was in need of extra milk; and that a number of inquisitorial questions were included. Mr. Davies put it that the amount of milk supplied to mothers and babies in the Letchworth area had fallen from 6,660 pints for mothers and 5,901 pints for children in 1920 to 112 pints for mothers and 280 pints for children in 1922, and that this reduction had been accompanied by an increase in infant mortality from 43 per 1,000 in 1920 to 63 per 1,000 in 1922. The Minister of Health replied that one of the medical officers had been instructed to investigate the matter. Before taking any action it was necessary to ascertain whether the increased rate was really the result of the reduction in the milk supply.

**Lead Poisoning.**—Mr. A. Greenwood asked, on June 14th, whether the Home Secretary was aware that of the eight cases of lead poisoning among house painters and plumbers which came to the knowledge of the Home Office during April six were fatal; and whether the Minister would urge on the Government the importance of ratifying the White Lead Convention as recommended by the Norman Committee. Mr. Bridgeman said that the question was being carefully considered. On request he gave particulars as to the four workers in the china and earthenware industry reported in the May issue as stricken by lead poisoning:

**Case 1.**—Man, aged 51, glost placer, employed forty years (ten years in the dipping-house as a child and youth). Chronic lead poisoning—arterio-sclerosis.

**Case 2.**—Man, aged 62, dipper, employed thirty-three years. Chronic lead poisoning—nephritis.

**Case 3.**—Woman, aged 39, dipper, employed twenty years. Chronic lead poisoning—nephritis.

**Case 4.**—Woman, aged 32, aerographer, employed sixteen years. Chronic lead poisoning—nephritis.

**The Fire at Highbury Pensioners Hospital.**—Major Tryon, on June 14th, gave particulars of the distressing fatalities which had occurred through an outbreak of fire at the Ministry of Pensions Hospital, Highbury, Birmingham. The building was not owned by the Ministry, but was made available for its exclusive use by special arrangement with the Birmingham Pensions Committee, which was responsible for the administration. The fire began in an isolated open-air ward in the afternoon. It was at once observed by the orderly on duty, who attempted to deal with it and gave the alarm. The fire brigade arrived in five minutes. In the meantime the whole of the staff, and all patients who were fit to do so, endeavoured to put out the flames and to remove helpless patients. A gale of wind was, however, blowing at the time and the fire spread rapidly. The ward was an open-air hut of the most modern type. It was a wooden construction on a brick foundation with a galvanized iron roof. There were two exits, but that at the end where the fire started at once became inaccessible; the other had an opening of 9 feet wide through which two beds could be simultaneously removed. In the ward were nine full waterbuckets and two fire extinguishers. The number of patients there were fifteen, of whom only three could help themselves. Two lost their lives and two were seriously injured. Major Tryon expressed his sorrow at what had happened and promised full inquiry into all the circumstances, including the suitability of this type of building. He agreed with Mr. Macpherson that the hospital was regarded by medical experts as one of the most up-to-date in the world.

**Tuberculosis in Cattle.**—Mr. Adams asked, on June 18th, whether the Minister of Agriculture would reintroduce the Tuberculosis Order of 1914 or one similar whereby tuberculosis in cattle would be made a notifiable disease, and whether he would promote a bill to require all county authorities and the larger cities or combinations of smaller authorities to appoint whole-time veterinary officers for the inspection of cattle, particularly dairy herds, and the inspection of meat. Sir Robert Sanders said that unless and until he was assured that a majority of local authorities, including counties and cities, favoured the reintroduction of the Order of 1914, he did not see his way to reissue it in view of the expenditure involved. Section 1 of the Milk and Dairies (Amendment) Act, 1922, deferred until September 1st, 1925, the operation of Section 10 of the Milk and Dairies (Consolidation) Act, 1915, which contemplated appointment of veterinary inspectors by local authorities for purposes such as were suggested in the question.

**Infectious Diseases Notification.**—Mr. Scrimgeour asked, on June 18th, whether the Scottish Board of Health would direct the medical officers of health to record in their annual report the number of cases of small-pox and other infectious diseases notified from families living in houses or tenements containing one, two, or three rooms, and from houses containing four or more rooms. Dr. Elliot said that the Board was prepared to consult local authorities and their medical officers of health through their associations on this point, but not without such consultations to issue a direction.

**Medical Appointments.**—Mr. Becker asked, on June 13th, whether the attention of the Minister of Health had been called to the complaint of English medical men in that Wales, Scotland, and Ireland insisted upon having only men of their own nationality in their region, whereas in England many of the more lucrative appointments were held by other than Englishmen; and whether he would see that all doctors appointed by the Minister of Health for England should be English. Mr. Chamberlain replied that no general complaint of the kind named had reached the Ministry.



**Dangerous Drugs.**—Mr. Bridgeman stated, on June 13th, in answer to Captain Hay, that the number of factories licensed at the present time for the manufacture of morphine and heroin was two. The amount of morphine made in 1922 was 315,342 ounces, of which, however, 173,010 ounces were converted into codeine or heroin, leaving a net total of 142,332 ounces. The amount exported was 115,465 ounces. The amount of heroin made in 1922 was 31,673 ounces and the amount exported 25,911 ounces.

**Spahlinger Treatment for Tuberculosis.**—Mr. Chamberlain stated, on June 13th, in answer to Captain Reid, that owing to supplies of the complete serum and vaccine not being available, the opportunity for a trial of this method of treatment in this country had not yet arisen. He regretted it was so.

**Vivisection Inspectorate.**—Mr. Bridgeman, on June 14th, corrected an assertion by Colonel Sir Charles Burn that, following on the recommendation of the Royal Commission on Vivisection, four whole-time inspectors were appointed for Great Britain. The staff was increased to four, but of these only two were whole-time officers. The working of the present arrangement would be carefully watched, but in view of the financial situation he could not hold out any prospects of an increase in the inspectorate.

**Cannock Chase Hospital.**—Major Tryon informed Mr. W. M. Adamson, on June 14th, that owing to the decreasing requirements for hospital accommodation in the Midlands arrangements had been made for the gradual closing of the Pensions Hospital at Cannock Chase.

#### Answers in Brief.

The Mental Treatment Bill was read a third time in the House of Lords on June 19th, and will now go to the Commons.

Mr. Chamberlain states that the report of the Committee of Inquiry on Venereal Disease is under consideration, but he is unable as yet to state what action will be taken on the recommendations. On a further question he said he was advised that there was nothing in the existing law to prevent chemists from selling disinfectants for the purpose of the prevention of any venereal disease so long as they were not sold accompanied by any written or printed recommendations.

Sir W. Joynton-Hicks has promised on behalf of the Treasury that a deputation shall be received at an early date to discuss the possibility of exempting hospitals from legacy and succession duty.

## England and Wales.

### OPENING OF THE NEW BIRMINGHAM PATHOLOGICAL LABORATORIES AT HOLLYMOOR.

On June 16th the Minister of Health, in the presence of a representative gathering, inspected the new pathological laboratories established at Hollymoor Mental Hospital, near Birmingham, by the Joint Board of Research for Mental Disease. The laboratories consist of three large rooms in series, with small annexes, and an x-ray room. The rooms are well suited to the purpose and are equipped for all forms of pathological investigation. The equipment will be made more complete as funds permit, and, as in all probability the first research work performed in the laboratory will be on basal metabolism, a chamber for the purpose will shortly be erected. In addition to pure research, the laboratory will undertake the examination of specimens from any of the mental hospitals. The work is under the direction of Sir F. W. Mott, assisted by Dr. F. A. Pickworth.

After inspecting the laboratories, the company assembled in the Recreation Hall. Sir Gilbert Barling (chairman of the Joint Board of Research for Mental Disease) welcomed the Minister of Health, and explained that the Joint Board consists at present of an equal number of representatives of the University of Birmingham and the City Asylums Committee. The funds are provided largely by voluntary contributions, the mental authorities being prevented by existing regulations from contributing to any appreciable extent to the heavy expenditure. In this connexion he paid warm tribute to the generosity of the Feanay Trustees, and expressed the hope that new legislation would soon remove the present restrictions from mental authorities. In outlining the aims and objects of the Board, he said that the ideas before them were to stimulate research into mental diseases, and to secure for the patients in mental hospitals equal clinical advantages with those in the large voluntary hospitals.

Sir Frederick Mott recalled the fact that Mr. Joseph Chamberlain, when Colonial Secretary, founded the schools of tropical medicine, and trusted that the Minister of Health would take the same keen and practical interest in medical science. One of the considerations which determined the speaker's decision to undertake the directorship was the association of the scheme with the University. This ensured

breadth of outlook and all the advantages of freedom of discussion with other faculties. He would aim at stimulating the young men to study mental disease on a scientific pathological basis, and instanced the improvement in the standard of mental work which followed the institution, at his instigation, of the Diploma in Psychological Medicine by the University of Cambridge. Research meant time, patience, and criticism, and he hoped that it would not be hampered by too much routine work, which had a stultifying effect on research.

Dr. Hubert Bond (Commissioner of the Board of Control) welcomed the scheme, and said that it commended itself to his colleagues because of its personnel, the atmosphere of progress it created, and its association with the University. He expressed gratification at the presence of Mr. Neville Chamberlain, who, he said, by placing upon the proceedings his imprimatur, was helping to bring psychological medicine "within the fold."

Mr. Neville Chamberlain said that the duties of the Minister of Health were very varied: watching the activities of building rings, securing a pure milk supply, and so on; but he had come to the conclusion that that part of his work which was concerned with mental hospitals was by no means the most dangerous. The scheme marked the inauguration of a new form of co-operation which he warmly approved. He recalled Mr. Joseph Chamberlain's interest in scientific research, a tradition to which he said he intended to adhere. Mental affliction was now regarded not as a thing apart, but as one phase of disease, and this was a step in a rational attempt to find its causes. No one knew when their patient building would be rewarded by a great discovery. The joint action of the University and the Mental Hospitals Committee had opened the door to a real advance, and he congratulated them and Sir Frederick Mott, to whom he paid tribute. In conclusion he expressed his high confidence in the future of the work.

The Lord Mayor of Birmingham proposed a vote of thanks to Mr. Chamberlain. This was seconded by Councillor Miss Bartleet (chairman of the Asylums Committee), to whose activity the scheme owes so much. She called attention to the great help rendered by Sir Gilbert Barling, who had secured the co-operation of the University and hence the services of Sir Frederick Mott. The vote was carried with acclamation, and the proceedings terminated.

The laboratories are not yet in full working order, and are regarded by those responsible as only a beginning. It is hoped that eventually they will be moved to the University and be closely associated with its general pathological work. No general appeal is being made for funds, but many have given voluntary financial help. Sir Charles Hyde has made the munificent offer to the Joint Board of £250 a year for three years, the gift being made after the close of the meeting.

### SMALL-POX IN GLOUCESTER.

As reported in our parliamentary notes (p. 1069) the Minister of Health has made a serious announcement as to small-pox in the city and county of Gloucester. The notifications in March were 8, in April 25, and in May 31. But that is not all. There is, he stated, evidence to show that many cases have occurred in the city during the past two months which have not been recognized as small-pox by the medical officer of health and have not been notified. Special visits were made by medical officers of the Ministry, who discovered a number of cases which had been incorrectly diagnosed or overlooked, and the officers here, at the request of the local authority, assisted in diagnosis and in organization of suitable measures to meet the emergency. From the *Bristol Times* of June 7th we learn that the steps taken include the provision of increased hospital accommodation by utilizing capacious premises at Beechley, Chepstow, which had been in use for German prisoners of war. The Ministry has succeeded in obtaining agreement to this provision between various local authorities in West Gloucestershire. In addition to the county town, Westbury and Lydney, on the fringe of the Dean Forest coalfield, are mentioned, and the agreement includes Coleford Urban and Westdean Rural districts. Owing to the serious outlook in the city of Gloucester, cases are to be received from it at Beechley.



The latest official figures issued by the Registrar-General are for the week ending June 9th, and they record 35 notifications in the county, 26 of the 35 being in the city. We understand that Dr. W. H. Davison, Assistant Medical Officer of Health for Birmingham, has been given plenary powers by the Corporation of Gloucester to take charge of the epidemic and to control the staff for dealing with it. Meantime, as reported in the *Birmingham Post* of June 13th, twenty-seven practitioners of the city have met, and have published the following conclusions, with their signatures appended:

"That we, the undersigned medical men practising in Gloucester, are aware that a large number of cases of small-pox exist in the city. We urge the citizens to support the Health Authorities in their efforts to stamp out the outbreak, and we strongly advise that everybody, in his own interest and for the public welfare, be vaccinated or revaccinated."

From the *Birmingham Post* we learn that one practitioner, however, a well known antivaccinationist, has inserted in a local newspaper an advertisement containing the following:

"This city has been visited by two medical men from the Ministry of Health and one medical man from the Metropolitan Asylums Board. They have called upon a large number of persons who have been suffering from eruptions and, with one exception, they have declared the whole of these cases to be small-pox. The one exception was a child suffering from chicken-pox who occupied the same bedroom as the alleged case of small-pox. I saw them both. The supposed small-pox case was one of the mildest cases of chicken-pox I have ever seen. And yet your Health Committee squandered 50 guineas to fetch a man down from London to make that erroneous diagnosis. I have notified a large number of chicken-pox cases of my own, and I have seen other cases in company with medical colleagues, and I have no hesitation whatever in saying that these gentlemen from the Ministry of Health are entirely wrong in their conclusions. There have been a few cases of small-pox, but very, very few; some have been my own, but at the present time, judging from inquiries I have made, I do not believe there is a single case of small-pox in the city."

The Public Vaccinator, when interviewed on behalf of the *Birmingham Post*, stated that for some days people had been vaccinated at the rate of 300 to 400 a day, but lately there had been a falling off to 100 a day, a decline which he attributed to advertisements in the press.

Such, it appears, is the present position. As elsewhere in England the variola in Gloucestershire is of a mild type, and we have not heard of any fatal cases, though some severe attacks with serious complications or sequelae have been mentioned. Like mild infectious diseases of every sort, this strain of small-pox is more readily overlooked than the classical form of the malady, and there is on that account need for constant vigilance on the part of all concerned in the prevention of epidemic spread. Where diagnosis is difficult, there is all the more occasion to resort to the one measure, recent successful vaccination and revaccination, which, applied in circumstances like the present, can render diagnosis of less importance, by making the occurrence of small-pox an impossibility. Nowadays vaccination is largely a matter of individual option and every parent must take the responsibility of deciding for himself whether to protect his children or to leave them susceptible to attack. If he is wise he will protect them; if foolish, then his children will have to suffer for his folly.

#### LIVERPOOL ROYAL SOUTHERN HOSPITAL.

At the annual meeting of the Liverpool Royal Southern Hospital, on May 3rd, it was stated that the debt of the hospital to the bank had been reduced from £13,880 to £9,448, but the future of this institution was not free from anxiety, in spite of the extraordinary income from legacies that had come to the hospital in the past year. The contributions, for the first time, by the approved societies amounted to over £800. The treasurer suggested that the insurance companies might follow the good example of the approved societies, for they benefited directly or indirectly by the work of the hospitals. The new scheme of the Liverpool Local Voluntary Hospitals Committee, whereby the various trade societies would make a voluntary weekly contribution, was warmly welcomed. This plan, jointly with the efforts of the Hospital Saturday and Sunday Fund, should place the voluntary hospitals of the city on a sound financial basis and relieve the committees of their perennial

anxiety to meet expenditure. The need for a larger and better equipped electro-therapeutic and massage department has been recognized by the committee, and it is hoped that its construction and equipment, costing approximately £3,000, will be completed before the end of the year. In connexion with the lady almoner's department, a number of ladies have volunteered their services in alleviating the personal conditions of patients and their after-care, and an appeal was made for the establishment of an endowment fund, the interest from which could be used to provide relief immediately in necessitous cases.

## Scotland.

### INTERNATIONAL PHYSIOLOGICAL CONGRESS.

THE eleventh International Physiological Congress, which, as already announced, is to be held at Edinburgh on July 23rd to 27th, under the presidency of Professor Sir Edward Sharpey Schafer, F.R.S., will meet in three sections—general, chemical, and pharmacological—but on the opening day Professor J. J. R. Macleod, F.R.S., will deliver an address on insulin. Those desiring to enrol as members should apply and send the subscription (25s.) to the Assistant Secretary of the Congress, Department of Physiology, the University, Edinburgh.

### THE ADVANCE OF SURGERY.

An address on surgery, old and new, was given last week by Sir Montagu Cotterill, C.M.G., to the members of the Edinburgh Rotary Club. The lecturer stated that when he began medical study in 1869 at a hospital in the South of England, about one-third of those upon whom operations were performed died from the effects of the operation—and no wonder, considering the conditions that existed before the work of Pasteur and Lister. During the war, at Craigleith Hospital, he had operated on 1,538 soldiers, with only one death—a sufficient indication of the changes that had taken place in the intervening years.

### PUERPERAL MORBIDITY AND MORTALITY.

Last week (p. 1036) we announced the composition of the Departmental Committee appointed by the Scottish Board of Health to inquire into the incidence of puerperal morbidity and mortality, with special reference to its causes and possible remedies. The committee has begun its sittings and will welcome offers of evidence from medical practitioners; such evidence, we are asked to state, would be of special value where records have been kept over a period of years. Communications should be addressed in the first place to the secretary of the committee, Mr. C. L. Farmer, Scottish Board of Health, Edinburgh.

## Ireland.

### VITAL STATISTICS OF NORTHERN IRELAND.

DURING the quarter ending March 31st, 7,381 births were registered in Northern Ireland, this number being equivalent to a birth rate of 23 per 1,000 of the estimated population. The births registered comprised 3,777 boys and 3,604 girls. This rate was 0.8 below the rate for the corresponding quarter of 1922, and 0.1 below the average rate of the first quarters of the previous ten years. Illegitimate births numbered 311, being 4.2 per cent. of the total births registered during the quarter. The deaths registered during the same quarter numbered 5,112, representing an annual death rate of 16 per 1,000. Of the deaths registered, 2,472 were of males, 2,640 of females. This rate was 4.0 below the rate for the corresponding quarter of 1922, and 5.0 below the average rate for the first quarter of the previous ten years. Of the 5,112 deaths registered, 629, or 12.3 per cent., were of infants aged under one year; and 2,078, or 40.6 per cent., were of persons aged 65 years and upwards. There were 123 inquests reported to the registrars during the quarter, and 639 deaths (or 12.5 per cent. of the total deaths registered) were uncertified, there having been no medical attendant during the last illness. The urban mortality from



the principal epidemic diseases recorded during the quarter was equivalent to an annual rate of 0.9 per 1,000 of the population, the total rate from these diseases for the remainder of Northern Ireland being 0.3 per 1,000. In Belfast the mortality from the principal epidemic diseases was 0.8 per 1,000; of the 1,556 persons whose deaths were registered for Belfast during the quarter, 301 were of infants under one year, representing a mortality of 113.3 per 1,000 births registered; and of the deaths recorded for Belfast, 418, or 26.9 per cent., occurred in public institutions. The population of Northern Ireland in the middle of 1922 was estimated to be 1,262,000, inclusive of military. During the same period the births registered in England and Wales numbered 192,970, or 20.5 per 1,000, and the deaths numbered 124,720, or 13.3 per 1,000. The number of marriages registered in Northern Ireland during the last quarter of 1922 was 2,063, representing an annual rate of 6.4 per 1,000 of the estimated population. This rate was 0.6 above the rate for the corresponding quarter of 1921, and 0.2 below the average rate for the previous ten years. Of the total number of marriages, 548 were marriages of Roman Catholics and 1,515 related to persons belonging to all other denominations.

#### REPORT OF INTERNATIONAL RED CROSS ON IRISH INTERMENT CAMPS.

On June 2nd, in this column (p. 954), we published under this heading a communication from the International Red Cross Committee at Geneva with regard to internment camps in the Irish Free State. In reference to this matter we have received the following letter:

Sir,—I have read with surprise the report of the International Red Cross on Irish internment camps appearing in your issue of June 2nd (p. 954), having been one of the delegates sent by the Prisoners' Defence League to Geneva last November to lay a statement before the International Red Cross Committee on treatment of political prisoners in Free State prisons. There was no mention made in that statement of internment camps, where, in some cases, conditions are on the whole good.

The International Red Cross promised to send a Commission and to get into touch with the President of the Prisoners' Defence League, Mrs. Despard, immediately on their arrival in Ireland. After six months' delay, so far as I know, two members of the International Red Cross came to Dublin. They made no attempt to get in touch with Mrs. Despard—I only by chance learned that they had arrived and with two others succeeded in having one interview with them, during which the word "internment camp" was never mentioned. We told of more recent conditions in Maryborough, Mountjoy and Kilmainham. To my certain knowledge the Commission never visited Kilmainham or Mountjoy, nor as far as I know Maryborough.

There is abundant evidence that the representations of the Prisoners' Defence League are only too well founded, much of it in the form of sworn statements by prisoners. In this connection the statement of the Hon. Albina Brodrick in the *British Journal of Nursing*, May 26th, is interesting. There are also statements from Dr. Elsie Murphy, Miss Dorothy McArdle, B.A., of Alexandra College, Dublin, and many others.

These conditions prevailed while the International Red Cross delegates were in the city of Dublin, and if they had investigated those places of which definite complaints had been made, it would have been impossible to issue with truth such a report as has been issued by them.—Truly yours,

KATHLEEN LYNN, F.R.C.S.I.

## New South Wales.

[FROM OUR CORRESPONDENT.]

#### DIPLOMA OF PSYCHIATRY.

ON the recommendation of the Faculty of Medicine in the University of Sydney the Senate has decided to establish a Diploma in Psychiatry. A candidate must produce evidence (1) that he is a qualified practitioner registered by the New South Wales Medical Board; (2) that a period of not less than twelve months has elapsed since he obtained a registrable qualification in medicine, surgery, and obstetrics; (3) that after obtaining the registrable qualification he has been resident medical officer for six months in a mental hospital approved by the Senate, or has been in regular attendance at the rate of not less than six hours a week during term time in the wards of any similarly approved hospital devoted to the care and treatment of functional nervous and mental diseases for a period of not less than twelve months; (4) that after obtaining the registrable

qualification he has attended the following courses of lectures and demonstrations:

(a) Psychology, thirty-five hours; (b) Anatomy and physiology of the nervous system, thirty hours; (c) Neurology, twenty hours; (d) Pathology of the nervous system, including lectures and demonstrations, with special reference to microscopic anatomy, biochemical methods and the chemical examination and estimation of certain clinical symptoms; (e) Psychiatry, to include ten systematic lectures in advanced psychiatry and in addition five lectures in mental deficiency and ten clinical demonstrations in the wards of a mental hospital or psychiatric clinic, provided that candidates must have previously attended the courses of lectures in psychiatry delivered to medical students in the sixth year of the curriculum or an equivalent of such course. Candidates are required to pass written, clinical, and *viva roce* examinations in psychiatry and neurology, a written and a practical examination in psychology and in the anatomy and physiology of the nervous system, and a practical examination in pathology. The courses of instruction are to be given during two terms of each year as required.

Candidates who are unable to attend all the lectures and demonstrations in these two terms may take the remainder in subsequent terms, but all the courses must be completed and the candidate must present himself for examination within a period of six terms.

#### INSANITY IN NEW SOUTH WALES.

The annual report of the Inspector-General of the Insane for the year ended June 30th, 1922, shows that there were 7,997 insane persons under official cognizance during the year. This was an increase of 55 over the number for the preceding year; the proportion of insane to the general population is 1 in 267. The number of admissions was 1,477; of these, 1,236 were admitted for the first time. Natives of New South Wales formed 53.42 per cent. of the admissions. The number of persons recovered was 614, equal to a rate of 41.57 per cent. on the admissions and readmissions for the year. The number of those discharged improved was 167, a proportion to the admissions of 11.43 per cent. The recovery rate shows an increase of 3.93 per cent. compared with the recovery rate for the year 1920-21, and an increase of 2.02 per cent. on the average for the past ten years. Of the 606 deaths, 77 were due to general paralysis, 40 to inflammation and other diseases of the brain, 37 to epilepsy and convulsions, 34 to maniacal and melancholic exhaustion, and 26 to apoplexy and paralysis. Diseases of the heart and blood vessels caused 94 deaths, pulmonary tuberculosis 45, other diseases of the lung 50, decay and old age 36.

The Inspector-General again emphasizes the necessity for some amendment of the present Lunacy Act, inasmuch as this Act only contemplates the treatment in the mental hospitals of persons who are certifiable as insane, and no specific provision is made for persons in the incipient stages. An amending bill is now before the Minister which provides for the recognition of three classes of persons suffering from mental disorder according to the degree of restraint required for their care:

(a) Persons amenable to treatment, power of detention not being required as a necessary condition of their admission; such cases to be dealt with in the ordinary wards of a general hospital or in a special hospital. (b) Persons for whom detention is in their own interest. These would be treated in a special hospital. (c) Persons who from the nature of their complaint require compulsory detention, either for their own protection or for that of the public; they will continue to be provided for in the ordinary mental hospitals. Persons suffering from mental disorder to be admitted to a public hospital or special hospital are defined as those whose mental condition is not such as to render it necessary to grant a certificate of insanity in their case, either for their own protection or that of the public; those admitted to the special hospital will be admitted on their own request.

A special hospital of the nature to take patients of both classes—the Psychiatric Clinic at Broughton Hall—has been established, and is now admitting patients who voluntarily seek the assistance of the department. It is in charge of Dr. Evan Jones, who has associated with him as a consultant Sir John Macpherson, M.D., F.R.C.P. Edin., lately Commissioner in Lunacy for Scotland, and now Professor of Psychiatry in the University of Sydney. As psychiatry is a compulsory subject in the medical curriculum at the University of Sydney, this clinic will be of great value in the training of medical students.

#### MENTAL DEFECTIVES IN NEW SOUTH WALES.

Under the auspices of the Public Health Association of Australia a meeting was recently held to discuss the problem of the mental defective. Sir John Macpherson, Professor of Psychiatry in the University of Sydney, referred to the



system in vogue in Scotland of boarding out the mental defectives, who partook to a certain extent in the communal life of their respective parishes. Under this system they are far happier than they would be in institutions, and he urged that the institutions should be made, as far as possible, to embody the domestic idea. Dr. Eric Sinclair, the Inspector-General of the Insane in New South Wales, said there must be numbers of mentally defective persons in this State whose training was neglected, over whom no sufficient control was exercised, and whose wayward and irresponsible lives were productive of crime and much misery to themselves and their relatives. Only when these unfortunates committed some crime was attention directed to them, and such persons committed to prison repeatedly for crime not due to inherent vice but to a permanently defective mind, could not be improved by punitive sentences. This condition of things could only be ameliorated by devising some means of training them in discipline and in simple occupations. Such training could not be done at home, but the education authorities were in the best position for finding out these defectives and providing efficient means for their training and education. Dr. Ralph Noble advocated the establishment of such out-patient clinics as were to be found in New York and in Massachusetts as the most effective means to be used in the fight against feeble-mindedness in the community.

#### THE MATERNITY BONUS.

At a recent meeting of the National Council of Women a report on the maternity allowance was presented by two ladies who were members of the commission appointed to inquire into the working of the maternity allowance in New South Wales. They stated that the allowance is claimed by 98 per cent. of mothers, but unnecessary deaths continue to occur. In New South Wales statistics do not show that the money disbursed in the maternity bonus has had the slightest effect in minimizing maternal or infantile mortality. Dr. J. C. Windeyer, Lecturer in Obstetrics in the University of Sydney, gives the following as average conditions: "From 12 to 15 per cent. of pregnancies end in abortion; from 3 to 5 per cent. of women are delivered of stillborn children. At least 50 per cent. of stillbirths are preventable. First-year deaths represent 7 per cent. of births registered. . . . Neo-natal deaths are largely preventable." Between 1912 and 1922 the Federal Government has distributed some six and a half million pounds among 1,300,000 mothers. The report gave examples of other systems of assistance in operation in Europe and America, where it had been found that measures which provided for instruction in the hygiene of maternity and infancy through public health nurses, consultation centres, and other suitable methods were of much greater benefit to both the mothers and the State than the system of giving a maternity bonus, and some recommendations based on this information were made to the Council. These will be considered at a future meeting.

## Correspondence.

#### TOXIC SYMPTOMS FOLLOWING THE ALKALINE TREATMENT OF PEPTIC ULCER.

SIR,—In view of the fact that I have for several years been a strenuous advocate of the medical treatment of gastric and duodenal ulcer in preference to surgery, I think it only right to draw attention to the possibility of toxic symptoms arising as a result of using very large doses of alkalis.

Sippy, who was the first to recommend this treatment with the object of completely neutralizing the acid of the gastric juice, has not referred in any of his papers on the subject to the toxic symptoms which may result. In a recent paper from the Mayo Clinic Hardt and Rivers<sup>1</sup> describe the toxic symptoms which may develop in cases in which it is impossible to neutralize the acid completely. The patient is at first unduly introspective and nervous. He then complains of difficulty in taking his milk. After a time headache, nausea, and vomiting occur. The patient

becomes apathetic and drowsy, and in one of their cases death ensued. In every instance the urea in the blood became greatly increased, and albumin and casts appeared in the urine. In some there was evidence of kidney disease before the symptoms developed, and in the fatal case definite chronic nephritis was found.

I have met with three similar cases in private patients, though none in hospital, during the last three years. In one case the patient had only one kidney and this was affected with pyelitis. In the other two patients a moderate degree of pyloric obstruction was present and there was an extreme degree of hypersecretion. In one of these death occurred in spite of the early cessation of the alkaline treatment. The urea content of the blood was greatly increased in all three cases.

It is impossible at present to say what is the cause of the toxic manifestations. But it seems clear that no case in which the kidneys are diseased should be subjected to the full alkaline treatment, and the same is true when partial pyloric obstruction is present in spite of Sippy's advocacy of the treatment in such cases. If any suspicious symptoms develop, a blood-urea estimation should be made and the treatment discontinued until it is ascertained whether it is excessive; in that case the treatment should be modified.

For ulcers associated with renal disease treatment by diet, olive oil, and belladonna in the manner I have described, with only small doses of alkalis, may give sufficiently good results, but if pyloric obstruction is present, even in a mild degree, it is probably wise to recommend gastro-enterostomy without further delay.—I am, etc.,

New Lodge Clinic, Windsor Forest,  
June 17th.

ARTHUR F. HURST.

#### THE PREVENTION OF HEART DISEASE.

SIR,—In the JOURNAL for June 2nd Dr. Poynton and Dr. Moon point out the desirability of providing homes for the convalescence of cardiac cases, and say that as far as they are aware no such places are in existence in England.

I would like to call attention to the fact that, under the auspices of the Invalid Children's Aid Association, a home for patients convalescent from rheumatic affections of the heart who need prolonged rest and care under medical supervision was established three years ago at 14, Stonebridge Park, N.W. (the Edgar Lee Home). Twenty-four boys under 15 are taken, and since the home was opened 203 boys have passed through our hands with results which may be said to justify the experiment, in view of the improvement in their condition. An experienced matron and nurses are in residence; weekly visits are paid by myself, and Sir John Broadbent and Dr. Cotton act as honorary consultants. There is a large garden attached to the home where patients can sit out or take suitable exercise. An important feature is the provision of educational facilities. A certificated teacher approved by the Board of Education attends daily, and classes are held in a roomy and well ventilated schoolroom, which are much appreciated by the children. Patients are kept for several months if necessary, and are not discharged till convalescence is fully established.—I am, etc.,

London, N.W., June 13th.

J. ANDERSON SMITH.

#### DISEASED TONSILS AND HEART DISEASE.

SIR,—I wish to express my entire agreement with Dr. Herbert Tilley in his definitions of "diseased tonsils" (June 16th, p. 1038). Apart from the history of severe or repeated tonsillar infection, the evidence of such infection is better sought in the presence of enlarged glands behind the angle of the jaw than in the appearance of the tonsils themselves.

I expect to publish shortly a paper on the analysis of one hundred cases of rheumatic endocarditis in which definite tonsillar infection was present in 81 per cent. Enucleation was performed in thirty-six of these cases. The result of the operation was so beneficial in the majority that, in my opinion, the question to be solved is how late in the course of the endocardial disease can benefit be expected from the removal of the focus of infection.

The best results can never be obtained from the operation

<sup>1</sup> L. L. Hardt and A. B. Rivers, *Arch. Int. Med.*, xxxi, 171, 1923.



of tonsillectomy so long as the patient returns to the environment in which he first contracted rheumatic infection. The ideal treatment consists in the removal, first of the septic tonsils from the patient, and then of the patient from his old surroundings to the happy conditions described by Dr. A. P. Thomson in the same issue of your JOURNAL.—I am, etc.,

Norwich, June 17th.

HUBERT J. STARLING.

#### WHAT IS A "DISEASED" TONSIL?

SIR,—Mr. Stuart Carruthers's letter in your issue of June 9th (p. 995) recalls at least one other which dealt with the same subject—namely, that of "Clinic" (July 6th, 1921).

Mr. Carruthers calls for a "definition." Is it possible to make a general one, to order, in this way? And if so, of what practical use would that be? Perhaps that is why, as he states, one has never been forthcoming.

The real question is, surely, whether in such and such a case under consideration the tonsils can be held responsible for certain pathological symptoms.

There is obviously no difficulty in recognizing as "diseased" or "unhealthy" tonsils which are acutely infected, subject to malignant changes, or the invasion of serious chronic disorders. This class, however, is small. I think there should be no misgivings about pronouncing tonsils of the following types "diseased"—even if there should be no symptoms at the moment:

(a) Those which are grossly hypertrophied, causing obstruction. (There must be a limit to the enlargement which is not considered pathological.)

(b) Those associated with persistent enlargement of the glands behind the angle of the jaw in the absence of oral sepsis (tonsils, gums, etc.).

(c) Those, however small, from which can be expressed foul-smelling matter (although the crypts always contain micro-organisms, such contents cannot be passed as non-pathogenic—if "pus" is not a sign of disease here why should it be considered so in tooth sockets or accessory sinuses?).

(d) The tonsil "with a past"—frequent attacks of tonsillitis, "colds" always starting in the throat, past "quinsies"—although looking quiet and harmless when inspected.

These four types comprise by far the majority of cases with which we are concerned. What then remains? A comparatively small group of cases with local or general symptoms, which one has learnt by experience to associate with "diseased" tonsils, but with no definite macroscopic signs in the tonsils. Whether the latter are "diseased" or "healthy" is purely a relative question, and what may be producing symptoms in A would fail to do so in B. One cannot be dogmatic, in such cases—one cannot be "absolutely sure." As in other surgical problems, one can only arrive at a verdict in each individual case by considering all the evidence at hand in the light of personal experience, and that accumulated and recorded by others, unassisted by any "definitions."—I am, etc.,

Worcester, June 11th.

J. B. CAVENAGH.

SIR,—In the BRITISH MEDICAL JOURNAL of June 9th Dr. Carruthers suggests that a diseased tonsil is one which shows intracellular micro-organisms on section. But the lymphocytes in the tonsil are continually migrating through the epithelium, phagocytosing the bacteria in the crypts, and returning into the lymph nodules, where the bacteria are destroyed and some measure of immunity attained. Thus intracellular micro-organisms are probably always present in every tonsil after birth, though not often easy of demonstration. This constant ingestion of bacteria is most easily studied in certain other subepithelial lymphatic glands—namely, the vermiform appendix and Peyer's patches in the rabbit, where the Gram-positive nature of the organisms enables them to be easily traced for a long time after they have been ingested. Thousands of intracellular bacilli can be counted in one high-power field of the microscope in the lymphoid tissue of any healthy rabbit's appendix. I have collected the evidence in support of the above statements in *Immunity in Health: the Function of the Tonsils and other Subepithelial Lymphatic Glands in the Bodily Economy*.

The presence of intracellular organisms, therefore, may merely show that the tonsil is functioning normally.—I am, etc.,

London, June 16th.

KENELM H. DIGBY.

#### DEFECTIVE LIPOLYSIS IN DIABETES AND CANCER.

SIR,—The discoverers of insulin have shown that this substance not only has an effect on the blood sugar but also on the utilization of fat. This utilization of fat is defective in diabetes, and insulin markedly improves it and rapidly removes any lipaemia if present. This latter action is especially interesting to me because for many years various aspects of the fat-splitting action of the pancreas have been the object of research by myself and other workers in this laboratory.<sup>1</sup> The main outcome of this work has been to show that lipase in extracts of the pancreas consists of two components, one of which, following current nomenclature, is spoken of as the *coenzyme* and the other *inactive lipase*. The coenzyme when produced in the pancreas, or after injection, appears to be distributed by the blood to the tissues, activating the lipases there. We concluded further that this activating property is due to organic and inorganic phosphates. Whether the islets of Langerhans are responsible for the formation of the coenzyme or not appears uncertain. The same uncertainty is seen in De Witt's experimental work.<sup>2</sup>

My object in writing is to call the attention of workers to this aspect of the question, and more especially in relation to cancer. My experiments showed that tissue lipolysis is defective in cancer. I am convinced that increased tissue lipolysis is a factor in the defensive processes of the body, and this is particularly the case in cancer. Anything which increases this action in that disease should not be lost sight of.—I am, etc.,

J. A. SHAW-MACKENZIE, M.D.Lond.

Physiological Laboratory, King's College,  
London, W.C., June 8th.

#### REFERENCES.

- <sup>1</sup> Rosenheim, O., and Shaw-Mackenzie, J. A.: 1910 (I and II), Rosenheim, O. (III); Proc. Physiol. Soc., *Journ. Physiol.*, XL, pp. viii, xii, and xiv. Shaw-Mackenzie, J. A.: 1911 (IV), *Ibid.*, XLII, p. xi; 1913, *Internat. Con. Med. (Therap. Sect.)*; 1915, *Journ. Physiol.*, XLIX, p. 215; 1919, *Lancet*, ii, p. 85; 1921, *Trans. Trop. Med. and Hyg.*, i, p. 161; 1922, *Med. Press and Circular*, i, p. 237; 1922, *Lancet*, ii, p. 769.
- <sup>2</sup> De Witt, L. M.: 1905, *Journ. Exp. Med.*, 8, p. 193.

#### HERPES ZOSTER WITH LOCALIZED MUSCULAR PARALYSIS.

SIR,—In his article in the BRITISH MEDICAL JOURNAL for June 9th (p. 970) Dr. C. Worster-Drought writes that in an extensive search he has been able to find very few recorded cases of paralysis accompanying or following herpes zoster of the trunk. On October 21st, 1915, I showed at the Dermatological Section of the Royal Society of Medicine a man, aged 64, in whom paralysis of the left upper extremity occurred on June 16th; it was later (about June 23rd) that an eruption of typical herpes zoster was first noticed. The eruption involved the left side of the head and neck, the left clavicular region and shoulder, and the upper front of the left side of the chest. The Wassermann reaction was positive. Antisyphilitic treatment was employed, and, whether owing to this treatment and faradization or not, the condition gradually considerably improved. Amongst cases not referred to by Dr. Worster-Drought are the following:

C. Handfield Jones (*Med. Times and Gazette*, 1882, i, p. 462) described the case of a man, aged 64, in whom herpes zoster of the left arm was followed by muscular wasting of the affected extremity.

Sir William Broadbent (BRITISH MEDICAL JOURNAL, October 27th, 1886, p. 460) narrated the case of a woman, aged 74, in whom herpes zoster in the distribution of branches of the brachial plexus was followed by partial paralysis in corresponding motor nerves.

In one of G. Waller's cases (abstract in BRITISH MEDICAL JOURNAL, 1885, ii, p. 560) right brachial herpes zoster was followed by paralysis of the right arm.

In a man, aged 35 (E. Schwimmer, *Die neuropathischen Dermatosen*, Vienna, 1883, p. 139), a blow on one shoulder was followed by herpes zoster of that region and then by sensory disturbance and incomplete paralysis of the arm.

In one of the cases recorded by E. F. Buzzard (*Brain*, 1902, xxv, p. 299) brachial herpes zoster was accompanied by paralysis of the deltoid muscle on the affected side.



S. Vere Pearson (*Trans. Clin. Soc., Lond.*, 1903, xxxvi, p. 268) reported the case of a painter, aged 52, who on getting up one morning noticed sharp, burning pain about the left arm and inability to move the upper part of the arm. On the following day an eruption of herpes zoster appeared on the left arm, which extended from the shoulder to the wrist. There was complete paralysis of the left deltoid and infraspinatus muscles, with some atrophy, and there was partial paralysis of the latissimus dorsi muscle. The herpes gradually healed and the affected muscles commenced slowly to regain power.

It was in a case of herpes zoster with motor symptoms that Magnus (quoted by A. Sunde, *Deut. med. Woch.*, 1913, xxxix, p. 849) found diplococci in the anterior horn of spinal grey matter and ordinary inflammatory changes in the spinal ganglia.

Souques and Mlle M. Henry (*Soc. de Neurol., Paris*, November 7th, 1919) showed a woman, in whom paralysis of the fifth and sixth cervical segments was followed by muscular paralysis of the deltoid, etc., having a radicular distribution.

A. Lemierre and P. Lantuejoul (*Soc. Méd. des Hôpitaux de Paris*, November 8th, 1918) described a case of cervical herpes zoster with motor troubles.

Bocca (*Soc. des Sciences Méd. de Lyon*, November 24th, 1920) communicated the case of a woman, aged 61, with herpes zoster of the left upper extremity followed by radicular paresis in that limb.

In the distribution of the paralysis Dr. Worster-Drought's case seems to differ from almost all others.—I am, etc.,

London, W., June 9th.

F. PARKES WEBER.

### THE VENEREAL DISEASE REPORT.

SIR,—I beg to inform you that an important and representative meeting of the Executive Committee of this Society was held yesterday under the chairmanship of Lord Willoughby de Broke, when Sir William Arbuthnot Lane, Sir Bryan Donkin, Sir James Porter, Mr. Basil Peto, M.P., Dr. Sequeira, and others were present.

The following resolution was proposed by me and seconded by Dr. Jane Lorimer Hawthorne (vice-chairman of the Women's Committee) and was carried unanimously:

"That the Executive Committee accepts the Trevethin Report as a document supporting the essentials of the policy of the Society for the Prevention of Venereal Disease, as defined in their policy pamphlet, and especially welcomes the recommendation 'that the law should be altered so as to permit properly qualified chemists to sell *ad hoc* disinfectants, provided such disinfectants are sold in a form approved, and with instructions for use approved, by some competent authority,' as set forth in Clause 14 of the Report."

—I am, etc.,

London, W.1, June 15th.

H. WANSEY BAXLY,

Hon. Sec., S.P.V.D.

SIR,—The report of Lord Trevethin's Committee has been read with interest and with qualified approval by many in the profession; but it is not easy for some of us to appreciate the difficulty that you and the Committee have found in determining which is the most suitable official body to approve the form of *ad hoc* disinfectants and to supervise their sale by qualified chemists.

For years past the Government has deputed the highly important task of propaganda work to the National Council for Combating Venereal Diseases, at whose disposal Government funds have been freely placed to enable them to carry out the work. Would it not be wise to entrust this other highly important task—the issue of disinfectants—to the Society for the Prevention of Venereal Disease, in whose ranks are to be found those who have devoted most time to the study of this difficult question? This surely is the most obvious and equitable way of burying the hatchet.—I am, etc.,

Carnwarth, Lanarkshire, June 18th.

ROBERT FORGAN.

### DIPHTHERIA ANTITOXIN ON SUSPICION.

SIR,—In connexion with the possible development of an anaphylactic reaction following the injection of antitoxic serum in previously injected persons, Dr. Sichel asks two pertinent questions, which, however, are difficult to answer categorically.

His first question—namely, What is the chance of any particular individual developing symptoms of anaphylaxis, if reinjected after the ten days' or so interval of safety?—is one of increasing importance by reason of the extensive use of prophylactic injections generally. The answer to this question is that every person injected must be regarded as

a law unto himself, since, in view of the fact that with the exception of an increased liability to serum disturbance evinced by asthmatic subjects, we really have no knowledge of any personal factor indicative of supersensitization. No predisposition has been shown in respect to either dosage, family, or sex, though I am inclined to think that age exerts some influence. I base this belief, however, in respect to age liability on observations on serum sickness as it occurs in persons primarily injected. Most of the really severe and accelerated reactions that I have witnessed have been in adults or older children, and partly on this account, and partly to avoid unnecessary sensitization, I never advise giving prophylactic injections of antiphtheritic serum to grown-up persons, if under medical observation.

In answer to Dr. Sichel's further question—How long does the liability to anaphylactic disturbance persist?—it may be asserted that expert opinion tends to the belief that after the lapse of two or three years the risk of anaphylaxis is very slight, though the issue is necessarily confused by the fact that idiosyncrasy may determine a severe reaction after a dose of serum, quite apart from previous sensitization.

Experience tends to show that the likelihood of serious anaphylactic symptoms occurring is much exaggerated, and it must be remembered, as Dr. Sichel points out, that an equally severe reaction may occur after a primary injection.—I am, etc.,

London, S.W., June 19th.

F. FOORD CAIGER.

### ETHER VERSUS CHLOROFORM.

SIR,—Dr. McNamara's attack upon the use of chloroform in England (June 9th, p. 996), where he says "death under anaesthesia is extremely common," carries no conviction to me. "Extremely common" is a loose phrase which, I believe, no statistics justify. During the war I anaesthetized hundreds of our wounded, and almost always used chloroform on a Skinner's mask; but there were no deaths.

Chloroform has the advantage of not irritating the bronchial tubes, of easily controlling movement, and of seldom causing after-sickness, if given with proper restraint. By starting slowly, keeping the pupil small, and, without touching the eyeball, keeping the palpebral reflex just absent, you can go on for hours with an average use of one ounce of chloroform per hour. Of this the patient respires but a small proportion. A few drops of ether occasionally are often helpful.

Ether as an anaesthetic requires a complicated apparatus, as it freezes on a mask, and evaporates uncertainly in consequence. It irritates the bronchi, necessitates a large quantity of anaesthetic, and causes after-sickness.

From what I have seen of the administration of an anaesthetic abroad I am not astonished that ether should be popular. Ether lets off the anaesthetist, but is often inconsiderate to the patient, and I doubt, if after-effects could be taken into account and tabulated, whether ether would not present the darker picture. My belief is that chloroform is the better anaesthetic in good hands, and ether the better in bad, and that deaths under anaesthesia are very rarely the direct fault of either anaesthetic.—I am, etc.,

Knowle, Topsham, Devon, June 11th.

D. W. SAMWAYS.

### THE DRUG HABIT.

SIR,—I have read the article by Dr. W. E. Dixon (March 31st, p. 543) with great interest, but in parts with great concern. That any scientific man should cite the findings of the Opium Commission of 1895 is amazing. I think one may fairly state that its general findings were contrary to the mass of evidence presented to it, and that among all except a very small minority its findings on the effect of opium smoking are utterly discredited.

So much so that the Medical Committee of the League of Nations, which is composed of experts on this subject from all countries, states "that medical use should be considered the only legitimate use, and that all non-medical use should be recognized as an abuse, and also that in the opinion of the doctors the use of opium as a stimulant could not be considered legitimate even in tropical countries."

This opinion would be endorsed without hesitation by the



medical men of China, who have had unrivalled opportunity of dealing with the vast number of opium smokers who have in the past years come to our hospitals.

To speak of an opium smoker as not forming a strong craving, and as being easily cured, and to add that "withdrawal symptoms are never observed," is simply not true. Where Dr. Dixon gets his information I do not know, but anyone who has been in charge, as I have been, of wards for the cure of opium addicts knows that the contrary is the truth. It is a rare thing for an opium smoker to pass through his cure without intense misery, especially manifesting itself in the form of diarrhoea, and the craving is so strong that a true smoker will do anything to obtain the drug.

I am sorry that Dr. Dixon should hint from a single abnormal case that the morphine habit can be acquired and given up without much inconvenience by a normal person. It may be argued that I am reading more into his words than he means to imply, but I have seen case after case where apparently normal persons, having acquired a painful disease, have taken to morphine injections for the relief of the pain, and have waked up after a few weeks to find themselves in the grip of a far worse disorder. It is true that those who have acquired the habit in this way are easier to cure than those who have taken to it simply for pleasure or vice, but it means on the part of anyone who is in the grip of the habit a severe struggle to get rid of it.—I am, etc.,

Peking Union Medical College,  
Peking, May 10th.

J. PRESTON MAXWELL.

#### OF EATING.

SIR,—Since the dentition of the race is every day regarded as a more and more important factor in its well-being, I may perhaps be allowed to suggest that the increasing prevalence of dental disease is largely due to the neglect of instinct. Commonly we attribute the retreat of the jaw, imperfect and crowded teeth, caries, and periodontitis and many intestinal disorders to the use of soft prepared foods. Modern cooking is doubtless a factor in poor dentition, but it occurred to me long ago that even with our common food mastication would be properly carried out if children's natural instincts were allowed full play.

Horace Fletcher showed that there was, or should be normally, a reflex preventing deglutition of solids. His remedy for ill health was to re-educate this destroyed or inhibited reflex by careful mastication. No doubt good was done by this perfectly correct observation, but the fact that re-education was committed to the higher cerebral centres militated against its general recognition. Such a relegation means attention and labour. It is entirely unnecessary, and this will be recognized when it is remembered that the invariable instinct of the child, as of the savage, is to fill the mouth and to keep it full during meals. This enforces continual mastication, as nothing solid can be swallowed with a full mouth. Unhappily it has become a doctrine that such a habit is dangerous. Polite mothers and nurses, even the mothers and nurses of the poor, do their best to destroy the only way in which food is rendered so liquid that it flows down the gullet without any effect at swallowing. Should anyone doubt this one trial will convince him of its truth. It may be objected that if it were generally adopted there would be an end of polite conversation at the dining table. I am not prepared to estimate the real value of this polite conversation, but I doubt if it can be set against decent dentition or decent health. In any case, if such conversation among adults is too valuable to be lost—and I have known occasions when this could be said of it—the chatter of children, which they would not indulge in unless wrongly trained, should not be allowed to interfere so greatly with proper exercise of the teeth and jaws as to prevent perfect late dentition. When this is established conversation cannot destroy it, and on every occasion when it is possible to eat in the instinctive manner properly trained people and adults will at once revert to nature instead of eating like cormorants or ravens with three bites and a concealed gulp.—I am, etc.,

London, N.W., June 7th.

MORLEY ROBERTS.

#### HOSPITAL STAFFS AND INCOME TAX.

SIR,—Ventilation of this subject in your columns would be interesting and valuable. The main question can be stated thus:

A member of the medical profession, mainly dependent on earned income, attends at a hospital for so many hours a week as one of the honorary staff. If he were a paid official, which he is not, he would be charged income tax on his salary. It seems to me that, in equity, he should be entitled to a deduction for the time spent in this public work. The difficulty is to assess the rate, as allowance must be made for experience gained, increased efficiency, and the age and experience of the member.

Before the war the out-of-pocket cost to the medical man of such work was not excessive, and then, as now, it was regarded as a privilege. At the present time, with the rate of income tax and the cost of living both high, the out-of-pocket cost is considerable. Allowable deductions at present compensate inadequately for the style of housing and service that such a man is obliged to keep up. In many provincial centres the public work is out of all proportion to private remuneration, and this tends to result in a lowering of standard as regards advanced and research work, there being no margin to pay for the clerical part of it. The factor of cost must deter some whose services in these and allied matters would be of use, both to the public and to the professed subjects, from venturing at all, and in the case of some already so engaged may cause them loss.

In the event of a sufficient body of opinion being expressed, and of some kind of flat rate deduction being suggested for day and night work, perhaps steps could be taken to bring the matter before the income tax authorities.—I am, etc.,

Aberdeen, June 16th.

G. H. COLT.

#### A PROTEST.

SIR,—In your issue of June 16th you published an article of mine relating to a case of foreign bodies in the stomach, and the very same evening an abstract of the article appeared in the lay press, giving my name, that of the hospital, and, to crown all, under sensational and objectionable headlines.

I would like, therefore, to take immediate opportunity of registering a strong protest against this freedom on the part of the newspapers to publish, without permission, any matter which appears in a medical journal; first, because, as in the present instance, the patient may read the account of same and run the grave risk of a relapse in her mental condition, and secondly, because there might arise in the minds of many people, both lay and professional, the erroneous impression that such publication had been permitted by the doctor in question for the purpose of self-advertisement.

I would further suggest that some steps should be taken to enable the Editor of the BRITISH MEDICAL JOURNAL to control the depredations of these sensation-loving and unthinking newspaper reporters, when they seek to cull cheap copy from its pages. Had I thought that such as the above would happen, my article would never have been sent for publication.—I am, etc.,

A. GEORGE BRAND.

Ayr, June 17th.

\*\* We sympathize with our correspondent and associate ourselves with his protest. But it is not easy to find a remedy. Matter published in the BRITISH MEDICAL JOURNAL is copyright, but the law of copyright is so ill defined that redress is difficult.

#### NURSES' REGISTRATION.

WE have received several letters from nurses calling in question the accuracy of some of the statements in Dr. Skene's letter published on June 9th (p. 997). The points raised seem to have been met in the discussion in the House of Commons, a report of which is published at page 1069.



## Obituary.

HENRY TROUTBECK, M.A., M.B., B.Ch.,

Medical Officer to Westminster School.

WE record with regret the death of Dr. Henry Troutbeck, of Ashley Gardens, Westminster, at the age of 57. About twelve years ago Dr. Troutbeck appears to have had slight symptoms of angina pectoris. On the morning of June 3rd last he seemed in perfect health; but on his returning from visiting patients he became very ill and had paroxysms of pain for nearly an hour. Recognizing that angina pectoris had reappeared, he directed his wife to give him injections of morphine and such other remedies as were at hand; but they were of no avail.

Henry Troutbeck was a son of the late Canon Troutbeck of Westminster; his brother, the late Mr. John Troutbeck, was for many years Coroner for Westminster. He was educated at Westminster School and Caius College, Cambridge, where he obtained honours in the Natural Sciences Tripos, and was for a short time a junior demonstrator in the University physiological laboratories. After studying at St. Bartholomew's Hospital he graduated M.B., B.Ch. in 1892, and obtained a post as house-physician. It was during his residence at St. Bartholomew's as house-physician that he produced a very clever series of caricatures of the hospital staff. He served next as house-surgeon at the East London Hospital for Children, Shadwell. After starting general practice in Ashley Gardens, Dr. Troutbeck became medical officer to Westminster School. He was a member of the Westminster and Holborn Division of the British Medical Association.

At the inquest Mr. Ingleby Oddie, the Coroner, commented upon the calmness and bravery of Dr. Troutbeck when he knew that he was dying, and described him as justly popular, and a kindly, efficient, and sympathetic medical man.

E. J. STEEGMANN, O.B.E., M.B., B.S.

DR. E. J. STEEGMANN, a distinguished worker in many departments of public health, passed away on June 8th. He came of an old Nottingham family, was educated at St. Mary's Hospital and at Durham University, and held resident posts at his own hospital and at the Brompton Hospital. After a short period of general practice he turned to public health work, which had always attracted him, and devoted himself to that field for the rest of his life. He held the post of Lecturer on Hygiene and Public Health at St. Mary's Hospital and for a time was medical officer of health for the Heston and Isleworth Urban District.

For ten years, from 1901, he was secretary to the Royal Commission on human and animal tuberculosis, which followed on Koch's startling pronouncement that infection of man by animal tuberculosis was negligible. Dr. Steegmann, who was a man of signal ability and administrative capacity, threw himself with great ardour into the work of the Commission, and I well remember the intense interest he took in the experimental investigations and the whole-hearted admiration he felt for the eminent men with whom he worked.

He was one of the earliest medical officers to join the R.N.V.R., in which at the time of his death he was Surgeon Commander. He went on active service in 1914 with the Fleet and afterwards did important special sanitary work for the Admiralty. It was on his advice that the system of Naval Sanitary Officers, which is now adopted at the large ports in this country, was introduced.

After the war he was employed in international medical work at the Ministry of Health, and later took a leading part in organizing the Section of Hygiene for the League of Nations.

In all, a record of public work of which any man might be proud, gallantly done in spite of ill health and almost lifelong pain. In public life Dr. Steegmann proved himself to be a man of great ability and enthusiasm with a marked power of impressing his views on others. In private life his friends will remember him as a bright, courageous spirit, whose loyal affection was always the same in spite of the lapse of time.

J. J. P.

## Universities and Colleges.

### UNIVERSITY OF CAMBRIDGE.

THE Professor of Anatomy has made the following appointments in the Anatomy Department: Senior Demonstrator, Dr. A. B. Appleton; Junior Demonstrators, Mr. N. G. Reid and Mr. A. Hopkinson; Additional Demonstrator, Mr. V. C. Pennell.

At a congregation held on June 16th the following medical degrees were conferred:

M.D.—G. W. Goodhart, G. W. Mitchell.  
B.Ch.—E. C. Curwen.

### QUEEN'S UNIVERSITY, BELFAST.

At a meeting of the Senate held on June 13th Dr. W. W. D. Thomson was appointed professor of medicine in the University, Dr. Andrew Fullerton professor of surgery, and Dr. Percival Orymble lecturer in operative surgery and applied anatomy. A resolution was adopted placing on record the Senate's high appreciation of the invaluable services rendered to the University by Professor Lindsay during his tenure of the chair of medicine from 1899 to 1923.

### ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN Ordinary Council was held on June 14th, 1923, when Sir Anthony Bowlby, President, was in the chair.

Mr. J. Howard Mummery, C.B.E., was introduced, and admitted a Fellow of the College.

#### Issue of Diplomas.

Diplomas of Fellowship were granted to the following twenty-four candidates found qualified at the recent examination:

W. Anderson, H. A. Brookes, A. G. Bryce, C. H. Carlton, G. R. E. Colquhoun, D. I. Currie, F. P. Fouché, G. J. Gillam, W. J. Lytle, N. Makar, P. J. Moir, J. W. G. Phillips, J. Mol. Pinkerton, J. E. Purves, S. D. Rhind, W. Salisbury, R. S. Scott, W. Shaw, N. R. Smith, G. F. Syms, D. R. Wheeler, E. R. Wheeler, R. L. Williams, S. H. Woods.

Licences in Dental Surgery were also granted to seventy-six candidates.

#### Examiners.

The following eight members of the Board of Examiners in Anatomy and Physiology for the Fellowship were elected for the ensuing year:

Anatomy.—J. Ernest Fraser, G. Gordon-Taylor, W. F. Haslam, William Wright. Physiology.—David de Souza, John Mellanby, Frankcon Roberts, A. Rendle Short.

The following were elected Examiners under the Conjoint Examining Board for the ensuing year:

Elementary Biology.—J. P. Hill, T. W. Shore. Anatomy.—Henry A. Harris, David Hepburn, John Basil Evans, H. E. Roaf. Midwifery.—Eard G. D. Robinson, Donald W. Roy. Pub. W. Andrews. Part II: Francis J. Hygiene.—George C. Low, H. B. G. Nov Surgery.—Part I: H. Willoughby Lyle Malcolm I. Hepburn. Psychological Med. . . . .

The resignation of Mr. F. F. Burghard from the Court of Examiners will take effect on the completion of the pass examination for the Membership in July. The vacancy on the Court thus occasioned will be filled up at the Ordinary Council on July 31st.

The vacancy caused by the expiration of Mr. N. G. Bennett's term of office on the Board of Examiners in Dental Surgery will be filled up at the Ordinary Council on July 31st.

The date fixed for the Ordinary Council following the Quarterly Council in July was Tuesday, July 31st.

The last day for sending in votes for the election to the College Council is July 5th, 2 p.m.

## The Services.

### OPERATIONS IN WAZIRISTAN.

THE names of the following medical officers have been brought to notice for distinguished service during the operations in Waziristan, April, 1921, to December, 1921, by His Excellency General Lord Rawlinson of Trent, in a dispatch dated May 24th, 1922:

Royal Army Medical Corps: Captain (acting Major) G. A. E. Argo, M.C., Captain (temporary Major) W. Frier, Colonel A. E. C. Keble, C.B., C.M.G., D.S.O., Captain (temporary Major) J. M. Mackenzie, M.C., Captain (acting Major) M. P. Power, M.C., Captain (acting Major) B. C. O. Sheridan, M.C.

Indian Medical Services: Temporary Captain P. P. Daruwalla, Captain (acting Major) P. A. Dargan, temporary Captain M. A. Mithavala, temporary Captain J. S. Pinto, Captain (acting Lieut.-Colonel) J. W. Van Reenan, Major (acting Lieut.-Colonel) W. D. Wright.



## Medical News.

THE Prince of Wales, President of Guy's Hospital, will open the new anatomy, biology, and physics department of the Medical School on Monday, July 2nd, at 3 p.m.

At a meeting of the Senate of Queen's University, Belfast, held on June 14th, it was agreed to confer the degree of LL.D. *honoris causa* on Major-General Sir R. Havelock Charles, G.C.V.O., K.C.S.I., Medical Adviser to the India Office and Sergeant-Surgeon to the King, in recognition of his public services to India and the Empire.

THE thirty-eighth annual meeting of the Caledonian Medical Society will be held in the Aberdeen Medico-Chirurgical Society's Hall, 29, King Street, Aberdeen, on Friday, June 23th, when Dr. David Rorie, D.S.O., will take the chair at 2.30 p.m. The annual dinner will take place on the same evening at the Palace Hotel, Aberdeen. This is the first occasion on which the annual meeting of the society is to be held in Aberdeen, and it is hoped to maintain, both as regards numbers and enthusiasm, the high level of the Stonehaven meeting in 1912, the only other occasion when the society met in the north-east of Scotland.

THE Mayor of Bath, Alderman Cedric Chivers, has assumed the responsibility for the expenses of a scientific research on the therapeutic properties of the Bath waters. The research will be carried out during the course of the summer in the Royal Mineral Water Hospital under the direction of Dr. Raimont of Oxford, assisted by Mr. G. L. Peskett, in co-operation with the medical staff of the hospital.

THE Council of Epsom College will shortly award several France pensions of £30 a year to medical men. Candidates must be not less than 55 years of age, and their income, independent of any allowance from the College, must not exceed £100 a year. The Council will also award one Grewcock pension of £50 a year. In this case there is no limitation as to age, but candidates must be legally qualified medical men who have retired from professional work, and who, in the opinion of the Council, are in need of the pension. There is the same income limit as in the case of France pensioners, and special consideration will be given to the claims of candidates having association with Worcestershire, Lincolnshire, or Carmarthenshire. Forms of application can be obtained from the secretary, Mr. J. B. Lamb, 49, Bedford Square, W.C.1.

SOME time ago we gave an account of the hospital established at Cardigan as a war memorial. It is staffed by practitioners in the county and Sir John Lynn-Thomas, who resides in the neighbourhood, is the director of the surgical clinic. The first annual meeting of the hospital was held recently, when it was reported that during the ten months for which it had actually been at work 167 cases had been treated; of these 88 were in-patients. Sixty-three operations were performed and 28 cases were submitted to x-ray examination for diagnostic purposes. The hospital when it opened had six beds, but it was soon found necessary to increase the number to ten and to add two cots. A vote of thanks to the staff was acknowledged by Sir John Lynn-Thomas.

DR. T. W. NAYLOR BARLOW, O.B.E., of Wallasey, has been elected president of the Society of Medical Officers of Health for the session 1923-24. He will be installed on Friday, October 19th, and will preside at the annual dinner of the society on the evening of the same day.

THE QUEEN has sent a donation of £50 to the Professional Classes Aid Council, 251, Brompton Road, S.W.3.

THE President of the Royal Society, Chairman of the General Board of the National Physical Laboratory, has issued invitations to visit the Laboratory, Teddington, on the afternoon of Tuesday, June 26th.

DR. A. H. G. BURTON, of the Middle Temple, and Dr. Charles Greer, of Gray's Inn, were called to the Bar on June 13th.

At the annual meeting of the governors of Queen Charlotte's Lying-in Hospital, London, Lord Howard de Walden referred to the serious financial position of the institution. There was a debt of £20,000, the hospital had had to deposit all its securities against the bank overdraft, and the committee to raise money on the security of the freehold. The number of patients seeking admission was greater than ever, and the accommodation in the hospital for post-graduate students, medical students, maternity nurses, and pupil midwives, who came to the hospital from all parts of the world, was quite inadequate for the demands made upon it. It was impossible to carry out the necessary extensions and alterations until the debt was paid off, and he made an earnest appeal for additional financial support.

A RECEPTION will be held at University College, London, on Saturday, July 7th, from 3.30 to 7 p.m., when the new anatomy building and the extensions of the physiology and engineering departments will be open to inspection. The secretary requests that old students of the college who have not recently communicated their addresses should send them to him.

THE KING has approved the appointment of the Honourable Dr. Alexander Campbell to be a member of the Legislative Council of the Colony of Newfoundland.

AN advanced course in oto-rhino-laryngology intended for specialists will be held at the Bordeaux Faculty of Medicine from July 23rd to August 4th under the direction of Professor Moure and Dr. Portmann. It will include operations, examination of patients, laboratory examinations and lectures. The fee of 153 francs is payable to the secretariat, Faculté de Médecine, Bordeaux.

A LECTURE on the stomach from the radiologist's standpoint will be delivered by Dr. G. E. Vilvandre in the Anatomical Theatre of the London Hospital Medical College on Thursday, June 28th, at 4.15 p.m. The lecture is intended for senior students of the hospital and to post-graduates, who are cordially invited.

APPLICATIONS for entry for the Savill Memorial prize (value £15) must be sent in to the Secretary of the West End Hospital for Nervous Diseases, 73, Welbeck Street, W.1, by July 16th. Post-graduate and undergraduate medical students who have visited the hospital during the year 1922-23 are eligible. A thesis on a neurological subject at the discretion of the candidate must be received at the hospital by October 1st.

THE Fellowship of Medicine has arranged for a special course in neurology at the West End Hospital for Nervous Diseases from June 25th to July 27th. There will be demonstrations each day in the out-patient department and lecture demonstrations dealing with the diagnosis and treatment of nervous disease will be given three times a week by members of the staff. A special course on diseases of children has been arranged at the Royal Waterloo Hospital from July 16th to August 4th. General refresher and special courses in cardiology, dermatology, and ophthalmology have also been arranged during July and August. Full particulars can be obtained on application to the Secretary, Fellowship of Medicine, 1, Wimpole Street, W.1.

THE University of Durham proposes to confer the degree of D.C.L. *honoris causa* upon Sir Anthony A. Bowly, K.C.B., K.C.M.G., K.C.V.O., President of the Royal College of Surgeons' Hospital, a Surgeon to St. Bartholomew's Hospital, and to the King. It is expected that Sir Anthony will receive the degree at the convocation on June 26th.

THE annual meeting of the Poor Law Medical Officers' Association will be held at the house of the Society of Medical Officers of Health, 1, Upper Montague Street, W.C.1, on Thursday, June 28th. Sir Arthur Newsholme, K.C.B., M.D., the president, will take the chair at 4.15 p.m. Poor Law medical officers are earnestly requested to attend.

COMMEMORATION DAY was celebrated at Livingstone College, Leyton, on June 13th, when a large assembly gathered in the grounds of the college, with Sir Leonard Rogers in the chair. The principal, Dr. Tom Jays, and the treasurer, Mr. L. R. Barclay, made statements on the work and the financial position of the college, which is not yet self-supporting. Sir Leonard Rogers referred to the excellent work the college does in training missionaries to look after their own health and to give medical aid to others in distant parts of the Empire where more skilled medical assistance was lacking.

THE David Syme Research Prize for 1923, presented to the University of Melbourne for research work in biology, chemistry, geology, and natural philosophy, has been awarded to Dr. Frank Longstaff Apperly, senior lecturer in pathology at the University. His paper dealt with the diagnosis and treatment of diseases of the stomach. Dr. Apperly was a Rhodes scholar in 1910 at Oxford. In acknowledging the honour he strongly advocated the establishment of an institute of research, where important problems that were purely Australian, such as hydatids and hookworm, might be thoroughly investigated.

DR. A. ROLLIER will hold a course of heliotherapy at Leysin from August 13th to 18th. Further information can be obtained from Dr. Rollier, Leysin-Village, Switzerland.

DR. DUBOIS has succeeded Professor Wertheimer in the chair of physiology at the Lille Faculty of Medicine.

MESSRS. BELL intend shortly to publish a book entitled *The Structure of the Atom* by Professor Andrade of Woolwich, and a new and enlarged edition of *X Rays and Crystal Structure* by Sir William Bragg and Professor W. L. Bragg.



## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

The postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, Aitiology, Westrand, London; telephone, 2630, Gerrard.

2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), Articulate, Westrand, London; telephone, 2630, Gerrard.

3. MEDICAL SECRETARY, Medisecra, Westrand, London; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

### QUERIES AND ANSWERS.

#### SALICYLATE INJECTIONS FOR VARICOSE VEINS.

DR. W. A. MURRAY (British Hospital, Oporto) writes: I should be much obliged if any of your readers could give me particulars of the treatment of varicose veins by injection of sodium salicylate. The points on which I should like advice are: (1) Has the treatment proved successful? (2) What is the dose and technique of administration? (3) Are there any special dangers to be avoided—for example, thrombosis extending up the veins?

#### INCOME TAX.

"W. H. L."—(1) A and B have changed the ratio in which they share the partnership profits from two-thirds and one-third to half and half as from January 1st, 1923. (2) B bought a motor cycle in 1920 for £130 and sold it in 1923 for £62, buying a motor car in its place for £525. What is he "entitled to put down to this year's expenses"?

\* \* (1) We suggest that "W. H. L." should request the Inspector of taxes to let the firm have a statement setting out the computation of each partner's share of tax on the basis of the change on January 1st, 1923. Assuming that this is found to be correct, each partner should contribute towards the July tax (which is the second instalment of the total duty payable for the year to April 5th, 1923) the amount necessary to increase his January, 1923, payment to the total amount due from him according to the revised statement. ("£130-£62=£68 can be included in the expenses in computing the profits for 1923 for the purpose of the average amount assessable in subsequent years.

### LETTERS, NOTES, ETC.

#### SODIUM OR POTASSIUM SALTS.

DR. F. G. CAWSTON (Durban) writes: I do not consider that there is sufficient clinical evidence to support the contention that the sodium salt is preferable to the potassium where patients are being treated with intravenous antimony. In my own experience with these drugs I have found patients much more subject to muscular pains where the sodium salt is used, and, since I have adopted the procedure of using tartar emetic in doses ranging from 1/2 to 1½ grains dissolved in not more than 3 cubic centimetres of saline just before the injection, I have noted none of those unpleasant toxic effects which I sometimes observed when using distilled water or when injecting the sodium salt. I have not been able to note any more beneficial effect from the injection of 2 grains of the sodium preparation than 1½ grains of the potassium in several cases of bilharzia infection that I have treated, and in some patients suffering from extensive condylomatous conditions the experience was the same. In 1920 the Minister of Agriculture promised me that those methods of administering antimony which were being used with success in the treatment of bilharzia disease in Natal should be given a thorough trial in the treatment of cattle suffering from nagana in Zululand. Fortunately Mr. H. H. Curson, M.R.C.V.S., who had carried out a series of tests on fluke-infested sheep, using the freshly dissolved tartar emetic solution as I had demonstrated it to him, was placed in charge of the experimental station, and the treatment resulted, according to the Department of Agriculture, "in immediate success." Though I offered him all the sodium

preparation I had on hand, as I had hoped that cattle might be able to tolerate the drug better than human beings, he confined himself to the potassium salt, and we have yet to find a more economical and effective remedy for either nagana or bilharzia disease.

#### INTRAVENOUS ACRIFLAVINE FOR GONORRHOEA.

DR. M. W. BROWDY (London, W.) writes: In the Epitome of Current Medical Literature in the BRITISH MEDICAL JOURNAL (June 16th, 1923, para. 500) G. H. Wood is quoted as advocating intravenous injections of acriflavine in the treatment of acute gonorrhoea. I described this method of treatment in the Practitioner, October, 1921, with satisfactory results. I believe I was the first to suggest it.

#### METHYLATED SPIRIT DRINKING.

We observe that in his last annual report Dr. F. S. D. Hogg, medical superintendent of Dalrymple House, Rickmansworth, notes an increasing number of cases of methylated spirit drinking among his patients. He supposes that inebriates drink this disgusting fluid (alcohol "denatured" with 10 per cent. wood naphtha and 0.25 per cent. petroleum oil) because they are short of funds or are unable to buy potable spirits except during restricted hours of sale. Dr. Hogg has his own way of helping patients to overcome any temptation to indulge in secret draughts of methylated spirit. For the past twenty years such methylated spirit as has been used in the institution has been "doctored" with tartar emetic and marked "poison." He says—and we can well believe him—that it is very rare for a patient to sample this mixture, and he has never known one to try it twice. He accordingly suggests that all the methylated spirit sold to the public might well have this addition, which would add but a trifle to its cost. It has often surprised us that pharmacological advice is not sought in regard to the "denaturing" of alcohol.

#### MEDICAL GOLFING SOCIETY.

THE Medical Golfing Society's annual summer meeting was held at Addington Golf Club on June 14th. The meeting was a great success, over ninety members competing for the various prizes. As usual, all competitions were against bogy.

Mr. H. D. Gillies (+2) won the *Lancet* Challenge Cup and Memento for the best scratch return with 4 up; also the Henry Morris Challenge Cup and Society's Gold Medal for best handicap return with 2 up. His actual score was 73.

Other results were as follows:

CLASS I. (Handicap 9 and under.)		CLASS II. (Handicap 10 and over.)	
1st Prize.—Sir R. Cruise (2) 1 up. (Mr. H. D. Gillies was ineligible for this prize.)		1st Prize.	H'cap.
2nd Prize.	H'cap.	C. M. Hinds Howell ...	10
J. Swan ...	6	J. Cunningham ...	12
G. Dawson ...	4	N. B. Benjafield ...	16
Gordon Lane ...	9	H. L. Hatch ...	15
Sir K. Goadby ...	8	J. Clarke ...	14
(All square.)		(All square.)	
Best last nine holes.		Best last nine holes.	
Sir K. Goadby } All square.		J. E. Coulson ...	11
Gordon Lane }		L. Bathurst ...	11
		(1 up.)	

#### In the Foursome Sweepstakes.

1st Prize.	H'cap.
Bruce Hamilton ...	12
G. A. Sutherland ...	6
2nd Prize.	
{ Sir R. Cruise.	
{ Gordon Lane.	
{ O. R. Salisbury ...	16
{ O. H. Housden ...	18
{ J. S. H. Lewis ...	8
{ Murray Thomson ...	10

All ties will be played off in due course.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 28, 29, 30, 31, and 34 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 32 and 33.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 279.

### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded. Advertisements should be delivered, addressed to the Manager, 429, Strand, London, W.C.2, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restant* letters addressed either in initials or numbers.



## A British Medical Association Lecture.

## NOTES FROM PRACTICE.\*

BY

W. J. TYSON, M.D., F.R.C.P., F.R.C.S.,

HONORARY PHYSICIAN, ROYAL VICTORIA HOSPITAL, FOLKESTONE.

*Prognosis in Heart Disease.*

Just now there is reason to avoid going from one extreme to the other. Murmurs are not all innocuous, as some seem to imply, but vary in character, and also as to which valves are involved. What is important is this: How does the heart act? Are there any signs or symptoms? If there are not, then the less a patient knows about his heart the better it is for him. In my opinion the presystolic murmur ranks first in seriousness; after this the aortic (regurgitant); and the most favourable is the systolic mitral—all referring to the left side of the heart. Again, all these murmurs must be considered in conjunction with the state of the wall of the heart.

The sinus irregularity of children, associated with the respiration, which at one time produced so much mental anxiety among doctors and patients, need not disturb us. The extra-systoles, easily detected, are not prognostically bad; these are generally missed pulse beats, seen mostly in old people.

The effect of cardiac diseases is really to be gauged in its extent by how much the ventricular action is affected. The most important cardiac irregularity is auricular fibrillation. Its constant association with the presystolic murmur makes this latter of serious importance; it also occurs in the cardiac sclerotic changes of elderly people.

The very slow pulses of old people, often accompanied with insensibility, and even fits, which we have all seen, are now known to be due to heart-block, the condition, of course, varying with the amount of disease in the auricular bundle obstructing the stimuli from auricle to ventricle. In the young the heart disease is generally rheumatic in origin; although the prognosis is good, still this must depend on the ventricular efficiency, tested by physical exertion. In middle life and onwards cardiac disease is due to degenerative changes in the musculature of the heart.

Of all drugs digitalis holds its own, but after this ranks theocine-sodium acetate; both are most useful when auricular fibrillation is present. It is generally thought that the value of digitalis consists almost entirely in slowing of the pulse, the drug having no effect on the left ventricle, but only on the vagus nerve, affecting the supraventricular tissues.

*The Relief of the Right Heart.*

There is no doubt that the heart is more often auscultated than percussed—in other words, the valves are more thought of than the muscle; also, the left side receives more attention than the right. This probably is as it should be, but there are times when the right side of the heart, especially the auricle, demands our thought and skill. When we are dealing with diseases such as pneumonia, valvular or muscular disease of the left heart, it is well to examine by percussion the size of the right auricle. Now there is not much difficulty in detecting an enlarged right auricle; the normal dullness of one fingerbreadth to the right of the sternum in the fourth interspace is increased to two, or perhaps three, fingerbreadths; the ordinary finger percussion is quite sufficient for all practical purposes. When this enlargement is discovered, then local depletion by means of a few leeches—three to six—is decidedly valuable. I have seen cases where, after application of leeches, the distress has been almost at once relieved; it is then that the action of digitalis and strychnine can have full play, for it is bad treatment to begin with heart tonics before the heart congestion is relieved, and often, also, before the alimentary canal is purged.

\*Delivered at Carmarthen on Wednesday, April 11th, 1923, before the members of the South-West Wales Division.

*Treatment of Acute Diarrhoea in Children by Saline Injection.*

Acute summer diarrhoea in children is one of our greatest anxieties. I am not speaking of the comparatively mild cases which yield to ordinary remedies and dieting, but to those collapsed conditions in which sickness and constant diarrhoea are both present, and which are found mostly among the classes that live in poor and crowded thoroughfares. These cases, when possible, should be admitted as in-patients for hospital treatment; here alone can they be kept properly clean and fed, and in a thoroughly ventilated room. If we can manage to prolong life for a few days, recovery will frequently follow. It is often most difficult at first for the baby or child to keep down any food at all. It is in this condition that saline injections, given either by the skin or bowel, are of great and saving value. The injections must be given slowly and continuously.

*Pleuritic Effusion.*

When the right or left chest is three-fourths full of fluid or more, then aspirate or tap. I have seen two or three people die from simply sitting up in bed when one side of the chest was full. When the quantity of fluid is less than three-fourths there is no necessity for immediate action—in fact in a few days the fluid may not only diminish, but soon entirely disappear. There are two dangers in withdrawing the fluid—namely, a sudden acute congestion, or oedema of the compressed lung, producing an albuminous or serous expectoration in large quantity, resulting in serious obstructive breathing. The cases like this which I have seen have recovered, but fatal ones have been recorded. Again, the mere tapping or aspirating has resulted in immediate death. It is not wise to draw off the whole of the fluid, for the reason that when doing so syncopal attacks are apt to occur. The most common condition mistaken for an effusion is a chest tumour, which is generally malignant in character, but here the heart and other organs are not displaced.

Two other diseases may cause difficulty—namely, aneurysm of the thoracic aorta, and a hydatid cyst. It may be fatal to aspirate either. It is generally believed that the effusion is of a tuberculous origin; whether this be so or not, in my opinion a large proportion of these cases get well, and remain so. I do not remember seeing a serous effusion become purulent; when it is purulent it is so from the beginning. I know of no sign or symptom to distinguish between a purulent and a serous effusion—of course, one may make a shrewd guess. The temperature does not help us.

*The Mania following Pneumonia.*

I am not now referring to the ordinary delirium, or "delirium febrile," a delirium, as its name implies, which may come on in any case with high fever. Pneumonic delirium is not common, and it is often associated with the apical form. Perhaps one of the most interesting and practical points is that the delirium may be the first symptom noticeable in the disease—that is to say, the physician is called to see a case of delirium, and on examination of the lungs he discovers pneumonia. In young children this delirium has been mistaken for meningitis. The pneumonia is generally of the sthenic type and occurs generally in comparatively young people.

But the cases to which I wish particularly to call attention are those in which the mania follows the pneumonia. I have had the opportunity of seeing three of these cases, but the literature is exceedingly scanty. I think the reason of this scarcity is mainly because these cases occur in the hands of private practitioners and so do not get recorded. The following are the characteristic points in this form of pneumonia mania:

1. The pneumonia is of the sthenic or classical type.
2. The people affected are mostly of a neurotic temperament.
3. It generally occurs in youngish people under 40 years of age.
4. It is associated with great sleeplessness, and there seems great difficulty in the treatment of this symptom.
5. It is not essential that the disease be very acute or that much lung be involved—in fact, the amount of lung involved does not seem to bear any relation to the amount or length of stay of the mania.
6. It occurs after the crisis. The delirium, already mentioned, which occurs early in the disease, is as a rule a much more severe type of mania than that which follows the crisis.



7. The pathology, I suppose, is toxic, but I am unable to say why some people suffer in this way and others do not.

8. The prognosis of this mania is good; it should be looked upon as part of the pneumonia, and should not be especially treated as a case of mania *per se*. The question of asylum treatment need not be considered. I mention this point because in one of my cases the doctor in attendance considered the mania should be treated in an asylum.

9. *Treatment*.—Perhaps the most important thing in this trouble is to treat the sleeplessness. Food is the best hypnotic, but it may be necessary to give some paraldehyde or some other narcotic. The bowels should be attended to. A tactful, wise, and firm nurse is a necessity, and convalescence should be carried out in the country.

#### *On the Late Discovery of Physical Signs in Pneumonia.*

The signs to which I wish to draw attention are dullness on percussion, bronchial breathing, and bronchophony, which, in my opinion, not infrequently occur, or rather are discovered, comparatively late in the course of the disease. The following paragraphs occur in two standard works on medicine:

"Usually up to the third day after the chill the percussion note over the affected part becomes dull, the respiration of a blowing character. Bronchophony now makes its appearance."

"On the second day a dullness more or less appreciable reveals itself in the part originally affected, and there are also heard in that situation anomalous signs which become more and more decided, such as a fine and very equal crepitant r le, heard during respiration."

These paragraphs show the generally acknowledged time as to the appearance of the physical signs of pneumonia. From observation of cases of croupous pneumonia that have come under my care, I believe that the physical signs, such as dullness on percussion, bronchial breathing, and bronchophony, occur later in the disease than is generally supposed; or perhaps it would be more correct to say that there is a larger percentage of cases with the above signs lately discoverable than our reading or teaching has hitherto led us to suppose. What this percentage is I am not prepared to say. The authors already quoted say further on in their articles on pneumonia that the characteristic physical signs of the disease may escape detection from the inflammation being confined to the central situation of the lung. Probably this explanation may account for the lateness of the appearance of the aforementioned signs. Yet, allowing that this explanation is the true one, it is nevertheless just as important for the welfare of the patient to diagnose a central pneumonia early as it is a peripheral one, for the one is as dangerous in its prognosis as the other. If this dullness, bronchial breathing, and bronchophony are not infrequently noticed late—for all authors admit that these signs are occasionally either overlooked or lately discovered—then it becomes necessary to diagnose pneumonia by symptoms instead of by signs. One of the authors before quoted says that if the patient has had a chill, pain in the side, rusty sputa, and high temperature, there is scarcely any room for doubt about the diagnosis, and even in central pneumonia these symptoms are generally present. If there is one symptom which is pathognomonic of the disease it is the pulse-respiration ratio—it is often in the proportion of 2 to 1. I know of no disease in which this ratio is so low.

#### *Change of Type of Pneumonia.*

I should say from my own experience that the sthenic or classical type of pneumonia is not so frequently met with as formerly. The type of pneumonia seems to have changed in character. Pneumonia seems often to be of a less local form, spreading often, and the disease ends constantly by lysis rather than by a crisis.

#### *Abdominal Pain in Pneumonia.*

In some cases of pneumonia, especially in children, pain in the abdomen, which is referred, has been mistaken for peritonitis—for example, appendicitis—and the abdomen has been opened for this symptom. It is wise always to think of this fact, and when in doubt to examine the chest. On carefully examining the abdomen, although at first tender, this soon passes off, and the whole of the abdomen can be successfully palpated.

#### *Fresh-air Treatment of Acute Respiratory Diseases, with Special Reference to Pneumonia.*

The open-air treatment of phthisis is well established, but the treatment of the more acute affections of the lungs, such as pneumonia, bronchitis, asthma, by this method is not

well established. Oxygen is given, but there exists a good deal of doubt as to its efficacy—for the reason, perhaps, that it is too artificial in its manufacture, and, if of use, too intermittently given. Now, the natural atmosphere is always with us, and can be administered in large and constant quantities. May not the higher incidence of pneumonia in winter and spring be due, not so much to the cold weather, as to "the closer confinement of the populace indoors, in the stagnant air of living-rooms from which sunlight is excluded, and which tends to lower vitality and decrease resistance on the one hand, and to favour rapid multiplication and increased virulence of the specific poisons on the other"? (Anders.) Again, we have evidence that pneumonia is more prevalent in overcrowded districts and among the impoverished classes.

It seems to me that in a disease where nearly half of the breathing apparatus is out of gear it is hardly possible to have too much air, containing its full amount of oxygen. I treat these cases with free ventilation, or even on an open verandah exposed fully to the air. My experience is that pneumonic cases do better with this freedom of air rather than, as formerly, with a limited amount. I am not prepared to say that excessively damp air, or strong, cold east winds playing directly on the patient, is decidedly beneficial, but if the air is dry I doubt if the coldness is detrimental.

I should sum up the essential points in the treatment of pneumonia as (1) absolute rest; (2) appropriate feeding and stimulation; (3) sufficient, but light clothing; (4) sunshine, if possible; and (5) abundance of fresh air. The last point is the one most generally neglected, or perhaps forbidden by the patient and friends. I refer particularly to the more acute cases of the respiratory organs, but I have treated a fair number of subacute, and even chronic, cases, such as cases recovering from empyema, bronchiectasis, with or without purulent and offensive expectoration, etc., in open verandahs with the greatest success.

#### *Acute Intestinal Obstruction due to Thrombosis of the Superior Mesenteric Artery.*

The cases of the above have been more commonly reported abroad than in England. I have seen two cases. As they are rare and seldom diagnosed, the following points are interesting and useful to remember. The general symptoms and signs are very similar in character, whether the superior or the inferior mesenteric artery is involved. Certain differential points have been given; these do not seem of much value when practically considered, for in both intestinal obstruction is produced.

The first prominent symptom is abdominal pain, closely resembling an ordinary attack of colic. Nausea is frequent and arises fairly early. Vomiting follows, with a gradual change in the character of the vomit. Constipation is the rule, but diarrhoea has been often reported. Tension and tympanitic swelling of the abdomen are late signs indicating the advent of peritonitis. Extreme fetor of the stools, should there be diarrhoea, is of serious omen, and points to gangrene of the bowel having taken place. Profuse intestinal haemorrhage has also been recorded, and when meeting with this sign it is wise to bear in mind that embolus of the mesenteric artery may be the cause.

Prognosis is always most grave, but not absolutely fatal. Of course, this is better if only one branch of the artery is involved rather than several. If the main artery is occluded it is doubtful whether recovery has ever taken place. The greater the arterial obstruction the more severe the symptoms. As regards the source of the embolus, the left heart seems to be the most common one, and after this the abdominal aorta.

#### *Thrombosis of the Superior Mesenteric Vein.*

A few cases of this have been reported, giving rise to intestinal obstruction, the artery not being affected. Swelling of the bowel from infarcts occurred, and the tumour has been mistaken for one of malignant nature. Early abdominal section gives the only possible chance of recovery. I have not been able to find any recorded instance of recovery after delayed operation.

#### *The Intestinal Origin of Convulsions.*

In convulsions one must often look beyond the brain for the explanation and treatment. A boy, aged 2, was taken



almost suddenly with severe convulsions. I saw him soon after they had begun. They soon became almost continuous, and he appeared in a serious condition. On placing my hand on the abdomen I felt marked peristaltic action of the bowel. The convulsive attack was so tedious and violent in passing off that I gave some chloroform to check it. Some time later the bowels were opened four or five times, after which the convulsions ceased. There are many causes of convulsions in children, and intestinal irritation from undigested or ill-assorted food is among the most common.

#### *Indigestion.*

I know of no disease more difficult to diagnose than what is generally called indigestion. The difficulty mainly occurs after 50 years of age. Is the pain over the region of the stomach common indigestion—for example, hyperchlorhydria, or achylia gastrica, etc.—or has the patient a gastric or duodenal ulcer, or the beginning of malignant disease? I am not going to describe the textbook symptoms of the above; they are known to you.

The modern diagnostic methods of the examination by the x rays and bismuth meals, also the last method by fractional test meals, are both probably of more value in diagnosis than the common symptoms, but neither of them, in my opinion, can give a final definite opinion. Of course, where a "lump" can be felt, the consultant who is called in late in the disease may be the first to settle the dispute in question, but one should be anxious to know the trouble before the tumour is recognizable.

I was seeing a case in the country a few months back with a medical friend. We were speaking on the difficulty of diagnosing the cases I am mentioning, when he abruptly turned round and said, "I rarely allow a dyspeptic case to go on more than six months without recommending an abdominal exploration."

In looking back on my past experience I remember now many cases that it would have been better to have operated on, particularly gastric and duodenal ulcers, and malignant disease. Yet one must not forget that it is only comparatively recently that our surgeons have been fully equipped in all operative quickness and skill to deal successfully with these cases. Moynihans do not live in every town; still, they are becoming more common every day. Personally, where I can obtain this necessary surgeon, I feel more and more inclined to recommend this radical treatment of gastric ulcers and malignant disease in the comparatively early stage of stomach symptoms.

#### *Albuminuria.*

The ordinary textbook classification of Bright's disease—that is, acute Bright's disease, such as that which follows cold or scarlet fever, chronic tubular nephritis, or smooth kidney, whether large or small, or the granular and contracted kidney—does not by any means cover the cases of albuminuria which we meet with in private practice. I am not referring to those cases of cyclic or functional albuminuria which have often been described and which we know so well, nor to those conditions which follow temporarily specific fevers, nor to those associated with chronic congestive states of chest and abdominal organs. The cases that I am referring to occur in people who are for the most part pretty well; the albumin is almost constantly present, but not as a rule in large quantity.

I have seen a considerable number of albuminuric cases, some with hyaline casts and some without; they defy classification, and it is impossible often to prognose them; they occur at various ages between 30 and 70. Because you find albumin in the urine do not be in a hurry to class the case under one of the classical divisions of the disease. I am convinced that many of the patients live for years without ever having a granular kidney—certainly not a large white one.

I have lately described at the Royal Society of Medicine, and recorded in their *Transactions* of last year, a distinct class of albuminuric cases, which so far as I know have not been written upon before. A large quantity of albumin is present for many years, the quantity often amounting to absolute solidity on boiling. At times the albumin may

entirely disappear. Four of these cases have come under my notice, at ages ranging between 50 and 75. There was no oedema or dropsy. In two there were attacks of insensibility, and at this time the albumin was at its maximum in quantity. Dr. Mackenzie Wallis, of St. Bartholomew's Hospital, kindly examined the urine for me in one of these cases, in which the ratio of albumin to globulin was 2 to 1. The globulin when isolated behaved like serum-globulin, and was quite different from the type met with in functional albuminuria.

#### *Acute Glaucoma simulating a Bilious Attack or an Attack of Erysipelas.*

Glaucoma has been mistaken for three diseases—namely, cataract, erysipelas, and a bilious attack. The inflammatory condition of the eyelids and integuments of the face have at times been so severe in acute glaucoma that the case has been diagnosed as one of facial erysipelas; or again, the sickness has been so prominent a symptom that it has to a great extent masked the increased eye tension, so that the latter has been overlooked and gone untreated. Such cases show the importance of teaching the chief practical points in all the specialties. It is not necessary, nor even desirable, that all men should be able to do expert operations, for most cases can wait and be handed on to more skilled fingers. But cases like the above should always be diagnosed early, in order that they be properly placed. Every doctor should be a general practitioner in knowledge, although he need not be so in practice.

#### *The Value of Single Symptoms and Signs.*

In the diagnosis of medical and surgical cases one must not forget to put proportionate value on each symptom and sign; it is not the number of these that tell in making a diagnosis, but rather the quality of each one. One sign or symptom may count more in giving our final opinion than five or six others. One often hears men saying that the majority of the symptoms are in favour of such a disease, whereas the minority symptoms may be of much more total value. It happens not unfrequently that one symptom or sign may determine our view to the exclusion of all others. Two examples will suffice: in pneumonia the pulse-respiration ratio ranks probably highest of all the symptoms, and is almost pathognomonic of the disease. In acute appendicitis the pulse and respiration should rarely if ever be trusted, whereas rigidity ranks very high and may be the only sign.

#### *The Soporific Action of Mercury.*

I am not aware that the soporific action of mercury in the class of case about to be described is at all generally known. The cases in which I have found blue pill—for this is the form of mercury I am referring to—give such good soporific effects are rather difficult to describe, and must be given in a more or less general way. Many men would call them cases of biliousness, and for want of a better term I am contented to use it provisionally. The patients, who are usually over 40, complain of lassitude, loss of appetite, a general fullness of the abdomen, pains in the shoulder-joints, a want of clearness of thought, more or less dull pain in the head, not confined to one particular spot, irritability of the skin, and, above all, of sleeplessness at night. The tongue is generally of a whitish-brown colour, there is a nasty taste in the mouth, and the eyes are rather "thick." There may be many more symptoms and signs than the above, or few of them may be present, but when the symptom of sleeplessness is prominent, then the soporific action of blue pill followed by saline draughts is peculiarly brought out.

The symptoms I have detailed are principally found under the heading of "bilious dyspepsia," but there is this important clinical difference: whereas sex, sickness of food, and want of exercise play leading parts in producing this particular form of dyspepsia, the cases that I have in mind are found as often—if not more often—in women as in men, and where the plainest diet and fair amount of exercise have been taken.

There is little doubt that sea air has something to do with



this state of health; people who have come down to the sea-side after a long residence inland frequently develop, after a few days, all the symptoms described. I do not associate these cases with those which are commonly called "lithaemia," or the substitution of uric acid for urea as the final product of disintegration of albuminous substances within the body; in this last condition one finds the more remote symptoms of gout.

What is the exact action of mercury which brings about the happy result? I do not know, nor am I anxious to propose theories. Murchison supposed that mercury possessed a double action, for he says, whether or not the secretion of the bile was increased, more bile was certainly passed when the drug was being taken, and an eliminating action was brought about, so that less of the bile constituents were absorbed from the intestine than usually. Again, he supposed the albumin to be in some way more thoroughly disintegrated. In some such way the brain is "cleared." It is important for us to know empirically the use of a drug which will enable us to give a patient a good night's rest, whilst at the same time we are treating the origin of the trouble and apparently not giving ordinary soporific drugs.

#### *The Danger of putting Old People to Bed.*

Probably I shall be running atilt against someone's opinion when I say that I believe that many old people are sent to bed too early, and are kept too long in bed when they are convalescing. Of course, there are many obvious exceptions which will at once occur to you, and which I need not take up your time in mentioning.

I believe that we should be chary in advising old people to take to their beds when slightly ill. Some few years ago I was attending an old man of 80 with a slight attack of bronchitis, the like of which he had often suffered from before. A consultation was suggested, and the consultant called in advised my patient to go to bed. I remonstrated, but gave way to what I thought then was wiser advice than my own. The patient kept his bed for a week and then died. It may have been a case of *post hoc* and not *propter hoc*; still, my experience has since led me to believe that this man would have had a better chance of recovery if he had remained up during the daytime.

We must remember that the will power of old people is comparatively weak, and that bed to them is comfortable; then, when once in bed, after a few days the heart and muscular system lose tone. The effort to overcome the above is difficult, and sometimes impossible to obtain again. It often requires a good deal of courage to keep these old people from taking to their beds, for the patient often takes kindly to bed himself and the friends think you unkind in advising less rest.

My own belief, then, is that it is wise to keep old people about and with moderate exercise as long as possible.

#### *Final Remarks.*

I have finished.

I have often wondered, and at the same time regretted, why men who have been in practice many years do not record their experiences. Men who have been in general practice in the past have done great work. We think of Jenner, etc., and in modern times of Mackenzie.

Some years ago there was much more local record of cases made than there is to-day. In my own experience as Secretary of the East Kent District of the South-Eastern Branch of our Association, for six years we had regularly four meetings a year, with an average of four papers at each session, and with an average of twenty attendances. Things and times are changed. All the papers were written by our own members. Most of us who have been in practice for some years, whether hospital, private, or both, must have a vast experience well worth noting down. I have often said that young men write books, when they have little practice; old men, who know something, have little or no time. Personally I have seen in practice most of the rare diseases in medicine, many of which I have recorded.

We who live in villages and comparatively small towns see diseases often in their true perspective—the beginning, the middle, and the end of them.

## HERPES ZOSTER OPHTHALMICUS.

BY

SAMUEL LODGE, O.B.E., M.D.,

OPHTHALMIC SURGEON, ROYAL HALIFAX INFIRMARY;

AND

WILLIAM OLIVER LODGE, M.D., F.R.C.S.E.,  
D.O.M.S.,

ASSISTANT OPHTHALMIC SURGEON, BRADFORD ROYAL EYE AND EAR HOSPITAL.

THE eye has aptly been described as an elegant diminishing mirror of diseases of the body. Indeed, our ophthalmic experience of herpes zoster reflects so diffusely upon epidemiology, neurology, and dermatology that we can but select six arbitrary headings—etiology, pain, efflorescence, keratitis, complications, and treatment.

#### ETIOLOGY.

"In full fair tide let information flow—  
That evil is half cured whose cause we know."

Churchill: *Gotham*, Book 2, 652.

In our infirmary practice the incidence of herpes zoster is approximately 1 in 10,000, but in many clinics it is rarer—for example, Colonel Elliot estimated its relative incidence at Madras at 1 in 25,000.

In twenty private cases the average age at the time of attack was 55. We see the disease in children occasionally, but note that as a rule only elderly patients experience persistent pain, extensive scarring, or severe corneal ulceration. We are indebted to Dr. Henry Head for a letter confirming our inference that ophthalmic zona is more prevalent in early life than ophthalmic statistics denote.

"Herpes zoster in children," he writes, "is almost a negligible disease. Were it not that the mothers are frightened of the rash we should see very few cases in young persons. The elasticity of the ganglia and surrounding parts probably prevents the occurrence of severe forms of pain. Notoriously, herpes zoster wherever it occurs is much more severe in old people than in young. This is particularly the case when the rash lies over the forehead."

Some authors report a preponderance of male patients, and state that the right side is more often affected than the left; in our own series the proportions were equal in both respects. The cases were entirely sporadic. In one instance a man and his wife were affected, but fourteen years intervened between the two attacks. Most of those affected were in good health and were engaged in active mental or physical pursuits prior to some temporary fatigue or minor indisposition, upon which herpes supervened.

In a case which followed carbonic oxide poisoning Sattler first described infiltration, destruction, and degeneration in the Gasserian ganglion. Poulard distinguishes three varieties of trigeminal herpes according to the position of the causative lesion: (1) a neuritic form, affecting the peripheral branches of the ophthalmic division; (2) a rhizomeric form, implicating the Gasserian ganglion; and (3) a metameric form, in which the lesion is in the pontino-medullary nucleus of the fifth nerve. In this nucleus, according to Bing, the frontal region is represented most distally, the temples and eyelids in an intermediate position, and the nose and cheeks highest up. In one or two of our cases anomalous eruptions occurred, for example, on the buccal mucosa, in addition to the eruption of typical rhizomeric distribution.

Netter states that herpetiform eruptions appear in at least 1 per cent. of cases of encephalitis lethargica, and cites a case reported by Medea of Milan, in which encephalitis was accompanied by supra-orbital herpes, followed by paraesthesia of the affected area. Numerous instances of chicken-pox arising in remote farms and isolated villages within twenty-one days of a case of herpes zoster have been recorded.<sup>17</sup> Again, Head and Campbell point out that herpes zoster may justly be described, both on anatomical and pathological grounds, as acute posterior poliomyelitis. Probably the virus of shingles, widespread in an attenuated form, is liable to enhanced virulence, when epidemics arise, and is sometimes inconstant in its affinity for the small bipoplar ganglion cells, irritation of which results in the



herpetic eruption. The effects of such irritation are the same whether it be due to a specific virus, or to local inflammatory processes secondary to injury, tuberculosis, or new growth. Patients presenting herpetic eruptions should always, therefore, receive a careful examination.

#### PAIN.

" . . . and thus would be produced those paroxysms of shooting or flashing pains, which, in accordance with a well known physiological law, are referred to the periphery, although in reality due to a central cause."—Charcot: *Lectures on Diseases of the Nervous System*, Sigerson, 1877, 60.

In mild cases the early neuralgic pain is confined to one side of the head, but in severe and fulminating cases there is intense headache and vomiting. The meningeal branch of the ophthalmic division, which is given off before the nerve reaches the sphenoidal fissure, sends filaments to supply the tentorium: in the rare cases which simulate meningitis in their onset it is possible that the ganglion cells connected with this meningeal branch are implicated. Similarly, according to Chauffard, extension of the disease from the posterior root ganglia to the meninges in spinal zoster would account for the pains down the spine, girdle sensation, exaggerated knee-jerks, and lymphocytosis of the cerebro-spinal fluid which are observed from time to time.

A more typical manifestation is formation; our out-patients complain that the skin feels as though there were something "wick" (that is, alive) under it. Sometimes by rubbing the scalp they produce bald patches, comparable to the frayed sleeve and threadbare coat which proclaim the sufferer from shingles.

In proportion to the age of the patient and extent of the scarring, a type of pain is complained of which has much in common with that which, during the war, frequently complicated partial lesions of the median and internal popliteal nerves—causalgia; a scalding pain is felt in the palm of the hand or sole of the foot, and is increased to a maddening degree by the lightest touch. Causalgia has been attributed to compression of the nervi nervorum. Elderly convalescents from herpes zoster often compare the lancinating pains to the effect of a drop of hot oil, and are careful to avoid cold winds, which are apt to excite a paroxysm. Anaesthesia dolorosa, the duration of which was two years in the severest of our cases, is one of the gravest complications of the disease; Gowers speaks of suicide in despair. Happily cases of such extreme severity are rare.

#### EFFLORESCENCE.

"Diseased nature oftentimes breaks forth  
In strange eruptions."

King Henry IV, Pt. I, Act III, Sc. I.

The cutaneous manifestations make their appearance in the following order—hyperaesthesia, erythema, vesiculation, rupture of the vesicles, cicatrization, and hypaesthesia. Occasionally, according to Poulard, the eruption is haemorrhagic or gangrenous.

The rash usually appears three or four days after the onset of the pain, but this period is not constant; for example, one of our patients suffered from hemicrania for three weeks, and another from intense headache, for the relief of which morphine was required, for only forty-eight hours before the appearance of the rash.

It is sometimes possible, in the prodromal period, to map out the area subsequently affected by the rash by eliciting

a local increase in susceptibility to pain. According to Head and Campbell the eruption is due to intense irritation of ganglion cells which normally produce referred pain in response to afferent visceral impulses. In support of this theory it is urged that those dorsal ganglia are most affected which receive white rami from the sympathetic.

Fuchs records an old clinical observation that there is a striking elevation of the temperature of the skin upon the affected side, which not only is present when the inflammation is recent, but often lasts for a long time afterwards. This increase of temperature is presumably due to antidromic impulses passing from the ganglion, for physiologists

have proved by experiment that stimulation of the peripheral ends of divided sensory roots causes dilatation of the cutaneous vessels.

It has been shown that mustard does not produce its ordinary effect on the skin if it has previously been anaesthetized, nor if the nerves have been divided sufficiently long beforehand to allow them to degenerate.<sup>2</sup> It would be interesting to ascertain whether the eruption of shingles could be aborted by injection of an anaesthetic such as quinine and urea hydrochloride, the effect of which lasts for some days.

Extensive scarring after trigeminal ganglionitis becomes more common as age advances. The following case illustrates this tendency.

#### CASE I.

A medical student had been subject to attacks of herpes frontalis every summer since boyhood. More recently attacks had occurred twice a year, generally after examination. When he came under our observation, at the age of 20, he had for the first time reason to complain of residual scarring.

For the most part, our cases have borne out Hutchinson's rule, that when herpes zoster affects the nasal branch of the trigeminal the cornea is particularly liable to suffer. Poulard mentions the fact that the nasal mucosa is often swollen and hyperaemic during the attack, causing unilateral coryza.

A curious superstition is sometimes expressed—that when shingles meets in the middle line the result is inevitably fatal. Bilateral cases of herpes zoster ophthalmicus are

extremely rare. Greenwood of Boston, who reports a case, which showed the multiple scars of the skin along the course of both supra-orbital nerves, so characteristic of herpes, states that one eye was lost from glaucoma and the

other from panophthalmitis secondary to infected herpes corneae. "Il n'est règle qui ne faille."

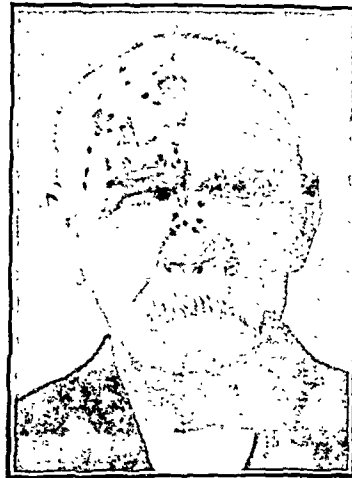
#### KERATITIS.

"O loss of sight, of thee I most complain."

Milton: *Samson Agonistes*.

The frequency of corneal complications varies considerably in the experience of different ophthalmic surgeons. Out of 235 cases collected by Willbrand and Saenger the cornea was affected in 83. In rather more than half the cases in our series greyish streaks and opaque areas made their appearance as soon as the rash began to subside. In numerous instances there were vesicles, which ruptured on the surface, leaving superficial ulcers, which remained discrete or became confluent according to the severity of the attack. In one case the opacity was dendriform. Mild iritis accompanied the severer cases.

The current teaching is that herpes zoster corneae is only to be feared inasmuch as it tends to leave a permanent opacity. Thus, according to Mr. Foster Moore, "The ulcers



A typical case of herpes zoster ophthalmicus: Confluent ulcers on cornea

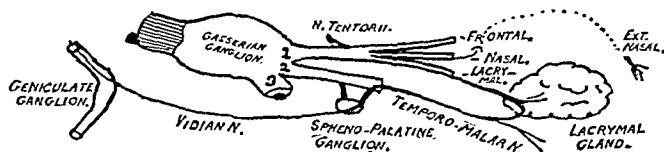


Diagram showing some of the connexions of the trigeminal nerve mentioned in the text.



never perforate and hypopyon does not arise. . . . recurrences never occur and both sides are never involved." The following case furnishes a notable exception to this generally accepted law.

## CASE II.

Male, aged 66. After severe hemicrania for three days an eruption appeared on the right side, which the patient, who had resided in Jamaica, compared to confluent small-pox. The nasal branch was affected. Severe corneal ulceration ensued, with accompanying iritis. The eye was covered with a dressing and treated with atropine and an antiseptic lotion.

At the beginning of the second week, as a result of a consultation with Mr. Teale, paracentesis and syndectomy were performed, without an anaesthetic.

Improvement was only temporary, ulceration continued, and panophthalmitis set in. After consultation with the late Sir Jonathan Hutchinson enucleation was recommended. Enucleation was accomplished without resort to any anaesthetic, no pain being felt.

There was considerable scarring, and the patient complained of fulgurating pains and of a constant sensation—"as though someone had put a plug in his eye and broken it off." Large doses of quinine afforded relief, but on one occasion, after 70 grains in three days, toxic labyrinthitis developed and prevented further exhibition of the drug. The anaesthesia dolorosa lasted for two years.

Anaesthesia of the cornea may persist for months. On rare occasions we have detected a difference between the sensibility of the nasal and temporal halves of the cornea. Clinically there seems little doubt that the neuro-paralytic factor has an important bearing on the course of herpetic ulceration of the cornea, although Turner and Ferrier, by experimental division of the fifth nerve, its root and branches, with protection of the eye from injury, reached the conclusion that keratitis from disease or injury of the trigeminus was the result of irritation rather than paralysis.

## COMPLICATIONS.

"It is by no means enough to spend all our pains upon one object."—Horace: *Satires*, Book II, 4.

The following case was complicated by sympathetic irritation.

## CASE III.

Male, aged 58. Right herpes zoster ophthalmicus—eruption extending to the tip of the nose. No corneal nor ophthalmoscopic changes detected on repeated examination. Extreme photophobia and lacrymation of the left eye, lasting several months.

Four years later, the patient having suffered an embolism of the right retinal artery, it was ascertained that he was still unable to distinguish between the blunt and sharp ends of a pin on the right side. The left eye was no longer irritable.

The late Sir Jonathan Hutchinson wrote of this patient as follows:

"I have repeatedly known the other eye in cases of herpes to be somewhat irritable, but I do not think I have ever seen a case which approached yours in severity. Have you tried arsenic? It is, I believe, the most efficient remedy for herpetic after-pain. I know a gentleman who suffers from frequently repeated attacks of herpes on the right eyelid, and the attacks are always attended by lacrymation and irritability of the unaffected eye."

Herpetic inflammation of the Gasserian ganglion does not prevent the secretion of tears by the lacrymal gland; the secretory fibres come from the facial trunk, via the great superficial petrosal nerve, sphenopalatine ganglion, and temporo-malar branch of the superior maxillary nerve, which communicates with the lacrymal. Oversecretion by the lacrymal gland of the opposite side furnishes an interesting problem in neurology.

Glaucoma, which complicated three of the twenty cases, occurs in two forms, the treatment of which is essentially different. The first variety is to all appearances idiopathic. There is generally some indication of predisposition to the disease—for example, glaucoma in the other eye previously. It is, in our experience, usually subacute, and tends to occur during convalescence from herpes zoster ophthalmicus, which can only be regarded as an exciting cause. The onset of glaucoma is possibly connected with loss of the normal periods of contraction of the pupil which accompany sleep. An alternative explanation is as follows:

According to Priestley Smith's theory of glaucoma the vitreous is secreted by the pars plana of the ciliary body and the aqueous by the ciliary processes. Senile degeneration affecting the two zones unequally results, it is conjectured, in a relative excess of fluid in the vitreous and displacement of the lens forward. Acceleration of some

such obscure process may be responsible for the somewhat frequent conjunction of herpes zoster ophthalmicus and glaucoma. The following is an illustrative case.

## CASE IV.

Woman, aged 56, convalescent from right herpes zoster ophthalmicus. Cornea unaffected. Subacute glaucoma on the same side. (The left eye had been operated on for glaucoma nine years previously.) Right iridectomy. The patient remained under observation for six years, during which time the refraction altered from  $1\frac{1}{2}$  dioptries of hypermetropia to 2 dioptries of myopia, with a low degree of inverse astigmatism. When last examined the vision with glasses was R. 6/10, L. 6/60.

Symptomatic hypertension, as certain American authors describe it, may generally be recognized by the presence of punctate deposits on Descemet's membrane or other signs of irido-cyclitis. Secondary glaucoma of this type yields promptly to the use of atropine. The interference with filtration must be attributed to changes in the aqueous.

Herpetic lesions of the choroid, retina,<sup>20</sup> and optic nerve<sup>9</sup> have been reported. Circumscribed nodules on the sclera of reddish colour,<sup>19</sup> the centre of which resembles a limpid vesicle, surrounded by injected vessels, have been observed about a fortnight after the corneal disturbances had declared themselves.<sup>16</sup> Facial palsy and paralysis of the extrinsic and intrinsic muscles of the eye<sup>1</sup> are among the rarer complications of herpes zoster ophthalmicus.

## TREATMENT.

Isabel: Alas! what poor ability's in me  
To do him good.

Lucio: Assay the power you have.

*Measure for Measure*, Act I, Sc. 5.

Like other exanthemata, herpes zoster runs its course, albeit at times a painful and protracted one. In elderly subjects, morphine is often indispensable in the early stages; but the danger attending its use in a painful affection which may last for two years is manifest. For one of our patients Gowers recommended the following prescription, which gave relief:

R. Caffeinae citratis	} ... .. gr. v
Sodii iodidi	
Sodii salicylatis	
Salicini	
Phenazoni	... .. gr. x

Misce. Fiat pulvis. Mitte in chartulam. Sig.: One paper to be taken every four hours as required.

There is a general prejudice against the use of arsenic, originating in Hutchinson's statement that herpes zoster may actually be caused by arsenic taken medicinally; hence the special interest of his letter quoted above.

Locally, we recommend dusting powders until the vesicles rupture, when cocaine or orthoform ointment is appreciated. In the later stages painting with ichthyol in glycerine, or massage with any simple ointment, is beneficial; hot fomentations should be avoided, as the skin is anaesthetic, and burns are readily produced. Paroleine is a suitable instillation for the conjunctival sac. The intra-ocular tension should be estimated at regular intervals and ocular complications treated as they arise.

Since encountering the case described above which resulted in panophthalmitis, we have several times resorted to suture of the lids. Sir John Tweedy observes that "in very severe cases immediate and permanent relief may be obtained by paring the edges of the lids and suturing them together. Not only does the pain at once abate, but the ulcerative process is checked and repair takes place." We have verified this observation. In elderly patients continuous application of a pad and bandage is apt to produce entropion, retention of secretion, and superficial dermatitis, and the cornea is at the mercy, for so many hours at a time, of any micro-organisms present in the conjunctival sac. Median tarsorrhaphy, on the other hand, provides a natural dressing with adequate drainage. We make a shallow incision along the grey line of the lids, and, introducing three sutures, bring the clefts so formed into apposition. Union is firm on the third day, and the cornea may be inspected by gently separating the outer or inner third of the palpebral margins. The central united portion is divided when corneal sensibility returns—after a period of eleven months in a recent case. The process of healing is



slow and relapses are apt to occur if the lids are separated too soon. Ultimate transparency of the cornea depends largely on complete protection of the delicate corneal surface and freedom from infection.

Median tarsorrhaphy lightly closes the eye as in sleep, compelling it to "hibernate" until its reflex protective mechanism is restored.

## BIBLIOGRAPHY.

1. Baranov: *Trans. Oph. Soc. U.K.*, xlii, 157.
2. Bayliss: *Principles of General Physiology*, 1918, 473.
3. Bing, R.: *Compendium of Regional Diagnosis*, 1903, 145.
4. Chaudard, cited by Osler, *Principles and Practice of Medicine*.
5. Elliot, R. H.: *Trans. Oph. Soc. U.K.*, xxviii, 351.
6. Fuchs: *Textbook of Ophthalmology*, sixth edition, 509, 658, and 659.
7. Greenwood: See Veasey, *Trans. Amer. Oph. Soc.*, xvii, 1919, 237.
8. Head and Campbell: *Brain*, 1900, xxiii, 357, 391, 395.
9. Hutchinson, J.: *Archives of Surgery*, ix, 1838, 136.
10. Mayou: *Trans. Oph. Soc. U.K.*, xxxvii, 1917, 226.
11. Moore, R. Foster: *Medical Ophthalmology*, 1922, 245 and 246.
12. Netter, Arnold: *Abstr. BRITISH MEDICAL JOURNAL, Epitome*, November 18th, 1922, para. 377.
13. Poulard: *Ophthalmologie dans la Pratique Médicale*, 1922, 265.
14. Priestley Smith, cited by Fuchs.
15. Sattler, cited by Head and Campbell.
16. Thompson, G. W.: *Trans. Oph. Soc. U.K.*, 1918, xxxviii, 154.
17. Taylor, Le Feuvre, Evans, and others: *Brit. Med. J.*, 1920, i, 235; 1921, i, 382.
18. Turner and Ferrier, cited by Posey and Spiller, *The Eye and Nervous System*, 325.
19. Tweedy, Sir John: *Dictionary of Practical Surgery*, Heath, 1885, 719.
20. Willbrand and Saenger, cited by Weeks, *Diseases of the Eye*, 1911, 287.

## THE TREATMENT OF CHRONIC MALARIA.

BY

T. STORIE DIXSON, M.B., C.M.,

HONORARY CONSULTING PHYSICIAN TO THE SYDNEY HOSPITAL, AND LADY EDELYNE HOSPITAL FOR INFANTS, PRESIDENT OF THE NEW SOUTH WALES BOARD OF MEDICAL REGISTRATION.

QUININE has been long, and still is, recognized as the chief drug for use in malaria, but there is no general agreement as to the best method of administration, and this is my excuse for discussing some results of my experience in its use.

## 1. Physical Form of Administration.

Sugar-coated pills of quinine are very unsatisfactory, and I have known them, when containing quinine hydrochloride only, cause violent gastric trouble in malaria, and pills so coated are often passed through the bowel undissolved. Even uncoated pills may be so densely compressed, if made of the sparingly soluble sulphate, that a like result may follow; but, on the other hand, if made of the hydrochloride they may dissolve in the act of swallowing so as to give an intensely bitter taste. If taken in 10 to 15 grain doses, whether in this form or as wafers, or in easily soluble capsules, gastric irritation is sometimes set up; this is especially liable to be the case if only a mouthful of water be taken. This result is due to the quinine acting in great concentration on a limited area of the stomach. These troubles can be avoided by administering the quinine in uncoated pill form, using an excipient affording enough cohesion both to prevent it dissolving during the act of swallowing, and to slow down solution in the stomach sufficiently to avoid undue concentration when at least 2 ounces of water are taken with it.

## 2. Chemical Composition of the Dose.

Unfortunately, for reasons of cheapness, the sulphate has often been the chief salt used, though it has otherwise manifest disadvantages as compared with the hydrochloride, which is soluble 1 in 36 or so of water, is neutral, and in solution less liable to get mouldy. To give quinine sulphate, which is soluble 1 in 800 or so of water, in a mixture to which nearly a minim of dilute sulphuric acid or aromatic sulphuric acid is needed for each grain to secure its solution, is unsatisfactory, especially where large doses, such as 15 grains, are given. The taste is very disagreeable, the acidity is prejudicial to the teeth, and on reaching the stomach both its chemical action and the foreign nature of the mineral acid cause further local and afterwards even systemic trouble. Clinically quinine hydrochloride is better tolerated. Whereas in the case of children pills cannot be used, the sparingly soluble and so less bitter sulphate can be given with syrupy or mucilaginous but non-acid menstrua; the tannate might be better still

## 3. Route of Administration.

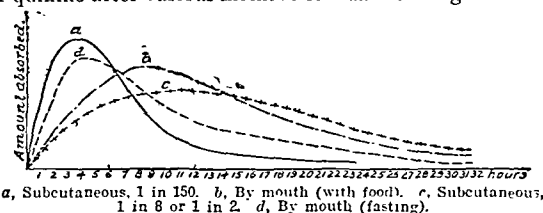
The oral route has in general most advantages, and even where gastric disturbance might be feared adoption of the rules suggested in this paper overcomes it. In severe acute forms the intravenous route would, of course, be the correct one.

Kenneth Mackay<sup>1</sup> found that blood films become negative earlier under oral administration than under either intramuscular or subcutaneous administration, and that four-hourly observations upon the asexual benign tertian cycle appear to show that quinine has an immediate effect upon the malarial parasite—not only upon the young sporulating merozoite but also the intracorporeal stage.

## 4. Time of Administration.

Marchiafava and Bignami have shown that quinine acts in all phases of the life of the malarial parasite and that therefore it is unnecessary to wait for any specified period. Giemsen and Schlaumann found that if quinine were given with the meals traces of it were not found for over two hours, but, given fasting, in twenty to thirty minutes. Kerner demonstrated that, given by the mouth, the hydrochloride is found in traces in fifteen minutes, after the quinine in alkaloidal form in twenty-five to thirty minutes, and that its excretion continued with a meal; whilst Mariani showed that the maximum elimination of quinine in a man's urine occurred between the sixth and twelfth hours if given after food, but between the third and sixth hours if given before it. Castellani and Chambers<sup>2</sup> say: "With regard to mild quartan and tertian fever, in many cases we give the drug three times a day without regard to the conditions of parasitic life, and this method is apparently not less successful" (than giving the drug four hours before sporulation of the parasite is due).

The following scheme, adapted from MacGilchrist,<sup>3</sup> will give some idea of the rapidity of absorption and excretion of quinine after various methods of administering it.



This takes no account of the effects of gastro-intestinal disorders, whether due to malaria or quinine itself or to other causes, in diminishing or in increasing the energy or rapidity of action of a dose, but, so far as my experience goes, by adopting the methods to be subsequently described these are to a great extent negligible.

Hele's experiments<sup>4</sup> proved that "In active malaria the excretion rate after oral quinine no doubt varies, according to the condition of the alimentary tract, but high fever is not incompatible with rapid absorption and the rapid attainment of the maximum excretion rate, more rapid than after intramuscular therapy." He found no decrease in quinine excretion during continuous administration by the mouth, but that the greater part of the excreted quinine is excreted within twenty-four hours of the last dose, though traces persist for another twenty-four or forty-eight hours. There was no great fall in the quinine excretion till the twelfth hour after a dose by the mouth, till the eighteenth hour after intramuscular injection, and, following the immediate rise, fall, and re-rise in the first half-hour, till the twelfth hour after intravenous injection.

MacGilchrist suggests that a rapid and energetic absorption of quinine is best obtained by giving a salt of it during fasting, then when sporulation is regular to give it two or three hours before the paroxysm, fasting; but where sporulation is irregular to give less soluble forms soon after meals. It is generally agreed that even if a certain amount is absorbed from the stomach, as some assume, the greatest amount is absorbed in the duodenum and practically none (when the drug is given orally) in the large intestine. In practice I prescribe it to be taken an hour before meals and



5. *Frequency of Dose.*

If 3 or 4 grains be adopted as a dose, and 16 grains as needful daily, it means that four or five doses a day must be given. For a full-sized adult this implies an amount just bordering on one sufficient to cause nervous symptoms, varying with the patient—symptoms which I always try to avoid. This will effect a fairly continuous, yet mild, quininization of the patient's system, with the idea of steadily lowering the vitality of the plasmodia till they become unable to reproduce their kind—just the opposite of the *therapia sterilisans magna*, or knock-out blow. It is this great evenness and persistence of treatment that I venture to think affords this, and one which might be labelled "*therapia sterilisans perstans*." The doses should be given as far as possible at equal intervals, and therefore one should be given during the night, if possible, or at least the last thing at night, and another the first thing in the morning.

6. *Coincident Treatment.*

This consists in most cases of preliminary treatment with an aperient, mostly calomel. In view of the action of the latter in causing "bilious" motions, whether due to lessening catarrh in the region of the duodenum, etc., by acting as an antiseptic, or otherwise, the possibility of its aiding indirectly the absorption of quinine is evident in view of MacGilchrist's experiments. He found that the alkaloid quinine in the crystalline form is soluble 1 in 625 of blood serum (that is, three times as soluble as in water), but is soluble 1 in 183 of bile (that is, about nine times as soluble as in water). Against this it is often assumed that the alkaline secretions of the liver, pancreas, and intestines precipitate the quinine, though, as MacGilchrist showed, quinine glycocholate is soluble in excess of bile. There may be in addition to the antiseptic and characteristic aperient action of calomel another due to its increasing the mucous secretions in the bile ducts of the liver (as occurs with the salivary and intestinal secretions), and so removing the blocking by the malaria-thickened bile. In some cases of persistent headaches in patients affected with malaria calomel acts very quickly and thus I have not needed the help of acetyl-salicylic acid, gelsemium, etc., which at best act symptomatically.

I may now refer to some prescriptions in which small doses of quinine are alleged to be effective.

1. *Warburg's Tincture* is a very complicated mixture containing some fifteen ingredients. It contains in each half-ounce 4 grains of quinine sulphate, and as only two doses were to be given, in all only 8 grains were administered. But with each dose there are given 6 grains of aloes—that is, within half an hour, 12 in all—a rather severe treatment. In view of the readiness with which a chill seems to bring on an attack of malarial fever the diaphoretics contained in the tincture are of possible value; they may be expected also to act beneficially as gastro-intestinal antiseptics. The alcohol is evidently a powerful solvent medium, and beyond that its action need not specially concern us. This preparation has been abandoned since the aperient action, at least in some cases, must be rather strong; hence the aloes, if desired, is omitted in the various preparations supplied commercially, thus, perhaps, removing the soul of the efficiency ascribed to it. The complicated form makes it expensive, many of the ingredients are practically unobtainable, and their effects are unknown; it is said to depress the heart and has an appalling taste.

2. *Huxham's Tincture* was the forerunner of the compound tincture of cinchona, the composition of which has varied since its first introduction. The dose was 1 to 4 fluid drachms. Originally it was made with pale, but is now made with red, cinchona bark; the other constituents being orange peel and serpentary and saffron (now omitted). The serpentary in small doses acts as an aromatic bitter, diaphoretic and diuretic; in larger doses as an emetic and aperient. The full dose of half a fluid ounce, containing 10 per cent. cinchona bark, would perhaps mean  $1\frac{1}{2}$  grains of mixed cinchona alkaloid. At four doses a day this amounts to 6 grains of cinchona alkaloids with some possible help from antiseptics and diaphoretic or mildly aperient agents. The present official dose of the compound tincture of cinchona is only half to one fluid drachm.

3. E. T. Simpson (Civil Surgeon of Oudh, India) recommends in all acute cases where diarrhoea is not present:

Magnesiæ sulphas	...	...	...	...	dr. ij
Liq. ammoniæ acetatis	...	...	...	...	℥. oz. j
Quininæ sulphas	...	...	...	...	gr. xv
Aquam camphoræ	...	...	...	...	℥. ad fl. oz. viij

Sig.: One ounce every four hours.

He claims that 90 per cent. of cases recover under this treatment. He employs a somewhat similar prescription for chronic tertian.

4. Finally, there is Forbes Leslie's recommendation of calomel only.

*Method Recommended.*

The foregoing will make clear the principle—namely, the more or less continuous coincident administration of an

aperient, preferably calomel—upon which I base the method which I have for many years adopted and which is as follows:

1. Give a small dose of calomel at once, 1 grain, perhaps repeated in an hour or so; this single dose is to be administered each night at bedtime. I prefer the pill form as less liable than that of a powder to cause mercurialism in the mouth. This should be followed early next morning by a saline aperient. This will help release of bile into the duodenum and by its antiseptic and aperient action without irritation cleanse the bowels. The continual administration of calomel, in doses insufficient to risk distinct mercurialization, is to my mind extremely, indeed I think essentially, important; though in certain circumstances a stronger dosage for the purpose of thinning the thickened bile might be desirable. The rapidity, however, with which the calomel aids quinine indicates a local gastro-intestinal action rather than one due to absorption.

2. Give the quinine in 3 or 4 grain doses according to the size and strength of the (adult) patient, as a pill; the small dose and form avoid irritation of the stomach.

3. Give the hydrochloride; this is in order to secure rapid absorption with minimum of gastric irritation.

4. Give the doses an hour or more before meals, and at bedtime; this is in order to secure rapid absorption.

5. Give with each dose 3 or 4 ounces of water; the amount of fluid, by diluting the quinine freely, prevents disturbance of the stomach and encourages rapid removal from it.

6. Continue the treatment for two months.

I have never failed in this way rapidly to relieve urgent symptoms; generally there is no attack or at most only a slight one in the first week of treatment, none afterwards in my experience. Those few cases which I have followed a year or two after the treatment have been free from attacks and have felt unusually well as compared with their general condition between the attacks before treatment. But, no more with this, perhaps, than with other treatments can one promise an absolute cure. I claim, then—

1. That the method is in no sense unpleasant, except as regards taking the salines, though even these might be replaced by other aperients.

2. That it is easily carried out, being very simple. The patient can go on with his work, not needing to go into hospital.

3. That the drugs are easily obtained, are portable, and keep well.

4. That if the result is not perfect it at least is produced more rapidly than by the ordinary routine, and in general is much more effective.

5. That there is no risk whatever of permanent disorders of the nerves due to quinine, for, indeed, the slightest symptoms of such disorders are taken as the indication for lessening the dose.

Although my experience is limited to chronic cases it is quite possible that the principles of this treatment are adaptable at least in some measure to acute cases.

## REFERENCES.

- <sup>1</sup> *Journ. of the R.A.M.C.*, February, 1922. <sup>2</sup> *Manual of Tropical Medicine*, 1919. <sup>3</sup> *Quinine and its Salts, their Solubility and Absorbability*, Calcutta, 1911. <sup>4</sup> *Journ. of the R.A.M.C.*, April, 1922.

## THE AUTOGENOUS PEG GRAFT IN CERTAIN FRACTURES OF THE FEMUR.

BY

WALTER MERCER, F.R.C.S. EDIN.,  
EDINBURGH.

FROM a study of the end-results of simple fractures of the shaft of the femur it would appear that in spite of a great variety of methods of treatment there is still scope for one which will ensure a more perfect end-result.

The disabilities resulting from fracture of the shaft are from two main causes—bad alignment and knee-joint trouble.

*Faulty Alignment.*

The shortening is maintained by the pull of the muscles irritated by the bony ends and by the distension of the fascial planes with hæmorrhage and exudate. This is usually considerable at first, and attempts at manual reduction frequently fail. Oblique fractures make the retention of the position very difficult. The usual procedure is to



attempt manipulation if there is marked shortening, and if retention is difficult extension is applied to the femur by one of the various methods.

The extraordinarily careful adjustment of the line of pull and the delicate nature of the means of retention of the fragments mean constant watching and attention; in civil hospitals the surgeon has not the constant stream of such cases that were seen in military hospitals, and minor defects result. Manipulation followed by traction with a considerable weight frequently fails to overcome the muscles, so that shortening and overriding persists, and when reduction is successful and retention is attempted by extension the presence of the necessary apparatus makes it difficult to carry on the movements of the joints and the massage which are so useful to the injured limb.

#### *Limitation of Knee Movements.*

The commonest cause of the limitation of movement of the knee is the long-continued immobilization, as was so evident in many of our soldiers returned from German prisoner-of-war hospitals, where they had not been looked after. It is said that immobilization will not limit the movements of a healthy joint. This may be so, but it allows tendons and muscles to undergo fibrosis and shortening, and the end-result is the same—a limitation in the extent of joint movement. This fibrosis is due in many cases to the actual wounding of the quadriceps by the bony fragments. When healing takes place fibrous tissue forms; this limits the relaxation of the muscle and also tacks it down to the fracture. Actual adhesions in the joint are rarely considerable enough to prevent their being gradually broken down, nor is any capsular shortening ever very troublesome.

We should aim at some method by which complete reduction of the deformity is obtained and retained with some degree of certainty and yet without any cumbersome appliance that will prevent active movements and massage to the affected parts. An autogenous intramedullary peg bone graft as here described fulfils these conditions. This graft of live bone ensures alignment in a good position and maintains fixation while the osteogenetic functions produce a greater amount of internal callus, and the patient is allowed a greater freedom of movement at an earlier date. The peg stimulates bone production, and this new bone fills up between the peg and the parent bone till a solid mass is produced. This increases in strength according to the demand put upon it, and it is of great importance to get movements started early so that the new tissue may be "taught" its function. It is not contended that the peg is a permanence, as with complete bony union the shaft generally resumes its normal shape and a complete medullary cavity is reproduced. This is even produced when a long gap of 4 to 5 inches in the forearm bones is filled with the anterior surface of the tibia. It takes some years to produce, but it is the eventual result.

The essential feature of every case is that there is no wound of the skin that might lead to sepsis in the operative field, hence it is practically only in a simple fracture that the method can be used.

In many oblique fractures where both reduction and retention are difficult and where external immobilization is necessary afterwards to retain the position an autogenous peg graft would make the after-treatment easier and the end-result better. It would also be the operation of choice in that class of fracture in which reduction cannot be secured otherwise than by open operation. The obstacle to reduction would appear to be either the pull of strong muscles irritated by the fragments or oedema expanding and so shortening the fascia.

#### *Mode of Using a Peg Graft.*

If operative treatment is deemed essential it is necessary to wait only until any shock has disappeared. It is better to give the operative field a very complete preparation; this is usually begun two days before the operation, and after the usual shaving, washing with spirit, soap, and lysol, spirit is applied and then 1/2 per cent. picric acid; this is found to be less irritating to the skin than iodine and equally

effective. The skin of the same leg over the crest of the tibia is prepared equally carefully.

The fracture is exposed by an incision 5 to 7 inches long over its lateral aspect. It is a matter of choice whether sterile towels should be clipped round the wound, but where there is any doubt about the skin the towels should certainly be used. The blood clot, including that in the marrow cavity, is cleared away as freely as possible. Traction is applied to the limb by a second assistant, and the deformity is reduced by the levering aid of a strong file and Lane's T-shaped lever with serrated edges. It is essential to obtain this preliminary reduction so as to stretch the muscles and make the reduction easier when putting in the graft. The leg is now adducted at the site of fracture and the ends protruded from the wound so that the medullary cavity may be prepared. The size of this is increased in its transverse axis by the reamer attached to the Albee saw. The actual calibre is not increased in all directions as the peg graft to be introduced is flattened rather than round. This reaming is done to a greater length in one of the fragments, that length being the same as the graft to be cut. The length in the other fragment need only be half the length of the graft.

The peg graft is cut from the anterior surface of the tibia and should be about 4 to 5 inches long, unless the fracture is oblique, when a greater length is necessary. The breadth should be just less than the already measured breadth of the marrow cavity it has to fit. The periosteum is now stripped from the graft, as this fibrous tissue element prevents union of its underlying bone. A shallow saw cut is made at the mid-point of the graft so that its correct position may be ascertained when fitted.

The graft is now inserted into the upper fragment to practically its full extent; it should not be gripped too tightly by the femur, but should be so loose as to be easily extracted by a pair of Kocher's artery forceps which are clipped on to the terminal 1/8 inch of the graft, which is allowed to protrude. The lower fragment is now got into position by traction on the foot and by leverage, but the thickness of a strong file—about 3/8 inch—is interposed between the bony ends, so that a gap of that amount is left between the bone fragments through which the Kocher's artery forceps are used to "tease" down the graft into position. This is recognized to be correct when the saw cut in the middle of the graft is seen, and then the file is carefully removed while traction is applied. The traction being removed, accurate reduction is obtained and retained by the peg graft. The muscles and fascia are stitched with interrupted catgut and the skin with interrupted silkworm gut. No drainage is necessary, but the stitches are not put in too closely so that the effused blood can get away easily.

Although I used a complete plaster case in some of my earlier cases I do not now consider this necessary, as with ordinary care of a good nursing staff there is little to fear. The leg is accordingly bandaged firmly on a double inclined plane and the plane fixed to the foot of the bed. About the end of the second week the bandage is removed from the leg and the knee extended and some gentle massage given. This is continued once daily right on and the movements gradually increased. By the end of six weeks the splint may be removed and active movements increased by this freedom. Consolidation of the callus is frequently quickened by ionization with calcium salts, while the faradic current to the quadriceps is extremely useful in developing a muscle slightly wasted by disuse. The patient should be taught frequently to contract his quadriceps even though not getting great movement with this contraction, to preclude any possibility of it adhering to callus. He is up on crutches at the end of two months and can get home. In three months a walking calliper is applied and used for other three months, by which time the patient should be saying good-bye to the surgeon. The method is so simple and reasonable that it seems necessary to add the history of only one typical case:

K. B., aged 23, as a result of a motor cycling accident, was admitted to my care on May 23rd, 1921, with a simple fracture of the lower third of the right femur presenting the usual signs, but



no crepitus could be made out. There was over 3 inches of shortening. X-ray examination showed a transverse fracture at the junction of the lower and middle thirds with about 3 inches overriding of fragments. The leg was put on a double inclined plane, and on May 24th, under a general anaesthetic, was pulled out as far as possible, counter-extension being maintained by a roller towel round the perineum. Pearson's ice-tong calliper was applied and the patient put back to bed; x-ray examination showed that there was still 2 inches of shortening.

On June 5th a further attempt was made under chloroform to correct the displacement of the lower fragments and the leg was put on an inclined plane. This attempt was also unsuccessful, as shown by x rays; 45 lb. weight extension was now put on the Pearson calliper with a roller towel round the perineum to the head of the bed. X rays still showed the fracture to be in an unsatisfactory position, and the shortening not reduced after forty-eight hours of this weight. It was accordingly decided to operate on the fracture.

#### Operation.

On June 11th an incision was made along the lateral aspect of the leg, exposing the site of fracture. There was a considerable amount of blood clot and bruising of muscle at this level. By means of traction on the leg and leverage with a heavy file between the ends it was seen to be possible to get the fragments in good position. Retention, however, appeared difficult, and I decided to introduce an intramedullary peg bone graft. An incision was made over the tibia on the same side, and a piece of the anterior surface of the tibia about 6 inches long by 3/4 inch broad was removed by Albee's electric saw. The graft was slightly sharpened at both ends and the electric reamer used for slightly widening the medulla of both femoral fragments. The graft was then inserted into the two fragments and their position was found to be easily retained by this means. The wounds were then closed with catgut and silkworm gut without drainage; the leg was applied to a Miles's double inclined plane.

Recovery from the operation was uninterrupted and the stitches were taken out on the thirteenth day; knee movements were started at the end of the first week. The inclined plane was left off on the twenty-first day, he was up on the twenty-eighth day, and out on the fifty-second day. No shortening resulted.

The radiogram of the femur taken about two months after the operation showed perfect alignment with complete osseous union and a considerable amount of callus around the fracture. The knee- and ankle-joint movements rapidly improved, the full extension of the knee being the last movement to come, but all were perfect on his discharge, and he now walks without a limp and is able to run and play strenuous games without any difficulty.

#### Conclusions.

1. The method by autoplasmic peg graft is superior to all other operative measures in that it retains the alignment of the fracture and helps to form new bone, so ensuring union at an earlier date and allowing early active and passive movement.

2. Though requiring a certain skill with the electric saw it is by no means a difficult operation.

3. The peg is eventually absorbed from the marrow cavity, leaving the shaft in the normal condition.

4. It obviates any limitation of knee movements as the joint is moved from the tenth to the twelfth day.

5. The results achieved warrant its much wider application.

## LARYNGEAL INTUBATION IN ANAESTHETICS.

BY

STANLEY ROWBOTHAM,

ANAESTHETIST, THE QUEEN'S HOSPITAL FOR FACIAL AND JAW INJURIES,  
SIDCUP; HONORARY ANAESTHETIST, THE CANCER HOSPITAL AND  
THE SEAMEN'S HOSPITAL, GREENWICH.

THE method of laryngeal intubation to be described is offered (1) as an alternative, and (2) in some cases as a very necessary adjunct, to intratracheal insufflation where this method of anaesthesia is indicated.

Intubation for the administration of the anaesthetic, when the operation is in the region of the mouth or jaw, is usually performed by means of a Kühn's tube. The indirect method of intubation, however, is not generally so easy nor so certain as that of passing a tube through the glottis by direct vision; moreover, the tube supplied by instrument makers in this country seems to offer a very considerable resistance to free respiration.

The technique of intubation to be described is no more

difficult and takes no longer than that for passing a tracheal catheter. The following advantages may be claimed for it:

(a) It completely shuts off the air passages so that no blood or mucus can enter.

(b) It enables gas and oxygen almost entirely to be administered, and, as most operations in this region do not require very great relaxation, the patient can be kept in a lighter zone of anaesthesia without fear of respiratory obstruction, the glottic sphincter being entirely out of action.

(c) A soft rubber tube is used which does not injure the cords.

In combination with a tracheal catheter—

(d) To obtain expiration entirely free from all obstruction some form of return airway is usually necessary with intratracheal insufflation. This especially applies to cases where the surgeon is working on the lower jaw.

(e) It prevents bubbling of blood from hindering the surgeon when the operation is in the mouth or nose. In the latter case a post-nasal sponge is unnecessary.

The tube used is of rubber, rather a cheap quality being

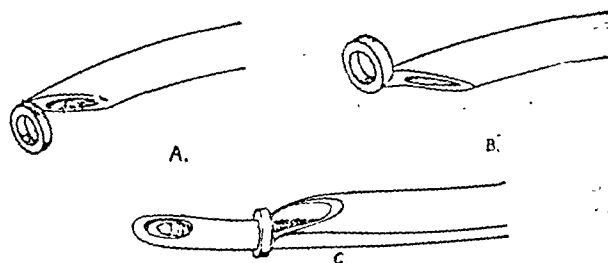


FIG. 1.—Three illustrations showing method of cutting tube to slide along catheter.

preferable because it is not so soft and compressible. The walls are not more than 2 mm. thick. The size varies with the patient and also with its mode of use, a larger size, of course, being necessary if the patient is to breathe backwards and forwards through it, than if it is merely to be used as a return airway, the entering stream of air being supplied by way of a tracheal catheter. Tubes approximating numbers 22 to 32 French catheter sizes are most generally useful, and the length should be about 8 inches, so as to carry the end well into the trachea. When the tube is to be passed through the nose, its end is cut away in a sloping manner to facilitate its passage through the nose, and a small hole is punched half an inch from the end

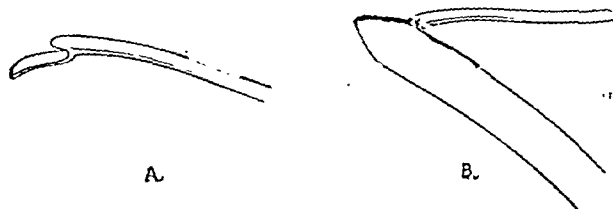


FIG. 2.—Two illustrations showing directing rod and method of hooking up tube.

to receive the hooked end of the directing rod. When used as a return airway with a catheter passed through the mouth, a tube is cut as in Fig. 1, and the end turned round to form a loop; this slides down the catheter after it has been passed into the trachea, and so is guided through the cords.

The directing rod is a straight metal rod curved slightly upwards and forked at the distal end. The inner prong of the fork is turned upwards and a little outwards so as easily to enter the hole in the tube when catching it up in the pharynx. The outer prong is cut short (Fig. 2).

The direct laryngoscope is used for intubation. When intubating by way of the mouth, the directing rod is hooked into the hole in the distal end of the tube, which is cut as for passage through the nose. The two are held together and passed by the side of the speculum. The upward bend on the directing rod enables the tube to be more easily directed between the cords. As soon as the thin end of the tube has passed into the glottis it is pushed on alone, and the directing rod gently withdrawn.



After intubation, the tube is connected with a gas-bag by means of a metal angle piece, a short length of one-inch-bore rubber tubing, and the usual three-way stopcock, the mask having been removed. A flat angle piece curving straight down to the chin has proved very useful for intranasal operations; it does not get in the operator's way if it is held to the chin by a piece of adhesive plaster (Fig. 3).

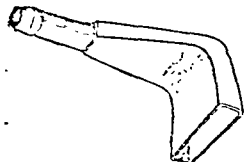


FIG. 3.—Flat metal angle piece.

When administering gas and oxygen by this method it is advisable to keep up a small *plus* pressure (3 to 5 mm. Hg) in the bag. This is easily effected by suitable adjustment of the stopcock. Ether or chloroform can, of course, be administered by using a Shipway's three-bottle apparatus in connexion with the intubation tube. Before removing the tube it is advisable thoroughly to cleanse the pharynx and mouth of all mucus and blood.

When the operation is within the mouth a double intubation may be performed as follows: A catheter is passed down one side of the nose and the return airway tube down the other (a piece of tubing with a natural curve should be chosen and passed with its concavity towards the floor of the nose). The laryngoscope is now passed through the mouth and the tube and catheter viewed in the pharynx. After having passed the catheter into the trachea (BRITISH MEDICAL JOURNAL, October 16th, 1920) the hooked end of the directing rod, turned so that it curves towards the tube, is passed down into the eye at the end. By rotating the rod through a quarter-circle so that it now turns upwards, a secure hold of the tube is obtained, and it is easily directed between the cords.

The advantages of this method over the simple pharyngeal return airway previously described are that bubbling of blood is entirely avoided without packing the pharynx, and that if the lower jaw is pushed back, as often happens during intra-oral operations, the airway is not in the least obstructed.

## CHANCER REDUX.

BY

P. C. P. INGRAM, M.B., B.S.LOND.,

HONORARY PHYSICIAN FOR DISEASES OF THE SKIN AND MEDICAL OFFICER IN CHARGE, VENEREAL DISEASE CLINICS, ROYAL GWENT HOSPITAL, NEWPORT, MON.

CHANCER redux is a condition which excited a good deal of interest among syphilologists of a past generation, but little appears to have been heard of it in recent years, though Wilfrid Fox<sup>1</sup> has drawn attention to the fact that it may be mistaken for the primary lesion; it has therefore been thought worth while to record the following cases from the venereal diseases clinic of the Royal Gwent Hospital, Newport, as further illustration of a condition which appears to be of importance both in diagnosis and prognosis.

### CASE I.

A man, aged 25, first attended the clinic on August 15th, 1921. There was no history of previous infection. Exposure ten weeks previously; sore first noticed ten days ago. He had a slightly indurated sore on the ventral surface of the glans penis and the inguinal glands were enlarged; there were no other signs. General condition good. The *Spirochaeta pallida* was found in the sore by dark-ground method. The Wassermann reaction was weakly positive. Treatment was commenced forthwith (on dark-ground diagnosis) and an intravenous injection of novarsenobillon and an intramuscular injection of mercury given. In the ensuing eight weeks he received a total of 4.8 grams of the former and 8 grains of the latter. The sore was healed in a fortnight, and a Wassermann test done on October 28th was completely negative. He then took potassium iodide, 10 grains by mouth thrice daily, for six weeks.

On January 6th, 1922, he attended and stated that a sore had broken out a week previously. He emphatically denied re-exposure and said that eight days previously he had had an attack of vomiting, after which he had become somewhat jaundiced. He now had a small non-indurated sore on the inner surface of the prepuce—that is, not at the same place as the original chancre. This sore, on dark-ground examination, showed numerous *Spirochaeta pallida*, and the blood gave a strongly positive Wassermann reaction. As the urine contained some bile, salvarsan was withheld and he was given intramuscular injections of mercury only, 1 grain at weekly intervals. The sore was quite healed by February 1st, and no

other lesions developed; the jaundice quickly disappeared, but the Wassermann reaction was still strongly positive on February 15th. Treatment was resumed, and he had eight ram at weekly intervals. He stayed away the month of June, and on his return on July 19th his blood was slightly positive only. He took liq. hydrarg. perchlor. dr. 1 with potass. iodid. gr. 10 in mixture by the mouth for two months, but in spite of this his blood relapsed, and on September 29th was back to markedly positive. He had two more injections of novarsenobillon and mercury, but then stayed away from the clinic and has not attended since.

This case, I think, must be considered a relapse and not a reinfection, though, in view of the fact that he had what might be termed more than a maximum tolerant dose of novarsenobillon, such a clinical as well as serological relapse is unusual. With a sore not more than eight to ten days old (he was attending the clinic at the time it developed), the Wassermann reaction was strongly positive, and in spite of treatment his blood has not remained permanently negative since.

### CASE II.

A man, aged 21, first attended on April 13th, 1921, with a history of exposure three weeks previously and soreness of his penis for one week. He had phimosis with a profuse discharge. No *Spirochaeta pallida* but numerous *refringens* found; no gonococci; no ulcer could be felt beneath the prepuce—probably because it was too early. The Wassermann reaction was slightly positive. He was given 0.45 gram of novarsenobillon and 1 grain of mercury. Blood taken the week following was strongly positive. Seven more injections were given at weekly intervals to July 21st; he then stayed away until August 10th. He was then free from active signs, the prepuce could be easily retracted and the sore was quite gone, no scar being visible. The Wassermann reaction was completely negative. He was given potassium iodide 10 grains t.i.d. On August 24th he reported a slight soreness at the margin of the meatus; this was thought to be a simple balanitis and he was ordered to resume local treatment (hydrogen peroxide), but a week later there was a definitely ulcerated area and *Spirochaeta pallida* was found in the serum obtained from it. He did not attend the clinic again for a week, and the blood taken then was found to be strongly positive. He was given a second course of novarsenobillon and mercury injections. Within a fortnight the sore was quite healed and no further signs developed. Injections of the two drugs were given at weekly intervals up to October 23rd, and on the 30th of that month his blood was completely negative. He took potassium iodide for six weeks and then stayed away. He came again to the clinic on February 15th, 1922, and was found to be free from active signs and the Wassermann reaction was completely negative. A month later the blood, taken a week after a provocative dose of novarsenobillon, was still negative. He had no further treatment, and a like result was obtained in the following June and November.

This patient, like the first, emphatically denied re-exposure, and the strongly positive Wassermann reaction so early in the stage of the second sore makes it probable that his statement is correct, though it is not quite so conclusive as in the first patient, where the sore was a little older, though certainly not more than three weeks, and probably only two, when the blood test was done. It is unfortunate that blood was not taken on August 31st, the day spirochaetes were found in the sore, and when one considers the way the disease cleared up, both clinically and serologically, one is not quite so certain that this was not a reinfection.

But should either of these cases be called chancre redux? Hutchinson's<sup>2</sup> original description laid stress on the fact that the sore is almost invariably located exactly on the site of the former chancre. The first of these does not fulfil that criterion; the second possibly does if we do not regard it as a reinfection.

The point on which I would lay stress is that these cases may, if a full bacteriological as well as clinical examination be not done, be taken for reinfections, and that, unlike the latter, their prognosis from the point of view of a permanent cure is much more unfavourable—as witness the first case, who is still uncured, in spite of eighteen months' treatment on most modern lines.

More recently a patient came to the clinic showing what I would consider a classical redux chancre.

### CASE III.

A man, aged 32, attended on January 10th, 1923. He gave a history of a chancre six years ago, and some months' treatment for it by mercury only. Beyond some sores on his head he does not appear to have noticed much in the way of secondary signs, and he had been quite free from symptoms for over four years, until his present trouble began. He had a gummatous ulcer on his palate, and, on what he says he is sure is the site of his primary sore, was a definite red indurated area which, though now dry, he said had been weeping recently. The Wassermann reaction was strongly positive; the site of the chancre was too dry to get any



material for examination by dark ground. He was put on novarsenobenzol and mercury injections; the induration and ulcer quickly became much less and disappeared in the course of about three weeks.

## REFERENCES.

<sup>1</sup> *Proc. Roy. Soc. Med.*, Section of Dermatology, 16, 1.

<sup>2</sup> *Syphilis*, Cassell and Co., 1909.

## MEDIASTINAL GROWTH WITH VENOUS THROMBOSIS.

BY

J. A. MacLAREN, M.D., Ch.B.

The following case is of interest owing to the difficulty in arriving at a definite diagnosis.

In August, 1922, a medical man began to suffer from general malaise, shortness of breath, and cyanosis of ears and nose; x-ray examination was negative.

In October, when I was called in, there was complete thrombosis of the brachial veins and partial of the external jugulars; the face was puffy and congested, and the arms enormously swollen. The superficial veins of the thorax and abdomen were engorged. The respirations were quickened and shallow; the heart apex was outside the nipple line, and the liver two inches below the costal margin. The pulse was regular, varying between 70 and 80 a minute; there was no heart murmur, and the chest was clear except for slight dullness and diminished air entry at the right base behind. A sputum test was negative for tubercle bacilli; there was no history of syphilis, but there was a history of previous thrombosis of the right leg following enteric fever and malaria some thirty years ago. Treatment consisted in iodides and podophyllum internally, with fomentations to arms and support to arms and head. The oedema and hardness of veins gradually cleared up, and the heart and liver became normal in size. The chest dullness, however, did not disappear, and later the left base behind also became dull; there were no adventitious sounds except for a few occasional coarse crepitations. The extreme bases appeared to be clear and resonant and breath sounds were audible near the spinal column. The dull patches varied in position and extent from day to day, and were influenced by dry cupping. The patient's temperature never rose above normal, and he had no discomfort apart from slight shortness of breath, sleeplessness, and some flatulence.

In February, 1923, oedema began to reappear in the arms, and later in the right leg, and the heart sounds became muffled. There was then no appreciable dullness in the front of the chest. On the chance of there being a septic focus present I now inoculated him with antisepsis vaccine (P. D. and Co.), with the result that the oedema rapidly began to disappear and the chest dullness diminished. After the third weekly dose everything cleared up except a small patch of dullness in the right axillary line of the chest. Improvement in his condition continued till the beginning of April, when suddenly cough became troublesome, cyanosis began to return, and the heart sounds became weak. At this time there was some slight dullness to percussion over the middle of the front of the chest. The patient now lost weight and daily became weaker and more cyanosed, though he stated that he felt really better in himself except for the cough. Cyanosis increased, oedema of both legs set in, he suffered from orthopnoea, and died suddenly after getting into bed on April 19th.

Post-mortem examination revealed a soft growth, cheesy and breaking down in parts, adherent to the manubrium sterni. It extended down to the pericardium and surrounded the large vessels at the base of the heart. The apices of the lungs, especially on the right side, were involved, and on cutting into the lung substance secondary deposits could be seen studded throughout both lungs. Microscopically the growth showed all the characteristics of round-celled sarcoma.

The points I wish to emphasize are: (1) X-ray examination showed no evidence of new growth. (2) Until the last week or two of the illness there was no dullness over the anterior mediastinum. (3) The dull patches behind varied daily in size and position, and were influenced by dry cupping. (4) The antisepsis vaccine produced immense temporary relief, causing the dull patches, the cyanosis, and oedema to disappear. (5) What relation, if any, had the new growth to the thrombosis? Finally, I draw attention to this point: "In all cases of venous thrombosis affecting the upper portion of the body the existence of a mediastinal new growth should be borne in mind in spite of the want of direct evidence."

## Memoranda:

### MEDICAL, SURGICAL, OBSTETRICAL.

#### ACUTE PUERPERAL INVERSION OF THE UTERUS.

The case here recorded is of interest on account of the serious condition of the patient when admitted to hospital, and the rapidity with which recovery followed the treatment adopted.

Mrs. M. W., aged 29, was admitted to Victoria Hospital, Southend, on April 16th, suffering from complete inversion of the uterus, following labour, which had occurred an hour previous to admission.

She had been under the care of a midwife, who stated that labour had been normal but somewhat precipitate. As the placenta did not come away after half an hour she expressed it, and the "placenta and uterus came down together." The placenta was then removed. She also said that she had not pulled upon the cord, which was normal in length and was not twisted round the child. The haemorrhage was slight. Two years previously the patient had a normal labour, in which the placenta had been retained for an hour after the birth of the child.

On admission the patient was unconscious and pulseless, and in a condition of extreme shock. The shock was treated and consciousness returned in an hour, when the pulse could first be felt. The patient was lightly anaesthetized and Dr. Cleveland Smith succeeded in replacing the uterus by steady pressure for about ten minutes. Pituitrin was given intramuscularly and the uterus douched; it contracted immediately and there was no haemorrhage. For about three days following reposition she had a swinging temperature and an offensive vaginal discharge. This cleared up with douches and she was discharged from hospital three weeks later in perfect health.

The points of interest in this case were the extreme gravity of the shock, the slight amount of haemorrhage, the rapid contraction of the uterus after reposition, and the good results which followed upon early reposition with removal of the placenta as a preliminary.

I am indebted to Dr. Cleveland Smith for permission to publish this case.

ROBERT R. FOOTE, M.R.C.S., L.R.C.P.Lond.

Southend-on-Sea.

#### IDIOSYNCRASY TO MERCURY.

Miss K., aged 26, came to me complaining of a painful eye condition. On examination the lids were seen to be oedematous with small pearl-like blebs on the skin surface; there was a good deal of injection of the conjunctivae, with similar blebs on them. She complained of excessive watering of the eye, blurred vision, and photophobia. On the posterior surface of the auricle and skin adjoining were erythematous pearl-like blebs. All down one side of the neck over the distribution of the fibres of the trapezius was a distinct shotty erythema.

The case appeared a puzzle until I went into the question of occupation. The patient had lately engaged herself as a dental nurse, and I ascertained that she had been clearing up amalgam fillings, and had touched some globules of mercury. Evidently she had rubbed her eye with the finely divided metallic mercury, and set up slight mercurial poisoning. She had some slight watering of the mouth, and the parotid was very tender.

Evidently the case was one of special idiosyncrasy to mercury, and I congratulated myself that I had not ordered her a mercurial ointment as treatment for the conjunctivitis.

After using a weak solution of potassium permanganate and some cocaine drops for the eye, the rash and other symptoms disappeared in a week.

Bath.

FELIX MEINÉ, M.B., Ch.B.Edin.

In 1922 there were 386 cases of typhus in Germany as compared with 533 in 1921. Almost all of the cases occurred among immigrants and refugees.

According to the *Journal Officiel* the number of marriages in France during 1922 was 383,220, or 73,000 less than in 1921 and 240,000 less than in 1920. The number of divorces was 27,684, or 4,873 less than in 1921 and 1,472 less than in 1920. The excess of births over deaths has diminished on the whole, but was higher in 1921 in nine departments—namely, Pas-de-Calais, Lozère, Corrèze, Ardèche, Saône-et-Loire, Haute-Savoie, Indre, Ain, Aube.



## British Medical Association.

## CLINICAL AND SCIENTIFIC PROCEEDINGS.

CAPE OF GOOD HOPE—WESTERN PROVINCE  
BRANCH.

A MEETING of the Cape of Good Hope (Western Province) Branch was held in Cape Town on May 25th, when the President, Dr. C. M. MURRAY, presided, and thirty-five members were present.

*Caesarean Section.*

Sir EDMOND S. STEVENSON read a paper on Caesarean section. He dwelt on the danger of the scar rupturing at a subsequent confinement, and spoke at length on the difficulties of sterilizing a woman at the time of section. The indications which he laid down for Caesarean section were accidental haemorrhage, eclampsia, and placenta praevia. As regards operation he favoured the lower uterine segment scar. Professor E. C. CRICHTON congratulated Sir Edmond Stevenson on his courage and spirit in contributing a paper in spite of his advanced years. The paper gave a true account of the operation of thirty years ago, but ideas had changed materially, and the indications laid down by Sir Edmond were no longer accepted in their entirety. He agreed as to the great importance of placing swabs in the abdomen before opening the uterus. Dr. C. W. COMRIE-SHARP described his own technique. Dr. D. H. WESSELS agreed with Professor Crichton regarding the indications for operation. Contracted pelvis was rare in Cape Town. He thought that if placenta praevia was seen late, Caesarean section might be considered. He thought the personality and lengthy experience of the speaker had lent tremendous interest to a paper which had shown very clearly how much the conception of this operation had changed. Mr. C. C. ELLIOTT remarked how rarely Caesarean section was carried out in South Africa; in a very large experience he had only performed the operation three times. Sir EDMOND STEVENSON replied to the discussion, and the PRESIDENT thanked him on behalf of the Branch for his contribution.

*Care of the Pregnant Woman.*

Dr. C. W. COMRIE-SHARP read a paper on the care of the pregnant woman. He gave an entertaining historical review of the origin of conception, and detailed many of the weird beliefs still held by native races in South Africa. He then detailed modern advances in the manner of dealing with the pregnant woman, and dwelt on the methods and teaching of Ballantyne, the father of the new gynaecology. Dr. R. LANCE IMPEY emphasized the importance of ante-natal care, and suggested that the reduction of high infantile mortality turned on the better education of the medical student and the rigid prosecution of modern methods of ante-natal supervision. He discussed the great advances made in dealing with syphilis *in utero*. Professor CRICHTON, Dr. D. H. WESSELS, Dr. SIMPSON WELLS, and Mr. A. REITH FRASER also discussed the paper.

*Treatment of Genital Prolapse.*

Dr. R. LANCE IMPEY read a paper on the treatment of genital prolapse. In a brief review of the anatomy and physiology of the pelvis, he showed how the pelvic viscera were kept in position by three sets of forces—namely, intra-abdominal pressure, the pelvic diaphragm, and the parametric tissues; the great importance of the last was emphasized. He gave his personal experience—gained while working at the Royal Infirmary, Edinburgh, St. Mary's Hospital, Manchester, and the Michigan University Hospital, U.S.A.—of the three best known types of operation. In his opinion the essential points when operating were (1) to shorten the elongated parametric tissues, (2) to repair the pelvic floor, and (3) to keep the uterus anteverted. Vaginal plastic surgery gave the best results, and abdominal intervention was unnecessary. The operation introduced by Fothergill was described and illustrated by means of diagrams. He strongly recommended this operation for general use. Dr. D. H. WESSELS entirely agreed

with everything Dr. Lance Impey had said. He had himself adopted Fothergill's operation, and deprecated opening the abdomen for genital prolapse. Professor E. C. CRICHTON also spoke.

## Reports of Societies.

## THE LARYNGOLOGICAL SUMMER MEETING.

THE summer meeting of the Section of Laryngology of the Royal Society of Medicine was held—for the first time outside London—at Manchester Royal Infirmary on Friday and Saturday, June 15th and 16th, and was extraordinarily successful. The President, Mr. C. A. PARKER, was in the chair, and over sixty laryngologists were present from some thirty different centres, including London, Manchester, Edinburgh, Glasgow, Dublin, Belfast, Newcastle-on-Tyne, Leeds, Sheffield, Harrogate, Blackpool, Liverpool, Stoke-on-Trent, Birmingham, Leicester, Nottingham, Norwich, Reading, Cardiff, Bristol, Worcester, Bournemouth, and Brisbane.

The meeting was opened by the PRESIDENT on Friday morning, when Dr. DOUGLAS GUTHRIE (Edinburgh) read a paper on chronic hyperplasia of the upper jaw and its relationship to other osseous tumours.

*Chronic Hyperplasia of the Upper Jaw.*

Dr. Guthrie described two cases, a girl aged 16 and a boy aged 4, both of whom presented a uniform, painless enlargement of one upper jaw, due to the exuberant growth of soft cancellous bone. The alveolus was greatly thickened on the affected side and the maxillary antrum almost obliterated. A number of lantern slides were shown to illustrate the osseous tumours of the upper jaw which might bear some relation to chronic hyperplasia. Leontiasis ossea, for example, was, he said, a name somewhat loosely applied to any bony enlargement of the facial bones and might commence as a hyperplasia of one maxilla, but as a rule the lesions were multiple. The tropical disease known as goundou, or symmetrical exostoses of the nasal processes of the maxilla, appeared to be the result of some infective condition within the nose. Unilateral hypertrophy of the face—the strange congenital anomaly described by Greig and others—was an enlargement of normal tissues, without hyperplasia, and might possibly be caused by localized meningitis or neuritis during intrauterine life. The pathogenesis of these osseous enlargements was worthy of further study. In the museum of the Royal College of Surgeons, London, there were, said Dr. Guthrie, three specimens of chronic hyperplasia of the upper jaw. One, from a woman aged 35, whose right upper jaw had been the seat of a painless enlargement for ten years, was described by Christopher Heath in his classical work. The jaw consisted of a uniform mass of porous bone and the antrum was much reduced in size. Another specimen was a jaw excised by Lord Lister, and the third has been described in detail by Sir Frank Colyer. A complete account of the disease was given by Westmacott at the International Medical Congress of 1913; he described eight cases, all of whom, save one, were females. The cause of the hyperplasia was unknown. It appeared to bear no relation to syphilis or tubercle, or to maxillary antral suppuration. The microscopic appearances suggested a reversion to the embryonic type of bone and presented a striking similarity to otosclerosis. Mr. G. J. Jenkins had recently demonstrated a relationship between otosclerosis and osteitis deformans, and it seemed probable, suggested Dr. Guthrie, that a similar relationship existed in the present instance, although it could not be concluded that two diseases were pathogenically identical even when the histological appearances seemed indistinguishable. The paper was discussed by Mr. F. H. WESTMACOTT, and by Mr. T. B. LAYTON, who described a similar condition found in chimpanzees.

*Diseases of the Thyroid Gland.*

Mr. F. HOLT DIGGLE (Manchester) discussed (1) the incidence of laryngeal paralysis in benign diseases of the thyroid gland, and (2) the effects of thyroid enlargements on the shape and position of the trachea. After quoting other



published figures as to the incidence of laryngeal paralysis, Mr. Diggle stated that of 34 cases which he had examined during the last eighteen months, 7 presented laryngeal or tracheal complications. Of these, one was an adductor paralysis in a case of exophthalmic goitre. In the six remaining cases, three were due to tracheal compression, one to the involvement of the right recurrent nerve in a perithyroid inflammation, one, a woman aged 43, with a large goitre, suffered from attacks of spasmodic dyspnoea associated with adductor spasm, and lastly, there was one case of hoarseness in a child. Mr. Diggle remarked that in the majority of cases the paralysis was unilateral and was more generally associated with intrathoracic or substernal goitres, and that by reason of the anatomical position of the recurrent nerves in the neck it was unusual to obtain vocal cord paresis without tracheal compression. Laryngeal paralysis occurred, however, in retro-oesophageal or retro-pharyngeal extensions of the thyroid gland. Referring to the involvement of the nerve in perithyroid adhesions, a case was quoted of a lady, aged 60, who had a right abductor paralysis due to haemorrhage into a cystic goitre. It was interesting to note that two months later (no operation having been performed) the paralysis had completely recovered. Radiograms were shown illustrating the bilateral or scabbard compression of the trachea in cases of parenchymatous goitres occurring in young adolescents. Mr. Diggle pointed out that it was essential in these cases to remove more than one lobe of the thyroid in order to prevent dyspnoea from subsequent tracheal displacement. The paper was discussed by Mr. TILLEY and Mr. SMURTHWAITE.

#### *Malignant Disease of the Upper Jaw.*

Mr. MUSGRAVE WOODMAN (Birmingham) gave a lantern demonstration illustrating the surgery and pathology of malignant disease of the upper jaw, in the course of which thirty-two coloured lantern slides were shown. He divided the growths of the upper jaw into intrinsic and extrinsic, and pointed out that, whether they arose from the air sinuses or from the outer walls of the jaw or tissues covering it, they sought and entered the antrum as the site of election. In the latter group of extrinsic growths, slides were shown illustrating epitheliomata and spheroidal-celled carcinomata arising in the palate and alveolus. Similarly squamous-celled carcinomata and rodent ulcer growing from the skin and various types of sarcomata growing from the base of the skull, including giant-celled sarcoma, were demonstrated. The endothelial sarcoma was considered the typical growth arising intrinsically from the air cells. Sections under low and high power were given of the normal ethmoid bone showing the air cells with their endothelial lining and bony walls. The series of slides showed transition from the normal structure to that of an endothelioma with typical vacuolated cells. Considerable emphasis was laid on the varied microscopical appearance shown by sections taken from various parts of the same tumour. Coloured slides were also shown of three operation cases: the first was a sarcoma of the base of the skull, which on exposure bled so seriously that the operation had to be abandoned. It was pointed out that the source of this haemorrhage was mainly the vertebral artery, and that ligation of the external carotid would not have checked the haemorrhage. The second was an extensive rodent ulcer of the face, which had become epitheliomatous and had destroyed the eye. This was excised completely and a photograph was exhibited showing that the operation area became eventually completely covered by epithelium. The third was a case of extensive recurrent endothelioma with secondary nodules in the region of the eye, the whole eye, together with the upper jaw, having to be excised. The growth was found to be adherent to the dura mater, where it was destroyed by diathermy. The patient made a good recovery, but suffered from considerable headache, which was probably due to increased meningeal pressure. These cases were shown to illustrate the wide scope of operative treatment in the region of the upper jaw, and the necessity of approaching each case with an open mind and of modifying the operation to suit the individual case and to deal with its complications. The demonstration was discussed by Mr. WILKINSON, and by Mr. SYME, who said that he had not found radium of much benefit in such growths.

#### *The Lingual Tonsil.*

Mr. J. ARNOLD JONES (Manchester) said that he had found that troublesome symptoms, such as an irritable cough, arose, particularly in neurotic women leading sedentary lives, from certain conditions of the lingual tonsil. He had obtained good results by local treatment with the cauterizer or silver nitrate and by giving ovarian extract internally. Mr. WILLIAM HILL, Dr. WATSON-WILLIAMS, Sir WILLIAM MILLIGAN, Mr. H. TILLEY, and other speakers deprecated the part played by the lingual tonsil in causing the symptoms described, and suggested that treatment of the neuroses alone would have given equally good results.

#### *Large Foreign Bodies in the Gullet.*

Dr. D. R. PATERSON (Cardiff) discussed the problem of the treatment of large foreign bodies impacted in the gullet. Sir WILLIAM MILLIGAN pointed out the value, in some cases, of the open operation, in place of attempting to remove the obstruction *per vias naturales*, and was supported by Mr. WILLIAM HILL. Mr. MUSGRAVE WOODMAN, while supporting the employment of the open operation, emphasized the danger of infection spreading to the mediastinum. Mr. LAYTON raised the point of whether removal of an impacted foreign body was an "urgent" operation, or whether it was justifiable to wait. It was generally agreed that waiting was quite justifiable in most cases; Mr. WESTMACOTT indicated, however, that copper coins should be attacked at once, as they quickly ulcerated.

#### *After-Treatment of Maxillary Antrum Empyema.*

Mr. LINDLEY SEWELL (Manchester) read a clinical note on the after-treatment of empyema of the maxillary antrum (Denker's operation). He detailed the steps of the operation and stated that he had obtained excellent results by discontinuing irrigations after operating. Mr. MUSGRAVE WOODMAN promised to try the effect of discontinuing irrigations; in performing the operation he thought it best not to cut but to crack the inferior turbinate and push it upwards to obtain free access. Mr. LAYTON had found physiological saline the best irrigation; Mr. GRAHAM BROWN gave the results of his large experience of antrum suppurations in Queensland; and Sir WILLIAM MILLIGAN, Mr. BANKS-DAVIS, Mr. WRIGHT, and Dr. GUTHRIE also took part in the discussion.

#### *Evolution of the Nasal Sinuses.*

Mr. J. F. O'MALLEY (London) read an interesting paper on the comparative anatomy of the nasal cavities and sinuses, and their evolution in relation to function.

#### *Exhibition and Discussion of Cases.*

After an excellent luncheon in the Medical Board Room of the Infirmary, given by the local committee to the visiting members of the Section, there was a demonstration and discussion of laryngological cases in the Throat and Ear Out-patients' Department. The cases were fifty-three in number, and elaborate arrangements had been made to facilitate examination by the members. Sir WILLIAM MILLIGAN showed a case of sarcoma of the left tonsil, successfully treated with radium; a case of epithelioma of the soft palate and left anterior faucial pillar, which had been and was again about to be diathermized; a case of epithelioma of the right vocal cord, successfully treated by laryngo-fissure and removal of the cord; a case of suppurative labyrinthitis successfully treated, so far as static symptoms were concerned, by extirpation of the left labyrinth; and (with Mr. F. WRIGLEY) a case, successfully operated upon, of orbital cellulitis complicated by invasion of the frontal sinus and osteomyelitis of the frontal bone, and a case of sarcoma of the right tonsil and faucial region treated by diathermy and external application of radium. Mr. F. H. WESTMACOTT showed, for diagnosis and suggestions, two cases of chronic oedema of the orbit, several cases of laryngeal growths, and a case of ulceration of the soft palate and left tonsil; he also showed several cases of laryngeal growths successfully treated by removal under suspension laryngoscopy. Dr. KNOWLES RENSCHAW showed, for diagnosis, a case, possibly following injury twelve years previously, presenting a large, smooth tumour more than half filling the pharynx. Mr. J. ARNOLD JONES showed, among other cases, an extensive condition of tuberculosis of



the nose, pharynx, and larynx. Mr. LINDLEY SEWELL showed a case of epithelioma of the anterior pillar of the fauces and base of the tongue, treated by diathermy, and a case of lupus of the anterior end of the inferior turbinate, treated by electro-cautery puncture. Other cases were shown by Mr. FRANK WRIGLEY, Mr. A. A. SMALLEY, Mr. G. E. ARCHER, Mr. F. HOLT DIGGLE, and Dr. DAVID THOMSON.

#### Demonstrations.

On Saturday morning Dr. P. WATSON-WILLIAMS (Bristol) demonstrated his method of diagnostic bacteriological exploration of the nasal sinuses. This method, in brief, consists in attaching to a syringe a cannula suitable for entering the suspected sinus and sucking up the discharge, which is then placed in a sterile bottle and submitted to bacteriological investigation; it is usually helpful to inject a small quantity of sterile water into the particular sinus and then suck it back with the contained discharge. In adults the procedure is carried out under local anaesthesia (20 per cent. cocaine), but in children general anaesthesia is used.

Dr. IRWIN MOORE (London) demonstrated his method of reducing or destroying hypertrophied or diseased tonsils by means of the "London paste" of Morell Mackenzie—caustic soda and slaked lime. The paste is applied to the tonsils with a special applicator, under local anaesthesia (10 per cent. cocaine); this procedure, carried out once a week for about four to six weeks, causes a rapid reduction of the tonsillar tissue right down to the capsule. It is recommended only for cases in which operation is contra-indicated or persistently refused.

In the new X-Ray Department of the Infirmary—which was greatly admired—Dr. MORISON (Manchester) gave a demonstration of radiograms illustrating "cardiospasm," and initiated a discussion on the subject, in which Mr. WILLIAM HILL and others joined. Dr. TWING showed x-ray photographs of normal and diseased mastoids; and Dr. ANDERSON demonstrated methods of treating by x rays malignant conditions of the throat.

In the Radium Institute, Nelson Street, Dr. A. BURROWS exhibited interesting cases, and demonstrated methods of the application of radium.

Sir WILLIAM MILLIGAN performed a number of operations, including radical mastoid and skin grafting, acute mastoid (blood-clot method), and enucleation of tonsils; and Mr. F. H. WESTMACOTT carried out operative procedures with the aid of suspension laryngoscopy.

#### Annual Dinner.

The annual dinner of the Section of Laryngology was held on Friday evening at the Clarendon Club, with Mr. C. A. PARKER, President, in the chair. The toast of the Section of Laryngology was proposed by Sir HENRY MIERS, Vice-Chancellor of Manchester University, and the PRESIDENT—who had discovered that he was an old school-fellow of the Vice-Chancellor—replied. The health of the guests was proposed in felicitous phrase by Sir WILLIAM MILLIGAN, and Dr. C. H. MELLAND replied. Mr. LINDLEY SEWELL, who acted with great success as local secretary of the meeting, told some of his inimitable Lancashire (and fishing) stories; and Mr. LAYTON and Mr. O'MALLEY, secretaries of the Section, were also called upon to speak.

### GYNAECOLOGICAL CASES AND SPECIMENS.

A MEETING of the North of England Obstetrical and Gynaecological Society was held at Leeds on May 25th, when Professor E. O. CROFT showed a specimen of axial rotation of the right Fallopian tube and ovary.

The ovary was enlarged by a small cyst; it was removed from a patient 36 years of age, whose fourth child was born eight years before. Menstruation did not return after weaning the baby; a year later part of an enlarged thyroid was removed. After three years' amenorrhoea she had one very slight show of blood followed by a normal pregnancy and labour; menstruation has not reappeared. For some months she has had irregular labour-like pains, some difficulty in micturition and defaecation, but no bleeding. On March 12th an irregular, rounded, soft lump in the pouch of Douglas displaced the uterus forwards. Professor Croft remarked on the rarity of the extreme rotation of a tubal swelling—probably inflammatory or hydrosalpinx—and the mechanism of rotation of

such a small swelling with a relatively broad pedicle; on the amenorrhoea which existed from the fourth child eight years ago, probably associated with the enlarged thyroid and its subsequent removal and observed that the amenorrhoea was not associated with sterility.

Mr. R. A. HENDRY showed a hydatidiform mole with considerable epithelial overgrowth, suggesting the possibility of chorion-epithelioma.

The patient was 30 years of age, had had two children, the last six years ago. Menstruation ceased in October, 1922. Vomiting began during the second month and became severe. There had been occasional shows since December, and a fortnight's bleeding preceded the passage of hydatidiform mole on February 17th. The uterus was about one inch above the umbilicus; no data as to the rapidity of uterine enlargement were obtainable. The patient was transferred to Liverpool Royal Infirmary, where, after anterior hysterotomy, the uterine contents were cleared out and the cavity explored digitally. Sections of the mole showed an unusually active growth of both syncytium and Langhans's layer, suggestive of chorion-epithelioma. Since the abortion she has had three menstrual periods, the first two at intervals of four weeks, the last after two weeks' interval—the ovaries were then slightly enlarged. She had now gone three weeks without bleeding and the ovarian enlargement had disappeared.

Mr. A. GOUGH showed a fibroid uterus removed by abdominal pan-hysterectomy combined with colporrhaphy.

The patient was 46 years old, and had prolapsus uteri since her only confinement nine years before. For several years menstruation had been increasing. On examination, the cervix was prominent, and the uterus formed a firm, globular mass almost filling the pelvis. At the operation a quadrilateral colporrhaphy incision was made and vaginal hysterectomy begun; the uterus could not be brought down and was removed through an abdominal incision, and the vaginal repair was then completed.

Dr. J. W. BRIDE described a case of obstructed labour due to carcinoma of the bladder.

The patient was aged 49, had had seven normal labours, and was admitted, eight and a half months pregnant, to St. Mary's Hospital, Manchester, with a growth from the bladder projecting into the vagina. She had been an in-patient at the Manchester Royal Infirmary about a year previously, when the bladder growth was recognized as a carcinoma; it was operable, but the patient declined operation. Labour was obstructed by a hard indurated mass, the size of a Tangerine orange, firmly adherent to the pelvic arch. A living child, 6 lb. 14 oz. in weight, was removed by Caesarean section, but maternal death ensued from exhaustion.

Mr. J. ST. GEORGE WILSON showed a hydatidiform mole with unusual features.

The patient, a 3-gravida, was 25 years old; her last child was born in July, 1921; menses ceased on March 16th, 1922; and the baby was weaned in May at the onset of morning sickness. In January, 1923, a month overdue, there was two days' bleeding; on January 30th, on examination the uterus corresponded to a sixteen weeks' gestation, and alternately contracted and relaxed. On February 26th, as the uterine condition was unchanged, three bougies were inserted; on March 2nd the mole was expelled with few pains and little bleeding. The mole consisted of a pyriform mass of vesicles with an incomplete decidua covering; section disclosed an amniotic sac containing a 12 mm. embryo.

Professor CROFT reported the after-history of a multipara aged 38 years, who consulted the late Mr. Wright in October, 1897.

A gradually increasing sore had existed for about eighteen months. On examination a raised oval growth, about 2.3 inch in its longest diameter, was seen on the inner aspect of the right labium majus. There was no history nor other evidence of syphilis. Mr. Wright removed the growth freely, but did not remove any glands from the groins. The growth was examined by Mr. J. E. Taylor and also by the late Mr. Targett, and the appearances were those of typical squamous epithelioma. A year later the patient had some uterine haemorrhage—probably an early abortion—a small polyp was removed and curetting was performed. In 1902, five years after the operation, the inguinal glands were enlarged, and the patient came under the care of Professor Croft, who cleared the glands away. The patient was not seen again until February, 1923, twenty-six years after the primary operation. She was now 64 and came with various neurotic complaints, including some pain in the right side of the pelvis. A thorough pelvic examination revealed no evidence at all of any physical disease and, except for the scars, both the vulva and the groins were normal. The facts of the case are all carefully noted in the hospital records, and the pathological report was as reliable as it could be.

A POST-GRADUATE course on orthopaedics will be held under the direction of Dr. F. Calot, at Berck-Plage, Pas-de-Calais, from August 6th to 13th. The subjects will include non-pulmonary tuberculosis, congenital and acquired deformities, the treatment of fractures, etc. Demonstrations will be given in English and Spanish, and the fee is 150 francs. The number of places is limited, and early application should be made to Dr. Fouchet, Institut Calot, Berck-Plage, Pas-de-Calais, France, or 69, Quai d'Orsay, Paris.



## Reviews.

### PSEUDO-APPENDICITIS.

THE general belief that all pains in the right iliac fossa are due to appendicular disease shows little sign of abating. There is no doubt that the public are very greatly to blame for this. The man in the street has learned that if you have appendicitis you have pains in the right iliac fossa. Unfortunately he believes the converse to be equally true: pains in the right iliac fossa must, he thinks, be due to appendicitis. The general practitioner and the surgeon who try to disillusion the chronic sufferer often get but small thanks for their trouble. In a small, but exceptionally clearly expressed book<sup>1</sup> TH. DE MARTEL and ED. ANTOINE have a tilt at this windmill. They concern themselves with the symptomatology, diagnosis, and treatment of "the painful syndromes of the mobile caecum and proximal colon." They point out that colonic mobility may give rise to no trouble, and may to that extent be considered normal. They regard the troublesome cases as failures of compensation. We have long been taught that it is the uncompensated heart which is the truly diseased heart, and so, according to these authors, is it with the colon. The book has the advantage of being written by a surgeon and by a physician in collaboration. Great stress is laid on medical treatment, details of which are given, and the authors very rightly say that no surgical treatment is successful unless aided by careful and intelligent attention to diet, bowel action, and general hygiene. They believe that all the pains which arise from the supposed abnormalities of the colon are mechanical in origin, being chiefly due to back pressure and dilatation of the caecum. There is a good account of the acute crises which are apt to arise, the chief point in differential diagnosis being the sudden and early relief of the pain (one to three hours) by the release of gas from the distended caecum. They point out that abnormal caecal mobility, caecal ptosis, ptosis of the hepatic flexure, ptosis of the whole proximal colon, Jackson's pericolic membrane, and the "shot-gun" hepatic flexure have a common symptomatology and that it is usually impossible accurately to distinguish the one from the other by the clinical history alone or by examination without x ray.

M. de Martel has little faith in caeco-plication or in any of the fixation operations. He performs, nine times out of ten, a short-circuiting followed by a greater or lesser colectomy at a later date, but only if the occasion demands it. Section of bands, dissection of veils, and fixations have not given him such good results. As regards operation, a very healthy conservatism is maintained, and he insists on the necessity for a very wide abdominal exposure if any real good is to be done.

The book should make a wide appeal. It is easy to read, it is well arranged, and the few illustrations are very clear.

### TWO BOOKS ON CANCER.

ALTHOUGH the public are well aware of the frequency of cancer, and appear often to have an exaggerated idea of its painfulness, they are not so well informed of the nature of malignant disease as of certain other diseases, such as typhoid, dysentery, or anthrax, which are really rarer. This want of knowledge is often betrayed by the questions asked in conversation, and has lately been reflected by the inaccurate information contained in the correspondence of the press. To remedy this defect Dr. C. E. WALKER has written a popular book entitled *Theories and Problems of Cancer*,<sup>2</sup> in which he presents the modern orthodox views as to the origin and spread of cancer in such a way as to render the information intelligible to the ordinary reader. The book is largely a reproduction of a series of articles written for *Science Progress* in 1912, but in its present form

contains also an account of the advances made in subsequent years, notably the experimental production of cancer in animals. The difficulties of addressing an audience unfamiliar with the technical vocabulary of pathology have been overcome by simple methods of expression, but, thanks to the careful choice of language, the book has not lost in accuracy. Though not by any means easy reading, it could be followed without the assistance of a scientific dictionary by a person of average education. The book correctly represents accepted teaching concerning the development of malignant disease, but is saved from being "dry" by references to the author's own researches which afford a personal touch. After reviewing the many experiments in treatment which have been tried at different times, Dr. Walker states that "the only conclusion to be arrived at is that at the present time the only means available which affords any reasonable chance for the patient is complete removal by a surgical operation." Under surgical treatment he includes also the action of agents such as x rays or radium, which kill the cells of the malignant growth instead of removing them.

Quite another opinion is aggressively advocated by Dr. JOHN SHAW in his recent book *Cancer: Fallacy, Theory, and Fact*.<sup>3</sup> Dr. Shaw has a poor opinion of cancer research, and declares that experiments on animals have led to lamentably fallacious results. Misled, as he thinks, by the teaching of research workers, surgeons have embarked on extensive operations which, he argues, have had the double effect of increasing the mortality from cancer and actively spreading the disease. He holds that cancer is a preventable disease and a curable disease; the former object is to be achieved by obedience to certain hygienic laws, and the latter can be assured by medical treatment. The methods of treatment he most relies on are the application of the constant current, radiant heat, pressure, injections of oxygen, external remedies, and animal extracts, such as that of the thyroid gland. The author defends his conclusions by a detailed account of about forty cases of cancer affecting different organs of the body successfully treated by such tranquil therapeutics.

Thus these two books lead to diametrically opposite conclusions, but were they to fall into the hands only of those readers for whom they were intended there would be no cause for misgiving as to the influence they may exert. Dr. Walker's excellent exposition of the cancer problem is carefully prepared for non-medical readers, and it is to be hoped that it will have a wide circulation. Dr. Shaw's controversial opuscle has for its object the enlightenment of the medical profession, and the restraint of what he has persuaded himself is the barbarous practice of surgeons. We trust it will have a wide circulation amongst them, but, such is the perversity of human nature, we shall probably find the laity will become much better acquainted with the fruit of the tree of knowledge intended for their medical brethren than with that provided for themselves.

### HAEMORRHAGIC JAUNDICE.

THE valuable monograph on the morbid anatomy of spirochaetosis icterohaemorrhagica,<sup>4</sup> by Dr. RENJIRO KANEKO, professor at the medical clinic at the University of Fukuoka, Japan, is the outcome of his wish to make known to European readers investigations which had previously been published mainly in Japanese literature. The book is divided into three parts. The first contains a review of the literature up to the time of the discovery of the *Spirochaeta icterohaemorrhagiae* by Inada and Ino in 1915, when only 30 cases had been described in Europe and 7 in Japan. Apart from icterus and haemorrhages, the chief lesions described by the earlier writers were inflammatory or degenerative changes in the liver and kidneys and enlargement of the spleen. The second part contains an account of Professor Kaneko's own elaborate investigations, which were based on 42 cases, of which a clinical and

<sup>1</sup> Les Fausses Appendicites. Etude clinique, radiologique et thérapeutique des syndromes douloureux du caecum et du colon proximal. By Th. de Martel and Ed. Antoine. Paris: Masson et Cie. 1922. (Imp. 16mo, pp. 183; 31 figures, 10 plates. Fr. 10.)

<sup>2</sup> Theories and Problems of Cancer. By C. E. Walker, D.Sc., M.R.C.S., L.R.C.P. London: Published for the University of Liverpool Press by Hodder and Stoughton. 1923. (Cr. 8vo, pp. 126; 3 illustrations. 5s. net.)

<sup>3</sup> Cancer: Fallacy, Theory, and Fact. By John Shaw, M.D. (Lond., Lond.) George Routledge and Sons, Ltd. 1923. (Demy 8vo, pp. viii + 183; 13 plates. 10s. 6d. net.)

<sup>4</sup> Ueber die pathologische Anatomie der Spirochaetosis icterohaemorrhagica Inada (Heidische Krankheit). By Professor Dr. Renjiro Kaneko. Vienna, Leipzig, Munich: Rikola. 1922. (Roy. 8vo, pp. 181; 8 plates.)



anatomical study was made and the diagnosis confirmed by finding the causal organism. The third part is a critical review of the literature which has appeared since the discovery of the *Spirochaeta icterohaemorrhagiae* in February, 1915, and the writer's first article on the morbid anatomy of the disease in the same year.

In addition to the generalized jaundice, numerous small haemorrhages, severe renal disease, and degeneration of the skeletal muscles described by other writers, Professor Kaneko emphasizes the diagnostic importance of the following pathological features: (1) obstruction in the bile capillaries without mechanical obstruction in the large bile ducts; (2) inflammatory and degenerative changes in the heart muscle and in the nerve cells and fibres; (3) certain negative findings, such as the absence of the so-called infective spleen, fatty degeneration, and severe extensive necrosis and suppuration.

The work contains a bibliography, and is illustrated by microphotographs, some of them in colours.

#### ELEMENTS OF TUBERCULOSIS THERAPEUTICS.

THE French volume on the treatment of pulmonary tuberculosis<sup>5</sup> is one of a series of monographs on treatment, written primarily for the general practitioner. With this end in view practically all discussion of the various problems presented by the disease is omitted; the scientific side is completely suppressed, and just a plain, straightforward account of the conduct of a case is provided. As in every book, there are one or two subjects upon which the author lays particular emphasis—subjects making an individual appeal to the author himself. Such subjects are climatology and the treatment of haemoptysis. Practising at Cambo, a pleasant little health resort in the foothills of the Pyrenees, he naturally is impressed with the importance of the different types of atmospheric and environmental conditions in the treatment of his patients, and is, therefore, careful to give a fairly liberal account of the more popular places of resort for tuberculosis patients, and to indicate the type of case for which each is suited. With regard to haemoptysis his main contribution has to do with the different modes of treatment to be applied to the patient, depending on whether the blood pressure is above or below normal. In the latter case the usual remedies are recited—rest, bandaging of the limbs, calcium lactate, posterior lobe of the pituitary, etc.—but in the former case he recommends the intramuscular injection of emetine, which he regards as of the greatest value in lowering the systolic pressure and diminishing the haemorrhage from the lungs. The remainder of the book calls for little comment. A considerable amount of space is devoted to drug treatment and to the use of serums—more than is usual in an English manual. Artificial pneumothorax is dealt with very fully, and the treatment of pulmonary tuberculosis in infancy, old age, pregnancy, and diabetes is carefully considered. To those who care for a simple, clear, somewhat empirical description of the treatment of disease we would recommend this book unhesitatingly.

#### DIATHERMY.

IN a volume entitled *Diathermie et Diathermothérapie*<sup>6</sup> Professor BORDIER has written on the physics, electro-technics, and therapeutics of diathermy. The principles on which high frequency and diathermy currents are generated, the various types of apparatus which produce these currents, the physical and physiological properties of diathermy, are described in the first three parts of the book. The fourth part deals with the various methods of performing the operation of coagulation by diathermy. In the fifth part the tumours and infective granulomata of different regions which may with advantage be treated by diathermic coagulation are considered. The author describes his methods and results and those of other workers. Medical diathermy is considered in a similar way in the

fifth part. Methods of applying diathermy are described, and the author then states, under the headings of the different systems of the body, the diseases for which diathermy is a valuable method of treatment.

The advantages of diathermy for the destruction of malignant growths are well known to many English workers, but Professor Bordier also recommends this form of treatment for other morbid conditions for which, in this country, it has been less widely used. Among these may be mentioned haemorrhoids, lupus (certain forms), rhinophyma, and enlargement of the prostate. Professor Bordier has used diathermy for the cauterization of external and internal haemorrhoids for ten years; his patients were not confined to bed after the operation, and no post-operative accidents are mentioned. He recommends diathermy for the treatment of rhinophyma; the operation, he says, can be performed without loss of blood. For enlargement of the prostate he advises a wider trial of diathermy for the purpose of cauterization of the gland where it narrows the channel, so making a wider outlet for the passage of the urine. He quotes the work of Luys, who has had considerable experience in the method. The patients were treated under local anaesthesia and were not confined to bed after the operation.

In the section on medical diathermy some interesting reports are given of this form of treatment on chronic gastritis accompanied by alteration in the degree of acidity of the contents of the stomach. Test meals were given before and after a course of diathermy and the analyses showed a return to normal; the patients were relieved of their symptoms.

Professor Bordier has evidently had a wide experience of diathermy, and his results will be read with interest by English specialists. He admits that French workers have had less experience in the treatment of malignant growths by diathermy than English laryngologists. He freely quotes the work of English authors, and some of the tables and illustrations in an English work on diathermy are reproduced.

The volume under review contains a large quantity of useful information. It is clearly written and well illustrated.

#### A USEFUL GUIDE.

THE neophyte, fresh from the schools, proud in the possession of full knowledge of the books and of cases carefully selected to demonstrate the exactness of medical science, has many a fall when he bursts his bonds and spreads his wings in the free air of general practice. In this atmosphere one attribute counts more than all others, and that is—experience; and however well he has been taught, and with whatever diligence and zeal he has studied, this the fledgling cannot have.

It is to anticipate for him some of the pitfalls and the gins of general practice that Dr. A. CAMPBELL STARK has compiled a little book which he styles *An Index to General Practice*.<sup>7</sup> In an admirable and all too short preface and introduction Dr. Stark explains that he writes solely from the point of view of a general practitioner, and seeks an apology for the book in "the curious fact that although a large majority of medical students go into general practice, no attempt is made during their curriculum to train them for their special work." He further regrets that "experience of general practice is not an indispensable qualification for election to a hospital staff"; that "writers of textbooks, and others who cater for the needs of the medical profession, have little for the general practitioner, and he is left to work out his own salvation." Probably Dr. Stark would agree that in the working out of his salvation lies the practitioner's true source of strength. No man can be a success in practice without first "going through the mill," and it is good for the young practitioner that the way is hard, for thus his character is moulded, and thus, out of necessity, he acquires those weapons with which his hospital training does not equip him.

There is, nevertheless, every reason for complaining that he is not sufficiently warned of the kind of thing

<sup>5</sup> *Le Traitement de la Tuberculose Pulmonaire en Clientèle*. By C. Colbert. Comment Guérir? Bibliothèque des Praticiens. Paris: A. Maloine et Fils. 1923. (52 by 74, pp. 291; 12 figures. Fr. 10.)

<sup>6</sup> *Diathermie et Diathermothérapie*. By Dr. H. Bordier, Professeur Agrégé à la Faculté de Médecine de Lyon. Paris: J. B. Baillière et Fils. 1922. (Post 8vo, pp. 512; 157 figures. Fr. 30.)

<sup>7</sup> *An Index to General Practice*. By A. Campbell Stark, M.B. and B.S.Lond., L.S.A.Eng., Ph.C. London: Baillière, Tindall, and Cox. 1923. (Cr. 8vo, pp. x + 181. 5s. net.)



MR. J. ALBAN ANDREWS, M.C., F.R.C.S. (Resident Surgical Officer, St. Peter's Hospital for Stone), has had made for him by Mr. J. H. Montagu (69, New Bond Street, W.1) a box to carry apparatus for ureteral catheterization and pyelography in compact form, and sterilized for immediate use. The advantage claimed for it is that, apart from its portability, the contents are available with a minimum of handling when it is required to pass a ureteral catheter or introduce a pyelographic medium. The box is of the flat oval pattern introduced by Mr. Swift Joly for holding ureteral catheters. In the lid is a series of six clips, arranged round the margin, for holding spare ureteral catheters, and one or two phospho-bronze stiletts useful in clearing a blocked catheter; in addition, two clips in the centre hold a pair of forceps for manipulating the catheters, etc. In the base, fixed round the margin, is a series of eight racks, with a hinged clip attached to each; by means of these racks four ureteral catheters can be coiled within the box, each lying in a separate compartment of a given rack. A triangular container, with perforated sides, and a detachable wire-mesh lid holding cotton-wool soaked in a strong solution of formalin, is so placed that when the four catheters are in position their proximal ends can be fitted to four fixed, tapered, hollow needles projecting from its base. Formalin vapour passes from the container, by way of these needles, into the lumen of the catheters; this is accelerated by warming the closed box; in this way the inner and outer surfaces of the catheters are both exposed to the action of the vapour. To ensure efficient sterilization care must be taken that the lumen of each catheter is quite clear, and that the exposure to the vapour is made for not less than twelve hours. Within the racks is a central oval space fitted with clips holding a 10 c.cm. all-glass syringe, a 5 c.cm. Record syringe, four single needles fitting both the 5 c.cm. and 10 c.cm. syringes, and three double needles. A catheter can be readily extracted, without disturbing those adjacent, by detaching its proximal ends from the fixed tapered needle with the forceps, and then withdrawing it smoothly from the racks.



# NINETY-FIRST ANNUAL MEETING of the British Medical Association, PORTSMOUTH, 1923.

## OLD PORTSMOUTH AND PORTSEA.\*

"Strange enchantments of the past  
And memories of the days of old."

PORTSMOUTH is not all harbour and dockyard. If visitors to the Annual Meeting have a few minutes to spare after their attendance at the scientific Sections, and if the festivities of Southsea do not prove too alluring, or the Trades Exhibition at the Naval Barracks too attractive, there are a few relics of the drowsy past worth seeking out in old Portsmouth and Portsea. It will be interesting to wander for a space in the streets and places where Byng, Vernon, Anson, Hawke, Kempenfelt, Rodney, Keppel, Howe, Nelson, and scores of other famous officers were wont to walk and work and play. We may perhaps be able to recall to our memories forgotten facts, and repicture the places we see with the doings of the good old days. What yarns we might hear from the old "Blue Posts," the "Star and Garter," and the "George" could their walls but speak; what might not High Street, Broad Street, and Point tell us! Boys as midshipmites came quite young and fresh to Portsmouth; like Peter Simple, they stayed at the "Blue Posts," and then for the rest of their careers would be frequent visitors. As they climbed the service ladder the "Blue Posts" would be forsaken for the "Parade Coffee House," and finally the "Crown" and the "George" would be their temporary resting places. Their sojourns in old Portsmouth would be full of fun and adventure. Even young Nelson wrote:

"Yesterday I was riding a blackguard horse that ran away with me at Common (Portsea), carried me round all the works into Portsmouth by the London Gates, through the town and out at the gate that leads to Common, where there was a waggon in the road, which is so very narrow that a horse could barely pass. To save my leg and perhaps my life I was obliged to throw myself from the horse, which I did with great agility, but unluckily upon hard stones, which have hurt my legs and back, but done no other mischief. It was a thousand to one I had not been killed."

Little of old Portsmouth is left, and to find it the visitor must penetrate behind the modern frontages into some of the back streets, grubby and picturesque, but no longer the highways they used to be. Here and there he will find an old house—even a partly wooden house or two. The oldest portions of the town are or were at Point, on either side of Broad Street and around the Camber. There, in narrow and twisting lanes, old houses may be found with sixteenth and seventeenth century dates carved on their beams, mostly built of red brick and roofed with red tiles, here and there shingle fronted or more rarely half timbered. But the modern medical officer of health and the sanitary authorities have been at work, and have cleared away the old and antique that was pleasant to look on but dangerous and unhealthy to live in. Perhaps the oldest street of all is (or was, for now most of it is cleared away) East Street, running from Broad Street to the

Camber, and the oldest public house, the "Shoveller's Arms," is still here, and was kept not many years ago by a family whose predecessors were there in the days of Nelson.

The neighbourhood of Point, which was outside the old town wall, has always been notorious. It was called Spice Island, but for what reason no one knows. The Camber remains the commercial harbour of Portsmouth, but there is nothing at the dockside indicative of prosperity. Portsmouth is naval first—everything gives place to the requirements of the navy—and commerce goes elsewhere. Here by the Quay is an old red brick building that once held all the food stores for the navy! In it was the biscuit bakery which was once visited by George III. A story is told that he set the fashion of munching biscuits in the streets, for he was observed eating a specimen in the roadway after visiting the naval bakehouse. After the Crimean War the old Cavalry Barracks at Gosport were taken over and converted into the present Victualling Yard.

From Point starts the floating bridge that connects Portsmouth with Gosport. From "the Bridge" when crossing a fine view of the harbour and dockyard is obtained. Haslar Hospital is also seen, and Haslar Creek, the home of the submarines. Many yachts and all kinds of naval craft may be seen at anchor or moving about the waters. Alas! the old *Triton*, that once rode so proudly in midstream, is now in dry dock undergoing repair. Here in the Royal Dockyard she may be visited, and for many long years may she remain the cynosure of the navy.

Right at the very end of Broad Street, opposite the ferry landing stage, is the "Star and Garter" hotel, which is perhaps the most interesting of all Portsmouth's inns.

It has more historic associations than any other of the old houses. Here the very room and the bed is shown in which in their time have slept Howe, St. Vincent, Nelson, and Franklin. It is related that Lady Franklin, after the great arctic explorer had been given up for lost, used to come here year after year on a sacred pilgrimage. In the common room or naval snuggery one can in imagination picture the old seamen recounting their yarns and telling how things should have been done had they had their way. William IV, when Duke of Clarence, regularly occupied a room here from the window of which is obtained a fine view of the harbour with its varying interests. Louis Philippe, when an exile, was here a great deal. Dickens and Thackeray were frequent visitors. It is of interest to note that the third of the trinity of novelists, Sir Walter Scott, also visited Portsmouth in 1831. The deeds of the house date back to the time of Queen Mary, and the landlord still pays capon money to the corporation.

About half-way between the above house and the High Street is the site of the "Two Blue Posts," built in 1613, and once the chief posting house in the borough. The old house was destroyed by fire on May 7th, 1670. A new house has been built here since. The "Two Blue Posts" is frequently alluded to in Marryat's novels. It is recorded

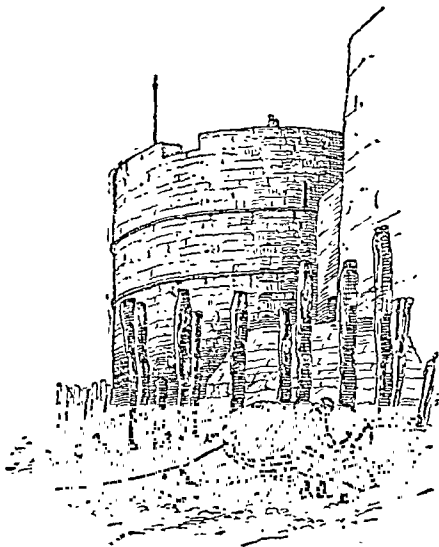


FIG. 1.—The Round Tower.

\* Previous articles on Portsmouth and Southsea and neighbourhood have appeared in the BRITISH MEDICAL JOURNAL of December 9th, 1922, p. 1137; January 13th, 1923, p. 77; February 10th, 1923, p. 253; June 2nd, 1923,



that on one of the old window panes was scratched the following inscription:

"This is the Blue Postesses  
Where midshipmen leave their chestesses  
Call for tea and toastesses  
And forget to pay for their breakfastesses."

In the old days there was a large porch over the front door supported on two big columns which were painted a bright blue colour.

On the opposite side of the road is a narrow opening called Bathing Lane, leading to a spot now known as Bath Square, interesting for its connexion with sea bathing. The fashion of going to the seaside for holidays set in about the middle of the eighteenth century. Sea bathing, although not unknown before, was made popular by the propaganda of a certain Dr. Richard Russell in 1753, with the result that many people, as the old rhymester says—

"Rushed seaward to be cur'd like  
tongues  
By dipping into brine."

Portsmouth, not to be left behind in the fashion, provided visitors "facilities for washing" in Bathing House Square. Not far from here the Hot Walls, in front of the "Saluting Battery," was a famous place for bathing and playing for many generations of old Portsmouthians.

A little further east a reading room and pump room, with conveniences for bathing, was established in 1816 near the site of the Clarence Pier. This has gone, as well as the old-fashioned horse machines with a big hood over the scaward door, and the hoop-skirted "nymphs" who ducked children willy-nilly beneath the salt sea waves. Now there are corporation chalets and tents on the beach, and the Swimming Club, between the Clarence Pier and the Castle, has a good diving board; another is in use at the popular bathing site to the east of Southsea pier.

Proceeding from Bath Square to the Round Tower we shall find between the tower and Broad Street a railed-off space called Capstan Square. Here stood the apparatus for "taughtening the mightie chaine of yron" used in war time, from the days of Henry VIII till 1813, for the defence of the harbour mouth. At low tides some of the links of the chain may be seen in the shingle. The Round Tower was built early in the fifteenth century, as well as a similar one on the opposite side of the harbour mouth. Cannon were then coming into general use, and were placed on these platforms to defend the harbour. Near here, running from Broad Street, is a twisting passage that leads to the Sally Port; in the old days it was the spot for taking boat to Spithead; in Mr. Gow's picture in the Royal Exchange Nelson is represented as embarking from this spot. Access to the sea is now obtained from the King's Stairs, nearer Southsea, close to the old Victoria Pier. The Square Tower, which is here on the conspicuous, was once the garrison magazine. It has on its land face a bust of Charles I, set up to commemorate his safe return from his travels in search of a wife. When

Lord Viscount Wimbeldon was governor of Portsmouth he issued an order that all persons were to doff their hats to the King's image—an order the inhabitants treated with scorn and derision.

We are now at the bottom of High Street. Before exploring it we will go back to some of the grubby streets. But first, looking up the High Street on our left hand, we shall see two plaques on adjacent houses—one on the house of Admiral Anson and one on the birthplace of George Meredith. On the right-hand side, at the corner of Grand Parade, is the York and Pier Hotel—the old Parade Coffee House. The Coffee House was patronized by the captains of the old navy. Here in red breeches, three-cornered hats, and pigtails they sat on benches outside the house smoking their long nines. Here in 1729 they had an "early club" which met at 4 a.m.



Fig. 2.—Sally Port.

till he was fourteen and was then sent to Germany to complete his education. Not much is known of his early life. He is said to have threatened to haunt anyone who attempted to write his biography. There is a reference to Portsmouth in *Erra Harrington*.

In Oyster Street, the favourite resort of the Guernsey onion men when they visit Portsmouth, there is a small disused chapel, now utilized by the foreign egg business, in which John Wesley often preached, and on the opposite side of the way is the house in which he lodged. Another chapel in which Wesley used to preach stands at the corner of Warblington Street and Nobbs Lane. John Wesley came to Portsmouth in July, 1753. He records in his journal of the crowds that thronged to hear him—

"So civil a people I never saw before in any seaport town in England. I preached in an open part of the Common adjoining the new chapel of St. George's. The congregation was large and well behaved, not one scoffer did I see, nor one trifler."

Now we turn out of the narrow street into the broader and more picturesque Street of Saint Thomas, which is just a quarter of a mile long. In it are one or two sixteenth century houses known as "garrison houses." These were built low so that they should not overtop the fortifications or interfere with the sighting of the guns. No. 78 will interest lovers of Dickens. Here Mr. Vincent Crummles had his quarters. "Mr. Crummles lived (on mutton and onion sauce) at the house of one Bulph, a pilot, who sported a boat-green door with brass knocker, brass plate, and



Fig. 3.—John Pound's House, Highbury Street.



brass handle." At the upper end of the street is a Baptist chapel which claims to be the oldest Nonconformist place of worship in Portsmouth. John Sicklemore preached here in 1642. Near it is Palliser House, noted for its connexion with the trial of Admiral Keppel. The house has a round bay supported on columns. Another house is plaqued, "In 1801 Sir Frederick Madden was born here."

Running across St. Thomas's Street is Highbury Street. From 1214 till quite recently it was called St. Mary's Street. On the north side of this street is a fine house, No. 8, now called Curzon House, with a plaque on its front; here lived Admiral Lord Howe, the victor of the Glorious First of June, 1794. On the south side of the street No. 78 is a little wooden house with a tiny workshop. This is the house of John Pounds, the founder of ragged schools.

Pounds was born in 1766 and was apprenticed as a shipwright in the Dockyard. Here he met with an accident which crippled him for life. He then took to cobbling and worked and lived in this little house. His brother had a deformed son whom John took great care of, and no doubt the devotion he lavished on his unfortunate nephew initiated in him the care and pity he lavished on the uncared for youngsters that ran and played about the narrow lanes and alleys round his shop. Whilst toiling in his little shop he found time to teach them the rudiments of the three R's. Too poor to buy books for his unkempt scholars, he picked advertisement bills from the walls and with scraps of newspapers made them into primers. He was very fond of birds, and often expressed the wish that he might die like one—just drop off his perch. His wish was gratified. He died suddenly on January 1st, 1839, aged 72 years. He called at the house of Mr. Edward Carter in High Street and dropped dead whilst waiting in the hall. A monument to his honour is erected in the burial ground of the Unitarian chapel in High Street.

(To be concluded.)

## Nova et Vetera.

### AIX EN SAVOIE.

It seems as though a spring gushing out of the earth has a fascination for even the most primitive peoples, who are apt to attribute its presence to mysterious agencies and to credit its waters with special virtues, even when they do not contain medicinal solids in solution in quantities enough to produce striking effects on the human body. When in addition the spring is hot it is likely to be still more renowned, for a copious supply of hot water obtainable without any effort or expense must have been an inestimable boon during the long ages before "Bath h. & c." became a household term. The Romans, who had long acquired the art and the means of heating large quantities of water, nevertheless seized eagerly on hot springs wherever they found them and used them for the supply of their public baths. At Bath, at Aix, at Baden, and elsewhere the remains of *Thermae* testify to the estimation in which such springs were held, and the ruins are evidence of the elaborate constructions of which they were the occasion.

Whatever may be the real therapeutic value of "the waters," their presence has always attracted the sick, and the flow of visitors to them may be compared to the religious pilgrimages, which even yet survive, some presenting the double attraction of the Saint and of his or her holy well.

The well known springs of Aix in Savoy are no exception to the rule, and M. Gabriel Perouse has done well in his book on the old days of Aix-les-Bains to tell the story of the rise and vicissitudes of this famous watering place.<sup>1</sup> He has found evidence that the Gauls or Allobroges had made use of the hot springs before the Romans came upon the scene, and the foundations of the massive constructions of the latter leave no doubt as to the importance of this bathing place. Apparently the natural heat of the waters was insufficient, for extensive remains of a hypocaust have been laid bare. Besides these the so-called Arch of Campanus, which seems to have formed part of a family mausoleum, is still standing. At Aix, as elsewhere, Roman ruins served

as convenient quarries from whence to take materials for new buildings, but when and how the Roman baths were destroyed, whether suddenly or gradually from neglect, is not known, and the earliest extant written record of the springs dates from the fourteenth century. Only one ancient basin or pool now remains, which was afterwards known as the Royal Bath.

Faith in the value of the waters and desire of cure must have been strong, for down to a period so late as the eighteenth century the amenities of Aix were but slight. Bathers were carried to and from the *douche* in litters or Sedan chairs, there was little privacy, and the surroundings of the *douches* were filthy. Small wonder then if some bathers had the water brought to their rooms. Moreover, in the sixteenth century there seems to have been nothing to do in the little town in the intervals between baths, although those who were active enough could explore the picturesque environs and take boat on Lake Bourget. But the roads were execrable, and "carriage exercise" could not have been pleasant. Nevertheless, aristocratic and royal personages of both sexes patronized the waters during the fourteenth and subsequent centuries.

Early in the seventeenth century Dr. Jean-Baptiste de Cabijs wrote *Les Merveilles des bains d'Aix en Savoye*. When you set out for Aix, he says, "you must leave all melancholy behind," which is easier said than done. On arrival, of course, in that age and country of clysters and purgatives, purgation is advised. His advice on diet is sensible, but the modern valetudinarian would be horrified to learn that he must get up at four in the morning (seemingly after going to bed at nine) and bathe between five and six o'clock, so as to leave the bath clear for the ladies. Above all the bather must not leave Aix before he has had a final purgation. As to lodging, it seems to have been a common custom for a number of visitors to share a room and often for two of them to share a bed.

By the middle of the eighteenth century things were better at Aix, but even then in the best inn there was only one room to serve as dining-room and sitting-room; even in that there were two beds in the corner, but as they were four-posters, with curtains, they afforded some degree of privacy. However, the majority of bathers and the most distinguished took lodgings in private houses, where their hosts were some of the most respectable residents of the town. A great step forward was taken in 1783, when the reigning Duke of Savoy authorized the erection of the first modest "Etablissement" at the sulphur spring; nevertheless, down to and after the end of the century Aix remained a small walled city of narrow lanes and thatched houses, subject to repeated conflagrations. Narrow as the streets were, they were rendered still more inconvenient by the habit of keeping small dunghills before the house doors; this practice seems to have been dear to many of the inhabitants and was the subject of often vain denunciation by the authorities. Nowadays the picturesque but stinking town has vanished and most of its site is covered by the great modern bathing establishment.

All this and more may be read with pleasure in M. Perouse's book, which tells not only of the place, but of its distinguished visitors, from the eccentric J. C. Roberts—eccentric because he actually stayed a whole year in 1789/90—to the Empress Marie-Louise and Queen Hortense and her sons, of whom one, as Napoleon III, was later to annex Savoy to France. The husbands of both these ladies were then deposed and the Queen was in course of being divorced, but M. de Flahaut and the Count Neipperg, who accompanied them, were doubtless able to console them. There is a chapter on Lamartine, who with his English wife frequented Aix, and notes on the visits of Alexandre Dumas and of Balzac, who there placed one of the scenes of his *La Peau de Chagrin*.

Thus for at least 400 years, no matter who were its rulers, Dukes of Savoy and Kings of Sardinia, France, or Spain, the waters have not lost their vogue, and the treatment given at the Etablissement benefits countless invalids, even if it has to be admitted that the water of the Bain d'Alun contains no alum and that the sulphur spring is almost if not quite innocent of brimstone.

<sup>1</sup> *La Vie d'autrefois à Aix-les-Bains*. Par Gabriel Perouse, Chambéry: Librairie Dardel. 1922. (5½ in. by 7½ in., pp. 348; 15 plates.)



# British Medical Journal.

SATURDAY, JUNE 30TH, 1923.

## HONOUR TO RONALD ROSS.

SIR RONALD ROSS's medical colleagues throughout the world will rejoice to learn that a movement is afoot to signalize the twenty-fifth anniversary of his successful transmission of malaria to the anopheline mosquito by some public recognition of the incalculable service he has rendered to the Empire and to millions living under its protection.

In a letter in the *Times* of June 22nd, signed by some of the leading men of affairs of this country, a noble tribute is paid to the world-wide importance of the knowledge acquired through Ross's patient and exacting labours and of the material benefits which have accrued therefrom to mankind. It is proposed to establish in London some permanent memorial to his achievement as a token of public gratitude while he is still with us. We believe that the appeal will meet with sympathetic and widespread support. It is one which cannot be overlooked by those whose financial interests are centred in the tropics. The suggestion is put forward that the occasion provides a fitting opportunity to establish a "Ronald Ross Clinic" for tropical diseases, in which laboratory research and clinical investigation should be combined as closely as possible. With the same ideal, clinical units for medicine, surgery, and gynaecology have recently been established at the leading London medical schools, and as His Majesty said recently, when laying the foundation stones of the new buildings at the University College Medical School, these have justified the high hopes with which they were founded in 1919.

We feel confident that the establishment of a similar unit or clinic in tropical diseases, with Sir Ronald Ross at its head, would fulfil a national purpose and give a powerful stimulus to the study of tropical medicine and parasitology, for which London has already become a centre. The clinic must have the fullest scope for the initiation and continuity of its researches, but if it is to serve more than an ephemeral purpose it must take its proper place with other institutes devoted to post-graduate study and research under the aegis of the University. It is stated that its primary object will be research, not teaching, but there must be provision for training others in research, since the permanent usefulness of the memorial is the avowed aim of the founders.

The relationship of the clinic to other bodies similarly engaged, as well as the best means of securing access to an adequate and constant supply of clinical material, will require the most careful consideration. In giving two million dollars for the building and equipment of a great School of Imperial Hygiene the Rockefeller Foundation was undoubtedly inspired by the desire to integrate the post-graduate work in preventive medicine in London, and this institute too must have its clinical laboratory for tropical diseases and be linked with the clinical wards of some accessible hospital.

Hitherto, apart from special military provision arising out of the war, the care of those suffering from tropical diseases has been undertaken in London by the corporation of the Seamen's Hospital Society. In its

hospitals at the Albert Dock and in Endsleigh Gardens over a hundred beds are provided for these maladies, and this total would appear to be adequate for present needs if fully endowed and utilized. The Seamen's Hospital Society has, in the past, notably helped the cause of education in London by opening its hospitals for post-graduate clinical instruction. Its interest in the promotion of research is shown by the way in which it has provided, in the premises partly occupied by the Hospital for Tropical Diseases at Endsleigh Gardens, accommodation for the London School of Tropical Medicine, the Tropical Diseases Library, the Tropical Diseases Bureau (Colonial Office), and the Research Institute for Agricultural Helminthology (Ministry of Agriculture). We believe that the greatest possible benefit to humanity would follow the further strengthening of this fine centre of scientific activities by the association of the proposed unit with it and eventually of both with the School of Hygiene. By this plan there would be no depletion of funds for unnecessary buildings, and, while the unit would remain separate from the London School of Tropical Medicine, much duplication could be avoided by team work between the unit and the research departments of the school.

In any case, the position which the London School of Tropical Medicine has won for itself in London, since its foundation twenty-four years ago by Sir Patrick Manson, and the support which it enjoys from the people of the metropolis, cannot be ignored. The statement in the *Times* letter that, like its sister in Liverpool, the school is engaged for the most part in training young doctors for practice in the tropics, shows that the significance of the unique organization of its staff and curriculum has not been fully appreciated. The curriculum is so arranged that while the clinical instruction is given by visiting lecturers, chosen for their practical experience in the tropics, the studies in the laboratory are in the charge of whole-time professors—not one of whom, however, is occupied in this teaching for more than three periods of twenty consecutive days in the year. During the intervening time the professors, with their staffs, are engaged wholly in research and are free, when need arises, to visit the tropics for their investigations. During the past three years eight of these whole-time workers have been sent abroad by the school, two are still in the field, and two more are preparing to leave.

The relation of the proposed memorial to the clinical material now available in London, to the projected School of Hygiene, and to the research activities of the London School of Tropical Medicine are matters, we feel sure, which will invite, not in vain, the immediate attention of Mr. Asquith and the distinguished men associated with him in the laudable endeavour to honour Sir Ronald Ross.

## WINDWARD ISLANDS MEDICAL SERVICE.

FROM time to time during the last two years we have had occasion to advise intending applicants for posts in the medical services of certain West Indian colonies to consider carefully the disadvantages and disabilities attendant upon the choice of that particular field of practice. We have done so in the belief that conditions so bad must surely find a remedy. It was reasonable to hope that when the inquiry urged centrally and locally by the British Medical Association had been completed the officers in those services would secure speedy and adequate redress of their grievances. The report of the Wind-



ward Islands Medical Committee, together with the recommendations of the Governor and the final ruling of the Secretary of State for the Colonies thereon, have now been communicated to the Dominions Committee of the Association, and it is clear that our confidence has been misplaced.

The recommendations of the Islands Committee failed to meet the case put forward by the British Medical Association in the first instance, for they allowed net commencing emoluments from all sources to fall short of £600 a year—the lowest sum recognized by the Association as adequate for colonial appointments. They also left untouched other local grievances. The settlement advocated by the Governor and sanctioned by the Secretary of State is worse still. Its distinguishing feature is that the medical officer in Grenada, with a consolidated salary on appointment of £400, supplemented by some £50, the net proceeds of private practice, is left to find out of his own pocket the difference between £70 forage allowance and the allowance of £120 to £180 estimated by the Islands Committee as meeting the cost of necessary expenditure on motor car or car and horse. The medical officer has to supply as well as run his car. In short, the Government of the Windward Isles, driven by economic pressure, has decided to perpetuate a state of affairs which, in our considered opinion, denies to members of its medical service conditions essential at once to the efficient exercise of their profession and to adequate provision for their dependants.

We are convinced that no practitioner fully conversant with existing conditions will apply for an appointment in the Windward Isles. This conviction alone would be sufficient justification for explaining more fully than is possible within the limits of the present article the position which has arisen, and we propose to deal with the matter in detail in future issues. In doing so we shall not forget the plight of those who, having served faithfully and with no small distinction in those islands, now see their last hope of relief vanish, and are left no alternative but to begin life afresh elsewhere, or to accept as final, conditions only tolerable whilst hope of immediate redress remained. To them we would say that if the tragedy of the Windward Islands medical services is a sorry chapter in the history of British medicine, it is one for which the profession itself has no responsibility.

#### BRITISH EMPIRE CANCER CAMPAIGN.

We are informed that the Royal Society and the Medical Research Council have agreed jointly to receive delegates from the British Empire Cancer Campaign to discuss the formation of a scientific committee for the distribution of money subscribed to the campaign for research purposes and the revision of the articles of association of the campaign which may be necessary to give effective powers to the committee. Representatives of the Imperial Cancer Research Fund will be present at this conference. The first meeting of the Grand Council of the British Empire Cancer Campaign was held at the headquarters of the British Red Cross Society, London, on June 25th. The Grand Council consists of seven representatives nominated by the Imperial Cancer Research Fund, seven by the Cancer Hospital, Brompton, seven by the Middlesex Hospital, three by St. Mark's Hospital, London, and several other members who have agreed to serve. The Earl of Athlone was elected chairman of the Council. A discussion took place on the constitution of the campaign, in which the representatives of the Imperial Cancer Research Fund, the

Middlesex Hospital Cancer Charity, and the Cancer Hospital pointed out the desirability, in the public interest no less than in the interests of research, of making the executive committee more representative. It was evident that these bodies viewed with some concern the articles of association of the limited liability company which the promoters had formed, and which, it was alleged, had not been disclosed to them in negotiations for their support. A small subcommittee of the Grand Council was elected to investigate these articles and to see what changes in them, if any, were desirable in order to secure the co-operation of all parties interested. It would thus seem that the Grand Council, which consists of elected representatives, means to make itself responsible for the policy to be adopted, and not merely to exist as a subsidiary body which the executive committee, provided in the articles of association as they now exist, might consult occasionally. As it has been declared that the present executive committee regards itself as provisional, and that its members are willing to give place to others who may be considered more suitable, and as the Royal Society and the Medical Research Council have agreed to discuss the position, it seems possible that an executive body representative of research may be formed. We feel sure that such a decision would meet hesitations we felt obliged to express when the campaign appeal was issued, and would receive general approval. A meeting will be held at the Mansion House on July 6th to inaugurate the campaign.

#### THE MANUFACTURE AND DISTRIBUTION OF INSULIN IN SCANDINAVIA.

THE Scandinavian countries, though politically independent, have a happy way of acting in unison in medical matters, and the manner in which the problem of insulin manufacture and treatment is being tackled by Professor August Krogh of Copenhagen affords a good illustration.<sup>1</sup> In November last Professor Krogh went to Toronto and arranged with the university authorities there for an adequate supply of insulin for the Scandinavian countries. The problem with which he was confronted was not quite simple. Remedies cannot be patented in Norway, Sweden, and Denmark, and it is thus open to any manufacturer to attempt to produce insulin and place it on the market. This procedure would, of course, be open to serious objections, and Professor Krogh has made arrangements with the Toronto authorities according to which no preparation can be sold as insulin in Scandinavia unless it has received Professor Krogh's approbation. He has approached Mr. Kongsted, the proprietor of Löven's Kemiske Fabrik, who has undertaken to manufacture insulin and to make no profit out of its sale in the Scandinavian countries. The laboratory in which insulin is to be made will be conducted as an independent institution, and the financial results will be published yearly. Only the direct costs of the manufacture, control, and distribution of insulin will be considered in fixing its price, and after the capital sum invested in the institution has been paid off—at, it is hoped, a comparatively early date—the proceeds of the sale of insulin will be devoted to further research and to the purchase of new plant. The charge provisionally fixed for every Toronto unit is 20 Danish öre, but this will be modified if and when circumstances warrant. Six clinical research workers in Norway, Sweden, and Denmark have accepted Professor Krogh's offer of a quantity of insulin, enough for one or more patients, and it is hoped that a supply may soon be available for Scandinavian hospitals; not till some time later will insulin be issued to general practitioners and their patients. This policy is adopted not only with a view to conserving the limited supply of insulin, but also on account of the dangers and difficulties

<sup>1</sup> *Ugeskrift for Læger*, May 21st, 1923.



associated with its administration. In this connexion Professor Krogh urges all who wish to administer insulin to their patients to familiarize themselves with the technique of blood sugar estimations, and the method he recommends as the most simple, rapid, and accurate is that described by Dr. H. C. Hagedorn and Dr. N. Jensen.<sup>2</sup> Professor Krogh has had to abandon, at least for the time, his project of preparing insulin from fish, and he has secured a supply of pancreases from the Danish swine abattoirs.

#### VACCINE TREATMENT OF TUBERCULOSIS BY A NEW METHOD.

WE gave last week a full account (pp. 1065 and 1059) of the researches conducted by Professor Dreyer at Oxford, which have resulted in the preparation of a new form of vaccine; they have naturally attracted a great deal of attention and we are informed that the Medical Research Council has received many inquiries. Professor Dreyer has so far given most attention to the production of the vaccine for tuberculosis in its various forms, but the principle applies also to some other infectious diseases. In reply to the inquiries mentioned the Medical Research Council has issued the following statement: "When it had been shown by experiment that small animals, highly susceptible to tuberculosis, when infected with tubercle bacilli were improved or lost the signs of active disease after the use of Professor Dreyer's new antigen or vaccine, arrangements were made for trials of this treatment under suitable control at three hospitals in London. The results which have been obtained hitherto have been favourable almost without exception. Upon the results, highly promising as they now seem to be, which have been obtained in cases of tuberculosis of the lungs or of other internal organs, no final opinion can be passed until a longer period has elapsed. In cases of tuberculous disease of the glands and of the skin it can be said already that the results of this treatment have surpassed any known to have been attained regularly by other methods. Encouraging results have also been gained in the treatment of infections like those in puerperal fever and other septic conditions. There is good ground therefore for hope that a very important advance in the curative treatment of tuberculosis and of some other diseases has been made. Until these laboratory and hospital results had been achieved, publication of Professor Dreyer's method was withheld. The Medical Research Council are now arranging, in consultation with Professor Dreyer, for extensive trials of the new treatment by physicians and surgeons at various centres in different parts of the country where suitable facilities can be provided. Much has still to be learned of the best modes of application of the treatment, and it is not ready yet for general use. For the series of trials now in view supplies of the new vaccine will be prepared for distribution at the Oxford School of Pathology, from which for some years standard diagnostic serums for typhoid, paratyphoid and dysenteric infections have been distributed after preparation on behalf of the Medical Research Council. As soon as the progress of the patients under treatment has been sufficiently watched and recorded, full publication will be made of the clinical results which have been obtained. If these justify the hopes which have been formed, and lead to a wide use of the new treatment, it is believed that, by arrangements which have already been made by the Medical Research Council, adequately large supplies of the necessary antigen will be ready at very small cost. Investigations are already in progress to ascertain what useful extensions can be made of the new method of antigen preparation and of its applications to the prevention or treatment of infective disease."

<sup>2</sup> *Bioch. Zeitschr.*, Bd. 135, 1923, p. 45.

#### LAËNNEC.

THE Medical Classics Series edited by Dr. Charles Singer is designed to give extracts from the works of the men who have made great advances in the science and art of medicine. Each volume is to be accompanied by a short life and notes; the plan thus differs from the purely biographical plan of the Master of Medicine Series edited by the late Charles Louis Taylor, the gifted Assistant Editor of this JOURNAL. The first two volumes of the new series were devoted to Lord Lister and Sydenham, and are appropriately followed by one on Laënnec. It contains a translation of selected passages from the first edition of *De l'Auscultation médiate*,<sup>1</sup> which saw the light on August 15th, 1819. The life is short but of absorbing interest, and in its course Sir William Hale-White admirably brings out the extraordinary energy and ability of a man labouring under great difficulties, particularly the advances of the disease, chronic pulmonary tuberculosis, which he did so much to elucidate. Primarily a notable morbid anatomist, Laënnec, by a fortunate flash of his quick brain, struck out the idea of the stethoscope, and in little more than three years his epoch-making treatise appeared. That in so short a time the numerous râles, abnormal sounds, and cardiac murmurs audible in the chest should be described, classified, and correlated with morbid changes is a surprising triumph of industry directed by genius; added to this its lucid and accurate style ensures that it will always remain a classic. As Sir William Hale-White remarks, Laënnec was one of the founders of the clinical method of studying disease in relation to morbid anatomy, which, although other methods have since been elaborated, still remains the corner-stone of medicine. At first Laënnec did not consider it necessary to have a name for what he modestly spoke of as "so simple an instrument," but as others thought differently and used words sometimes barbarous and always unsuitable, such as sonometra, pectorilogue, pectoriloquie, thoracilogue, and cornet médical, he decided that, if it must be given a name, the most suitable would be stethoscope. Soon after the first edition of his book appeared the state of his health obliged him to leave Paris for Brittany, where he stayed for two years; the progress of his tuberculosis was thus stayed in some degree, and in 1821 he returned to Paris. During the next four and a half years he accomplished an almost incredible amount of work, but unfortunately was no exception to the rule that pioneers meet with opposition. In those days opposition was less mealy-mouthed than now; from the dogmatic and dominating Broussais abuse and ridicule were his portion, and his rapid success and wide reputation excited contemporary jealousy. In 1824, when 43 years of age, his marriage brought him great happiness and an optimistic view of his health. Two years later, when correcting the proofs of the second edition of his great book, he realized that he was dying, and soon after left Paris for the last time for Ploaré in Brittany, where the end came on August 13th, 1826.

#### BIOMETRICAL STUDIES IN TUBERCULOSIS.

It is sometimes difficult to understand how a patient with the grave changes found at necropsy has managed to live so long; how, in other words, damage to vital organs has been compensated so that an at any rate fairly successful new functional balance of interdependent parts or organs has been effected. Dr. Raymond Pearl, of the Statistical Department of the Johns Hopkins Hospital, is applying the methods of bio-statistics to the elucidation of these adaptive regulatory powers of the organism. In the first

<sup>1</sup> *Translation of Selected Passages from De l'Auscultation médiate (First Edition) by R. Théophile H. Laënnec. With a Biography by Sir William Hale-White, K.B.E., M.D. Medical Classics Series. Edited by Charles Singer, M.D., D.Litt., Oxon. London: John Bale, Sons and Danielsson, Ltd. 1923. (Crown 8vo, pp. x + 193; 10 illustrations. 12s. 6d. net.)*



of these Biometrical Studies in Pathology,<sup>1</sup> written with Miss A. L. Bacon—on the quantitative relations of certain viscera in tuberculosis—it is assumed that the relation between the weights of any two organs reflects in some degree and manner, in a statistical sense, the functional balance existing at the time between the particular organs considered, and also reflects in its duly proportional degree the functional balance of all parts of the body taken as a whole. The aim of these investigations is to discover and describe the type and variation of the weight relations of certain important organs of the body under various normal and morbid conditions; for example, an attempt will be made to find solutions to questions such as the following: Is the ratio of liver weight to heart weight, on the average, different, and if so by how much and with what degree of variation, in a group of persons found after death to show as the primary morbid lesion pulmonary tuberculosis, from what it is in a group showing endocarditis as the primary disease? The investigation into the quantitative relations of certain viscera in tuberculosis was based on the records of 3,848 necropsies at the Johns Hopkins Hospital, of which 1,341, or approximately 35 per cent., showed tuberculous lesions of some sort, 825 being active and 516 inactive. The cases were divided into groups of whites (male and female), coloured (male and female), and then further subdivisions were made according to the character of the tuberculous change—active, pulmonary alone, pulmonary and other, glandular alone, glandular and other, and generalized tuberculosis; inactive tuberculosis. The next step was to calculate for each case six organ-weight indices, such as liver to heart, and heart to spleen. The general result is that five of the six organ-weight indices gave very different values in the case of persons dying of tuberculosis only as compared with those dying with some tuberculosis but also with other grave lesions. The question is discussed whether persons with tuberculosis only have relatively small hearts and large spleens because they had fatal tuberculosis, or whether they had fatal tuberculosis in part at least because they congenitally had relatively small hearts and large spleens. Pearl's general statistical studies of tuberculosis indicate that it acts in many ways like an organic rather than as a simple infective disease, such as typhoid fever; and in this research the evidence is in favour of the view that fatal tuberculosis lowers the absolute weight of the heart and increases that of the spleen.

#### THE MEDAL OF THE WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

The annual dinner of the West London Medico-Chirurgical Society was held at the Café Monico on June 19th, with the President, Dr. Alfred George Wells, in the chair. There was a large attendance of members and guests and a considerable toast list had been drawn up. The loyal toasts were followed by that of the Imperial Forces, proposed by Dr. J. Burnford and responded to by Surgeon Vice-Admiral Sir Robert Hill, Medical Director-General, R.N., Brevet Colonel J. W. West, R.A.M.C., and Air Commodore David Munro, Director R.A.F. Medical Service. The toast of prosperity to the West London Medico-Chirurgical Society was proposed by Sir Arbuthnot Lane, who in complimenting the Society on its fame and its vigour remarked on the need for combination between post-graduate institutions if London were to take its proper place as the great centre of medical graduate teaching. The President in his reply touched briefly on the year's work, and pointed to the satisfactory state of the Society's membership, now nearly 500. Mr. Dan Mason,

a vice-president of the West London Hospital, added a few words on behalf of the associated institution. The President then handed to the guest of the evening—Sir Clifford Allbutt—the Society's Triennial Gold Medal, amidst warm applause, everyone present standing throughout the presentation. The medallist, being called upon to respond, modestly disclaimed his title to this honour, greatly as he appreciated it. He supposed, however, that it might be that his professional brethren had come to look upon him, in the Bismarckian phrase, as an "honest broker" in the mart of medical ideas and discoveries, acting as a merchant between producer and consumer. The marvels of the present age of medicine, Sir Clifford said, impressed him deeply. New conceptions and achievements were leading to a greater power over disease; but what would happen to the medical student of the future, with so much to learn, he dared not imagine. Looking back on a very long professional life he could not but regret the passing away of the old style general practitioner, whose accomplishments and devices and instinctive skill used to fill him with wonder; in the flights of scientific medicine there was some risk of neglecting the craftsman-ship of such bygone practitioners. Lastly, Sir Clifford Allbutt said that to receive at the close of his career such compliments as the Moxon Medal of the Royal College of Physicians, the Gold Medal of Merit of the British Medical Association, and now the West London Medal, was to him peculiarly touching. The health of the Cavendish Lecturer, Dr. Henry Head, was proposed in very cordial and appreciative words by his friend, Sir Humphry Rolleston, President of the Royal College of Physicians, and Dr. Head replied in characteristically happy phrases. The toast of kindred societies and guests, proposed by Dr. Seymour Taylor, Consulting Physician to the West London Hospital, was responded to by Sir Bruce Bruce-Porter, President of the Hunterian Society, and Sir Crisp English, President of the Harveian Society. The evening's entertainment closed with the toast of the President's health, proposed by Sir William Hale-White, President of the Royal Society of Medicine, and a brief reply by Dr. Wells.

#### THE RESEARCH DEFENCE SOCIETY.

An uneventful year, the fifteenth in its history, was reported by the Research Defence Society at its annual meeting on June 20th. Viscount Knutsford presided and moved the adoption of the annual report, which showed that the Society had had a considerable accession to its membership; more than 450 new members had joined during the past few months. The lectures and debates had been fairly satisfactory in numbers and very satisfactory in results dealing with antivivisectionist misstatements. The Dublin Branch had decided that in view of the separate government of Southern Ireland, it ought to have no official connexion with the parent society, and accordingly it had been dissolved and a new association was being formed in the Free State capital. The parliamentary secretaryship of the Society had been vacated by Dr. Elliot, M.P., on his appointment as Under Secretary of Health for Scotland, and Sir Sydney Russell-Wells, M.P., had accepted the position in his stead. Sir David Ferrier presented the financial statement, which revealed an income of £806 and an expenditure of £948. He said, however, that this apparently none too prosperous state of affairs did not represent the actual position of the Society's finances at the moment, because, as the result of an appeal by Lord Knutsford, since the close of the Society's year there had been a considerable increase in subscriptions and donations. The remainder of the annual meeting was occupied by a lantern lecture by Dr. C. W. Saleeby, describing the work done in recent years on heliotherapy

<sup>1</sup> Raymond Pearl and Agnes Latimer Bacon: Biometrical Studies in Pathology. I, The Quantitative Relations of Certain Viscera in Tuberculosis. *The Johns Hopkins Hospital Reports*, vol. xxi, Fasciculus iii; pp. 157-230. 1.50 dollars.



in England, Denmark, Switzerland, and the United States. He mentioned that the credit for the discovery, or at least the anticipation, of the healing virtues of light in rickets belonged to an English medical man, Dr. Theobald Palm, who was still in practice at Aylesford in Kent. More than thirty years ago, when Dr. Palm was medical officer at a mission hospital in the Far East, he found that rickets appeared to be present when there was darkness and absent when there was sunlight, though he had no technical equipment with which to prosecute any researches. Afterwards came the experiments of Finsen of Copenhagen, in combating lupus by light treatment. In Switzerland evidence had been forthcoming that the action of sunlight, as yet largely unexplained, upon or through the skin might cure disease, notably tuberculosis. He spoke particularly of the wonderful results obtained by Dr. Rollier's method of treating tuberculosis at his solarium at Leysin in Switzerland, and Sir Henry Gauvain's work at Alton. Recently he had had the opportunity in New York of seeing some experimental work on animals, which went to show that the useful therapeutic agency in the sun's beam was the light and not the heat. Results improved with the exclusion of heat rays. The amount of phosphorus and lime in the blood of these experimental animals had been found to vary according to the light in the sky at the time of the year; it was highest in June, and gradually dropped, reaching its lowest point in March. Clothing had an important effect upon the exclusion of light from the body; mercerized white cotton would allow the light to act upon the skin almost as well as if the skin were naked, whereas the same material coloured black arrested the potent rays in their passage. He believed that in a few years' time exposure to an adequate amount of sunlight would be regarded as part of the régime of pregnancy.

#### MEDICAL FELLOWSHIPS IN THE UNITED STATES.

THE Rockefeller Foundation, New York, has entrusted the Medical Research Council with a fund to be used in providing fellowships in medicine in the United States. Fellowships will be awarded by the Council, in accordance with the desire of the Foundation, to graduates who have had some training in research work in the primary sciences of medicine or in clinical medicine or surgery and are likely to profit by a period of work at a university or other chosen centre in the United States before taking up positions for higher teaching or research in the United Kingdom. A fellowship will be of the value of not less than £315 a year for a single fellow, or £470 for a married fellow, payable monthly in advance. Travelling expenses and some other allowances will be made in addition. A fellowship will be tenable for one year, which will as a rule begin in September. Applications for fellowships tenable for the academic year 1923-24 should be made not later than July 20th next. Full particulars and forms of application are obtainable from the Secretary, Medical Research Council, 15, York Buildings, Adelphi, London, W.C.2. It is understood that similar medical fellowships provided by the Rockefeller Foundation will be awarded by the National Research Council at Washington to American graduates desiring to work for a time at selected centres of research work in this country. Both announcements are of great interest. It is of course a commonplace to say that science is international and knows no boundaries; but the practical application of the principle frequently encounters difficulties, to the detriment of progress. Some of these difficulties are removed when scientific workers know those of other countries and their methods of work. The United States now possesses many first-rate laboratories and research institutes, and it will be a great advantage to the British fellows to work in them.

#### THE NATIONAL PHYSICAL LABORATORY.

THE annual inspection of the National Physical Laboratory on June 26th was attended by a very large number of visitors, who were received in the Aerodynamics Building by Sir Charles Sherrington, President of the Royal Society and Chairman of the General Board of the Laboratory, Sir Arthur Schuster, F.R.S., and the Director, Sir Joseph E. Petavel, F.R.S. The first impression of the uninstructed visitor after he has observed the amenity of the place, which is at the gates of Bushy Park, is the bigness of the area already occupied but to be extended, and the second the multiplicity of the laboratories and testing rooms and the astonishing complexity of the researches and measurements conducted in them. Broadly speaking, the work of the laboratory falls into two classes. On the one hand, the staff is engaged in research into a great variety of scientific questions, and every year makes numerous contributions to the progress of many departments of science; on the other hand, it renders another kind of service to all these departments of science by its verification of the exactness of instruments of research. To take an example having a direct interest to medicine we may mention the testing of thermometers, including clinical thermometers, which is carried out systematically on a very large scale. The tests are made with great precision, and the method appears to leave no loophole for errors. In the Radiology Division work has been continued on the crystalline structure of metallic crystals by means of the x-ray spectrometer. The high voltage x-ray equipment has been employed on the examination of a number of samples of metal, and much thicker specimens have been radiographed than was previously possible. This work has necessitated the x-ray equipment being sufficiently protected, and to this end the box containing the x-ray tube is covered on all sides with sheet lead 6 mm. in thickness. The measurement of the protective value of materials used in x-ray installations has provided a considerable amount of work for the department during the course of the year, while in addition a number of hospitals have been inspected and reported upon along the lines of the recommendations of the X-Ray and Radium Protection Committee. In many cases the protection afforded to the operators was found to be defective, and in the reports on these inspections satisfactory means of remedying the various defects have been pointed out. The Metrology Department is concerned, among other matters, with the maintenance of standards used for the verification of sets of weights for scientific purposes, and a new weight made of stellite was shown; the material is found to be particularly stable, and, being extremely hard, is resistant to accidental damage. An instance of the astonishing minuteness to which the art of measurement is carried is afforded by two pieces of apparatus designed and made in this department; both are capable of measuring with accuracy to a millionth part of an inch. Some idea of what a millionth part of an inch is may be gained from the statement that in the thickness of a single cigarette paper there are as many millionths of an inch as there are cigarette papers in an inch. We cannot pretend to give any full account of all that the laboratory is doing, and will conclude by a brief reference to the Aerodynamics Department, which is now adequately housed. Among other appliances is a wind-tunnel in which a gale of over fifty miles an hour can be produced and the behaviour of model aeroplanes studied.

#### THE ORTHOPAEDIC HOSPITAL.

PRINCE HENRY, President of the Hospital, laid the foundation stone of the Nurses' Home which is to be built for the country branch of the Royal National Orthopaedic



Hospital at Brockley Hill on Saturday last. A brief dedicatory religious service was conducted by the Rev. Stewart F. L. Bernays, after which the Prince laid the stone, assisted by the architect, Mr. R. M. Pigott, A.R.I.B.A., and the contractor, Mr. Roland Holloway. Lord Denbigh, the chairman of the Committee of the Hospital, then thanked the Prince for attending and emphasized the necessity of finding out and treating cripples in the earliest possible stage, which the long waiting list of cases showed was not yet possible. Prince Henry in his reply reminded his hearers of the history of the Hospital, and quoted statistics to show the large number of cases which urgently needed treatment and the necessity of expansion to ensure that surgical tuberculosis should receive the most modern treatment of sunlight and fresh air while at the same time providing facilities for surgical operations in those cases in which they were necessary. The country branch, which already has nearly a hundred beds, including a large hut for open-air treatment, the gift of Queen Mary's Convalescent Auxiliary Hospitals, stands in twenty-seven acres of ground at Stanmore on the top of the Elstree ridge over 400 feet above the sea, commanding extensive views in almost every direction. It is therefore not surprising to find that the Romans, with their unerring judgement in the selection of sites, established here the station of Sullionæacæ, a stage on the great road to Chester and beyond. "Perierunt etiam ruinae!" and the surroundings are now so rural that it is difficult to believe that the tenth milestone from the Marble Arch is close at hand. Prince Henry also reminded his hearers that the work is expensive and that the upkeep of the country branch, where happy and unclothed children bask in the summer sunshine, costs the charity £8,000 a year, besides the expenditure in Great Portland Street, and that the Nurses' Home will cost over £8,000 in capital expenditure. He therefore asked for liberal contributions to the funds of the charity, since the needs of London were not nearly met by the existing cripples' hospitals and expansion to at least four hundred beds must be provided at Brockley Hill in the near future.

THE tenure of office as Lord Rector of Edinburgh University by Mr. D. Lloyd George ends in September, and the University Unionist Association has invited Mr. Baldwin to be its candidate at the forthcoming Rectorial election. The Liberals have nominated Sir John Simon, and a Labour group in the University has adopted Mr. Bertrand Russell as its candidate.

THE attention of members of the Association who propose motoring to Portsmouth to attend the Annual Meeting of the British Medical Association is called to the fact that garage facilities are very limited. Those members who require accommodation reserved for them must notify Dr. W. P. McEldowney, "Elmhurst," London Road, North End, Portsmouth, on or before July 6th.

DR. JAMES MOORES BALL, of St. Louis, U.S.A., has presented his collection of ophthalmic specimens to the Army Medical Museum, Washington. The museum was rich in specimens illustrative of other branches of surgery, but was poor in eye specimens. The collection includes a large number of original drawings of external ocular disease, photographs, pathological preparations of eye diseases, microscopical sections, eye instruments, rare ophthalmic literature, copies of well known ophthalmic atlases, and many portraits of bygone leaders in ophthalmic work. The drawings and pathological specimens have already been installed in the museum. Correspondents have been instituted in other cities and countries so that exchanges and additions may be secured; amongst these are Mr. Treacher Collins of London and Mr. Gray Clegg of Manchester.

## ROYAL COLLEGE OF SURGEONS IN IRELAND.

### HONORARY FELLOWSHIP.

At a meeting of the Royal College of Surgeons in Ireland on Monday, June 25th, Sir Harold Stiles, K.B.E., Regius Professor of Clinical Surgery in the University of Edinburgh, was admitted an Honorary Fellow. After the termination of the ceremony of enrolment the President, Sir William de Courcy Wheeler, addressed Sir Harold Stiles as follows:

Sir Harold Stiles,—It devolves on me now, in conformity with the unanimous wish of the Council of this College, to admit you an Honorary Fellow. We recognize that your original contributions to surgery have been signal and outstanding, and we follow with pride in the footsteps of the many great medical schools which have done you honour. The parchment which I will now ask His Excellency to hand you signifies that your name will be placed on the Roll of our Honorary Fellows, in company with many great scientists, including John Hunter, Lister, and Pasteur.

The presentation was then made by the Governor-General of the Irish Free State.

### CHARTER DAY DINNER.

In the evening the charter day dinner was held under the chairmanship of Sir William Wheeler. Among the guests were H.E. the Governor-General of the Irish Free State, the Lord Chief Justice of Ireland, the Recorder of Dublin, the Master of the Rolls, Mr. Justice Samuels, the Presidents of the Royal Institute of Architects, the Incorporated Law Society of Ireland, the Chamber of Commerce, of University College, Dublin, of the Royal Academy of Medicine, and of the Royal College of Physicians, the Archbishop of Dublin, the Provost of Trinity College, the Governor, Apothecaries' Hall, Dublin, the Chairman of the Institute of Journalists, the Registrar of the Royal College of Physicians, the Very Rev. Father T. Finlay, S.J., Sir T. Grattan Esmonde, Mr. G. J. Swift MacNeill, and the Master of the Rotunda Hospital (Dr. Gibbon Fitzgibbon).

Among the Fellows of the College present were the Vice-President (Mr. R. Charles B. Maunsell), Sir Lambert H. Ormsby, Sir C. Arthur K. Ball, Mr. A. Fullerton, Senator Gogarty, Dr. M. R. J. Hayes, Professor G. Jameson Johnston, Sir Thomas Myles, Professor Rowlette, Mr. J. B. Story, and Sir Robert H. Woods.

After dinner Sir WILLIAM WHEELER proposed the toast of the Governor-General and prosperity to Ireland. One of the reasons, he said, which had decided the College to revive, after an interval of some years, the charter day dinner was to have another opportunity of expressing the hope that His Excellency's tenure of office might be long and prosperous and marked by the establishment of peace and fraternity between all members of the community. The College was an institution which knew nothing of politics or sectarian strife; its impartiality had indeed been tested, for its building had within the last few years been occupied or besieged at different times by three separate military forces hostile to one another. Since the College was chartered by George III on March 9th, 1784, it had sought to promote surgical progress. The charter stated that the College was founded to improve the profession of surgery, and so to promote the welfare of the nation at large. The College and its Fellows gloried in the fact that Irishmen, north and south of the Boyne and overseas, had the welfare of the College at heart, but the salvation of a medical school was the fundamental truth that medicine and surgery, and for that matter, scholarship generally, were without nationality and knew no distinction of race or speech. Many of those present recognized in the Governor-General an old acquaintance, for as expert witnesses they had come under his hands, yet whatever happened to a witness Mr. Healy always brought his well known courtesy and kindness into play, and members of the medical profession left the courts with feelings unwounded and with pride unhurt.



Sir William Wheeler gave the toast of the Honorary Fellows of the College, coupled with the names of Dr. William Mayo and Sir Harold Stiles. Both, he said, through their writings, their disciples, and their followers, had become the daily friends of the entire community, and both were known personally to many of those present. Only the names of those who were in the very forefront of the profession were even suggested for the honorary fellowship, but when the time came to enrol Dr. William Mayo, in company with several other of his distinguished countrymen, there was not a dissentient voice. Like many pilgrims from other lands, the speaker had visited Rochester; some evidence of the position the Mayo Clinic had achieved was afforded by the fact that though the population of the town was about 8,000, in the previous year 60,000 patients, drawn from all over the globe, had sought advice and the help from Dr. Mayo and his 200 assistants. In that clinic, as in the surgical clinics of France, Germany, and Switzerland, the work of Sir Harold Stiles, as a scientific surgeon, was well known, and he was everywhere regarded also with feelings of affection. Sir William Wheeler then referred to the high tribute paid by Dr. Mayo and the late Professor Osler on more than one occasion to the general practitioner. They had referred to him as being a daily benediction in the community, living a life of self-denial and tender sympathy. The general practitioners in Ireland had lived up to the high reputation attributed to them; they had carried out their duties under conditions which would almost make those trained in the profession of arms shrink and retreat. It was no light matter to travel over roads strewn with mines; it was not a joy ride going through ambushes and of necessity by forbidden routes, to be mistaken for combatants and fired upon by friends and foes. Some fell wounded; some were killed; others escaped with their cars blown up, but there was never an instance of refusal to attend a patient when the summons was received. In conclusion Sir William Wheeler said that broadcasting was the order of the hour, but the fame of Mayo and Stiles had been broadcasted before the invention of Marconi of a mechanical plant. He asked his audience to tune their glasses and listen in for Rochester and Edinburgh.

Dr. Mayo, in reply, said that when it became known that Mr. Timothy Healy had accepted the position of Governor-General of the Irish Free State it was felt that the troubles between Great Britain and America were over. Speaking of men of Irish birth who had won distinction in America he mentioned the late Dr. John B. Murphy, and described him as the greatest surgeon of his day. The American College of Surgeons, which had been patterned upon the Royal Colleges of Surgeons of Ireland, England, and Scotland, was putting up in his memory a new building to cost about £100,000 in addition to the endowment.

Sir HAROLD STILES, who followed, said that he felt that the honorary fellowship conferred on him was a recognition, not so much of what he had been able to do in the science of surgery and in its practice and teaching, as a tribute to the College to which he belonged and the School of Surgery in which he had the honour to work. He was glad that the Governor-General had honoured the gathering with his presence, because it was an indication of his sympathy for learning and for the science of medicine.

The toast of the sister College and the guests was given by Sir THOMAS MYLES, and acknowledged by Dr. M. F. Cox, President of the Royal College of Physicians, the Provost of Trinity College, and the Lord Chief Justice. The last-named said that he was greatly struck by what Sir William Wheeler had said about general medical practitioners. During the last ten years Ireland had lived through difficult and dangerous times, and the one abiding admiration he had was for the general medical practitioner; in every county he had seen him responding with the greatest courage to the test he had to pass through, always performing his duty and never shirking it or even thinking of the danger.

The toast of the President, proposed by the Governor-General, was warmly honoured.

## CONFERENCE ON INDUSTRIAL HYGIENE.

UNDER the auspices of the League of Nations Union a Conference on the International Labour Organization and Industrial Hygiene was held at the Royal Sanitary Institute, London, on June 19th and 20th.

After a few introductory-remarks from the Chairman, Mr. W. L. Hichens, of Messrs. Cammell, Laird and Co., Mr. Grimshaw, of the International Labour Office, Geneva, gave a short and explicit statement of the constitution and aims of the office, and remarked that it was entirely a non-political body. Upon it were represented the various States which were members of the League, also representatives of employers and workers. Following him, the Right Hon. J. H. Thomas, M.P., general secretary of the National Union of Railwaymen, remarked that the war had not only created an abnormal condition of society, but also an abnormal state of the human mind. He dealt with safety and protection in industry, and showed in a well balanced and temperate speech how the introduction of "safety" measures had been followed by a considerable reduction in the number of accidents. There were still, however, far too many accidents among railwaymen. He thought the cases were few where it could be said that employers were not interested in the health and safety of the workmen. He pleaded for more frequent meetings of the masters and men to discuss problems concerning industry and health. Lieut.-Colonel J. A. A. Pickard, general secretary, British Industrial "Safety First" Association, alluded to frequent labour "turnover" as a cause of accident, and pressed the point that prevention was better than compensation. Experience showed that in factories only a small number of accidents was due to machinery, not more than 5 per cent., also that while the larger number was due to hand labour, many of these could not have been prevented. Alluding to minor accidents, he had found in an inquiry into 60 fatalities in coal miners that 10 of the deaths were caused by sepsis owing to minor injuries not receiving immediate and proper treatment shortly after their occurrence. Compared with these the serious cases in a London firm had fallen from 17.7 per cent. to 2.5 per cent. by immediate treatment. Mr. G. Stevenson Taylor, H.M. Senior Engineering Inspector, Home Office, read a paper on the safeguarding of machinery; he pleaded that engineers should receive instruction in regard to safety devices, and urged the desirability for united action among the nations. Mr. Bellhouse, who occupied the chair, lent the weight of his position in the Home Office to what had been said by the reader of the paper, and commented upon the fact that over two-thirds of the accidents occurring in factories were not the result of machinery.

### *Fatigue in Industry.*

After a few remarks from the Chairman, Mr. W. Graham, M.P., chairman, Industrial Fatigue Research Board, Mr. D. R. Wilson, secretary of this Board, in referring to the subject, preferred to use the words "physical unfitness or inefficiency" instead of "fatigue." Long hours were followed by smaller production. Quite apart from fatigue as a cause of accidents in factories, there was a "personal susceptibility" which could not be altogether ignored. He could not say how many countries were studying the question in the manner it was being done in the United States of America, in France, and Great Britain. An extremely interesting address was given by Dr. C. S. Myers, director of the National Institute of Industrial Psychology, in which he dealt with the muscular and nervous causes of fatigue. He reminded the audience that during muscular contraction it was not so much muscular substance itself which disappeared as the reserve of carbohydrate contained therein. The muscles of the body were always more or less in a state of contraction or "tone," and yet there was no sense of fatigue, nor were nerve fibres readily fatigued: it was the brain cells which came under the harmful influences of the waste products of the body. Fatigue was a large question and it was not really known what fatigue was. So far as industrial fatigue was concerned it could only be known by its results, for there was no real test for it. The objection to "Taylorism" was that it concerned itself too much with the wages of the men and their output, and that the men who adopted it had simply to follow their leaders. Professor



Cullis said that she would like to see more laboratory tests carried out in regard to women's work as compared with men's. She had given attention to the physiology of normal womanhood and of normal pregnancy; also to the subject of the elimination of carbon dioxide as a measure of muscular work. It made all the difference whether a woman's heart was in her work or not: if the work was agreeable to her the output was increased. Dr. Legge, of Columbia, U.S.A., expressed himself as doubtful as to the practicability of several of the tests suggested, since they could not be carried out in factories. Miss E. H. Howse, Postal Workers' Union, vividly exposed the hardships imposed upon girls employed in the telephone department of the Post Office. In twelve seconds calls had to be linked up. Some of the girls when at work were on their feet practically all the shift in front of a switchboard 3 feet high and 4 feet wide. By the end of four to eight years many of these girls were played out. In the United States of America girls gave up the work after three years, and in Australia no women were employed after the age of 28. Mrs. MacFadyen, South Africa, referred to a series of minor illnesses among the coloured men working in the gold mines in South Africa, where the malady was traced to overeating of the food and which disappeared on giving the men oranges. She alluded to child labour in the United States of America, where children of 5 and 6 years of age were working in the cotton mills for twelve hours a day while the children of the negro population were attending school. Sir Thomas Oliver paid a compliment to the reader of the paper, and enlarged upon some of the views expressed by various speakers. In regard to the excessive demands upon telephonists, he raised the point as to whether the application of science had in this instance at least not outstripped human physical capacity to cope with it. Dr. Bond, from the chair, thanked the readers of the papers and speakers, and remarked upon the interest which the discussion had aroused.

#### *Industrial Diseases and Injurious Processes.*

Dr. T. M. Legge, Home Office, paid a well deserved compliment to the certifying factory surgeons, and stated that he was opposed to the separation of industrial medicine from general medicine. It was extremely important to know more of the incidence of industrial diseases in the early stages. It was difficult to draw out a list of unhealthy trades. He did not think that the rarer toxæmias arising in industrial occupations were of little importance. He quoted the serious conditions of health which had occurred in submarines and which were traced to arseniuretted hydrogen gas; he also alluded to the nervous symptoms produced by manganese and which had been wrongfully attributed to carbon monoxide gas. He welcomed the work which the International Labour Office was doing, and paid a compliment to Dr. Carozzi, one of its scientific advisers.

Professor E. L. Collis spoke of miners' nystagmus and its supposed relationship to carbon monoxide, also of the large number of accidents which had occurred among agriculturists. It had been stated that the number of cases of miners' nystagmus had been increasing in this country, but on inquiry in Belgium and France the increase was more apparent than real. He drew attention to such maladies as miners' beat hand, knee, and elbow, a well known form of bursitis, as being unknown to the Central Office in Geneva. Dr. Collis subsequently dealt with the provision of baths at the pit head. Dr. T. M. Watts, M.P., who occupied the chair, mentioned that nothing had been done to put a stop to the dangerous practice and consequences of "shuttle kissing." Sir Thomas Oliver supported Dr. T. M. Legge as to the inadvisability of separating the two branches—general and industrial medicine. As regards a list of dangerous occupations, distinction had to be drawn between diseases caused by the trade itself—for example, plumbism, due to the action of lead upon the body—and diseases incidental to employment. It was a well known fact that tuberculosis and cancer were more prevalent in some occupations than in others. Sir Thomas Oliver pleaded that while information in regard to occupation and disease was being gathered at the Central Office, to be turned to good account afterwards, the working classes, especially those engaged in dangerous trades, should receive instruction as to the dangers to be averted in their particular calling.

The subject of women workers' health was introduced from the chair by Miss Margaret Bondfield, and elaborated at length by Miss Constance Smith, H.M. Deputy Chief Inspector of Factories, who maintained that women's labour still required protection as regards the limitation of hours, also no night work and no Sunday labour. It was also necessary that in dangerous trades women should be protected, since women were more susceptible to some poisons than men. There was the question to be considered of the influence of these upon motherhood. The introduction of national insurance had made it easier to control women working after their confinement. The lifting and shifting of heavy weights were also dealt with. Miss Gertrude Tuckwell, who followed, said that any laws which were introduced must, to be effective, meet the needs of the workers and have their sympathy. The session was brought to a close by Mr. E. L. Poulton, vice-chairman of the General Council of the Trades Union Congress, who stated that the International Labour Office was an outcome of the war, and that its function was to accumulate information which could form the basis of consideration at future congresses of the League.

The promoters of the Conference are to be congratulated upon having brought together men and women in this country who are interested in the medical and social problems arising out of industrial conditions, and which have been, and are still likely to be, discussed by industrial conferences of the League of Nations.

### *Medical Notes in Parliament.*

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

*Small-pox in Gloucester.*—Mr. Leach asked, on June 25th, what was the evidence that the epidemic which had occurred in the city of Gloucester was really an epidemic of small-pox, seeing that, although it was estimated that 2,000 cases of the disorder had occurred, there had been a complete absence of invalidity or injury during the attack, an absence of any invalidity subsequent to the attack, and that the mortality had been nil. The Minister of Health replied that the epidemic in Gloucester had been recognized to be small-pox by a large number of local medical men, by officers of the Ministry, and by Dr. Cameron of the Metropolitan Asylums Board, who was called in as an expert by the corporation. A number of cases of small-pox were recognized in other districts and traced to Gloucester. The statements as to the absence of injury or invalidity either during or subsequent to the attacks were not correct, as he was informed that although the type of the disease was mild and no deaths had yet occurred, many of the patients had been seriously ill. The action of the Ministry of Health had led to the localization and control of an outbreak which had already begun to spread to other parts of the country, and which, if unchecked, might have caused widespread disturbance of trade as well as danger to the public health. On June 26th Sir Arthur Holbrook asked the Minister of Health whether he would consider the repeal of Section I (1) of the Vaccination Act, 1907, exempting persons conscientiously believing that vaccination would be prejudicial to the health of the child. Lord Eustace Percy replied that the Government could not undertake to introduce legislation for the amendment of the Vaccination Acts during the present session.

*Infant Mortality.*—Mr. Chamberlain, at the instance of Mr. Lansbury, on June 21st, presented to the House a table showing infant mortality in London, Manchester, Birmingham, and Leeds in the years 1913, 1917, and 1922, and also the figures for each of the metropolitan boroughs. In London as a whole the deaths of children under 2 years of age in 1913 gave a rate of 136 per 1,000 births; in 1917 it was 143, and in 1922 it was 109. In Manchester the figures were respectively 169, 148, and 133. In Birmingham they were 164, 130, and 112. In Leeds they were 174, 183, and 131.

*London Housing By-laws (Public Health).*—On report on the Housing Bill, on June 20th, Dr. F. E. Fremantle proposed a new clause. The object is to make the London County Council the sole by-law making authority for London for the taking of precautions in respect of any infectious disease in working-class houses which are divided into separate tenements. The metropolitan boroughs will still have the powers and duties of enforcing the by-laws. Dr. Fremantle explained that the by-laws might be varied either in accordance with the wishes of different metropolitan boroughs for their respective areas or in respect of limitations as to rental, or in the case of the owner-occupier living in the house. But it was hoped that the County Council would vary the conditions as little as possible because it was for the general benefit to get a set of by-laws for London as uniform as possible. The clause was the subject of agreement between the County Council and the borough councils; and it was passed.

*General Disease.*—Sir W. Davison asked, on June 22th, whether any notification had been given on the lines of the report of Lord Trevelthain's Committee that chemists were entitled to sell disinfectants, or would legislation be necessary? Mr. Chamberlain



replied that no notification had been issued to chemists in consequence of the report. He was now inquiring into the question whether legislation would be required. Mr. Chamberlain's original answer to the question on this part of the report was given in the *BRITISH MEDICAL JOURNAL* of June 23rd (p. 1071).

**Hospitals and Legacy Duty.**—As promised while the Finance Bill was in Committee, Sir William Joynson-Hicks (Financial Secretary to the Treasury) received, on June 26th, a deputation to urge that legacies to hospitals should be exempted from legacy and succession duty by the present Finance Bill. Dr. Macnamara introduced the deputation, which included a number of members of both Houses of Parliament, and representatives of King Edward's Hospital Fund and the British Hospitals Association. It was stated that the concession might amount to between £40,000 and £70,000 a year for London, and possibly another £80,000 for the provinces. Such a form of indirect assistance would be particularly helpful, inasmuch as it should encourage testamentary gifts. Sir William Joynson-Hicks made a sympathetic reply, and promised to report to the Prime Minister what had been said.

**Ministry of Health: Medical Staff.**—Answering Mr. Becker, on June 20th, Mr. Chamberlain stated that fifty-four medical men were employed in the work of the regional staff of the Ministry of Health on a sessional basis. There would be no economy by placing any of them on the salaried staff. Three medical officers of the Ministry of Health were in receipt of retired pay; two of these were established civil servants, and the unestablished officer possessed special qualifications.

**Deaths from Silicosis.**—Lieut.-Colonel Lane-Fox (Secretary for Mines) informed Mr. Hurd, on June 20th, that it was not established with certainty that silicosis was the cause of death in the case of a miner at Newbury Colony in Somerset which had been investigated. But the departmental Health Advisory Committee, after examining the dust from the mine, was of opinion that there might be some danger from gritty particles. The owners, at the request of the inspector, had installed drills fitted with a spraying device, and these were now in use. The whole question was now under careful consideration.

**Miners' Cramp.**—Lieut.-Colonel Lane-Fox informed Mr. A. J. Bennett, on June 13th, that his attention had been called to the proposed remedy for miners' cramp. Professor Moss was working in close collaboration with the committee on the control of atmospheric conditions in deep and hot mines, which was one of the research committees now attached to the Safety in Mines Research Board of the Department.

**Registration of Nurses.**—Mr. Mitchell inquired, on June 20th, whether the Minister of Health was aware of the serious position in which the smaller hospitals had been placed in consequence of the Regulations of the General Nursing Council regarding the training of nurses, which had increased the difficulty of obtaining probationers. Mr. Chamberlain said he had not received representation in this sense. It was open to any hospital which was refused approval by the General Nursing Council to appeal to him, and no such appeal had been made. In reply to Dr. Chapple, Mr. Chamberlain said that 947 applicants had been rejected by the General Nursing Council as ineligible for registration under the rules hitherto enforced. He was advised that these rules were not inconsistent with the provisions of the Act of 1919. It rested with the Council to determine what steps should be taken to advise the nursing profession of the decision of the House, but in view of the publicity given to the subject in the papers he doubted whether many nurses were unaware of the effect of last year's vote. He agreed with Sir Henry Craik that the decision of the House did not have effect until an Order pursuant to it was issued. The best course for the 900 nurses who had already been rejected would be to put in fresh applications.

**Universities of Oxford and Cambridge Bill.**—This measure, which had been introduced in the House of Lords, was read a second time without division in the Commons on June 22nd. Mr. E. Wood (Minister of Education) explained that it was substantially in the same form in which it was presented last year by Mr. Fisher, and was consequential on the report of the Royal Commission over which Mr. Asquith presided. It was held that the establishment of a pension scheme would be outside the scope of the Commissioners' recommendations; the universities and colleges had power to make such a scheme, and the University of Cambridge had already formed one. During the time that the Royal Commission was sitting the Treasury gave assistance to the universities to the extent of some £30,000. Mr. Asquith and his colleagues recommended that an additional £70,000 a year should be given to each university, and that sums should be allowed to the women's colleges for a period of years and for extra-mural teaching. In addition a capital sum was suggested to put the finances of the universities in better condition. The times were somewhat changed since the Royal Commission reported and it was not likely that the Government could give the full measure of assistance recommended, but it would give such assistance to the universities as would be sufficient to meet the more pressing and immediate needs. Mr. Asquith, supporting the bill, touched on the inadequacies of the salaries of university teachers and administrators. Mr. William Graham, who was a Labour member of the Commission, deplored the practical starvation of important departments of research which had a most immediate bearing on economic and industrial problems. He thought a strong effort should be made to obtain £100,000 or more in each case at the earliest possible moment.

#### Answers in Brief.

The number of deaths attributed to pregnancy and child-bearing in 1922 was 2,971. In the same year the number of deaths associated with childbirth but attributed to other causes was 1,051.

## England and Wales.

### THE WELSH NATIONAL MEMORIAL ASSOCIATION.

The Welsh National Memorial Association is one of the best examples of the good that may be done by a wise benefaction well administered. The association owes its existence to Mr. David Davies, M.P., and its prosperity very largely to his continued interest and support. It has established country sanatoriums for pulmonary tuberculosis in several parts of Wales, and has for some time had a surgical tuberculosis hospital at Glan Ely, near Cardiff, where children suffering from joint and gland affections are received and treated. It has now established a large children's hospital at St. Bride's Castle, St. Bride's Bay, to which children from Glan Ely can be transferred, thus ensuring the continuity of treatment during the prolonged period necessary for the cure of joint disease. The new institution is known as the Kensington Hospital because the castle was until recently occupied by Lord Kensington. It has been converted into an orthopaedic hospital with 101 beds. It contains on the ground floor two wards of eight beds each, one ward of seven beds, and two wards of four beds each. A sun ward with fourteen beds has been erected on the south-east terrace. On this floor also are day and dining rooms, an operating theatre, and sterilizing room. On the first floor there are two wards of eight beds each, one of seven, one of five, three of six, two of three, and two of two beds each. The third floor opens on to a flat roof. A stable block has been converted into x-ray and plaster rooms, and a workshop and forge have been provided. There is also a post-mortem room, a mortuary chapel, and a disinfecting house. There are other buildings which can be converted into class-rooms, and it is hoped to utilize the greenhouses for training patients in horticulture. Steam cooking, electric lighting, and central heating apparatus have been installed.

The hospital was opened recently by Mrs. David Davies, to whom a vote of thanks was proposed by Sir John Lynn-Thomas, who said that since the opening of the first tuberculosis hospital thirteen years ago 30,000 patients had been treated in the different institutions, and Wales could now boast the finest organization in the world to deal with this scourge. Dr. Llewellyn Williams (medical member of the Welsh Board of Health), who seconded the motion, said that by opening so excellent an institution for the treatment of tuberculosis Mrs. Davies had inaugurated a new era in the fight against tuberculosis in Wales. He went on to say that as 20 per cent. of tuberculosis was believed to be caused by bovine disease every effort should be made to stop the supply of tuberculous milk. At a luncheon which followed, Mr. R. C. Elmslie, orthopaedic surgeon to St. Bartholomew's Hospital, proposed the toast of prosperity to the Memorial Association. He said that a survey of the number of crippled children in London made in 1907 showed that half were crippled by surgical tuberculosis; the proportion had now fallen to one-third. He hoped that parents in Wales would take full advantage of the splendid opportunity now afforded for the treatment of their children; the sooner they were admitted to the hospital the sooner would they recover and be able to return to their parents. Mr. David Davies, in reply, said that the association had now under its control or supervision 1,322 beds—1,014 for pulmonary tuberculosis and the remainder for surgical cases. There were, he said, 160 children still waiting admission, but as soon as the Kensington Hospital was completely equipped it would be possible to deal with all these cases.

### SMALL-POX IN GLOUCESTER.

Reference was made last week (p. 1071) to the seriousness of the situation at Gloucester, where there is an outbreak of small-pox. A special meeting of the Gloucester City Council was held on June 20th, to consider a report on the outbreak by Dr. W. H. Davison, assistant medical officer of health for Birmingham, who had been invited to undertake the administrative control of the outbreak of small-pox in Gloucester. According to the *Birmingham Post* of June 21st, Dr. Davison said that on June 12th,



when he undertook control, 148 cases of small-pox were known to exist in Gloucester, only 14 of which had been removed from their homes to the small-pox hospital. Up to June 18th 57 more cases had been discovered, making a total, to that date, of 205 cases. Dr. Davison said that great difficulty was being experienced in getting patients to agree to removal to hospital. There were certain influences at work endeavouring to foster this resistance and throw sand on the administrative machinery designed to protect the community. It had been necessary in six cases to apply for a magistrate's order for the removal of the affected person to hospital, and it could not be too widely known that the sanitary authorities had ample powers to compel persons suffering from small-pox to go to the isolation hospital provided. Captain J. Wood, chairman of the Public Health Committee, detailed the steps that had been taken to cope with the epidemic. Vaccination was no part of the policy of that committee, but he had been assured that there was no hope of dealing with this epidemic except by vaccination. Alderman Dr. Knight said that for some weeks there had been a strong feeling among doctors in the city that small-pox was there, and some were contemplating writing to the Ministry of Health on the matter. Alderman Caldwell said that he did not think it wise to talk too much about the epidemic. He felt sorry that the meeting had been called, and also that notices respecting small-pox in the city had been stuck all over the place. Mr. S. T. Stoddart said that any man who did anything to prevent the disease being checked was rendering a disservice to his fellows. Mr. J. Embling said that the bunkum of vaccination was being put up because of the financial gain that was behind it. The Mayor, Mr. J. O. Roberts, remarked that the local medical officer of health suggested that the expert who should be called in to decide between himself and the medical officer of the Ministry of Health, who diagnosed the disputed cases as small-pox, should be the medical officer of health for Leicester, but that eventually another medical officer was agreed upon. The reports and minutes of the Health Committee and of a subcommittee appointed for dealing with the outbreak were approved by the meeting, with one dissentient. At a meeting of the Health Committee at Gloucester on June 26th it was resolved to recommend to the City Council that the medical officer of health be relieved of all duties connected with the diagnosis of cases of small-pox and chicken-pox and hospital administration in connexion therewith; the medical officer has agreed to this course. The Committee decided to appeal to the Metropolitan Asylums Board for additional medical assistance.

According to the official *Weekly Return of Births, Deaths, etc.*, issued by the Registrar-General, a total of 79 cases of small-pox were notified in England and Wales during the week ended June 16th, 1923; they were made up as follows: Heanor (Derbyshire), 1; West Ham, 2; Stapleford (Notts), 5; Gloucester (county borough), 52; Gloucester (rural district), 3; Stroud (Gloucestershire), 1; Wheatenhurst (Gloucestershire), 2; Thornaby (Yorks), 1; Bentley (Yorks), 5; Doncaster (borough), 2; Doncaster (rural district), 4; and Risca (Monmouth), 1. Other cases of small-pox occurring since June 16th have been reported in the newspapers, including 23 cases at Warsop (Notts), 8 at Kirkby-in-Ashfield (Notts), 7 at Tylorstown (Glam), 10 in Middlesbrough, 3 in Birmingham, 1 at Broadheath (Worcestershire), and 2 at Millom (Cumberland).

#### INFANT WELFARE CONFERENCE.

A conference on infant welfare, under the auspices of the National Association for the Prevention of Infant Mortality and National Baby Week Council, will be held at Carnegie House, 117, Piccadilly, London, on Monday, Tuesday, and Wednesday, July 2nd, 3rd, and 4th. The representatives of the British Medical Association are Professor Louise Mellroy and Dr. Donald Paterson. On Monday the Minister of Health will deliver his presidential address, with Dr. G. F. Still in the chair; a debate will afterwards be held on the causal factors of infant mortality and their

prevention; in the afternoon a debate will take place on the value of maternity homes in a maternity and child welfare scheme, with Dr. Janet M. Campbell in the chair; and lectures will be given in the evening by Mr. R. C. Elmslie and Mr. C. E. Wallis. On Tuesday there will be a debate on the scope, staffing, and administration of maternity and child welfare centres, with Mr. H. O. Stutchbury, Assistant Secretary, Ministry of Health, in the chair; in the afternoon a debate will be held on the advisability of combining the functions of the health visitor with those of other officers of local authorities, with Dr. J. W. Robertson in the chair; in the evening there will be lectures by Mr. Bishop Harman and Mr. S. G. Moore. On Wednesday a debate will be held on the maternity convention passed by the Washington Convention in 1919, with Dr. Constance Ellis of Melbourne in the chair; in the afternoon there will be a debate on housing in relation to infant welfare, with the Hon. Sir Arthur Stanley in the chair, and in the evening there will be lectures by Dr. Evelyn Saywell and Miss Norah March. During the conference the annual meeting of the Maternity and Child Welfare Group of the Society of Medical Officers of Health will be held, and there will also be a meeting of the General Council of the Association of Infant Welfare and Maternity Centres; a number of visits to institutions have been arranged. Further particulars may be obtained from the honorary secretary, National League for Health, Maternity and Child Welfare, 117, Piccadilly, W.1.

#### PADDINGTON TUBERCULOSIS DISPENSARY.

At the annual meeting of the Paddington Tuberculosis Dispensary on June 25th the Mayor (Alderman H. B. Kenyon) read some figures which had been given him by Dr. Reginald Dudfield, M.O.H. Paddington, to illustrate the effect on the health of the borough of this, which was the first tuberculosis dispensary to be opened in England. Between 1914 and 1922 there had been in Paddington a fall of 49 per cent. in the number of cases of pulmonary tuberculosis notified, and of 27 per cent. in the number of cases of tuberculosis of other forms. The fall in the death rate from pulmonary tuberculosis during the same period had been 23 per cent., and in the death rate from other forms of the disease 26 per cent. Even more gratifying was the substantial fall (27 per cent. in the pulmonary cases) in the mortality of the cases notified since the dispensary was opened in 1909. Sir Robert Philip, upon whose Royal Victoria Dispensary, in Edinburgh, the Paddington work was modelled, congratulated the borough upon its honourable record. It had associated with the preventive and curative aspects of its work the investigation into and amelioration of the social and economic consequences of tuberculosis. Paddington was the first centre in Great Britain to introduce the principle of a Care Committee. It was at Paddington that it was first realized that, on account of the ubiquity of the disease, if tuberculosis was to be effectively dealt with it must be sought for. Sir Robert Philip bore strong testimony to the value of the combination of voluntary and official enterprise. He was confident that, thanks to a concentration of forces, pulmonary tuberculosis was on the run. He was sorry to read in an evening newspaper a statement attributed to a medical man that the consumption problem was probably never more serious than to-day, and that the death rate was higher than when the campaign against consumption was started. Such a statement was a libel on their efforts, and an illustration of ignorance and folly. He rebutted it by quoting the figures of the Registrar-General both for England and Wales and for Scotland. He recalled the fact that in 1910, to a great conference on the subject in the United States, presided over by Mr. Roosevelt, then President, he (Sir Robert Philip) was asked to send a cable stating what in his opinion would be the result of the adoption of the system then under consideration, involving the setting up of dispensaries, sanatoriums, open-air schools, and so forth. In his cable in reply he prophesied a 40 per cent. reduction in tuberculosis mortality within ten years. The New York statistics for the most recent year available showed that during practically that period of ten or eleven years there had been a fall in tuberculosis mortality in New York City of 51 per cent.



## ST. CHAD'S HOSPITAL, BIRMINGHAM.

St. Chad's Hospital, Birmingham, was opened in September, 1914, as a non-charitable, self-supporting institution intended to supply special medical and surgical treatment at a moderate inclusive cost. In its report for the year ending March 31st, 1923, the Committee of the hospital attributes the fall in the number of admissions to the general industrial depression, even the low inclusive fees being beyond the means of those who would otherwise have availed themselves of the hospital services. The fall is considerable, the number of in-patient admissions having dropped from 1,184 in 1920-21 to 752 during last year. The hospital staff now consists of 32 specialists, drawn from the consultants of the Birmingham hospitals. The hospital can accommodate 100 patients. It is run on business lines, with shareholders and a Board of Directors which controls the institution subject to the powers conferred upon the Medical Committee. The rules governing admission to the hospital are not quite clear. In the report of the Committee it is stated that "patients can obtain admission by applying to the House Governor, who is empowered to assess the amount of fees payable according to the nature of the treatment required and the financial circumstances of the patient." Again, "a patient admitted in this way will be placed under the care of a member of the staff who is a specialist for the disease from which he or she (*sic*) is suffering." And, "in the interest of the patient it is strongly recommended that a letter of introduction from his or her doctor should be presented at the time of application, or the name of the doctor given." On the other hand, in an article by Mr. William Billington, published in the *BRITISH MEDICAL JOURNAL* on February 21st, 1920, it is stated that no patient can be admitted except on the recommendation of a member of the medical staff; and that the amount of the inclusive fee (minimum charge 5 guineas a week) is arranged between the patient and the member of the staff concerned. Mr. Billington also said that the ordinary relationship between consultant and practitioner is maintained, the latter being invited where practicable to assist in the treatment. It appears that something like the group clinic method exists in the hospital, since each member of the staff has the right to call upon any other member for assistance without fee in treating what is called the "composition" patient.

According to the report the Committee has endeavoured to make St. Chad's fulfil as completely as possible the conditions laid down by the Advisory Committee to the Minister of Health, and it is stated that after a consultation between the Chairman of the Committee and Lord Dawson, it has been made possible for patients to make direct application to the hospital for admission and treatment. It seems likely that the Hospital Committee and the medical staff are not quite sure yet of the position of the hospital in the scheme of things; and that with the incentive of a falling admission list they are feeling their way in various directions. Whether a system of receiving direct applications from patients, who are then placed under the care of a specialist selected by some method not at present clear, will be satisfactory is a matter of experiment. But all experiments in the use of paying hospitals are interesting, and possibly valuable.

## LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.

The annual general meeting of the London and Counties Medical Protection Society was held for the first time at the society's new headquarters, Victory House, Leicester Square, on June 20th. Sir John Rose Bradford, who presided, referred regretfully to the loss which the society had sustained during the year in the death of three members of the Council—Colonel E. C. Bensley, Dr. D. B. Balding, and Dr. J. C. Pollock Muir—each of whom had served the society for more than thirty years. The society's membership had increased during the year, but unfortunately it still remained true that there were many members of the medical profession who did not belong to either of the defence societies. He could not help thinking that if they were acquainted with the risks they

ran in the course of their daily work, and with the valuable assistance which either of the two societies was capable of rendering, they would seize the earliest opportunity of becoming members. The finances of the society were in so satisfactory a state that the Council was able to waive the entrance fee in the case of the more junior members of the profession—those applying for membership within a year of registration—and there was now no difference in procedure as regards entrance fees or annual subscriptions between this society and the Medical Defence Union. The year had been marked by a closer association between these two bodies. A joint standing committee, including representatives of both, had been set up. The speaker drew attention to the number of instances in which practitioners had charges brought against them owing to their remissness in not examining the patients by modern methods, particularly x-ray examination in cases of fractures. Numbers of cases came before the society's council in which very obvious precautions had been neglected. Many practitioners, although they might, perhaps, recommend that a patient should have x-ray examination, did not protect themselves by means of a written record of the fact that the patient had declined to do what was recommended.

On the motion of Dr. C. M. Fegen, seconded by Mr. Sidney Spokes, Sir John Rose Bradford was re-elected to the presidency unanimously and with hearty acclamation. Dr. Fegen mentioned that Sir John had taken a principal part in bringing about the closer co-ordination and co-operation which now existed between the two defence societies. Dr. Fegen himself was re-elected treasurer, and all the retiring officers were re-elected.

The annual report, which was adopted, stated that the number of applications from members asking for advice and assistance was 645, as compared with 465 in the previous year. In the great majority of cases satisfactory results were obtained without litigation. The provision made by the society for indemnifying members against costs of the other side and damages in unsuccessful cases continued to give satisfactory results, and the Council had not yet had occasion to draw upon the sum of £20,000 provided for each year by an excess insurance policy with Lloyd's. After very careful consideration the Council had resolved, for the present at all events, not to elect as members any dentists who did not possess a registered degree or diploma.

## Scotland.

## THE CHAIR OF BACTERIOLOGY AT EDINBURGH.

THE court of the University of Edinburgh at its meeting on June 18th appointed Dr. Thomas Jones Mackie to be Robert Irvine professor of bacteriology in succession to the late Professor James Ritchie. Professor Mackie, who was born at Hamilton and educated at the academy there, is a Glasgow graduate, having taken the degrees of M.B. and Ch.B., with honours, in 1910, when he was awarded the Brunton Memorial Prize as the most distinguished graduate of his year. During the war he saw service at Gallipoli and afterwards had charge of a bacteriological laboratory at Alexandria. In 1917 he was released on his appointment to the Wernher-Beit chair of bacteriology in the University of Cape Town. Before the war he had been assistant in bacteriology with the director of the Bland-Sutton Institute of Pathology at the Middlesex Hospital, and has to his credit a large amount of valuable research work in bacteriology. In 1921 he received the M.D. degree, with honours, from Glasgow with a thesis entitled "Studies in Intestinal Bacteria."

## DEPARTMENT OF ZOOLOGY AT EDINBURGH.

At the same meeting of the University Court a letter was read by Principal Sir Alfred Ewing intimating from a donor, who desired to remain anonymous, a gift of £20,000 5 per cent. War Loan, to form the nucleus of a fund to provide a new department of zoology. It is hoped that other



support may be forthcoming in the near future to enable the department to be established. The laboratory accommodation for this department is at present quite inadequate, and both teaching and research are carried on under serious disadvantages. The department is well staffed, for in addition to the professorship of natural history which has existed since 1767, a chair in zoology was instituted in 1919, and there are four lecturers in zoology, a lecturer on genetics since 1911, and a lecturer on comparative anatomy since 1911.

Leave of absence has been granted to Professor Cossar Ewart, Regius Professor of Natural History, to enable him to accept the invitation of the Government of Australia to attend the Pan-Pacific Science Congress in Australia. His recent researches into the origin of the merino sheep and on the evolution of wool have been of great practical value, and he has been specially invited to contribute to the proceedings of the Congress.

#### SCOTTISH BOARD OF HEALTH.

The fourth annual report of the Scottish Board of Health has been issued and we hope to refer to it at more length in future issues. We will now only note the statement that throughout 1922 the policy of the Board was largely determined by two factors—the need for economy and the distress caused by the prolonged trade depression. The policy of economy prevented the Board from sanctioning developments that were not urgently necessary, and caused existing services to be restricted wherever this was possible without danger to the public health. Unfortunately the ban on developments has restricted several of the health services, notably the school health service and maternity and child welfare services, which were practically only in course of development when the need for economy arrested them.

#### SCOTTISH SOCIETY OF ANAESTHETISTS.

At the annual meeting of the Scottish Society of Anaesthetists, held in the Hall of the Faculty of Physicians and Surgeons on May 26th, a report by the executive on the present remuneration and status of specialists in anaesthetics in Scotland was considered and adopted. The report stated that the fees in Scotland are at present much below those paid in London and compare unfavourably even with those usual in the English provincial centres. Emphasis was laid especially on the following points:

1. At the request of surgeons, anaesthetists frequently reduce their fee to suit the pocket of the poorer private patients in exactly the same spirit as the surgeons themselves do. To this they have no objection, but unfortunately it seems to be a general experience among anaesthetists that what may be termed their standard fee for an administration of average gravity in a patient of ordinary means has come to be looked upon as a maximum to be exceeded upon very rare occasions. It is certain that a considerable number of patients are charged an anaesthetic fee which is too small in comparison with the other expenses associated with the operation.

2. The remuneration paid even to special anaesthetists of experience and acknowledged standing is little if any greater than that accorded to the surgeon's assistant, who is usually a man of junior standing and only at the beginning of his career.

3. In the teaching hospitals, also, the present status accorded to the specialist in anaesthetics shows too little recognition of his responsibility and of his special training and experience.

4. The developments of modern surgery are such as to require the services of the properly trained and fully responsible anaesthetist, and it is felt that neither in respect of status nor remuneration do the present conditions give recognition and encouragement to good and sustained work. For the making of a good anaesthetist, natural aptitude, proper study and prolonged hospital experience are all necessary, and unless those who devote themselves to the subject can look forward to reasonable prospects, the progress of the science and practice of anaesthesia must suffer.

The society recognizes that any attempt to lay down rigid rules and scales of remuneration is not in accordance with the spirit of the profession. The individual specialist in anaesthetics must charge for his services in accordance with his own standing. It is hoped, however, that ventilation of the matter in this way may be of value in bringing before the profession the unsatisfactory nature of the present position.

## Ireland.

#### IRISH MEDICAL COMMITTEE.

A MEETING of the Irish Medical Committee was held in the Royal College of Surgeons on June 20th. There were present: Dr. Joseph Power, Vice-Chairman, in the chair, Senator W. O'Sullivan, Drs. P. J. Hamilton, J. M. Kenny, G. Maguire, G. A. Hickey, R. J. Rowlette, M. R. Hayes, D. Forde, W. McCann, J. G. Holmes, J. S. Darling, D. Walsh, T. B. Costello, H. T. Warnock, P. J. Grogan, P. T. Magner, J. P. Shanley, A. D. Courtney, P. J. Quinlan, Dr. Hennessy, Medical Secretary, and Mr. C. H. Gick, Secretary. Apologies for absence were received from Drs. R. J. Johnstone, M.P., Chairman, W. S. Morrison, M.P., E. C. Thompson, P. J. O'Brien, W. J. O'Sullivan, J. C. King, P. McKenna, W. W. Murphy, J. Conihlan. Mr. R. J. Johnstone, Chairman, wrote stating that he wished to resign the chairmanship, but the Committee directed that he should be urged to reconsider his decision.

#### Advisory Committee to the Irish Insurance Commission.

A letter was received from the Irish Insurance Commission inviting the Irish Medical Committee to nominate three medical practitioners to act on an Advisory Committee to the Insurance Commission (Free State). Drs. Rowlette, W. O'Sullivan, and Hennessy were selected.

The Insurance Commission (Free State) forwarded a draft of the proposed report with regard to (1) Investigation of complaints against medical certifiers; (2) the appointment of a Complaints Committee to investigate, in the first instance, charges made against medical certifiers, etc. The report was considered in detail, and it was resolved:

"That the Irish Medical Committee is of opinion that the present arrangement whereby complaints against medical certifiers are submitted to Local Medical Committees should be continued, and that only such cases where the Local Committees failed; within a reasonable time, to take action, should be submitted to the proposed Complaints Committee.

"2. That there may be allowed to either party an appeal from the decision of the Local Medical Committee to the Complaints Committee.

"3. That the names of Dr. P. Grogan and Dr. P. Magner be forwarded to the Commission to represent the Irish Medical Committee on the Complaints Committee."

The revised form of medical certificate, and certain queries sent to the medical certifiers by approved societies, hitherto sent through the Insurance Commission, were considered. The Committee decided that it was inadvisable as well as a violation of the agreements of medical certifiers to forward certain queries through the approved societies, but that it would be prepared to consider favourably the adoption of such queries if embodied in the form of a certificate which would be used only at intervals agreed upon between the Insurance Commission and the Medical Committee.

#### Irish Medical Services.

A long discussion took place with regard to the position of the Irish Medical Services both as they affected the public and those members of the profession engaged in their administration. It was resolved:

"That an Executive Subcommittee, consisting of the Chairman, Vice-Chairman, Drs. Rowlette, O'Sullivan, Hamilton, Hayes, Shanley, Magner, J. M. Day, and the Secretaries, be appointed, and that it shall act as a deputation to wait on the Minister for Local Government and urge upon him (1) the necessity for the establishment of a Ministry of Health for Ireland and a National Medical Service on the lines recommended by the Irish Public Health Council; (2) pending legislation that the deputation urge on the Minister the grievances of medical officials in regard to salaries, holidays, pensions, etc."

The Medical Secretary was directed to continue his representations to the Ministry of Local Government in connexion with the refusal of that Department to sanction increases for medical officers passed by the local authorities in Mullingar, Kinsale, etc.



*Red Cross on Motor Cars.*

Arising out of communications in regard to the continuance of Red Cross and other distinctive marks on the motor cars of medical practitioners, it was resolved:

"That the Irish Medical Committee considers the use of the Red Cross on motor cars of medical practitioners, during the recent troubles, was justifiable, but it is now of opinion that all such distinctive marks should be dispensed with in districts where peace is restored."

*Medical Attendant to St. Patrick's College, Maynooth.*

The position of medical attendant in St. Patrick's College, Maynooth, and resolutions passed by the County Kildare medical practitioners, were considered. The Committee expressed its sympathy with Dr. Grogan and adopted the resolutions passed by the County Kildare doctors, which stated (1) that the increase asked for in the salary of Dr. Grogan as medical attendant to St. Patrick's College, Maynooth, should be granted without further delay; (2) that the County Kildare doctors considered it unprofessional, in the circumstances, for any doctor to accept Dr. Grogan's office, and that if any doctor did so they would not recognize him professionally.

*Medical Fees for Life Insurance.*

The following resolution was adopted:

"That the Irish Medical Committee is of opinion, for medical examination in life insurance cases, that if the profession, throughout Ireland, take proper steps to have itself locally organized it will secure the fees obtained and obtainable by the Limerick doctors. As the result of united action the doctors in the borough of Limerick are paid the following scale of fees for life insurance examinations:

Industrial assurance :					£	s.	d.
Under £100	...	...	...	...	10	6	
Ordinary :							
£100 to £500 (inclusive)	...	...	...	...	1	1	0
Above £500 and less than £1,000	...	...	...	...	1	11	6
£1,000 or any higher sum	...	...	...	...	2	2	0

*Remuneration for Holidays, Consultations, Administration of Anaesthetics, etc.*

The following resolutions were adopted:

"That the remuneration in dispensary districts for temporary work, in normal conditions, should be a minimum of £6 6s. per week, and for hospitals £5 5s. per week. For the administration of anaesthetics and assisting at operations, £2 2s. Where more than one anaesthetic is administered at one visit: First case, £2 2s.; subsequent cases at £1 1s. each.

"That the substitute nominated by the doctor going on leave should be appointed by the local authority—if the arrangements made for the discharge of the duties are satisfactory to the Local Government Department. Canvassing by doctors against the nominee of the doctor going on leave is to be very strongly condemned. Consultations under the Medical Charities Acts: Day, £2 2s. and mileage; night, £3 3s. and mileage. Midwifery, in the day, £3 3s. and mileage; at night, £4 4s. and mileage."

*Tax on Motor Cars.*

It was resolved:

"That motor cars engaged in work under the Medical Charities Acts should be exempt from taxation, and that the tax paid on motor cars of doctors engaged in other practice should be on pre-war basis of allowance."

*IRISH (FREE STATE) ARMY MEDICAL SERVICE.*

At the conclusion of the proceedings of the Irish Medical Committee the Chairman congratulated Dr. M. R. Hayes, F.R.C.S.I., late Director-General of the Free State Army Medical Service, on his success in organizing, under very great difficulties, a medical service which proved in every way equal to the difficulties it was called upon to meet during the recent troubles in Ireland. Dr. Hayes, in thanking the chairman and the meeting for their appreciation of his services, stated it was due from him to acknowledge the whole-hearted support he had received from the Irish medical profession, without which he believed his task would have been a great deal more difficult. General R. Mulcahy, Minister of Defence, at a recent meeting of the Dail also paid a very high tribute to the services of Dr. Hayes during the time he acted as Director-General of the Army Medical Service in the Free State.

## Correspondence.

*ETHER VERSUS CHLOROFORM.*

Sir,—There must be many surgeons who, like myself, were pleased with the strongly expressed opinion of Dr. McNamara in favour of ether which appeared in the JOURNAL of June 9th. In the issue of June 23rd (p. 1076) Dr. Samways argues for chloroform, but I venture to state that few anaesthetists and surgeons of ripe experience will agree with his views or the statements by which he attempts to support them.

Anyone who reads the daily papers with average regularity must be appalled by the frequency of the headline "Death under anaesthetic," and no one will dispute that the disaster has practically always occurred when chloroform (in whole or part) was the drug employed.

I have had the misfortune to see ten deaths under anaesthesia. Two were patients of my own; the anaesthetists were well known experts, and death occurred during induction and while I was preparing my instruments for operation. In one patient—an apparently healthy man—a few inhalations of chloroform were followed by sudden pallor, dilatation of pupils, failure of the pulse and respiration, and death. The post-mortem examination gave no satisfactory clue to the disaster.

There are few surgeons who cannot recall one or more similar tragedies.

Surely Dr. Samways is not accurate in his statement that "chloroform has the advantage of not irritating the bronchial tubes, of easily controlling movement, and of seldom causing after-sickness." If "open ether" be preceded by a hypodermic injection of 1/100 grain of atropine and pushed to the stage of complete relaxation the attributes he claims for chloroform will be equally well secured by ether. Above all, the patient will be under the influence of a drug which stimulates the cardiac and respiratory centres rather than depresses them. Even if we were to allow his contentions in favour of chloroform, our first interest must be the safety of our patient, and what comparison is there between a possible few temporary discomforts and the appalling tragedy of a "death on the table"? Very many patients have died, and others will yet die, under chloroform, even when the anaesthetic is given by an expert; such an event is extremely rare under ether anaesthesia. Why run the unnecessary and added risk by employing chloroform? Dr. Samways says that "ether as an anaesthetic requires a complicated apparatus." My reply is that, if administered by the "open" method, it only needs a few layers of closely folded gauze on which the drug is freely poured.

It seems to me that he both weakens his argument in favour of chloroform and strengthens it in favour of ether when he says that "From what I have seen of the administration of an anaesthetic abroad I am not astonished that ether should be popular. Ether lets off the anaesthetist..." I ask "Why?" My own explanation would be that the anaesthetists whom Dr. Samways met are wise men who, when confronted with two dangers, had no hesitation in choosing the less.

I apologize for the length of this letter, and only plead the wisdom and importance of the contentions raised by Dr. McNamara. If Dr. Samways will do me the honour of allowing me to arrange for him a demonstration of the open ether method I shall be delighted to avail myself of the opportunity.—I am, etc.,

HERBERT TILLEY.

London, W., June 22nd.

Sir,—Dr. Samways (June 23rd, p. 1076), referring to my letter, says that "Extremely common" is a loose phrase which, I believe, no statistics justify."

It is unnecessary to remind readers of London newspapers that hardly a week passes without the melancholy record of one or more of these tragedies. On the day on which I wrote my letter it was recorded that a London coroner, holding an inquest on one of these victims, said that he had already on that day held three similar inquests. Some time ago it was stated that one famous



London hospital had 42 chloroform fatalities in eight years. And this hospital was not alone in its misfortunes.

Dr. Samways says that "Ether as an anaesthetic requires a complicated apparatus." It does not. With "open" ether, which is the ideal, any simple apparatus like Rendle's inhaler, or even a tumbler with a towel and sponge, is sufficient. The Clover inhaler and all other closed apparatus forcing the patient to rebreathe his own poison are a mistake. Dr. Samways thinks if the truth were known that "If after-effects could be taken into account and tabulated," ether might present the darker picture. Where is this truth to be found? Not in the coroner's court, because the patients do not die; not in the experience of the anaesthetists who use the "open" ether method, for they are unhesitating in its praise. Many years ago, when I first wrote on this subject, I saw a statement by an American surgeon that at that time in all Philadelphia there was only one expert anaesthetist, and that although the ether was generally administered by non-experts there was almost no mortality under anaesthesia. Dr. Samways gives details of his method of giving chloroform, and implies that if others would do likewise things would be all right. He says that deaths under anaesthesia are very rarely the direct fault of the anaesthetic.

If this were true, then the fault must be with the anaesthetist. Every London hospital has one or several expert anaesthetists who devote most of their time to the practice of anaesthesia. Are we to assume that these gentlemen are all duffers?—I am, etc.,

London, W., June 22nd.

J. McNAMARA, M.D.

#### THE EDUCATION OF MYOPES.

SIR,—Anything by Dr. Harrison Butler is well worth reading, but if he agrees with me that the use of the eyes for near work has nothing to do with myopia why should he forbid his patients to use their eyes for near work? I always tell mine that they can read or use their eyes for near work as much as they like, glasses being given so that the book is not held too close.

The evidence as to the chief exciting cause of myopia is overwhelming. Myopia is caused by distension of the eye due to back pressure through the veins, such as is caused by lifting a heavy weight. Heredity may give anyone a weak sclerotic as it may give a man weak muscles, but in absence of the exciting cause he will probably remain normal sighted. As chairman of the Ophthalmic Board, Central London Medical Boards, National Service, I had exceptional opportunities of studying a very large number of cases of myopia, many of whom had not previously had their eyes examined. Myopia, especially the higher degrees, appears to be much commoner in the labouring than in the professional classes, although a large number of the former will not wear glasses.

Space will not permit me to go into details, but the reader will find them in my "Arris and Gale Lecture" (*Lancet*, March, 1921). On publication of the lecture I received letters agreeing with the conclusions from all parts of the world. Let the reader examine for himself any case of myopia, without leading questions, inquiring as to onset, progression, etc. A man, for instance, may have normal sight until he is 22 or 23 and be accustomed to go to the music hall and see clearly from the gallery, but on changing from a sedentary employment to one in which he has to do heavy lifting finds that his sight steadily deteriorates and that he is not able to see from the gallery, and then after a time gives up the theatre. He may even come to the conclusion that the work is affecting his eyes and go back to a sedentary employment where he has to use his eyes for near work, and that there is then no further increase in his myopia.—I am, etc.,

London, June 19th.

F. W. EDRIDGE-GREEN.

#### POLYTHELIA.

SIR,—I am much obliged to your correspondent, Dr. Graham Renshaw, for his remarks on my article "Polythelia." The fact that the situation of the accessory nipple in all his three cases coincides with the situation of the

nipple in my own case is interesting, but it is difficult to see what the significance, if any, can be. Supernumerary breasts are most commonly found upon the anterior thoracic wall near the mammillary line; less commonly are they situated in the axillae and on the anterior aspect of the abdomen; occasionally upon the shoulder; and on very rare occasions upon the thigh.

I am not aware of any other case of polythelia in the female subject, nor have I been able to find any reference to an authentic case in medical literature. In regard to the condition of "double nipple" in the male, one is aware that the abnormality is not sufficiently uncommon to merit it being described as a rarity, but I am not aware of any method by which it is possible to distinguish definitely between polythelia (supernumerary nipple) and polymastia (supernumerary breast) in the living male, except, perhaps, in the case of abnormally stout subjects. The mammary tissue of the average normal male may be scarcely palpable and in polymastia the supernumerary breast may be so minute as to be scarcely distinguishable. Is it not therefore more likely that Dr. Renshaw's cases are really cases of polymastia?

I have always, without dogma, held the view that such conditions as polythelia and polymastia are to be regarded as atavistic reversions. Many observers, however, do not accept this view. Whitridge Williams (Baltimore) has observed that in not a few instances an apparent hereditary influence can be traced. Others prefer to accept the theory of Ahlfeld concerning the distribution of the mammary tissue.—I am, etc.,

Bradford, June 16th.

R. DOUGLAS HOWAT.

#### BLOOD SUGAR ESTIMATIONS BY GENERAL PRACTITIONERS.

SIR,—The recent discovery of insulin has led to a large amount of correspondence in your columns on blood sugar, and has increased the interest taken in diabetes by general practitioners. The prominent advertisements in the *JOURNAL* of Professor Maclean's excellent book on the treatment of diabetes by modern methods, and those of a firm of chemists supplying the necessary solutions for these estimations, will probably result in a number of medical men attempting what I believe to be impracticable, and to a large extent unnecessary.

My experience of over twenty years in a large practice, in which all urines are examined as a routine, is that the number of glycosurias is very small—perhaps six to ten cases per annum. Of these, nearly all fall into one of two classes: (1) temporary glycosuria due to a septic focus, often situated in the teeth or tonsils, (2) elderly persons with a deficient storage capacity for sugar. The former are highly amenable to treatment, and the latter pass comfortable lives on a slightly restricted diet, and eventually die of something else. For these blood sugar estimations are unnecessary.

There remains a very small number—not one in twelve months—of true and severe diabetes; cases where it is impossible to get sugar-free urine on a diet sufficient to keep them alive. Even with these very little can be learnt from frequent blood sugar estimations; one investigation is sufficient to exclude renal glycosuria, and this can be done better at a laboratory.

However, if a general practitioner wishes to do it himself, is it practicable to do so by Maclean's method? This so-called simple method requires fifteen special pieces of apparatus and six special solutions. It requires a room, or at least a bench, set apart for its use. It takes one hour to carry the test through, and experimental errors due to want of practice in the use of capillary tubes make it essential to perform more than one estimation in order to obtain a reliable result.

My opinion, after having tried the method, is that we should carry on at present on the old lines, testing our treatment by quantitative urine estimations with Fehling's solution, and curing a large proportion of our patients. If we wish to experiment with insulin one complete blood sugar estimation should be made at a laboratory, and overdosing guarded against by keeping a mere trace of sugar present in the urine during its administration.

I believe this is the only practicable method, and the



attempt to do more will involve the busy practitioner in a large and unnecessary expenditure of time and trouble, and should be left to scientific workers.—I am, etc.,

Poplar, June 18th.

W. H. F. OXLEY.

#### THE PEPTONE TREATMENT OF ASTHMA: A DISCLAIMER.

SIR,—In a recent monograph, entitled *Asthma*, by Mr. Frank Coke, certain statements are attributed to me to which I must emphatically take exception. It is affirmed that I prescribe "5 per cent. each of Armour's and Witte's peptones" intravenously. I have never done so, nor should I think of recommending such a dangerous concoction. The peptone prescriptions I have given will be mainly found in the *BRITISH MEDICAL JOURNAL* (1921, vol. i, p. 698), where it is stated *inter alia* that when the Armour peptone is not used alone (as I generally recommend) a 5 per cent. solution may be tried of a mixture containing one part of Witte's peptone to three parts of "peptone siccum" (Armour), the latter greatly differing in composition from the ordinary Armour No. 2 peptone in that it contains extremely little proteose. It will be seen how wide is the difference between this and the preparation attributed to me above. The other statement to which I take exception is that, as an explanation of the *modus operandi* of peptone, I have suggested "that the peptone, being a common derivative of all proteins, may desensitize the patient to them all." I should be sorry to think that I ever offered a suggestion so crude. My view, uniformly expressed, is that the peptone interacts with the fluids and tissues of the body in the production of a poison which desensitizes to a poison produced from the interaction of the fluids and tissues with the antigen-antibody complex.

It is a recognized rule in medical authorship to give chapter and verse in verification of statements attributed to others; yet no reference to any paper of mine on the peptone treatment of asthma is given in this volume, and I would certainly have expected that, in the case of a delicate method of treatment, care would have been taken in the matter of quotation. This is the more inexplicable in view of my responsibility for the method, a consideration which is entirely ignored.—I am, etc.,

London, W., June 19th.

A. G. AULD.

#### FREEDOM OF NEGRO RACES FROM CANCER.

SIR,—The May number of *American Medicine* contains an article entitled "The Sewage System of the Human Body," by Sir William Arbuthnot Lane. On page 268 Colonel McCarrison is quoted as never having seen a case of asthenic dyspepsia, of gastric or duodenal ulcer, of appendicitis, of mucous colitis or of cancer, during the nine years he practised in the Himalayas. On the same page Dr. Hoffman is quoted as having asserted that during a seven months' trip to South America he did not come across a single case of cancer amongst the native Indians or mixed bloods.

With the above statements my personal experience in South Africa fully agrees. For six and a half years I was District Surgeon in the Orange Free State. The district in which I practised had a native population of 14,000, the large majority of the Basuto race. During the whole of that period I never saw a single case of gastric or duodenal ulcer, colitis, appendicitis, or cancer in any form, in a native, although these diseases were frequently seen amongst the white or European population.

Whilst, however, acting as locumtenent for a colleague in the Western Province of South Africa, I saw two cases of carcinoma of the breast in native women. They both belonged to the coloured race peculiar to that part, a race which has lived under civilized conditions for the last 300 years at least. These facts are well known to all medical men in South Africa who have practised amongst the native races. In view of the present stimulus given to research in the causation of cancer, I think the article and facts quoted above ought to receive serious consideration.—I am, etc.,

London, N.W., June 16th.

F. P. FOUCHÉ.

#### Obituary.

W. D'ESTE EMERY, M.D., M.R.C.P.,

Formerly Director of Laboratories and Lecturer on Pathology and Bacteriology at King's College Hospital.

We regret to record the death on June 19th, at Red Cross Hospital, Brighton, of Dr. Walter d'Este Emery, at the age of 53. Dr. Emery was educated at Queen's College, Birmingham, and St. Bartholomew's Hospital, and graduated B.Sc.Lond. (with first-class honours in physiology) in 1892, M.B.Lond. (gold medal in medicine and obstetric medicine) in 1896, and M.D. (qualified for gold medal) in 1897; he had taken the L.R.C.P.Lond. and M.R.C.S.Eng. in 1894, and obtained the M.R.C.P.Lond. in 1918. After having been house-physician and obstetric house-surgeon at Queen's Hospital, Birmingham, he was appointed assistant surgeon to the Birmingham Skin and Urinary Hospital, and lecturer on pathology and bacteriology in the University of Birmingham. He was next appointed pathologist to the Paddington Green Children's Hospital, and afterwards became director of the laboratories and lecturer on pathology and bacteriology at King's College Hospital, and lecturer on general pathology at the London School of Medicine for Women. He was a former Hunterian professor to the Royal College of Surgeons. He was a Fellow of the Royal Society of Medicine and of the Pathological Society of Great Britain and Ireland, and a member of the British Medical Association; at the Annual Meeting of the Association in Birmingham, in 1911, he was vice-president of the Section of Pathology. Among his published works are *Clinical Bacteriology and Haematology*, a practical handbook which has passed through six editions, *Tumours, Their Nature and Causation*, and *Bacteriological Diagnosis for Practitioners*. He was also the author of many contributions to periodical medical literature, and was at one time editor of the *Journal of Vaccine Therapy*. Owing to ill health he had recently retired, and was living at Shirehampton, near Bristol.

Sir GEORGE LENTHAL CHEATLE writes: All who knew Dr. d'Este Emery were deeply concerned to learn that the state of his health necessitated his retirement from the teaching staff of King's College Hospital. They are now more deeply grieved to hear of his early death. In the natural course of busy lives, most of us know only of his public career; those who knew him always recognized that they were in contact with a modest man who possessed an original and philosophical mind combined with great intellectual ability. He seldom spoke on matters to which he had not devoted conscientious study, and, in consequence, anything that he said was interesting and worthy of the attention it attracted. Dr. Emery's brilliant career as a student, and the variety in the branches of work in which he had studied and shone specially fitted him for original work. Some of the early researches which I heard him describe before the Medical Research Club were the result of pioneer work. The conclusions at which he arrived were always based upon accurate, ingenious, and controlled experiments, and were received by that critical body as coming from one in authority. Philosophical and profound, he was also a clear and concise teacher, and the advice which he gave to me and to others was always of value, not only in elucidating the point at issue, but also in aiding the further investigations to which his opinions led. Latterly, his labours at King's College Hospital were almost more than one man could accomplish; he had to teach pathology and bacteriology, and to superintend the many and varied calls that clinical claims made upon his department. In many ways this was a great pity; his knowledge, originality, and desire for research work could not be granted the scope that they required. They were almost entirely limited to simplifying, and to rendering more accurate, the usual technique employed in the investigation of clinical material. The ingenuity and resource of his methods were examples of the loss he was to the work of exposing to light facts hidden in dark places. The students and patients of King's



College Hospital have lost an invaluable servant, science has lost a master, and his friends have lost an accomplished, an inspiring, and a lovable companion.

### WALTER PETTER, M.B., C.M.EDIN.,

Honorary Physician to the Darlington General Hospital.

DR. WALTER PETTER, who died on May 24th, was born at Barnstaple in 1857, and received his medical education at the University of Edinburgh, graduated M.B. and C.M. in 1883. He was an expert in medicine, and was house-physician at the Royal Infirmary to Sir Douglas McLagan. Shortly afterwards he became assistant to the late Dr. Munro of Barnard Castle, where his skill, straightforwardness, and genuine kindness won him many friends. In 1887 Dr. Petter settled in Darlington, where he soon obtained the success he deserved, making many friends among his fellow practitioners and the general public. He was medical officer to the post office and the training college and medical assessor to the county court judge. In 1914 he was appointed assistant honorary physician to the Darlington General Hospital, and in 1919 he became full physician.

During the war he worked very hard; in addition to his private practice he acted as civilian medical officer to the Durham Light Infantry and physician to the V.A.D. Military Hospital. For four years in succession he was unanimously elected chairman of the Darlington Division of the North of England Branch of the British Medical Association, and was regularly in the chair at every meeting discharging the onerous duties with supreme tact and fairness; but his intimate friends who watched him are convinced that the extra duties imposed by the war shortened his life considerably, especially as he had never enjoyed what might be called robust health. After the war he did a large amount of work on pension boards. Those who served with him on the hospital staff regret much the loss of a colleague so loyal to the hospital and its medical and nursing staffs; he was beloved by his patients and by all who knew him.

The funeral, which took place at the Darlington West Cemetery, was attended by most of his fellow practitioners and by a very large number of the general public; the hospital committee and nurses were well represented. He leaves a widow (who did most valuable war work as commandant of the V.D. Hospital, Woodside, Darlington), one daughter, and one son to mourn his loss.

### WILLIAM FLEMING,

Secretary of the Royal College of Physicians of London.

A WELL KNOWN and widely respected figure in the medical world has passed away in the person of Mr. William Fleming, the Secretary of the Royal College of Physicians, who died suddenly on June 21st. Mr. Fleming had passed fifty years in the service of the College, and it would be difficult to point to a finer example of complete and unswerving devotion to duty. For him the College came before all other considerations, and although advancing age and ill health made their insistent demands for rest, he remained at his post and died, as we think he would have preferred to die, in harness to the last. From the days of Sir Thomas Watson to the present time he had seen Presidents and College officers come and go. He had watched the changes taking place during his long association with the College, and it was pleasant to find him in reminiscent mood, when he sketched with delightful touch the characters and peculiar personal traits of distinguished Fellows of the College who have long since passed from our ken. His knowledge of the traditions and history of the College was profound, and from his long experience he could always provide the reason for some ceremony or the origin of some practice. His courtesy in discharging the duties of his office made him respected by all with whom he came into contact, and his loss will be deeply felt. For him we can truly subscribe the epitaph he would have valued—"Well done, thou good and faithful servant."

## The Services.

### INDIAN MEDICAL SERVICE.

THE annual dinner in London of the Indian Medical Service was held on June 20th, when ninety-seven officers and two guests were present.

After dinner Major-General Sir W. R. EDWARDS, K.C.B., K.C.I.E., who was in the chair, spoke at some length about the present and future of the Service. He indicated that many Indian politicians held that the Indian Medical Service could be conducted efficiently by medical men of Indian birth possessing British qualifications, and that a sufficient number of such men would be available. With regard to the present he said: "I am informed by the India Office that regulations have now been made by the Secretary of State in Council under Rule 12 of the Devolution Rules reserving for officers of the Indian Medical Service a total of 305 civil posts and thus providing civil employment for 388 Indian Medical Service officers, including leave and study reserve. Of these posts 65 are under the Government of India and 240 under Local Governments. Of the latter the posts of Surgeon-General, Inspector-General of Civil Hospitals and Director of 1st Class Provincial Bacteriological and Pasteur Institutes will be filled by the nomination of the Government of India. I understand that the regulations are declared to be provisional and without prejudice to the final orders to be passed by the Secretary of State in Council when he has received and considered the report of the Royal Commission which is being appointed under the chairmanship of Lord Lee of Fareham to inquire into the Public Services, including officers of the Indian Medical Service in civil employment. The text of the regulations will be published in the *Gazette of India*, and copies will be obtainable shortly from the India Office." Sir William Edwards expressed the view that this did not go far enough and that appointments of professors, of alienists, as clinical examiners, and to jails and to public health offices should be made by the Government of India from an all-India service. It might very well happen that a provincial service would not on occasion be able to provide a suitable person when there was a vacancy in one of these services.

The officers present were as follows:

Major-Generals: Sir W. R. Edwards, K.C.B., K.C.I.E., C.M.G. (Chairman); Sir R. H. Charles, G.C.V.O., K.C.S.I., B. H. Deare, C.I.E., Sir G. G. Giffard, K.C.I.E., C.S.I., T. Grainger, C.B., G. F. A. Harris, C.S.I., H. Hendley, C.S.I., J. B. Smith, C.B., C.I.E.

Colonels: Sir H. E. Banatvala, C.S.I., P. F. Chapman, C.I.E., J. K. Close, J. Crimmin, V.C., C.B., C.I.E., J. Garvie, T. A. Granger, C.M.G., C. R. M. Green, A. J. Macdonald, C.B., C.M.G., J. J. Pratt, W. A. Quayle, H. A. Smith, C.I.E., T. Stodart, C.I.E., R. G. Turner, C.M.G., D.S.O., C. N. C. Wimberley, C.M.G.

Lieutenant-Colonels: A. Aleck, C.I.E., W. G. P. Alpin, O.B.E., J. Anderson, C.I.E., F. L. Blenkinsop, J. T. Calvert, C.I.E., W. V. Coppinger, D.S.O., D. G. Crawford, J. M. Crawford, O.B.E., C. D. Dawes, C. Donovan, C. Duer, C. A. Gill, J. D. Graham, C.I.E., J. A. Hamilton, C.M.G., C. T. Hudson, C.M.G., E. V. Hugo, C.M.G., J. G. Hulbert, C. H. James, C.I.E., S. P. James, J. G. Jordan, H. Kirkpatrick, J. C. G. Kunhardt, Clayton Lane, W. B. Lane, C.I.E., C.B.E., R. A. Lloyd, D.S.O., J. Masson, F. O. N. Mell, C.I.E., C. W. F. Melville, A. Miller, R. K. Mitter, T. R. Mulrony, F. O'Keefe, C.I.E., C.V.O., E. J. O'Meara, O.B.E., S. E. Prall, R. H. Price, N. Rainer, Sir J. R. Roberts, C.I.E., Sir L. Rogers, C.I.E., E. R. Rost, O.B.E., R. D. Saigol, W. S. J. Shaw, G. M. C. Smith, C.M.G., H. Smith, C.I.E., R. F. Standage, C.I.E., R. Steen, A. Street, C. Thomson, W. H. Thornhill, J. N. Walker, J. H. Tull Walsh, H. J. Walton, D. P. Warlicker, J. W. Watson, C.I.E., H. G. L. Wortabst, A. C. Younan.

Majors: H. C. Brown, C.I.E., A. Cameron, O.B.E., R. C. Clifford, D.S.O., M. C. T. A. Hughes, N. H. Ilume, R. B. Lloyd, C. R. Lynn, D.S.O., P. S. Mills, A. C. Munro, K. S. Thakur, A. A. Tresidder, R. T. Wells, M. F. White, O.B.E.

Captains: J. W. F. Albuquerque, P. Basu, G. Corvill, M. M. Khan, C. Melver, G. R. McRobert, D. R. Thomas.

The guests were representatives of the *British Medical Journal* and the *Lancet*.

## Medico-Legal.

### TUBERCULOUS INFECTION IN A HOUSE.

A RECENT judgement of Mr. Justice McCardie has an interesting medico-legal aspect. The lessor of a furnished house was mulcted in damages for the breach of an implied warranty that it was reasonably fit for habitation, the breach consisting of the fact that a person suffering from pulmonary tuberculosis had been living in the house up to six weeks before the lessee entered.

It appeared that the plaintiff, Mr. B. M. Collins, entered the house on October 26th, 1922, but on the following day he discovered that the husband of the defendant, Mrs. E. Hopkins, while suffering from pulmonary tuberculosis, had lived in the house until September 11th, 1922, when he went to Switzerland for treatment. The plaintiff at once repudiated the agreement of tenancy and quitted the house on the ground that it was infected with tubercle bacilli and therefore was not reasonably fit for habitation.



As Mr. Justice McCardie pointed out, no warranty of fitness is implied in the letting of an unfurnished house, though there is a statutory exception in respect of working-class dwellings. As to the nature and extent of this warranty in law, he cited two cases where the tenant had been held to be justified in repudiating the tenancy of a furnished house—in the first case because the house was infected by insects, and in the second case because the tenant had heard before his tenancy commenced on March 28th that a child suffering from measles had been living in the house from March 10th to March 19th. It will be observed that some nine days elapsed between the departure of the infected person from the house and the arrival of the new tenant in the measles case, whereas some six weeks elapsed between the departure of Mrs. Hopkins's husband from the house and the arrival of Mr. Collins, the new tenant in the case before Mr. Justice McCardie. In the measles case Mr. Justice Field held that the tenant was entitled to repudiate because (1) the best disinfecting processes had not been used, and (2) the house was not free from infection on March 28th. Mr. Justice McCardie spoke of the implied warranty as one "which tends to the public good and the preservation of public health," and one to be extended rather than restricted. Construing the phrase "fit for habitation," he said that in the case of unclean furniture, or defective drains, or a nuisance by vermin, there was not, as a rule, much difficulty. The eye or the nostrils could detect the fault and measure its extent. But in the case of a house lately occupied by a person suffering from an infectious disease the eye and other senses were of no avail. Yet a peril was none the less grave because it was hidden. Mere apprehension or dislike of a house because a person had died there of small-pox or scarlet fever was not sufficient. "Was there an actual and appreciable risk to the tenant, his family, or household, by entering and occupying the house in which the infectious disease had occurred?" The answer to this question depended upon (1) the nature of the disease; (2) the degree and persistence of its infectivity; (3) the date when the sufferer lived in the house; (4) the steps taken to prevent the risk of infection.

Speaking of the dangers of the tubercle bacilli, Mr. Justice McCardie said:

"I doubt whether the terrible prevalence of consumption in this country is fully realized. One person in seven dies from it. In recent years science has made rapid progress. Yet up to the day of the trial before me the medical profession had failed to find a serum that would prevent the assaults of infection or a drug that would kill the germs of the disease. Now what is the cause of this terrible measure of suffering and death from consumption? The answer is infection. It is clear that pulmonary tuberculosis in the adult (which causes nearly 80 per cent. of the deaths from all forms of tuberculosis) is the result of infection through direct or indirect contact with human beings already suffering from the disease. All infection is caused by tubercle bacilli. The sputum or other ejection from the mouth of the sufferer may fix on and adhere to the walls or the floors or carpets or rugs, curtains, cushions, bedding, coverings, or any kind of article. I feel no hesitation in coming to the conclusion that a large number of persons are infected by other means than personal association with those who suffer from the disease. If the sputum be allowed to dry, then the bacillus may preserve its virulence and capacity for six months. It can, however, be destroyed in a few days or even hours by open exposure to the direct rays of the sun, and several antiseptics are fatal to it. I should add that I am satisfied that if the bacilli are only exposed to the light and air of an ordinary room (that is, apart from direct sunlight) their life and danger may last for five or six months."

As we have seen, the last date on which the sufferer occupied the house was about six weeks before the date fixed for the entry of the plaintiff, and, as the learned judge accepted the evidence of one of the plaintiff's witnesses that the house was "one of the dustiest and dirtiest he had ever seen," thus negating the contention that it had been cleansed, and, added to this, was satisfied that "if the bacilli are only exposed to the light and air of an ordinary room their life and danger may last for five or six months," his conclusion follows: "that there was a substantial risk that the house and its contents were so infected with tubercle bacilli on October 26th, 1922, as to constitute an actual danger to the plaintiff and his household," and "to render it unsafe for occupation."

Mr. Justice McCardie commented upon the omission of the medical attendant, through an oversight, to notify the case to the medical officer of health. Also it was, said the learned judge, a matter of regret that after the husband's departure for Switzerland no doctor visited the house or gave any directions or advice as to the needs and methods of disinfection.

The duty of medical practitioners to notify tuberculosis is laid down in the Public Health (Tuberculosis) Regulations, 1912, Article V, whilst the duties devolving upon the medical officer of health upon the receipt of such notification are laid down in Article XII—that is, that he "shall make such inquiries and take such steps as are necessary or desirable for investigating the source of infection, for preventing the spread

of infection, and for removing conditions favourable to infection"

It may be presumed that if the medical attendant in this case had notified the disease, then the machinery set up by these Public Health (Tuberculosis) Regulations would have been put in motion, and the house and its contents cleansed and disinfected before the plaintiff entered into occupation.

#### PROSECUTION UNDER THE MEDICAL ACT.

A MAN named William Lumsden was charged before the Bradford stipendiary magistrate on June 15th, on seven summonses, with falsely pretending to be a bachelor of medicine. Defendant pleaded guilty. According to the *Yorkshire Post* of June 16th, Mr. Ross Pashley, who prosecuted on behalf of the Director of Public Prosecutions, said that the defendant had been a medical student at Edinburgh, but did not pass his final examination. From 1913 to 1915, representing himself to be a registered medical practitioner, he acted as locumtenent to a medical practitioner in Bradford. He then went to sea as a surgeon. In 1916 he applied to the General Medical Council for a certified copy of the entry in the *Register* of William Lumsden (a registered medical practitioner who had no connexion with defendant). As the General Medical Council had at that time no specimens of signatures of practitioners registered in Scotland, a copy of the entry was sent to the defendant. From 1920 to 1923 he again acted as locumtenent in Bradford, and had signed seven death certificates, putting his qualification as M.B. When interviewed by a detective he produced the certified copy of the entry which he had obtained from the General Medical Council. Mr. Pashley pointed out that the case was serious, because of the danger to the community. The stipendiary magistrate said that it was of the first importance that death certificates should be given by properly qualified and registered persons. He imposed fines and special costs amounting to a total of £106 15s.

Dr. William Lumsden, M.C., M.B., C.M. Aberdeen, D.P.H. St. Andrews, of Darlington, is the only William Lumsden whose name appears on the *Medical Register*. Dr. Lumsden qualified at Aberdeen University in 1897, and served with distinction in the war, in France, and at Salonica, being awarded the Military Cross. He is anxious that his friends should know that he has no association with the person charged at Bradford, who in fact seems to have attempted to personate him.

### Universities and Colleges.

#### UNIVERSITY OF OXFORD.

At a congregation held on June 21st the degree of Bachelor of Medicine (B.M.) was conferred on C. R. Lane.

#### UNIVERSITY OF CAMBRIDGE.

At a congregation held on June 19th the following medical degrees were conferred:

M.D.—A. A. Prichard, W. T. Beswick.  
M.B.—F. E. Higgins.  
M.B., B.Ch.—J. G. Drew, W. F. T. Adams.

The following candidates have been approved at the examination indicated:

THIRD M.B., B.Ch.—Part I (*Surgery, Midwifery, and Gynaecology*): J. C. Ainsworth, Davis, P. E. Bardsley, B. Broadbent, J. T. Burrell, N. E. Chadwick, W. E. F. Davidson, G. S. W. Evans, M. W. H. Evans, L. S. Fry, T. S. Goodwin, C. J. P. Grosvenor, H. E. Harris, G. T. Henderson, E. G. Holmes, J. W. W. Jeps, A. H. Johns, L. P. Lockhart, C. A. Lupton, R. J. Lythgoe, G. C. Millie, A. C. Mowle, E. B. Murrell, L. R. W. Price, R. J. V. Pulvertaft, J. Russell, C. E. G. Smith, R. W. Smith, J. D. M. Stewart, J. H. G. Thompson, E. R. Weaver, Adams, M. H. Webb-Peploe, R. Whittis, L. E. H. Whitby, R. N. P. Wilson. Women: G. M. Brown, M. F. Kennedy. Part II (*Medicine, Pathology, and Pharmacology*): B. Broadbent, E. B. Brooke, G. H. Cniger, B. H. Cole, G. K. Cooper, E. J. Crisp, W. E. F. Davidson, W. Edwards, L. E. Frazer, L. B. Hartley, L. Lavan, A. G. Story, C. Sturton, E. Tagoe, C. G. Taylor, G. D. Thomson, A. S. H. Walford, L. E. H. Whitby, R. N. P. Wilson. Women: M. E. Kennedy.

#### UNIVERSITY OF LONDON.

At a meeting of the Senate held on June 20th Mr. H. J. Waring, M.S., F.R.C.S., was re-elected Vice-Chancellor for the year 1923-24.

Professor Frederick Wood Jones, D.Sc., M.B., B.S., was appointed as from September 1st next to the University Chair of Anatomy tenable at St. Bartholomew's Hospital Medical College. He has been Demonstrator in Anatomy at the London Hospital, Senior Demonstrator and Lecturer in Anatomy at Manchester, and Senior Demonstrator in Anatomy at St. Thomas's Hospital, and head of the Department of Anatomy at the London School of Medicine for Women. Since 1919 he has been Professor of Anatomy in the University of Adelaide.



Mr. R. J. S. McDowall, M.B., Ch.B., D.Sc., was appointed as from August 1st next to the University Chair of Physiology tenable at King's College. During the war he served in the R.A.M.C. with the Egyptian Expeditionary Force. He has been Lecturer in Physiology at Edinburgh, and since 1921 he has been Lecturer in Experimental Physiology and Experimental Pharmacology at Leeds.

Mr. Gilbert Stead, M.A., was appointed as from August 1st next to the University Readership in Physics tenable at Guy's Hospital Medical School.

#### UNIVERSITY OF DURHAM.

THE following candidates have been approved at the examination indicated:

THIRD M.B., B.S.—*Materia Medica, Pharmacology and Physiology; Public Health; Medical Bacteriology*: C. C. Schofield, C. W. Arnot, D. R. F. Bertram, F. H. Blackburn, A. Brodie, J. Brown, A. Charlton, Nora E. Coleman, N. Davidson, J. W. Dickinson, D. Ewart, J. T. Garson, A. Gray, J. T. Holliday, A. H. Holmes, S. Hughes, Marjory G. T. Jacko, M. H. Jones, B. Kaplansky, H. Levy, F. Lishman, D. W. McLaren, R. A. Pallister, Ethel G. Potts, A. Purvis, S. C. Stouler, W. Toward, W. S. Walton, R. Wear, J. Y. Woodhouse.

\* Second class honours.

#### UNIVERSITY OF MANCHESTER.

THE Council, on June 20th, appointed Mr. H. S. Raper, C.B.E., D.Sc., M.B., Ch.B., as Brackenbury Professor of Physiology and director of the physiological laboratories as from September next. Dr. Raper is at present professor of physiology and biochemistry in the University of Leeds. During the war he was engaged in research work on protection against poison-gas, and from 1918 was head of the Anti-Gas Department, with control of the factories in which respirators were made.

The Council have accepted with regret the resignation of Dr. A. M. Mitchell, lecturer in vaccination.

The following appointments have been made: Clinical Lecturer in Ophthalmology, Mr. T. M. Bride; Assistant Lecturer in Anatomy, Dr. David Stewart; Demonstrators in Anatomy, Dr. G. V. Ashcroft, and Miss Eugenia R. A. Cooper, M.B., Ch.B.

Dr. W. H. Wood has been appointed Tutor and Secretary to the Faculty of Medicine.

#### UNIVERSITY OF LEEDS.

DR. JOHN KAY JAMIESON, Dean of the Faculty of Medicine and Professor of Anatomy, University of Leeds, has been appointed Pro-Vice-Chancellor of the University for two years, in succession to Professor Smithells.

#### UNIVERSITY OF BRISTOL.

THE following candidates have been approved at the examinations indicated:

FINAL M.B., Ch.B.—*Part I, including Forensic Medicine and Toxicology*: E. R. Clutterbuck, E. B. Eadie, J. A. James, F. G. Jenkins, F. Langford, G. S. Mundy, A. S. Prowse. *Part I only*: R. H. Dammitt, K. F. Platt. *In Forensic Medicine and Toxicology only*: Helen M. Dixon. *Part II*: \*F. H. Bodman, \*Constance L. Griffiths, Dorothy Staley, Idris Williams.

\* With second-class honours.

#### UNIVERSITY OF GLASGOW.

AT the summer graduation ceremony which took place on June 21st a number of distinguished graduands were presented for honorary degrees in various departments. Amongst those who received the degree of LL.D. (*honoris causa*) from the Principal, Sir Donald MacAlister, were the following members of the medical profession: Sir Walter Morley Fletcher, K.B.E., D.Sc., M.D., F.R.C.P., F.R.S., Secretary of the Medical Research Council; Graham Lusk, Ph.D., D.Sc., F.R.S.E., Professor of Physiology in Cornell College, New York; Andrew Maitland Ramsay, M.D., F.R.F.P.S.G., ophthalmic surgeon, Glasgow, and formerly lecturer in diseases of the eye in the university.

The following degrees were also conferred:

M.D.—\*Grace H. Anderson, †J. B. D. Galbraith, †B. S. Nicholson, †Lydia I. H. Torrance, C. Averill, A. D. Blakely, L. L. Fyfe, A. Macphail, J. M. Melvin, G. W. Ronaldson.

\* With honours. † With high commendation. ‡ With commendation.

#### UNIVERSITY OF DUBLIN.

##### TRINITY COLLEGE.

AT the later summer commencements in Trinity Term, held on June 23rd, the following degrees were conferred:

M.D. (*honoris causa*)—W. J. Mayo, E. Hastings Tweedy.

M.D.—H. H. James, G. Fitz M. Keatinge.

M.B., B.Ch., B.A.O.

Mr. A. A. Darlington, R. A.

M. A. Downing,

Mr. S. D. Gab

Grobler, H. L. Hanna, L. Herman, R. J. Hill, W. T. Hogan, W. E.

Hutchinson, R. T. Jackson, M. Jaffe, H. Kohlberg, J. Kruser,

H. Lewis, O. T. McCarthy, H. M. Martin, V. O. McCormick, R. S.

M'Elroy, B. Morris, S. Narutsky, J. M. O'Connor, F. J. O'Meara,

L. Phillips, R. A. D. Pope, H.

F. W. G. Smith, P. F. H.

Wilfred D. C. Wynne, Maria F.

† Copeland, A. Dar-

† H. Dorman, Alice

† V. Foster, T. Freed-

† C. L. Griffiths, P. J.

Grobler, H. L. Hanna, L. Herman, R. J. Hill, W. T. Hogan, W. E.

Hutchinson, R. T. Jackson, M. Jaffe, H. Kohlberg, J. Kruser,

H. Lewis, O. T. McCarthy, H. M. Martin, V. O. McCormick, R. S.

M'Elroy, B. Morris, S. Narutsky, J. M. O'Connor, F. J. O'Meara,

L. Phillips, R. A. D. Pope, H.

F. W. G. Smith, P. F. H.

Wilfred D. C. Wynne, Maria F.

LICENTIATE IN MEDICINE, SURGERY, AND OBSTETRICS.—W. L. Duncan.

#### ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AT the recent primary examination in anatomy and physiology for the Fellowship 134 candidates presented themselves, of whom 42 were approved and 92 were rejected. The following are the names of the successful candidates:

W. S. Adams, R. M. Ainsworth, G. Armitage, R. M. Bates, C. E. Beare, C. M. Brodie, C. J. O. Brown, C. M. Carruthers, J. Carver, E. T. Cato, Violet H. Comber, C. H. Corbett, J. Dreman, Georgiana M. Duthie, N. L. B. V. Eckhoff, J. T. Fathi, R. A. Fitzsimons, S. J. P. Gray, R. John, P. J. Jory, C. A. King, P. Metcalfe, B. S. Nat, J. B. Oldham, G. H. Pfeiffer, R. Pilot, L. S. Pot, Seddon, H. R. Sgar, Beatrice G. Smith, H. B. Stallard, F. H. A. Walker, C. A. Wells, and E. F. Wilson.

## Medical News.

THE Albert Medal of the Royal Society of Arts has been awarded in duplicate to Major-General Sir David Bruce, K.C.B., D.Sc., LL.D., F.R.C.P., F.R.S., and to Colonel Sir Ronald Ross, K.C.B., K.C.M.G., D.Sc., LL.D., M.D., F.R.C.S., F.R.S., in recognition of the eminent services they have rendered to the economic development of the world by their achievements in biological research and the study of tropical diseases.

STATISTICS of the sanitary conditions among the Jews in Russia and an account of the activities of the O.Z.E. (Society for Preserving the Health of the Jews) were given by Dr. M. Schwartzman at a recent meeting of Jewish doctors at Jews' College. The civil war and the social revolution resulted in complete economic ruin, in which the Jews were the principal sufferers. The rate of mortality was computed at 80 per 1,000, and in some places it reached 150-200 per 1,000. The rate of births sharply declined. Dr. Schwartzman's address had for its object the stimulation of interest in the O.Z.E. organization. Started before the war with the object of stemming the effects of economic and political persecution on the physique of the Jewish masses, it had established before the revolution a network of institutions, hospitals, sanatoriums, open-air colonies, and the like, and had developed physical culture and sanitary education. Between 1914 and 1918 the O.Z.E. was at work in 218 localities, had 105 hospitals and 190 sanitary establishments, and was taking care of 90,000 children. The budget of the O.Z.E. in these three years exceeded £500,000. A resolution was passed to establish in London an organization in support of the O.Z.E. Mr. A. H. Levy, F.R.C.S., was elected chairman of the committee which will be in charge of the work of the organization. Dr. Redcliffe N. Salaman, who presided at the meeting, read a number of messages containing expression of support and sympathy. Among these were letters from Lord Robert Cecil, Mr. Ramsay MacDonald, Sir Sydney Russell-Wells, Sir Frederick Mott, Dr. Charles Myers, and Professor Zeligman.

THE annual meeting of the Dutch Pediatric Society was held at Groningen on June 9th and 10th, when the following papers were read: Etiology and clinical aspects of rickets, by J. Haverschmidt; pathogenesis of rickets, by J. Gorter; lipodystrophia progressiva and osteopsathyrosis, by E. S. Frank; the result of the Albee-Halsted operation, by G. J. Hoet; treatment of pertussis by vaccine, by J. H. van der Starp; and two cases of leukaemia, by B. E. J. H. Becking.

ACCORDING to the annual report for 1922 of the Manchester Babies' Hospital, 253 children were in the hospital during the year. The greatest number of admissions was in the fourth month, and over 50 per cent. of admissions of all cases under one year were in the third, fourth, and fifth month. Of the 206 cases discharged during the year, 142 were discharged improved in health, 6 were discharged on transfer to other hospitals, 14 for other reasons, and there were 44 deaths. Nursing mothers were established in the hospital for the first time during the year, and it was found that they yielded from 27 to 31 oz. of milk a day in addition to their own children's feeds. During the previous four and a half years only 22.2 per cent. of premature infants had survived; since the employment of nursing mothers 64.7 per cent. of the premature infants fed lived.

A STUDY tour—the seventeenth *Voyage d'Études Médicales*—will take place under the direction of Professor Paul Carnot and Dr. Rathery, of Paris, from September 9th to 22nd. In fourteen days visits will be made to the Jura spas (La Mouillère, Salins-du-Jura, Divonne), the Swiss universities of Geneva and Lausanne, the Savoy spas (Evian and Thonon, Chamonix, Saint-Gervais, Annecy, Aix-les-Bains, Le Revard, Challes, Allevard, Moutiers-Salins, Brides, Pralognan), and the Dauphiné spas (Uriage, Grenoble, and Saint Pierre de Chartreuse, La Motte-les-Bains, La Grave and Le Lautaret). The party will break up on September 22nd at Lyons, after visiting the school of medicine there. This study tour is



exclusively reserved for medical practitioners and medical students; they can, however, up to 15 per cent. of the total, be accompanied by their wives or one of their daughters. The cost of the journey, from the meeting place, Besançon, to the breaking-up place, Lyons, is 790 francs, including all expenses. A 50 per cent. reduction will be granted on the French railways from the frontier station to Besançon, and a similar reduction from Lyons back to the frontier station. Further information may be obtained from Madame Juppé-Blaise, representative of the French spas, at the French Touring Office, 56, Haymarket, S.W.1.

The annual meeting of the Medico-Psychological Association of Great Britain and Ireland will be held under the presidency of Dr. E. Goodall at the house of the Medical Society of London, 11, Chandos Street, Cavendish Square, W.1, on July 9th, 10th, 11th, 12th, and 13th.

The Council of the Royal Institute of Public Health has accepted invitations from the mayor and the University of Bordeaux to hold its annual meeting there at Whitsuntide next year. The president will be Viscount Burnham, and the local honorary secretaries, Professor René Cruchet, professor of medicine in the University of Bordeaux, and M. G. Faure, treasurer of the Chamber of Commerce. The meetings will take place in the University. Special arrangements are being made for travelling and hotel accommodation.

DR. S. J. CLEGG, on leaving the post of deputy medical officer of health for Newcastle to take up the duties of medical officer of health for Durban, South Africa, has been presented by his colleagues in the Newcastle Health Department with a pair of binoculars. Dr. Clegg has also received a silver inkstand from the members of the 50th (Northumberland) Sanitary Section, of which he was commanding officer in France.

#### ERRATUM.

READERS of the JOURNAL are asked to substitute the following for the last seven lines of the paragraph beginning "The remainder of this absorbing report" in the issue of June 9th (p. 988, col. 2):

the whole more efficacious than the mercury vapour lamp or cod-liver oil, especially as regards improvement in general health; but there was an impression that the addition of cod-liver oil to open-air treatment accelerated cure (p. 84). It is important to note that excellent conditions of hospital hygiene in winter, with a diet of high calorie value (Diet I), did not effect a cure of rickets.

## Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, Aitiology, Westrand, London; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), Articulate, Westrand, London; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, Mediscra, Westrand, London; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

#### QUERIES AND ANSWERS.

"T. P. G." asks for advice in the treatment of a married woman (2-paral), aged 45, who is troubled with a constant sensation of "fluttering" down the course of the left sciatic nerve from the thigh to the calf. There is no pain. It is worse at night, especially if she is tired. Blisters have been tried without benefit.

#### INCOME TAX.

"I. N." who holds a resident appointment at a sanatorium, inquires (a) whether the cost of removal from one sanatorium to another is an admissible expense, and (b) what allowance can be

claimed for the use of his car for the purpose of attending committee meetings.

\* \* (a) Nothing is legally due if the removal arises from a change in the appointment held. The expense could be claimed if the removal were from one sanatorium to another of the same authority by that authority's direction. (b) No allowance is due for the initial cost of the car—which represents capital outlay—but assuming that attendance at the committee meetings is a part of his duties, "I. N." can deduct the amount of the expense necessary—that is, if he were to go by car, train, tram, etc.—as included in the total cost of running the (private) car.

#### LETTERS, NOTES, ETC.

##### MEDICINE AND MEDICINES.

DR. JAMES GARDNER (Burnley) writes: From your review of it Dr. Harry Roberts's book, *A National Health Policy*, must be interesting and worth reading, and I shall get it and read it during my holiday. Your reviewer gives one quotation—"Nine out of every ten bottles of medicine prescribed are entirely useless to the persons taking them, and are known to be useless by the doctors who prescribe them." How does Dr. Roberts know this to be true? He cannot be so intimate with other doctors' practices to know the results of their prescriptions, and if the statement be true of the practice carried on by him and his partners he should say so and not make the sweeping assertion quoted in your review. The matter does not end here, because drugs are noxious articles and cannot pass harmlessly through the body; if they are not useful they are not merely useless but harmful, and a corollary to Dr. Roberts's statement must be that nine out of every ten bottles of medicine are harmful—minus the mere placebos. This is serious from two points: (1) Public finance; (2) our system of therapeutics.

(1) There are 14,000,000 insured persons, and the drug bill is between 1s. 6d. and 2s. per insured person. At 2s. the bill is £1,400,000, and nine-tenths of this amount is £1,260,000, spent on useless and harmful drugs. Or if the figure is 1s. 6d., the amount spent uselessly and harmfully is £945,000. Comment is superfluous.

(2) Dr. Roberts's statement is an indictment of our system of therapeutics. If nine-tenths of our prescriptions are useless, whose is the fault? Our teachers', or ours individually? Some years ago the Royal Colleges in London cut pharmacology out of their examination. Has it been reinstated, or do the Colleges still disbelieve in it? The subject is still taught in universities, but for what purpose should students spend time over a subject if nine-tenths of it be useless, not to say harmful? We talk of the honour and dignity of the profession, and yet we go on prescribing and outwardly professing our faith in the healing virtue of drugs we know to be harmful; to my mind, there is neither honour nor dignity in us if the assertion be true.

Is our system of therapeutics at fault, or have we any system at all? It certainly behoves us to reconsider our position, both on account of the financial aspect and "for the honour and dignity of the profession."

\* \* The curriculum of the Conjoint Board in England has for many years past included a course of pharmacology and therapeutics; therapeutics was specified as one of the final examination subjects, but pharmacology was included under the head of medicine and therapeutics. In 1919 pharmacology was grouped with materia medica as Part II of the second professional examination of the Board, leaving therapeutics only to be included under medicine in the final examination. It would appear, therefore, that pharmacology has never ceased to be a part of the curriculum but has been a subject of examination with materia medica since 1919.

#### VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 32, 33, 36, 37, and 38 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 34 and 35.

A short summary of vacant posts notified in the advertisement columns appears in the Supplement at page 285.

#### SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	...	...	0 9 0
Each additional line	...	...	0 1 6
Whole single column (three columns to page)	...	...	7 10 0
Half single column	...	...	3 15 0
Half page	...	...	10 0 0
Whole page	...	...	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, W.C.2, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.



THE  
**British Medical Journal.**

THE JOURNAL OF THE BRITISH MEDICAL ASSOCIATION.

**EPITOME**

OF

**Current Medical Literature.**

---

**JANUARY TO JUNE, 1923.**

---

**London :**

PRINTED AND PUBLISHED AT THE OFFICE OF THE BRITISH MEDICAL ASSOCIATION,  
429, STRAND, W.C.







# INDEX TO THE EPITOME FOR VOLUME I, 1923.

READERS in search of a particular subject will find it useful to bear in mind that the references are in several cases distributed under two or more separate but nearly synonymous headings—such, for instance, as Brain and Cerebral; Heart and Cardiac; Liver and Hepatic; Renal and Kidney; Cancer and Carcinoma; Epithelioma, Malignant Disease, New Growth, Sarcoma, etc.; Child and Infant; Bronchocele, Goitre, and Thyroid; Diabetes, Glycosuria, and Sugar; Eye, Ophthalmia, and Vision, etc.

*The Figures in this Index refer to the Number of the Paragraph, NOT the Page.*

- A.
- Abdomen: Diagnostic value of pain on percussion of the abdomen in the upright position, 257
- Abdominal diseases, pain on pressure over the peritoneal nerve in, 51
- Abortion, criminal, 175
- Abortion, induction of, 305
- Abortion, manual removal of the uterus after, 199
- Abortion, treatment of, 104, 371
- ABRAHAMSON, I.: Tumour of the upper cervical cord, 511
- Abscess of lung, fistula in, 215
- Abscess, cerebellar, and purulent labyrinthitis, differential diagnosis of, 533
- Abscess, paraneuritic, frequency and diagnosis of, 323
- Abscess, subphrenic, 255; the operation for, 238
- Abscess, temporo-sphenoidal, treatment of, 193
- Achalasia, oesophageal, 8
- Achondroplasia, 305
- Adenoids, respiratory exercises for, 170
- ADLER, A.: Association of bladder symptoms with ultra-descent of the right testicle, 77
- Adrenaline in acute heart failure, intracardiac injections of, 322, 520
- Adrenaline, homologues of, 443
- Adrenaline in the Stokes-Adams syndrome, 111
- AFFRE: The blood in malaria, 463
- Air passages, upper, effect of antiseptics on the bacterial flora of, 309
- AGERLUND, A.: X-ray diagnosis of duodenal ulcer, 507
- ALAMANNI, R.: Pyometra and carcinoma of the cervix, 83, 350
- ALBANO, G.: Acute inversion of the uterus, 327
- Albumin, excess of in the cerebro-spinal fluid in syphilis, 397
- Albumin and other urinary proteins, rapid test for, 287
- Albuminuria, orthostatic, 271
- Albuminuria and other sequels to severe exertion, 356
- Albumoses, arrest of by the liver, 375
- ALBUS, W. R.: Physiological youth in bacteria, 419
- Alcohol, action of on the acidity of the gastric juice, 65
- ALEXANDER, E. G.: Prolapse of the rectum in children, 34
- Anaemia, pernicious, during and after pregnancy, 416
- Anaemia, pernicious, splenectomy for, 148
- Anaemia, pernicious, treatment of, 208
- Anaesthesia, ethyl chloride, dangers of, in children, 142
- Anaesthesia, nitrous oxide, followed by apoplexy, 481
- Anaesthesia, plexus, 79
- Anaesthesia, spinal, 192
- Anaesthetic, ethylene as an, 342
- Anal fissure, relief of pain on defaecation in, 36
- ANDRASSY, K.: Inflammatory tumour of intestine associated with *Ascaris lumbricoides*, 300
- Aneurysm, pharyngeal, of the internal carotid, 343
- Aneurysm, thoracic aortic, difficulties in the diagnosis of, 44
- ANGELIS: Cerebro-spinal haemorrhage in the newborn, 17
- Angina pectoris, surgical treatment of, 370
- Angio-neuroses, the pathology of the, 487
- Ankle, flap, treatment of, 476
- Antimony in the treatment of leprosy, 231
- Aorta, rupture of, 286
- Aortic aneurysm, thoracic, difficulties in the diagnosis of, 44
- Apoplexy following nitrous oxide anaesthesia, 481
- ARPELMANS, R.: The place of the thyroid gland in anaphylaxis, 64
- Appendicitis, chronic, and malignant disease of the caecum, 53
- Appendicitis and lobar pneumonia in children, differential diagnosis of, 7
- Arterio-sclerosis, 213
- Artificial pneumothorax. *See* Pneumothorax
- ARJEFF, M.: Quinidine in heart disease, 493
- ARLOING, F.: Staphylococcal vaccines, 224
- ARMSTRONG, R. R.: The recognition of pneumococcal types, 178
- Ascariasis, 13
- ASCOLI: Duodenal ulcer, 209
- Asthenopia, therapeutic use of weak atropine solution in, 387
- Asthma, bronchial, pyrogenic treatment of, 27
- Atropian poisoning, 5
- Atropine, action of, on local temperature in hemiplegia, 427
- Atropine solution, weak, therapeutic use of in asthenopia, 387
- AUBERTIN, E.: Inoculation of guinea-pigs with contaminated tuberculous material, 158
- AUBIN, A.: Endoscopic examination in young children, 123
- Auditory nerve. *See* Nerve
- AURICULAR, L.: The association of enteric and Malta fever, 112
- Auricular fibrillation, quinidine in, 45
- Auricular flutter, 22
- Auricular sign in meningitis, 512
- Auto-serotherapy in tuberculous pleural effusions, 230
- B.
- BAAR, G.: Indican in the blood in kidney disease, 352
- BAASTRUP, C. I.: Calcium lactate for nervous headache, 185
- BAB, M.: Involvement of the auditory nerve in early syphilis, 259
- B. *diphtheriae*, cultivation of, 223
- B. *diphtheriae* destroyed by the pneumococci, 267
- B. *dysenteriae* Shiga, the nature of the toxin of, 84
- Bacteria, physiological youth in, 419
- Bacterial flora of the upper air passages, effect of antiseptics on, 309
- Bacteriophage, multiple types of, 202
- Bacteriophages of unequal activity, an attempt to isolate, 374
- BALZANO, L.: Infection and immunity in anthrax, 129
- BARNER: The duration of contagion in whooping-cough, 70
- BARD, L.: The pathogenesis of tumours and the
- BARNETT, S. P.: Genesis of blood platelets, 420
- BARNARD, R.: Alterations in the coagulation time of the blood following proteinothorax, 421
- BENSAUDE, R.: Hirschsprung's disease, 119
- BENTLEY, W.: Caesarean section statistics, 527
- BERGER, B. J.: Differential diagnosis of lobar pneumonia and appendicitis in children, 7
- BERGUA, P. G.: Ether injections for whooping-cough, 333
- BRUTNER, O.: Radium in cancer of the uterus, 174
- BEVILACQUA, A.: Transmission of sheep-pox to man, 28
- BIANCHETTI: Cancer of the breast arising bilaterally, 282
- Bile ducts, surgery of the, 298
- BILL, A. H.: The place of pubiotomy in obstetrics, 439
- BISSET, L.: The intrapulmonary digestion of fat, 531
- Birth statistics, premature, and congenital syphilis, 304
- Bismuth salts in treatment of syphilis, 6, 68
- Bladder, diverticuli of in children, 165
- Bladder, hernia of in children, 320
- Bladder symptoms associated with ultra-descent of the right testicle, 77
- Bladder syphilis, 278
- BLAMONTIER: Treatment of epidemic encephalitis, 334
- BLASCO, N.: Hydatid cysts in the pelvis, 418
- BLECKMANN, G.: Cardiac murmurs in young children, 114
- Bleeding, intraperitoneal, symptomatology of, 328
- BLEGVAD, N. R.: Treatment of tuberculous laryngitis by Finsen light, 341
- BLISS, W. P.: Haemolytic streptococci in scarlet fever, 18
- BLOCH, C. E.: The relation of rickets to fat-soluble A vitamin, 30—The treatment of rickets by cod-liver oil, 161
- Blood in the sputum, 122
- Blood cells, diagnostic value of the rate of sedimentation in, 226
- Blood, chemical variations in, following the radiation of tumours, 417
- Blood, coagulability of during pregnancy and in the newborn, 62
- Blood coagulation, alterations in following protein therapy, 421
- Blood, convalescent, injection of in pertussis, 310, 311
- Blood, erythrocytes in under various conditions, 63
- Blood in kidney disease, indican in, 352
- Blood, leucocytes in, relation of the diazo-reaction to the number of, 65
- Blood in malaria, 463



Blood nitrogen, non-protein, in pregnancy and eclampsia, 442  
 Blood phosphate in infants, 222  
 Blood picture during an attack of tertian malaria, 505  
 Blood platelets, genesis of, 420  
 Blood pressure, high, treatment of, 447  
 Blood tests for syphilis, 60  
 Blood transfusion for treatment of anaemia in children, 321  
 BLOOMFIELD, A. L.: Effect of antiseptics on the bacterial flora of the upper air passages, 309  
 BOAS, H.: Can tuberculosis give a positive Wassermann reaction? 268—Can salvarsan create a positive Wassermann reaction in the non-syphilitic? 469  
 BOEZ, L.: The action of lead and other metals on grafted tumours in rats, 85  
 BONARETTI, M. dal Collo: Action of mammary extracts on the uterus, 103  
 Bone tumours. *See* Tumours  
 Bone-graft fixation of vertebrae in spinal caries, 499  
 Bones, long, operative treatment of certain fractures of, 455  
 BOOTHBY, Walter M.: The death rate of operations on the thyroid gland, 364  
 BOOTS, R. H.: Influence of sodium salicylate upon arthritis, 464  
 BORREL, A.: The action of lead and other metals on grafted tumours in rats, 85  
 BOSSERT, O.: Treatment of convulsions in childhood, 467  
 BOURGIGNON, G.: Electrical methods in the diagnosis and prognosis of paralysis due to nerve lesions, 378  
 BOUTIN, P.: Treatment of varicose ulcer, 344  
 BOYD, W.: Pathology of the gall bladder, 155  
 BRADFORD, E. H.: School children and spinal curves, 73  
 BRADY, L.: Clinical features of tubal pregnancy, 547  
 BRAHME, L.: Unusual results of encephalitis lethargica, 206  
 Brain tumour, neuro-otological examination in cases of, 318  
 BRAMWELL, Edwin: Psychotherapy in general practice, 204  
 Breasts, the surgical significance of menstrual changes in the, 414  
 BRISOLTO: Respiratory exercises for adenoids, 170  
 BROCC-ROUSSEU, M.: Modification of the properties of streptococci, 418  
 Bromides and luminal in the treatment of epilepsy, 276  
 Bromoderma, 536  
 Bronchial asthma. *See* Asthma  
 Bronchial diseases, posture in the treatment of, 272  
 Bronchiectasis, surgical treatment of, 277  
 Broncho-pulmonary spirochaetosis, 160  
 BROWN, E. W.: Types of organism in tuberculous children, 552  
 BROWN, P. K.: Surgical treatment of angina pectoris, 370  
 BROWN, W. H.: Malignant tumour and syphilitic infection, 551  
 BUBEN, I. v.: The treatment of nocturnal enuresis by thermopenetration, 434  
 BUSS: Trypaflavine in the treatment of encephalitis lethargica, 473  
 BUZYBY, B. F.: Submaxillary salivary calculus, 145

## C.

Caecum, malignant disease of and chronic appendicitis, 53  
 Caesarean section, 81  
 Caesarean section statistics, 527  
 Calcium chloride in pulmonary tuberculosis, 165  
 Calcium lactate for nervous headaches, 186  
 Calculus, large renal, pyelotomy for, 346  
 Calculus, recurrent renal, 100  
 Calculus, salivary, 168  
 Calculus, submaxillary salivary, 145  
 Calculus, vesical, in the female, 14  
 CALLANDER, C. L.: Arterial decortication, 236  
 CAMPBELL, D. Grant: Pregnancy and heart disease, 548  
 CAMURATI: Hereditary osteitis, 211  
 Cancer, association of surgery and radiotherapy in, 455  
 Cancer, effect of magnesium sulphate injection on, 190  
 Cancer of the breast, 458  
 Cancer of the breast arising bilaterally, 282  
 Cancer, campaign against, and the pathogenesis of tumours, 353  
 Cancer of the cervical stump, 326  
 Cancer of cervix, 15  
 Cancer of cervix, inoperable, radium treatment of, 127  
 Cancer of the cervix complicating pregnancy, 501  
 Cancer of the cervix, pyometra and, 83, 350  
 Cancer of the cervix, radiotherapy for, 509  
 Cancer of the choroid and iris, metastatic, 74  
 Cancer, etiological significance of pregnancies and labours in, 484  
 Cancer, gastrectomy for prolonged survival after, 437  
 Cancer, Gastric, of the intestinal type, 392

Cancer of the intestinal tract, glycaemia in, 465  
 Cancer of the larynx, treatment of, 54  
 Cancer of oesophagus, treatment of, 239  
 Cancer of ovary, treatment of, 82  
 Cancer, pregnancies and labours in, the etiological significance of, 484  
 Cancer of the prostate, radium in, 368  
 Cancer of rectum, inoperable, treatment of, 12  
 Cancer, serum diagnostic test for, a new, 108  
 Cancer of skin following exposure to radium, 266  
 Cancer, spontaneous cure of, 8  
 Cancer of the stomach, operation in two stages for, 405  
 Cancer, tar, development of, 330  
 Cancer of the tongue, 365  
 Cancer of the body of the uterus, 351  
 Cancer of the uterus, operation or radiation for, 57  
 Cancer of the uterus, radium in, 174  
 Carcinoma. *See* Cancer  
 Carcinomata, effect of magnesium sulphate injections in, 190  
 Cardiac failure, acute, intracardiac injection of adrenaline in, 520  
 Cardiac failure and infective myocarditis, 2  
 Cardiac murmurs in young children, 114  
 CARNOT, A.: Action of atropine on local temperature in hemiplegia, 427  
 CARNOT, P.: Treatment of epidemic encephalitis, 334  
 Carotid gland. *See* Gland  
 Carotid, internal, pharyngeal aneurysm of, 343  
 CARTER, J. B.: Ethylene as an anaesthetic, 342  
 Cartilage implants after eye excision, 217  
 CARUSO: Congenital septa of the vagina, 440  
 CASALIS DU PUY, G. A.: Operative treatment of, chronic intestinal stasis, 169  
 CASSAET: Difficulties in the diagnosis of thoracic aortic aneurysm, 44  
 CASTAGNA, P.: Partial symphysectomy for pelvic contraction, 285  
 Cataract, advanced, a macular perception in, 432  
 Cataract extraction, intracapsular, 409  
 CATHALA, M.: Vesical calculus in the female, 14  
 CAUCCI: Retroperitoneal cysts, 247  
 CAUSSADE, G.: Treatment of unilateral pulmonary tuberculosis, 184  
 CAUTLEY, E.: The Pel-Ebstein type of Hodgkin's disease, 72  
 Cerebellar abscess. *See* Abscess  
 Cerebral lesion indicated by a frontal reflex, 336  
 Cerebro-spinal fluid in herpes zoster, 43  
 Cerebro-spinal fluid in syphilis, excess of albumin in, 397  
 Cerebro-spinal . . . . . 100  
 Cerebro-spinal . . . . . 17  
 Cerebro-spinal meningitis, epidemic, treatment of, 115. *See also* Meningitis  
 Cervical cord, upper, tumour of, 511  
 Cervical stump, carcinoma of, 326  
 Cervix, infections of, 173  
 Cervix, myoma of, 128  
 Cervix, pre-cancerous conditions of, 40  
 CESARE, D.: The ductless glands during pregnancy, 153  
 CHABROL, E.: Apoplexy following nitrous oxide anaesthesia, 481  
 CHALLAMER, A.: Prophylaxis of mumps, 471  
 CHAMBERLIN, H. G.: The effect of olive oil on gastric functions, 188  
 CHARRBOND: Gastric surgery, 537  
 CHARRIER: Gastric surgery, 537  
 CHARRON, Louis: The toxæmias of pregnancy and anti-anaphylaxis, 102  
 CHEYASSU, M.: The value of perirenal inflation, 260  
 Children with pylorospasm, prognosis in, 428  
 Cholera, histopathology of the intestine in, 550  
 Cholera patients, a bacteriolytic principle (not bacteriophage) in the intestine of, 506  
 Cholesterinaemia in arteritis obliterans, 42  
 CHOMÉ, E.: Middle-ear infection in the newborn, 97  
 CHOPRA, R. N.: Therapeutics of antimony, 251  
 Chorea, relation of to rheumatism, 133  
 Chorea, rheumatic fever and heart disease, 335  
 CIGNOZZI, O.: Malarial splenomegaly, 273  
 CIOPPA: Treatment of epidemic cerebro-spinal meningitis, 115  
 Circulatory disturbances, embolectomy in, 454  
 Cirrhosis of the liver, etiology of, 295  
 CLARKE, E. A. D.: Achondroplasia, 306  
 Climacteric bleeding, x rays in, 152  
 CLORTON, M. B.: Gastric motility after pyloric obstruction, 55  
 CLUTE, H. M.: Subphrenic abscess, 256  
 Cod-liver oil, therapeutic properties of, 182  
 COFFEY, W. B.: Surgical treatment of angina pectoris, 370  
 COHEN, Martin: Amaurotic family idiocy, 369  
 COLLET, F. J.: Maxillary sinusitis in young children, 96  
 Colloidal gold reaction in acute poliomyelitis, 130  
 Colostomy in intussusception, 479  
 COMBESCO: The nature of the toxin of *B. dysenteriae* Shiga, 84  
 Complement fixation reaction in tuberculosis in the dog, 394  
 CONROY, M. J.: Changes in the islands of Langerhans in diabetes mellitus, 376  
 Convalescents' serum. *See* Serum  
 Convulsions in childhood, treatment of, 467  
 COORMAN, H. L.: Post-anaesthetic gastric paralysis, 31  
 Cord, compression of, Queckenstedt's sign of, 229

CORNWALL, E. E.: Conservative treatment of pneumonia, 4  
 CONROW, E. F.: Pruritus ani, 404  
 CORTE, G.: Pelvic varicocele, 462  
 COUVELAIRE, A.: Pre-natal antisyphilitic treatment and infant mortality, 525  
 COVA: Radiology in pulmonary disease, 116  
 COWEN, S. O.: Familial haemolytic splenomegaly, 93  
 COX, M. A.: Congenital syphilis, 357  
 Coxa plana, treatment of, 519  
 Coxitis, influenzal, with spontaneous dislocation, 237  
 Cranial stress in the foetus, 198  
 Cranioplasty, after-results of, 33  
 CRAWFORD, W. W.: Ectopic pregnancy at term, with living child, 413  
 CREEKMAN, Francis: Otosclerosis and rickets, 395  
 Cuboid, dislocation of, 540  
 "Cuff" method in gastric operations, 523  
 CURTIS, A. H.: Infections of the cervix, body of uterus, and Fallopian tubes, 173  
 Cutaneous lesions due to tar, 490  
 Cuti-inoculations, repeated, desensitization by, 517  
 Cystography in prostatism, 261  
 Cysts of the external semilunar cartilage of the knee, 319  
 Cysts, hydatid, of the erector spinae muscles, 541  
 Cysts, hydatid, in the pelvis, 438  
 Cysts of liver, non-parasitic, 299  
 Cysts of ovary, tuberculosis in, 38  
 Cysts, retroperitoneal, 247

## D.

DA FANO, C.: Herpetic encephalitis, 179  
 DALLA VORTA, A.: Specific haemagglutinins and serum disease, 393  
 DANIEL, C.: Wounds of the gravid uterus, 151  
 DANIEL, G.: The Meyer-Betz-Haas treatment of pyelitis, 46  
 DATWE, F.: Neurasthenia, 207  
 DAVIS, L.: Carcinoma of the cervical stump, 326  
 DAWSON, W. S.: Dementia praecox, 470  
 DE BESCHE, A. E.: Conjugal tuberculosis, 23  
 DEBRE, R.: Treatment of scarlet fever by injection of convalescents' serum, 1—Prophylactic injections in measles, 312—Prophylaxis of tuberculosis in the newborn, 516  
 DE COULON, A.: The action of lead and other metals on grafted tumours in rats, 85  
 DE FOSSEY: Glycaemia in cancer of the intestinal tract, 465  
 D'HERELLE, F. A.: Bacteriolytic principle (not bacteriophage) in the intestine of cholera patients, 506  
 DEHOFF, Elisabeth: The rate of sedimentation of the erythrocytes in tuberculosis in children, 488  
 DE KRÜFF, Mlle L.: Multiple types of bacteriophage? 202—An attempt to isolate bacteriophages of unequal activity, 374  
 DE LANGE, C.: Active immunization against diphtheria, 292  
 DE LA SERRANA, M. J. G.: Ovarian transplantation, 325  
 DELAUNAY, H.: The arrest of albumoses and peptones by the liver, 375  
 DEL SOLE, E.: Pregnancy with myoma and placenta praevia, 58  
 Dementia praecox, 470  
 DENVILLE: Treatment of unilateral pulmonary tuberculosis, 184  
 Desensitization by repeated cuti-inoculations, 517  
 DE SILOS, J. R.: Treatment of anthrax, 294  
 DESQUEYNOUX, J.: The arrest of albumoses and peptones by the liver, 375  
 DEUCHER, G.: Importance of digital exploration of the uterus, 411  
 DE VRIES, W. M.: Rupture of the aorta, 286  
 DE WILDE, P. A.: A rare cause of foetal death, 215  
 Diabetes, underfeeding in, 228  
 Diabetes insipidus as a sequel of epidemic . . . . . 207  
 . . . . . logical factors, 67  
 . . . . . diet in the treatment of, 474  
 Diabetes mellitus, changes in the islands of Langerhans in, 376  
 Diabetes treated with insulin, 532  
 Diabetic oedema, 337  
 DRACON, H.: The sero-diagnosis of typhoid infections by globulin reaction, 523  
 Diathermic treatment of naso-pharyngeal tumours, 56  
 Diazo-reaction, relation of to the number of leucocytes in the blood, 65  
 Digestive haemoclasis in pulmonary tuberculosis, the test of, 21  
 Diphtheria bacilli destroyed by the pneumobacillus, 267  
 Diphtheria bacillus, cultivation of, 223  
 Diphtheria, active immunization against, 292, 398  
 Diphtheria, nasal, Schick reaction in, 87  
 Diphtheritic infection, action of normal serum on, 495



Dipnea causing myelias, 76  
 Disseminated sclerosis. *See* Sclerosis  
 Diverticula of the bladder in children, 166  
 DOWNEY, W. B.: Cartilage implants after eye excision, 217  
 DOMINGO, P.: The nature of local immunity, 328  
 DORTCH, C.: The nature of the toxin of *B. dysenteriae* Shiga, 81  
 DORGLAS, S. R.: Cultivation of *B. diphtheriae*, 223  
 DRAGANESCO, S.: The motor nuclei of the vagus, 339  
 DRIESSEN, L. F.: Treatment of fibroids, 461  
 DRUCK, C. F.: Hypertrophied anal papillae, 122  
 Ductless glands. *See* Glands  
 DUBAUCH, Ch.: Dislocation of the cuboid, 511  
 DUBAS, J.: The nature of the toxin of *B. dysenteriae* Shiga, 81  
 DUNHAM, H. G.: After-care cases of infantile paralysis, 183  
 Duodenal stenosis, chronic, 120  
 Duodenal ulcer. *See* Ulcer  
 Duodeno-jejunal junction obstruction as a cause of duodenal ulcer, 407  
 DUPRE, R.: Treatment of syphilis of the newborn, 385  
 DUCOURT, P.: Pharyngeal aneurysm of the internal carotid, 345  
 Dupuytren's contraction, heredity in, 233  
 DRYAN, A. P.: The effect of magnesium sulphate injections on carcinoma, 193  
 Dysentery, amoebic, treatment of, 315  
 Dysentery infection in mental hospitals, 311  
 Dyspepsia, chronic, treatment of in infancy, 161

E.

Ear conditions in tuberculosis, 280  
 Ear, middle, infections of in the newborn, 97  
 EASTWOOD, E. H.: Appendicitis and *Oryzuris vermicularis*, 215  
 EBNER, A.: Cysts of the semilunar cartilage of the knee, 319  
 Eclampsia, non-protein blood nitrogen in, 442  
 Eclampsia, prophylactic treatment of, 372  
 Eclampsia, statistics of, 59  
 Ectopic pregnancy. *See* Pregnancy  
 Eczema, infantile, 165  
 Eczema, infantile, dietary considerations in, 426  
 EDWARDS, Page: Syphilis and industrial disablement, 249  
 EGGERS, C.: Chronic empyema, 297  
 EHRLICH, F.: The diagnostic value of pain on percussion of the abdomen in the upright position, 257  
 EHRSTRÖM, R.: Is salicylic acid a specific in rheumatism? 472  
 EISENHORN, Max: Peptic ulcer, 94  
 Electrical methods in the diagnosis and prognosis of nerve lesions, 333  
 Electro-cardiogram and myocardial disease, 164  
 Electro-coagulation in the treatment of lupus of the nose and throat, 345  
 Embolectomy in circulatory disturbances, 454  
 Emulsion, pulmonary fat, 125  
 EMILE-WEIL, P.: Gastric syphilis, 69  
 Empyema, chronic, 297  
 Encephalitis, epidemic, diabetes insipidus as a sequel of, 423  
 Encephalitis, epidemic, etiology and epidemiology of, 19  
 Encephalitis, epidemic, etiology of, 529  
 Encephalitis, epidemic, from the ophthalmia, 34  
 Encephalitis, herpetic, 179  
 Encephalitis lethargica followed by neuroses, 494  
 Encephalitis, of, 205 in the  
 Encephalitis, of, 43 of, 205 of the  
 Encephalitis, of, 117 following gonococcal  
 Endoscopic examination in young children, 123  
 Enuresis, nocturnal, treated by the mopencration, 434  
 Eosinophilia in prostate affections, 436  
 Eosinophilic cells, 486  
 EPARVIER, H.: Symptoms of intracranial haemorrhage in the newborn, 76  
 Epithelioma, of, 150  
 Epithelioma, of the  
 Erythema nodosum, etiology of, 269  
 Erythraemia (polycythaemia), x-ray treatment of, 503  
 Erythrocytes in the blood, number of under various conditions, 63  
 Erythrocytes in tuberculosis in children, the rate of sedimentation in, 485  
 ESCHER, B.: Mouth salts in the treatment of syphilis, 68

Either injections for whooping-cough, 333, 448  
 Ether, rectal, in obstetric practice, 233  
 Ethyl chloride anaesthesia, dangers of, in children, 142  
 Excretion, severe, albuminuria and other sequelae of, 356  
 Exophthalmos, pulsating, 279  
 EXTON, W. G.: Rapid test for albumin and other urinary proteins, 287  
 Eye excision, cartilage implants after, 217

F.

Face, plastic surgery of by tubular grafts, 363  
 FALLAS, A.: Salivary calculi, 168  
 Fallopian tube, primary sarcoma of, 412  
 Fallopian tube, twin pregnancy in, 329  
 FEVER, enteric, and Malta fever, association of, 112  
 Fever, enteric, haematoma of the rectus abdominis in, 78  
 Fever, eruptive, a new, 92  
 Fever, glandular, 159  
 Fever, Malta, and enteric fever, association of, 112  
 Fever, rat-bite, 491  
 Fever, scarlet, treated by injection of convalescent serum, 1  
 Fever, scarlet, haemolytic streptococci in, 18  
 Fever, typhus, vaccine for, 535  
 Fibroids, treatment of, 461  
 Fibroids of uterus, x-rays in, 152  
 Fibroma of the ovary, 244  
 FINDLAY, G. M.: Vitamins and infections, 221  
 Finsen light treatment of tuberculous laryngitis, 341  
 Fissure of anus, relief of pain on defaecation in, 36  
 FLATAU, W. S.: Radiotherapy for carcinoma of the cervix, 509  
 FLECKER, H.: Deep x-ray treatment, 406  
 FLOYSTRUP, G.: Rubella without a rash, 48  
 Foetal death, a rare cause of, 219  
 Foetus, cranial stress in, 193  
 Fog, J.: Suffocation of infants by bed straps, 534  
 FONTAN, A.: Inoculation of guinea-pigs with contaminated tuberculous material, 158  
 Food poisoning simulated by epidemic poli-encephalitis, 90  
 FORGEOT: Modification of the properties of streptococci, 418  
 FOSSATI, G.: Correction of deformity in flat pelvis, 483  
 FOX, Howard: Relief of pain in herpes zoster by paraffin, 23  
 Fracture of humerus, supracondylar, deformity after, 146  
 Fracture of the upper end of the humerus, treatment of, 382  
 Fracture of the os calcis, an unusual, 195  
 Fractures of long bones, operative treatment of, 455  
 FRANK, R. T.: Treatment of early malignant disease of the genital tract, 284  
 FRANK, F.: The frequency and diagnosis of paraneuritic abscess, 323  
 FREEMAN, E. B.: Treatment of carcinoma of the oesophagus, 239  
 FRENSE, K.: Action of alcohol on the acidity of the gastric juice, 66  
 Frontal reflex indicative of a cerebral lesion, 336  
 FRUMFRIE, K.: Treatment of the ill effects of lumbar puncture, 477

G.

Gall stones and gastro-intestinal disease, differential diagnosis of, 493  
 Gall stones, the incision for, 322  
 GALLI: Immunization against measles, 140

GAMBLE, W. E.: Therapeutic use of weak atropine solution in asthenopia, 387  
 GANSSLE, H.: Treatment of placenta praevia, 460  
 GARCIA, F. H.: Ovarian transplantation, 325  
 GARIN, Ch.: Broncho-pulmonary spirochaetosis, 160—The blood in malaria, 463  
 Gastrectomy for carcinoma, prolonged survival after, 437  
 Gastric disease, radiotherapy in, 420  
 Gastric function, the effect of olive oil on, 188  
 Gastric hormone, the question of, 20  
 Gastric juice, action of alcohol on the acidity of, 66  
 Gastric motility after pyloric obstruction, 55  
 Gastric operations, the "cuff" method in, 523  
 Gastric paralysis, post-anaesthetic, 31  
 Gastric surgery, 537  
 Gastric ulcer. *See* Ulcer  
 Gastro-enterostomy, followed by acute symptoms, 167  
 Gastro-intestinal disease and gall stones, differential diagnosis of, 493  
 GATPS: Antibodies to filter-passing virus of influenza, 446  
 GATES, F. L.: Influenza, 41  
 Genitalia, external female, benign tumours of, 549  
 Genital tract, treatment of early malignant disease of, 284  
 GERLACH, W.: Intestinal obstruction due to ascariasis, 13  
 GERSTLEY, J. R.: Dietary considerations in infantile eczema, 426  
 GESSNER, W.: Statistics of eclampsia, 59  
 Gestation, purpura during, 526  
 Gestation, tubal, etiology and treatment of, 80  
 Gestation. *See* Pregnancy  
 GHORMLEY, R. K.: Congenital osteo-sclerosis, 124  
 GIBB: Blood tests for syphilis, 60  
 GITTON, S. R.: Salicylates in ocular diseases, 149  
 GILES, A. E.: Scope and end-results in myomectomy, 220  
 GRAUD, G.: Acute tuberculous meningitis following trauma, 379  
 GRABER, Lucien: Injection of convalescent blood in pertussis, 311  
 GRONCOLI: Benign tumours of the female external genitalia, 549  
 GLAESNER, K.: Intermittent quinine treatment in malaria, 23  
 Gland, carotid, tumour of the, 194  
 Gland, thyroid, the place of in anaphylaxis, 64  
 Gland, thyroid, the death rate of operations on, 361  
 Glands, ductless, during pregnancy, 153  
 Glands, lymphatic, effects of exposure to radium on, 444  
 Glands, sexual, and vitamin B, 288  
 "Glandular fever," 159  
 Globulin reaction in the sero-diagnosis of typhoid infections, 528  
 Glucose in major operations, prophylactic injection of, 11  
 Glycaemia in cancer of the intestinal tract, 465  
 Glycosuria, early diagnosis of pregnancy by the induction of, 150, 218  
 Goitre, 95  
 Goitre, exophthalmic, treatment of, 453  
 Goitre, toxic, the x-ray treatment of, 362  
 Gonococcal septicaemia followed by ulcerative endocarditis, 89  
 Gonorrhoea, chronic, culture of the seminal fluid in, 504  
 Gonorrhoea, treatment of, 500  
 GOODMAN, H.: Herpes zoster generalisatus, 339  
 GOODPASTURE, E. W.: Histopathology of the intestine in cholera, 550  
 GORDON, A.: Ponto cerebellar tumours with few symptoms, 25  
 GORDON, J. K.: Types of organism in tuberculous children, 552  
 GOSSETT: Surgery of the bile ducts, 293  
 GOTTA, H.: Vitamin B and the sexual glands, 288  
 GOTTESLEBEN, A.: Colostomy in intussusception, 479  
 GOTTESLEBEN, A.: Sterility of other  
 GRATIA, A.: Multiple types of bacteriophage? 202—An attempt to isolate bacteriophages of unequal activity, 374  
 GRAVES, R. J.: Traumatic hernia, 366  
 GRAVES's disease, results of operative treatment of, 408  
 GRIGG, D. M.: Oesophageal achalasia, 8—The lesser minor muscle, 143—Congenital dislocation of the shoulder, 435  
 GRIMM: The leucocyte picture in tuberculosis, 85  
 GRIST, A.: Primary sarcoma of the Fallopian tube, 412  
 GROSSMAN, M.: Tumour of the upper cervical cord, 511  
 Guinea-pigs inoculated with contaminated tuberculous material, 153  
 GUNBY, injuries of the semilunar cartilages, 522  
 GUNDBERT, H.: Intravenous injection of ure tropine for retention of urine in nervous diseases, 359  
 GUNTHER, B.: Haemoglobinuria in scarlatina, 275  
 GUTTMANN, V.: Etiology of paralysis of the recurrent laryngeal nerve, 307  
 GYRGY, P.: Narcosis and acidosis, 162



## H.

- HADEN: Acute symptoms following gastro-enterostomy, 167  
 Haemagglutinins, specific, and serum disease, 393  
 Haematoma of the rectus abdominis in typhoid fever, 78  
 Haemoclasis, digestive, the test of in pulmonary tuberculosis, 21  
 Haemoglobinuria in scarlatina, 275  
 Haemolytic streptococci in scarlet fever, 18  
 Haemoptysis in the tuberculous, causation of, 429  
 Haemorrhage, cerebro-spinal, in the newborn, 17  
 Haemorrhage, essential uterine, treatment of, 391  
 Haemorrhage, intracranial, symptoms of in the newborn, 482  
 Haemorrhage, non-malignant uterine, radium and surgery in the treatment of, 388, 389  
 HAGESTAD, J.: Neuroses following encephalitis lethargica, 494  
 HAJEK, J.: Auricular flutter, 22  
 HALD, J. K.: Albuminuria and other sequels to severe exertion, 356  
 HALKIN, Henri: Melanomata of the skin, 91  
 HANN: . . . 358—The action of . . .  
 HARRIS: . . . 98  
 HARRIS: . . . cular fibrillation, 45  
 HARTMANN-KEPPEL, G.: Clinical features of tubal pregnancy, 546  
 HARTWIG, E.: Arterial hypertension, 113  
 HAUBENREISSER, W.: "Rejuvenating" operations, 189  
 HAUDUROX, P.: The distribution of the bacteriophage in different media, 530  
 HAWKS, E. M.: Treatment of ruptured ectopic pregnancy, 262  
 Headaches, nervous, calcium lactate for, 186  
 Heart disease and pregnancy, 548  
 Heart disease, chorea, and rheumatic fever, 335  
 Heart disease, quinidine in, 493  
 Heart failure, acute, intracardiac injection of adrenaline in, 302, 520  
 Heart failure and infective myocarditis, 2  
 Heart in influenza, 138  
 Heart. See also Auricular  
 HEILE, B.: Pyloric stenosis in infants, 214  
 HEISSEN, F.: Simple aeroparaesthesia, 187  
 HEITZ, J.: Cholesterinaemia in arteritis obliterans, 42  
 HELLMUTH: Non-protein blood nitrogen in pregnancy and eclampsia, 442  
 Hemiplegia, action of atropine on local temperature in, 427  
 HENDERSON, J.: Treatment of high blood pressure, 447  
 Hernia of the bladder in children, 320  
 Hernia, femoral, the etiology of, 212  
 Hernia, inguinal, of the uterus, 348  
 Hernia, traumatic, 366  
 Herpes faecalis, the virus of, 61  
 Herpes zoster, 254  
 Herpes zoster, the cerebro-spinal fluid in, 43  
 Herpes zoster generalisatus, 399  
 Herpes zoster, paraffin for the relief of pain in, 28  
 Herpes zoster, pituitrin in the treatment of, 402  
 Herpes zoster, treatment of, 293  
 Herpetic encephalitis. See Encephalitis  
 HESS, A. F.: Blood phosphate in infants, 222  
 HICKEL, P.: Post-traumatic cutaneous epithelioma, 521  
 HILDEBRAND, O.: The results of operative treatment of Graves's disease, 408  
 HILLMANN, P.: . . . 119  
 HIMMELRE: . . . tumour of intestine, 330  
 . . . mbricoides, 330  
 . . . acible acquired or congenital, 410  
 Hirschsprung's disease, 119  
 HIRST, J. C.: Caesarean section, 81  
 Hodgkin's disease, the Pel-Ebstein type of, 72  
 HÖGLER, F.: Pain on pressure over the phrenic nerve in abdominal diseases, 51  
 HOLLAND, Eardley: Cranial stress in the foetus, 198  
 HOLM, E.: Splenectomy for pernicious anaemia, 148  
 HOLMES, G. W.: X-ray treatment of toxic goitre, 362  
 HOLMGREN, I.: A frontal reflex indicative of a cerebral lesion, 336  
 HOGGSLAG, W.: Diabetes mellitus, etiological factors, 67  
 HOON, M. R.: Fibroma of the ovary, 241  
 HÖRHAMMER, C.: The "cuff" method in gastric operations, 523  
 Hormone, gastric. See Gastric  
 HORN, W.: Treatment of scleroderma by periarterial sympathectomy, 538  
 HORNING, R.: Rupture of the symphysis pubis during labour, 16  
 HOYER, W.: The blood count in erythema nodosum, 265  
 HUBERT, M. J.: Cutaneous lesions due to tar, 493  
 HÜBER: Rectal ether in obstetric practice, 283  
 HUNTER, A.: The early diagnosis of renal tuberculosis, 496  
 HUGGINS, R. R.: Pre-cancerous conditions of the cervix, 40

- Humerus, fracture of the upper end of the, treatment of, 382  
 Humerus, supracondylar fracture of, deformity after, 146  
 Hydatid cysts of the erector spinae muscles, 541  
 Hydatid cysts in the pelvis, 438  
 HYMAN, A.: Diverticula of the bladder in children, 166  
 Hypernephroma, 281  
 Hypnotic drugs in diseases of the nervous system, 252

## I.

- Ice-cream, vitamins in, 118  
 ICHOK, G.: The tuberculosis mortality in relation to influenza epidemics, 331  
 Icterus neonatorum, 245  
 IDE: Blood tests for syphilis, 60  
 . . . of, 308  
 . . . ey disease, 352  
 . . . syphilis, 249  
 Infancy, tuberculosis in, 185—Causes and prognosis of, 109  
 Infant mortality and pre-natal antisiphilitic treatment, 525  
 Infantile paralysis. See Paralysis  
 Infants suffocated by bed straps, 534  
 Influenza, 41  
 Influenza, antibodies to filter-passing virus of, 446  
 Influenza epidemics, tuberculosis mortality in relation to, 331  
 Influenza, the heart in, 138  
 Influenzal coxitis with spontaneous dislocation, 237  
 Insulin in treatment of diabetes, 532  
 Intestinal infections, oral administration of vaccines in, 533  
 Intestinal obstruction due to ascarides, 13  
 Intestinal obstruction, spastic, 147  
 Intestinal stasis, chronic, operative treatment of, 169  
 Intestine in cholera, histopathology of, 550  
 Intestine, congenital malformation of the, 196  
 Intraperitoneal bleeding, symptomatology of, 328  
 Intussusception, 478  
 Intussusception, colostomy in, 479  
 Iododermia, 536  
 ISAAC, B.: Underfeeding in diabetes, 228  
 Islands of Langerhans. See Langerhans

## J.

- JACOBÆUS, H. C.: Treatment of the ill effects of lumbar puncture, 477  
 JACOBS, C.: Radium treatment of inoperable cancer of the cervix, 127  
 JACOBSEN, H.: Spastic intestinal obstruction, 147  
 JAMESON, P. C.: Correction of squint by muscle recession, 10  
 JANET: Gastric carcinoma of the intestinal type, 392  
 JEFFERIES, M. S.: Experimental production of paraffin oil tumours in monkeys, 225  
 JELLINER, W.: Treatment of ulcerative stomatitis, 255  
 JENSEN, W.: Transmission of the virus of disseminated sclerosis to animals, 354  
 JEZDITCH, D.: Pelvic varicocele, 462  
 JIMÉNEZ, J.: Death from obstetrical shock, 485  
 JOHN, M.: Intravenous and intragluteal injections of quinine in pneumonia, 401  
 JOHNSON, F. C.: A new eruptive fever, 92  
 JÖRGENSEN, J. O.: Conjugal tuberculosis, 29  
 JOSELYN, E. P.: Treatment of diabetes with insulin, 532  
 JUDD, E. S.: Carcinoma of the tongue, 365  
 JUNDÉLL, I.: The comparative value of medicinal-dietetic and light treatment in rickets, 232

## K.

- KAESS, F. W.: X rays in the treatment of salivary fistula, 99  
 KAHN, M. H.: The function of the spleen, 296  
 KALA-AZAR, 361  
 KALIN, H.: Deformity after supracondylar fracture of humerus, 146  
 KANE, H. F.: Spontaneous rupture of the uterus during pregnancy, 349  
 KAPPIS, M.: The cause and treatment of perforating ulcer, 171  
 KAUFFMANN, A. B.: Otosclerosis and rickets, 395  
 KAUFMANN, M.: X-ray treatment in erythraemia (polycythemia), 503  
 KEATING, J. H.: Auricular flutter, 22  
 KEHRER, E.: Premature birth statistics and congenital syphilis, 304

- KEY, E.: Embolectomy in circulatory disturbances, 454  
 Kidney disease, indican in the blood in, 352  
 KILDFER, R. A.: Blood tests for syphilis, 60  
 KIPFER, R.: The Wildholz auto-urine reaction in tuberculosis, 157  
 KISSMEYER, A.: Can salvarsan create a positive Wassermann reaction in the non-syphilitic? 469  
 KLENKHAUT, K.: Pain on pressure over the phrenic nerve in abdominal diseases, 51  
 KLIENEHBERGER: Etiology of cirrhosis of the liver, 295  
 KLING, C.: The etiology and epidemiology of epidemic . . . of herpes and . . .  
 KLINGER: The . . .  
 KLIPEL-FEIL's syndrome, 475  
 Knees, cysts of the semilunar cartilage of, 319  
 KNOWLES, F. C.: Impetigo contagiosa, 316—Pruritus ani, 404  
 KOENIG, E. C.: Achondroplasia, 306  
 KOENNECKE, W.: Chronic duodenal stenosis, 120  
 KOGA, T.: The internal secretion of the pancreas, 422  
 KOVO-NGEN, J. Tchang: Multiple types of bacteriophage? 202  
 KOUWER, B. J.: Treatment of abortion, 371  
 KOUWER, J. B.: X rays in uterine fibroids and climacteric bleeding, 152  
 KRÄMER, B.: . . . against diphtheria  
 KRAUSE, P.: Epidemic polio-encephalitis simulating food poisoning, 90  
 KRECKE: Hypernephroma, 281  
 KREIBICH, C.: The pathology of the angio-neuroses, 487  
 KULLMANN, P.: Serum diagnosis of tuberculosis, 201  
 KÜSTNER, H.: Operation or radiation for cancer of the uterus, 57

## L.

- LABBÉ, M.: Basal metabolism in obesity, 156  
 Labour, analgesia during, 503  
 Labour, induction of by pituitary extract, 197  
 Labour, rectal examination in, 242  
 Labour, symphysis pubis ruptured during, 16  
 Labyrinthitis, purulent, and cerebellar abscess, differential diagnosis of, 539  
 LACROIX, A.: Treatment of varicose ulcer, 344  
 LAFONGUE: Early phlebitis in pulmonary tuberculosis, 253  
 LANEY: Hydatid cysts of the erector spinae muscles, 541  
 Langerhans, islands of, changes in in diabetes mellitus, 376  
 LANGERON, L.: Staphylococcal vaccines, 224  
 Laryngeal tuberculosis. See Tuberculosis  
 Laryngitis, tuberculous, treated by Finsen light, 341  
 LASSERRE: Hydatid cysts of the erector spinae muscles, 541  
 LATTERI, F. S.: Inguinal hernia of the uterus, 348  
 LATTES: The biological test of paternity, 269  
 LAURIE, H.: Intravenous therapy of rheumatoid arthritis, 514  
 LAUTIER, R.: Infective myocarditis and cardiac failure, 2  
 LAUZE, M.: Purpura following administration of phenolphthalein, 450  
 Lead, action of on grafted tumours in rats, 85  
 LEENHARDT: Primary Pfeiffer bacillus meningitis in infants, 210—Aseptic purulent meningitis, 377  
 LEPEVRE, C.: Tuberculosis in ovarian cysts, 38  
 LEFROU: The cerebro-spinal fluid in trypanosomiasis, 106  
 LEAGNEUX, H.: Typhoid fever in large towns, 513  
 LEICHENRING: Treatment of laryngeal tuberculosis by paralyzing the recurrent laryngeal nerve, 457  
 LEIVA, L.: Treatment of amoebic dysentery, 315  
 LE NÔR: Glycaemia in cancer of the intestinal tract, 465  
 LENOIR, Ch.: Plastic surgery of the face by tubular grafts, 363—Clinical features of tubal pregnancy, 546  
 Leprosy, antimony in treatment of, 234  
 Leprosy, ethylic ethers in treatment of, 468  
 LESBRE: Destruction of diphtheria bacilli by the pneumo-bacillus, 267  
 LESKINEN, S.: Early diagnosis of pregnancy by the induction of glycosuria, 150  
 LESNÉ, M.: Injection of convalescent blood in pertussis, 310  
 Leucocyte count, the mechanisms of variations in, 248  
 Leucocyte picture in tuberculosis, 86  
 Leucocytes in the blood, relation of the diazo-reaction to the number of, 65  
 LEVADITI, C.: Physical properties of the neurotropic ultra-viruses, 181—Neurotropic ectodermosis: studies on the vaccinia virus, 246  
 LEVY, M.: Gastric carcinoma of the intestinal type, 392  
 LEWIN, L.: Early diagnosis of pregnancy by induction of glycosuria, 218



Lewis, D.: Myositis ossificans, 480  
 LIPPY, G. F.: Epidemic encephalitis from the ophthalmological standpoint, 52  
 LILIENTHAL, I.: Icterus neonatorum, 215  
 LIM, R. K. S.: The question of a gastric hormone, 20  
 LINDBLOM, S. H.: Treatment of pulmonary tuberculosis, 338  
 Li... tomy  
 ... for carcinoma, 437  
 Lipoma of the mammary region, 211  
 LIPPYMAN, H.: Endolumbar injections of sodium bromide for the pain and spasticity of tabes, 338  
 LISHSKE: Primary Pfeiffer bacillus meningitis in infants, 210—Aseptic purulent meningitis, 377  
 ... in acute  
 ... tones by.  
 Liver, cirrhosis of, etiology of, 295  
 Liver function, method of testing with phenol  
 L... of olive oil on  
 ... gastric function, 188  
 LOEBER, M.: Chemical variations in the blood following the radiation of tumours, 417  
 LOHN, A.: Typhoid fever in large towns, 513  
 Long bones. See Bones  
 LONGCOPE, W. T.: "Glandular fever," 159  
 LOHREZ, Adolf: Treatment of irreducible acquired or congenital hip dislocations, 410  
 LOWY, T.: Heredity in Dupuytren's contraction, 233  
 LUCKHARDT, A. B.: Ethylene as an anaesthetic, 312  
 Lumbar puncture, treatment of the ill effects of, 477  
 Luminal, the therapeutic properties of, 136  
 Luminal and bromides in treatment of epilepsy, 276  
 LUNDAGEN, M. A.: Blood phosphate in infants, 222  
 LUNDGAARD, K. K. K.: Is neo-salvarsan an anthelmintic? 403  
 Lung disease, radiology in, 116  
 Lungs, postural treatment for congestion of, 139  
 LURU, N. Gh.: Ulcerative endocarditis following  
 I... electro-coagula-  
 I... of exposure to  
 Lymphatic system, tuberculosis of, 289  
 M.  
 McCool, Joseph L.: Correction of certain forms of squint, 386  
 McGREGOR, J. K.: Goitre, 95  
 McKenna, P. D.: ... 95  
 ... f vascular naevi with  
 MACNELL, W. J.: Skin cancer following exposure to radium, 266  
 MAREN, S. Tschudi: The ultimate prognosis of lethargic encephalitis, 49  
 Magnesium sulphate injections, effect of on carcinoma, 190  
 MAHLF, A. E.: Carcinoma of the body of the uterus, 357  
 MAHU: Middle-ear infection in the newborn, 97  
 MAITRE, F.: Endoscopic examination in young children, 123  
 Malaria, the blood in, 463  
 Malaria, intermittent quinine treatment in, 23  
 Malaria, tertian, the blood picture during an attack of, 505  
 ... See Caecum  
 ... genital tract, early  
 treatment of, 284  
 Malignant disease of the vermiform appendix, 191  
 Mammary extracts, action of on the uterus, 103  
 MANN, L.: Treatment of disseminated sclerosis, 139  
 MARASON, M. G.: The significance of the thyroid "red line," 47  
 MARGARUCCI, O.: Non-parasitic cysts of the liver, 299  
 MARINESCO, G.: Herpes zoster, 254  
 MARINESCO, G.: The motor nuclei of the vagus, 339  
 MARION, M.: Pyelotomy for large renal calculi, 316  
 MARK, H.: Large doses of trypanflavine in endocarditis, 117  
 MARSH, P. L.: Fat diet in the treatment of diabetes mellitus, 474  
 MARVIN, H. M.: Clinical report on quinidine sulphate, 425  
 MASTIAS, C.: Culture of the seminal fluid in chronic gonorrhoea, 504  
 MASSON, J. C.: Sarcoma of the uterus, 524  
 MASTEN, A. M.: Electro cardiograms and myo-  
 ... anism of variations

... of tubal  
 ... 96  
 MATO, Charles H.: The death rate of operations of the thyroid gland, 364  
 MAYO, W. J.: Radical operations on the stomach, 518  
 MEANS, J. H.: X-ray treatment of toxic goitre, 362  
 Measles, immunization against, 140  
 Measles, prophylaxis of by the serum of con-  
 ... at sign in meningitis,  
 ... 512  
 MENDELSON, R. W.: Natural immunity, 445  
 MENETNER, P.: The development of tar cancer, 330  
 ... atment  
 ... of, 115  
 Meningitis of otitic origin, 35  
 Meningitis, primary Pfeiffer bacillus, in infants, 210  
 Meningitis, tuberculous, acute, following trauma-  
 ... 379  
 Menopause, treatment of skin diseases occurring at, 263  
 Menstrual changes in the breasts, the surgical significance of, 414  
 Menstrual disturbances in acquired tubercu-  
 ... 502  
 MENT, S.: The heart in influenza, 138  
 MERY, H.: Injection of convalescent blood in pertussis, 311  
 ... nosis  
 ... se, 498  
 ... pyelitis, 46  
 ... ility after pyloric  
 MOCOQUOT, P.: Surgical treatment of bronchi-  
 ... 277  
 ... 344  
 MOORE, J. E.: The course of syphilitic infections in pregnant women, 373  
 M... rtain  
 M... te of  
 M... Broncho-pulmonary spiro-  
 ... 160  
 MORGAN, E. A.: Congenital syphilis, 357  
 MORRIS, C. A.: Malignant disease of the caecum  
 ... 53  
 ... flam-  
 ... 26  
 ... lands  
 ... as in  
 ... the leucocyte count, 248  
 MOORE, E. J.: Treatment of cancer of the larynx, 54  
 MOECKE, F.: Treatment of temporo-sphenoidal abscess, 193  
 MULLER, H.: Treatment of syphilis with bis-  
 ... 6  
 ... 31  
 ... reulous.  
 ... 101  
 Muscle, teres minor, 143  
 Muscles, voluntary, the tone of in tuberculosis, 231  
 Myeloma of the vertebrae, 433  
 Myiasis caused by diptera, 76  
 ... 31  
 Myomata of uterus, treatment of, 264  
 ... ad-results of, 220  
 ... by x rays, 240  
 N.  
 Naevi, vascular, treatment of with radium, 510  
 Naphthalene emulsion, the effect of on experi-  
 mental intestinal tuberculosis, 203  
 NAPIER, L. E.: Therapeutics of antimony, 251  
 Narcosis and acidosis, 162  
 Naso-pharyngeal tumours. See Tumours  
 NEALE, Humphrey: Tumour of the optic nerve, 545  
 "Neckless men," 475. See also Klippel-Feil's syndrome  
 NEGRO, Mario: Eosinophilia in prostate affec-  
 tions, 436

Neo-salvarsan: Is it an anthelmintic? 403  
 Nerve, auditory, involvement of in early syphilis, 259  
 Nerve lesions causing paralysis, electrical methods in the diagnosis and prognosis of, 378  
 Nerve, optic, tumour of, 545  
 Nerve, phrenic, pain on pressure over, in abdominal diseases, 51  
 Nerve, recurrent laryngeal, etiology of paralysis of, 307  
 Nerve, recurrent laryngeal, paralysis of in treat-  
 ment of laryngeal tuberculosis, 457  
 Nervous diseases, intravenous injection of uro-  
 tropine for retention of urine in, 359  
 Nervous system, hypnotic drugs in affections of, 252  
 ... 324  
 ... ue to latent pos-  
 ... lethargia, 494  
 Neurotropic ectodermosis, studies on the vaccine virus, 246  
 Neurotropic ultra-viruses, physical properties of the, 181  
 NEW, G. B.: Carcinoma of the tongue, 365  
 N... morrhage in, 17—  
 ... in, 62—Middle-ear  
 ... of syphilis, 380—  
 Symptoms of intracranial haemorrhage in, 482—Prophylaxis of tuberculosis in, 516  
 NEWBURN, L. H.: Fat diet in the treatment of diabetes mellitus, 474  
 NICHOLS, B. H.: Radiographic diagnosis of bone tumours, 32  
 NICHOLSON, F. M.: The nature of Rickettsia bodies, 355  
 NICOLAU, S.: Physical properties of the neuro-  
 tropic ultra-viruses, 181—Neurotropic ecto-  
 dermosis, studies on the vaccine virus, 246  
 NIELSEN, A.: Dietetic treatment of gastric ulcer, 24  
 Nitrous oxide anaesthesia followed by apoplexy, 481  
 NOBECOURT, P.: Tuberculosis in infancy, 185  
 NOGIER, T.: X-ray and radium treatment of enlarged tonsils, 258  
 NOIRI, R. H.: Congenital scoliosis, 75  
 NORDGREN, R.: The relation of chorea to rheu-  
 matism, 133  
 NORRIS, C. C.: Pregnancy in the tuberculous, 101  
 Nose conditions in tuberculosis, 280  
 NOVAK, E.: The use of the vaginal pessary, 459  
 NYSTROM, B.: Injections of turpentine in diseases of the uterine appendages, 178  
 O.  
 OBERLING, Ch.: Post-traumatic cutaneous epi-  
 thelioma, 521  
 Obesity, basal metabolism in, 156  
 Obstetric practice, rectal ether in, 283  
 Obstetric shock, 126  
 Obstetric shock, death from, 485  
 Obstetrics, the place of pubiotomy in, 439  
 Obstruction, intestinal, due to ascarides, 13  
 Obstruction, intestinal, spastic, 147  
 OCHSENIUS, K.: Influenzal colitis with spon-  
 taneous dislocation, 237  
 Ocular diseases, salicylates in, 149  
 ... disease, 227  
 Oedema, pulmonary, following thoracocentesis, treatment of, 291  
 ... properties of, 182  
 ... function, 188  
 OLESKE, L.: Large doses of trypanflavine in endocarditis, 117  
 OLIVER, J.: Antibodies to filter-passing virus of influenza, 446  
 ... of the  
 ... 320  
 ... 188  
 ... miliar  
 ... tumour  
 ... rm with  
 O... children by  
 O... pregnancy.  
 177  
 ... to latent pos-  
 ... the prostate.  
 368  
 ORENSTEIN, A. J.: Oral administrations of vaccine in enteric and other intestinal infections, 533  
 Organism in tuberculous children, types of, 552  
 ORR: Acute symptoms following gastro-entero-  
 stomy, 167  
 Orthostatic albuminuria, 271



- R.
- Radiation of tumours, chemical variations in the blood following, 417
- ours, 32
- Radiotherapy for carcinoma of the cervix, 509  
Radiotherapy in gastric disease, 430  
Radiotherapy in ophthalmology, 381  
Radium treatment of inoperable cancer of the cervix, 127  
Radium in cancer of the prostate, 368  
Radium in cancer of the uterus, 174  
Radium exposure, effects of on the lymphatic glands, 444  
Radium, exposure to followed by skin cancer, 266  
Radium in metrorrhagia, 154, 200  
Radium and surgery in the treatment of non-malignant uterine haemorrhage, 388  
Radium treatment of enlarged tonsils, 258  
Radium treatment of vascular naevi, 510  
RAEMM-BORSCH, L.: Manual removal of the uterus after abortion, 199  
RAFFAUF, C. J.: The leucocyte picture in tuberculosis, 86  
RAMOND, F.: Gastric carcinoma of the intestinal type, 392  
RAO, B. Sanjiva: Kala-azar, 361  
Rat-bite fever, 491  
RAYNOR, H. L.: The action of normal serum on diphtheritic infection, 495  
RAVENBERG, E.: Postural treatment for congestion of the lungs, 139—Treatment of peliosis rheumatica, 381  
RANINA: Prophylactic injections in measles, 312  
RECAMIER, J.: Treatment of uterine myomata, 264  
Rectal ether in obstetric practice, 283  
Rectal examination in labour, 242  
Rectum, prolapse of in children, 34  
"Red line" of the thyroid. See Thyroid  
REDING, R.: The effect of magnesium sulphate injections on carcinomata, 190  
REDLIN, G.: Prognosis in children with pylorospasm, 428  
REDMAN, T.: The effect of naphthalene emulsion on experimental intestinal tuberculosis, 203  
REGAN, J. C. (and C. REGAN): The colloidal gold reaction in acute poliomyelitis, 130  
REGARD, G. L.: Treatment of paralysis by the grafting of tendons, 172  
REID, W. D.: The diagnosis of cardio-vascular syphilis, 340  
"Rejuvenating" operations, 189  
Renal calculi, recurrent, 103  
Renal tuberculosis, 367  
Renal tuberculosis, early diagnosis of, 496  
RENARD: The duration of contagion in whooping-cough, 70  
RENAUX, E.: The serum diagnosis of tuberculosis, 201  
Respiratory diseases, ocular disturbances in, 227  
Respiratory exercises for adenoids, 171  
Retropertitoneal cysts, 247  
RHENTER, J.: Symptoms of intracranial haemorrhage in the newborn, 482  
Rheumatic fever, chorea, and heart disease, 335  
"Rheumatism" of the toes to, 133  
"Specific" in ? 472  
"ous therapy of,
- 514
- RIBADEAU-DUMAS, L.: The causes and prognosis of tuberculosis in infancy, 109—Surgical treatment of bronchiectasis, 277  
RICHER, C.: Glycaemia in cancer of the intestinal tract, 465  
Rickets, the comparative value of medicinal-dietetic and light treatment in, 232  
Rickets, the relation of to fat-soluble A vitamin, 30  
Rickets and otosclerosis, 395  
Rickettsia bodies, the nature of, 355  
RIMINI: Differential diagnosis of purulent labyrinthitis and cerebellar abscess, 539  
RITTER, L.: Treatment of fractures of the upper end of the humerus, 382  
RIISING, J.: The therapeutic properties of Iminal, 136  
RIVERS, W. C.: Silicosis and tuberculosis, 290  
ROBERTS, J. B.: Pericardiotomy in diagnosis and treatment, 383  
ROE, A. S.: Urinary infection, 3  
ROGER, H.: The intrapulmonary digestion of food, 51  
ROHLFEDER, S.: The causation of haemoptysis in the tuberculous, 429  
ROLLESTON, J. D.: Hereditary tylosis, 400  
ROLLT: Radiotherapy in ophthalmology, 381  
RONCALI: Spontaneous cure of cancer, 9  
ROSENTHAL, A.: The surgical significance of menstrual changes in the breast, 414  
ROSENOW, G.: Treatment of pernicious anaemia, 208  
ROSENTHAL, S. M.: Method of testing liver function with phenoltetrachlorophthalin, 107  
ROSLER, H. L.: Congenital scoliosis, 75  
ROSS, J. W.: Cancer of cervix, 15  
ROSSIEN, G.: Analgesia during labour, 593  
ROST, Franz: Haematoma of the rectus abdominis in typhoid fever, 78  
ROUX-BRINGEN, J. L.: The association of surgery and radiotherapy in cancer, 455  
Rubella without a rash, 48  
RUD, E. J.: The number of erythrocytes under various conditions, 63







Tuberculous patients, the causation of haemoptysis in, 429  
 Tuberculous patients, pregnancy in, 101  
 Tuberculous pleural effusions, auto-serotherapy in, 230  
 Tubular grafts in plastic surgery of the face, 363  
 Tumour of Achilles tendon, giant-celled, 466  
 Tumour, brain, neuro-ological examination in cases of, 318  
 Tumour, malignant, and syphilitic infection, 551  
 Tumour of the carotid gland, 194  
 Tumour of the optic nerve, 545  
 Tumour of the upper cervical cord, 511  
 Tumour of intestine, inflammatory, associated with *Ascaris lumbricoides*, 300  
 Tumours, benign, of the female external genitalia, 549  
 Tumours of bone, radiographic diagnosis of, 32  
 Tumours, grafted, in rats, action of lead and other metals on, 85  
 Tumours, naso-pharyngeal, diathermic treatment of, 56  
 Tumours, paraffin oil, experimental production of in monkeys, 225  
 Tumours, pathogenesis of and the campaign against cancer, 353  
 Tumours, ponto-cerebellar, with few symptoms, 25  
 Tumours, radiation of, chemical variations in the blood following, 417  
 TURKNE, A.: Obstetric shock, 126  
 Turpentine injections in diseases of the uterine appendages, 176, 441  
 TURRO, R.: The nature of local immunity, 308  
 Tylosis, hereditary, 400  
 Typhoid fever. *See* Fever, enteric  
 T.: ... -pro-diagnosis of by  
 T.:  
 T.:  
 TITGAT, E.: Spinal anaesthesia, 192

## U.

Ulcer, duodenal, 209  
 Ulcer, duodenal, caused by obstruction at duodeno-jejunal junction, 407  
 Ulcer, duodenal, perforated, treatment of, 121  
 Ulcer, duodenal, x-ray diagnosis of, 507  
 Ulcer, gastric, dietetic treatment of, 24  
 Ulcer, gastric, differential diagnosis of, 135  
 Ulcer, gastric, perforated, treatment of, 121  
 Ulcer, peptic, 94  
 Ulcer, perforating, the cause and treatment of, 171  
 Ulcer, varicose, treatment of, 344  
 Ulcerative endocarditis following gonococcal septicaemia, 89  
 Ultra-viruses, neurotropic, physical properties of, 181  
 URBAIN, A.: Modification of the properties of streptococci, 418  
 Urinary infection, 3  
 Urinary proteins, rapid test for, 287  
 Urine, normal, does it contain leucocytes? 489  
 Urine, retention of in nervous diseases, intravenous injection of urotropine for, 359  
 Urotropine, intravenous injection of for retention of urine in nervous diseases, 359  
 USHER, C. H.: Metastatic carcinoma of the choroid and iris, 74  
 Uterine appendages, injections of turpentine in  
 ... *See* Haemorrhage  
 manual removal of, 199  
 Uterus, carcinoma of the body of, 351  
 Uterus, digital exploration of, the importance of, 411  
 Uterus, gravid, retroverted, 37  
 Uterus, gravid, wounds of, 151  
 Uterus, infections of the body of, 173  
 Uterus, inguinal hernia of, 348  
 Uterus, inversion of, acute, 347

Uterus, mammary extracts, action on, 103  
 Uterus, sarcoma of, 524  
 Uterus, spontaneous rupture of during pregnancy, 349

## V.

Vaccine in enteric and other intestinal infections, oral administration of, 533  
 Vaccine for typhus fever, 535  
 Vaccine virus, studies on, 246  
 Vaccines, staphylococcal, 224  
 Vagina, congenital septa of, 440  
 Vaginal pessary, the use of, 459  
 Vagus, the motor nuclei of, 339  
 VALLERY-RADOZ, P.: Desensitization by repeated cuti-inoculations, 517  
 VALLI, E.: Interstitial pregnancy, 303  
 VAN BLOMMESTEIN, J. H.: Rectal examination in labour, 242  
 VAN DAM, G.: The blood picture during an attack of tertian malaria, 505  
 VAN DEN BRADEN: Enlarged prostate in a young subject, 50  
 VAN DEN WILDERBERG, L.: Retrobulbar optic neuritis due to latent posterior sinusitis, 542  
 VAN DOLSEN, W. W.: Caesarean section, 81  
 VAN DOUGEN, J. A.: Treatment of abortion, 104—Criminal abortion, 175—Induction of abortion, 305  
 Varicocele, pelvic, 462  
 Varicose ulcer. *See* Ulcer  
 VASILESCU: Klippel-Feil's syndrome, 475  
 VEDAL: Acute tuberculous meningitis following traumatism, 379  
 VEEDER, B. S.: Gastric motility after pyloric obstruction, 55  
 VENDEL, S. N.: Pituitrin in the treatment of herpes zoster, 402  
 VERGE, J.: The complement fixation reaction in tuberculosis in the dog, 394  
 VERNE, J.: The intrapulmonary digestion of fat, 531  
 VERNIEUWE: The Schick reaction in nasal diphtheria, 87  
 VEESARI: Antimony in the treatment of leprosy, 234  
 Vertebrae, myeloma of, the 433  
 Vesical calculus. *See* Calculus  
 VIBEDE, A.: Electro-coagulation in the treatment of lupus of the nose and throat, 345  
 VIKO, L. E.: Clinical report on quinidine sulphate, 425  
 VILLARD, H.: Optic neuritis of dental origin, 324  
 Vitamin A, fat-soluble, the relation of rickets to, 30  
 Vitamin B and the sexual glands, 288  
 Vitamins in ice-cream, 118  
 Vitamins and infection, 221  
 VOLLMER, H.: Narcosis and acidosis, 162  
 VOLLET, H.: An unusual fracture of the os calcis, 125  
 Vulvo-vaginitis in children, 243

## W.

WAGEMANS, J.: Multiple types of bacteriophage? 202  
 WAHLBERG, J.: Is salicylic acid a specific in rheumatism? 472  
 WALDENSTRÖM, H.: The treatment of coxa plana, 519  
 ... can salvarsan create a non-syphilitic? 469  
 ... syphilis of the aorta,  
 Wassermann reaction in tabes, prognostic value of, 131  
 Wassermann reaction, can tuberculosis give a positive? 268  
 WATSON, B. P.: Pituitary extract in the induction of labour, 197

WEBER, F. Parkes: Bromoderma and iododerma, 536  
 WEIDMAN, F. D.: Experimental production of paraffin oil tumours in monkeys, 225  
 WEISS: Anaphylactic purpura, 358  
 WEISS, E. A.: Radium and surgery in the treatment of uterine haemorrhage, 388  
 WERTHEIMER, R.: The genesis of ovarian tuberculosis, 396  
 WHITE: Infantile eczema, 163  
 WHITE, P. D.: Clinical report on quinidine sulphate, 425  
 WHITEHEAD, A. L.: Ocular tuberculosis, 385  
 WHITHAM, Lloyd B.: Pulsating exophthalmos, 279  
 WHITMIRE, A.: Fundamental considerations in the correction of squint, 543  
 ... tion of contagion in, 70  
 ... of convalescent blood  
 in, 510, 511  
 Whooping-cough, ether injections in, 333, 448  
 WIBORG, A.: The etiology of erythema nodosum, 270  
 WILBOUCHEVITCH, A.: A new diagnostic serum test for cancer, 108  
 Wildbolt auto-urine reaction in tuberculosis, 157  
 WILLIAMS, F. H.: X rays and radium in enlarged tonsils, 258  
 WILLIAMSON, G. Scott: A system of tubules in secreting epithelia? 180  
 WILLIS, G. W.: Skin cancer following exposure to radium, 266  
 WINTER, G.: Tuberculosis and pregnancy, 177  
 WINTNER, K.: Psychic sequels of encephalitis lethargica, 205  
 WIRTING, F.: Control of cerebro-spinal meningitis, 313  
 WISHART, D. E. S.: Neuro-otological examination of cases of brain tumour, 318  
 WITTE, C.: Can tuberculosis give a positive  
 ... blood picture during  
 ... aria, 505  
 ... ternal secretion of the  
 pancreas, 422  
 WOOD, G. H.: Treatment of gonorrhoea, 509  
 WRIGHT, R. E.: Radiography in optic atrophy, 347

## X.

X-ray  
 X-ray  
 X-ray  
 X-ray  
 X-ray  
 X-ray treatment of toxic goitre, 362  
 X-rays in treatment of enlarged tonsils, 258  
 X-rays in treatment of myositis ossificans, 210  
 X-rays in treatment of salivary fistula, 93  
 X-rays in uterine fibroids, 152

## Y.

Yeasts causing skin diseases, 451  
 YERGER, C. F.: Meningitis of otitic origin, 35  
 YOUNG, G.: A macular perception in advanced cataract, 432  
 YOUNG, H. H.: Prostatectomy, 497

## Z.

ZENTMAYER, W.: Intracapsular cataract extraction, 409  
 ZIEGLER, H.: Operation in two stages for carcinoma of the stomach, 405  
 ZIMMERMANN, L.: Prophylaxis of measles by serum of convalescents, 110











# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

### 1. Treatment of Scarlet Fever by Injection of Convalescents' Serum.

R. DEBRÉ and J. PARAF (*Paris méd.*, November 4th, 1922, p. 418), who record a case of severe scarlet fever in a girl aged 5 years successfully treated by this method, state that Weisbecker in 1897 was the first to employ injections of convalescents' serum in the treatment of scarlet fever. His example was followed by Huber and Blumenthal, von Leyden, Rumpel, and Scholz, all of whom gave only small quantities of serum and often only a single injection. The results varied and no definite conclusion could be drawn. The treatment was therefore abandoned until 1912, when Jungmann and Reiss employed the method again in a modified form. Relatively large doses (50 to 60 c.cm.) were given, usually intravenously, and repeated three or four times. The results were very favourable, and were confirmed by other observers, such as R. Koch, Reiss and Herz, A. Zingher, Schulz, Griesbach, Kling and Widfeld, Weaver, and Mironesco and Sager. The authors' conclusions are as follows: The serum of convalescents is indicated in the treatment of scarlet fever. It should be employed at the onset of the disease, as it does not appear to have any effect on the secondary complications. The serum should be injected intramuscularly and subcutaneously as well in doses of 40 to 50 c.cm., and the injections should be repeated the following days in the same or slightly smaller doses (30 to 40 c.cm.). Intravenous injections, which may give rise to shock, should not be employed except with great care and in cases where the prognosis appears hopeless otherwise. Three facts stand out against the treatment being of a specific character. In the first place Zingher employed injections of the citrated blood of normal individuals with success in malignant scarlet fever, although it is true the favourable action appeared to be less marked than with convalescent serum. Secondly, convalescents' serum does not produce the Schultz-Charlton extinction sign more readily than does the serum of normal individuals. Lastly, the injection of convalescents' serum does not have any definite action on the eruption of patients treated by this method.

### 2. Infective Myocarditis and Cardiac Failure.

R. LAUTIER (*Arch. des Mal. du Cœur des Vaisseaux et du Sang*, October, 1922, p. 686) observes that if the symptomatology of cardiac failure is well known, its etiology in many cases is still obscure. He divides cardiac failure into two classes—(1) active and (2) passive. Cases in the former class result from physical or mental overwork or from some circulatory obstruction within or outside the heart which the myocardium cannot overcome—for example, valvular lesions, certain arrhythmias, and raised blood pressure. In the latter class, cardiac failure results from myocardial degeneration, fatty, fibrous, or toxic. Clinically, both forms may be present in the same patient. The author quotes three typical cases, and emphasizes the fact that treatment may at first produce improvement, but this is only transient, slight dyspnoea persists, and sometimes a few râles at the bases of the lungs, the improvement disappears and further treatment is useless. Lautier states that in this particular type the patient appears to be in good health; the onset is rather sudden, though the patient may be aware of some previous cardiac lesion. There is more or less severe anaemia, due to reduction of the number of red corpuscles and of the haemoglobin content. Leucocytosis may be slight or may rise to a count of 25,000, chiefly polymorphs. There is slight fever with morning remissions; the temperature curve is irregular and uninfluenced by antipyretics. The heart's action is tumultuous and irregular, there may be tachycardia, arrhythmia with extra-systoles, or total arrhythmia. These three symptoms in combination indicate an infection, which may be confined to the myocardium, or in cases of acute rheumatism may invade the endocardium or pericardium. When these alone are invaded few subjective symptoms occur, and they produce only insignificant disturbance of the circulatory equilibrium. Conversely, when the myocardium only, or with endocardial and pericardial complications, is attacked great circulatory disturbance follows immediately, owing to reduction of the functional power of the myocardium. This sudden invasion of the myocardium is very common, and rarely extends to the endocardium or pericardium. The author has performed autopsies in many of these cases. Some show signs of old healed endocarditis, but he has not found any evidence of

active endocardial lesions. Others had perfectly healthy endocardium and valves intact. The author discusses rheumatic infections, and emphasizes the fact that he has seen a large number of these infective cases with no rheumatic history, in which the myocardium alone was involved. In rheumatic cases he has had remarkable results from vaccine therapy, either alone or combined with salicylate treatment. In "infective passive cardiac failure" he has had no permanent good results from this treatment. He thinks that hexamethylenetetramine, given intravenously in daily doses of 25 to 50 cg., has definite action on the infection, but it is often necessary to continue it for months. Cardiac tonics are also indicated, but the physician must be guided by clinical symptoms. The author prefers powdered digitalis leaves to digitalin. In syphilitic cases specific treatment requires great caution on account of the dangers of arsenobenzol, and even of mercuric cyanide in these cardiac cases. Quinine and quinidine are very dangerous and lead quickly to a fatal termination. The author observes that careful dietetic treatment should be combined with the treatment recommended above, and that success will depend largely upon the commencement of such treatment at an early stage of the disease, before the patient's strength is exhausted.

### 3. Urinary Infection.

A. S. ROE (*Med. Journ. of Australia*, October 14th, 1922, p. 433) considers that absorption of bacteria into the blood, obstruction to the urinary outflow, and disturbances in metabolism producing a highly irritating urine, are the three factors concerned in the production of urinary infection. While these may operate either singly or in conjunction, the last appears to be the most important from the point of view of preventive medicine. In the majority of cases the urine is definitely acid, while fatigue is a prominent factor in determining an attack, and the disturbance in metabolism, by producing a highly irritating generally acid blood, impairs kidney efficiency and lowers resistance. The elimination of bacteria which have been absorbed into the blood from such foci as the bowel, teeth, tonsils, pelvis, etc., also takes place through the already damaged kidneys, producing still further damage, with a resulting renal infection. Similar infection also follows from the presence of bacteria alone if there is obstruction to the urinary outflow from stricture, stone, prostatic disease, etc., though in obstinate cases foci of infection must be sought for as well. The physiological conditions tending to cause disturbances in metabolism are those associated with deficiencies in diet, disorders of internal secretions connected with pregnancy, puberty, and the climacteric, and physical or mental disturbances resulting from fatigue.

### 4. Conservative Treatment of Pneumonia.

E. E. CORNWALL (*New York Med. Journ. and Med. Record*, November 15th, 1922, p. 563) describes the treatment of pneumonia on conservative lines as adopted by him during the past ten years. The main features are: (1) The provision of fresh air with protection from exposure to cold when the temperature falls, and with no definite treatment for fever beyond tepid sponging if excessively high; (2) a fluid lacto-vegetarian diet on the general lines of two pints of milk to one of barley water daily, 9 oz. of orange or grape fruit juice, 2 oz. of lactose, 1½ drachms of sodium bicarbonate, and half a drachm of calcium chloride in addition to the salts in the food, and over 90 oz. of water; (3) avoidance of cathartics and enemata during the acute stage; (4) heart stimulation only when needed, but when so needed in the later stages given freely; and (5) conservatism in the relief of distressing and dangerous symptoms—opiates, expectorants, and sedatives being employed only in exceptional cases. In a series covering five and a half years in which such treatment was adopted, and including cases moribund when admitted, statistics show a mortality of 18.8 per cent., as compared with 30.6 per cent. in a previous series of less conservative treatment, especially as regards the diet and the avoidance of catharsis; of 70 cases during 1921 the mortality rate was 13.2 per cent., and the average duration of the fever 8.1 days. The diet should be changed to suit conditions, being reduced to barley water, salts, lactose, and fruit juice, or to water and salts alone should tympanites and diarrhoea or critical conditions arise; the fluid intake is restricted in the face of great cardiac weakness. Tympanites was observed less frequently than when routine catharsis is practised, and the bowels may remain unmoved for several days without untoward results and with apparent safeguarding



against dangers which threaten from the alimentary canal. Of cardiac stimulants, strophanthus, strychnine, and caffeine are the best, but in by no means every case are they required, and in children but seldom.

#### 5. Atophan Poisoning.

K. SCHROEDER (*Ugeskrift for Læger*, September 7th, 1922, p. 1141) has found atophan of great value not only in uric acid diseases, but also in sciatica, lumbago, and neuralgia, and even when salicyl preparations have failed the action of atophan has often been prompt. But he regards it as a dangerous drug which ought not to be sold without a prescription. He records seventeen cases of atophan poisoning, the most prominent symptoms being an urticarial eruption with or without oedema, albuminuria, fever, headache, general malaise, and gastro-intestinal disturbances. In two cases there were also cardiac symptoms. The gastro-intestinal symptoms, as well as the renal symptoms, may be mitigated by giving the drug with sodium bicarbonate and with plenty of water, and the rash and other symptoms are best treated with a calcium salt. The patient should always be under close medical observation in order that the drug can be instantly discontinued at the first sign of poisoning. The author has seen symptoms of poisoning even when he began cautiously with 0.5 gram three times a day, increasing the daily dosage by 0.5 gram every day till a dosage of 0.5 gram six times a day was given.

#### 6. Treatment of Syphilis with Bismuth.

H. MÜLLER (*Ugeskrift for Læger*, November 9th, 1922, p. 1547) has received from Professor Levaditi a supply of potassium and sodium tartro-bismuthate (trépol), and has administered it to twenty-five cases of syphilis in Mainz. Every adult was given 2 grams by intragluteal injection, care being taken to introduce none of the drug into a blood vessel. The injections were repeated every fourth or fifth day, each case being given approximately ten injections. The response of the symptoms was more prompt to trépol than to injections of calomel, and was as satisfactory as to silver-salvarsan; but while this drug banishes the spirochaetes from the primary lesion in twenty-four hours, trépol took about three days to do so. The clinical results were as satisfactory in tertiary as in primary and secondary syphilis, and albuminuria was never observed. It was, however, almost impossible to avoid a narrow bismuth line in the gums, resembling the lead line. This bismuth line could be disregarded provided the teeth were in a healthy state; otherwise it was apt to be the precursor of stomatitis. The Wassermann reaction did not become negative as soon as after silver-salvarsan or a combination of mercury with salvarsan. The author's verdict is favourable, and he urges the clinical trial of this drug on a large scale.

#### 7. Differential Diagnosis of Lobar Pneumonia and Appendicitis in Children.

A SERIES of 145 cases of lobar pneumonia in children, aged from 2 to 15, have been studied by F. D. ADAMS and B. J. BERGER (*Journ. Amer. Med. Assoc.*, November 25th, 1922, p. 1809) to determine the most common sources of error in diagnosis, and the signs and symptoms in early pneumonia which are of the greatest value in reaching a correct diagnosis. For purposes of comparison a series of 63 cases of proved appendicitis have been reviewed. Of the cases of lobar pneumonia, 17.5 per cent. had at one time or another been wrongly diagnosed as acute appendicitis or surgical condition of the abdomen, and 4.8 per cent. as cerebro-spinal meningitis. The authors stress the fact that a history of cough or pain in the chest points toward a diagnosis of pneumonia, but absence of respiratory symptoms does not rule out this disease. A history of vomiting, abdominal pain, and diarrhoea is of no value, as these occur as frequently in pneumonia as in abdominal conditions. The pneumonia patients always seem more ill and present a characteristic general picture not seen in the abdominal cases. If recognized, this is a very important differential point. Pneumonia patients show much more of a systemic reaction, as seen by pulse and temperature chart, than do the abdominal cases. Careful examination of the lungs will frequently reveal a small area suggesting early solidification; but if it is located in the upper half of the chest; or in patients who do not otherwise present the picture of pneumonia, it must be interpreted with caution. Abdominal tenderness and spasm are relatively frequent in pneumonia, but are of a type unlikely to be found in acute abdominal conditions. A high leucocyte count favours the diagnosis of pneumonia, except when peritonitis or appendix abscess is suspected, in which case it is of no value in differentiating the condition from pneumonia. In the presence of symptoms or signs of meningial irritation, lobar pneumonia should be ruled out before lumbar puncture is done.

## SURGERY.

#### 8. Oesophageal Achalasia.

D. M. GREIG (*Edinburgh Med. Journ.*, November, 1922, p. 217), in dealing with cardiospasm, considers that three factors are of importance—namely, the anatomical, the physiological, and the pathological. Recent work shows that the oesophagus is a potential sphincter, but possesses no anatomical sphincter at its lower end. The oesophageal opening in the diaphragm is not modified by the movement of the diaphragm, and retains an unvarying diameter; beyond being the aperture through which the oesophagus passes it has little relations to it. The oesophagus receives its nerve supply from the vagi and the mediastinal sympathetic, but it must be realized that, in common with the lungs, it has a parasympathetic supply from the bulbar area. These anatomical facts must be borne in mind before the physiological question can be approached. The oesophagus contains both striated and non-striated muscle, yet there is no evidence that the former can be contracted voluntarily. The oesophagus has tonus, and is always in a state of tonic contraction ready for the reflex act of swallowing. It is doubtful if the oesophagus ever contains air; the tonus of the muscle is sufficient to maintain the tube gently closed. In all varieties of oesophageal obstruction the essential feature is dysphagia; in congenital deficiency the anatomic structure is at fault, in all others it is the function that is deranged. The crucial factor in spasmodic obstruction must be the innervation of the muscles. In achalasia there is a condition of hypertonus or difficulty in relaxation of the muscle; this may be due to some local cause, as undue stimulation from the oesophageal lumen. The oesophagus is a sphincter, and relaxation takes place in advance of the bolus as part of the correlated action through the oesophageal nerves. When a want of balance is set up a localized achalasia results, and it is not the muscles that are primarily at fault but the nerves. Analogous conditions are found in the intestinal tract and in congenital idiopathic dilatation of the colon. Here there is limitation to one portion of the bowel, as the affection may be limited in the oesophagus.

#### 9. Spontaneous Cure of Cancer.

RONCALI (*Annali Ital. di Chirurg.*, August 30th, 1922, p. 484) concludes his careful study of cases of so-called cure of cancer, either without or with only limited partial surgical treatment, and he states that those cases which are cured spontaneously cannot, in the light of rigorous criticism, be accepted as true cancer. Of the cases which seem cured after partial operation, it is necessary to distinguish those which go on to complete and definite cure (such as simple infiltration of the chorionic villi) from those which only reach a temporary and not a lasting cure. As an exceedingly rare exception some epithelial cancers have been known to get well (and usually where no surgical intervention has taken place), but such cases are very rare and even at the best perhaps doubtful. Even if it is granted that such cure may take place, it is only likely to occur in the chronic forms and not in the acute types with embryonal cells—for example, chorion-epithelioma. Spontaneous cure is still more unlikely in the case of metastatic growths. A bibliography of about 100 references is given at the end of the paper.

#### 10. Correction of Squint by Muscle Recession.

P. C. JAMESON (*Arch. of Ophthalmol.*, September, 1922, p. 421) records experience of 56 operations for the correction of (with two exceptions) internal concomitant squint by recession without advancement, with deep scleral suturing short of perforation. The muscle is freely exposed through a conjunctival incision following the curve of the semilunar fold with its centre corresponding to the caruncle, and, after being completely separated from the globe, and its capsular continuity severed above and below by incisions carried back beyond the equator, it is transplanted and fixed by a method of safe scleral suturing to the exact position required. In the technique of introducing the sutures it is important that the bend of the needle after counter-puncture and of the suture after it has been drawn should be distinctly seen in their entire continuity through the translucent sclera, the motion employed being similar to that used in picking up the fibres of a thick linen handkerchief bent over the finger without pricking the finger. Three sutures are used, the first being introduced from without the conjunctival lip nearest the caruncle perforating the outer surface of the muscle just below the centre. In order further to ensure its hold the needle is passed through the muscle from the under side above its first perforation and brought out on the upper side, the thread being looped round the thread of the first perforation. The sutures are continued through the sclera and brought out through the lip of the



conjunctiva nearest the cornea. The two remaining sutures are carried in a parallel course about 3 mm. above and below the centre one, and when they are all tied the muscle is firmly held in its new position and the conjunctival opening closed. By leaving the sutures sufficiently long to be held loosely by an adhesive strip to the bridge of the nose, their removal in a week is facilitated by abducting the eye by making traction on them and so bringing the knots into view. Any ultimate retraction of the caruncle is negligible. By this method convergence is safeguarded, and its corrective capabilities are extensive and uniform, so that a single recession of 5 mm. will correct a deviation of 25 degrees in a large percentage of cases.

#### 11. Prophylactic Injection of Glucose in Major Operations.

B. TENCKHOFF (*Zentralbl. f. Chir.*, October 7th, 1922, p. 1472) remarks that every surgeon has lost patients after severe operations in spite of perfect technique and normal healing of the wound, owing to damage to the internal organs, especially the heart, lungs, liver, and kidneys. More frequent still are the cases which survive but with permanent damage to these organs. Operative shock and the long duration of the anaesthesia are rightly incriminated, and it is not always the apparently most hopeless or weakest cases which succumb. It is not surprising to find a fatal issue in patients who at the time of the operation presented signs of heart failure or an imperfect circulation, but many of the cases have occurred in patients who have shown no signs or symptoms of cardiac disease. It is in such patients especially that Tenckhoff has found that the prophylactic intravenous injection of 10 c.cm. of a 10 per cent. solution of glucose on the evening before a major operation is of value. The only unpleasant results were a feeling of chilliness and shivering and occasionally a rigor. The good results of the injection were shown by the pulse not becoming rapid, weak, or small after the operation, as so frequently occurs, but remaining slow, strong, and of good tension—an indication that the injection has acted not only on the heart but also on the peripheral part of the circulation. This good effect lasts two to three days and tides the patient over the most dangerous period. The injection also appears to diminish or entirely prevent the unpleasant symptoms of the excitement stage of anaesthesia, as well as the after-effects, such as vomiting and nausea. Tenckhoff remarks that if these observations are confirmed a high percentage solution of glucose will form part of the armamentarium of the surgeon. The rationale of the treatment is not yet fully explained. Büdingen, who was the first to introduce glucose therapy, has shown that a number of subjective and objective cardiac disturbances are due to a low sugar content of the heart muscle or to inability of the heart to make use of its normal sugar content.

#### 12. Treatment of Inoperable Cancer of the Rectum.

G. F. GAARENSTROOM (*Nederl. Tijdschr. v. Geneesk.*, November 11th, 1922, p. 2165) records two cases of inoperable cancer of the rectum—in a woman aged 53 and a man aged 29—in whom as the result of combined treatment by radium and x rays all the signs of the tumour disappeared and the general condition improved to such an extent that they were able to carry on their occupation. At the time of publication of the note this condition had lasted six and five years respectively, so that the patients might be regarded as cured. The successful result was due to three factors. In the first place, the creation of an artificial anus had removed all sources of irritation from the rectum. Secondly, very powerful irradiations were employed in both cases. Thirdly, the courage of the patients in undergoing such vigorous treatment and submitting to the necessarily unpleasant reactional phenomena was to be taken into account. Often patients give up the treatment at an early stage, or are compelled to do so owing to various complications, such as fever, thrombosis, intestinal obstruction, or asthenia.

#### 13. Intestinal Obstruction due to Ascarides.

W. GERLACH (*Deut. Zeit. f. Chir.*, August, 1922, p. 396), who records an illustrative case, remarks that infestation by ascarides in the great majority of cases is a harmless disease, either because the number of worms is small, or because the intestinal mucosa possesses a high degree of immunity to the toxins of the ascarides. Under special conditions, however, the results of infestation may be dangerous and even fatal. Sometimes the presence of ascarides may complicate a pre-existing intestinal disease, such as typhoid fever or tuberculosis, and cause perforation of the intestinal ulcer, while in other cases the bad results may be due entirely to the ascarides, either from their toxic or mechanical effects. The surgical diseases due to ascarides have been classified by Schlossmann as follows: (1) Presence of the parasites in the abdominal cavity; (2) intestinal obstruction of a spastic or

mechanical nature; (3) peritonitis; (4) appendicitis. Gerlach's case occurred in a girl, aged 9, admitted to hospital with acute peritonitis. Death took place a few days after laparotomy. The autopsy showed diffuse fibrinous peritonitis, following spastic intestinal obstruction caused by ascarides in the lower part of the small intestine. Histological examination showed extensive necrosis of the intestinal mucosa, in which there had been an agglomeration of ascarides.

## OBSTETRICS AND GYNAECOLOGY.

#### 14. Vesical Calculus in the Female.

ACCORDING TO TÉDENAT and M. CATHALA (*La Gynéc.*, September, 1922, p. 514), the *intubular form* of the urethrovaginal opening and the shortness and susceptibility of dilatation shown by the urethra account for the readiness of elimination of urinary concretions in the female, and the greater rarity, in comparison with the male, of vesical calculus; with regard to gravel, however, the degree of distinction between the sexes is less. Gravelly collections not infrequently give rise to referred pain in the back, ankles, or heels; the urine shows abundant deposits, and treatment by dieting, purgation, and exhibition of alkalis or sodium benzoate is followed by rapid improvement. Backache, ascribed to chronic adnexal disease or uterine retroposition, is not infrequently due to a urinary lithiasis which has been overlooked. Vesical calculus is usually single, as in 29 of the 32 cases forming the basis of this paper. The symptoms consist in (1) frequency of micturition; (2) pain, which may radiate from the hypogastrum to the urethra, clitoris, sacrum, or thighs; (3) haematuria, which, however, is infrequent, not usually profuse, and sometimes absent. All these symptoms are notably worse after walking or other exercise, and after jolting. Diagnosis may sometimes be made after vaginal examination, usually after exploration of the bladder by sound or lithotrite; sometimes, however, radiographic examination is required. Treatment is operative in nearly all cases, and varies according to the consistence and size of the calculus, the state of the bladder, and the virginity or married state of the patient. In any case operation must be preceded by a period of absolute repose during which any coincident cystitis is carefully treated by administration of urotropine, salol, turpentine, or eucalyptus, by daily lavage with 1 per cent. silver nitrate and instillations of 2 per cent. protargol or 5 per cent. argyrol, or, if necessary, by continuous vesical drainage by catheter. Extraction of the calculus per urethram after dilatation by Hegar's or other instruments is suitable for stones of which the diameter does not exceed 3 cm. Lithotripsy—according to the authors the operation of choice—is suitable for stones which are not too hard nor too large (the diameter not exceeding 5 cm.), and for cases in which the bladder is not infected or is susceptible of disinfection. Cystotomy from the vagina, which is very rarely followed by fistula, is called for in cases of large or hard oxalate stones, and according to some authors is preferable to urethral extraction for calculi measuring 2 to 3 cm.; it should be done if there is persistent medium grade cystitis without pericystitis. Suprapubic cystotomy finds its indications in cases of stone formed around a foreign body, in cases of extremely infected bladder, and in some virgin subjects.

#### 15. Cancer of the Cervix.

J. W. ROSS (*Canadian Med. Assoc. Journ.*, November, 1922, p. 772) summarizes the results of various methods of treatment of cancer of the cervix from a study of 475 cases (1913-19) at the Mayo Clinic, at least three years having elapsed since the patients were first seen. Vaginal and intra-cervical radium applications were used in inoperable cases in most instances, and a modified Wertheim in the operable cases was employed, or a more conservative procedure in which a cuff of vagina well beyond the growth was removed with as much of the parametrial tissue as was necessary. The interval between cauterization and hysterectomy giving most favourable results was one month, and, following radium treatment, hysterectomy should be performed after from two to four weeks. Sixty of the 475 patients (12.6 per cent.) have lived more than three years. Thirty three modes of treatment, mainly variations in technique, were used, grouped under four main headings—namely, surgery, radium, Percy cautery, and simple cautery. Fistulae resulted in 46 cases (9.7 per cent.), the largest number following the Percy cautery, which was probably partly due to the fact that the abdomen was not always opened to control the uterus and estimate the heat. In very early cases surgery alone gives good results, but these are slightly better when it is used in combination with radium. In operable but not early cases surgery alone, or combined with radium, gives the best results, radium alone or Percy cautery alone being of



equal value but less efficient. In cases inoperable because of extension to the vagina surgery gives the best results, radium being disappointing, but in other inoperable cases radium alone, or in combination with cautery or surgery, is the only effective treatment, while in advanced cases radium is superior to all other methods but is not curative.

#### 16. Rupture of the Symphysis Pubis during Labour.

R. HORNUNG (*Zentralbl. f. Gynäk.*, November 25th, 1922, p. 1898) has found in the literature 110 recorded cases of obstetric rupture of the pubic symphysis, of which about one-sixth occurred during spontaneous delivery, the remainder being for the most part associated with high application of forceps in contracted pelvis. Walcher's position appears to have played a contributory part in certain cases. Not infrequently partial ruptures have been produced during labour and have become complete at a later period as a result of muscular strain; and partial ruptures occurring during delivery of the head may not become complete until the passage of the shoulders. In the recorded cases the mortality was 75 per cent., but most of them were reported in the pre-antiseptic era. In a case radiographically illustrated by the author the rupture dated from high forceps extraction without narcosis in a patient with contracted pelvis; the puerperium was long and febrile, but there was no injury of bladder, urethra, or ureter. One and a half fingerbreadths separated the divided bones, but six months after delivery the patient could walk without difficulty. BENTHIN (*Monats. f. Geburts. und Gyn.*, lviii, 1922) records a case of puerperal abscess formation in the symphysis which he ascribes to a spontaneous rupture during labour.

#### 17. Cerebro-spinal Haemorrhage in the Newborn.

ANGELIS (*La Pediatria*, November 15th, 1922, p. 1054) reports the case of a child born asphyxiated after a tedious labour (non-instrumental). Next day it was noticed to be very pale, with cyanosis of the face, hands, and feet. It lay supine and sluggish and responded very little to any stimulus; there was no muscular tone and no tendon reflexes, the corneal and pharyngeal reflex was normal, the pupils small and reacting slowly. Lumbar puncture was done on the second day, and 5 c.cm. of bloody fluid withdrawn; except for marked delay in coagulation time the blood was normal; the Wassermann reaction was negative. The general paralytic condition increased and the child died on the sixth day. *Post mortem* about 15 c.cm. of black fluid blood ran out when the skull was opened. Haemorrhagic patches were noted on the right occipital lobe and the cerebellum was immersed in a large collection of grumous blood. There was no blood in the ventricles. In the whole length of the spinal canal there were extradural exudations of blood in big clots. The author draws attention to the poor coagulability of the blood as a possible adjuvant cause of haemorrhage. The child had no convulsions.

### PATHOLOGY.

#### 18. Haemolytic Streptococci in Scarlet Fever.

W. P. BLISS (*Journ. Exper. Med.*, November, 1922, p. 574) found that haemolytic streptococci can be obtained from 100 per cent. of patients suffering from scarlet fever if the throat be swabbed during the first week of illness. After the first week of the disease the number of haemolytic streptococci diminishes rapidly, although great numbers may still be present as late as the twelfth day, and the average length of time that these organisms are present in the throat varies from ten to twenty days. No morphological or cultural characteristics peculiar to the haemolytic streptococcus from scarlet fever can be demonstrated. Scarlatinal streptococci are not agglutinated by immune serums prepared from haemolytic streptococci isolated from other pathological sources, but ten immune serums were prepared from different strains of scarlet fever streptococci, and each of the serums agglutinated more than 80 per cent. of the strains isolated from scarlatinal throats. The homologous strain of the haemolytic streptococcus may be agglutinated weakly by the serum of patients convalescent from scarlet fever. Some degree of protection against virulent scarlet fever streptococci is provided by scarlatinal antistreptococcal serum, but such serum has no protective power against haemolytic streptococci from other diseases. It is interesting to note that in a small epidemic of scarlet fever a healthy carrier of haemolytic streptococcus was discovered, and the organism carried was identical in its serological reactions with strains of haemolytic streptococci isolated from active cases of scarlet fever. The scarlatinal type of haemolytic streptococcus was only once found in the study of a number of cases of scarlet fever.

#### 19. The Etiology and Epidemiology of Epidemic Encephalitis.

C. KLING (*Hygiea*, November 15th, 1922, p. 894) investigated on the spot an outbreak of epidemic encephalitis in the north of Sweden, where, early in 1921, the epidemic assumed alarming proportions. In the four villages in which every person was examined it was found that, by the inclusion of slight and abortive cases, the morbidity ranged from 7.1 to 45 per cent. In certain families several members were simultaneously affected, and the abortive cases were characterized by the same prodromal symptoms (fever, catarrhal symptoms, headache, tenderness of the scalp, and "rheumatic" pains) as the fully developed and typical cases. The abortive cases were in the majority, and were doubtless chiefly responsible for the rapid spread of the infection. No evidence of infection by indirect means—that is, by milk, water, or insects—could be demonstrated. The spread of the epidemic was remarkably rapid; in the course of two months it had spread over an area of 87 square Swedish miles, populated by about 9,000 persons. In three cases in which the incubation period could be determined with accuracy, it was invariably one of ten days. About 100 cases, including 12 which terminated fatally, were subjected to a bacteriological examination. All the 30 inoculations of the virus into monkeys proved negative, but rabbits proved susceptible, although the disease was not acute as in man, but was of a chronic, slowly progressive character. The characteristic changes in the brain did not, as a rule, appear till three to five months after intracerebral infection or injection of the virus into the anterior chamber of the eye. When the virus was contaminated with cocci a mixed disease was provoked, and the rabbits died in four to eight days with signs of acute inflammation of the brain. It was evident, however, that they harboured the specific virus, for by filtration and other devices it was possible to isolate the virus from these cases of mixed infection and to induce uncomplicated encephalitis in other rabbits. The author has succeeded in passing the virus from one rabbit to another through eight generations in the course of eighteen months, during which the toxicity of the virus was gradually raised.

#### 20. The Question of a Gastric Hormone.

R. K. S. LIM (*Quart. Journ. Exper. Physiol.*, September 30th, 1922, p. 79) investigated the distribution of "gastrin" in the stomach and duodenum in order to locate the cells responsible for its production, and to ascertain whether it is secreted internally, by demonstrating its presence in the blood. Experiments were conducted upon anaesthetized cats, and the effects of organ extracts, histamine, and adrenaline studied. The organ extracts were extracted with boiling water or acid from the three regions of the stomach and the intestinal mucosa, their potency being in the descending order of pyloric, cardiac, duodenal, fundic, jejunal, and ileal, thus confirming the observations of Edkins regarding pyloric extracts and their effect upon gastric secretion. Extracts from the cardiac and duodenal areas are less active, fundus extracts inert, and jejunal and ileal extracts ineffective. The pyloric principle, or gastrin, is closely allied to histamine, which causes gastric secretion when injected intravenously. Possibly the order of potency might vary with the methods of extraction, which would account for differences in results obtained by other observers. Adrenaline does not inhibit the secretion so provoked, but may delay its outflow from the stomach, and in some individuals it may excite secretion. Since the distribution of gastrin in the stomach and duodenum corresponds with that of the mucoid glands, it is suggested that it is extracted from these cells. Neither direct nor indirect transfusion of citrated blood of fed animals taken at various intervals after a meal has any effect upon gastric secretion, and, since there is no gastric exciting substance in the blood after meals, it is concluded that the excitant found in pyloric and other extracts is not secreted into the blood stream, and that the mechanism of secretagogue action is not due to internal secretion.

#### 21. The Test of Digestive Haemoclasis in Pulmonary Tuberculosis.

M. PIÉRY and M. PAPADOPOULOS (*Bull. Soc. de Théor.*, October 11th, 1922, p. 213) state that Vidal's test of digestive haemoclasis not only possesses a diagnostic value in revealing a functional insufficiency of the liver, but also may be employed in therapeutics for testing the value of various methods of treatment of hepatic insufficiency. The authors treated 16 cases of pulmonary tuberculosis in which the test of digestive haemoclasis was positive by various kinds of Vichy water for four weeks, with the result that 12, or 75 per cent., showed a return to normal digestive leucocytosis in place of leucopenia. The test therefore appears to be a ready and accurate guide in the feeding and chemotherapy of pulmonary tuberculosis.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

### 22. Auricular Flutter.

J. H. KEATING and J. HAJEK (*Amer. Journ. Med. Sci.*, November, 1922, p. 656) report eight cases of auricular flutter, a condition characterized by regular co-ordinated action of the auricle so rapid in rate that the ventricle is rarely able to respond to each auricular impulse, thus giving rise to a partial or complete heart-block, the impulses no longer arising from the sino-auricular node, but from some other portion of the auricle. While dyspnoea, palpitation, and precordial distress are the chief symptoms, these depend upon the amount of cardiac insufficiency, and are modified by the presence or absence of complications. Physical signs may be absent when the amount of cardiac insufficiency is slight, and clinically the diagnosis is difficult because of the paucity of definite symptoms and signs. Sphygmograph tracings of the large veins and radial pulse may in some cases enable a diagnosis to be made, but the condition can only be detected definitely by the use of the electrocardiograph. Clinical experience and experimental work show that paroxysmal tachycardia, flutter, and fibrillation are stages of the same pathologic condition causing cardiac insufficiency, tachycardia being the first stage, flutter the second, and fibrillation the third. In the eight cases reported the auricle showed a remarkable stability while fluttering—atropine, rest, exercise, or emotion, though affecting the ventricle, having no effect upon the auricular rate. The treatment advised by the authors consists of rest in bed to increase the cardiac reserve, and the administration of large doses of digitalis in tablet form or intravenously, with a view to causing the auricle to fibrillate, the drug being discontinued when this is attained. In those cases in which digitalis produces no effect other than slowing the ventricle, the condition may persist for years if the patient leads a sedentary and uneventful life. The value of quinidine sulphate is as yet undetermined, the cases in which it has been used being too few to allow of any definite conclusions being drawn.

### 23. Intermittent Quinine Treatment in Malaria.

K. GLAESSNER (*Wien. Arch. f. innere Medizin*, Bd. v, Heft 1, October 15th, 1922, p. 43) records his experience of the intermittent quinine treatment in malaria. He gives reasons for considering the intermittent treatment specially indicated; he had demonstrated its value by intravenous injections of quinine. In the meantime Ochsner had advocated an intermittent treatment with quinine given by mouth, which he based on similar theoretical grounds. Glaessner has carried out this latter treatment in 77 cases of malaria with good results. On the evening of the day of the attack of malaria—the day of high fever—the patient is given 30 grams of castor oil. Then on the next day, and the day following, he is given 0.15 gram of quinine sulphate in a cup of tea every two hours (during day and night). During these two days no meat is given, and the diet consists of milk, soups, vegetables, milk, and farinaceous foods. After these two days of quinine treatment, no quinine is given for eight days, and the mode of life is normal in this period. On the ninth and tenth days the treatment is repeated. If another attack occurs, or if the malarial parasites are still detected in the blood, and the spleen has not diminished, then a third course of treatment is carried out after another eight days; occasionally a fourth course is given. In 56 of his 77 cases only one course of the treatment was required (that is, four days of treatment, with the eight days' interval between the first two and the last two days). In 21 of the cases two or three courses of the treatment were required. The author estimates that successful results were obtained in 80 per cent. of his cases; he is unable to state the permanent results, except in a small number of cases, but he considers this method of treatment worthy of further trial.

### 24. Dietetic Treatment of Gastric Ulcer.

A. NIELSEN (*Hospitalstidende*, October 25th, 1922, p. 67) has come to the conclusion that, in estimating the value of the medical treatment of gastric ulcer, it is essential to distinguish between immediate and ultimate results. As a rule, in a well conducted hospital, 95 to 98 per cent. of the patients given medical treatment are discharged symptom-free or improved. To ascertain the late effects of such treatment the author investigated the subsequent fate of 239 patients two and a half to nineteen years after discharge. The clinical diagnosis was in every case founded

on reliable data. About 200 were found not to have been permanently cured, and a remarkable difference was observed when the cases were classified according to the duration of the symptoms before the institution of medical treatment. Among the patients whose symptoms had lasted less than six months the proportion of permanent cures was 60 per cent., and of improvement 16.7 per cent. In cases in which the symptoms had lasted one to three years the proportion of complete cures was only 36.9 per cent. This percentage was reduced to 20 among the patients whose symptoms had lasted three to five years, and to 5.3 among the patients whose symptoms had lasted more than ten years. The fact that only 5.3 per cent. recovered among the patients whose symptoms had lasted more than ten years indicated the comparative futility of medicinal and dietetic treatment. Included among these cases was a certain number of cases of duodenal ulcer.

### 25. Ponto-cerebellar Tumours with Few Symptoms.

A. GORDON (*Arch. Intern. Med.*, November 15th, 1922, p. 607) points out that often the diagnosis of brain tumours developing at the ponto-cerebellar angle is made without great difficulty. If the tumour originates in the cerebellum, cerebellar symptoms will occur first. If the tumour originates in the eighth nerve, vestibular or auditory symptoms will occur first. Besides the eighth, also the seventh, sixth, and fifth nerves are very often affected. But in some cases the symptoms are slight and indefinite, and the author records seven such cases. In these seven cases even the ocular fundi were normal in five, and in the other two only retinal haemorrhages and venous engorgement were found. A sign detected, however, in all of these cases was the error in pointing with the hand on the side of the disease (the result of a disturbance in the regulation and in the co-ordination of voluntary movements, which are controlled, directly or indirectly, by the cerebellum). The author regards the pointing error as a sign of great localizing value. He also considers persistent pain in the area of distribution of one or two branches of the trigeminal nerve as highly suggestive of the disease. This pain is not of the typical neuralgic character, but is described as a burning, boring, pulling pain. H. W. Stevens has pointed out that in several instances x-ray examination has revealed erosion of the mesial part of the petrous bone in tumours of the cerebello-pontine angle.

### 26. Transmission of Sheep-pox to Man.

A. BEVILACQUA (*Il Policlinico*, Sez. Prat., November 27th, 1922, p. 1563) states that in the southern provinces of Italy, on the Adriatic coast, there is an epidemic of sheep-pox, caused by periodic emigration of infected animals from the plains to the mountains and vice versa. The epidemic is of slight intensity, and the mortality does not exceed 15 to 16 per cent. Owing to the avarice of the owners, and the lack of supervision, most of the infected animals are sent to the slaughter-house, where their flesh is sold at a moderate price to the public. Bevilacqua has recently seen two cases of slaughterers who had been infected by the animals which they had killed. In the first patient, who had never been vaccinated, nor had a previous attack, there was considerable constitutional disturbance in addition to two pustules, one on the right hand and the other on the right forearm. In the second patient, who had been vaccinated twice, and had had a similar attack three years previously, the disease was confined to an eruption of vesicles on the forearms and hands, and there was no constitutional disturbance. Bevilacqua recommends that all who have to handle infected animals should use a fresh solution of a 5 per cent. solution of potassium permanganate for washing their hands after touching the animals.

### 27. Pyrogenic Treatment of Bronchial Asthma.

SCHOTTMÜLLER (*Deut. med. Woch.*, November 3rd, 1922, p. 1474) had been driven almost to despair in trying to combat very severe attacks of asthma in a woman, aged 45, when she developed influenza with high fever. With the defervescence of this illness the asthma, which had been violent for several weeks, disappeared completely. Three months later the asthma returned and the patient was again admitted to hospital in great distress. After the most common remedies had been tried in vain for eight days, an attempt was made to exploit her experience with influenza. She was given an intravenous injection of a vaccine prepared from germs cultivated from a case of sepsis. The author does not state what these germs were nor the dose of the injection. It was followed in about an hour by a rigor and a temperature of



nearly 106°F. The leucocytes rose to 18,000, and there was an extensive eruption of herpes labialis. The asthmatic symptoms disappeared completely, and when the patient was again seen, two months later, she was still free from even slight attacks. The author has followed the same procedure in eight other cases of asthma, and only in one case did it fail to disappear. This system of treatment has no claim to permanent results, and its action probably depends on the presence in the body of a non-specific protein. But though the relief it gives may last only a few weeks or months, its effects are often remarkable even in cases which have resisted treatment with adrenaline.

#### 28. Relief of Pain in Herpes Zoster by Paraffin.

A COLLEAGUE who had suffered from a very severe attack of thoracic herpes zoster suggested the use of an occlusive dressing of paraffin to HOWARD FOX (*Journ. Amer. Med. Assoc.*, December 9th, 1922, p. 1979), and he has followed the procedure in twenty selected cases. The method was reserved solely for those patients who were suffering from pain severe enough seriously to interfere with sleep. Experience soon revealed the fact that the best results were obtained by a daily application of the paraffin, and it was seldom necessary to continue the treatment for more than a week. In even the severest cases the applications of the paraffin gave almost immediate relief, and were followed by more or less freedom from pain for twenty-four hours and by a complete night's rest. The most convincing proof of the efficacy of this treatment was shown by patients who had obtained complete relief from pain, but who for some reason or other had not returned for several days, during which time the pain had recurred; by further treatment the pain was again promptly relieved. The technique of treatment consisted simply in spraying the melted paraffin with an atomizer on the cutaneous lesions and covering those areas with a generous layer of absorbent cotton, held in place by bandages. In a few cases the paraffin was applied by cotton swabs—an equally efficient, although slower and less convenient, method. When fresh applications were made the previous layer of paraffin was gently removed.

#### 29. Conjugal Tuberculosis.

A. E. DE BESCHE and J. O. JØRGENSEN (*Norsk Mag. for I*, December, 1922, p. 1000) have investigated the order which conjugal tuberculosis exists in Christiania. In 742 marriages, in each of which one partner was notified as suffering from pulmonary tuberculosis, there were 39, or 5.25 per cent., in which both partners suffered from pulmonary tuberculosis. In 33 of these 39 cases one of the partners developed pulmonary tuberculosis after marriage. Of these 33, 16 had grown up in tuberculous surroundings, and 5 had had enlarged glands, apical catarrh, or pleurisy before marriage; about one no information could be obtained. Thus there remained only 11 cases in which the infection could reasonably be regarded as conjugal. The authors conclude that, though slight tuberculous infection in childhood probably confers considerable immunity, there is some risk connected with life in wedlock with the subject of open pulmonary tuberculosis.

#### 30. The Relation of Rickets to Fat-soluble A Vitamin.

C. E. BLOCH (*Ugeskrift for Læger*, November 2nd, 1922, p. 1486) has made certain observations in the Children's Department of the Rigshospital in Copenhagen, and has deduced therefrom that rickets is not due to deficiency of vitamin A. He assumes that xerophthalmia is due to a lack of vitamin A. If this assumption is correct, then the association or non-association of xerophthalmia with rickets should throw light on the latter's relation to vitamin A. Between 1912 and 1921 the author observed 77 cases of xerophthalmia between the ages of 2 months and 10 years. Only two showed signs of scurvy, and it was therefore evident that the supply of vitamin C had been adequate in most cases. Most of the patients were admitted to hospital during the winter and spring—that is, in the rickety season. All had been artificially fed. Yet among 65 children in the rickety age—that is, 3 months to 3 years—there were only 12 with signs of rickets. Considering the season of the year, the artificial diet of the patients, and the poverty of the homes from which they came, this number of rickety patients is surprisingly low. The author is therefore very sceptical with regard to the teaching that the ordinary form of rickets is a deficiency disease, and he refers to the investigations of Jundell and others as showing that an apparently vitamin-rich milk does not prevent or cure rickets. Nor does butter containing much vitamin A cure rickets. The rarity of rickets in the autumn may, he suggests, be largely due to the rate of growth being comparatively slow at this season.

## SURGERY.

#### 31. Post-anaesthetic Gastric Paralysis.

H. L. COOPMAN (*Nederl. Tijdschr. v. Geneesk.*, November 18th, 1922, p. 2280) states that in a relatively small number of operations under a general anaesthetic a peculiar condition develops, in which the patients die with symptoms of intestinal obstruction and shock, unless a correct diagnosis is made and appropriate treatment employed. In about 700 laparotomies Coopman has seen two examples of this condition. The course is usually as follows: on the third or fourth day after a relatively simple operation, such as ovariectomy, antefixation of the uterus, or appendicectomy, as well as after cholecystitis, Bassini's operation, etc., the patient begins to vomit, although the effect of the ether has long worn off. The vomit contains bile but no faecal matter. An acute dilatation of the stomach and intestines takes place, the abdomen becomes distended like a balloon, the pulse becomes rapid and small, and there is no passage of flatus. If the patient is now placed in the ventral or lateral decubitus flatus is passed, the distension subsides, and rapid recovery takes place. Washing out the stomach should be tried if the change of position fails to cause relief. A second operation is rarely necessary, but if no improvement occurs after the above treatment . . . should be performed. Of 148 cases collected . . . or about 50 per cent., succumbed. The condition is due, as was shown by Glénard in 1885, to compression of the duodeno-jejunal junction by the relaxed mesentery.

#### 32. Radiographic Diagnosis of Bone Tumours.

B. H. NICHOLS (*Surg., Gyn., and Obstet.*, September, 1922, p. 301) draws attention to the x-ray diagnosis of bone tumours. Bone tumours are classified according to the following plan: (1) Their origin, whether medullary or cortical; (2) whether characterized by bone production or destruction; (3) the condition of the cortex, whether expanded or destroyed; (4) whether the growth is invasive or non-invasive. The author gives the following characteristics of the more important bone tumours: Round and spindle celled sarcomata are medullary in origin, contain no new bone, and are destructive; this type breaks through the cortex and invades the soft tissues; they usually arise in the ends of the long bones, but do not cross a joint, as the cartilage seems to be a barrier to growth. In periosteal sarcoma new bone is laid down perpendicular to the shaft. These tumours appear after 30 years of age and are invasive in character. In syphilis the new bone is laid down parallel to the shaft. In exostosis a definite outline is seen with no semblance of invasion. Bone carcinoma is always metastatic and is medullary in origin; most often it is seen at the middle of the bone where the nutrient artery enters. There is no bone production, only destruction, and it never involves a joint. This variety is almost never found below the elbows or knees, and occurs in later life. It is the most common type of bone tumour in females after 40 years of age. Myelomata are multiple and medullary in origin; they show expansion and later destruction of the cortex; Bence-Jones bodies are present in the urine. Giant-cell sarcoma is benign, and of medullary origin; it shows destruction and no new bone; it grows at the end of the bone and occurs after middle age. These tumours do not metastasize and are single lesions, but have a multilocular appearance. Bone cysts are multilocular and occur in a single bone; they extend up and down the medulla and expand the cortex. Osteomata are lawless growths of cortical origin; they grow from the shaft in any direction and do not invade. In myositis ossificans new bone is deposited parallel to the shaft; it is due to trauma where periosteum is torn off and produces new bone. Tuberculosis is usually of joint origin; if not, it is an osteomyelitis. Destruction without production is the characteristic appearance. The cartilage is attacked, and both sides of the joint are involved.

#### 33. After-results of Cranioplasty.

TERMIER (*Le Scalpel*, October 14th, 1922, p. 977), in considering the after-results of cranioplasty, approaches the subject from two sides: first, from the point of view of the improvement or recovery of the nervous symptoms due to the injury of the skull or brain; secondly, with regard to the restoration of the bony wall of the skull. In 31 of his own cases he finds that the distant results, as far as the first question is concerned, are only moderate; 2 of these cases have died, one from Jacksonian epilepsy; the other, a case of hemiplegia, died later from coma. About 10 cases show no improvement, whilst 12 others state that they are a little better, but the improvement has been slow. The most marked feature has been the disappearance of the headache in many of these cases. He does not consider the operation of cranioplasty capable of curing all the nervous and other



symptoms, whether the cerebral scar tissue be excised or not; they depend rather on some deeper lesion which we are at present powerless to deal with. However, the cases of neuralgia and headache may be improved or cured, and the operation itself is almost devoid of risk and certainly does not aggravate the condition of the patient. With regard to the reconstruction of the cranial vault it is certain that the operation gives almost perfect results; the patients all feel a sense of security, and are able to leave off the means of protecting the brain they previously adopted. The use of cartilaginous grafts taken from the ribs has not proved satisfactory. On two occasions the author has taken a graft from the anterior surface of the patella, and considers this preferable to rib grafts. He now follows the technique of Delagenière and uses osteo-periosteal grafts, with excellent results in all cases. These grafts are easily removed from the tibia and give rise to no subsequent ill effects, as sometimes arises after those taken from the chest wall.

#### 24. Prolapse of the Rectum in Children.

L. G. ALEXANDER (*Annals of Surgery*, October, 1922, p. 496) finds the treatment of this disorder by injections of alcohol very satisfactory. Prolapse of the rectum in children can often be cured by careful diet, removing the cause, strapping the buttocks, and the administration of cod-liver oil. Some cases do not yield to these conservative measures and demand more radical treatment. The most frequent exciting cause appears to be abnormal intra-abdominal pressure, with muscular weakness as the predisposing factor. The treatment by injection is performed under general anaesthesia. The finger is placed in the rectum to gauge the position of the needle, and 1.5 c.cm. of absolute alcohol is injected on each side of the rectum at about a depth of 7 cm. The needle is inserted about a quarter of an inch from the anal margin and passed along the side of the bowel just outside the mucosa for about two inches, where the alcohol is injected on both sides; the punctures are sealed with collodion and the buttocks strapped. The child is kept in bed ten days and the bowels kept constipated. Findlay, who described this treatment, believes two factors to be responsible for the cure by this method. There is a certain amount of irritation at the seat of injection, with formation of fibrous tissue which fixes the bowel to the pelvic cavity. The sphincter usually regains its tone within ten days following the alcohol injection. The author has used this method in eleven consecutive cases and has obtained a cure in each instance without any post-operative complications.

#### 35. Meningitis of Otic Origin.

C. F. YERGER, Chicago (*Journ. Amer. Med. Assoc.*, December 2nd, 1922, p. 1924), presents a statistical study of 63 cases of meningitis of otic origin; only two of the patients recovered—a mortality of 97 per cent. Given a case of meningitis, in a person with a history of chancre, with clinical evidences of syphilis or with a positive Wassermann reaction, in the presence of an otitic infection, Yerger says that it becomes a very difficult matter to decide correctly the etiology of the meningitis in some of the cases, before the therapeutic test has been tried. An otitic meningitis can develop in a syphilitic patient who is harbouring an otitic infection with the same ease as in one who is not syphilitic; the same may be said of syphilitic meningitis—that is to say, it may develop in a syphilitic person harbouring an otitic infection. One case of meningitis cited, though complicated by an otitis media, responded promptly to large doses of potassium iodide. In this case the history and the Wassermann test gave the clue, and a speedy recovery under antisyphilitic treatment proved the case to be one of undoubted syphilitic meningitis.

#### 36. Relief of Pain on Defaecation in Anal Fissure.

E. SYLVEST (*Ugeskrift for Læger*, November 30th, 1922, p. 1671) points out that in cases of fissure of the anus the pain of defaecation gives rise to a vicious circle. The patient defers defaecation for several days because he fears the pain, and the result is an accumulation of hard and bulky faeces which, when they are ultimately evacuated, give rise to excruciating pain. If the pain of defaecation could be mitigated or banished the vicious circle would be broken. The device recommended by the author is that the patient should press very firmly with one finger between the tip of the coccyx and the anus during defaecation. He has almost invariably found this simple device perfectly effective, and he suggests that the explanation of its efficacy is to be found in the work of Head and others on reflex impulses. As Head has shown, diseases of the lower part of the rectum are associated with a zone of hyperalgesia behind the anus, extending up to the lower part of the sacrum. The maximum point of hyperalgesia is in the middle line, at the level of the lowest part of the sacrum. Pressure on this point also has

been found by the author to relieve the pain of defaecation due to fissure of the anus. His device is analogous to that of P. T. Hald, who found that the dysphagia associated with inflammation of the tonsils and surrounding structures could be greatly relieved by exerting firm pressure on the tragus, and through it on the posterior wall of the auditory meatus, on both sides of the head.

## OBSTETRICS AND GYNAECOLOGY.

#### 37. The Retroverted Gravid Uterus.

J. MOREAU (*Le Scalpel*, November 25th, 1922, p. 1137) states that the great majority of cases of incarceration of the retroverted gravid uterus occur in organs which were in the retroverted position prior to conception. Pregnancy in such a uterus is frequently followed by abortion about the ninth week, and uterine retroposition accounts for many cases of repeated abortion in non-syphilitic subjects. A different type of abortion may take place between the twelfth and twentieth weeks, as a sequel to incarceration which is produced about the end of the third month, when the uterus occupies practically the whole of the pelvis. Prognosis is worse in the later than in the earlier type of abortion, for complications such as severe cystitis or uraemia may be already present. In the majority of cases the malposition becomes spontaneously corrected. The author believes, however, that such an event is impossible if the retroflexion is so great as to bring the uterine attachment of the round ligament at a lower level than its other end; at operation he has found that in these circumstances traction on the round ligament tends to emphasize the displacement. Clinically it is nearly always the urinary complications which lead to detection of retroversion of the pregnant uterus; Moreau points out that catheterization is difficult and sometimes dangerous, and that after the bladder has been emptied its enlargement and thickening may lead to diagnostic difficulty by confusion with myoma, adnexal tumour, or extrauterine gestation. Treatment before incarceration is comparatively simple and consists in bimanual correction followed by application of a pessary. When incarceration has led to urinary retention, repeated catheterization may be followed by spontaneous correction; bimanual replacement may require general anaesthesia. In certain cases it is necessary to open the abdomen, and even then correction may present very great difficulties—in one case symphysiotomy was necessary. In cases of gangrenous cystitis the bladder must be drained suprapubically, uterine manipulations being deferred.

#### 38. Tuberculosis in Ovarian Cysts.

ACCORDING TO C. LEFEBVRE (*La Gynéc.*, September, 1922, p. 534) the occurrence of tuberculosis in an ovarian cyst, first reported by Spencer Wells in 1864, is comparatively rare, 45 cases only—of varying degrees of authenticity—having been recorded. Unilocular or multilocular and pseudo mucous or dermoid cysts may be affected. In simple cases the various intra-abdominal structures, the cyst included, are not adherent; the tuberculous lesion of the cyst may be internal (leading to formation of a cold abscess) or external, the interior of the cyst being scattered with numerous minute subperitoneal tubercles. Complex cases are characterized by adherence of the cyst with the neighbouring viscera; in some instances the Fallopian tube communicates with the cavity of the cyst. Diagnosis presents very great difficulty, especially from tuberculous pyosalpinx, tuberculous peritonitis with encysted abscess, or non-tuberculous suppuration of an ovarian cyst; in advanced cases with extensive degeneration of the cyst wall even histological examination may not determine with certainty the origin of the condition. The contents of many tuberculous ovarian cysts remain non-purulent for very extensive periods, but the sediment after centrifugalization is characterized by marked preponderance of lymphocytes; the tubercle bacillus is rarely if ever detected. In a case recorded by the author excellent results followed drainage and marsupialization of a large cyst showing tuberculous changes, in spite of the presence at the time of operation of extensive peritoneal tuberculosis.

#### 39. Treatment of Placenta Praevia.

SCHWEITZER (*Zentralbl. f. Gynäkol.*, November 15th, 1922, p. 1869) records fifteen years' experience at the Leipzig clinic in the treatment of 333 cases of placenta praevia, of which 227 were partial. In 22 cases of slight haemorrhage partial placenta praevia and vertex presentation treatment consisted in simple rupture of the membranes, and was without maternal mortality. About 40 per cent. of cases with incompletely dilated cervix were treated by intra-amniotic introduction of a dilating bag, and about the same proportion of similar cases by version. The former treatment, attended as



it was with comparatively copious loss of blood, was reserved in the interest of the foetus for cases in which the maternal condition was good and the foetus living. Version, chosen for cases in which the maternal condition was poor and it was desirable to minimize haemorrhage, gave a maternal mortality of 6.6 per cent., as compared with 3.8 per cent. after metrorrhysis; the mortality from haemorrhage is given as smaller after the former treatment, which showed, however, a much greater foetal mortality. The total mortality of the cases treated on these, the older, lines was 5.6 per cent. (3 per cent. ascribed to haemorrhage, 2 per cent. to sepsis); at the initiation of hospital treatment, however, the majority of patients were in poor condition. Of those untreated outside the hospital, none died; of those examined, 2 per cent.; of those in whom tamponage had been performed, 6 per cent.; and of those who had received obstetrical manipulations, no fewer than 11 per cent.—all these treatments having been given extra-institutionally. For the diminution of maternal and foetal mortality two points are considered by Schweitzer to be of paramount importance: (1) that every patient suffering from haemorrhage in the last month of pregnancy should be admitted to hospital without previous vaginal examination, and especially without the insertion of a tampon, which is usually unnecessary and often ineffectively applied; (2) that for diminution of foetal mortality the most hopeful treatment is intraperitoneal cervical Caesarean section, which, however, demands admission of the patient to hospital at an early and uninfected stage.

#### 40. Pre-cancerous Conditions of the Cervix.

R. R. HUGGINS (*Amer. Journ. Obstet. and Gynec.*, November, 1922, p. 552) thinks that cancer of the cervix probably starts in an erosion, which has become re-covered by vaginal epithelium, the columnar cells of the erosion being buried beneath. These cells still secrete and cysts form, which may be found on the surface or may extend deeply into the cervix. These cysts often become inflamed, which can be demonstrated clinically by the tenderness of the cervix, and the author thinks that this chronic inflammation acts as an irritant and incites cancer to develop. He quotes several cases where examination of the cervix microscopically had shown such chronic pathological changes, and which later had developed cancer. He therefore urges that every woman of 40 who has borne children should be examined, and if disease of the cervix is found this should be treated either palliatively or more often by removal of the diseased tissue. By such means cancer will be prevented. The author puts forward the following points concerning cervical cancer: (1) Cancer begins as a benign growth; (2) there is a pre-cancerous stage, in which removal is a sure means of relief; (3) it is absolutely local to begin with; (4) as a rule tissues are more susceptible to its development at the age when atrophy and degeneration take the place of the building-up process; (5) it is prone to develop into an acid medium such as is produced by the vagina.

### PATHOLOGY.

#### 41. Influenza.

A FRESH outbreak of influenza in the early months of 1922 gave P. K. OLITSKY and F. L. GATES another opportunity to continue the study of the filter-passing organism they have previously recorded as being present in the naso-pharyngeal secretions from influenza patients. It may be recalled that during the epidemic wave of 1918-19 these authors demonstrated that a filter-passing virus was present in the naso-pharyngeal secretion during the first few hours of an attack of influenza, and that the intratracheal injection of these filtered secretions produced typical influenza-like lesions in the blood and lungs of rabbits. These findings have since been confirmed by many other workers, who succeeded in mastering the difficult technique involved—in this country notably by Mervyn Gordon (as reported to the Microbiological Section of the meeting of the British Medical Association at Glasgow in 1922). The main developments of recent months may be summarized as follows: The intratracheal injection of this filter-passing virus, to which Olitsky and Gates have given the name *Bacterium pneumosintes*, favours the invasion and infection of the lung with other bacteria, such as the pneumococcus, streptococcus, and *B. Pfeifferi*; it leads to the development, in experimentally infected animals, of a specific immunity against reinfection with similar material. The organism can be cultivated under strictly anaerobic conditions in a medium composed of sterile human ascitic fluid and a fragment of fresh rabbit kidney, producing a faint haze in the region of the kidney fragment, and stained films from this show countless Gram-

negative, minute bodies of regular morphology, measuring 0.15 to 0.3  $\mu$  in the long axis. Rabbits intravenously injected with such cultures produce antibodies which can be recognized by precipitation, agglutination, complement fixation, and phagocytic tests. Finally, surface colonies of these minute organisms have been obtained on blood agar plates incubated under anaerobic conditions. In the present series of experiments (*Journ. Exper. Med.*, November, 1922, p. 501) carried out during the outbreak of influenza in January and February, 1922, Olitsky and Gates succeeded in six cases of human influenza out of nine in transmitting the disease to rabbits by the intratracheal injection of filtered naso-pharyngeal secretions from early cases of influenza. Negative transmission experiments were obtained with three persons not suffering from influenza used as controls. Cultures of strictly anaerobic, filter-passing, Gram-negative organisms were obtained with material derived from four of the six influenza patients from whom an active agent had been transmitted to rabbits, from a seventh influenza patient whose naso-pharyngeal washings were not injected into animals, and from four of ten other persons not suffering from influenza. Thus *Bacterium pneumosintes* is not the only anaerobic, filter-passing, Gram-negative organism to be found in the human respiratory tract, but these other filter passers, which Olitsky and Gates isolated, were found not to be pathogenic to rabbits and could be distinguished by cultural and morphological tests. The authors do not commit themselves to any definite opinion about these other filter passers. "What the importance of these micro-organisms may be or whether they have any pathogenic significance we are not prepared to suggest." On the other hand, the four new strains of *Bacterium pneumosintes* which were isolated in pure culture were identified on morphological, cultural, and serological grounds with the strains previously isolated in 1918-19 and in 1920. All the significant characteristics of the old strains were noted in the four new strains isolated in this epidemic, including their effect upon the resistance of the lungs of rabbits to secondary invasion with other bacteria.

#### 42. Cholesterinaemia in Arteritis Obliterans.

J. HEITZ (*C. R. Soc. de Biologie*, November 4th, 1922, p. 1024) records some investigations which he has made on the amount of cholesterol—or more strictly of lipoids giving Liebermann's reaction—contained in the blood of patients affected with arteritis obliterans. Of the 22 individuals studied 20 were males and 2 females. All were suffering from intermittent claudication; in the majority of the cases only one leg was severely attacked, but in a few both the lower limbs manifested this symptom. There were no diabetics amongst them, and syphilis appears to have been excluded. The normal titre of cholesterol in the blood may be taken as about 0.16 per cent.; the average titre in these patients was 0.282 per cent.; in only one of them was it below 0.2 per cent. Without there being any definite relation existing between the degree of hypercholesterinaemia and the extent or duration of the arterial lesions, it was noticed that the highest figures were encountered in those patients suffering from bilateral disease of the femoral vessels which had existed for several years. What is the cause of this increase in blood cholesterol? It is difficult to believe that it is merely fortuitous. Rather it is more logical to regard the hypercholesterinaemia and the arterial disease as proceeding from a common cause; in this case the latter may be accentuated by the former. A further investigation, dealing with diabetic patients, showed that hypercholesterinaemia was the rule, but that it was more marked in those cases showing arteritis obliterans than in those whose vessels were unaffected. In connexion with these results it will be remembered that arterio-sclerosis has been produced experimentally in rabbits by feeding them on large quantities of lipoidal substances.

#### 43. The Cerebro-spinal Fluid in Herpes Zoster.

R. TARGOWLA (*Paris méd.*, November 25th, 1922, p. 480) states that during the course of, or in convalescence from, herpes zoster a meningeal reaction is frequently found, characterized by hypertension of the cerebro-spinal fluid, with or without increase of albumin and the number of cells in the fluid. He has recently observed five cases at the Villejuif Asylum, consisting of three cases of general paralysis, one of dementia praecox, and one of mental enfeeblement due to a circumscribed lesion of the brain, in which herpes zoster developed and lumbar puncture was performed. The cerebro-spinal fluid in these cases did not appear to be affected by the occurrence of herpes zoster. The reaction of colloidal benzoin in particular was not changed, and the albumin and lymphocytosis in the fluid did not undergo any appreciable alteration. In two cases of general paralysis, however, the tension of the fluid was raised.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

### 43. Difficulties in the Diagnosis of Thoracic Aortic Aneurysm.

CASSART and SECOUSSE (*Journ. de Méd. de Bordeaux*, November 25th, 1922, p. 731) describe a remarkable case. A workman aged 59 was under daily observation by several physicians for more than six months, but, in spite of the use of many different diagnostic methods, the diagnosis remained doubtful until the necropsy. The patient was admitted to hospital in July, 1921; he complained of cough, sputum, left-sided thoracic and epigastric pains. In 1920 he had had pneumonia on the left side, and in February, 1921, bronchitis, which did not clear up. His physician suspected tuberculosis, and advised admission to a sanatorium. He was admitted in June, 1921, and discharged after a month's observation as non-tuberculous. His father and one sister were diabetics. The patient was married; there were no children. At 21 he had a chancre; the Wassermann reaction was positive on admission. Three years previously he had a slight cerebral haemorrhage and right hemiplegia, which cleared up entirely. On admission he was very ill, anaemic, face very drawn, constant cough, difficult expectoration, dyspnoeic. The left lung was generally dull, especially in the upper three-quarters in front and at back. There were vocal fremitus and vocal resonance, a harsh murmur, and the heart sounds were plainly transmitted. There were no signs of effusion. The symptoms indicated an extensive mediastinal compression. The right eye was normal; the left eye was retracted, and the pupil contracted, indicating compression of the left sympathetic. The voice was hoarse and weak; the laryngoscope showed paralysis of the left vocal cord. The cough was paroxysmal, with anginal attacks suggesting pneumogastric compression. A skiagram showed compression of the trachea. The patient stated that he could not swallow bread, and deglutition of solids became more and more difficult. Liquids excited the paroxysmal cough. Oesophagoscopy showed a compression without parietal change at 34 cm. from the incisors. The left radial pulse had almost completely disappeared, but there was no oedema nor sensory disturbances. The blood pressure was practically equal on both sides. The heart did not appear to be enlarged, but was displaced slightly to the right. There was no albuminuria. A series of skiagrams confirmed the diagnosis of a large intrathoracic tumour on the left side, pushing the viscera to the right and approaching the middle line. No pulsation nor expansion was observed in the tumour. A normal blood count (eosinophiles, 1 per cent.) negative a diagnosis of hydatid cyst, lymphosarcoma, or abscess. An exploratory puncture met with deep resistance similar to that of the chest wall, and at 8 cm. depth yielded a drop of blood which showed no abnormal cells. A diagnosis of sarcoma was rejected, as this would have bled freely on puncture. Under energetic antisyphilitic treatment the patient appeared to improve, but hypostatic congestion supervened, and he died on February 16th, 1922—that is, seven and a half months after admission. At the autopsy an enormous aneurysm, 15 cm. by 18 cm., occupied the whole of the left chest except the extreme base; it was densely adherent to the chest wall and had eroded the bodies of the third, fourth, and fifth dorsal vertebrae on the left side. The heart was not enlarged and its walls were firm. The authors give further details and observe that the thick resistant clot explains the absence of pulsation, the aneurysm, *per se*, was cured and behaved as a solid tumour, dangerous from its size, and rendering the diagnosis difficult.

### 45. Quinidine in Auricular Fibrillation.

T. S. HART (*Arch. Intern. Med.*, November 15th, 1922, p. 592) records the results of quinidine treatment in 15 cases of persistent and in 2 of paroxysmal auricular fibrillation. Quinidine sulphate was employed, administered in capsules, each containing 0.2 gram. For the first twenty-four hours two doses of 0.2 gram were given; then afterwards 0.4 gram was given three times a day after food. Of the 15 patients with persistent auricular fibrillation, 5 recovered a normal rhythm after the administration of quinidine. In all of these the fibrillation recurred in course of time, but in 4 of them quinidine was given again, and in each instance the normal rhythm followed. One of these patients still maintains a normal rhythm after five months; in another of the cases a third period of quinidine treatment was followed by a normal rhythm. If quinidine was effective the good results were

obtained within sixty hours. In the cases in which the good results were obtained the total amount of quinidine given was never more than 3 grams. In 2 cases of paroxysmal fibrillation quinidine was successful, and in one of them no paroxysms have occurred for nine months. Cases exhibiting electrocardiograms with coarse auricular waves appear to be more readily affected by quinidine. There is some experimental and clinical evidence that the action of quinidine and of digitalis are antagonistic.

### 46. The Meyer-Betz-Haas Treatment of Pyelitis.

G. DANIEL (*Deut. med. Woch.*, December 8th, 1922, p. 1624) has since 1917 treated 38 cases (14 ambulant and 24 in hospital) of pyelitis on the following lines. On the first day the fluid intake is cut down and on the second to the fourth day it is limited to 300 grams. Urotropine and sodium salicylate, 1 gram of each, are given three times a day, and a 20 per cent. solution of phosphoric acid (40 in 1,000) is distributed over three days. Twice a day the patient is given a hot-air bath for twenty to thirty minutes to promote sweating. On the fifth to the seventh day the drugs are discontinued, ordinary diet is given, and the system flushed by an "intensive drink cure" consisting of 2 to 3 litres of tea, a tablespoonful of *uva ursi* folia and another of herb. herniaria being added to each litre. The urine is examined every day with reference to its specific gravity and reaction, and on the last day of the cure a microscopic and bacteriological examination is made. The rationale of this treatment is the following: The growth of *B. coli* is inhibited in acid urine. Formaldehyde is obtained from urotropine only in an acid medium, and the more concentrated the urine the less vigorous is the growth of *B. coli*. The sudorific treatment is therefore given to make the urine more concentrated. The less urine there is secreted the less frequent will micturition be and the longer will be the time during which the germs will be under the action of the acid and antiseptic urine. The water cure at the end of the treatment is intended to flush the system and thus prevent the ill effects of the reduced intake of water. The results obtained by the author were very satisfactory, and it was only occasionally necessary to repeat the treatment. It invariably brought down the temperature and only in a few cases was it necessary to repeat the treatment once or twice to bring the temperature to normal. Other effects were the cessation of pain in the back and frequency of micturition.

### 47. The Significance of the Thyroid "Red Line."

M. G. MARAÑON of Madrid (*Bull. et Mém. Soc. Méd. des Hôpitaux de Paris*, December 7th, 1922, p. 1635) states that he described in 1919 a vasomotor reaction which he and others have observed very frequently in hyperthyroidism. For a long period it has been known that on gently tapping the skin on the front of the neck and upper part of the chest in patients whose vasomotor system is somewhat irritable a transient diffuse red colour of the irritated skin appears. In certain cases, however, this reaction is closely confined to the region of the thyroid gland; in some cases the generalized original flush becomes restricted in a short time to the thyroid region, in others from the first it is confined to that area. In either case the erythema persists for several minutes, and either disappears gradually or in irregular patches. Vasomotor instability has been noted as one of the cardinal symptoms of Basedow's disease—sudden flushing or true factitious urticaria—but its localization in the thyroid region has not been previously described. The author has found it in 85 per cent. of cases of hyperthyroidism; in others, in which the erythema was less well defined, these often : The author has termed them "vegetative neurosis," as he considers it is a factor in their etiology. The various tests proposed—the adrenaline test, thyroid extract, or leucocyte count—have not thrown light upon these doubtful cases; if, clinically, a case is obscure the reactions remain obscure also. The intensity of the symptoms has no relation to that of the hyperthyroidism—it has no prognostic value. For instance, it fails or is very slight in severe cases of senile hyperthyroidism and, conversely, is very well marked in the transient and slight hyperthyroidism associated with sexual crises. The author discusses fully the etiology of this phenomenon, which is admittedly obscure, but Lian has shown that the outline of the thyroid gland may be traced by the varying sensitiveness of the skin of the front of the neck—that is, over the thyroid area it becomes suddenly more



sensitive in the majority of cases of hyperthyroidism. This may be due to auto-suggestion in many neurotic patients who are aware of this thyroid hypertrophy. But in a certain number of cases, as frequently in Lian's hyperaesthesia as in the author's vasomotor reaction, the psychic factor may be eliminated. These phenomena may occur particularly in cases of simple hyperthyroidism without thyroid hypertrophy in which the patient does not suspect the origin of his troubles.

#### 48. Rubeola without a Rash.

G. FLÖYSTRUP (*Ugeskrift for Læger*, October 26th, 1922, p. 1461) considers the diagnostic value of tender swelling of the glands in the neck and occipital region in rubeola to be great. But he believes that rubeola can exist without a rash, although such an aberrant form of rubeola has apparently not hitherto been described. The cases inducing the author to take this view occurred in his own family. On April 20th a son aged 9, who had had measles but had not hitherto suffered from enlargement of the lymphatic glands, was found to have slightly tender, freely movable, and swollen glands in the neck. On April 23rd there was slight nasal catarrh with conjunctivitis; he vomited once and complained of headache and indefinite abdominal pains. Next day a few isolated pin-head spots appeared for a few hours on the cheeks and were of a pale red colour. This child had been a fortnight earlier in contact at school with cases of rubeola. Eight days after he fell ill his brother, aged 3, who had had measles two years earlier, fell ill with tender swelling of the cervical glands. Seven days later a rash, characteristic of rubeola, broke out. As there was no other source of infection it seems evident that the typical rubeola in the second case arose from contact with the atypical case.

#### 49. The Ultimate Prognosis of Lethargic Encephalitis.

S. TSCHUDI MADSEN (*Medicinsk Revue*, October, 1922, p. 470) has come to the conclusion that it is rare for the subjects of lethargic encephalitis to recover complete health. He has observed 19 cases, 4 of which terminated fatally at an early stage. Of the remaining 15, 10 were kept under observation for one year or more, and only in one case did the disease fail to leave any trace. Many patients showed slight mental disturbances; their memory was affected, and neurasthenic and psychasthenic symptoms were extraordinarily persistent. One of the patients was a boy, aged 13, who had previously been well behaved. After his discharge from hospital he was irritable and passionate, and, though he gradually regained his docile temperament, his capacity for concentration at school work was diminished. Some patients who retained their memory and intelligence lost all interest and initiative, being apathetic and performing every movement with a machine-like lack of individuality. Parkinson's disease supervened in two cases, and intention tremor and scanning speech were observed in one case a year after the onset of the disease. No satisfactory treatment has yet been devised.

## SURGERY.

#### 50. Enlarged Prostate in a Young Subject.

VAN DEN BRADEN (*Le Scalpel*, September 16th, 1922, p. 901) observes that retention of urine in a young man is not common except in those cases where it is due to a stricture or an acute prostatitis. As a general rule the symptoms due to enlarged prostate appear after 50 years of age. Guyon has stated that prostatic symptoms in the young subject may be due to alcoholism. The author records in detail a case of this nature. The patient, aged 25 years, was a wine merchant, and had indulged freely in alcohol since his youth; he complained of difficulty of micturition of several months' duration. The prostate was found to be slightly enlarged, of normal consistence, and not painful. After treatment with sounds and dilatation his condition was little improved; there was incontinence with overflow. Cystoscopic examination showed increased vascularity of the bladder and intravesical enlargement of the prostate. Treatment by local applications of heat to the posterior urethra with a metal sound gave satisfactory results, and the patient was subsequently able to resume his employment. Nine years later he returned with further difficulty of micturition and nocturnal frequency. The prostate felt very little enlarged, of soft consistency, and the urine was clear. The condition did not improve with treatment, and operation was advised. On opening the bladder the left lobe of the prostate was found much enlarged; the right lobe projected slightly. Prostatectomy was carried out, and when incised with the nail the enlarged left lobe ruptured, much blood escaping, and a prostatic tumour, weighing 10 grams, was enucleated with some difficulty. Microscopic examination of the portion

removed showed great vascular proliferation with a little adenomatous tissue. This case does not appear to have been one of true adenoma. The author compares the condition of the left lobe to a kind of cystic dilatation of the prostate, causing, by its mechanical effect, symptoms analogous to those due to an adenoma.

#### 51. Pain on Pressure over the Phrenic Nerve in Abdominal Diseases.

F. HÖGLER and K. KLENKHART (*Wien. Arch. f. inn. Med.*, Bd. v, H. 1, October 15th, 1922) record the results of their observations, in 200 cases, respecting the sensibility of the phrenic nerve to pressure in abdominal diseases. The nerve is lightly pressed upon between the two heads of the sternocleidomastoid muscle (Mussy's pressure point). Here the phrenic nerve winds round the anterior scalene muscle, and is most superficial. When the nerve is unduly sensitive a light pressure at this point causes intense pain. (Comparison with the opposite side should be made.) From their observations the authors conclude that in abdominal diseases the right phrenic nerve is sensitive to pressure only in inflammatory conditions in the region of the gall bladder. The most frequent cause was cholelithiasis with cholecystitis, very rarely ulcer of the intestinal tract; but then only when the latter had caused inflammatory adhesions with the gall bladder. In abdominal diseases pain on pressure over the left phrenic nerve was not detected. The right phrenic nerve contains both motor and sensory fibres, and supplies fibres to the diaphragmatic pleura, the mediastinal pleura, and the pericardium, and also to the peritoneum covering of the liver, gall bladder, and suspensory ligament of the liver. The importance of the pressure sensibility of the phrenic nerve in chest affections has been previously demonstrated by Neumann. Höglér and Klenkhart have shown in this paper that not only in thoracic affections, but also in diseases of the abdomen, this symptom is of diagnostic value. When the right phrenic nerve is found to be painful on pressure, and no sign of lung affection can be detected, this symptom especially points to inflammatory affections in the region of the gall bladder.

#### 52. Epidemic Encephalitis from the Ophthalmological Standpoint.

G. F. LIBBY (*Amer. Journ. Ophthalmol.*, October, 1922, p. 785) considers epidemic encephalitis from the point of view of the ophthalmologist, seeing that the ocular symptoms are often rapid in onset and may be the first, or even the only, symptom noticed, diplopia being frequently the first indication. Of other ocular symptoms paralysis of the eye muscles are transient and variable, and ptosis is often bilateral but seldom complete. Weakness or loss of convergence, insufficiency of accommodation, and inequality of the pupils occur, and in a large number of cases nystagmus is present, and occasionally optic neuritis in one or both eyes. If syphilis can be excluded, encephalitis may be diagnosed from the ocular symptoms alone, and an important differentiating point is the duration of the muscular palsies, the lesion in syphilis being generally long-standing before treatment avails, while in encephalitis the paralysis is fleeting and may shift from one muscle to another. Notes of five cases are given showing several varieties and degrees of ocular symptoms, from transient palsies to destructive optic neuritis. While it is possible to base a diagnosis on the ocular symptoms alone, the disease so almost invariably attacks the eye that a diagnosis in the absence of such symptoms is open to doubt. The evil effects of epidemic encephalitis may affect the general nervous system for years, and consequently the eyes may show persistent, or even permanent, damage to the structures seriously affected; but in these long-standing cases care must be taken not to confuse the pathological changes with those due to nerve syphilis. Clearly the disease is as much the concern of the ophthalmologist as of the neurologist or internist, and co-operation between all these is the ideal attitude in diagnosis and treatment.

#### 53. Malignant Disease of the Caecum and Chronic Appendicitis.

C. A. MORTON (*Bristol Med.-Chir. Journ.*, September, 1922, p. 82) states that it is sometimes impossible to make a definite diagnosis between a malignant growth of the caecum and a chronic or subacute appendix. Even on opening the abdomen the difficulty in distinguishing the one condition from the other may still be marked. The author reports three cases of malignant disease where it was not possible to make a certain diagnosis till adhesions had been broken down. Chronic appendicitis with abscess formation may be present with no pain, whilst malignant disease may simulate an attack of appendicitis with marked pyrexia. In both conditions the



lump will be found fixed in the right iliac fossa, and may be tender in either disease. In one case reported there was both a malignant growth and appendicitis, the latter condition being due to blockage of the lumen of the appendix by the growth. Carcinoma originating in the appendix may present the microscopic structure of alveolar carcinoma. In three cases recorded by Willie the patients were under 25 years of age. Several writers consider that these nodules are not really malignant. Such growths of the appendix are probably benign, and may threaten life more from the acute obstruction and inflammatory complications to which they may lead than from any intrinsically malignant properties.

#### 54. Treatment of Cancer of the Larynx.

L. J. MOURE (*Rev. de laryngol., d'otol. et de rhinol.*, October 15th, 1922, p. 755), in discussing the treatment of cancer of the larynx, considers that the first point to be emphasized is the confirmation of the diagnosis by a histological examination. Malignant tumours may be divided into intrinsic and extrinsic growths. Of the former, sarcomata and epitheliomata are found. Among the extrinsic growths are found those arising above the glottis, growths confined to the epiglottis, and those starting outside the laryngeal vestibule. In the case of intrinsic cancers limited to one vocal cord the neoplasm can be excised by thyrotomy, followed by immediate closure of the air passages. This is succeeded by x-ray treatment. If radium is employed great care must be taken to avoid necrosis, as it is difficult to control its effect. If the growth has started in the vocal cord but has spread beyond this to neighbouring structures, it should again be removed by thyrotomy, followed by local application of radium. In cases of an intrinsic growth arising outside the vocal cord on other parts of the mucous membrane, deep x-ray therapy should be tried. If this is not successful, complete laryngectomy is the operation of choice, followed by the application of x-rays to the scar. If the growth is limited to the epiglottis, the epiglottis may be removed after splitting the hyoid or thyroid cartilages. Should the growth arise outside the larynx and be accompanied by glandular enlargement, deep x-ray therapy should be tried. This may be followed by an apparent immediate cure, but recurrence is apt to take place after an interval of perhaps several months.

#### 55. Gastric Motility after Pyloric Obstruction.

B. S. VEEDER, M. B. CLOPTON, and R. W. MILLS (*Amer. Journ. Dis. of Children*, November, 1922, p. 404) studied the results of operation or non operation for pyloric obstruction in infancy upon gastric function and motility later in life (from 1½ to 8 years of age). The children were given a barium and milk meal on an empty stomach and its progress fluoroscoped, four cases which had been operated upon, and four which had not, being examined. No difference was noted between those cases treated medically and those treated surgically (Rammstedt operation), the gastric motility in all being normal, so that it may be concluded that end-results cannot be taken into consideration in deciding for or against operation in any given case of pyloric obstruction in infancy. In those operated upon a definite tumour was found, the four medically treated cases being classified as pylorospasm with symptoms of persistent projectile vomiting, small stools, visible peristalsis, and malnutrition. At the time of x-ray examination they were all in good condition of nutrition, and, with one exception, had developed normally after recovering from the trouble in early infancy. In five of the cases the stomach was empty in four and a half hours or less, and in the other three there was only a very slight amount remaining by that time, so that they all came well within the limits of normal gastric motility.

#### 56. Diathermic Treatment of Naso-pharyngeal Tumours.

L. SAMENGO (*La Semana Médica*, No. 36, 1922) records 5 cases of fibroma, 2 of fibrosarcoma, and one each of fibro-adenoma, fibromyxoma, and sarcoma of the nasopharynx, treated by diathermy followed by excision. The advantages claimed for this method are that electro-coagulation renders the operation bloodless and rapid, and leads to sterilization of the line of tissue cleavage; also that it is only by this means that certain extensive tumours can be extirpated *per vias naturales*. Unipolar or bipolar electrodes were used, one of the latter being introduced through the nostril and the other through the mouth. Except in aged subjects chloroform anaesthesia was employed as a rule. Glandular metastases were treated by bipolar electro-coagulation, a small cutaneous incision having previously been made. In the malignant cases post-operative applications of radium were made by means of the author's rigid apparatus fixed by bands, rods, and screws around the skull. Diathermic treatment of sarcomatous and epitheliomatous growths of the tonsil, palate, epiglottis, and floor of the mouth is also described.

## OBSTETRICS AND GYNAECOLOGY.

#### 57. Operation or Radiation for Cancer of the Uterus.

H. KÜSTNER (*Deut. med. Woch.*, December 8th, 1922, p. 1640) believes that in many German hospitals the pendulum is at present swinging in favour of operative treatment of uterine cancer and against treatment by radiation. At his hospital (the University Gynaecological Hospital in Breslau) the principle has consistently been adopted of operating when the disease is operable, the radical abdominal operation being practised for carcinoma of the lower sections of the uterus. When laparotomy reveals inoperable disease the abdomen is at once closed and treatment by radiation adopted. In the period from January 1st, 1911, to December 31st, 1917, there were 205 women operated on for cancer of the uterus. To ascertain their fate approximately five years or more after operation the author traced as many as he could. Only 15 cases had been operated on for cancer of the body of the uterus, and the number being too small for statistical investigation they were not included in the following results. Of 171 total abdominal extirpations there were 42 representing the primary mortality and 53 the late mortality. There were 30 patients still living and 46 who could not be traced. Total extirpation by the vaginal route was performed on only 18 patients, 6 of whom were still alive, and 3 could not be traced. There were 2 primary (operation) and 7 late deaths among the 18. The vaginal extirpations performed on these 18 patients concerned cases in the very earliest stage of the disease. The outstanding feature of these figures is the high operation mortality for the abdominal operation. This mortality has been greatly reduced of late, and during the past three years there has been only one operation fatality among 55 abdominal operations for cancer of the uterus. Of the 30 patients still alive 3 had developed late recurrences. The ultimate result was, therefore, recovery in 15.7 per cent. of all the cases of cancer of the cervix operated on by the abdominal route. As the operation mortality has been greatly reduced of late it would be fair to subtract the operation fatalities of the earlier period. This leaves 129 women, of whom 27, or 20.9 per cent., were cured by the operation. The author concludes that every fourth patient who survives the operation may expect complete recovery, and it is by this standard that the results of radiation should in the future be judged. At present, he holds, every operable case should be operated on, and treatment by radiation should be only supplementary and prophylactic.

#### 58. Pregnancy with Myoma and Placenta Praevia.

E. DEL SOLE (*Rivista d'Obstetricia e Ginecologia Pratica*, October, 1922, p. 533) records an unusual case of pregnancy with myoma and placenta praevia present. The patient, a 5-para aged 36, had had menorrhagia for three years; when, after twenty-six weeks' amenorrhoea, she was admitted to hospital complaining of slight haemorrhage per vaginam and of pain, the uterus corresponded in size to seven months' pregnancy and placental tissue was palpable through the cervix. In spite of two sharp haemorrhages, pregnancy continued to term and the patient was admitted to hospital in labour thirty-eight weeks after the last menstruation. Abdominal palpation showed the left portion of the uterus to be harder than the right; during performance of podalic version, on account of prolapse of the cord and haemorrhage, it was found that a voluminous myomatous mass to the left of the uterus had distorted and narrowed the uterine cavity. The delivery of the living and healthy foetus was followed by expulsion of a placental cotyledon which, implanted in the lower uterine segment, had caused the *ante-partum* haemorrhage; the main portion of the placenta was inserted on the left lateral surface, above and below the myomata. Signs of pelvic infection persisted during the puerperium and the ensuing months, and seven months after labour two partially necrotic myomata, weighing together 1,300 grams, were expelled per vaginam, together with much fetid pus. The subsequent recovery appeared complete, save that the uterus remained somewhat hard and large.

#### 59. Statistics of Eclampsia.

W. GESSNER (*Zentralbl. f. Gynäk.*, December 2nd, 1922, p. 1914) gives statistics of the number of births and the number of cases of eclampsia occurring in Baden during the years 1910-20. It is seen from these that during the war and especially during the years 1917-18 the number of cases of eclampsia was approximately only half as many per 1,000 births as in the years previous to the war. It is also noted that in the two years following the war the number of cases again approximates to the number before the war. This has been attributed to the nearly vegetarian diet indulged in



during the war years, a pregnant woman only receiving 1 lb. meat and 2 eggs a week and 1 litre of milk per diem. But, the author points out, the price of meat after the war made a vegetarian diet still necessary, yet the number of cases of eclampsia increased. Thus there must be some other factor involved. The author thinks that the decrease was also due to the hard work that had to be done during the war even by pregnant women up to the very day of their confinement. This helped metabolism and prevented the laying down of superfluous fat. He also blames the upright position, which, owing to the prominence of the abdomen, alters the centre of gravity of the body and causes a lordosis, which is especially marked in primiparae and has been shown by Jehle to be a cause of albuminuria, as it leads to circulatory disturbances in the kidney. It has also been shown by von Leyden that the progressive increase of the intra-abdominal pressure affected the kidney during pregnancy. Thus during the war hard work was indulged in, which caused the disappearance of most of the subcutaneous and subperitoneal fat, and thus increase of intra-abdominal pressure was not aggravated and there was no disturbance of renal function. After the war pregnant women, enjoying as before tranquillity not only of body but of mind, developed superfluous fat followed by eclampsia. The author advocates an hour's exercise morning and afternoon in the open air for every pregnant woman, and if she is obese and pasty he gives her thyroid extract three times a day to stimulate metabolism and accelerate the disappearance of fat. This treatment to be efficacious has to be begun early as it takes fourteen days before its maximum effect is reached.

## PATHOLOGY.

### 60. Blood Tests for Syphilis.

R. A. KILDUFFE (*Arch. of Derm. and Syph.*, December, 1922, p. 709) gives the results obtained at the Pittsburgh Hospital Laboratories from 1,014 serums tested both by the routine Wassermann method and the Kolmer modification. The same preserved complement was used in both tests. The Kolmer test involved serum dilutions of 0.1, 0.05, 0.025, 0.005, and 0.0025; primary ice-box incubation for eighteen hours; and the use of a special antigen—namely, a cholesterinized and lecithinized extract of heart muscle. Eight cases of known syphilis gave a negative Kolmer reaction. Seventeen serums from non-syphilitic conditions (pneumonia, diabetes, etc.) were all negative to Kolmer's test; two were positive and two doubtful by routine method. A positive Kolmer reaction was obtained in two cases where the primary lesion was only three and four days old respectively, routine method giving negative reaction. In 111 cases a positive Kolmer reaction was obtained where routine method gave a negative result; of these 50 per cent. had definite evidence of syphilis, and there was strong presumptive evidence in the remaining 50 per cent. (many being prostitutes) of the correctness of the positive findings. Thirty-one serums gave positive routine reaction and negative Kolmer reaction. The readings given by the Kolmer method are strictly quantitative; this last feature makes it a particularly useful method of estimating the results of treatment, and the author concludes that, although not infallible, it is superior to other methods now in use, and might well be adopted as the standard method of performing the Wassermann test. PALMER and GIBB (*Ibid.*) arrive at the same conclusions, based on examination of 362 serums. IDE and SMITH (*Ibid.*) report the results of an examination of 2,165 serums by the Wassermann and the Kahn precipitation tests. The results were practically identical from both tests. With spinal fluid, however, they found the Kahn method inferior to the Wassermann method.

### 61. The Viruses of Herpes and Epidemic Encephalitis.

C. KLING (*Hygiea*, November 30th, 1922, p. 913) has carried out experiments on rabbits to ascertain whether the viruses of herpes and of epidemic encephalitis are identical or not. The herpes virus was obtained from one case of pneumonia and from one case of herpes facialis. The virus of epidemic encephalitis was obtained from a district in the North of Sweden, where there had recently been a severe outbreak. The virus in each case was introduced into the cornea of a rabbit. The herpes virus provoked an intense purulent kerato-conjunctivitis in twenty-four to forty-eight hours, and an acute encephalitis followed, the changes in the brain differing in many respects from those associated with experimental epidemic encephalitis in rabbits. The inoculation of the virus of epidemic encephalitis into the cornea of a rabbit provoked a comparatively slight reaction, and it took about four to six months for charac-

teristic changes to occur in the brain. For these and other reasons the author has come to the conclusion that Levaditi is wrong in assuming that the viruses of herpes and of epidemic encephalitis are identical. In another series of experiments the author has found that the cerebro-spinal fluid of patients who have developed Parkinson's disease after contracting epidemic encephalitis is infectious to rabbits even a year to a year and a half after the onset of the encephalitis. Some rabbits appear to have a natural immunity to this disease, but 50 to 60 per cent. proved susceptible to inoculation with the cerebro-spinal fluid of the subjects of post-encephalitic paralysis agitans.

### 62. Coagulability of the Blood during Pregnancy and in the Newborn.

THE coagulability of the blood in women before, during, and after labour, as measured by the estimation of the coagulation, calcium, and pro-thrombin time, F. H. FALLS (*Journ. Amer. Med. Assoc.*, November 25th, 1922, p. 1816) asserts, is well within the limits of normal blood coagulability. Maternal and foetal blood at the time of birth of the baby have practically the same coagulation time. There is no evidence from the series of experiments performed by Falls that pregnancy tends to produce a haemophilic state in the mothers; hence post-partum haemorrhage can rarely, if ever, be ascribed to this cause. Foetal blood at birth clots with normal firmness and rapidity, so that subsequent haemorrhagic tendencies cannot be detected from coagulation tests at this time. Patients who took ether exhibited the same coagulation time as those delivered without ether. Post-partum haemorrhages, therefore, which are more common in these cases, cannot be explained on the basis of decreased blood coagulability.

### 63. The Number of Erythrocytes under Various Conditions.

E. J. RUD (*Acta Medica Scandinavica*, December 21st, 1922, p. 325) has investigated, at the Rigshospital in Copenhagen, the conditions under which the number of the erythrocytes in the blood is supposed to vary. He found, however, that such factors as a meal or muscular work did not show an appreciable or constant influence in this matter. He also failed to find any appreciable differences in the number of the erythrocytes at different times of the day or during menstruation. Their number was also strikingly uniform in the same person from day to day, week to week, and month to month; and it was immaterial whether the blood was taken from a capillary, vein, or artery. But during pregnancy there appears to be a certain physiological anaemia, as shown by a comparatively low erythrocyte count.

### 64. The Place of the Thyroid Gland in Anaphylaxis.

R. APPELMANS (*C. R. Soc. de Biologie*, December 9th, 1922, p. 1242) has endeavoured to confirm the statement of Képinow, who found that in animals from which the thyroid gland had been removed the injection of the dechaining dose after previous sensitization failed to bring about anaphylactic shock. On a series of eleven animals—presumably guinea-pigs—a sensitizing injection of 0.64 c.c.m. of human serum was made. In three of them thyroidectomy was performed 2, 7, and 11 days previous to the injection; in two of them thyroidectomy was carried out at the same time as the injection; in four of them thyroidectomy was performed 2, 2, 7, and 8 days after the injection; while the remaining two animals were used as non-thyroidectomized controls. At a period varying from 17 to 24 days after the sensitizing dose, the dechaining dose—0.5 to 3 c.c.m. in quantity—was injected into either the heart or the peritoneum. In every case typical shock occurred, and, with the exception of two of the animals in which the thyroid had been removed subsequent to the sensitizing injection and one of the controls, all of them died. All the animals were examined post mortem, and in only one was any vestige of the gland to be found—and this in one of the fatal cases. From these experiments it is concluded that the thyroid gland plays no part in the phenomenon of anaphylaxis. This conclusion, it may be noted, can only be held valid for the particular species of animal investigated.

### 65. Relation of the Diazo-Reaction to the Number of Leucocytes in the Blood.

NANNA SVARTZ (*Hygiea*, November 15th, 1922, p. 869) was so struck by the frequency with which she found the number of the leucocytes vary inversely with the intensity of the diazo-reaction in the urine in cases of tuberculosis and typhoid fever, that she undertook a special investigation of the subject, hoping to find some explanation for this inverse parallelism. Seventeen cases, represented chiefly by typhoid and paratyphoid infections, were investigated. But though confirmation was obtained of the inverse relationship of the two conditions, no explanation of it could be found.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

### 66. Action of Alcohol on the Acidity of the Gastric Juice.

K. FRIESE (*Dent. med. Week.*, January 5th, 1923, p. 11) has investigated the action of alcohol on the acidity of the gastric juice of 132 patients suffering from various diseases of the stomach. He first investigated the acidity forty-five minutes after a test meal without alcohol, and then gave a test meal containing 20 c.cm. of absolute alcohol in 200 c.cm. of tea, and on another occasion 5 c.cm. of alcohol in 200 c.cm. of tea. Thus the strength of the alcoholic solutions was 10 per cent. and 2.5 per cent. respectively. The patients were classified according as they suffered from (1) ulcer, (2) carcinoma, (3) achylia gastrica, (4) nervous dyspepsia, and (5) other diseases, such as atony, gastritis, and the digestive disturbances associated with cholecystitis and tabes. Both sexes and every age were represented in this material. Investigations with seven healthy controls showed that alcohol has, as a rule, no appreciable effect on the acidity of the gastric juice. But in the overwhelming majority of the 29 cases of gastric ulcer the acidity was reduced by the alcohol. Similar, but not so uniform, results were obtained in most of the 13 cases of carcinoma. In none of the 10 cases of achylia gastrica did the alcohol have any effect on the acidity of the gastric juice, but in nervous dyspepsia the acidity was usually increased. In the fifth class there was no uniformity in the reaction of gastric juice to alcohol. The author concludes that small quantities of alcohol promote the secretion of gastric juice largely by reason of its psychic action, and he discusses the possibility of the findings referred to being exploited in the differential diagnosis of various diseases of the stomach.

### 67. Diabetes Mellitus: Etiological Factors.

W. HOOGSLAG (*Nederl. Tijdschr. v. Geneesk.*, October 28th, 1922, p. 1934) records his observations on 250 cases of diabetes mellitus, 130 of which were males and 120 females; 42 were Semites (41 Jews and 1 Arab) and 208 non-Semites. The proportion of Jews affected, high as it was, was somewhat below the average, as all the patients came from the Hague and the neighbouring district, in which the Jewish population is by no means so large as at Amsterdam. The ages of the patients ranged from 10 to 79. In spite of careful treatment all the patients under 30 died in typical diabetic coma. Between 30 and 40 there were a few deaths from acid intoxication, but after 40 this cause of death was rare, and coma was usually due to a complication, such as gangrene, carbuncle, or bronchopneumonia, or to a sudden change to meat and fat diet. Occupation had much etiological importance, the disease being specially frequent among those who eat and drink in excess of their physiological requirements and neglect to take exercise and to take care of their skin, etc. Very many cases were found among butchers, restaurant keepers, captains of mail steamers, bankers, Indian planters, and clergymen leading a sedentary life. Hereditary and familial diabetes was common—among 207 cases 90, or about 43 per cent., gave a history of diabetes among their near relations (parents, grandparents, brothers and sisters, uncles and aunts). Diabetes among several children and adolescents in the same family was very uncommon. Hoogslag met with only 5 examples: 3 of these were rapidly fatal, and 2 occurred in Jewish youths whose disease had lasted for six years and showed no tendency to progress. It was as difficult as in the case of tuberculosis to say whether the factor of heredity was of favourable or unfavourable prognosis. In some cases the disease was fatal in every generation, while in others it ran a favourable course in all. Signs of mental degeneration, such as epilepsy and mental disease, were rare. Graves's disease was met with in 4 cases. On the other hand, evidence of the uric acid diathesis, such as gall stones, renal calculus, and obesity, were very frequent, being found in 115 out of 215 cases. Obesity was present in 85 cases. As regards the blood pressure, a low reading (below 110 Riva-Rocci) was of bad prognosis, and was only found in young patients or in middle-aged patients with clinical signs of pancreatic diabetes. A high blood pressure (above 200 Riva-Rocci) was found in patients with arterio-sclerosis or obesity of some years' duration. In this group the tension sometimes fell 20 or 30 mm. Hg when the sugar and fat were reduced. The great majority of the patients had a moderately high blood pressure (140 to 200), which was the best prognostic.

A normal reading (120 to 140) was very rare, in confirmation of the well known fact that the heart and vascular system are soon involved in diabetes.

### 68. Bismuth Salts in the Treatment of Syphilis.

ESCHER (*Ann. de l'Institut Pasteur*, December, 1922, p. 839) has used trepol and neo trepol in a large number of cases of syphilis in soldiers with very satisfactory results. In the present communication he analyses the results of treatment with trepol (tartaro-bismuthate of sodium and potassium) in 60 cases. At first he gave courses of ten to twelve intramuscular injections of 0.3 gram. But such doses frequently caused stomatitis and gingivitis, and occasionally albuminuria, and he therefore reduced the dose in later courses to 0.2 gram, given every fourth or fifth day. In 10 cases in the primary stage with a positive Wassermann reaction in the blood the parasite disappeared from the chancre in twenty-four to fifty-six hours after the first injection, and living spirochaetes were never found after forty-eight hours. The swelling of the inguinal glands subsided more rapidly than after any form of arsenical treatment, and parasites were not found in the serum aspirated from these glands six to eight days after the first injection. The chancres healed rapidly, and secondary rashes never appeared during the treatment. The Wassermann reaction became negative after the first course in 6 cases, in 2 at the end of the second, and in 2 between the second and third courses. Forty cases in the secondary period were treated. Mucous plaques began to heal on the fifth or sixth day, and parasites disappeared from them in thirty-six hours. Roscolar rashes disappeared in every case after the third injection. Pigmentation of the scars was much less frequent than after arsenical treatment. In 30 of these cases the Wassermann reaction became negative after one, two, or three courses of trepol. Pain at the site of injection was rarely met with after "painless trepol." Stomatitis and gingivitis could be controlled by thorough attention to the teeth and mouth-washes when doses of 0.2 gram were given. Albuminuria, which occurred in 9 cases, cleared up on cessation of the drug and a vegetarian diet. The presence of clusters of renal epithelial cells in the urinary deposit was a warning of the imminence of albuminuria.

### 69. Gastric Syphilis.

P. ÉMILE-WEIL (*Bull. Soc. de Thér.*, November 8th, 1922, p. 231) states that Leven has shown that syphilitic affection of the stomach is much more frequent and important than has hitherto been supposed. Without going so far as to adopt the opinion of Castex of Buenos Aires, that every gastric ulcer is due to syphilis, he maintains that a large number are due to this cause, and, as many cases of cancer of the stomach follow an ulcer, the possibility of syphilis should be considered in every organic lesion of the stomach. Gastric cancer may succeed syphilis of the stomach, as cancer of the tongue, oesophagus, or rectum may succeed syphilitic affection of these organs. From the practical standpoint, in every case of gastric disease it is important to make a complete examination, including the Wassermann reaction, of the patient himself and the members of his family. But even in the absence of any signs of syphilis the existence of an organic disease of the stomach should justify the trial of specific treatment, which is often followed by unexpected success, as in three out of four cases which the author records. The treatment consisted in injections of "914" alone, or in intravenous injections of soluble salts of mercury, followed by subcutaneous injection of arsenical preparations. Iodides were never given.

### 70. The Duration of Contagion in Whooping-cough.

BARBIER and RENARD (*Paris méd.*, December 9th, 1922, p. 531) have examined numerous children and adults before and during the paroxysmal stage of whooping-cough for Bordet's bacillus, and have come to the conclusion that whooping-cough patients are isolated for too long a period. In most cases children cease to be contagious after the paroxysms have lasted three weeks. They should, therefore, be allowed to return to school one month after the onset of the disease, instead of one month after the last paroxysm. The authors also maintain that abortive attacks occur, and that when a case of whooping-cough breaks out in a family the patient's brothers and sisters should also be examined, as they may be in the pre-paroxysmal stage, and thus constitute a source of infection in the school which they are attending.



## 71. Direct Muscle Testing in the Prognosis of Acute Poliomyelitis.

P. ERLACHER (*Klinische Wochenschrift*, December 2nd, 1922, p. 2415) describes a method of direct electrical examination of paralysed muscles by faradism in cases of acute poliomyelitis soon after the onset. On the results he bases his prognosis as regards the recovery of motor power in the muscles affected. It has been shown by Perthes that at the time of operation for nerve lesions the exposed paralysed muscle may react to a faradic current when it had ceased to react to faradism applied through the skin. Erlacher has tested the direct excitability of paralysed muscles in poliomyelitis by means of a fine needle introduced through the skin into the muscle. By this needle he applies the faradic current directly to the muscle. He states that this method of testing can be carried out even in infants, and that the pain is not greater than that caused by the needle when a hypodermic subcutaneous injection is given. He has found that paralysed muscles which present relatively good excitability when tested by the introduction of the fine needle recover their functions later. He gives examples of cases of acute poliomyelitis in which muscles not reacting to faradism applied in the ordinary way through the skin, but reacting distinctly to the faradic current applied by a fine needle recovered their motor power. The author's experience has been that recovery occurs in those paralysed muscles of which the direct excitability during the first month (after the onset of the paralysis) does not sink under one-third of the normal strength of current required for producing their contraction. But no useful recovery occurs in muscles which can only be directly excited by the full strength of the faradic current. If a relatively weak faradic current by direct needle testing gives a rapid and marked contraction the muscle is not seriously affected. If the direct faradic excitability does not sink under one-third of the normal, and if an increase of the strength of the current produces a strong contraction the prognosis is favourable.

## 72. The Pel-Ebstein Type of Hodgkin's Disease.

E. CAUTLEY (*Brit. Journ. Children's Dis.*, October-December, 1922, p. 185), who records an illustrative case, states that irregular pyrexia is common in Hodgkin's disease. One variety is the recurrent or relapsing type described by Pel and Ebstein in 1887. It is infrequent at all ages and decidedly rare in children. MacNalty reported one case in an infant aged 3 months and another in a child of 8 years of age; Murchison's patient was a girl aged 6 years. The fever is suggestive of an infectious origin of the disease, but so far no reliable evidence of this has been obtained. Cautley attributes the pyrexial bouts to localized necrosis of lymphadenomatous tissue and toxic absorption. His case, which occurred in a girl aged 8 years, was characterized by a prolonged local stage of glandular hyperplasia in the neck and a generalized stage of pyrexia which assumed a relapsing type, severe and progressive anaemia, a yellowish-grey tint of the skin, enlargement of the cervical glands, liver, and spleen, slight bronchitic attacks with breathlessness, sometimes semidelirium, erythropenia, and leucopenia. There was no evidence of tuberculosis, and the von Pirquet reaction was negative. No autopsy was obtained.

## 73. School Children and Spinal Curves.

E. H. BRADFORD (*Boston Med. and Surg. Journ.*, November 30th, 1922, p. 781) calls attention to the advantages of effective and not too irksome corrective measures in treating the curvatures of growing children, carried out through childhood and adolescence, as compared with spasmodic and expectant methods. Since faulty attitudes in children tend to develop into fixed spinal curves in adults, the importance of correcting flat chests and round shoulders is pointed out. When muscular weakness is present daily home exercises must be added to the class gymnastics and school drills, and in addition to the correcting of curves attention must be given to the strengthening of those muscles which hold the trunk normally. Where faulty attitudes have become firmly established corrective devices—braces, corsets, etc.—are needed in addition, but these should not be used so constantly as to weaken muscles or establish reliance. By means of properly adjusted appliances correcting pressure can be made on the projecting shoulder-blade, the drooping shoulder raised, and the side bend of the spinal column checked. It is during the period of rapid bone growth that treatment will be most successful, and each case requires individual judgement as to the extent and degree to which such correcting pressure should be applied. Clothing which restricts the normal play of muscles, and chairs which allow of faulty lounging attitudes, must be avoided, and since treatment is necessarily of long duration appliances should be as simply made as possible and suitable for domestic nursing.

## SURGERY.

## 74. Metastatic Carcinoma of the Choroid and Iris.

C. H. USHER (*Brit. Journ. Ophthalmol.*, January, 1923, p. 10) reports three cases of metastatic carcinoma of the choroid; the importance of recognizing such tumours is increased by the fact that a latent primary internal carcinoma may occur in which the diagnosis can be made only with the ophthalmoscope. The large majority occur in females and the primary growth is generally mammary, but two of the three cases reported were in males and the primary growth was not in the breast. In the first case, a man aged 36, autopsy was refused, and there was no evidence as to the site of the primary growth. In the second case, a woman aged 35, the primary tumour was in the breast and both eyes contained metastatic carcinomatous masses on the outer surface of each sclerotic; two growths were present in the choroid of the right eye, and both optic nerves were invaded. In the third case, a man aged 48, there were separate growths in the iris and choroid, that in the iris being cystic. Extensive growths were present in the thyroid, lymphatics, and lungs, the choroidal mass being probably metastatic from the scirrhous type of growth in the thyroid, lymphatic glands, and root of the lungs, while the cyst in the iris was probably metastatic from the softer papilliferous cysto-adenoma found in the lower lobe of the right lung. In about a third of the cases recorded in the literature both eyes were affected, and of 102 cases 73 were females and 29 males. Extraocular growths with destruction of the sclerotic are unusual, and growths passing from the optic disc into the optic nerve, as occurred in the second case, are rare. After the first onset of ocular symptoms duration of life averages only about eight months.

## 75. Congenital Scoliosis.

H.-L. ROSHER and R.-H. NOIRIT (*Journ. de Méd. de Bordeaux*, December 10th, 1922, p. 767), in reporting six cases of congenital scoliosis, remark that radiography has shown abnormalities in the vertebral column to be much more frequent in occurrence than was previously supposed. The commonest variety consists in a cuneiform or trapezoidal deformity of one or more vertebral bodies, often associated with abnormalities of the articular and spinous processes and of the ribs, and sometimes with spina bifida, occult or otherwise. The absence of one or more spinous processes often gives a valuable hint as to the congenital nature of the deformity, although the latter may not be noticed till adolescence. Slight cases may require no treatment. In severe cases a stiff corset should be worn, during the period of growth, to prevent increase of deformity. Moderate cases are treated in the same way as ordinary scoliosis, by hypercorrection and plaster jacket, followed by leather or celluloid corset, with gymnastic exercises. The cases in question presented the following conditions: (1) Male aged 2; right cervico-dorsal scoliosis from hemiatrophy of seventh cervical and of second dorsal vertebrae; absence of second left rib; torticollis since infancy. (2) Female, aged 13; dorsal right scoliosis with fusion of fourth and fifth dorsal vertebrae and atrophy of their left sides; oblique split in body of fourth dorsal vertebrae. (3) Female, aged 16; trapezoidal deformity of fifth dorsal, absence of fifth and sixth spinous processes; sixth right rib bifid. (4) Female, aged 9; left dorsal scoliosis from wedge-shaped sixth dorsal vertebra; fusion of sixth and seventh right ribs. (5) Female, aged 5; left dorso-lumbar scoliosis, with fusion of last four dorsal and first lumbar vertebrae, irregularity of lumbar vertebra, absence of twelfth right rib, spina bifida occulta, and dorso-lumbar hypertrichosis. (6) Male, aged 17; fifth lumbar vertebra wedge-shaped and fused with sacrum; atrophy of fourth lumbar, especially of its right side, giving secondary left dorsal scoliosis (compensatory).

## 76. Diptera causing Myiasis.

W. S. PATTON (*Journ. Laryngol. and Otol.*, January, 1923, p. 18) deals with the identification of the larvae of the tropical flies which cause naso-pharyngeal and aural myiasis in man, and studies the subject from the standpoint of the flies rather than from a classification of the organs invaded. Attracted by offensive discharges from the nose or ear, or following a nose bleeding, the eggs are laid, or larvae deposited, in the nostril or external auditory meatus, giving rise to intense irritation, swelling, and pain. The septum of the nose becomes perforated and the tissues rapidly break down; but in the ear the larvae are unable to eat their way through bone, and therefore cannot reach the brain. *Chrysomya bezziana* and *Wohlfahrtia magnifica* are typical of the oviparous and larviparous species causing myiasis; but many flies which normally lay their eggs or deposit their larvae in decaying vegetable and animal matter have acquired the



habit of doing so in or near diseased human tissues, as do also several flesh-flies of the genus *Sarcophaga*, and one or more species of the *Phoridae*. The larvae of either *Chrysomya*, *Sarcophaga*, or *Wohlfahrtia* can be recognized by the posterior stigmatic plates being large and enclosed in a shallow cleft or deep hollow, and by the overhanging lips of the ninth segment. In *Chrysomya* the plates are D-shaped, with three brown slits directed downwards and inwards, and they become visible on pressing the posterior end of the larva, while in *Sarcophaga* or *Wohlfahrtia* they are buried in a deep cleft and only just become visible on firm pressure. In *Calliphora* or *Lucilia* the plates are exposed without compression, and are relatively small, round or pear-shaped. The genera and species can only be determined with certainty by examining a caustic potash preparation of the posterior stigmata.

#### 77. Association of Bladder Symptoms with Ultra-Descent of the Right Testicle.

A. ADLER (*Deut. med. Woch.*, December 1st, 1922, p. 1612) has tested Ebstein's claims as to the diagnostic significance of the degree of descent of the testicles. Having many patients in hospital suffering from enuresis or other slight nervous disorders of the bladder, the author compared the incidence of these symptoms with that of ultra-descent of the right testicle. The coincidence of the two phenomena proved to be remarkably frequent, and when a patient was found to have ultra-descent of the right testicle he often gave a history of nocturnal enuresis. The author has collected 22 cases of ultra-descent of the right testicle, and he gives details of 12. Only in 4 out of the 22 did he fail to correlate the ultra-descent of the right testicle with functional disturbances of the bladder. He assumes that the ultra-descent of the right testicle betrays a slight functional deficiency in the lower segments of the cord; the right testicle hangs lower than the left because the tone of the right cremaster muscle is defective; and the lower position of the right testicle is not the cause of the bladder symptoms, but merely, like them, the result of a defect in the nervous system.

#### 78. Haematoma of the Rectus Abdominis in Typhoid Fever.

FRANZ ROST (*Acta Chirurgica Scandinavica*, December 22nd, 1922, p. 385) considers that in typhoid fever haematoma of the rectus abdominis muscle may give rise to symptoms which are very liable to be mistaken for those of perforation of the intestine. In typhoid fever the muscles sometimes undergo degeneration and rupture, a considerable quantity of blood being effused. The author has seen two cases in which haematoma of the rectus occurred under these conditions. In both cases the onset of abdominal pain was sudden, and it was associated with rigidity of the abdominal wall. The physician in charge diagnosed perforation of a typhoid ulcer and called for immediate operation. In the first case laparotomy was performed, but all that was found was a large haematoma of the rectus. In the second case the author declined to operate because the pain and rigidity of the abdominal wall were confined to the rectus muscle, and he realized that the symptoms were due to rupture of this muscle. With regard to the differential diagnosis, he suggests that it would be greatly facilitated simply by the surgeon bearing in mind the possibility of this complication of typhoid fever. It is very difficult to diagnose early peritonitis in typhoid because distension of the abdomen is common in typhoid before perforation and peritonitis have occurred. Considering the critical condition of the patient, it is most important that he should not have to undergo a laparotomy which would be superfluous if the symptoms were solely due to rupture of the rectus muscle.

#### 79. Plexus Anaesthesia.

E. PLATOU (*Norsk. Mag. for Lægevidenskaben*, September, 1922, p. 667) discusses the comparative merits of Kulenkampff's method of injecting a local anaesthetic into the brachial plexus for operations on the arm, and Mulley's modification. According to Kulenkampff's technique, the local anaesthetic is injected into the brachial plexus immediately above the clavicle. In some cases thus treated there have been signs of involvement of the pleura or apex of the lung, as well as other complications; to avoid these Mulley advocated anaesthetizing the plexus at a considerably higher level, the injecting needle being introduced three finger-breadths above the middle of the clavicle and 0.5 cm. behind the external jugular vein. The author has practised Kulenkampff's method in 26 cases, and it was successful in 25. Mulley's method was practised in 7 cases, but only in 3 did it prove satisfactory. Practising Mulley's method, the author found it very difficult to locate the plexus, and in one case he observed just those complications which Mulley's method, as compared with Kulenkampff's, should avoid. The

author used a 2 per cent. solution of novocain-adrenaline injecting, as a rule, about 20 c.cm., increasing the dosage in some cases to 30 or 40 c.cm. In some cases anaesthesia was induced in three to four minutes, but as a rule fifteen to twenty minutes were required, and in some cases half an hour. In 7 cases total anaesthesia of the arm was combined with complete paralysis of the muscles, the normal functions of which returned in two to four hours. The average duration of the anaesthesia was two hours, but in one case the sense of pain suddenly returned after eighty-five minutes. Though bilateral anaesthesia by Kulenkampff's method is considered dangerous, the author has successfully employed it in one case of severe electrical burns of all ten fingers; he allowed, however, an interval of an hour and a half between the two injections. He concludes that Kulenkampff's method is perfectly safe when carried out with care.

### OBSTETRICS AND GYNAECOLOGY.

#### 80. Etiology and Treatment of Tubal Gestation.

E. MAUTHER (*Zentralbl. f. Gynäk.*, December 16th, 1922, p. 2005), from his statistics of 437 cases (all operated upon), discourses on the various theories as to the causation of the condition. A previous history of acute salpingitis was only given in 17 per cent., but at operation the appendages were found to be inflamed in 36 per cent. The increase of gonorrhoea during the war years gave rise to no corresponding increase in the cases of tubal gestation. As regards the theory that tubal gestation usually occurs a long time after the last confinement, his statistics tend to show that this is not the case, 18 per cent. occurring less than a year after the last labour, and 30 per cent. between one and two years after. Definite external migration was found in three cases, one ovary and the opposite tube having been removed previously. As 32.2 per cent. of his cases showed no pathological causal factor, he is inclined to favour Poorten's theory that in many cases the condition is due to a diminished vitality of the ovum, and that this diminished vitality is due to some pathological condition in the ovary itself; 16.7 per cent. of his cases had ovaries which contained small cysts. "An absolutely degenerated ovary gives forth no ova; why (he asks) should a partially degenerated ovary not expel partially devitalized ova?" As regards treatment, the author advises immediate operation with removal of the gravid tube and ovary if necessary. He condemns all conservative measures of treatment of the tube, as the bleeding cannot be controlled with certainty. He also condemns the treatment advocated by Smith and Kulenkampff of prophylactic removal of the unaffected tube to prevent a second tubal gestation occurring, and only removes the other tube if markedly diseased. He points out that a second tubal gestation only occurred in 11.8 per cent. of his cases, and as the various symptoms were so well known to the patients they all reported early and were successfully operated on, whereas 33.4 per cent. became pregnant again, several having more than one child after the tubal gestation. It is interesting to note that in 6.7 per cent. a haematosalpinx was found on the opposite side to the gravid tube. His operative mortality was 2.5 per cent.

#### 81. Caesarean Section.

THE indications and technique of Caesarean section, based on 252 operations, are discussed by J. C. HIRST and W. W. VAN DOLSEN (*Journ. Amer. Med. Assoc.*, December 16th, 1922, p. 2047). The cases were unselected, and the patients were operated on just as they presented themselves. They varied from the ideal, clean case, in which operation was performed before labour, under ideal conditions and surroundings, to those in which operation was performed in unfavourable surroundings, in various stages of neglect. In one instance a patient with a rachitic funnel-shaped pelvis had been in labour five days, with four physicians making in all thirteen attempts at forceps delivery and one attempt at version; this patient recovered after hysterectomy and drainage of the stump, and the child is alive and well. In this series of 252 cases there have been five maternal deaths: one from haemorrhage from a ruptured varicose vein in the broad ligament, eight hours after operation (proved by *post-mortem* examination); one from mesenteric embolism of the transverse colon; three from septic peritonitis. Of the latter, two occurred before the days of extra-peritoneal Caesarean section. Had this technique been used the authors are confident one or both women might have been saved. This maternal mortality gives a percentage slightly less than 2. The foetal mortality, in any series of unselected cases, will run relatively high. In neglected cases the child is so often injured by prolonged pressure or ill advised attempts at instrumental delivery that



it is either stillborn or dies shortly after delivery. This can be in no way ascribed to the operation. Even in clean cases the child is not entirely safe. It is born anaesthetized in many cases, and inspiration pneumonia later claims some of these infants, though the risk is naturally many times less than in any other form of delivery in these particular cases. It is a mistake, however, to say that in a clean ideal case of Caesarean section the child runs no risk; it does, though a comparatively small one. In this series eighteen children were stillborn or died shortly after delivery; some of these deaths might have been avoided had the patient been brought to operation without needless delay. Two died of enlarged thymus, which would have occurred in any method of delivery. The authors emphasize the necessity for the operator to provide a competent assistant to receive the baby and attend to its resuscitation, if needed, rather than trust this important duty to anyone who happens to be present.

### 82. Treatment of Ovarian Carcinoma.

ACCORDING to E. ZWEIFEL (*Archivos de Medicina, Cirugia y Especialidades*, December 16th, 1922, p. 491) the operability in cases of carcinoma of the ovary is about 33 per cent., and the primary mortality is high—10 to 50 per cent. in various reports. The percentage of cures after operation is given as from 9 to 29, and no definitive cure has yet been recorded after irradiation alone. The author is in favour of prophylactic x-ray treatment after operation. He records the case of a patient in whom the uterus and adnexa were removed in April, 1913, for large ovarian carcinomatous tumour with microscopically confirmed nodular metastases on the peritoneum covering the uterus and bladder and that of the pouch of Douglas. In the same year the patient received two vaginal applications of mesothorium (50 mg. for twenty-four hours) and two exposures to x rays. She remained well for over seven years, and the metastases which then appeared in the abdominal scar and the pelvis have yielded to radiation.

### 83. Pyometra and Carcinoma of the Cervix.

R. ALAMANNI (*Rivista d'Ostetricia e Ginecologia Pratica*, October 29th, 1922, p. 12), in a communication to the Tuscan Obstetrical and Gynaecological Society, calculates the frequency of incidence of pyometra as a complication of cervical cancer to be 3.3 per cent. in cases observed at one clinic. In four cases seen by the author the age ranged from 55 to 70, and the growth was of the proliferative form and ulcerated; in two the pyometra was closed, and in two it emptied itself intermittently. The etiological factors concerned are: (1) obstruction by the tumour; (2) inflammatory infiltration of the cervical tissue; (3) endometritis in the body of the uterus. In none of these cases were pain, elevation of temperature, or compression signs present; and in one the diagnosis was only made after abdominal removal of an enlarged uterus, thought to be the site of myoma as well as of cancer of the cervix. Pyometra is not to be regarded as a contraindication to abdominal hysterectomy if the cervical growth is operable.

## PATHOLOGY.

### 81 The Nature of the Toxin of *B. dysenteriae* Shiga.

OLITSKY and Klinger stated that if *B. dysenteriae* Shiga were grown in a medium of egg bouillon, two distinct types of toxin were secreted. The one, an exotoxin, appears in the filtrate in five days; it is thermolabile, being destroyed by heat at 75° C. for one hour. Injected intravenously into a rabbit it gives rise to paralysis of the fore and hind limbs without any intestinal symptoms. The other, an endotoxin, does not appear for twenty-two to twenty-five days; it is thermostable, resisting heat at 90° for one hour. Inoculation of the heated filtrate—heated to 80° C. so as to destroy the exotoxin—causes intestinal symptoms without any nervous lesions. An antitoxic serum neutralizes the exotoxin but not the endotoxin, while a serum prepared against the endotoxin protects animals against several lethal doses of the endotoxin. C. DOPFER, J. DUMAS, and COMBESCO (*C. R. Soc. de Biologie*, December 2nd, 1922, p. 1140) have endeavoured to confirm this statement. They find that the five-day filtrate injected into rabbits produces paralysis of the limbs without any intestinal symptoms, but that on autopsy considerable oedema of the caecum is always noticeable. The twenty-two-day filtrate, heated to 80° C. for one hour and injected intravenously into rabbits, similarly gives rise to paralysis of the limbs without any intestinal symptoms, though on autopsy the same oedema of the caecum is found. They were able to produce the same phenomena by injection of the sodium sulphate toxin, and by the bodies of both living and dead bacilli. Finally, the ingestion of Shiga bacilli by the mouth,

either living or killed by heat for an hour at 60° to 75° C., produces the same syndrome with or without intestinal symptoms. On these grounds they feel unable to substantiate the duality of dysenteric toxin.

### 85. The Action of Lead and other Metals on Grafted Tumours in Rats.

A. BORREL, A. DE COULON, and L. BOEZ (*C. R. Soc. de Biologie*, November 25th, 1922, p. 1118), after noting in 1910 the effect of variations in the diet on the percentage of successful grafts in mice, and after obtaining, in particular, evidence of the growth-increasing properties of potassium, decided to take up the question again and study the action of different elements introduced, not by the alimentary canal but by means of ionization. Rats were selected as the most suitable animals, and the tumour used was a sarcoma—one which gives uniformly successful grafts without spontaneous regression. The treatment was commenced two to three weeks after inoculation, at a time when the tumour was already well developed. As regards the technique, they employed a battery of Leclanché cells, a resistance box to enable variations in the current to be made, and an ammeter to measure it. Knowing the electrochemical equivalent of the body they were using, the length of time the current was passed, and the intensity of the current, they were able to calculate the weight of the substance introduced. A carbon electrode was placed over the tumour, separated from it by a cotton compress soaked in a chemically pure solution of the electrolyte, while the cathode was in contact with the opposite side of the body. Of the various elements introduced lead gave by far the most promising results. Of ten tumours treated by this metal no fewer than eight retrogressed and disappeared completely within the space of two or three weeks. The animals were subsequently found to be refractory to a fresh inoculation. The total quantity of lead introduced varied from 16 to 47 grams, distributed over two to five sittings. Other metals, such as barium, silver, and copper, occasionally caused retrogression of the graft to occur, but not with the same frequency as lead. Though these experiments have only been performed on a small number of animals, and only one particular type of tumour studied, the results are certainly very suggestive and encouraging.

### 86. The Leucocyte Picture in Tuberculosis.

C. J. RAFFAUF and GRIMM (*Zeit. f. Tuberc.*, November, 1922, p. 107) examined the blood of 65 children, 25 of whom were boys and 40 girls, aged from 6 to 15 years, suffering from tuberculosis of the lungs or bronchial glands, and came to the following conclusions: (1) In well marked pulmonary tuberculosis in children the blood picture has the same significance as in adults, lymphocytosis and eosinophilia being signs of a favourable reaction. (2) In bronchial tuberculosis in the child lymphocytosis is also an undoubtedly favourable sign, and is frequently present when the disease pursues a relatively favourable course. (3) No distinction can be made between active and inactive hilus tuberculosis from a study of the blood picture. (4) The study of the leucocytes in tuberculosis of the lungs and bronchial glands in children appears to be, as in adults, a valuable therapeutic guide, especially as regards specific treatment. (5) A careful study of the blood picture appears to be specially important in tuberculosis of the bronchial glands when a focal reaction is produced by overdosage.

### 87. The Schick Reaction in Nasal Diphtheria.

VERNIEUWE (*Rev. de Laryngol., d'Otol. et de Rhinol.*, December 15th, 1922, p. 925) discusses the question of carriers and reviews the progress made since 1896, when Eeman and van Ermengem showed that virulent diphtheria bacilli might exist in a case presenting no other symptoms beyond excretion, increased nasal discharge, and, occasionally, epistaxis. Vernieuwe divides diphtheria "carriers" into four classes: (1) Convalescents from an acute attack, whether they have been given antitoxin or not, may still have bacilli, especially in the throat—that is, carriers by continuity of infection. (2) Carriers with no visible lesion (past or present). (3) Accidental carriers in whom are found diphtheria bacilli on a raw surface, such as follows an intranasal or naso-pharyngeal operation. (4) Carriers who have an active nasal diphtheria, often yielding an almost pure culture—a true local diphtheria with no constitutional invasion, which consequently is not diagnosed. The author records seven typical cases and describes his technique. He states that, by the use of Schick's method, laboratory work proves that nasal diphtheria does not produce immunization. The bacilli form a virulent focus, and in the majority if not in all of the cases continue to produce a positive Schick reaction. The significance of this fact and the recent work of Wolf on this subject are fully discussed.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

### 88. A Modification in the Routine Treatment of Syphilis.

M. SYDNEY THOMSON (*Brit. Journ. of Derm. and Syph.*, January, 1923, p. 1) has treated over 2,000 cases of syphilis by a special routine. This consists in giving at least three intravenous injections of 0.9 gram novarsenobillon with an interval of three weeks between each injection. These doses are continued until the Wassermann-reaction becomes negative. At the same time the patients take 1 grain of grey powder three daily continuously for at least a year unless gingivitis necessitates short remissions in the treatment. When the Wassermann reaction has remained negative for a year treatment is stopped, and the patient is watched for another year, a Wassermann test being done every six weeks. If this remains satisfactory at the end of the probation period the cerebro-spinal fluid is examined, and if all the tests for syphilis prove negative the patient is discharged as cured. The reasons given for this modification are (1) that death never occurs after a first dose of 0.9 gram novarsenobillon; (2) that this dose is not fully eliminated from the body for four weeks, but at three weeks only minute traces remain. There is therefore no danger of cumulative poisoning by the arsenic. Analysing 500 cases which have undergone this treatment fully, he finds that of primary cases 90 per cent. gave a persistently negative Wassermann reaction after their third injection, and a further 6.5 per cent. after four to eight injections, with a failure in 3 per cent. of cases. Of secondary cases 71 per cent. gave a persistently negative Wassermann reaction after the third injection, and 19 per cent. after four to seven injections; 10 per cent. were failures. He found the Wassermann test a very reliable standard of cure; a relapsing Wassermann reaction frequently presaged a clinical relapse. But during pregnancy the reaction almost constantly becomes negative, to relapse at once on parturition; it should therefore be disregarded during pregnancy, and treatment by injections and grey powder continued, if anything, more energetically than before. He had seen no ill results following arsenical intravenous injections continued up till the date of parturition, if the urine was carefully watched for albuminuria. This routine method was safe and convenient for the patient, and gave at least as good results as any other.

### 89. Ulcerative Endocarditis following Gonococcal Septicaemia.

N. GH. LUPU and P. STOINESCO (*Bull. et Mém. Soc. Méd. des Hôpitaux de Bucarest*, October 11th, 1922, p. 211) report a case in a woman of 21, admitted to hospital on February 15th, 1922, with a very painful acute arthritis of the right knee. Five days previously she had had a severe rigor with generalized articular pains. The articular fluid was greenish-yellow and viscid; dysuria and a vaginal discharge had been present for three weeks—the latter, as well as the synovial fluid from the knee, yielded a pure culture of gonococci; the blood culture was negative. Transient improvement followed hypodermic injections of polyvalent gonococcal vaccine, but after two weeks the temperature began to oscillate, rising to 38° or 39° C. at night, and the pulse rate rose to 136. A second course of vaccines produced a still shorter improvement; the patient developed right bronchopneumonia with bilateral pleural effusion, racking cough, and blood-stained sputum—over 500 grams of blood-stained purulent fluid were removed from the pleurae; neither this nor the sputum showed gonococci. Cultures from the pleural effusion remained sterile. Two months after admission a systolic bruit was heard for the first time; its maximum intensity was at the third left intercostal space; pericardial friction sounds were also heard. The pulmonary condition improved, but three weeks later the patient's state was very grave; a diastolic basal bruit, loudest in the pulmonary area, appeared, and an intense systolic thrill was felt. Intractable vomiting, followed by symptoms of acute parenchymatous nephritis, set in. The spleen was much enlarged and very tender, uraemic symptoms increased, and the patient died on May 27th. At the autopsy the following conditions were found: acute myocarditis, fibrinous pericarditis, vegetations on the pulmonary valve, double bronchopneumonia (pseudo-lobar), right pleuritic adhesions, parenchymatous degeneration of the myocardium and liver, acute nephritis, splenic enlargement with anaemic and suppurating infarcts, arthritis and peri-arthritis of right knee, with periostitis of the femoral condyles, and cervicitis of the uterus. The lesions of the pulmonary valve are described in detail, as well as those of the other viscera. Cultures on

blood agar, and ascites agar from the heart, pulmonary valve, purulent synovial fluid, lung, and cervical canal, yielded gonococci. The authors observe that, after streptococcal, staphylococcal, and pneumococcal infections, gonococci most frequently produce metastatic lesions. Gonococcal septicaemia has been described by several authors, whose statistics are quoted. Gonococcal infection often produces arthritis, rarely endocarditis, and exceptionally pleural, pericardial, and pulmonary complications. The infection of the pulmonary orifice, the multiplicity of the secondary foci, and the failure of vaccine therapy are remarkable. The authors conclude by analysing the localizations of previously recorded valvular lesions of gonorrhoeal origin, emphasizing the rarity of infections of the right side of the heart.

### 90. Epidemic Polio-encephalitis Simulating Food Poisoning.

P. KRAUSE (*Deut. med. Woch.*, December 22nd, 1922, p. 1715) reported at a medical meeting at Bonn an epidemic which broke out in a training establishment, where ten women between the ages of 18 and 25 developed alarming symptoms. There was great dysphagia, with dyspnoea, diplopia, and paralysis of accommodation. There were no gastrointestinal symptoms. Nine, all of whom lived in the same room, died within two and a half days. The tenth patient, who lived apart from the rest, recovered. Of 13 patients, who fell ill several days later, 4 died with similar symptoms. The patients examined by the author showed a variety of ocular symptoms; there was paralysis of accommodation and of the movements of the eyeball, in 2 cases there was horizontal nystagmus, in 1 there was vertical nystagmus, and in 2 there was bilateral ptosis. All experienced difficulty in swallowing, and in one case there was complete paralysis of the palate. The tendon reflexes were normal or slightly increased, and in some cases they were less lively than normal. There was no evidence of poisoning by meat, fish, or cheese, and an examination of sweets, which some of the patients had eaten, proved negative. Tests for arsenic also proved negative, as did certain bacteriological and serological investigations. The post-mortem examinations showed no signs of an inflammatory process or of gastro-intestinal disease. A doctor who had attended the patients developed similar symptoms about eight days later. The author noticed that all his patients showed slight redness and moderate swelling of the lining of the throat, and some suffered from gingivitis. Three other patients were seen, all of whom showed slight catarrhal angina, transitory dysphagia, and protracted accommodation paralysis. In two of these cases the poisoning was traced to a ham, but in the third case there was no evidence of food poisoning. The conclusion drawn from these cases is that the symptoms of food poisoning and of epidemic polio-encephalitis may be remarkably similar.

### 91. Melanomata of the Skin.

HENRI HALKIN (*Ann. de Méd.*, September, 1922, p. 189) discusses fully the various views regarding the origin of these tumours, and then describes his own researches. He explains his methods of hardening and staining, and insists on the differences in structure which the specimens present. These show a type of evolution of a naevus from that of a localized benign tumour; this evolution may be arrested or become so slow that one finds in adults very slightly developed naevi which have existed for a long period; the process is independent of that malignant change which, as clinical observation shows, may be produced as much in a small, smooth naevus as in one which is projecting and horny. Histological details of fourteen specimens are then given, with numerous plates. Halkin concludes that melanomata are naevi undergoing rapid evolution; like them they are of mesoblastic origin, and may be termed melanosarcomata. This confirms Virchow's opinion; he considered naevi to be potential sarcomata. As in naevi, all connective tissue cells may become the point of origin of proliferation. Proliferation without pigmentation may occur; non-pigmented naevi are analogous to the melanotic form, and may result in sarcomata by malignant degeneration. Melanotic pigmentation, however it may arise, is a proliferating agent and an element of malignity. Proliferation is particularly rapid, and metastases occur very early when pigmentation is most marked. Epidermal pigmentation and the proliferation resulting therefrom are accessory only. The epidermis takes no active part in naevus formation, nor in its malignant transformation, nor in metastases. Pigmented connective tissue cells (chromatophores) are not the only source of the



tumours (chromatophoromata of Ribbert). Non-pigmented cells are developed in the same manner; they are not derived from chromatophores. The chromatophores are not old pigmented cells (Unna); they are young cells with all their proliferating power. Melanosarcomata do not originate in a nucleus, an embryonic inclusion; they result from tissue change, probably under the influence of a substance circulating in the blood, if not derived from it, and becoming deposited in the cells in the form of melanin.

## 92. A New Eruptive Fever?

A. M. STEVENS and F. C. JOHNSON (*Amer. Journ. Dis. Children*, December, 1922, p. 526) report two cases of eruptive fever, which they consider entirely unlike any previously recorded condition, and associated with stomatitis and ophthalmia. Both occurred in boys, living so far apart as to preclude any possibility of contact, and in both there were high continuous fever, great prostration, and purulent conjunctivitis. Commencing with fever, the rash appeared the next day on the back of the neck and on the chest, spreading during the next eighteen days to the face, arms, trunk, and legs, and finally to the soles and palms, by which time resolution in order of appearance had begun. The eruption consisted of oval, dark red to purplish macules, separated by normal areas of skin, and becoming in a few days raised brownish-purple papules, without pustules or vesicles, and without pain or itching, and ending in horny crusts. The mouth and tongue were inflamed and raw, and the eyelids swollen, with pus streaming from the eyes. Both were diagnosed at first as haemorrhagic measles, but this was negated by the subsequent distinctive development of the rash, and, though a toxic erythema multiforme was suggested, the character and distribution of the lesions, absence of subjective symptoms, prolonged high fever, and terminal heavy crusting negated this view also. The serious effects of the disease were shown by one of the boys becoming totally blind and the other only escaping with impairment of vision in one eye. The syndrome suggested to the authors an infectious disease of unknown etiology.

## 93. Familial Haemolytic Splenomegaly.

S. O. COWEN (*Med. Journ. of Australia*, November 11th, 1922, p. 545) investigated a remarkable series of cases of splenic enlargement associated with anaemia and jaundice occurring in one family, now 48 in number spread over three generations, of whom 19 were examined. The majority were only mildly affected, but in two advanced cases, aged respectively 1 year and 4 months and 44 years, splenomegaly, anaemia, increased corpuscular fragility, and jaundice were prominent. Enlargement of the spleen commences early but is never extreme, and anaemia is constant, the red cell count becoming lower and the colour index rising as the disease progresses. The fundamental pathogenic feature of the disease is the persistent excessive haemolysis, and this and the specific activity of the spleen are regarded as essential factors in its causation, and may both be due to the action of some toxic substance as yet unidentified. Splenectomy, by removing the splenic factor permanently, relieves symptoms, since excessive haemolysis is prevented. The familial and acquired forms of the disease are, the author believes, closely related, and in the family under observation the disease may have been introduced by an acquired case among its members; the familial factor is apparently transmitted by a toxin causing an inborn error of metabolism manifested by corpuscular fragility and splenic activity, the age of onset of symptoms varying as the balance between blood destruction and blood regeneration varies.

## 94. Peptic Ulcer.

MAX EINHORN (*New York Med. Journ. and Med. Record*, December 6th, 1922, p. 613), from an experience of twelve cases of peptic ulcer with deformities of the viscus as shown by x rays, considers that such cases can be successfully treated medically with a restoration of almost normal configuration of the stomach and duodenum. Five of the cases showed penetrating ulcers of the lesser curvature of the stomach, one of the pylorus, and in six there were duodenal ulcers with constant deformities of the cap. Under duodenal alimentation treatment the pathological findings were improved, the niche formation almost entirely disappearing, and the cap deformities becoming normal, with a general return of well-being and health. That the possibility of curing peptic ulcers by medical means is not a rare event is shown by the fact that these twelve cases were taken serially, and only one later case occurred in which duodenal alimentation failed to relieve, and in which a gastro-enterostomy was needed. By such medical measures rest to the affected part is secured, and the general nutrition provided for.

## SURGERY.

95.

### Goitre

N. J. MACLEAN (*Canadian Med. Assoc. Journ.*, December, 1922, p. 847) considers that in the treatment of goitre bilateral resection affords the best results, provided that the patient be placed in the best possible position for operation by preventive and early active medical treatment, the actual operation being regarded as one of the steps in treatment. The importance of pre-operative and post-operative rest is insisted upon, and it is claimed that the exophthalmic or toxic patient can be made as safe for operation as in simple goitre. R. E. McKECHNIE (*Ibid.*, p. 854) urges basal metabolism as the best guide in deciding when to operate, and under such guidance early operation is advocated. While treatment by rest and drugs is important, operation, undertaken before extensive myocardial degenerations have taken place, offers the only positive treatment, and both forms of toxic goitre (the exophthalmic and the toxic adenoma) should be treated alike. F. N. G. STARR (*Ibid.*, p. 258) considers that most of the cases seen in childhood can be cured before the age of 20 by medical treatment, but that later surgery alone can effect a cure, provided that no permanent cardiac mischief has arisen. The estimation of the basal metabolism is important, and in extreme cases one pole should be ligated under local anaesthesia, followed in a week or two by ligation of the other pole, the whole operation being completed after about three months' complete rest and change. J. K. MCGREGOR (*Ibid.*, p. 860) relies upon the basal metabolic test in diagnosis and also in estimating the course of the disease. Surgery is inadvisable in the early stages, which should be treated by complete rest. Ligations are of value in preparing for a thyroidectomy and for testing whether a radical operation is likely to produce an attack of acute hyperthyroidism. Extirpation of four-fifths of the gland affords the only certain means of cure. In severe cases ligations and thyroidectomies may be done in bed, as advised by Crile, in order so far as possible to eliminate disturbance of the patient.

96.

### Maxillary Sinusitis in Young Children.

INFLAMMATION of the maxillary sinus in the newborn and young children is a somewhat unusual condition. F. J. COLLET (*Arch. Internat. de Laryngol.-Otol.-Rhinol.*, November, 1922, p. 1041) records a case of this nature in a child a few weeks old. The symptoms of the condition are fairly typical. The child at first shows the signs of a feverish attack with rise in the temperature, refusal to take the breast, and nasal obstruction. There is redness around the eye and progressive swelling and redness in the suborbicular region with oedema and perhaps fluctuation. Finally, there is a discharge of pus from the corresponding nostril. Recorded cases show that the prognosis is bad, and the suppuration severe in spite of operative treatment, which may be necessary on repeated occasions. In two cases death was due to an abscess of the lung and abscess of the brain. The maxillary sinus in the child differs from that in the adult, in that in the child it opens into the nasal fossa by a large orifice; further, the cavity itself is of small dimensions, for the anterior part of the maxilla does not contain the sinus but is occupied by the tooth germs. This renders an infection of nasal origin unlikely. The author considers that the condition starts as a generalized infection which becomes localized in the maxilla and then affects the sinus, the infection being by way of the blood stream. In one case it followed injury at birth. The treatment of the condition raises several points. It is not advisable to approach the small cavity via the nasal fossa, as it is both difficult and dangerous owing to the proximity of the orbit. If it is approached from the alveolus the incision should be slanted to avoid damaging the teeth; further, if the disease starts in the maxilla the incision is best made at the border of the alveolus, as this allows sequestra to be cast off later should they form.

97.

### Middle-ear Infection in the Newborn.

MAHU and E. CHOMÉ (*Gynéc. et Obstét.*, 1922, vi, 5, p. 313), at autopsy on a stillborn child born after prolonged infected labour, demonstrated the presence of staphylococci, streptococci, and other organisms in the middle ear. They point out that pus has been found in this situation by Renaud in post-mortem examination of each of 70 sucklings, and that Veillard found pus, together with evidence of local suppuration in bone or in mucous lining, in 35 per cent. of cases. As may be shown by animal experiment, foetal distress causes intra-amniotic inspiration followed by deglutition; by these movements infection of the foetal middle ear may, it is said, be readily produced. The authors are inclined



to agree with Renaud in considering chronic latent middle-ear infection as a common cause of marasmus and as playing an important part in early infant mortality; like him they have found middle-ear suppuration to be the only demonstrable morbid finding at autopsy on certain atrophic infants. They believe that shortly after birth prophylactic applications of silver solutions should be made to the nose and nasopharynx as well as to the eyes, and suggest instillation into the nostrils of two or three drops of 10 per cent. argyrol in glycerin, or injection of 1 in 300 watery solution of protargol.

### 93. Prostatectomy.

S. H. HARRIS (*Med. Journ. of Australia*, October 7th, 1922, p. 401) records a death rate of 3.5 per cent. in 146 cases of prostatectomy. The average age of these patients was 69 years, nine being over 80 years. Preliminary treatment was carried out by retention catheter in over one hundred of the cases, whilst a preliminary cystotomy was performed in thirty-four. The one-stage operation was performed as follows: After vertical incision of the aponeurosis the bladder was segregated with gauze; the bladder was then incised to the highest point of the fundus, and after bimanual enucleation the bladder was drained with a glass tube. For the control of operative haemorrhage, bimanual compression was generally found sufficient. Either is the anaesthetic of choice, by the intrapharyngeal method. A saline is given per rectum immediately after the operation, and a suspensory bandage fixed to support the scrotum. The drainage tube is removed about the sixth day, and the majority of patients pass urine within ten days; complete closure of the fistula occurs three to seven days later. Hexamine and sodium benzoate are given, and no bladder irrigation used, at any rate during the first fortnight. Epididymitis occurred in 10 per cent. of the cases; the early onset of urination acts as a prophylactic in this regard. The author considers that the glass drainage tube contributes in no small degree to the exclusion of unpleasant sequelae. So far as recurrence of symptoms is concerned, practically all the patients consider themselves cured of the prostatic trouble. The modern operation of prostatectomy in competent hands should entail little greater risk than that of any average series of abdominal sections.

### 99. X Rays in the Treatment of Salivary Fistula.

F. W. KAESS (*Zentralbl. f. Chir.*, January 6th, 1923, p. 14) reports two cases of parotid fistula in which healing took place after the parotid gland had been put out of action temporarily by a strong dose of x rays. He was led to make a trial of the method through noticing that patients under x-ray treatment for cervical adenitis frequently complained of dryness of the mouth. One case, in which the fistula resulted from a gunshot wound received in 1917, was operated upon on January 23rd, 1920, the fistula being excised and the thermo-cautery applied to the deep communication; on removal of the sutures a week later a brisk flow of saliva reappeared. Thereupon a strong x-ray exposure was made, the dose being 120 F. at 24 cm. distance of anode from skin, with 3 mm. of aluminium filtering. After this no saliva came from the wound, and complete healing had taken place by March 2nd, 1920. The second case was that of a man aged 44, suffering from parotid fistula, the result of a gunshot wound, with marked eczema of the surrounding skin. Division of the auriculo-temporal nerve was first tried, and was followed by temporary improvement, then relapse. A dose of 150 F. of x rays was then applied. Two weeks later the fistula had closed, and the eczema disappeared soon after. The author considers that such x-ray exposure may of itself cause many such fistulae to heal, and also that the method should be used as an adjunct to any form of operative treatment.

### 100. Recurrent Renal Calculi.

J. D. BARNEY (*Surg., Gyn., and Obstet.*, December, 1922, p. 743) considers that it is impossible to say whether the stones found in a kidney a year or more after operation are actual recurrences or stones left in the kidney at the first operative procedure. He is convinced that many cases fall into the latter class. An x-ray examination should be the rule after convalescence to ensure accuracy in finding if these stones are recurrences. Actual recurrence of stone is unquestionably very frequent. It appears strange that removal of stones from so comparatively small a cavity as the renal pelvis should be so uncertain a matter, whilst nephrotomy yields equally unsatisfactory results. However, the complex character of the interior of the kidney, haemorrhage, and the comparative inaccessibility of the organ in many cases contribute to the difficulties in removing all stones. X-ray examination may show one fairly large shadow, but this may cover other smaller shadows lying in

front of or behind it. Further, a small stone may become surrounded with fibrin so that it is not detected. It would appear that the fluoroscope offers the most promising prospects of success. After delivering the kidney from the wound the x-ray apparatus is brought up and stones may be readily seen. When the rays subsequently show that a stone has been left behind a second operation is advisable and should be done soon after the first. For removal of stones pyelotomy is unquestionably the operation of choice, and may often be advantageously combined with partial nephrotomy. One of the most common causes of recurrence of stone has been attempts to conserve a badly damaged kidney. The mortality following nephrotomy is about 5 to 6 per cent., whilst in pyelotomy it is practically negligible. Haemorrhage and post-operative fistulae are rarely seen after the latter procedure, which, though perhaps more difficult, should always be selected if possible.

## OBSTETRICS AND GYNAECOLOGY.

### 101. Pregnancy in the Tuberculous.

C. C. NORRIS and D. P. MURPHY (*Amer. Journ. of Obstet. and Gynecol.*, December, 1922, p. 597), from a series of cases of their own and also collected from the literature, evolve some important statistics. In their own cases 51 per cent. became worse or died after pregnancy, the prognosis becoming worse the more advanced the stage of the disease. Thus, 30.5 per cent. in the first stage got worse and 1.5 per cent. died, 46.6 per cent. in the second stage got worse and 3.6 per cent. died, whereas 84.5 per cent. got worse in the third stage and 31.5 per cent. died. From the cases collected from the literature therapeutic abortion seems to be beneficial, for in 630 cases 44 per cent. became worse with pregnancy, whereas in 44 cases in which abortion was induced only 9 per cent. deteriorated. The infantile mortality in 1,500 infants was 58.83 per cent. From the study of their cases the authors give the following recommendations: (1) Unless pulmonary lesions have been quiescent for some time tuberculous women should not marry, but, if married, should not become pregnant unless disease is in the first stage and has been quiescent for at least two years. (2) If acute exacerbations manifest themselves before the fifth month of pregnancy, abortion should be induced at once, the delay of a week even affecting the prognosis considerably; 70 per cent. will benefit by such treatment. (3) If after the fifth month, expectant treatment should be adopted and labour made as easy as possible. The patient should never be allowed to go over time, but rather premature labour should be induced a week or two before time. (4) A tuberculous mother should never be allowed to nurse her child, and the infant should be specially protected against post-natal infection, as it is very rare indeed for a child to be born tuberculous.

### 102. The Toxaemias of Pregnancy and Anti-anaphylaxis.

LOUIS CHARRON (*Journ. de méd. de Bordeaux*, December 25th, 1922, p. 787) observes that the uncontrollable vomiting of pregnancy has given rise to an infinity of etiological interpretations, and consequently to a like variety of remedies. The author records two cases which he thinks may throw light on the problem: (1) A patient, aged 30, complained that for two months she had vomited incessantly. She had not menstruated for two months, but stated that she did not know if she were pregnant; in her two previous pregnancies she had not suffered in this way. Her doctor suspected pregnancy and tried to relieve the vomiting, without success. He gave (among other treatment) a few injections of horse serum. The patient became worse, slight jaundice appeared, with rapid pulse and progressive emaciation. Ultimately the uterus was explored, but the cavity was empty, except that on the anterior wall there was a placental fragment as large as a small nut. The patient recovered, and admitted that abortion had been induced. The retention of that small portion of placenta after the bulk of the ovum had escaped apparently caused the persistence of vomiting; this suggested that the toxins are of placental origin. (2) A war widow, aged 24, with one child aged 5, was about two and a half months pregnant. Her doctor had treated her for two months for severe vomiting. The patient refused food, the vomit became fetid and blood-stained, and when seen by the author cachexia was advanced. After administration of various drugs and injections of horse serum, with no benefit, the author curetted the uterus, and the patient completely recovered. Two years later the patient married again, and fifteen days after the last period blood-stained vomiting suddenly commenced. The previous symptoms recurred, the vomit was extremely fetid and incessant, and the patient's weight fell from 58 to 41 kg. The urine was normal, except that it contained 0.96 gram of acetone to the



litre, much indican, urobilin, leucocytes, and a trace of serum-albumin. With her doctor's consent, Charron decided to try the effect of injection of the husband's serum. He was quite healthy; the Wassermann reaction was negative, and there were no signs of malaria. If the patient's toxæmia were due to a "male" antigen, a second and progressive injection of that antigen should, asserts the author, desensibilize the patient's system. After five injections of 5 c.cm. of the husband's serum the patient completely recovered, and her pregnancy is stated to be progressing normally. Charron considers that the fact that in this pregnancy the patient commenced suddenly to vomit while yet ignorant that she was pregnant disposes of the theory of auto-suggestion; further, none but Charron and his colleague knew the source of the serum.

### 103. Action of Mammary Extracts on the Uterus.

M. DAL COLLO BONARETTI (*Archivio di Ostetricia e Ginecologia*, December, 1922, p. 73) reviews the somewhat discordant results which have been reported concerning the action of mammary extracts on the uterine muscle. In her own experimental investigations she has found that mammary extracts made with saline solution or Ringer's fluid exercise an effect which varies with the dosage; small amounts increase the tone of surviving uterine muscle and lead to increased frequency and amplitude of its contractions, while larger amounts produce the contrary effects. The results are the same on the gravid as on the empty uterus, and are produced by extracts of secreting or inactive breast tissue; no specificity is demonstrable, the uterus of one species responding to mammary extracts derived from another species. The experiments included trial of human uterine muscle and human mammary extracts, but the latter appeared less active than extracts of animal breast tissue. The active principle is destroyed by boiling, but resists a temperature of 60° C.

### 104. Treatment of Abortion.

J. A. VAN DONGEN (*Nederl. Tijdschr. v. Geneesk.*, November 25th, 1922, p. 2346), in the second part of his paper (see EPITOME, December 23rd, 1922, para. 492), discusses whether digital or instrumental removal of the residues of abortion is preferable. First, as regards pain, instrumental treatment is in most cases possible when the os admits a No. 12 dilator and sometimes even a No. 10, or No. 8, whereas proper digital treatment can only be carried out when a No. 18—or better, a No. 20—can be passed. This in itself is in many cases so painful that an anaesthetic is necessary. In manual treatment, therefore, the patient has to choose between suffering much pain and the dangers connected with an anaesthetic. On the other hand, curetting can be carried out in most cases without an anaesthetic and with little or no pain. Secondly, as regards the results, manual treatment, even under an anaesthetic, is more fatiguing for the operator, as the cervix, if it is not considerably dilated, grips the manipulating finger, and interferes with the separating of the residues of abortion. Moreover, the finger, which is short in comparison with the curette, may have difficulty in reaching the fundus, so that the operation loses in completeness and accuracy. Van Dongen has frequently had to remove with a curette large pieces of the placenta from patients who had been treated elsewhere by the digital method. Thirdly, infection of the genital organs and general infection are much more likely to occur under digital treatment, owing to damage to the cervix of fundus, than when a curette is used. Fourthly, as regards perforation, provided a proper instrument is used and suitable care is taken, this accident is not likely to occur. Van Dongen has never had a case among the 1,590 curettings for abortion performed by him. He concludes that curetting is less painful for the patients, saves an anaesthetic, is more readily carried out, and is less likely to give rise to local or general infection, while there is only more chance of perforation if it is performed by an inexperienced and careless operator. Medical students should occasionally perform the operation under supervision, so that after they are qualified they may be of greater help to their patients than if they employed the digital method.

## PATHOLOGY.

### 105. Pancreatic Extracts.

J. R. MURLIN, B. KRAMER, and J. E. SWEET (*Journ. Metabol. Research*, July, 1922, p. 19) discuss the influence of pancreatic extracts without the aid of alkali upon the metabolism of the depancreatized animal, and record experimental support of the presence in pancreatic tissue of a substance capable of restoring to the diabetic animal the ability to utilize glucose. Success in its preparation depends upon the reaction of the

extracting medium. A mixed extract of pancreas and duodenal mucosa, neutralized but not made alkaline and administered intravenously, not only stopped the sugar elimination, but the blood sugar markedly declined and the animal showed the power to burn glucose. These experiments, though conducted in 1913 to 1916, are presented in confirmation of the hormone previously recorded by Banting and Best. While these latter consider that the hormone is of the nature of an enzyme, because heating to 57° C. kills it, the present authors have no doubt that in certain circumstances the hormone will withstand boiling in an acid medium, thus showing that its exact nature is as yet undetermined. That the extract has some effect on combustion is seen by the rise in respiratory quotient, and removal of the thyroids some weeks previously in no way altered the handling of carbohydrates or prejudiced the result.

### 106. The Cerebro-spinal Fluid in Trypanosomiasis.

LEFROU and OUZILLEAU (*Ann. de l'Institut Pasteur*, December, 1922, p. 834) have studied the cerebro-spinal fluid in trypanosomiasis for evidence of meningeal invasion other than the demonstration of the parasite in the centrifugized deposit of the cerebro-spinal fluid. Two hundred and forty samples of cerebro-spinal fluid were examined; trypanosomes were proved to be present in 100 of these, but absent from the remainder. The parasites were never found in cerebro-spinal fluids which contained less than 50 cells per cubic millimetre, or less than 0.02 per cent. of protein. Their presence in fluids giving cell and albumin counts above these levels was frequently but not constantly demonstrated; nor were parasites always easily found in fluids which contained a very large number of cells, or a high percentage of vacuolated cells, or other abnormal cell forms. But the authors considered that a cell and protein examination of the cerebro-spinal fluid gave presumptive evidence that the parasite had invaded the central nervous system if more than 50 cells per cubic millimetre and 0.02 per cent. of protein were present.

### 107. Method of Testing Liver Function with Phenoltetrachlorophthalein.

The principle of the method devised by S. M. ROSENTHAL (*Journ. Amer. Med. Assoc.*, December 23rd, 1922, p. 2151) is as follows: Five mg. of phenoltetrachlorophthalein per kilogram (2.2 lb.) of body weight are injected intravenously. This dosage is normally removed from the blood stream very rapidly; in normal human beings, from 2 to 6 per cent. is present in the plasma fifteen minutes after injection, and complete disappearance takes place within from forty to sixty minutes. In cases of liver disease, high percentages may be found in the plasma for many hours after injection. Clinical results have fully borne out experimental work. Following the intravenous injection of the dye, strikingly high degrees of retention in the plasma have been found to occur in cases of hepatic disease. Results by this method are quantitative, and it is believed that they give an index of the fundamental capacity of the liver.

### 108. A New Diagnostic Serum Test for Cancer.

A METHOD of serum diagnosis in cancer, studied by Botelho, is reported by A. WILBOUCHEVITCH, together with the results obtained from its use (*C. R. Soc. de Biologie*, December 23rd, 1922, p. 1339). The technique is as follows: To 2 c.cm. of a 5 per cent. solution of citric acid, containing 1 per cent. formal, is added 0.5 c.cm. of a 1 in 2 dilution of the serum to be tested, followed by 0.7 c.cm. of a test solution containing 1 gram of iodine and 2 grams of potassium iodide in 210 c.cm. of distilled water. A precipitate appears which rapidly dissolves in the case of a normal serum, but which persists—even after shaking—in the case of a cancerous serum. If the serum clarifies, 0.2 c.cm. of the iodine solution is added; this gives rise to a fresh precipitate, which remains solely in the presence of a cancerous serum. To obtain a persistent precipitate with a normal serum it is necessary to use at least 1 c.cm. of the iodine solution. Applying this test to 52 cases of cancer he obtained 39 positive reactions, 5 doubtful ones, and 8 negative ones. With 107 control serums sent up for the purpose of a Wassermann reaction, 1 positive and 1 doubtful reaction were obtained; information as to the condition of the individuals from which they were derived was not available. In comparing the results obtained by this method with those furnished by a study of the haemolytic and anti-tryptic titres, it was found that the majority of the serums which gave a positive Botelho test had only a low quantum of haemolysis—for sheep red cells—while, with few exceptions, their antitryptic content was high. He concludes that it would be well in doubtful cases to perform both the Botelho and the antitryptic tests, as the correlation between them appears to be fairly close.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

### 109. The Causes and Prognosis of Tuberculosis in Infancy.

L. RIBAUDEAU-DUMAS (*Journ. de Méd. et de Chir. Prat.*, December 25th, 1922, p. 885) gives a brief review of our present knowledge of the factors which lead to the development of tuberculosis in infancy. Apparently he considers the question merely from the point of view of infection with the human type of tubercle bacillus, omitting all reference to the bovine type, and not even mentioning the possibility of milk infection. He finds that in a large proportion of cases it is possible to trace the source of infection usually to one of the family. The mother is more dangerous than the father; the mortality of children with a phthisical mother is 33.5 per cent., while that of children with a phthisical father is only 14.7 per cent. After being infected the children show an incubation period which can be roughly given as thirty days; this may be determined either by the careful observation of the first signs of disease or by the appearance of a positive von Pirquet reaction, following exposure to a known infectious individual. The danger of tuberculosis to the child seems to depend largely on the period at which infection occurs: thus infants infected under 3 months of age almost invariably die; under 1 year the mortality may be given as 86 per cent.; from 1 to 2 years as 10.8 per cent.; and from 2 to 3 years as 2.7 per cent. Whether the lesion remains latent or whether it advances rapidly has been referred to the heaviness of the infection; the more bacilli there are taken in the greater is the danger of active spread. But on this point the evidence is confusing. There is much to suggest that a single big dose of virulent material is more harmful than repeated doses of smaller quantities. The latter may have an immunizing effect, as has been demonstrated in animals. If this be so, it might be justifiable to allow children of tuberculous patients to be reared at home, but as one has no control over the actual doses they receive it is obvious that the procedure is at best highly unscientific. It has been shown that if such children are separated from their parents shortly after birth and brought up under hygienic conditions their mortality is only 2.7 per cent., of which a half can be attributed solely to tuberculosis. The author's thesis, therefore, is that the greatest care should be taken during pregnancy to ascertain the extent of the danger to which the newborn infant will be submitted, and that if this danger is sufficiently great steps should be taken to ensure the removal of the child, so as to permit of its upbringing in healthy surroundings.

### 110. Prophylaxis of Measles by the Serum of Convalescents.

L. ZIMMERMANN (*Deut. med. Woch.*, December 22nd, 1922, p. 1701) is very favourably impressed by his experience in aborting measles by injecting into exposed children serum obtained from convalescents. In a children's hospital prophylactic injections were given to 32 children after the admission of a child who developed measles on the day after he reached hospital. This child was at once isolated. There were 4 cases in which the prophylactic injection of serum could not be considered suitable for testing its claims as it was given too late. Of the remaining 28 children given prophylactic injections only 2 developed measles. No ill effects from the injections were observed. The author agrees with Degkwitz that the convalescent serum should be obtained from children over the age of 3 years, who show no sign of syphilis or tuberculosis, who are in other respects healthy, and who are in the seventh to the tenth day of convalescence from uncomplicated measles. To every 10 c.cm. of serum one drop of carbolic acid should be added, and it is best to give a mixture of three different serums. Up to the sixth or seventh day of the incubation period the injection can almost invariably be relied on to abort the disease. This procedure is particularly useful in children's hospitals housing cachectic and tuberculous children, who must be protected at all costs from measles.

### 111. The Use of Adrenaline in the Stokes-Adams Syndrome.

H. FEIL (*Journ. Amer. Med. Assoc.*, January 6th, 1923, p. 26) presents clinical evidence that the subcutaneous injection of adrenaline in cases of partial heart-block may overcome the delay in conduction, restoring it to normal; in 2-1 block the

mechanism may be restored to normal or dissociation may follow. In complete block normal sequence may result or no change occur. In the latter event acceleration of the auricles and the ventricles usually results. In cases of frequently recurring attacks of the Stokes-Adams syndrome the attacks of syncope may be abolished. The effect of the subcutaneous injection may be said to last about twelve hours. The dose administered to adults of average weight is from 0.3 to 0.6 c.cm. of a 1 in 1,000 solution, injected subcutaneously. The danger in administration of adrenaline to patients with a considerable degree of arterio-sclerosis or with hypertension (and in many cases of complete heart-block there is an elevated systolic maximum pressure) must be weighed against the dangers and the discomfort of the syncopal attacks. Doubtless adrenaline therapy is justified in the treatment of patients with frequently recurring syncopal attacks, in view of the usual urgency of the patient's condition and because of the satisfactory results obtained in the reported cases. In no event should adrenaline be administered intravenously. Injected subcutaneously it offers relief from Stokes-Adams attacks. The supposition is that it stimulates the new centre of impulse formation in complete heart-block by way of the sympathetic endings. There appears to be little or no danger in the use of adrenaline in this type of case when it is properly administered. Intravenous injection results in greater concentration of adrenaline in the blood stream, and it is this factor that is probably responsible for the grave reactions reported in the literature.

### 112. The Association of Enteric and Malta Fever.

L. AURICCHIO (*La Pediatria*, December 15th, 1922, p. 1155) records five cases of the association of various forms of enteric with Malta fever in patients aged 21, 22, 7, 56, and 8 years respectively. The symptoms in all the cases corresponded to the clinical picture of the association of the two diseases described by Maggiore and Tupputi. The typhoid infection dominated the scene at first. In two cases the diagnosis of typhoid fever was made by the agglutination test, and later, when the symptoms of typhoid subsided, and the temperature assumed the characteristic features of Malta fever, the blood culture showed the presence of the melitococcus. In the third case the serum agglutination test was positive for the typhoid bacillus only after the disease had lasted ten days, but when the fever persisted in spite of repeated injections of antityphoid vaccine a blood culture was made on the twenty-third day and showed the melitococcus. The agglutination test was also positive for this organism. In another case, although there was a history of only eight days' illness, Malta fever infection had probably been present much longer. The agglutination test in this case was positive, both for the paratyphoid B bacillus and the melitococcus; the paratyphoid B bacillus was found in the blood and the melitococcus in the urine. Treatment with antityphoid vaccine acted almost exclusively on the typhoid symptoms, and had little or no effect on the course of Malta fever, which had to be treated with a specific vaccine.

### 113. Arterial Hypertension.

E. HARTWIG (*Zentralbl. f. inn. Med.*, December 23rd, 1922, p. 825) mentions the diseases which may cause high blood pressure, and discusses the cases of high blood pressure in elderly people which are not associated with disease of the kidneys or heart. This last form is described as essential hypertension; it is regarded by some authors as a sign of commencing kidney affection, since in course of time in some of these cases albuminuria is detected. But the author shares the view of those who consider the subsequent kidney condition to be the result of the high blood pressure. The condition is caused by primary vascular constriction, and as a result of the high blood pressure both arterio-sclerosis and granular kidney may develop. Chronic abuse of tobacco is very often the exciting cause of the high blood pressure. Assuming these views to be correct, the author points out the importance of the treatment of high arterial tension. In addition to physical, dietetic, and psychical treatment, the employment of vaso-dilators is indicated, and of these the author thinks yohimbine deserves special mention. It dilates the peripheral arterial system and neutralizes vascular spasm of sympathetic origin. Through the use of this drug the development of arterio-sclerosis and granular kidney is thought to be prevented or at least postponed. The author states that his experience confirms this view.



## 114. Cardiac Murmurs in Young Children.

G. BLECKMANN (*Paris méd.*, December 30th, 1922, p. 588) remarks that in young children the diagnosis of a murmur due to a valvular lesion or to an abnormal communication between the various cavities of the heart from a non-organic intra- or extra-cardiac murmur may be a matter of great difficulty. In the child, as in the adult, no criterion can be derived from auscultation. As regards radiological examination, although the orthodiagram may not reveal the characteristic deformities of congenital heart disease, the absence of radiological signs does not absolutely negative the existence of congenital heart disease. Moreover, this method of examination is particularly difficult in the infant, and is therefore not generally employed. Time is the only real diagnostic criterion. If the murmur becomes permanent it is the sign of an organic lesion, while if it disappears within a year it may be regarded as not organic.

## 115. Treatment of Epidemic Cerebro-spinal Meningitis.

CIOPPA (*Rif. Med.*, January 1st, 1923, p. 7) gives his experiences in a small epidemic of cerebro-spinal fever. He lays stress on the importance of looking out for carriers and for evidence of adenoids and chronic naso-pharyngeal catarrh. Bad hygienic conditions, whether of the dwelling place or the person, should be corrected where possible and attempts made to establish health. Unfavourable conditions causing naso-pharyngeal catarrh. Intra-spinal serotherapy in big doses (30 to 40 c.cm.) proved efficacious, as 9 out of 10 cases reported were cured. Inhaling the vapour of iodine developed from a 1 per cent. ethereal solution, and painting the nasopharynx with iodine in glycerin (3 to 5 per cent.), were found useful, especially in carriers.

## 116. Radiology in Pulmonary Disease.

COVA (*Il Morgagni*, Nos. 8 and 9, An. 64, Part 1), writing as a physician and not as a radiologist, discusses the value of radiology in lung disease. In the initial stage of pulmonary tuberculosis he says that somatic examination gives more trustworthy and earlier results than radiology. In affections of the hilus glands radiology may sometimes be useful, but in many cases it is unreliable and inconstant. In diagnosing the site and extension of pulmonary disease radiology is valuable, and for the clinical form of pulmonary tuberculosis not only useful but essential. Even in acute types it may give much help. As regards the prognosis and control of the results of treatment radiology has not so far given important data. In the complications of tuberculosis and in pleuritic types it is useful as a control. In the treatment by artificial pneumothorax or certain surgical measures it is indispensable. In the differential diagnosis of other pulmonary affections radiology may be extremely useful.

## 117. Large Doses of Trypaflavine in Endocarditis.

H. MARK and L. OLESKER (*Deut. med. Woch.*, January 5th, 1923, p. 17) have achieved dramatic successes in the treatment of endocarditis with large doses of trypaflavine. Their conversion to a heroic dosage was due to a mistake. Intending to give 0.2 gram by intravenous injection, they gave ten times this dose by mistake. Nausea, vomiting, and a sense of heat in the head began even before the injection was completed, and after about half an hour intense yellow discoloration of the skin appeared, but the pulse rate was normal, and the general condition not disturbed. The temperature, which was 102.5° F. on the day of the injection, fell in the evening of the following day to normal, and when the patient was discharged from hospital less than a month later she felt perfectly well. After recording another case, in which three injections, each of 0.4 gram, were given, and the temperature was reduced to normal, the authors suggest that a suitable dosage is 0.01 gram per kilogram of body weight. They dissolve the drug in 20 c.cm. of distilled water, injecting it very slowly, and taking great care not to let any escape into the subcutaneous tissues for fear of necrosis.

## 118. Vitamins in Ice-cream.

VITAMIN A was present in the typical samples of ice-cream examined by A. H. SMITH (*Journ. Amer. Med. Assoc.*, December 30th, 1922), in such concentration that he concludes that no noteworthy alteration in its potency is caused by pasteurizing or freezing. Normal growth was induced by 1 gram of the ice-cream, and ophthalmia was cured by 0.25 gram containing 25 mg. of butter fat. The vitamin B of the ice-cream can be accounted for by the equivalent quantity of milk used therein. Freezing had no effect on the vitamin B in the ice-cream used. The ice-cream, which was made from pasteurized products, contained no significant quantity of vitamin C.

## SURGERY.

## 119. Hirschsprung's Disease.

R. BENSANDE and P. HILLEMANN (*Ann. de méd.*, December, 1922, p. 425) say that Hirschsprung's disease, a case of which was recently shown to the Cardiff Medical Society by Mr. Alwyn Smith (*BRITISH MEDICAL JOURNAL*, 1922, vol. ii, p. 1268), is more common than is usually described. It is found more often in boys than girls, in men than women, and in infants than in adults. Two theories have been advanced to explain the nature of the disease—the first by Hirschsprung, who considered it an idiopathic congenital condition analogous to other hypertrophies, such as are found in the liver, spleen, breast, or bladder; the second regards it as a secondary condition due to some obstruction to the passage of the faeces. The chief symptoms are obstinate constipation, distension of the abdomen, and the presence of a tumour with visible peristalsis. The course of the disease is essentially chronic, with acute exacerbations of faecal retention and violent peristalsis, ending in the passage of the accumulated faecal matter. Occasionally the condition undergoes spontaneous cure; more often the patient goes progressively downhill and succumbs to cachexia. The prognosis is bad, and the younger the child the worse the outlook. In the child the diagnosis is not difficult, but such conditions as tuberculous peritonitis and congenital occlusion of the intestine must be considered. The treatment should be medical in the first instance: a diet poor in indigestible residue, lavage of the intestine, and mild laxatives, whilst flatus must be evacuated by a rectal tube. If the condition does not improve, one of two operations must be carried out. Resection of the sigmoid, which is easy, quick, and safe, and has little risk attached to it, or colectomy, which is a long and difficult operation, but ensures a cure. The latter is the operation of choice, and has a lower mortality when carried out in two stages.

## 120. Chronic Duodenal Stenosis.

W. KOENNECKE and H. MEYER (*Deut. Zeit. f. Chir.*, November, 1922, p. 179) describe three cases of chronic duodenal stasis which have come under their observation since August, 1921. All were adults (one male and two female), who complained of pain in the upper abdomen, coming on half an hour to an hour after food, and of eructations and occasional vomiting. In each case radiography showed rapid passage of the opaque meal into a dilated duodenum, marked peristalsis of duodenum, with to-and-fro movement of contents and holding up of duodenal contents for about twenty minutes before gradual passage into the jejunum. In one case it was noted that these phenomena were less pronounced when the patient was placed in the prone position and disappeared in the knee-elbow position. (Reference is made to a case described by Zoepffel, where the appearances of duodenal stenosis vanished in the prone and knee-elbow positions.) Operation was performed in two cases: in one of these duodeno-jejunal anastomosis gave relief; in the other, although laparotomy was performed, there is no account of the procedure adopted. It was noted in this case that, on lifting up the root of the mesentery, the distended duodenum collapsed. Diagnosis is made by x rays, the contrast with the normal condition, in which the opaque meal passes along the duodenum very quickly, being marked. The authors have made a series of experiments on dogs, in which the duodenum was constricted at its terminal end by a band of fascia sufficiently to reduce the lumen to the diameter of a lead pencil. Several weeks later radiography has revealed a state of affairs very similar to that observed in the above cases—namely, duodenal peristalsis and holding up of contents for a quarter of an hour. In two of these experiments the gastric branches of the vagus were divided, in one at operation, in the other some weeks later; no marked differences in the phenomena resulted. The experiments proved that a partial obstruction at the duodeno-jejunal flexure can cause the appearances observed in the cases under discussion, and the authors conclude that the cause of chronic duodenal stenosis is a mechanical compression, probably exercised by the root of the mesentery or the superior mesenteric artery, and secondary to loss of support or changes in abdominal pressure or in the position of other organs. Reference is made to the work of Wilkie and others in this country on the same subject.

## 121. Treatment of Perforated Gastric and Duodenal Ulcer.

E. R. SCHMIDT (*Acta Chirurgica Scandinavica*, December 22nd, 1922, p. 314) considers that gastro-enterostomy is unnecessary in the treatment of a perforated ulcer, and he advocates excision of the ulcer and the establishment of a Witzel fistula through which the patient can be fed and



irrigated very soon after the operation. The material on which these views are based consists of 44 cases of perforation treated in hospital in the period 1908-21. There were 11 immediate deaths and 2 late deaths. Twenty-two cases were subsequently investigated, and all but one were found to be still fit for work. In no case did a simple ulcer subsequently show signs of malignant degeneration. In 39 cases the abdomen was closed without drainage, and in 42 the abdominal cavity was irrigated with normal saline solution at 40° C. The author is of the opinion that when peritonitis is more or less generalized, systematic mechanical cleansing should be effected by irrigation. It was notable that in 5 of the 44 cases there was no history of gastric or duodenal symptoms before the perforation occurred. The author's objection to gastro-enterostomy is partly based on the principle that operative interference should be strictly limited to absolutely essential measures.

## 122. Hypertrophied Anal Papillae.

C. J. DRUECK (*New York Med. Journ. and Med. Record*, October 18th, 1922, p. 448) discusses the etiology, symptoms, and treatment of hypertrophied anal papillae (papillitis). In the intermediate zone at the anus, where the transition from mucous membrane to external skin occurs, from ten to fourteen dermoid papillae exist, and it is these which hypertrophy as the result of traumatism or irritation, so that at each evacuation they become engorged and are dragged down to extrude externally. Symptomatically they cause a feeling of fullness and tickling within the anal canal, and a sensation of incomplete evacuation. When, with the subsidence of their engorgement, they recede a sensation as though worms were being voided or were crawling on the skin about the anus is produced, with a consciousness of the anal sphincter being unduly contracted, and such symptoms last from a few minutes to an hour or even become constant. Occasionally the sphincter may be so spasmodically contracted as to prevent complete evacuation without enema, the administration of which is painful. There may be accompanying symptoms of lumbar or sacral aching.

If untreated the papilla or, from the venous congestion, consists in amputation under local anaesthesia, and when only a few papillae require removal the infiltration may be confined to the diseased area, the needle being inserted into the mucous membrane at the base of the tumour and gradually advanced towards the apex while injecting, ten drops being usually sufficient. The papilla is then drawn down and cut off well below its base and the wound is not sutured, careful cleansing after each defaecation and a warm sitz bath each day being all the after-treatment necessary. Notes of a case are given—a woman, aged 45, in whom five hypertrophied papillae and one haemorrhoid were removed under local anaesthesia, with complete relief to all distressing symptoms.

## 123. Endoscopic Examination in Young Children.

F. LE MAÎTRE and A. AUBIN (*Arch. Internat. de laryngol., otol., rhinol.*, September-October, 1922, p. 968) emphasize the importance of endoscopic examination in young children. Endoscopy of the upper respiratory tracts and the oesophagus is easy at this age owing to the absence of teeth and the high position of the larynx. The narrowness of the pharynx and larynx causes no obstacle to the progress of the tube when a view is obtained of the landmarks, the epiglottis in particular. It is not a dangerous procedure, and can be carried out without a general or local anaesthetic. The indications for its employment are the same in the child as in the adult, and it is a method of diagnosis and treatment which should be more generally recognized. The authors have adopted this procedure in a case of a cyst of the epiglottis which was punctured through the tube, in the extraction of foreign bodies from the pharynx, and in cases of congenital stridor in young children.

## 124. Congenital Osteo-sclerosis.

R. K. GHORNLEY (*Johns Hopkins Hosp. Bull.*, December, 1922, p. 444) reports a case of congenital osteo-sclerosis which seems unique in its characteristics. The patient, a male aged 8 years, complained of pain in his left hip and a limp. The left foot was held rotated outwards and atrophy of the calf and leg was present on this side. There was apparent shortening of 1/2 cm. and some limitation of movement of the left hip. The condition suggested a beginning epiphyseal separation of the head of the left femur. Radiograms showed a curious dense appearance of the bones of the pelvis; this condition was found throughout the skeleton. The vertebrae showed marked density at either pole and thickening of the cortex of the long bones. The skull was thicker than normal. Radiographs of the parents showed the mother's bones to be normal, but that practically the same condition existed in the father as in the child. These changes are well illustrated in

a series of radiograms which are reproduced with the paper. A search through the literature has failed to locate any similar cases in the living person. Several cases have been described at autopsy, and a report of these cases is given. The general view is that the sclerosis is secondary to an irritation which goes with a morbid process in the blood. In this case the condition appeared to be definitely inherited and not related to any demonstrable metabolic disturbance, except possibly some increase in the blood phosphorus. It is possible that secondary blood changes may come as a coincidence, or as a failure of the blood-forming mechanism to respond to the excessive demands placed upon it.

## 125. Pulmonary Fat Embolism.

G. E. SUTTON (*Annals of Surgery*, November, 1922, p. 581) states that pulmonary fat embolism has most often been noted in cases of fracture. Fat embolism is a potential factor in the cause of death following any operation in which fatty tissue has been injured. In order to permit the entrance of increased amounts of fat into the blood there must be injury to the fatty tissue and a break in the continuity of the blood stream. Partial haemostasis is of importance, likewise mobility of the injured part. In fatal cases haematomas filled with fat droplets have been found at necropsy. Probably mobility of the injured tissue is the most important factor, as shown in the war cases of fracture which were transported long distances and suffered from pulmonary fat embolism. The symptoms may be pulmonary or cerebral. The respiration is increased in frequency and shallow; dyspnoea develops, followed by cough and cyanosis; blood-stained expectoration may be seen, and the pulse is increased and the temperature raised. Cerebral symptoms are ushered in with headache, restlessness, and delirium; convulsions or paralysis may occur. Pulmonary oedema is found on examination and fat droplets in the sputum. Lipuria is detected if the urine is held up to the light. The involvement of the nervous system is a later phase of pulmonary fat embolism. As to treatment, injured limbs should be kept at rest. If transportation is necessary all fractures should be fixed on an extension splint. Complete haemostasis is important where fatty tissue has been injured, and the wound drained at its dependent point. Active treatment has not met with much success. The injection of normal saline into the veins is recommended, and also of a 2 per cent. solution of sodium bicarbonate. Stimulants and heat should be applied to keep the blood flowing at as high a rate as can be maintained.

## OBSTETRICS AND GYNAECOLOGY.

### 126. Obstetric Shock.

ACCORDING to A. TURENNE (*Annales de la Faculté de Médecine, Monte Video*, October, 1922, p. 409), Wallich in 1908 was the first to draw a definite clinical picture of obstetric shock. From a review of the cases described in the literature and from a number of personal cases the author concludes that obstetric shock is a term which has been applied to a number of conditions of widely divergent etiology and pathology. In one group the condition of shock occurs during or after labour as a consequence of some morbid maternal condition which may be extragenital (for example, acute dilatation of the stomach, mitral stenosis, peritonitis, abrupt release of a Momburg's ligature, minute pulmonary fat embolus, among some of recorded causative factors), or may be located in the uterus or adnexa—for example, small incomplete uterine tears demonstrable only at autopsy or grosser lesions with grave haemorrhage. In a second group there have been antecedent pathological conditions the timely recognition of which might have pointed the way of prophylaxis—acidosis, hyperemesis, or other toxæmic condition of pregnancy. In a third group no etiological factor is apparent, at any rate in the absence of autopsy. Such cases of shock may be reflexly produced by afferent stimuli acting on over-sensitive nerve centres, and are comparable with the cases of sudden death or acute shock which have occurred after simple dilatation of the cervix or skillful introduction of the uterine curette. Obstetric shock and grave obstetric haemorrhage are both characterized by pallor, cold and moist skin, small pulse, and subnormal temperature; the frequent advent of shock after haemorrhage detracts somewhat from the value of the differential diagnostic signs as described by Berkeley and Bonney, but in general Turenne holds it true that in shock the superficial veins are full, the patient is quiet and indifferent, respiration is rapid and superficial, and there is no sensation of giddiness. With regard to treatment of shock cardiac stimulants are ineffective, if not prejudicial, and in general hypnotics are more useful—morphine in adequate doses, nitrous oxide, and possibly ether, but not chloroform on account of its toxic action on the liver.



**127. Radium Treatment of Inoperable Cancer of the Cervix.**

ACCORDING to C. JACOBS (*Gynecol. et Obstet.*, 1922, vi, 5, p. 354), palliative radium treatment of inoperable cervical carcinoma, as compared with palliative operative treatment, is fraught with considerably less risk and gives results which are both more satisfactory immediately and more lasting. In the most advanced growths and in extensive and apparently hopeless recurrences after hysterectomy the author has found radium therapy to be followed by cessation of pain, disappearance for a time of haemorrhage and discharge, notable improvement in general health, and survival of the patient in comparative comfort for long periods. The effect of the applications is the formation in the cervical mucosa of an adherent scar, the separation of which takes about eleven weeks; in addition to a caustic effect on the cells of the mucous membrane radium produces a quasi-fibrinous, vascular, and perivascular degeneration. Jacobs employs relatively small amounts of radium—for example, 75 mg. of the bromide for twenty-four hours—and repeats the applications on one or more occasions with any return of the haemorrhage; the treatment is preceded during several days by daily antiseptic douches, followed by tamponnage with gauze soaked in tincture of iodine. Clinical details are given of eight cases, in one of which symptoms of the malady were still in abeyance thirteen months after application of 50 mg. of radium bromide for the recurrence of a growth after vaginal hysterectomy.

**128 Myoma of the Cervix.**

IN the experience of SCHEFFZEK (*Zentralbl. f. Gynäk.*, November 4th, 1922, p. 1776), who records six illustrative cases, myoma of the cervix uteri not infrequently evades diagnosis, being confused with adnexal tumour or with corporeal myoma developing within the broad ligament. Cervical myoma shows the most varied anatomical relations, according as its greater growth is towards or away from the endometrium, and the anterior, posterior, or lateral regions are the site of its commencement. Compression of the bladder and other viscera may lead at an early stage to pain and other symptoms, and the cervical canal may show lengthening, displacement, and considerable distortion. The external os in such cases is of crescentic form and accessible with difficulty from the vagina, through which the tumour may be palpable below the level of the os. At an early stage considerable upward displacement of the peritoneum occurs, so that in one case it was found impossible to complete by the vaginal route a hysterectomy already begun. To shell out a cervical myoma which has developed in the sub-peritoneal direction is impossible (although there is usually a well defined capsule) on account of the complicated wound-bed which would be left behind. X-radiation is contra-indicated, and treatment consists in total hysterectomy after laparotomy, special care being taken to avoid wounding the bladder. For cervical myoma constituting an obstruction to labour in the pregnant uterus the author recommends Caesarean section, followed after a considerable interval by operation for the myoma.

**PATHOLOGY.****129. Infection and Immunity in Anthrax.**

L. BALTEANO (*Ann. de l'Institut Pasteur*, November, 1922, p. 805) has been successful in confirming Besredka's work on the mode of infection of rabbits and guinea-pigs with anthrax. These animals, he has shown, are refractory to all paths of infection except that of the skin. So long as proper care be taken not to contaminate the skin, virulent anthrax bacilli may be injected into any part of the body without any deleterious effect. In the present communication experiments are recorded in which twenty-four-hour broth or agar cultures were inoculated intravenously, intraperitoneally, intrapleurally, and subcutaneously into rabbits; in only one case—that of a rabbit in which three attempts were made before successful introduction of the emulsion into a vein—did fatal anthrax ensue. Two control rabbits, however, which were infected, one by rubbing the culture on the freshly shaven skin, and the other by intradermal injection, each died after four days with positive blood cultures. Similarly, guinea-pigs submitted to intracardiac, intraperitoneal, and subcutaneous inoculations with young bacilli failed to develop anthrax, while those inoculated on or into the skin died of the disease after three days. If the skin alone be susceptible to infection, it is reasonable to suppose that immunity to anthrax may be related to the functions of this structure. It is known that Pasteur's method of vaccination is comparatively valueless for small animals, however successful it may be in the case of larger ones: To immunize rabbits and guinea-pigs Besredka directed his attention to the skin, and found that if the organisms were injected into the skin,

instead of intraperitoneally or subcutaneously, it was quite easy to obtain complete protection after the usual interval had been allowed to elapse before the critical tests were made. The author here confirms this in respect to guinea-pigs. The first vaccine was rubbed into the skin of the abdominal wall by means of a cotton tampon; the second vaccine was similarly applied six or seven days later, and after eighteen days young living bacilli were employed. Afterwards virulent bacilli were injected in increasing doses into different parts of the body, without precautions being taken to protect the skin; both the original strain and three other virulent strains were employed. The protected guinea-pigs remained perfectly well, while the controls died in three days of anthrax septicaemia.

**130. The Colloidal Gold Reaction in Acute Poliomyelitis.**

J. C. REGAN, A. LITVAK, and C. REGAN (*Amer. Journ. Dis. of Children*, January, 1923, p. 76) made an examination of 132 cerebro-spinal fluids taken from 42 cases of acute poliomyelitis admitted to hospital between June and November, 1921. In every instance during the acute stage of the disease a positive reaction was obtained with colloidal gold solution. It was found that the average curve was highest during the first and second weeks, after which it gradually declined, to become normal in 65 per cent. of the cases by the eighth week. The reduction occurred constantly in the zone of low dilutions; in 88 per cent. of the fluids examined the reaction was present between the dilutions of 1 in 10 to 1 in 320, though in fourteen fluids it extended up to the seventh dilution—that is, 1 in 640. Those cases in which a normal reduction occurred early were affected with a mild type of the disease, while those in which the curve remained elevated beyond the eighth week were generally victims of the more severe forms, with extensive and slowly improving paralysis and with moderate or marked neuritis. There was nothing characteristic in the nature of the reaction seen in cases which proved fatal, so that the test was of no value in the prognosis of a fatal issue. No correlation could be established between the amount of globulin in the fluid and the height of the colloidal gold curve; nor was there any definite relation between the latter and the number of cells per cubic millimetre. The use of the test in the differential diagnosis of poliomyelitis is discussed, and the conclusion reached that, taken in conjunction with the history, symptoms, and other laboratory data, it is one of the most valuable tests we have for the recognition of the disease.

**131. Prognostic Value of the Wassermann Reaction in Tabes.**

T. E. HESS-THAYSEN (*Ugeskrift for Læger*, November 23rd, 1922, p. 1617) has investigated the behaviour of the Wassermann reaction in the blood and cerebro-spinal fluid of 111 cases of tabes, represented by 54 men and 57 women. Among them were as many as 18 cases of oligo-symptomatic abortive tabes, the chief symptom in most of these cases being sluggishness of the ocular reflexes. The author comes to the conclusion that, as a rule, the prognosis is practically unaffected by the Wassermann reaction in the blood. Even when a positive reaction has been replaced by a negative it does not follow that the prognosis is improved. Nor is the prognosis appreciably better for patients whose tabes first appears when the reaction is negative than for patients whose reaction is positive both early and late in the disease. Syphilitic complications of tabes were indeed somewhat more frequent when the reaction was positive than when it was negative, but the difference was not great. The prognosis for mono- or oligo-symptomatic tabes is comparatively good, particularly when the Wassermann reaction in the cerebro-spinal fluid is negative. On the whole, the serological evidence must be regarded as disappointing from the prognostic point of view.

**132. The Blood in the Aged.**

TERZANI (*Rif. Med.*, September 11th, 1922, p. 871) has examined the blood in old people with especial reference to the haemoglobin content and red corpuscles, as in these points authors differ considerably. The ages varied from 60 to 99, and blood diseases were excluded. In men the author found that the haemoglobin varied between 0.45 and 0.84, and in women between 0.35 and 0.80 (Fleisch apparatus). As regards the red corpuscles, a slight hyperglobulia was noted in men (in one old man of 99 it reached 6,190,000). In women this hyperglobulia was rather more marked. Poikilocytosis was seldom seen, anisocytosis was rather more frequent. There seemed no constant relation between hyperglobulia and high blood pressure. Probably this hyperglobulia in old people is not a primary fact, but secondary—a reaction against the diminishing function of the haematopoietic organs. The contrary state of hypochromæmia and hypoglobulia is of bad augury.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

### 133. The Relation of Chorea to Rheumatism.

R. NORDGREN (*Acta Paediatrica*, December 16th, 1922, p. 159) has made a statistical study of the incidence of rheumatic lesions and of chorea in children's hospitals in Stockholm between October 1st, 1908, and the end of 1921. As a table shows, the incidence of the two was remarkably uniform, and the author quotes Roger as saying that chorea, rheumatism, and endocarditis are three names for one and the same condition. Among the 345 cases of chorea there were 26 with a history of rheumatic fever, with or without valvular lesions, 161 with valvular lesions which could be traced to no other disease, and 6 with a history of endocarditis during residence in hospital. Thus 193, or more than half, showed definite signs of rheumatism. Other possible causes of the chorea were seldom found; there were only 6 cases with a history of scarlatina, and 6 others with a history of psychic shock. It was significant that during the epidemic of influenza in 1918 and 1919 there were very few cases treated in hospital. With regard to the sex distribution of chorea and other rheumatic affections, it was found that there were only 125 boys to 218 girls suffering from chorea. In the case of other rheumatic affections, however, the sex incidence was almost equal; there were 177 boys to 190 girls. The age for which chorea showed the greatest preference was between 8 and 10, and there were as many as 43 boys and 77 girls within this age limit.

### 134. Treatment of Disseminated Sclerosis.

L. MANN (*Klinische Wochenschrift*, December 23rd, 1922, p. 2573) records the results in the treatment of eight cases of disseminated sclerosis with tetraphan, a derivative of atophan. He points out the great difficulty in estimating the value of drug treatment in disseminated sclerosis owing to the spontaneous improvement which often occurs, and to the occasional occurrence of periods in which the disease is for the time latent. Also we have no means of definitely expressing and measuring the degree of many of the prominent symptoms. Notwithstanding these difficulties the author records eight cases in which improvement followed treatment with tetraphan. In three cases the results were prompt and marked, and consisted chiefly in a great diminution of the spastic paraplegia and great improvement in the gait. In five other cases similar but less striking improvement followed the use of the drug. In all of the cases the spasticity of the gait was diminished and walking became less difficult.

### 135. The Differential Diagnosis of Gastric Ulcer.

TORRACA (*Rif. Med.*, December 11th, 1922, p. 1190), discussing the differential diagnosis of gastric and duodenal ulcers, says that in the early stages the clinical signs and symptoms are for the most part common to either localization; continuous and progressive accentuation of symptoms favours the diagnosis of pyloric ulcer, whilst inequality and variability are more like duodenal or small curvature ulcer. Serial radiography is particularly useful in duodenal ulcer. The commonest site for ulcer is the smaller curvature, then the pylorus and duodenal bulb, and lastly, the second part of the duodenum. In 9 per cent. the ulcers are multiple. Haematemesis is most frequent in small curvature, melaena in duodenal, and stenosis in pyloric ulcer. In ulcer of the small curvature, radiology shows permanent hollowing of the greater curvature, diverticula of the small, mediogastric stenosis and *enroulement* of the smaller curvature. In pyloric ulcer the most certain sign is antiperistalsis. In duodenal ulcer diverticula and hollowing are the most usual signs. Pyloric ulcers usually have a sudden onset, slight tendency to haemorrhage, augmented stomach contents, late pain, and indirect radiographic signs.

### 136. The Therapeutic Properties of Luminal.

J. RIISING (*Ugeskrift for Læger*, November 30th, 1922, p. 1671) is greatly impressed by the hypnotic and analgesic action of luminal, the chief objection to which is its cost. The dose is 10 cg., and it is the only known remedy, he states, that invariably cures hiccups. But it is in epilepsy that its sphere of usefulness is greatest. Given in doses of 10 cg. two or three times a day it arrests the fits completely or renders them less severe and frequent. In some cases the fits are confined to the night after the administration of luminal,

which must not be discontinued suddenly for fear of provoking status epilepticus. The action of the drug is merely symptomatic, and while it is being gradually discontinued in epilepsy it is advisable to give bromides. There are no contraindications, and with the ordinary dosage no signs of poisoning have been observed. Eclampsia, tetanus, and delirium tremens are some of the many conditions which react satisfactorily to the drug.

### 137. Artificial Pneumothorax.

N. BARLOW (*New York Med. Journ. and Med. Record*, January 3rd, 1923, p. 9) discusses some principles of immunology applied to treatment of tuberculosis by artificial pneumothorax as a means of obtaining much more permanent benefit than the present temporary success obtained by artificial pneumothorax alone, which latter must be regarded more as an adjunct to treatment than as a treatment in itself. Since the clinical symptoms of tuberculosis are suppressed after pneumothorax before any real progress towards cure occurs they are apt to be misleading as guides to treatment, and, since the signs of activity both on the compressed side and in the compensating lung may not reappear until the disease has made more progress than would be required to cause marked signs in an ordinary patient, it is essential that such treatment should be continued as would be indicated were the physical signs and symptoms not masked by the pneumothorax. From the experience already gained such principles of treatment produce a greatly increased proportion of permanent benefit from artificial pneumothorax, so that while the lung is re-expanding the patient should be closely watched and tested, and placed at rest upon the slightest indications of toxæmia, such as nervousness, cardiac irritability, anorexia, insomnia.

### 138. The Heart in Influenza.

S. MENTI (*Zentralbl. f. inn. Med.*, January 6th, 1923, p. 10), from his observations on 106 cases of influenza, came to the conclusion that this disease has a definitely injurious action upon the heart. Circulatory disturbances developed which had hitherto been latent, or in the case of valvular defect had been well compensated, and caused no symptoms. Diseases of the heart and vessels which had already caused some symptoms before the attack of influenza underwent a considerable aggravation. In a second group showing cardiac disturbance without any anatomical lesion a general asthenia was noted. In both groups there was a disturbance of pulse rhythm which Menti attributes to a change in the conductivity of the heart muscle similar to that which occurs in convalescence from diphtheria. The symptoms in both groups were very slow in disappearing, and ordinary treatment, especially digitalis, failed, so that Menti came to the conclusion that cases which did not react promptly to digitalis were due to influenza. If digitalis had to be given at all it was administered only in combination with quinine, caffeine, theobromine, belladonna, etc.

### 139. Postural Treatment for Congestion of the Lungs.

E. RAUTENBERG (*Deut. med. Woch.*, January 5th, 1923, p. 1) notes that the rational treatment for cases of drowning is to place the body in such a position that water will run out of the lungs. Why, he asks, should not the same principles apply to the patient who is suffering from pneumonia or bronchitis and is drowning in his own bronchial secretion? Even as a prophylactic measure it would be wise in cases of pneumonia to tip up the foot of the bed 20 to 30 cm. and to turn the patient on to his abdomen. The author has had three years' experience of this simple measure, and he has come to the conclusion that it does not harm even very ill patients, and on the other hand it is positively life-saving in many cases. In one case as much as 500 c.cm. of fluid ran out of the patient's mouth and nose in the course of two hours. The result was great improvement in the respiration, which became slower and deeper. The author records in detail the case of a woman, aged 24, suffering from influenzal pneumonia with great dyspnoea, cyanosis, and weakness of the heart. The tracheal râles disappeared after she was turned over on to the abdomen, and she ultimately recovered, although the prognosis had been exceptionally bad. When the patient is unconscious great care must, of course, be taken to prevent the mouth and nose being obstructed by the pillow on which the head rests.



## 140. Immunization against Measles.

GALLI (*La Pediatria*, October 1st, 1922, p. 898), struck by the fact that 5 children exposed to measles did not develop it after a prophylactic injection of diphtherial antitoxin, has followed up the suggestion by further researches. In a group of 24 children exposed to measles and unprotected by previous attacks he injected 5 c.cm. of horse serum; only 3 of these developed measles three to five days after injection. Reference is made to similar attempts by other physicians, with various serums. Not less than 5 c.cm. of horse serum should be given, and the earlier it is given the better. In 2 out of the 3 cases which developed measles in spite of the injection the disease must have been well on in the incubation period, for the rash appeared only two or three days after injection.

## 141. Treatment of Cutaneous Anthrax.

ACCORDING to J. SEGOVIA (*Archivos de Medicina, Cirugía y Especialidades*, December 16th, 1922), surgical intervention in cutaneous anthrax is not to be recommended, total excision of the diseased focus usually being impracticable and a considerable danger existing of promoting extension of the infection. A much more effective treatment is a combination of intravenous injections of neo-salvarsan (60 cg.) with similar injections of anti-anthrax serum, which in Spain is given in doses of 10 to 15 c.cm., in contrast to the much larger amounts recommended by American writers. The serum may also be applied locally in compresses. The author records a case in which treatment on these lines was successful in a patient in whom a blood culture showed the presence of the anthrax bacillus.

## SURGERY.

## 142. The Dangers of Ethyl Chloride Anaesthesia in Children.

SEIFFERT (*Deut. med. Woch.*, January 12th, 1923, p. 55) records the two following alarming experiences. A well developed child, aged 2 years, suffered from a cold abscess of the knee, requiring aspiration. On a small ether mask 25 drops of ethyl chloride were covered by a cloth. The child soon fell asleep, then respiration became irregular and the face pale. The pulse became weaker and weaker, and at last the respiration ceased. The second patient was a child, aged 2½ years, with a small abscess at the angle of the jaw. Ethyl chloride was given as in the first case. An incision had been made, when the child collapsed suddenly; it was pale and livid, there was an outbreak of sweat, the pulse was not palpable, and the respiration ceased. In both cases oxygen was given, and artificial respiration and massage of the heart instituted. The skin was stimulated with cold water, and oil of camphor injected. In three to four minutes both children rallied, and fifteen minutes later neither of them showed any ill effects. Since these two experiences the author has not dared to use even transitory ethyl chloride inhalations in his children's hospital. He refers to an ethyl chloride fatality, published in 1922 by Hofmann, and suggests that the number of ethyl chloride accidents is considerably greater than is commonly supposed to be the case.

## 143. The Teres Minor Muscle.

D. M. GREIG (*Edinburgh Med. Journ.*, January, 1923, p. 16) points out that the teres minor muscle is phylogenetically inseparable from the deltoid. The strongest reason for regarding the teres minor as part of the deltoid is the common nerve supply from the circumflex. The pseudoganglion on the nerve is a vestigial structure in the course of phylogenetic obliteration; it is universally present in man and varies in size; it is the abortive remnant of the cutaneous distribution of the nerve. The function of the muscle is generally stated to be a lateral rotator of the humerus—the teres major rotates it inwards, the minor outwards. The author tests the validity of these opinions by clinical means. If the circumflex nerve is paralysed, lateral rotation of the humerus is not interfered with. In cases of paralysis of the teres minor itself—a rare condition—the humerus is drawn upwards until the head comes into contact with the acromion and the coracoid, then when abduction begins the head becomes moulded to this surface and an alteration in shape of both surfaces takes place. In a specimen described by the author this condition was found whilst lateral rotation of the humerus was not interfered with. In paralysis of the infraspinatus the patient is unable to rotate the humerus outwards. With the elbow to the side it is impossible to rotate the humerus; when abducted other muscles come into play and make good the deficiency. In conclusion, the author states that the teres minor is not a muscle of lateral rotation—this movement is caused mainly by the infraspinatus; the teres minor steadies the head of the humerus in the glenoid during contraction of the deltoid.

## 144. Paraplegia Four Years after a Wound of the Spine.

L. SENCERT and G. FERRY (*Bull. et Mém. Soc. Chir. de Paris*, December 19th, 1922, p. 1404) find that, in spite of the very large number of wounds of the spine and spinal cord received in the war, the number of cases of paraplegia cured after removal of the foreign body is very small. They record a case where a bullet was removed from the spine of a man with paraplegia two years ago, and the cure has been complete. The patient was wounded in 1915, and it was not till four years later that spinal symptoms, both motor and sensory, in the lower limbs appeared. Four months later the patient was completely paralysed. The case is of further interest owing to the slow appearance of the spinal symptoms. It is impossible to tell whether the bullet penetrated the spinal canal secondarily or lay against the dura mater, perhaps in a fold of the meninges. It produced no cord symptoms at the time of injury nor in the following months. Subsequently, after a latent interval of four years, symptoms of a slow and progressive compression supervened, resulting in paraplegia with complete paralysis of the sphincters. It is difficult to explain this long interval and the gradual onset of the symptoms of compression. It was perhaps the result of the fibrous reaction around the bullet found at the operation, or was possibly due to the lighting up of a latent and attenuated infection, the cause of which may have been accidental. Whatever may have been the reason, the authors emphasize the importance of giving a guarded prognosis in cases of foreign body in the central nervous system.

## 145. Submaxillary Salivary Calculus.

B. F. BUZBY (*Annals of Surgery*, December, 1922, p. 778) points out that salivary calculi, although comparatively often encountered, still go unrecognized in many instances. The submaxillary gland is the most frequent seat of calculus formation, as the saliva from this gland is more viscid and concentrated. Males are more frequently affected than females, perhaps because infection of the mouth is more common in men on account of the use of tobacco. Calculi vary in size, being large when in the gland itself, whereas in the duct small stones can cause obstruction. The stones are usually solitary. When the stone is in the duct the patient complains of a very painful and tender swelling appearing coincidentally with mastication; this disappears when the causative agent has passed away. This swelling interferes with the movements of the tongue, deglutition, and talking. The stone in the duct acts as a sort of stop-valve, causing partial obstruction to the flow of saliva. When the stone is in the gland there is no intermittent swelling, but a steadily growing tumour not influenced by the flow of saliva. Diagnosis is not difficult, and bidental examination enables the stone to be felt in the duct or in the gland. An x-ray picture always shows the calculus. Differential diagnosis is made from bone tumour and malignancy and submaxillary lymphadenitis. The treatment of a stone in the duct is removal under general anaesthesia. A longitudinal incision is made down to the stone, which is then lifted out. If the calculus is in the gland the whole gland should be removed because of the pain and possible abscess formation.

## 146. Deformity after Supracondylar Fracture of Humerus.

H. KÄLIN (*Deut. Zeit. für Chirurgie*, November, 1922, p. 45) has followed up 23 cases of supracondylar fracture of humerus occurring during the last twenty years, with a view to ascertaining the cause of the alteration, frequently seen after this accident, of the angle which the upper arm normally forms with the forearm when the elbow is extended. The angle of the sound arm was taken as the standard by which the amount of adduction or abduction was estimated. Clinically, particular attention was paid to the triangle formed by joining the tip of the olecranon and the epicondyles by straight lines. This triangle, normally equilateral, was frequently found to be altered. Union with uncorrected deformity would not account for this, at the level in question. The radiographs were examined with respect to the point in the transepicondylar line which the axis of the humerus crossed, and the angle which it made therewith. Normally the humeral axis crosses the middle of that line at right angles. After union of a supracondylar fracture with lateral displacement, the lines will still be at right angles; if union has taken place with angular deformity, viewed anteroposteriorly, the axial line will not be at right angles to the transverse; in neither case will the humeral axis cut the transverse line at its mid-point. In many cases it was found, however, that the normal angle of the arm was altered, although the humeral axis cut the transepicondylar line at its mid-point. There was evidence to show that the alteration had supervened or increased in many cases long after union of the fracture. These considerations



lead the author to conclude that, although cubitus valgus or varus may be due to union with angular deformity, it is liable to occur even after perfect reduction of fragments, and is then due to disturbance of growth at the epiphyseal line, most commonly taking the form of hypertrophy on the radial side, giving adduction deformity. Of the 23 cases, 20 were between the ages of 5 and 10 years, and none over 18, at the time of the injury. Adduction deformity was present in 15, abduction in 3; 6 showed no deformity; the remaining case was double, and any deformity was too slight to be assessed, in view of the absence of a sound angle for purposes of comparison. The deformity, when present, is not amenable to treatment.

#### 147. Spastic Intestinal Obstruction.

H. JACOBSEN (*Hospitalstidende*, November 8th, 1922, p. 753) notes that some surgeons are inclined to deny the very existence of spastic ileus. Though it certainly does exist they are wise in thrusting it in the background, for if this diagnosis were to be freely indulged in many a life-saving laparotomy might be omitted. By 1920 Sohn was able to collect 30 definite cases, and in the same year Nagel collected 45 cases in which the diagnosis was confirmed either by biopsy or necropsy. The chief interest of the case recorded by the author lies in the fact that laparotomy was performed twice, with an interval of only a day and a half; on neither occasion was there found any explanation for the obstruction other than spasm of the gut. The patient was a girl aged 7, who was admitted to hospital with violent pain under and to the left of the umbilicus. The pain was colicky, there was retention of flatus and faeces, and she vomited mucus frequently. The abdomen was slightly distended, and during a bout of colic the contour of a coil of gut was demonstrable in the right abdomen. Laparotomy revealed coils of small intestine, some of which were distended with gas, while others were completely collapsed and contracted, the transition from the one condition to the other being abrupt. But there was no stricture or furrow at this point. As the symptoms became most alarming after the operation it was repeated, but again nothing was found to explain the symptoms. Complete recovery ultimately followed after treatment with gastric lavage, enemas, and castor oil.

#### 148. Splenectomy for Pernicious Anæmia.

E. HOLM (*Lægeskrift for Læger*, December 21st, 1922, p. 1781) has investigated the records of splenectomy for pernicious anaemia, and has been struck by the unanimity with which the authors of these reports hesitate to claim permanent cures. The behaviour of this disease is notoriously capricious, and the marked improvement often observed after splenectomy is apt to end in the relapses which frequently follow periods of spontaneous arrest of the disease. It should be noted that, even in an advanced stage, the disease may suddenly and unaccountably take a turn for the better, and that this improvement may be maintained for a considerable period. With these reservations, the author publishes a dramatically successful case of splenectomy for pernicious anaemia. The operation was performed on August 5th, 1921, and when the patient was last examined, on July 7th, 1922, her improvement was well maintained, she could work all day, and continued to gain weight. But the blood picture was still that of pernicious anaemia, and the red cells, which had numbered 760,000 before the operation, had increased only to 1,725,000. In the same period the haemoglobin had risen from 35 to 65 per cent. (Sahli). The author concludes that though splenectomy does not deserve the place of honour in the treatment of pernicious anaemia, it may yet be indicated in those cases in which more conservative measures have failed.

#### 149. Salicylates in Ocular Diseases.

S. R. GIFFORD (*Amer. Journ. Ophthalmol.*, December, 1922, p. 948) summarizes the way in which salicylates and similar drugs produce benefit in ocular inflammations. Their effect is not directly bactericidal, since the concentration required could never be obtained in the living body; and, although leucocytosis has been observed after their administration, this is due to the infection rather than the drug, and there is but little evidence in support of the theory that by producing a general vasodilatation the engorged vessels of the inflamed part are depleted. Large doses are needed, and one grain of sodium salicylate per pound of body weight a day is a convenient formula, pushed to 175 to 200 grains a day if necessary; such doses do not damage the kidneys, and are not contraindicated unless albumin is present. There does not appear to be any advantage in using it in combination with sodium bicarbonate, though this latter renders cinchophen (atophan) and acetyl-salicylic acid less irritating. Such toxic symptoms as ringing in the ears, nausea, and malaise are no indication for stopping the drug if otherwise still needed. When the salicylates are contraindicated, cinchophen and

neo-cinchophen are useful and less toxic. In severe cases 100 grains a day of neo-cinchophen may be given for two or three days, reducing to 80 and 60 grains, and continuing 30 to 45 grains a day for some time after the eye is quiet. While in cases of non-specific iritis, irido-cyclitis, optic neuritis, congestion after cataract extraction, and sympathetic ophthalmia the respective causes require treatment, the salicylates are most useful in lessening the reaction and preventing permanent inflammatory changes until the effect of such causal treatment is secured.

## OBSTETRICS AND GYNAECOLOGY.

#### 150. Early Diagnosis of Pregnancy by the Induction of Glycosuria.

S. LESKINEN (*Finska Läkarsällskapets Handlingar*, November-December, 1922, p. 584) has used the phloridzin test, as described by Kamnitzer and Joseph. The solution contained phloridzin 0.03, novocain 0.015, and distilled water 30.5 parts. Of this solution 2 c.cm. were given by intragluteal injection, the quantity of phloridzin injected being 0.002 gram. The test was carried out in the morning, the patient being given 200 c.cm. of water to drink at the time of the injection, and again half an hour later. The urine was tested for sugar at the time of the injection and every half-hour after it. An hour and a half after an injection there was never any artificial glycosuria, and the critical time for determining the presence or absence of glycosuria proved to be an hour after the injection. The women tested included 13 in the first three months of pregnancy, 4 who had just aborted, and 31 who were not pregnant. Among these controls there were cases of myoma and inflammation of the appendages of the uterus and various other conditions. All but one of the 13 showed glycosuria, and the one exception showed glycosuria four weeks later. Glycosuria was present in only 2 of the 4 cases of abortion. Of the controls 5 showed glycosuria and 26 did not. It would thus appear that a positive reaction is less instructive than a negative; the reaction is always positive at a comparatively early stage in pregnancy, and may be so only six or eight days after menstruation is overdue.

#### 151. Wounds of the Gravid Uterus.

C. DANIEL (*Gynéc. et Obstét.*, 1922, vi, 5, p. 376), from a study of 47 cases of wounds of the gravid uterus, comes to the following conclusions: Penetrating wounds affecting the uterine wall and foetal membranes are usually characterized clinically by slight vaginal haemorrhage and passage of liquor amnii; in about half the recorded cases, corresponding in general to the larger uterine wounds, a part or the whole of the foetus passes into the abdominal cavity. The uterus may be the only viscus to be wounded, and the probability that this is so is proportional to the degree of advancement of pregnancy, the intestines being pushed upwards during the later months by the uterus, whose walls are in direct contact with the abdominal wall. The prognosis is better in wounds of the gravid than of the empty uterus, the total mortality being 22 per cent. Interruption of pregnancy is the rule in extensive wounds, expulsion of the foetus taking place *per vias naturales* in the case of small scab wounds or those caused by firearms. In about half the cases the foetus is directly injured by the wound, but in 40 per cent. of cases its survival has been reported. Treatment is surgical (laparotomy) except in the case of certain small punctured wounds, for which expectant treatment may be adopted, in the first instance at any rate. Simple uterine wounds may be treated conservatively by suture, but hysterectomy is called for if the wound is large or irregular, or in the case of multiple wounds, or if the foetus has partially or wholly escaped into the abdominal cavity.

#### 152. X Rays in Uterine Fibroids and Climacteric Bleeding.

J. B. KOUWER (*Gynéc. et Obstét.*, No. 6, 1922, p. 25) opposes the use of x rays for uterine fibroids on the following grounds: (1) The haemorrhage is stopped chiefly by the action of the rays on the ovaries, which become atrophied, and thus the woman suffers from an artificial menopause; whereas if operation is undertaken one or both ovaries can usually be conserved. (2) With the x rays the woman has no further chance of child-bearing, whereas in some cases, in which the abdomen is opened, myomectomy can be done and the uterus conserved. (3) There are numerous conditions, often present and unable to be diagnosed with certainty, on which x rays have little effect or are even harmful—for example, submucous fibroids, necrosis and gangrene in a fibroid, carcinomatous or sarcomatous changes, inflamed appendages. (4) The mortality and morbidity following operations are



slight in comparison with the damage that may be caused by x-rays, if the diagnosis is at all at fault. The author considers x-ray therapy unnecessary for menopausal bleeding except in very exceptional cases. He states that the great majority are cured if, after a diagnostic curettage has shown no signs of malignancy, the uterus is thoroughly curetted and the patient is then treated for the next few months with hot vaginal douches. He prefers hysterectomy to x-ray therapy for the few cases in which bleeding still continues, as the x-rays seem to upset the working of the endocrine system.

#### 153. The Ductless Glands during Pregnancy.

FROM animal experiments SCAGLIONE (*Rivista d'Ostetricia e Ginecologia Pratica*, October, 1922, p. xv) finds that during pregnancy signs of increased function of the pineal are to be found in unusual abundance of lipid granules, of vacuolated cells, and of quasi-colloid substance in the intercellular spaces. Pineal tissue administered orally to gravid animals is without toxic effect and appears to determine an increase of foetal weight. Pineal extracts are without influence on the gravid or non-gravid uterus, modifying neither the rhythm nor the depth of the automatic contraction of the former. D. CESARE (*Ibid.*, p. xxviii), in experiments on cows, has found that the content, as measured by Antencielli's colorimetric method, of adrenaline in the adrenal gland does not show any characteristic modification during pregnancy. He concludes that any increase in the functional activity of the gland during pregnancy is confined to the cortex. By similar experiments he has failed to note more than a slight and inconstant increase in the iodine of the thyroid gland in the pregnant condition.

#### 154. Radium in Metrorrhagia.

P. W. SIEGEL (*Deut. med. Woch.*, January 12th, 1923, p. 47) gives an account of treatment of metrorrhagia in Giessen at the University Maternity Hospital, which was fortunate enough to possess 150 mg. of radium bromide before the outbreak of the war. Since 1918, 28 cases of metrorrhagia have been treated, and 2 of myoma of the uterus. In every case amenorrhoea was induced, and in three-quarters of all the cases it was induced at once. In the remaining quarter there was one more menstrual haemorrhage after the treatment before amenorrhoea set in. Complications due to the treatment were rare, and only once did the temperature rise to 38.7°C. Senile shrinking of the vagina was never seen, but occasionally slight adhesions formed in the posterior fornix of the vagina, requiring blunt detachment by a finger. But no haematocolpos or haematometra followed. The observation period of these cases averaged twenty-five months, during which no serious ill effects occurred. The technique was exceedingly simple. Exploratory curetting was first performed, and then a capsule, containing 50 mg. of radium bromide, was inserted. If the length of the cavity of the uterus exceeded 8 cm. two capsules were inserted, each containing 50 mg. A 1 mm. silver filter was used, but no covering of rubber. The uterus was dilated with Hegar's dilators up to No. 4½, the cavity of the uterus being made just large enough to hold the capsule in its filter. The vagina was then packed with sterile gauze, and the radium left in place for twenty to forty-eight hours. The author considers this treatment a notable advance on x-ray treatment, which in Germany has become exorbitantly expensive.

## PATHOLOGY.

#### 155. Pathology of the Gall Bladder.

W. BOYD (*Brit. Journ. of Surg.*, January, 1923, p. 337), in discussing the pathological problems presented in the etiology of cholelithiasis, points out that a gall stone is composed of the several constituents of the bile combined in varying proportions. In the strawberry gall bladder, where tiny yellow specks are scattered over the mucous membrane, it has been found that the yellow material is lipid in nature, for it stains with Scharlach R. The author has investigated the nature of this lipid. With the dissecting microscope the lipid was seen on the folds and ridges of the mucosa and could be removed for further examination. It gives the usual reaction for fat and stains like an ordinary neutral fat with Scharlach R, Sudan III, and osmic acid. With Nile blue the reaction showed that the lipid was certainly not neutral fat, but left undecided whether it consisted of fatty acids or cholesterol. The polarizing microscope showed the yellow material of the strawberry gall bladder to be the ester of cholesterol with a fatty acid. Quantitative estimation showed that there was a real increase of the amount of cholesterol in the strawberry gall bladder compared with the normal organ. These deposits are found in the surface epithelium, connective tissue stroma, and possibly in the lymphatics, and the author considers that the first step in the development

of gall stones may consist in this formation of cholesterol deposits. The most probable cause of the deposit of this substance is inflammation, but it will only be possible to state with certainty the factors which govern its formation after deposition has been produced in animals.

#### 156.

#### Basal Metabolism in Obesity.

TO determine the basal metabolism in obesity LABBÉ and H. STEVENIN (*C. R. Soc. de P.*, 1923, p. 9) made experiments on 46 patients, both male and female, whose weights varied from 35 to 136 kilos, and whose ages were between 9 and 64 years. Of these 27 presented a normal basic figure, in 13 the metabolic rate was decreased, while in 6 it was above the normal. Those possessing a normal basal metabolism were nearly all large eaters, living a sedentary existence, and reacting well to a reduction in the amount of food taken. Of those presenting an increased basal metabolism, 2 were suffering from Graves's disease; the rest simply appeared to be addicted to over-feeding, and it is known how the alimentary régime may lead to modifications of metabolism. Amongst those with diminished basal metabolism were 3 cases of myxoedema and 2 of dystrophia adiposo genitalis; the others of this group displayed a disturbance of the ductless glands, which responded well to thyroid treatment. It was the sole manifestation of a thyroid disease. From these results the authors feel justified in dividing patients suffering from obesity into two classes: one in which the basal metabolism is normal or increased, and in which treatment by thyroid extract is contraindicated and often dangerous; and one in which basal metabolism is diminished, and in which thyroid treatment gives excellent results.

#### 157. The Wildbolz Auto-Urine Reaction in Tuberculosis.

R. KIPFER (*Schweiz. med. Woch.*, December 30th, 1922, p. 1241) describes fully the most recent modifications in the technique of the Wildbolz test, which is based on the assumption that the urine in tuberculosis contains certain tuberculous antigens which give rise to a specific reaction when the urine is introduced into the skin by intracutaneous injection. The author has tested this reaction in 200 cases, 103 of which were cases of active tuberculosis. In 104 of these 109 cases the reaction was positive, and it was again positive when the test was repeated. Only in 5 was the reaction negative. In a second class there were 25 cases in which the tuberculosis had ceased to be active, according to the clinical evidence. In 12 of these cases the reaction was positive, and in 13 it was negative. A third class was represented by 66 persons without clinical signs of tuberculosis; most of them suffered from other diseases. The reaction was positive in 12 and negative in 54. After reviewing the findings of forty-two other workers who have published their results, the author notes that twenty-six have reported favourably and sixteen unfavourably on the reaction. He has come to the conclusion that many of the unfavourable results may be traced to errors of technique, and though there remains a small proportion of cases in which this defence of the reaction cannot be put forward he is convinced that it is specific and is likely to prove of great value.

#### 158. Inoculation of Guinea-pigs with Contaminated Tuberculous Material.

IN order to overcome the difficulty caused by the contamination of suspected tuberculous material with pathogenic micro-organisms, E. AUBERTIN and A. FONTAN (*C. R. Soc. de Biologie*, January 20th, 1923, p. 118) have applied the same treatment to their inocula as Petrof does to products from which he desires to cultivate the tubercle bacillus. Their technique consists in adding to the material to be examined twice its volume of a 4 per cent. solution of sodium hydrate, shaking vigorously, incubating for half an hour at 37°C., and neutralizing with 10 per cent. hydrochloric acid. To the fluid resulting from this homogenization a 1 per cent. aqueous or alcoholic solution of gentian violet is added in such a quantity as will raise it to a concentration of 1 in 5,000. The mixture is now centrifuged for fifteen minutes, the sediment mixed with a little sterile saline, and used for animal injections. With the exception of certain resistant organisms contained in human faeces this process seems to destroy the usual secondary invading bacteria which are likely to gain access to tuberculous material. Such products as septic pleural fluids, sputum, urine, and pus can be injected intraperitoneally into guinea-pigs after this treatment without the risk of the animals dying of peritonitis due to pyogenic organisms. The process does not seem to have any deleterious action on the tubercle bacilli themselves, and the results recorded by the authors show that the development of tuberculosis in the guinea-pig proceeds in the usual manner.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

### 159. "Glandular Fever."

W. T. LONGCOPE (*Amer. Journ. Med. Sci.*, December, 1922, p. 781) points out that under the terms "glandular fever," "infectious mononucleosis," and "acute benign lymphoblastosis" cases have been described which present somewhat similar symptoms. He records ten cases which he describes by the term "infectious mononucleosis." The clinical features resemble those of "glandular fever" (described long ago by McEiffer, Dawson Williams, and others), but at present the exact relation, he says, is not settled. The onset is gradual, with headache and irregular fever, and often with pharyngitis, tonsillitis, or tracheitis. The cervical glands become enlarged, firm, and tender; frequently the axillary and inguinal glands are also affected; sometimes the spleen becomes enlarged and tender. The leucocytes in the blood increase in number from the seventh to the tenth or eighteenth day. The change is a mononuclear leucocytosis—an absolute and relative increase in the mononuclear non-granular leucocytes, with a decrease of the total number of granular leucocytes. Three forms of mononuclear leucocytes are found in all of these cases: (1) small mononuclear leucocytes, (2) large mononuclear leucocytes (both similar to those seen in normal blood), and (3) mononuclear leucocytes of a type not usually seen in normal blood. The third type predominates. These cells are somewhat larger than the small lymphocytes, and contain oval, kidney-shaped, or slightly lobulated nuclei, usually without definite nucleoli, and often eccentrically situated in the cell. Sometimes the nucleus almost filled the cell; at other times it was surrounded by a considerable amount of basophilic non-granular protoplasm. The absence of the oxidase reaction differentiated these cells from myeloblasts. There is no anaemia. The fever rarely exceeds 102° or 103°; it continues irregularly until the tenth or twentieth day, and then gradually subsides, and the symptoms and blood changes then disappear. The uniform character of this febrile disease and the association of enlargement of lymph glands with a striking increase of mononuclear leucocytes of an abnormal type in the blood serve to differentiate the condition from other acute infectious diseases. The cause is unknown. The disease is of short duration, and recovery is the rule. It resembles most closely acute leukaemia, but may be differentiated by many characteristics—anaemia and purpuric spots are absent, and the abnormal mononuclear cells in the blood are different in their histological and biological characteristics from those in leukaemia.

### 160. Broncho-pulmonary Spirochaetosis.

CH. GARIN and L. MORENAS (*Journ. de Méd. de Lyon*, December 20th, 1922, p. 759) state that broncho-pulmonary spirochaetosis typically resembles acute or chronic haemorrhagic bronchitis, but also assumes less typical but not exceptional forms. Some non-haemorrhagic broncho-spirochaetosis, resembling bronchopneumonia, fetid bronchitis, or pulmonary tuberculosis, are only recognizable by the often accidental discovery of Castellani's spirochaetes in abundance in the sputum, and by the absence of pathogenic microbes. Associated forms (spirochaetes and fusospirilli, or spirochaetes and tubercle bacilli) do not appear to produce distinctive symptoms, at least in their earlier stages. The authors state that prior to 1914, although the area of spirochaetosis was gradually extending, it appeared always to be confined to the tropics. The war brought it to Europe, the earliest cases being discovered in Switzerland, afterwards in Serbia, Dalmatia (where Castellani found some cases, erroneously diagnosed as tuberculosis, in a military sanatorium), and in 1917 an outbreak of nearly 50 cases occurred at Toulon, the majority being Annamese. Since that date, apparently under the influence of the great influenza pandemic of 1918-19, sporadic cases, or small local epidemics, have been reported in France, Salonica, Italy, England, and even in North America. Although rare, the disease must now be considered an integral part of European pathology. The authors describe in detail the antiseptic precautions which are required before the collection of suspected sputum—lavage of the mouth and fauces, and brushing the teeth with antiseptic solutions. The technique is then described. They recognize two main types: (1) The typical form, or haemorrhagic broncho-spirochaetosis, and (2) the atypical, habitually non-haemorrhagic form; intermediate or mixed forms also occur. In

the typical form the onset is sudden, with headache, moderate fever (lasting two to six days), and at first mucous or mucopurulent sputum. Examination of the lungs reveals only a few slight scattered râles. The symptoms may subside, but more frequently bronchitis persists for a long period, and a new and important symptom occurs—blood-stained sputum, homogeneous red masses resembling red-currant jelly. The chronic form may follow this, or it may commence with "influenza" symptoms. The authors describe in detail (a) the pneumonic and bronchopneumonic forms, (b) the "fetid" type, and (c) the pseudo-tuberculous variety, which clinically closely resembles pulmonary tuberculosis. Spirochaetosis may, however, be associated with true pulmonary tuberculosis, and also with enteric fever and malaria; such complications are, however, rare. The absence of the typical sputum ought not to eliminate the diagnosis of spirochaetosis, and a careful examination for spirochaetes should always be made in doubtful cases.

### 161. The Treatment of Chronic Dyspepsia in Infancy.

C. E. BLOCH (*Ugeskrift for Læger*, January 4th, 1923, p. 1) has given test meals containing barley water to 64 infants treated at the Rigshospital in Copenhagen for chronic dyspepsia and atrophica infantilis. In 31 cases the acidity of the gastric juice was normal. In the remaining 33 there was achylia or hypochylia, and in 15 of these 33 cases there was almost complete achylia, persisting for many weeks in spite of severe dietetic restrictions. In the remaining 18 cases of defective gastric secretion marked and rapid improvement followed treatment. This was based on the assumption that the chronic dyspepsia of infancy is merely the result of a simple insufficiency of the digestive glands. This insufficiency results from congenital weakness, the weakness following acute or chronic diseases, and overloading with food. Hence the author's advocacy of treatment by starvation. If the infant is already much debilitated, it cannot stand even a twenty-four hour régime, with only water or tea to drink. To avoid the collapse of absolute starvation, the author gives thin barley water, containing 2 per cent. cane sugar. After this dietary has been given for a day or two he adds increasing quantities of milk, but is careful to limit it on account of its tendency to promote fermentation. His discussion of the modern conceptions of the etiology of dyspepsia in infancy shows that opinions still differ widely.

### 162. Narcosis and Acidosis.

P. GYÖRGY and H. VOLLMER (*Klinische Wochenschrift*, November 18th, 1922, p. 2317) discuss the indications which urine examination may afford of acidosis or increased acid excretion. Freudenberg and György have recently shown that in tetany the acid excretion is markedly diminished; and György has shown that in rickets it is markedly increased. Retarded metabolism leads to acidosis; accelerated metabolism combats the acidosis, and may lead to alkalosis. In their further observations, to determine if every retarding of metabolism leads to increased acid excretion in the urine, the authors made careful examinations of the urine before and after chloroform narcosis or mixed chloroform and ether narcosis in 11 cases. The results of these examinations are given in detail. The authors conclude that this narcosis leads to an absolute and considerable increase of the acid excretion, and that the retarded metabolism due to the narcosis produces a tendency to acidosis, which is indicated by the increased acid excretion.

### 163. Infantile Eczema.

WHITE (*Arch. Dermatol. and Syphilol.*, January, 1923, p. 50) reports 22 cases of infantile eczema, and emphasizes the importance of examining the stools in obstinate cases. By the application of crude coal tar in combination with zinc oxide, two parts each, and sixteen parts each of corn starch and petrolatum, to form a black paste, the great majority of cases can be quickly cured; but in obstinate cases it was found that the stools were abnormal, excessive fat occurring in 60 per cent., excessive starch in 40 per cent., excessive sugar in 20 per cent., and excessive protein in 10 per cent. Distinct success resulted from a regulation of the diet. Of the reported cases males predominated, and all were breast-fed, the eczema appearing soon after weaning and attacking the face most frequently. No soap or water should be used to the affected parts, and night and morning the paste should be spread on and not bandaged, all remnants of the previousunction being removed with sterilized oiled gauze prior to each fresh application.



**164. Electro-cardiograms and Myocardial Disease.**

THE coronary arteries and ventricular heart muscle of eleven patients who died of heart failure were carefully examined by H. E. B. PARDEE and A. M. MASTER (*Journ. Amer. Med. Assoc.*, January 13th, 1923, p. 98), and it was found that muscle disease occurred but rarely in the absence of disease of the coronaries. The outstanding lesion was always a fibrosis, though it varied much in degree and distribution. The ventricular waves of the electro-cardiogram taken shortly before death were normal in four cases; three of these had normal ventricular muscle, and the other showed but insignificant changes. The ventricular waves were abnormal in seven cases; one of these hearts had a moderate fibrosis, and the remainder had various sorts of marked abnormality of the ventricular muscle. Though admitting the small number of their cases, the authors strongly suggest that an electro-cardiogram with the special abnormalities described will indicate disease of a ventricular muscle to a definite degree, which the microscope, if not the naked eye, can discover, and which might well be expected to interfere with its function. If the ventricular waves do not show any of these special abnormalities the indication is less clear, but it is likely that the ventricular muscle is normal, or at least affected with but the slightest degree of abnormality. It seems that ventricular muscle disease is a far more important deduction from the finding of abnormal ventricular waves than has been heretofore considered, so that the clinical importance of abnormal electro-cardiograms becomes more apparent.

**165. Calcium Chloride in Pulmonary Tuberculosis.**

R. MONTELEONE (*Il Policlinico*, Sez. Prat., January 8th, 1923, p. 48) alludes to the recent work of French clinicians on the use of intravenous injections of calcium chloride in the treatment of diarrhoea and vomiting in pulmonary tuberculosis, and records the results of his experiences with this method. Unlike the French writers, however, who used strong solutions (50 per cent.), he employed a solution of 10 per cent. Out of 10 patients suffering from vomiting following attacks of coughing, or independent of this cause, this symptom was completely cured in 5, considerably improved in 3, and in 2 not affected, while in 4 other patients diarrhoea was completely cured. Monteleone's results thus agree with those of the French as regards the great advantage of this method of treating two of the most troublesome symptoms of pulmonary tuberculosis.

**SURGERY.****166. Diverticula of the Bladder in Children.**

A. HYMAN (*Surg., Gyn., and Obstet.*, January, 1923, p. 27) points out that vesical diverticula are more frequently present in children than would be inferred, many being overlooked because the proper examination had not been made. Two types are described—true where all the coats of the bladder are present, false when formed by mucous membrane alone. The true diverticula are described as congenital or acquired, and uncertainty exists as to their origin. They are usually found in the neighbourhood of the ureteric orifice, and three reported cases were all in males; a marked pyuria was present in all cases, and all showed presence of residual urine. The symptoms do not usually appear till infection supervenes. A distended bladder is found and should focus attention on the condition, and if symmetrical a diverticulum should be suspected. Cystoscopy may be used, but is difficult in the young, and the opening, being small, may be overlooked. Radiograms are valuable in making a diagnosis. The prognosis is favourable, and children stand the operation well. Radical extirpation of the sac by an extraperitoneal route is the best procedure. Care must be taken to avoid the ureter, and it should not be interfered with if possible. The presence of diverticula in young children without evidence of obstruction leads to the conclusion that they are congenital in origin.

**167. Acute Symptoms following Gastro-enterostomy.**

HADEN and ORR (*Johns Hopkins Hosp. Bulletin*, January, 1923, p. 26) investigated the cause of certain acute symptoms following gastro-enterostomy, and record three cases which showed a considerable increase in the non-protein nitrogen of the blood proportional to the severity of the intoxication, low blood chlorides, and suppression of chloride excretion. All three presented clinical symptoms of a severe intoxication associated with much tissue destruction which, together with the chemical findings in the blood and urine, were characteristic of intestinal obstruction, although there was no reason to suspect (as confirmed in one of the cases by x ray) any actual interruption of continuity below the gastro-enterostomy stoma. The acute symptoms—fever, abdominal

pain, and in two cases nausea and vomiting—appeared to be caused by an intoxication arising in the upper intestinal tract, probably due to a duodenal obstruction at the site of the gastro-enterostomy interfering with drainage of the duodenal loop, and thus producing a condition favourable to the formation of toxic substances in a portion of the intestine from which rapid and complete absorption takes place. One case showed a marked alkalosis, evidenced by the very high CO<sub>2</sub> combining power of the plasma, and clinically by sighing respirations. In two cases in which the urine was examined there was a striking suppression of chloride excretion with a very low chloride content of both plasma and whole blood. The alkalosis is closely related to the chloride metabolism, and is probably merely an incident in the general intoxication.

**168.****Salivary Calculi.**

A. FALLAS (*Le Scalpel*, December 30th, 1922, p. 1264) remarks on the comparative rarity of salivary calculi. Men are more frequently affected than women, and adults rather than children. Irritants in the mouth, such as tobacco, dental caries, and spices, appear to exert some influence on their formation. It is generally believed that micro-organisms play a part in their formation. Staphylococci, pneumococci, and streptococci, and even the yellow grains of actinomycosis, have been found in the calculi. It is possible that some foreign body, such as bacteria or cellular debris, forms a nucleus around which the stone forms; the obstruction thereby produced assists in the deposit of crystals around the stone, though ligature of the duct alone does not result in calculus formation. The calculus is generally single, though multiple stones are not uncommon. They are small when multiple, larger when single—the size of a pea or an almond—and are generally oval in shape when formed in the duct; they are usually soft in the centre, with a harder covering. The presence of a calculus leads to stasis of the saliva and the ducts and the glands are distended with secretion; this leads to sclerosis and destruction of the secretory tissue. Inflammation with abscess formation may ensue and sometimes results in a salivary fistula; the inflammation may even spread to the teeth and the jaw, setting up a periostitis. Their formation is usually slow and may take up a dozen years or so. The symptoms are pain and swelling after food and a tumour situated in the course of the duct interfering with the movements of mastication. Salivary colic has been described with pain similar to renal and biliary colic. Probing of the duct with a fine stylet enables the stone to be felt; most calculi are opaque to the x rays. These calculi are most often found in Wharton's duct. Treatment consists in incision of the duct and removal of the stone.

**169. Operative Treatment of Chronic Intestinal Stasis.**

G. A. CASALIS DU PURY (*Med. Journ. of South Africa*, September, 1922, p. 27) discusses the operative treatment of chronic intestinal stasis associated with "typhlatony," caecum mobile, ptosis of the ascending colon, typhilitis, perityphilitis, chronic appendicitis, and the megacolon; he regards intestinal stasis in the right side of the large bowel as a frequent cause of chronic constipation. A mobile caecum is often dilated, prolapsed, and almost always associated with chronic typhilitis, perityphilitis, and appendicitis. Caecorrhaphy, with the destruction of adhesions and the performance of a caecopexy if necessary, by reducing the caecal sac and the dilated ascending colon, is the operation of choice in typhlatony and prolapse of the right colon. In other conditions giving rise to chronic intestinal stasis and necessitating either temporary or permanent drainage of the large bowel caeco-sigmoidostomy is preferable to other short-circuiting operations, because of its rapidity, simplicity, and safety, and the fact that the ileo-caecal valve is retained. For complete success in its performance the mesenteries of each colon must be lax, so that there is easy apposition of one bowel to the other without tension on the suture, and the anastomosis must be large.

**170. Respiratory Exercises for Adenoids.**

BRISOTTO (*Rif. Med.*, December 18th, 1922, p. 1206) says that the value of respiratory exercises both before and after operation for adenoids is not sufficiently recognized. He gives some figures showing, as tested by the spirometer, the great improvement in respiration which follows a course of special respiratory gymnastics. He describes the technique followed by him. Before starting the exercises he instils a few drops of mentholated oil into the nostrils. Although the value of these exercises is recognized by all, it is too often forgotten in practice, and the author's chief aim is to draw attention to the necessity of carrying them out if the best results are to be got from the removal of adenoids. It is especially between the ages of 6 and 12 years that the necessity arises.



## 171. The Cause and Treatment of Perforating Ulcer.

M. KAPIS (*Klinische Wochenschrift*, December 23rd, 1922, p. 2558) discusses the cause and treatment of perforating ulcers, and records his results in 31 cases of perforating ulcer on the foot. The ulcers were due in 13 cases to injuries of the peripheral nerves, in 4 to syringomyelia, in 5 to tabes, in 3 to syphilis, in 1 to spina bifida, in 1 to pes cavus (probably spina bifida), and in 4 to sensory disturbances not definitely due to spinal cord diseases. The author concludes that perforating ulcer is a bed sore in regions in which sensation is lost or diminished, and in tissues lacking the normal power of resistance and regeneration. The first duty in the treatment is the attempt to restore the nerve connexions; local treatment is necessary. In perforating ulcers on the balls of the toes a joint fistula usually exists, whether the joint presents arthropathic changes or not. These perforating ulcers are healed in the most simple manner by resection of the bones of the affected joints. For perforating ulcers of the heel no certain successful method of treatment has, so far, been found. The influence of sympathectomy is possible, but doubtful; removal of a neuroma appears less important. The performance of these operations is permissible in an attempt to heal an ulcer on the heel.

## 172. Treatment of Paralysis by the Grafting of Tendons.

G. L. REGARD (*Bull. Soc. de Chir.*, December 26th, 1922, p. 1496) has performed some experiments on dogs, in which calf tendons, preserved in 60 per cent. alcohol, were grafted to restore movements which had been abolished by nerve section, removal of muscles, etc. The essential feature was to connect the proximal end of the graft to a portion of an active muscle whose function was more or less in co-ordination with the paralysed muscles. Thus, after paralysis of the extensors of the digits of the hind leg, the graft was attached above to a portion of the vastus externus, separated distally just above the knee and below to the extensor tendons at the ankle. It was found that the best results were obtained if the graft was allowed to lie superficial to the deep fascia and covered by folding the latter over it, making an artificial sheath. Early movements were encouraged. An animal treated in this way and which had previously, owing to its extensor paralysis, walked on the dorsum of its foot, was walking normally within a few days. The fusion of the graft at its extremities becomes in time so complete that the exact site of union is not recognizable. REGARD considers that the method should be tried in preference to tendon transplantations, as it gives better results experimentally and is a less severe operation. Methods of performing the operation on the human subject for various forms of paralysis are suggested, but no actual cases are reported in which it has so far been attempted.

## OBSTETRICS AND GYNAECOLOGY.

## 173. Infections of Cervix, Body of Uterus, and Fallopian Tubes.

INASMUCH as it has been shown that the body of the uterus seldom harbours bacteria for a long period of time, A. H. CURTIS (*Journ. Amer. Med. Assoc.*, January 20th, 1923, p. 161) states emphatically that discontinuance of uterine curettage in attempts to relieve chronic infection marks a decided advance in methods. In most instances leucorrhoea arises from the cervix and from glandular tissues in the vicinity of the urethra. Treatment directed to eradication of these diseased areas yields very satisfactory results. Gonorrhoeal infection of the Fallopian tubes is naturally a quickly self-limited disease. So-called chronic gonorrhoeal salpingitis is usually a recurrence from an external source or repeated invasion from the chronically infected lower genital tract. Streptococcus infection of the tubes occurs usually as a complication of abortion or intrauterine manipulation, and is commonly only a part of more widespread pelvic infection. Streptococci, in contrast with gonococci, may remain viable in the tubes for many months or even for years. Even the most prolonged and most severe gonorrhoeal disease of the tubes is characterized by adhesions amenable to blunt dissection. Adhesions which require cutting or tearing are due to streptococcus or tuberculous infection. In any given case, if there is any doubt whether it is advisable to remove the ovaries at the time of operation, more radical measures are indicated in streptococcal or tuberculous infection than in gonococcal disease of equal severity, because viable bacteria probably remain buried in the tissues, and there is likelihood of post-operative chronic ovarian infection.

## 174. Radium in Cancer of the Uterus.

O. BEUTNER (*Schweiz. med. Woch.*, February 1st, 1923, p. 105) reviews the results obtained in treatment of cancer of the cervix by radium at the Swiss Radium Institute in Geneva. Till 1914 the treatment of carcinoma of the cervix in Geneva was operative. Since the establishment of the Radium Institute surgical interference has been abandoned even in operable cases. The author has had two series, each of 63 cases, and is now engaged on a third series. He classifies his cases according as the disease was (1) operable, (2) "borderland," (3) associated with excavation and slight infiltration of the structures adjoining the cervix, and (4) more advanced cases. In the first series of 63 cases there were 11 patients (4 belonging to the first group, 4 to the second, and 3 to the third) who were still alive. The remaining 52 were dead—that is, there was a mortality of 82.5 per cent. It should be borne in mind in connexion with this high mortality that only 14.3 per cent. of these 63 patients were operable—that is, in the first class. In this class there were only 9 cases, and 5 of them terminated fatally. In the second class there were 8 cases and 4 terminated fatally. Discussing the reasons why, in these two classes, the treatment was successful in some cases and unsuccessful in others, the author suggests that less depended on the microscopic character of the disease and the dosage of the radium than on the general health of the patient and her age; the best results were obtained in comparatively elderly patients. Turning to the inoperable cases, the author shows that, as judged by duration of life after the institution of treatment, by the relief from pain, haemorrhage, and discharge, radium treatment is remarkably superior to the old palliative treatment consisting of applications of zinc chloride and the like. He concludes that in inoperable cases radium is supreme; in operable cases the comparative merits of radium and operative treatment are still debatable, but it is significant that, whereas operative treatment has reached the limits of technical perfection, radium treatment is only in its infancy. While the Wertheim operation still has a primary mortality of 20 per cent., the author has not yet seen a single radium fatality among his patients.

## 175. Criminal Abortion.

J. A. VAN DONGEN (*Nederl. Tijdschr. v. Geneesk.*, January 6th, 1923, p. 24) remarks that it has always been held that the real number of cases of criminal abortion is much greater than the number admitted by the patients themselves. Olsbausen stated that about 80 per cent. of his cases of abortion were of criminal origin, and Kistner's experience at Breslau was the same. Boerma in 1908 was of the opinion that from half to three-quarters of all abortions in Groningen were of this character. In the 1,193 cases of abortion studied by van Dongen criminal abortion was admitted in 99, or 8.3 per cent. The real proportion was naturally much higher. It is probable that in Holland, as in other countries, criminal abortion has become much more frequent in recent years owing to economic depression. The proportion of unmarried to married women in van Dongen's series of criminal abortion was 1 to 0.8, while among the total number of abortions the proportion of unmarried to married was 1 to 5.9. It was thus obvious how frequently the unmarried state was the reason for criminal abortion. A study of the patients' ages showed that criminal abortion occurred at an earlier period of life than abortion in general. Nearly 50 per cent. of the patients were under 25 years of age, and only about 2 per cent. were over 40. The stage of pregnancy at which criminal abortion was induced was as a rule earlier than in abortion in general; in a large proportion of cases (36.49 per cent.) the duration of pregnancy was less than two months. In many cases attempts at abortion were made shortly after the first period had been missed. In a large proportion of cases the abortion was brought about by the patients themselves by ingestion of drugs, such as preparations of ergot, quinine pills, saffron, etc., hot baths, vaginal and intruterine injections, cycling, dancing, and gymnastic exercises. The complications of criminal abortion were lesions due to instruments used, infection of the sexual organs, toxæmia, and air embolism. Whereas among 1,193 cases of abortion due to all causes 296, or 24.86 per cent., had fever—that is, an axillary temperature of 100.4° or above—of 99 cases of criminal abortion 51.8 per cent., or about twice as many, had fever. The mortality among the 1,193 cases was 1.4 per cent., the afebrile cases having a mortality of 0.4 per cent. and the uncomplicated febrile cases a mortality of 1.09 per cent.

## 176. Injections of Turpentine in Diseases of the Uterine Appendages.

B. NYSTRÖM (*Läk. Med.*, November-December, 1922, p. 63) reports on 63 cases of uterine appendages. As turpentine in olive oil is apt to cause pain, he used



a preparation containing turpentine, quinine, and anaesthesia, given by intragluteal injection; in no case did it cause pain, swelling, or discomfort. The injections were given at intervals of a day or two, and the average number given to each patient was six. Among the patients there were 39 with acute or subacute disease and 24 with chronic disease; in all the cases of pyovarium and pyosalpinx the diagnosis was confirmed by puncture or operation. The results varied greatly. Several patients felt no change; others, often after the first injection or two, were rid of their symptoms. Others, again, felt much worse, and in these cases their complaints were substantiated on palpation, which showed increased tenderness or enlargement of the swellings. It was, however, just in these cases that the ultimate results were often best. The author is cautious in passing judgement on this treatment because it was supplemented by residential treatment in hospital, and it was therefore difficult to decide how much of the improvement should be credited to simple rest and dieting. But the general impression left on him by these cases was that their improvement was frequently hastened by the injections. This was particularly the case when the disease was acute or subacute.

#### 177. Tuberculosis and Pregnancy.

G. WINTER and W. OPPERMAN (Deut. med. Woch., January 5th and 12th, 1923, pp. 1 and 45) have investigated the cases in which tuberculosis was complicated by pregnancy at Winter's hospital in Königsberg. Of 139 cases carefully investigated after pregnancy the disease progressed in 93, or 67 per cent. Of 45 patients with latent tuberculosis, 33 showed no aggravation of the disease six months after pregnancy. Of 96 patients with active tuberculosis, 28 went to term; in the remaining 68 cases the pregnancy was interrupted. In 86 per cent. of the 96 the disease progressed. The authors consider that while latent tuberculosis is no indication for abortion, this ought to be induced when the disease is active and progressive. They admit that the distinction between latency and activity is often difficult. But fever is a definite indication for inducing abortion, and they have known 30 cases in which the disease was progressive, although the patients appeared to be afebrile. They found that when pulmonary disease was complicated by tuberculosis of the larynx as well as by pregnancy the prognosis was practically hopeless; of 16 patients in this class 15 died, and only one appeared to pass through pregnancy without any ill effects.

### PATHOLOGY.

#### 178. The Recognition of Pneumococcal Types.

R. R. ARMSTRONG (Brit. Journ. of Exper. Path., December, 1922, p. 287) has shown, by applying the absorption of agglutinin test to the serological study of pneumococci, that agglutination by specific pneumococcal serums is not invariably sufficient for recognition of types. Type II pneumococcus serum is not only capable of agglutinating the standard coccus but is also rich in subagglutinins which react with atypical cocci; these atypical cocci are sharply differentiated by failure to absorb the standard agglutinin. Some of the strains isolated from cases belonging to Subtype II appear to be intermediate between pneumococci and the salivary streptococci, but salivary streptococci are sharply differentiated from pneumococci by their vigorous agglutinogenic properties. These results are similar to those obtained by Avery, who, in an investigation of ten strains of aberrant Type II pneumococci, showed that saturation of the standard serum by its homologous coccus removes all the agglutinins and protective bodies, while absorption by a related subtype does not materially affect these. Subtype strains exhibit limited specificity within the group to which they belong; in no case was it found that a serum prepared against a subtype pneumococcus agglutinated the standard type strain. The numerous non-agglutinating strains of pneumococcus variously described as Group IV, and sometimes improperly as Type IV, are conspicuously deficient in antigen for rabbits, and only the feeblest agglutinating power can be produced by injections.

#### 179. Herpetic Encephalitis.

C. DA FANO (Journ. of Path. and Bact., January, 1923, p. 85) gives an account of the experimental investigation of herpetic meningo-encephalitis in animals and of the evidence that has been collected establishing its close resemblance to encephalitis lethargica. Inoculation with the vesicular fluid from all forms of herpes, with the possible exception of herpes zoster, gives rise in certain animals to a fatal infec-

tion, which displays a marked affinity for the central nervous system, spreading within a few days to the brain of the animal independently of the material used for inoculation or the site selected for transmission. The cerebral lesion thus produced consists of an extensive small-cell infiltration and marked degeneration of the nerve cells, which ultimately break down into a necrotic debris. Only by assuming the presence of a virus consisting of living micro-organisms able to multiply within the central nervous system of the animal affected does the above condition appear explicable. The process is almost identical with that observed in human cases of encephalitis lethargica, and the regions affected are the same. Still greater is the similarity that exists between the lesions of herpetic encephalitis and those produced in animals by inoculation into them of the virus of encephalitis lethargica. The author considers it probable, therefore, that the viruses of herpetic and lethargic encephalitis belong to the same pathogenic group. In the central nervous system of animals suffering from the former condition granular structures occur closely resembling certain "minute bodies" which have been described in the latter, and the suggestion is made that the smallest of these granular structures (herpetic minute bodies) may be the virus itself, or, at any rate, particles of organic matter to which the virus closely adheres. Whether the latter is of the filter-passing variety and whether it can be grown in culture media are as yet uncertain.

#### 180. A System of Tubules in Secreting Epithelia?

G. SCOTT WILLIAMSON and INNES PEARCE (Journ. of Anatomy, January, 1923, p. 193) describe a system of tubular structures which they have found existing in secreting epithelia, in particular of the thyroid gland, but also of portions of the kidneys and bile ducts. It consists, they say, of a network of tubules widely distributed and occupying a definite position in relation to the cells of the epithelium. In segmental section of the follicles the observers note short rods and dots with the appearance of a fence situated in a more or less central plane between the nuclei and the colloid substance within the vesicle, or, more plainly, stretched beneath the free surface of the epithelium. They state also that a layer of cytoplasm, no matter what may be the degree of distension of the latter, always separates the network from the contents of the follicle. Occasionally isolated branches, larger in calibre than the main system of tubules, have been observed running radially towards the base of the epithelium. The tubules are extremely fine—not exceeding  $2\mu$  in diameter—and when empty appear as dark-staining lines; when full they are pale and hollow, enclosing either a clear homogeneous or a granular substance. The observers claim no knowledge of the functional significance of the system, but feel justified in considering it a definite structure peculiar to secreting epithelium. They profess themselves satisfied that it is of a tubular nature, and consider it possible that it may be a type of auxiliary circulation carrying lymph, blood plasma, and the contents of parenchyma or gland ducts, connected with the complicated processes of excretion and absorption.

#### 181. Physical Properties of the Neurotropic Ultra-viruses.

C. LEVADITI and S. NICOLAU (C. R. Soc. de Biologie, January 20th, 1923, p. 66) have been investigating some of the physical properties of the viruses of vaccinia, encephalitis, and rabies. They find, in the case of the first two, that if an emulsion of the virus be mixed with animal charcoal, and centrifuged after twenty hours' contact in the ice-chest, the supernatant fluid is no longer able to produce disease when injected into a rabbit, while the deposit, on the contrary, is highly active. With rabies, not only does the charcoal adsorb the virus, but it actually destroys it, so that the injection of both the supernatant fluid and the deposit is without pathogenic effect. Similarly they find that this adsorption of the virus can be attained by the use of powdered kaolin, tricalcium phosphate, or the cellular material of yeasts—by the same bodies, in fact, which fix *in vitro* the soluble ferments, bacterial toxins, and certain colouring matters. Further, on dialysing an extract of neuro-vaccine, made by emulsifying a piece of brain in rabbit serum with subsequent clarification by prolonged centrifugalization, the virus was found to be adsorbed by the precipitated globulins. The same adsorption was shown to occur when the globulins were thrown down by ammonium or magnesium sulphate. It therefore appears that these viruses are composed of aggregations of living protein matter whose dimensions are not greatly in excess of those of the albuminoid particles which serve as nuclei for the adsorption of diastases and bacterial toxins. The authors promise to show presently that these viruses can be made to pass through collodion membranes which hold back albumins, toxins, haemolytic amoebocytes, and complements, but which allow the passage of peptones, amino-acids, and—curiously enough—the bac. criophage of d'Herelle.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

### 2. The Therapeutic Properties of Cod-liver Oil.

E. POULSEN (*Norsk Mag. for Lægevidenskaben*, January, 1923, p. 35) gives a preliminary account of the investigations into the composition of cod-liver oil proceeding at the Pharmacological Institute in Christiania. He found that even after heating the cod-liver oil for sixteen hours at a temperature of 98°C. its vitamin content was practically unimpaired. But bubbling air through warm cod-liver oil deprived it of its vitamin content in a few hours. Exposure to air at ordinary temperatures proved injurious, and when a thin layer of cod-liver oil was poured out on a glass plate it was found to be inert after fourteen days. But time alone appears to have little effect, and one of the most vitamin-rich samples examined was one which had been bottled for three years. With regard to prescribing cod-liver oil in the form of an emulsion it should be noted that, the oil being distributed in small drops, more of its surface is exposed than under ordinary conditions, and thus the chances of air contamination and loss of vitamin are considerably enhanced. As emulsions contain only 35 to 45 per cent. of cod-liver oil they must be given in much larger doses than pure cod-liver oil. The liver oil of certain other fishes besides the cod was found to be as rich in vitamin A as cod-liver oil. The liver of the male cod contains more oil than that of the female, and is just as vitamin-rich. The author refers to a case illustrating the value of giving cod-liver oil to the suckling mother. A poor mother, aged 39, had not been able to afford much fresh milk and butter. Most of her first nine children had suffered from rickets. Her tenth child, born on January 11th, 1922, weighed 3,500 grams at birth. Eighteen days later its weight had increased by only 50 grams. During the next fifteen days its weight was stationary, it looked flabby, and suffered from slight diarrhoea. The fat content of the mother's milk was normal. Her dietary was not changed, but she was given one tablespoonful of cod-liver oil three times a day. The weight curve, published by the author, showed a most dramatic rise. Fifteen days later the mother was given butter and fresh milk without stint, but they did not affect the infant's weight curve. What had been lacking had evidently already been supplied by the cod-liver oil.

### 163. After-care of Cases of Infantile Paralysis.

H. G. DUNHAM (*Journ. Amer. Med. Assoc.*, January 27th, 1923, p. 224) urges that, during an epidemic of infantile paralysis of any size, children with obscure indisposition should be kept at rest in bed for several days until the exact nature of their condition can be determined. When paralysis supervenes, it usually appears within a very short time after the initial upset, the average in a series which was investigated being three days after the first manifestation of illness; but often the paralysis comes on twenty-four or forty-eight hours after, so that the patient with a malaise of no consequence need not be incapacitated over a long period of expectancy. In every obscure acute illness during childhood the diagnosis of infantile paralysis should always be a mental reservation, since sporadic cases occur in the community every year. Obviously, to obtain the best results and maximum functional return, these patients must have intelligent care from the outset of their illness. Correct treatment for a definite stage applied at the wrong time is far worse than none.

### 161. Treatment of Unilateral Pulmonary Tuberculosis.

G. CAUSSE and DERVILLE (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, December 21st, 1922, p. 1766) remark that it is frequently thought that numerous pleural adhesions in the neighbourhood of a tuberculous cavity, too thick and resistant to permit collapse of the lung, must exist. Recorded cases have shown that while unsuspected adhesions sometimes bar the way, in others, in which radiological and clinical examination show pleuritic adhesions, the pleural separation is effected quite easily. Their patient, a married woman aged 20, had all the symptoms of acute pulmonary tuberculosis confined to the right lung: constant cough, profuse sputum containing numerous tubercle bacilli, fever, and profuse sweats. The physical signs and skiagrams showed a large cavity in the right middle lobe. Diagrams show the condition of the lungs at seven examinations made between September 8th and December 1st, 1922, each examination taking place within a few days of the seven nitrogen inflations of the right pleura, details of which are

given. Two days after the last inflation a right hydro-pneumothorax was found; this was sero-fibrinous only. The result of the treatment has been that the patient has gained in weight, the cough, sputum, and number of tubercle bacilli have all decreased, the right lung has collapsed, except where it is adherent to the mediastinum, and with that collapse the cavity has almost disappeared. The authors admit that the ultimate issue of the case cannot be predicted as yet, but they claim that the artificial pneumothorax has given great relief to a patient whose condition was very serious.

185

### Tuberculosis in Infancy.

P. NOBÉCOURT and J. PARAF (*Paris méd.*, January 6th, 1923, p. 18) in the course of two years have observed 60 cases of tuberculosis, or a proportion of 4.6 per cent., among 1,296 infants, aged from 1 to 17 months, admitted to the crèche of the Hôpital des Enfants Malades, Paris. In most of the cases the clinical diagnosis of tuberculosis was at first impossible, and the infants were admitted for gastro-intestinal affections or marasmus. In many cases the rapid course of the disease enabled a correct diagnosis to be made, as 21 infants died of meningitis less than a fortnight after admission, and 5 of bronchopneumonia or rapidly fatal miliary tuberculosis. The cuti-reaction was the only means of establishing a rapid and certain diagnosis. Among 40 cases in which the source of contagion could be determined the father was responsible in 16 cases, the mother in 19, the grandfather in 1, and nurses in 4. Of 36 children who had been infected by other members of their family, 16 appeared to have been contaminated in the first weeks of life by a tuberculous parent.

186.

### Calcium Lactate for Nervous Headaches.

C. I. BAASTRUP (*Lægeskrift for Læger*, February 1st, 1923, p. 75) describes a well defined type of headache in which he has found calcium lactate dramatically successful. The patient suffers concurrently from attacks of slight oedema affecting the eyelids, upper lip, or one hand. Apparently there is no fever, and while complaining of the headache the patient hardly notices the associated oedema. This condition appears to run in families, and in one family the mother and two daughters were subject to these attacks. One of the daughters knew when one of the others was suffering whenever she observed a slight swelling under the eyes. Another patient suffered from Quincke's oedema—a condition which the author has found to be remarkably common in Denmark. The association of headache with these cases suggests that it may be due to oedema of the meninges. The dose of calcium lactate recommended by the author is 1 gram once to thrice a day for a period of three weeks. This drug not only relieves the headache, but may also banish such troublesome symptoms as those of vasomotor rhinitis.

187.

### Simple Acroparaesthesia.

F. HEISSEN (*Klinische Wochenschrift*, December 9th, 1922, p. 2473) describes the clinical features of simple acroparaesthesia, and records two severe cases. In both cases severe attacks of a sensation of pricking and numbness in the legs, below the knees, occurred daily early in the morning. The author discusses the symptoms and etiology of the simple form of the affection, which, though not very rare, is not well known to medical practitioners. The application of warmth (warm bath or hot air) has a beneficial effect, and the patient is very sensitive to cold. The attacks are definitely related to excess of alcohol or coffee; the patients are less sensitive to tea and nicotine. Frequent associated symptoms are morning headache, superacidity, periodic attacks of diarrhoea alternating with constipation, attacks simulating migraine or angina pectoris, tendency to sweating, urticaria, oedema fugax, acrocyanosis. Two forms of acroparaesthesia have been described—the simple form (Schultze's type) and the vasomotor or angiospastic form (Nothnagel's type). The terminal stage of the simple form of acroparaesthesia is vascular paresis—acrocyanosis, with cessation of the paraesthesia. The vasomotor or vaso-constrictor form may terminate in recovery, or gangrene may develop. In the simple form the symptoms are temporarily relieved by warm baths, whilst in the vaso-constrictor form the symptoms are increased thereby. The two forms are two diseases of different nature and etiology. The vaso-constrictor form is allied to Raynaud's disease, and may be regarded as the first stage of this affection.



## 188. The Effect of Olive Oil on Gastric Function.

B. C. LOCKWOOD and H. G. CHAMBERLIN (*Arch. Int. Med.*, January 15th, 1923, p. 96) investigated the effect of olive oil on gastric function, as measured by fractional analysis, in thirteen patients, seven with normal gastro-intestinal tracts, and six with either pyloric or duodenal ulceration. It was found that one ounce of olive oil given before meals caused a reduction in the average total acidity by about 12 per cent. and a similar lowering of the high point of the curve. There was also delayed evacuation of the test meal in the stomach; the bread of an Ewald meal was delayed forty minutes longer than in the control, the oil remaining at least fifteen minutes longer and being the last portion of the meal to be evacuated. Regurgitation of bile occurred in about 80 per cent. of the cases, being five times as frequent after the administration of oil as without it. The results coincided with those of Cowie and Munson, who attributed them to the oil coating the food and mucous membrane, thus lessening the normal local reflex action of the food; but in view of the biliary regurgitation into the stomach it seemed possible that the reverse peristalsis resulting therefrom might account for the delayed emptying, and alkaline duodenal regurgitation might also lower the acidity to the extent found.

## SURGERY.

## 189. "Rejuvenating" Operations.

W. HAUBENREISSER (*Deut. Zeit. f. Chir.*, November, 1922, p. 31) compares the present interest taken in the subject of "rejuvenating" operations in the medical and lay press with that aroused by Brown-Séquard's work on testicular extract in 1889, and considers the end-result will be much the same—namely, an increase in our knowledge of the various internal secretions, but nothing startling in the way of immediate practical results. Three different methods have been tried extensively in recent years—namely, Steinach's operation of ligating the vas deferens, grafting of testicular substance, and exposure of the testes to x rays in doses calculated to stimulate those organs. Some workers have reported very successful cases, others have experienced many complete failures. The theory that the interstitial cells of the testis provide the all important internal secretion does not find general acceptance; experiments on the lower animals have failed to support it, and many authorities (Aschoff, Meyer, and others) consider that these cells are concerned only in the nutrition of the germ cells, the latter being the source of the internal secretion. The author describes his own series of ten cases operated on during the last two years. In eight of these, thin grafts of healthy testicular substance, taken from patients who were being subjected to epididymectomy for tuberculous disease, were implanted into pro-peritoneal pockets in the abdominal wall. One case was successful—that of a man who had lost both testes from a war injury, and suffered from impotence, mental depression, and general weakness. Potency returned four weeks after operation, and the mental and physical improvement which followed was maintained two years later. One patient committed suicide soon after operation. Of the other cases in which operation was undertaken for a variety of complaints—for example, loss of testes from tuberculosis, eunuchism associated with cryptorchism, homosexual perversion, etc.—none were successful. Two cases in which the vas was ligated (one suffering from impotence and mental depression, the other from premature loss of virility) were not benefited. Four cases treated by x rays were not improved in the slightest degree. The author concludes that the only method of any value is that of testicular grafts, applied in cases where both testes have been lost in adult life, to relieve the symptoms which follow that contingency. He doubts whether the graft functions for any length of time; all the evidence goes to show that it is soon absorbed. It is possible that its absorption stimulates other internal secretions in the body, which may then replace to some extent that normally provided by the germ cells of the testis.

## 190. The Effect of Magnesium Sulphate Injections on Carcinomata.

R. REDING and A.-P. DUSTIN (*C. R. Soc. de Biologie*, February 3rd, 1923, p. 301) have issued a brief preliminary note on the influence exerted by the intramuscular injection of magnesium sulphate on certain tumours. Their observations appear to have been conducted on patients suffering from carcinomatous metastasis after excision of the primary growth. In certain cases they were able to amplify their clinical deductions by actual biopsy during the course of treatment. Their conclusions may be summarized as follows: (1) Intraosseous and intradermal metastasis secondary to cancer of the breast diminish rapidly in volume after intramuscular injections of magnesium sulphate.

(2) Histological examination reveals that, after a preliminary phase, during which atypical division is most in evidence, the cells cease to divide in the metastatic growths, so that the latter progressively diminish in volume. This decrease in size is due partly to the failure of cell division, partly to the shrinking of the tumour cells, and partly to the development of a dense fibrosis around, which progressively strangles the alveolar epithelium. Hitherto no destruction of the cells by phagocytosis has been noticed; even when the nodules are reduced in size, so as to be almost imperceptible, it is still possible to find in them the neoplastic cells. (3) The involution of the metastasis is regularly accompanied by an improvement in the general state of the patient.

## 191. Malignant Disease of the Vermiform Appendix.

H. M. PERRY (*Journ. Roy. Army Med. Corps*, December, 1922, p. 419), in outlining the clinical history and pathology of primary malignant disease of the vermiform appendix, states that with routine histological examination the reported cases of this condition have increased in number. In two recorded cases both patients had suffered from recurrent attacks resembling in nature an ordinary appendicitis, and at the time of operation there was no suspicion of underlying malignant disease; in one case signs of chronic inflammation were present, in the other they were entirely absent. Microscopic examination showed that one case belonged to the group of endotheliomata, the cells being arranged in an alveolar formation. These growths possess a low type of malignancy and growth is slow. The second case appeared to be a spheroidal-celled carcinoma with an excessive overgrowth of fibrous tissue, and it is suggested that it originated from the Lieberkühn's glands in this situation. In this case recurrence of the growth took place later, but the prognosis in spheroidal-celled carcinoma of the appendix is usually not unfavourable; extension is, as a rule, slow and early operative interference usually successful. Primary malignant disease of the appendix is often entirely localized, and when infiltration does occur its extension is not rapid. Dissemination by way of the lymphatics does not appear to be usual. How far the occurrence of chronic inflammatory change acts as an exciting agent in determining the incidence of growths is unknown. The fact that malignant change is not altogether uncommon is an added incentive to removal of the organ when symptoms of chronic inflammation become manifest.

## 192. Spinal Anaesthesia.

E. TYTGAT (*Le Scalpel*, January 27th, 1923, p. 91) reviews in detail the subject of spinal anaesthesia. In his opinion it is the procedure of choice in operations below the level of the diaphragm where a purely local anaesthetic will not suffice. Whilst admitting it is not free from danger, he insists that serious mishaps are not frequent—at any rate not more so than with general anaesthesia. He considers that trouble can be largely avoided by never employing the method in any of the conditions of brain, cord, or spinal column which render it unsuitable—for example, syphilis, tuberculosis, deformities, apoplexy, dementia. A further safeguard is scrupulous attention to details of technique, among which he emphasizes the employment of a fine pliable needle as less likely to cause damage, a slow withdrawal of cerebro-spinal fluid to the amount of 10 c.cm. which is utilized as a diluting medium for the particular substance about to be injected, the precaution of keeping the head of the patient strongly flexed on the chest in all cases, and a strict observance of asepsis. He prefers novocain and its analogous products to cocaine or stovaine, as being less toxic, exercising no paralyzing action on the nervous system, having considerable anaesthetic power, and being very diffusible. Along with it he employs adrenaline (half a milligram to ten centigrams of novocain), and claims that the addition reinforces the anaesthetic and hastens the induction. He notes that by some authorities adrenaline is said to cause trophic disturbances, headaches, and localized gangrene, but this is not his experience. The level of the anaesthesia is influenced by the site of puncture, the position of the patient, and the diffusibility of the drug used. The duration is determined by the amount injected. In his experience neither the pressure of the cerebro-spinal fluid nor the amount withdrawn has any influence on the height or depth of the anaesthesia.

## 193. Treatment of Temporo-sphenoidal Abscess.

F. MUECKE (*Journ. Laryngol. and Otol.*, February, 1923, p. 72) records two apparently almost hopeless cases of temporo-sphenoidal abscess in which recovery took place. One, a woman aged 52, showed every sign of mastoid disease with a direct necrosed tract through the tegmen to the abscess; the other, a child aged 5, presented no evidence of mastoid trouble, the only sign of previous ear mischief



being a healed perforation at the lower anterior quadrant, and healthy tissue was situated between the indolent clot and the abscess, pointing to a probable vascular infection. At operation all disease in the mastoid and middle ear should be eliminated, special attention being paid to the attic and zygomatic cells. For the prevention of cerebral hernia, which not only blocks drainage but so alters relations as to render it increasingly difficult to locate the original abscess, the exposure of the dura mater should be as small as is consistent with the complete removal of diseased bone, and only a small linear incision should be made into it. Not more than three fairly superficial explorations of the brain matter should be made, the first being forwards and upwards, the next directly upwards, and the third backwards and upwards, these being in the order of frequency of the site of a temporo-sphenoidal abscess. The abscess cavity should not be washed out. Drainage is best effected by a stiff rubber tube inserted into the cavity for the same distance as the forceps had to be inserted in order to give free drainage, and long enough to rest on the lower shelf of the chiselled-out mastoid, and prevented from slipping by gauze packing. Since anaesthetics undoubtedly lower resistance in these severe toxic cases the operation should be as speedy as possible, and no anaesthetic should be given for subsequent probings; and since the abscesses are often multiple further explorations may be necessary as symptoms arise.

#### 191. Tumour of the Carotid Gland.

FEDELI (*Arch. Ital. di Chirurg.*, November, 1922, p. 217) records a case of tumour of the carotid gland in a man aged 59 successfully treated by operation. Very full details of the structure of the tumour are given and references with brief details of 90 collected cases (81 observed during life and 9 found at autopsy). Tumours of the carotid gland are often of a mixed character but usually display a mild malignancy. Different authors have classified them in various ways as angiosarcoma, epithelioma, etc., and some of the confusion comes from lack of knowledge as to the significance of the carotid gland. In the author's case the tumour was of mixed origin. Nothing certain can be said as to the etiology, and the symptoms are chiefly due to mechanical pressure. In diagnosis one has to consider the site of the tumour, its horizontal—not vertical—mobility, its ovoid form, with smooth slightly lobulated surface, transmitted, not expansile, pulsation; bruits are rare; sometimes there is myosis of the corresponding pupil; growth is slow. There is no pain. Operative treatment is not free from risk, but much of this risk is due to the fact that owing to slow growth and absence of marked symptoms operation is delayed until the disease is well advanced. The author thinks that it might be well to operate earlier in these cases. Local anaesthesia and preliminary temporary haemostasis of the carotid are useful points in the technique of operation. There is a valuable bibliography of cases collected from various sources and numbering 90 in all.

#### 195. An Unusual Fracture of the Os Calcis.

H. VULLIET (*Rev. Méd. de la Suisse Romande*, December, 1922, p. 815) describes two cases of fracture of a portion of the anterior articular surface of the os calcis. In the first case the patient fell with the foot fixed; there was ecchymosis and pain localized in the instep over the outer part of the medio-tarsal articulation. As the pain persisted a skiagram was taken and showed an incomplete fracture of the anterior part of the os calcis; a semi-diagrammatic drawing (from the skiagram) shows the fragment of bone still attached to the articular cartilage. The patient was unable to work for eight weeks. In the second case the foot had been strongly compressed from before backwards. A few days afterwards ecchymoses appeared on each side of the tendo Achillis, and more especially on the dorsum and outer surface of the foot. A skiagram showed a larger fragment of the os calcis in the same region as described in the first case, but completely separated from the anterior articular surface of the os calcis. The patient was completely incapacitated for fifteen days, and partially incapacitated for a second fortnight. Vulliet discusses the mechanism of the fracture, which appears to be due to a laceration of the ligaments in the region of the calcaneo-cuboid joint; he recommends the routine use of skiagraphy in all cases of obscure injury to the foot.

#### 196. Congenital Malformation of the Intestine.

W. S. QUINLAN (*Boston Med. and Surg. Journ.*, December, 1922, p. 370) suggests that atresia and imperforate anus may be regarded as rare forms of congenital malformation of the intestine due to embryonic arrest in development. The arrest occurs once in about 15,000 infants, and may be found in any portion of the intestine from the duodenum to the rectum. Imperforate anus results from the imperfect union

between the rectum above and the posterior part of the common cloaca below. The deformity exists in varying degrees. The rectum may open into various situations, more commonly into the bladder or urethra, or sometimes into the vagina. Atresia may be due to bands, twists, adhesions, or bends. In the duodenum the lumen becomes divided into compartments by septa in the embryo; later the compartments become confluent and the lumen is re-established. The persistence of these septa may lead to occlusion of the gut. Atresia is due to embryonic arrest of development rather than to mechanical injury, of which it may be the end-result. The majority of cases seem to occur in the duodenum and jejuno-ileum regions. The prognosis is grave on account of complications, particularly in males, in whom the malformation is more frequent. Death occurs in five or six days if the occlusion is high up. The presence of a patent external anus usually furnishes enough proof that the intestine is well formed, but importance must be attached to the first bowel movement of the infant. Surgical intervention is the only treatment. The perineal approach is most frequently adopted, but sometimes an enterostomy is resorted to. The author records twenty-five hitherto unpublished cases, with notes on the condition.

### OBSTETRICS AND GYNAECOLOGY.

#### 167. Pituitary Extract in the Induction of Labour.

B. P. WATSON (*Amer. Journ. of Obstet. and Gynecol.*, December, 1922, p. 603) describes two methods of administering pituitary extract for the induction of labour. His first method is as follows: Castor oil at 6 p.m., quinine hydrochloride gr. x at 7 p.m., enema at 8 p.m., quinine hydrochloride gr. x at 9 p.m., quinine hydrochloride gr. x at midnight. If labour does not begin by 9 a.m. pituitary extract 1/2 c.c.m. is given intramuscularly and is repeated at half-hourly intervals until six doses have been given, no further doses being given should labour start with fewer injections. If labour does not start pituitary extract is given in the same way the next day and the day after. Labour was induced in 90 per cent. of cases by this treatment. The second method is to give the pituitary extract in the dosage mentioned above without having administered castor oil and quinine previously, and by this method labour was induced in 90.7 per cent. of cases; 29.9 per cent. were induced by the castor oil and quinine alone. No untoward effects in the mother or the child were noted in a series of 276 cases except in the case of one mother, who had severe vomiting, which ceased when the pituitary extract was discontinued. The author shows that the above methods can be used in cases of eclampsia and high blood pressure, as the pressure was never raised more than 5 mm. with a single dose of pituitary extract, and the subsequent injections raised the pressure no higher.

#### 193. Cranial Stress in the Foetus.

EARDLEY HOLLAND (*Journ. Obstet. and Gynaecol. of the British Empire*, Winter, 1922, p. 549) describes and illustrates the intracranial septa springing from the dura mater of the foetal skull and points out that certain localized thickenings which they present form strengthening bands arranged along the lines where the chief stress is likely to fall during the moulding of the head in its passage through the pelvis. Post-mortem examination in 167 foetuses dying during the course of labour showed tears of the tentorium cerebelli in 81, associated with tearing of the falx cerebri in 5 cases, and with subdural cerebral haemorrhage in all but 6. The tears were found to occur in the region of the strengthening bands, and varied according to the direction of the stress in different presentations of the head. The subdural haemorrhages did not arise from the tears of the tentorium, and from dissections of formalin preparations it was apparent that the bleeding occurred in a narrow area bounded in front by the transverse fissure, behind by the upper parts of the tentorium, below by the pons Varioli, and laterally by the mesial aspects of the lateral cerebellar lobes. The centre of this area corresponds to the vein of Galen, and although rupture of the vein itself was detected in two instances only it is concluded that the usual source of the haemorrhage is the tributaries of that vein, which, by reason of drawing up of the apex of the tentorium during the moulding of the head, becomes kinked at its entrance into the straight sinus. Together with tentorial tears the vein of Galen was always found greatly engorged and distended. Of the 44 foetuses showing subdural haemorrhage after birth by vertex presentation, 25 had been delivered by forceps, and Holland is inclined to believe that the forceps had been used with excessive force, or applied in the wrong diameter of the head, or both. Tears were found in 35 of the 47 cases of breech delivery in the series, and in



no fewer than 15 of 17 cases of normal breech labour followed by foetal death. The presence of tentorial tears in 71 per cent. of dead foetuses delivered after podalic version was less surprising. With few exceptions the foetuses whose examination forms the basis of the paper were born in hospital practice.

#### 199. Manual Removal of the Uterus after Abortion.

L. RAEMI-BOESCH (*Schweiz. med. Woch.*, January 11th, 1923, p. 41) records the following incident to show how disastrous "furor operativus" may be. A nullipara, aged 38, was four months pregnant when violent uterine haemorrhage began. A practitioner, summoned in the evening, inserted a tampon in the vagina. Returning next morning, he withdrew the tampon with part of the ovum. He then attempted to remove the placenta by hand, working without any instrument and giving no anaesthetic or other drug. After he had removed the placenta with great trouble, he thought he felt a myoma in the uterus, so he proceeded to remove it—again without instruments or drugs. After he had been engaged in this occupation for nearly two hours, he pulled out through the vagina a "tumour" which remained attached to the body only by a few strands of tissue. The patient's relatives forbade further interference, the author was summoned in consultation, and the patient taken to hospital, where the "tumour" proved to be the uterus, attached to the body only by some filaments of peritoneum. These were severed, laparotomy was performed, and the torn structures hastily sutured. The uterus was as large as a fist, but not inverted. It still contained a large piece of the placenta. The patient left hospital twenty-seven days later cured. There were no medico-legal sequels, and the practitioner had, apparently, acted in perfectly good faith.

#### 200. Radium Treatment of Metrorrhagia.

A. SIREDEY (*Paris méd.*, February 3rd, 1923, p. 113) discusses the indications and contraindications for radium in the treatment of metrorrhagia not due to cancer or fibroids. In the first place, he considers radium unnecessary in metrorrhagia due to constitutional causes such as cardiac, renal, or hepatic disease, endocrine disturbance, or changes in the blood cells or plasma. In the great majority of such cases rest, suitable drugs, and the application of ice to the abdomen are all that is required. Secondly, radium therapy is contraindicated in puerperal haemorrhages in which rest, careful observation, and, in case of retained placenta, curettage are needed. On the other hand, radium is specially indicated in cases of haemorrhagic metritis in which the uterine mucosa has undergone ulcerative dystrophy or has become the seat of minute rudimentary myomata, haemorrhage from which is not checked by curetting. Radium is also indicated in cases in which polypi recur after careful curetting, except when there are acute or chronic inflammatory lesions of the adnexa present. It is specially valuable for obstinate cases of metrorrhagia which frequently occur about the menopause, whether the haemorrhage be due to a large subinvolved uterus in multiparae, old inflammatory lesions, or sclerosis of the uterine vessels or parenchyma. In such cases there is no need to be deterred from using radium by the fear of producing an early menopause, which is of much less importance than the persistence of severe haemorrhage.

### PATHOLOGY.

#### 201. The Serum Diagnosis of Tuberculosis.

FURTHER evidence of the value of the complement fixation test in the diagnosis of tuberculosis is brought by E. RENAUX and P. KULLMANN (*Archiv. médicales belges*, January, 1923, p. 1). For one series of serums they used Calmette and Massol's technique with Besredka's antigen; for another series they employed this technique together with Goldenberg's, so as to study the comparative values of the two. In this latter method the same antigen is used, but instead of working with guinea-pig's complement and an anti-goat haemolytic immune body, advantage is taken of the presence of both complement and haemolysin for goat's red cells in the serum of the patient. In the first series of patients examined there were 31 who had tubercle bacilli in their sputum; of these, 30 gave a positive fixation reaction, while the serum of the remaining patient could not be studied, as it had a marked agglutinating effect on the red cells employed. Of 14 subjects clinically and radiographically tuberculous 10 gave a positive reaction, and of 26 patients suspected of tubercle 6 reacted positively. In the second series 109 persons were examined. Of 18 with positive sputum 14 were positive by the former technique, 13 by the latter. Of 40 subjects clinically and radiographically tuberculous 30 gave positive reactions by both methods. Of 45 subjects suspected of tubercle 20 reacted positively by both methods, and in

6 normal persons negative results were obtained in each case. With the single exception of one serum, the two methods corresponded absolutely. Taking the two series together, it is found that 89 per cent. of patients eliminating bacilli in their sputum, 74 per cent. of patients clinically and radiographically tuberculous, and 36 per cent. of suspects give a positive reaction. In these figures all cases giving a positive Wassermann reaction are excluded. The authors obviously consider that a positive complement fixation reaction is highly suggestive of active tuberculosis, and that a negative reaction is to be interpreted as evidence against its existence, though neither result is to be treated too dogmatically.

#### 222. Multiple Types of Bacteriophage?

EVIDENCE is being produced in favour of the proposition that more than one type of (hypothetical) bacteriophage exists. J. TCHANG KOUO-NGEN and J. WAGEMANS (*C. R. Soc. de Biologie*, February 3rd, 1923, p. 303) find, for example, that there is a distinct difference in the sensibility of various strains of bacteriophage to the action of heat. Some are able to withstand a temperature of 80° C., while others are killed by exposure to temperatures lower than this. Further, the effect of heat on successive cultures of any one strain does not appear to be constant; an instance is given of one strain which at first resisted exposure to 80° C., but which in later cultures succumbed to the same degree of heat. J. WAGEMANS (*Ibid.*, p. 304) likewise cites a point of difference between the various bacteriophages—namely, in their capability to excite antibody production in animals. With some antigens it is a simple matter to obtain a serum of a titre of 1 in 1,000, while with others it is difficult to raise the titre above 1 in 2. That this does not depend on the idiosyncrasy of the particular animal employed is shown by the fact that the same results were obtained even when several animals were employed. Another point of interest is that bacteriophages which have become adapted to micro-organisms other than their original one can still, as a rule, be neutralized by their primary antiserum. A. GRATIA and Mlle L. DE KRUIF (*Ibid.*, p. 308), in studies on the titration of the bacteriophage, find that the activity of the latter is dependent, not on its concentration, but upon the actual amount present. Thus, if a quantity  $x$  be placed in a tube containing 1 c.cm. of broth, and the same quantity in a flask containing 1,000 c.cm. of broth, lysis occurs equally well, even though the dilution is very much greater in the second case.

#### 203. The Effect of Naphthalene Emulsion on Experimental Intestinal Tuberculosis.

T. REDMAN (*Journ. Path. and Bact.*, 1922, vol. xxv, p. 433) reports the results of some work designed to ascertain the effect of naphthalene emulsion on intestinal tuberculosis. The animals chosen were guinea-pigs; these were divided into twelve sets, comprising in all 56 animals, of which roughly one-half were used for experimental and one-half for control purposes. With the exception of two sets, they were all infected by feeding with heavily infected sputum mixed with a bran mash, either one, or at most two, feeds being given. In this way a slowly progressive ascending infection of the alimentary tract was produced; the mesenteric glands were involved by about the thirty-sixth day after feeding, the ileo-colic glands and spleen by the fifty-fourth day, the portal, post-sternal, and bronchial glands, together with the liver and lungs, by the seventy-fifth day, and the cervical and submental glands by the eighty-third day. The upward progress of the infection was constant and continuous, no intermediate glands being skipped. The general plan of the work was to allow the infection to proceed unchecked in both control and experimental animals, and then after periods of time varying from 20 to 132 days to treat the latter by means of the naphthalene emulsion, the usual dose of which was 1 drachm by the mouth daily for seven days. The effect of the treatment was observed at the subsequent autopsy of the guinea-pigs, undertaken after suitable intervals, when the lesions in the treated animals were carefully compared with those in the controls, histological examinations being conducted in most cases. Briefly, it may be said that no matter at what stage the naphthalene emulsion was administered, its effect was to retard the progress of the infection. If given 20 days after infection it delayed the appearance of tuberculous lesions for 75 days, at the end of which period only a slight infection of the caecal glands was found, while after 111 days, though the mesenteric glands were enlarged, there was no other evidence of tuberculosis; this was in marked contrast to the control animals, in which extensive invasion of both glands and organs has occurred. Infection of the spleen was prevented for between 54 and 75 days, and of the liver and lungs for 115 days after ingestion of the tuberculous material; and even when not given till severe infection had become established, the effect of treatment was to prolong the life of the animal.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

### 202. Psychotherapy in General Practice.

EDWIN BRAMWELL (*Edin. Med. Journ.*, February, 1923, p. 37) urges the importance of psychotherapy in general practice, since it is to the general practitioner that the best opportunities are given for studying the neuroses in their earliest stages. From such a unique experience he should be capable of dealing with all but severe cases by the application of psychotherapeutic methods of suggestion and persuasion, and be responsible for their prevention. For him a study of the disorders of the mind is as important as the study of bodily ailments in the successful treatment of patients by psychotherapeutic measures, and he must be able to recognize the necessity for such treatment and be fully alive to the mental suffering often associated with the neuroses. To tell a patient so afflicted that there is nothing the matter with him constitutes both an act of cruelty and a display of ignorance which must eventually reflect upon the honour of the profession. The clinical teaching of the subject, if it is to be of use to the general practitioner, must remain largely in the hands of the general hospital physician, who has the necessary experience and material at his disposal, and alienists and pure psychologists in their teaching must avoid creating the false impression that psychotherapy is a specialty only to be taught and practised by specialists. Psycho-analysis, requiring as it does much time and patience, ought only to be carried out by specialists able to devote adequate time to the treatment of individual cases, and it must not be confused with psychotherapy, which comes into the domain of the general practitioner, who should keep abreast with advances in this direction in so far as it has a direct application to his daily work.

### 205. Psychic Sequels of Encephalitis Lethargica.

K. WINTHER (*Ugeskrift for Læger*, February 1st, 1923, p. 73) has studied the psychic after-effects of epidemic encephalitis, and has come to the conclusion that there is no relation between the acuteness and the severity of the primary disease and the onset and character of the psychic sequels. As a rule the psychic disturbances follow directly after the acute stage. There were 4 cases in which the encephalitis was followed by lassitude, lack of initiative, apathy, faulty memory, and incapacity for work. There were 4 other cases in which the dominant character of the psychic disturbances was emotional instability. In all these 8 cases there appeared to be a tendency towards recovery, although the duration of the symptoms ranged from six months to three years. Turning from adults to children, the author insists that when the disease attacks children between the age of 5 and puberty, and the mind is affected, the psychic phenomena are amazingly uniform, and are suggestive of a psychopathic degeneration. Owing to such troublesome symptoms as libido praecox, these cases are very difficult to manage at home, and are badly in need of institutional supervision. The prognosis for these cases is, indeed, bad, and most of the changes observed by the author were for the worse. Of a total of 25 cases of epidemic encephalitis observed at one hospital in the period 1918-22, 11 terminated fatally in the acute stage. Two survivors could not be traced, and of the remaining 12 patients not one was well six months after the illness. Two years after the illness 5 were still suffering from severe and 3 from slight psychic disturbances.

### 203. Unusual Results of Encephalitis Lethargica.

K. PETRÉN and L. BRAHNE (*Journ. of Nerv. and Mental Disease*, February, 1923, p. 105) describe two cases of encephalitis lethargica in which hypertonic rigidity of the limbs was so intense that neither active nor passive movements were possible in them. In neither case were there any signs of lesion of the pyramidal tracts. In one case the paralysis was hemiplegic, and syphilis was suspected, but negative blood and cerebro-spinal fluid tests, the hypertonic character of the paralysis, and the rapid restoration of power made the diagnosis of encephalitis lethargica more probable. In the other case immobilization affected the whole body with the exception of the ocular, respiratory, and swallowing movements, which were preserved. The patient lay like a statue, and the limbs were so rigid that passive movement of the joints was impossible. Swellings appeared in the limbs and were followed by irregular ossification of the soft parts round the right elbow- and knee-joints, resembling myositis ossificans. Under treatment by massage and move-

ments these bony formations disappeared, and the activity of the limbs returned to a great extent. Similar ossification of paralysed soft parts has been described by Mme Dejerine-Klumpke and by Ceillier in cases of severe injuries of the cord or cauda equina. As in Petré's case it was always preceded by oedema of the limbs, but its relation to either paralysis or oedema is unknown. In no previously reported case has it been known to disappear.

### 207.

### Neurasthenia.

F. DAUWE (*Arch. méd. belges*, December, 1922, p. 1163) observes that neurasthenia is not a product of modern times. It is common to all countries, and has existed probably in all ages. Hippocrates described it, and it is evident that Galen's "hypocondria" was allied to neurasthenia and melancholia. Richelieu described the neurasthenia of Louis XIII. It is the result of the "struggle for existence," and is therefore most common in the strenuous period of life—from 20 to 50. The male sex comprises two-thirds of the cases. It is rare in infancy, but is frequently hereditary and constitutional. The mental condition is dominant, and it is often described as "psychasthenia," characterized by anxiety, phobias, impulsive obsessions, tics, and most frequently exhaustion is the foundation of true psychasthenia. Janet regards it as an entity, but while true neurasthenia and true psychasthenia demand a special description, in practice it is very difficult to define the hereditary factor, and frequently the conditions are associated. Even in acquired neurasthenia we must accept predisposition. Nervous overwork is always its foundation. Dauwe enumerates the physical symptoms—headache, dyspepsia, etc.—and then describes the mental condition resulting from the physical state of the patient: failure of will power, of concentration, of memory; but the mental state is not that of hysteria. The psychasthenic writes out a long list of his symptoms, and returns, fearing that he has omitted one. It is not an imaginary disease—hysteria is the offspring of imagination, suggestion will cure it; neurasthenia is the product of exhaustion, suggestion cannot control it. Treatment requires all the ingenuity and knowledge of the physician. The cause must be discovered and removed. Almost all these patients love the stress which exhausts them and cannot withdraw from it because it is their means of livelihood. Stimulants or narcotics only increase the exhaustion of the nerve cell. Possibly increase or diminution of the intracranial pressure by hypertonic or hypotonic intravenous saline injections may do good. Prophylaxis may be summed up in a phrase—moderation in all things. Mental work and physical exercise should alternate. The patient should be (in the words of Henri Bordeaux) taught that life has still, for him, some mission to be fulfilled in the world; he must be warned against fruitless introspection. The healthy man is an altruist. Egoism and "ego-centrism" are pathological. The egoist is not cured and cannot be.

### 208.

### Treatment of Pernicious Anaemia.

G. ROSENOW (*Klinische Wochenschrift*, January 1st, 1923, p. 24) reviews the various methods of treatment in pernicious anaemia. He concludes that either combined or separately certain results cannot be expected therefrom. Nevertheless some of them undoubtedly prolong life and accelerate the occurrence of remissions of the disease. For general practice three are specially to be recommended: (1) Arsenical treatment; (2) intramuscular injections of small quantities of blood; and (3) treatment by thorium X water. Since Byrom Bramwell first recommended arsenic no better drug has been found in the treatment of pernicious anaemia. There can be no doubt that since its use remissions in the course of the disease have been observed much more frequently than formerly. It is best given by mouth (10 c.cm. of liquor arsenicalis are mixed with 10 c.cm. of peppermint water in a drop bottle, and 3 drops are given three times a day; the dose is increased up to 30 drops of this mixture three times a day); the drug should be given on a full stomach, and it should be continued for a long period—several weeks or months. The possibility of toxic symptoms, skin pigmentation, and arsenical neuritis should be borne in mind. But in pernicious anaemia the tolerance for arsenic is high. Atoxyl should not be given on account of the risk of optic atrophy. Salvarsan is not superior to inorganic arsenical preparations. The author has treated cases with thorium X and not infrequently obtained results equal to the best obtained by arsenic. Thorium X is of service in some cases when arsenic has failed. It is given in a solution two or three times a week for four to



six weeks. The bottle containing the suitable dose should be used immediately because the activity rapidly diminishes. Not infrequently improvement in the blood condition follows transfusion of normal blood. This can be best performed according to Weber's intramuscular method: 10 to 20 c.cm. of blood are taken by means of a syringe from the arm of a healthy individual (free from syphilis and malaria) and injected directly into the gluteal region of the patient. The injection may be repeated later.

#### 209. Duodenal Ulcer.

ASCOLI (*Rif. Med.*, November 13th, 1922, p. 1092) finds duodenal ulcer more common than gastric ulcer in the proportion of 2.4 to 1, and occurs twice as often in the male as in the female. The first symptoms are usually noted at about 20 years of age. Predisposing causes are heredity, nervous temperament, chronic poisoning by lead, alcohol, infections, oral sepsis, tuberculosis, appendicitis, and cholecystitis. Duodenal ulcer is often secondary to some other chronic gastro-intestinal disease. The ulcer is more often superficial than deep, and the resulting cicatrices differ. Exceptionally the ulcer becomes cancerous. Radioscopy gives valuable aid in diagnosis. Points to look for are hypermobility of the stomach, duodenal shadows six hours after food, circumscribed tenderness, dextro-position of the stomach, hour-glass stomach, and persistent wrinkling of the stomach. Hydrochloric acid may or may not be in excess; if in excess the ulcers are usually recent. Occult blood may be found in the faeces. The character of the pain is very suggestive, if not exactly pathognomonic. Serial radiography is an important aid to diagnosis. Examination of the contents of the stomach has little importance *per se*. In the presence of severe pain and abdominal colic one should suspect peritonitis by propagation or perforation. When an ulcer becomes chronic this depends in the first place on hypersecretion of the gastric juice and disturbed mobility. Spontaneous cure may take place. In treatment, general measures should first be tried, so as to eliminate the cause if possible. Diet should be non-stimulating (few proteins, no spices, no alcohol), indigestible residues should be avoided (few vegetables, food well cooked and well masticated), a sufficiency of calories and adequate diet. Alkalis and mild saline laxatives, atropine injections, papaverine internally, bismuth or barium salts, and rest in bed are the lines of medical treatment. Surgical treatment is, in the author's opinion, usually concerned with deep ulcers, and with complications when they arise.

#### 210. Primary Pfeiffer Bacillus Meningitis in Infants.

LISBONNE and LEENHARDT (*Paris méd.*, January 13th, 1923, p. 47), who record a fatal case in a male infant aged 2 years, remark that while numerous cases of meningitis due to the Pfeiffer bacillus have been recorded as occurring at the terminal stage of an attack of severe or complicated influenza, comparatively little attention has been paid to primary Pfeiffer bacillus meningitis in infants. The authors' case shows that Pfeiffer bacillus meningitis may commence like any other acute primary meningitis, apart from any epidemic or source of contagion or previous symptoms of influenza. At most a septicaemic stage ranging from twenty-four to forty-eight hours may precede the meningeal localization. The onset is sudden, like that of meningococcal meningitis, and the disease rapidly proves fatal without treatment having any effect. The diagnosis is only possible by lumbar puncture, which enables the bacillus to be identified. Although too few cases have been recorded to enable the frequency of this condition to be estimated, the authors think it probable that a large number of cases of purulent meningitis in which the organism remains unknown are really due to the Pfeiffer bacillus. They are strengthened in this belief by the technical difficulties in identifying the bacillus and the variable character of its morphological appearances in the cerebro-spinal fluid.

#### 211. Hereditary Osteitis.

CAMURATI (*La Chir. degli Organi di Movimento*, November, 1922, p. 662) reports (with radiographs) a rare case of chronic osteitis of the lower limbs in a boy aged 7 years. The history was that he had suffered from birth with pains in the lower third of the thigh and upper third of the leg—worse on movement and at night. Ten males in the family (going back three generations) had suffered in a similar fashion. In other respects the health was good; the Wassermann reaction was negative in father and son. After 20 years of age the legs gave no trouble. In both father and son the affected parts were much enlarged. The appearances were like those of osteitis deformans.

## SURGERY.

212.

#### The Etiology of Femoral Hernia.

J. ALLISON PANTON (*Journ. of Anatomy*, January, 1923, p. 106) discusses the etiology of femoral hernia, which he has investigated on the cadaver and from hospital records of the condition, as well as from careful pelvic measurements carried out on patients. He reasons that man is peculiarly exposed to this form of hernia as a result of his erect posture, and in particular of his plantigrade mode of progression. The erect attitude has resulted in an increase of abdominal pressure against the crural ring; it demands a widened pelvis in order to balance the trunk properly, which would otherwise be top-heavy, and widening postulates weakening. Furthermore, plantigrade action has led to alteration in muscle structure and insertion, involving a widening and weakening of the femoral ring as compared to that of anthropoids, who are erect but not plantigrade. He refutes the commonly expressed view of textbooks that the greater incidence of femoral hernia in the female is due among other factors to the wider pelvis, and states that the false pelvis in the female is either narrower than in the male or equal to it. He also draws attention to the fact that the female Poupart's ligament is the shorter, and the pelvo-crural interval, therefore, the more narrow. He is of opinion that the greater incidence in females is due to the less developed ilio-psoas, which permits the femoral vessels to diverge more than in the male, thus producing a wider crural ring, to which contributes also a greater tendency of Poupart's ligament to sag. Women, too, are more deficient in muscular tone and development, and subject to greater variations in abdominal pressure. In either sex defective or poor development of Gimbernat's ligament may be a contributing factor, but in the female this ligament is actually the larger. The small number of cases in children is attributed to the narrowness of the pelvis, the efficient muscular tone, the small pelvo-crural interval, and the absence of exposure to sudden strain. The actual occurrence of femoral hernia depends on the existence of a preformed sac. This appears to be remarkably common even where the subject had never shown any symptoms of hernia. It is probable that the diverticulum is brought down by abnormal gubernacular muscle bundles. Such sacs are said to be equally common in both sexes.

213.

#### Appendicitis and Oxyuris vermicularis.

THE relation between appendicitis and *Oxyuris vermicularis* has been studied by E. H. EASTWOOD (*Journ. of Path. and Bact.*, January, 1923, p. 69), who found that oxyuris occurred in the appendix with equal frequency in cases of appendicitis and in normal appendices from the post-mortem room, so that no evidence was found to support the theory that oxyuris is frequently a cause of appendicitis. Oxyuris when present in the appendix does not cause a local eosinophilia, but eosinophils are present in the mucosa of the appendix in much greater numbers in appendicitis than in normal appendices, their numbers showing a definite relation to the stage of inflammation. Twenty-four hours after the onset of the attack they rise to above normal and they reach their maximum in the second week, after which the numbers gradually subside. The local increase of eosinophils in the appendix is not accompanied by a general eosinophilia. The author has observed also that the lymphoid tissue of the normal appendix shows an increase in amount up to the tenth year, and thereafter gradually retrogresses with age. The muscular coat of the normal appendix increases gradually in thickness up to the age of 60 years, and pigmentation of the appendix is as frequent in normal as in diseased appendices.

214.

#### Pyloric Stenosis in Infants.

HEILE, Professor B. (*Zentralbl. f. Chir.*, February 3rd, 1923, p. 162), considers Rammstedt's operation of dividing the tumour longitudinally down to the submucous layer to be the best procedure for this condition, with certain modifications which he has found useful. In some cases the tumour projects into the duodenum, so that a fold of mucosa lies superficially to the mass at its right extremity. This may be wounded, causing perforation, sometimes concealed. To avoid this the incision is begun in the middle, and carefully extended laterally in either direction. Sometimes the incision does not open out sufficiently to relieve the stenosis, owing to the presence of a larger quantity of connective tissue in the tumour. To overcome this difficulty the author uses blunt force, by means of artery forceps, to split the mass well open, instead of using the simple incision alone. If this is done rapid improvement follows the operation immediately, provided the case is a fairly early one. In later cases, where



the stomach has become markedly dilated and hypertrophied, operation is less successful than in earlier cases. The author has operated on 27 cases with one death, but he considers that the usual mortality is in the region of 10 per cent., and advises that the operation should not be undertaken without weighing the risks and alternative methods of treatment. Diagnosis is made by x rays, the opaque meal being introduced by means of the stomach tube. In organic pyloric stenosis very little of the meal has passed the pylorus in two hours. A case is quoted where a child with symptoms of organic stenosis gave almost normal x-ray appearance. Operation was not performed, and the child died later from malnutrition, when autopsy revealed an anatomically normal stomach.

#### 215. Fistula in Lung Abscess.

W. MEYER (*New York Med. Journ. and Med. Record*, January 3rd, 1923, p. 7) advocates the establishment of a temporary, or permanent, pulmonary lip fistula in the conservative treatment of advanced bronchiectatic lung abscess, by which means the cavity is emptied, drained, and ventilated, and the pus loses its foul odour. The result is usually so satisfactory that the patients generally refuse the second stage of operation for closing the canal or opening, and in two cases spontaneous closure of the fistula took place, resulting in complete cure. Unless closure occurs such patients cannot take a bath, nor must they fall into water, as death would be instantaneous through flooding of the lung, and though it might be possible to render the fistula airtight by a rubber stopper the slightest leak when immersed in water might cause drowning. While extirpation of the affected lobe or lobes is the ideal procedure to effect a complete cure, this is not always advisable or possible, and this pulmonary lip fistula operation affords a less severe method in such cases. Since aspiration of foreign substances is the most frequent agent in setting up the trouble the importance of prophylaxis in operations about the nose and throat is emphasized; in the early stages of such disaster surgical intervention is contraindicated, and thorough aspiration by a trained bronchoscopist should be carried out.

#### 216. Exploratory Puncture of the Peritoneum.

SAVARIAD (*Bull. et Mém. Soc. Chir. de Paris*, November 21st, 1922, p. 1174), in discussing the value of exploratory puncture of the peritoneum to ascertain whether a blood-stained effusion is present, points out that this procedure has a certain clinical value but is not devoid of risk. He records the results of eight cases—three negative and five positive punctures. In one case failure was due to the patient being very fat, and he did not dare to push the needle in sufficiently far; in a second case of ruptured ectopic gestation the puncture was made too oblique and pushed the peritoneum aside without piercing it. In a case of this nature he suggests that vaginal puncture might be preferable. Though allowing the value of this method in diagnosis, the author points out that if clinical signs indicate the advisability of operation a negative puncture must be ignored. On the other hand, if the needle withdraws a profuse amount of blood, it is not necessary to conclude that the visceral lesion is beyond the resources of nature in effecting a cure. In two cases where the liver was ruptured and the puncture gave a positive result, spontaneous recovery followed without operation. The side of the injury is of considerable importance, and in a rupture of the spleen operation should be carried out. Exploratory puncture is of value in doubtful cases when used in conjunction with other signs. Though rather more difficult to carry out than lumbar puncture, it has certain advantages which warrant its use in traumatic lesions of the abdomen.

#### 217. Cartilage Implants after Eye Excision.

W. B. DOHERTY (*Amer. Journ. Ophthalmol.*, January, 1923, p. 19) points out the advantages over other materials of formalized beef cartilage implants following enucleation of the eye. Costal cartilage grafts, when cut into spheres ranging from 16 to 22 mm. in diameter, the anterior surface being slightly flattened, are placed in a 2 per cent. formalin solution for a fortnight, and, after being thoroughly washed in sterile normal salt solution on successive days for a week, they can be preserved indefinitely in sterile water. In enucleation it is important to hug the sclera so that Tenon's capsule can be preserved and closed vertically over the implant with interrupted catgut sutures, over which the muscles are sutured and the conjunctiva closed horizontally with silk sutures. Similar grafts are suggested to fill in the depressions following radical frontal and mastoid operations. The advantages claimed for such implants are that they are cheap, easily obtainable in any size and shape, and that they can be kept indefinitely and are well tolerated by the tissues.

## OBSTETRICS AND GYNAECOLOGY.

#### 218. Early Diagnosis of Pregnancy by Induction of Glycosuria.

L. LEWIN (*Dent. med. Week.*, January 26th, 1923, p. 117) has carried out in 100 cases Kamnitzer's test for early pregnancy. It depends on the induction of glycosuria by the intramuscular injection of phloridzin. In early pregnancy, but not under other conditions, the injection of as small a quantity as 2 mg. of phloridzin gives rise to glycosuria. After briefly describing the technique of the test the author analyses the 100 cases, which included several non-pregnant controls. There were 24 cases of pregnancy, 6 of which were threatened by abortion. The reaction was invariably positive in the 17 cases in which pregnancy had lasted one to three months. But among the 7 cases in which the pregnancy had lasted four to six months there was only one in which the reaction was positive. It would thus seem that the test is valuable up to the end of the third month, but not later. Very instructive were the findings in 16 cases of abortion within the first three months. In 50 per cent. of these cases the reaction was still positive on the day after the uterus had been evacuated. In 6 out of 7 cases of incomplete abortion the reaction was positive. The test was of great practical value in the 7 cases in which it was doubtful whether abortion had been completed or not. There was a history of haemorrhage for some days and of absence of normal menstruation for a month or two. The uterus in these cases was of the size of a two or three months' pregnancy, the cervix was soft, the external os closed, and there was a blood-stained discharge. The clinical evidence suggested threatened abortion, but the phloridzin test was negative. This test therefore suggested that pregnancy did not exist. Ultimately it was proved that all these were cases of endometritis or parametritis following abortion which was not threatening at the time but had occurred at an earlier date. The test is useful in distinguishing between extrauterine pregnancy and inflammatory swellings of the uterine appendages, and among the 50 control cases in which pregnancy was absent there were only 4 which reacted with glycosuria to the injection.

#### 219. A Rare Cause of Foetal Death.

P. A. DE WILDE (*Nederl. Tijdschr. v. Geneesk.*, November 25th, 1922, p. 2386) states that syphilis is generally regarded as the chief cause of foetal death. Renal disease in the mother is also an important factor. Treub in his textbook states that general debility is another cause. De Wilde, however, has met with three cases in which excessive length of the umbilical cord caused foetal death. In two cases in which a dead foetus was born in the seventh month the cord was found coiled twice round the neck and once round the upper arm. The changes in the epidermis showed that death had taken place fourteen days previously. In these cases death was obviously due to compression of the vessels in the cord. In the third case the mother was a primipara who gave birth to a foetus by breech presentation. Foetal movements had ceased to be felt about a fortnight before birth. The umbilical cord, which passed between the legs, over the back, and round the neck, was no thicker in size than a piece of string, so that circulation in it was obviously impossible. De Wilde concludes that when a practitioner is called in to see a pregnant woman who complains of not having felt foetal movements for some time the possibility of an exceptionally long umbilical cord should be considered, if syphilis and renal disease can be excluded.

#### 220. Scope and End-results of Myomectomy.

A. E. GILES (*Journ. Obstet. and Gynaecol. of the British Empire*, Winter, 1922, p. 608), who holds the view that for the majority of myomata requiring surgical treatment hysterectomy is a more suitable and more satisfactory operation than myomectomy, discusses the range of applicability of the latter as shown by the late results in 93 cases, and reaches the general conclusion that the advantages of myomectomy outweigh its disadvantages in a restricted class of cases numbering roughly 15 per cent. The most important indication for myomectomy is the fact that the patient is of child-bearing age; in general, except in the case of single women over 30, myomectomy is the operation of choice in patients who have not passed the fourth decade. Of 50 of the author's patients who had the opportunity of conceiving after myomectomy, 14 became pregnant. The complication of myomata with prolapse or procidentia is an indication for myomectomy if possible; after removal of the myoma the uterus may be made to play an important part in the operation for displacement. When a myoma is solitary and pedunculated, and not associated with excessive bleeding, a myomectomy may properly be done, whatever the patient's



age and expectation of pregnancy may be. In the following conditions myomectomy should not as a rule be performed: (1) After the age of 40 to 45; (2) when there is associated bilateral tubal disease or bilateral ovarian tumour formation; (3) when myomectomy, in consequence of the position or number of the tumours, would leave a battered and useless organ (thus most cervical myomata call for hysterectomy); (4) in cases accompanied by excessive haemorrhage. In the after-history of Giles's patients, the uterus was found to be of normal size, without recurrence of myoma in 90 per cent., and menstruation was normal in 80 per cent. In association with pregnancy myomata that are causing no symptoms should be treated expectantly. Myomectomy during pregnancy is indicated (1) if the tumour or tumours appear to be increasing rapidly in size; (2) if the patient suffers from pain, pressure symptoms, or indications of septic or degenerative changes in the tumour; (3) if the position of a myoma makes it probable that labour will be obstructed. The outlook both for mother and foetus is good.

## PATHOLOGY.

### 221. Vitamins and Infection.

In a study of the relation of vitamin C to bacterial infection, G. M. FINDLAY (*Journ. of Path. and Bact.*, January, 1923, p. 1) worked with guinea-pigs suffering from chronic scurvy, showing no actual symptoms of disease except that they were less active than usual and failed to increase in weight. The bone marrow of such animals showed areas of gelatinous degeneration, consisting of a homogeneous interstitial ground substance in which were found a few fibrous tissue elements together with a certain amount of blood pigment. Experiments were carried out on such animals with the following organisms: *Pneumococcus*, *Staphylococcus aureus*, *Streptococcus haemolyticus*, and *B. coli*, special attention being directed to determine the number of organisms and the time required to produce a fatal result, and the cellular reaction to infection as shown by changes in the blood and haemopoietic organs. The results of these experiments showed that guinea-pigs fed on a diet deficient in vitamin C succumb to a smaller infecting dose of bacteria than animals fed on a complete diet. The symptoms of toxæmia are manifested more rapidly in scorbutic than in control guinea-pigs because the tissues, especially the heart, are more susceptible to the action of bacterial toxin, or because in scorbutic animals there is more toxin formed by the bacteria as a result of some rupture in the defence mechanism of the body. Since it has been established that degeneration in the haemopoietic bone marrow is associated with a reduced resistance to bacterial infection, it is probable that the lesion in the bone marrow which occurs in chronic scurvy is one of the factors in the reduction of the resistance to bacterial infection exhibited by animals with chronic scurvy.

### 222. Blood Phosphate in Infants.

A. F. HESS and M. A. LUNDAGEN (*Journ. Amer. Med. Assoc.*, December 30th, 1922, p. 2210) record investigations showing that in infants the inorganic phosphate of the blood can be raised to the normal level by frequent exposure to the sun's rays, or by irradiation with the carbon arc lamp, the ultra-violet rather than the visible rays being most probably responsible for this biologic action, since when these former are filtered out from the spectrum the rays lose this power. Seeing that in the temperate zone the sun's rays are richer in ultra-violet rays during the spring and summer than during the winter, investigations were conducted to ascertain whether the transitions of the seasons led to periodic chemical alterations. In infants from 6 to 18 months old the seasonal tide of blood phosphate was marked, beginning to rise in April and attaining an almost normal level during June, but in older children on a mixed diet the variations were less obvious but still definite. The ultra-violet rays vary much with the season, and their curve resembles closely that of the inorganic phosphate content of the blood, which points to their being the main cause of such seasonal variation, though possibly other climatic conditions operate to a minor degree. Chemical alterations of the tissues induced by seasonal meteorological variations may possibly influence nutrition and infection, and such alterations of the blood may bear some relationship to the incidence of epidemic diseases, and should be considered in studying epidemiologic problems.

### 223. Cultivation of *B. diphtheriae*.

S. R. DOUGLAS (*Brit. Journ. of Exper. Pathol.*, December, 1922, p. 19) describes a new medium for the isolation of *B. diphtheriae* on which the colonies of this organism have a characteristic appearance. Working on the supposition that

the neutralization of the antitryptic power of blood increases the value of serum as a medium for the growth of bacteria, Douglas adds 5 to 8 c.cm. of trypsin solution to 100 c.cm. of horse serum, and filters it through a porcelain filter. The basis of the medium is nutrient agar 2 per cent., made by digesting meat broth, and to each 100 c.cm. of this is added 4 c.cm. of 1 per cent. potassium tellurite solution and 15 c.cm. of sterile trypticized serum. The resulting medium is clear, and when inoculated with material containing diphtheria bacilli this organism produces colonies about 1 mm. in diameter, granular, and with regular outline, of a dusky grey black colour, while the peripheral part is opalescent greyish-white. Hoffmann's bacillus produces similar colonies, but streptococci and staphylococci have each a distinctly different appearance. After forty-eight hours' growth the colonies of diphtheria bacilli are likened to "flattened drops of partially dried black paint." To test the utility of this new medium 29 throat swabs from a fever hospital were examined, using this and the commonly employed Loeffler's serum medium for comparison: 19 positive results were obtained with the new medium, and 16 positive results with Loeffler's medium.

### 224. Staphylococcal Vaccines.

F. ARLOING and L. LANGERON (*C. R. Soc. de Biologie*, 1923, No. 3, p. 220) have studied the effect the age of the culture used for the preparation of a staphylococcal vaccine has on the protective properties of the vaccine by the following technique: Rabbits were given five doses of staphylococcal vaccines which had either been prepared from a twenty-four hour culture or from cultures which had been grown for as long as five days. One series received the injections subcutaneously, another intravenously. Three weeks after the last injection each rabbit was given a lethal dose of living virulent staphylococci, such a dose as was found by experiment to kill rabbits with certainty which had not received preliminary vaccine treatment. Complete immunity was only obtained in the case of the rabbits which had received vaccines made from cultures twenty-four hours old; all the other rabbits died presenting symptoms of subacute staphylococcal infections. Thus the authors conclude that only a vaccine prepared from a twenty-four hour agar culture should be used for making up protective staphylococcal vaccines.

### 225. Experimental Production of Paraffin Oil Tumours in Monkeys.

F. D. WEIDMAN and M. S. JEFFERIES (*Arch. of Derm. and Syph.*, February, 1923, p. 209) draw attention to the frequency with which hard swellings follow injections of paraffin oil or wax, either for cosmetic purposes or as a vehicle for camphor, mercury, or arsenical preparations. In order to prove that the paraffin and not the drugs contained in it was the cause of the tumours they injected two monkeys subcutaneously in various places with olive oil, cottonseed oil, paraffin, and camphor in paraffin. Forty-eight injections were made in all, and nine tumours developed within eleven months, and some more at the end of seventeen months. All but two of the tumours were at the site of the paraffin injections, and there was no difference between the camphorated and the plain paraffin oil. There was no tendency for the tumours to disappear. The tumours were adherent to skin and muscle; they were very hard, and on naked-eye section showed no evidence of the oil. Microscopically they were similar to those described in human cases. They were granulomatous rather than neoplastic in nature, and were formed of fibrous tissue with droplets of paraffin oil surrounded by endothelial cells and foreign body giant cells. The lymphatic glands also contained paraffin oil but showed no fibrosis, and no such reaction to the presence of the oil as was seen in the subcutaneous tumours. It seems possible that some irritating impurity in the oil had been removed in the subcutaneous tissues and the oil passed on to the lymph nodes in a purer condition.

### 226. The Diagnostic Value of the Rate of Sedimentation of the Blood Cells.

MORAL (*Deut. med. Woch.*, January 19th, 1923, p. 74) has investigated the sedimentation reaction (S.R.) in about 400 persons, some of whom were healthy. He concludes that the reaction is of value in distinguishing between functional and organic disease only when it is abnormally rapid. But a normal reaction does not exclude organic disease. A normal sedimentation reaction does not exclude active pulmonary tuberculosis any more than a negative skiagram. But the more abnormally rapid the reaction the worse is the prognosis in pulmonary tuberculosis. The reaction is of no value in distinguishing between tumours and inflammatory swellings, but in spite of these and other limitations it has, he believes, a definite sphere of usefulness.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

### 227. Ocular Disturbances in Respiratory Disease.

F. TERRIEN (*Paris méd.*, January 27th, 1923, p. 81) states that ocular disturbances in affections of the respiratory system may be of three kinds—reflex, infective, or mechanical. In the last case venous stasis due to obstruction in the lesser circulation gave rise to haemorrhage. (1) Reflex ocular disturbance. Inspiration is accompanied or followed by a slight degree of dilatation of the pupil even in the normal state, whereas expiration gives rise to a slight contraction of the pupil. In dyspnoea the pupil is dilated, as the inadequate supply of oxygen in the blood irritates the centre for the pupil in the medulla. In Cheyne-Stokes breathing the pupils are contracted during the period of apnoea and do not react to light, but become dilated again on return of respiratory movements, and the reaction to light reappears. (2) Mechanical ocular disturbance. Haemorrhages in the conjunctiva or even in the retina may occur after violent attacks of coughing or in a child during spasms of pertussis. Terrien has seen a case of paralysis of the external rectus and of the facial nerve complicated by hemianopsia in a child, probably as the result of pontine haemorrhage. Similar cases have occurred in glass-blowers, especially in elderly persons and in tabetic subjects. All these manifestations are the result of venous stasis. They are most pronounced in cases of hanging, in which haemorrhages are found in different parts of the eyeball, such as the conjunctiva, eyelids, retina, and canal of Schlemm. (3) Infective disturbances. Pulmonary infections, especially pneumonia, are often complicated by herpes of the cornea or dendritic keratitis. The affection is chiefly found in the adult, especially in men, often at the same time as herpes on the nostrils or lips and pain in the back, the latter suggesting a meningeal reaction. Changes in the pupil in pneumonia or chronic apical disease, consisting in dilatation on the affected side followed by contraction, are the result of irritation and later paralysis of the sympathetic. Paralysis of the extrinsic and intrinsic muscles of the eye may occur during pneumonia or a few weeks later, as in diphtheria. Blood infection fairly often gives rise to a metastatic ophthalmia, and more rarely to a neuro-retinitis. The irido-choroiditis frequently ends in panophthalmia, and when this is bilateral the prognosis is usually fatal. Profuse haemoptysis, like all other haemorrhages, may be complicated by amaurosis, but this is relatively rare. In a lesser degree, the author suggests, the eye reacts upon the lung. Vigorous pressure on the upper lid retards expiration, and the same is true of irritation of the conjunctiva or cornea. Malignant tumours of the eyeball have sometimes given rise to metastases in the lung. Thus in 46 cases of sarcoma of the uveal tract complicated by metastases the lung was involved three times and the epiglottis once.

### 228. Underfeeding in Diabetes.

S. ISAAC (*Klinische Wochenschrift*, January 29th, 1923, p. 212) criticizes the treatment of diabetes mellitus by prolonged fasting and underfeeding, which has been advocated strongly in America, and disputes many theories on which it is based. The value of single fast days introduced by Cantani and Naunyn, and especially recommended by von Noorden, has long been recognized. If fasting for twenty-four hours does not check the glycosuria the prognosis is generally unfavourable. A fast day diminishes the acetone in the urine, and is the best treatment for acidosis. But the author considers that, even in severe cases, the fasting should never be extended beyond thirty-six hours, and he is not convinced that the prolonged fasting treatment gives better results than treatment with short fast periods. He admits that it is possible, even in severe cases of diabetes, to check the glycosuria and hyperglycaemia by the American treatment whilst underfeeding is continued. But he insists on the difficulty in carrying out the treatment; he thinks the great reduction in weight, which can hardly ever be recovered, is of doubtful value, and states that a permanent increase of the tolerance is not obtained thereby. The underfeeding treatment is not suitable for a continued diet, on account of its deficiency in fat. The maintenance of strength and nutrition is only possible when the diet contains sufficient fat. In severe diabetes especially we should be content with a moderate controlled sugar excretion and a diet which is suitable to the taste and permits a certain amount of enjoyment of life and

the ability to perform a little work, instead of the ideal permanently sugar-free urine: the latter (in severe cases) can only be maintained by most rigid treatment, which still further reduces the already greatly diminished vitality of the patient. The vegetable and fat diet of Petré is also not suitable permanently, though it can check the glycosuria and acetone excretion. It contains so much fat that it is difficult to digest, and is disagreeable to the patient. But the results of this treatment show that the danger of fats, as regards increase of acidosis, need not be considered.

### 229. Queckenstedt's Sign of Compression of the Cord.

E. SAHLGREN (*Hygiea*, January 31st, 1923, p. 53) is greatly impressed by the diagnostic value of Queckenstedt's sign, first described in 1916 (*Deut. Zeit. f. Nervenheilk.*, Bd. 55). When the veins in the neck are compressed on one or both sides there is a rapid rise in the pressure of the cerebro-spinal fluid of healthy persons, and this rise quickly disappears when pressure is taken off the neck. But when there is a block in the vertebral canal the pressure of the cerebro-spinal fluid is little, or not at all, affected by this manoeuvre, and if there is a rise in the pressure it is very gradual. Queckenstedt assumed that when the veins in the neck are obstructed the veins of the central nervous system become distended, and thus diminish the space in which the cerebro-spinal fluid is accommodated. Hence its rise of pressure. This rise can only be rapidly conducted to the lower part of the vertebral canal if there is no obstruction above the point at which the pressure of the cerebro-spinal fluid is being gauged. Sahlgren records six cases in which he found this sign positive and in which there was compression of the spinal cord by tuberculous caries or growths. He refers to a case in which the other clinical signs pointed to compression of the cord, while Queckenstedt's sign was negative. The necropsy showed that there was no block in the vertebral canal.

### 230. Auto-Serotherapy in Tuberculous Pleural Effusions.

V. PETERSEN (*Ugeskrift for Læger*, January 11th, 1923, p. 25) has practised auto-serotherapy in several cases of tuberculous pleurisy, and recommends this treatment when a pleural effusion has persisted for a month or more and has proved refractory to rest in bed and other methods. The treatment is harmless, and in some cases acts like a specific. The author records in detail the case of a woman, aged 39, suffering from pulmonary tuberculosis. The left lung was collapsed by a pleural effusion, and the removal of 1,200 c.cm. of straw-coloured fluid was rapidly followed by a reaccumulation. Another 1,200 c.cm. were therefore withdrawn. Cultural tests in bouillon and on agar yielded no growths. Phenol was added so that the serum should contain 0.25 per cent. Cultural tests having again proved negative after the serum had been kept on ice for several days, 1 c.cm. was given by intramuscular injection. The injection was repeated daily for thirteen days. Rapid improvement followed, and the patient gained steadily in weight in spite of the absorption of the pleural effusion. She was discharged feeling much better and without tubercle bacilli in the sputum. On re-examination, more than half a year later, recovery was found to be maintained.

### 231. The Tone of the Voluntary Muscles in Tuberculosis.

F. FLARER (*Arch. di patol. e clin. med.*, December, 1922, p. 596) employed Mosso's myotonometer for estimating the degree of muscular tone in pulmonary tuberculosis. All forms of the disease were represented, one or both lungs being affected, and some of the patients being cachectic and others in a good state of nutrition. Flarer found that there was no relation between the muscular tone and the size of the muscle. Tracings characteristic of hypertonic muscles were obtained in individuals with small muscles, in whom the general musculature was not well developed, and atonic tracings were found in men and women with well developed muscles and in a good general state of nutrition, indicating the importance of the nervous system in the production of muscular tone. Flarer maintains that the statement made by many writers that tuberculous patients have atonic muscles is not correct, though it is true that muscular atony is present in some very advanced cases; it is due to anatomical changes in the muscle fibres. On the other hand, it is not found in cases of tuberculosis in which, either because the morbid process is of recent onset, or because it has not a destructive tendency, no muscular atrophy or degeneration



has occurred. The myotonometric curve taken in the morning always differed from the evening curve, which invariably showed an increase of tone. An immediate response was obtained in a tuberculous muscle to a stimulus which was of too slight a character and too short duration to provoke a response in a normal muscle, but the increased excitability was accompanied by a rapid exhaustion of the muscular tone. It is obvious that this condition differs essentially from true atony, inasmuch as in the latter reaction to a stimulus is absent or delayed, whereas in tuberculous the reaction is most prompt though easily exhausted even with minimal stimuli. The explanation of this condition is to be found in the chemical changes caused by the tuberculous toxin either in the nerve elements or in the muscle fibre itself.

### 232. The Comparative Value of Medicinal-Dietetic and Light Treatment in Rickets.

I. JUNDELL (*Acta Paediatrica*, December 16th, 1922, p. 113) points out that in 1919 two new methods for treating rickets were introduced. One of them, advocated by himself, consisted of reducing the dietary and, in severe cases, giving phosphorus and cod-liver oil. The other, advocated by Huldshinsky, consisted of exposure to ultra-violet light from a quartz lamp. To test the comparative merits of these two methods, the author has treated twenty-one cases at his hospital, partly by one method or the other, and partly by a combination of the two. The six patients put upon a reduced dietary, phosphorus, cod-liver oil, and calcium phosphate, responded remarkably well. The response of the six patients given only quartz lamp treatment was, however, equally good. The patients given the benefit of both methods did well, but no better than those given one or other treatment, and it would therefore appear that each method singly is so effective that little or nothing can be gained by combining them. Each method has its own sphere of usefulness: for obviously overfed children, the dietetic restrictions and medicinal treatment advocated by the author may be the best; but when a child is debilitated, dietetic restrictions may be undesirable, and ultra-violet light preferable. The medicinal-dietetic treatment possesses the great advantage of not being dependent on institutional equipment.

### 233. Heredity in Dupuytren's Contraction.

T. LÖWY (*Zentralbl. f. inn. Med.*, January 27th, 1923, p. 51) remarks that the etiology of Dupuytren's contraction is still obscure, and that attempts have been made to associate it with a great variety of diseases, such as disorders of metabolism, diseases of the central and peripheral nervous systems, tuberculosis, and especially chronic joint diseases. The oldest view which still prevails is that of the action of chronic trauma on the palmar aponeurosis. The disease is commonest in certain occupations—for example, in cabmen who use a whip, sailors who handle ropes, sealers of letters, barrel borers, etc. Löwy remarks that important as trauma is in the pathogenesis of the disease, attention should also be paid to heredity as a factor. He describes a family in which Dupuytren's contraction was present for four generations. In the first three generations the condition developed at or after the age of 40. In 15 members of the third generation who had not reached this age it was uncertain whether the disease would occur or not. Of the 5 affected persons in the third generation, 3 were peasants, 1 was a printer, and 1 a joiner. In the fourth generation, on the other hand, one member was affected at the age of 24, while her sister, aged 17, was not affected. Other examples of the inheritance of Dupuytren's contraction have been reported by Largillière, Adams, Goyrand, Vizioli, Kocher, Caspari, Stephensen, Friedrichs, and Durel.

### 234. Antimony in the Treatment of Leprosy.

VERSARI (*Rif. Med.*, January 15th, 1923, p. 53) reports two cases of leprosy treated with intravenous injections of tartar emetic. The solution used was a 1 per cent. watery solution, and in the first case fifteen injections of 7 c.cm. each were given—that is, 90 cg. of antimony. Some retching and troublesome cough were the chief unpleasant effects, but the results on the disease were very favourable. The ulcers were completely healed after the fifth injection. In the second case the drug was better tolerated, and twenty-two injections were given, making a total of 1.84 grams of tartar emetic in all. The ulcers in this case were completely cicatrized after the seventh injection, and the tubercles were then beginning to dissolve. The Wassermann reaction was strongly positive in both cases, and Hansen's bacillus was present all the time. Although the ulcers healed, the bacillus was still present at the end of treatment.

## SURGERY.

### 235. Synovectomy in Chronic Infectious Arthritis.

P. P. SWETT (*Journ. of Bone and Joint Surgery*, January, 1923, p. 110) describes the operation of synovectomy in chronic infectious arthritis. The operation consisted in opening the joint at the site of greatest thickening and effusion, and then with scissors and forceps dissecting out all the diseased inner layers of the synovial membrane down to what appeared to be healthy tissue. The joints were closed without drainage or fixation. All the cases treated were of long standing, with marked thickening and joint effusion. There should be no ulceration of the joint cartilages—in one case where this was present the operation was a failure. Mechanical improvement was promptly manifested by a restoration of painless function in every case; in two cases which relapsed re-operation led to complete ultimate recovery. No disastrous complications have followed the operation, and there has been little post-operative reaction. This operation warrants further consideration in cases of chronic infectious arthritis, but should not be attempted if extensive cartilaginous damage has already occurred. The operation is most likely to succeed if it is done in the type of case or at the stage of the disease where the damage is entirely synovial, the effusion extensive, and the cartilages not ulcerated. A record is given of the histories of a number of cases in which the patients have gained in weight and strength and recovered from their anaemic condition.

### 236. Arterial Decortication.

G. L. CALLANDER (*Annals of Surgery*, January, 1923, p. 15), in discussing arterial decortication, points out that it has been shown that sympathetic nerve plexuses lie in the intima sheath of large arteries and in the adventitia of these vessels. Certain definite results follow the excision of these structures in the treatment of different syndromes. Jaboulay performed this operation with beneficial results on the femoral artery in certain perforating ulcers of the foot, and to a less successful degree on the coeliac trunks in certain visceral disturbances. In the operation the main arterial trunk is exposed and the external fibrous coat incised for 8 or 10 cm., and the artery with its inner sheath is then exposed. The inner sheath is incised and freed from the artery. Certain reactions follow this procedure—a diminution in the calibre of the artery takes place, whilst an increase in surface temperature in the parts distal occurs. These conditions are thought to be the result of trauma to the sympathetic fibres. The operation has been successful in a number of cases of unassociated clinical pictures of a rather vague description where a disturbed vasomotor balance is present. In traumatic lesions, causalgia, and spontaneous ulcers in amputation stumps improvement has been noted. The author reports a number of cases, and considers that improvement in otherwise hopeless conditions has resulted from this procedure, even though the mechanism of the production of the diseases and that of their cure is unknown.

### 237. Influenzal Coxitis with Spontaneous Dislocation.

K. OCHSENIUS (*Deut. med. Woch.*, December 29th, 1922, p. 1726) points out that acute infectious diseases like scarlatina, measles, pneumonia, and typhoid fever may give rise to acute or subacute coxitis. As a rule, the serous or sero-fibrinous effusion into the joint is small, and the disease runs a favourable course without complications. Occasionally, however, in typhoid fever, suppuration ensues, the capsule of the joint becomes greatly distended, and spontaneous dislocation occurs backwards. Hitherto apparently, no such accident in the course of influenza has been recorded. The author reports such a case. During an epidemic of influenza a 10-months-old child developed this disease with typical manifestations—high fever, naso-pharyngitis, and bronchitis. A little later bilateral purulent otitis media set in, with coli-pyelo-cystitis and spasmophilic fits. The right hip became tender, and the limb was held flexed. Four days after the tenderness of the hip was first detected an x-ray examination showed that the head of the femur was dislocated upwards and backwards. As there was no history of trauma, the dislocation was evidently spontaneous. It was reduced, and the limb secured in plaster. Complete recovery followed.

### 238. The Operation for Subphrenic Abscess.

J. SOMMER (*Zentralbl. f. Chir.*, February 10th, 1923, p. 215) describes a method of deciding by x rays whether a subphrenic abscess is operable by the subcostal route or whether it will be necessary to cross the pleural cavity. The subcostal route is preferable, provided the abscess cavity extends downwards sufficiently to allow of drainage without opening the general peritoneal cavity. This point is determined by



laying the patient on the sound side, with the pelvis slightly raised, and screening antero-posteriorly. In the case of a gas-containing abscess the gas will rise to the highest part of the cavity—that is, towards the ribs and costal margin—and the extent of the cavity in that direction can be mapped out, assisted by slight alterations in the position of the patient. In the case of an abscess not containing gas, it is a simple matter to inject a little air with an exploring syringe, after withdrawing a corresponding amount of the fluid contents. In the case of a gas-free subphrenic abscess associated with a large pleural effusion the problem of diagnosis is difficult. If the exploring syringe strikes different fluids at different levels, subphrenic abscess may be presumed with fair certainty. If this fails, however, a quantity of the pleural effusion may be withdrawn and replaced by air; with the patient in the lateral position the remainder of the pleural fluid will then fall away from the diaphragm, and the position and mobility of the latter may be observed. If any doubt still remains, an exploratory puncture may then be made, under the guidance of the x-ray screen.

#### 239. Treatment of Carcinoma of the Oesophagus.

E. B. FREEMAN (*Boston Med. and Surg. Journ.*, November 23rd, 1922, p. 727), in a preliminary report upon the treatment of carcinoma of the oesophagus with colloidal selenium injected intravenously, considers that the method may be useful in certain cases. An initial dose of 3 c.cm. is followed on the second day by 5 c.cm., and this, in the absence of reaction, is continued three times a week for about six weeks. Improvement followed in the cases under observation, as evidenced by relief of pain, lessened dysphagia, control in loss of weight and in one case a very marked gain, and distinct psychic improvement. During the treatment oesophagoscopic and x-ray examinations are made from time to time in order to ascertain whether there is any resulting hyperaemia, sloughing, or increase in flexibility and patency in the oesophagus, or changes in the size and contour of the growth. Dilatation is also carried out by bougies passed over a guiding silk thread in order to prevent any injury. In most cases slight anaphylactic shock follows the injections with possibly temporary increased difficulty in swallowing, and six or eight hours later there may be some general reaction lasting for ten to twelve hours. For the present the treatment must be regarded as palliative only, though further observations may, the author believes, establish its therapeutic value. Where technical difficulties can be overcome surgical treatment is preferable to all other methods, and with earlier diagnosis patients may be referred to the surgeon in time for operative treatment; but these observations suggest that in certain hopeless cases colloidal selenium may offer a palliative treatment.

#### 240. Myositis Ossificans Treated by X Rays.

L. BAZY (*Bull. et Mém. Soc. Chir. de Paris*, November 28th, 1922, p. 1219) reports the case of a patient, 15 years of age, who as the result of a fall sustained a posterior dislocation of the elbow-joint. The following day the dislocation was reduced under anaesthesia without difficulty. The subsequent treatment consisted of hot baths and passive movement which did not cause pain; massage was not practised. Eleven days later x-ray examination showed two areas of new bone formation in the region of the brachialis anticus—one, the size of a large pea, fixed to the bone, the other, free from the bone, the size of a large almond. X-ray treatment was immediately started, and the result was very satisfactory. However, the newly formed bone had not completely disappeared, but showed an increased opacity to the rays, when examined at a later date. In spite of the presence of a nodule of bone in the brachialis anticus the functional result was excellent, all the movements being complete except extension, which was slightly limited. The points of special interest are the rapid appearance of the new bone eleven days after the accident, the formation of the bone in spite of the absence of forcible treatment or massage of the injured area, and the satisfactory result obtained although new bone formation remained present in the substance of the brachialis anticus.

#### 241. Lipoma of the Mammary Region.

TORRACI (*Rif. Med.*, December 4th, 1922, p. 1157) reports a case of lipoma in the mammary region in a man aged 73. Lipomata in this area seem to be rare, and the author has only been able to collect references to 42 other cases. The patient first noted the swelling, above the nipple, about eleven years ago. It was elastic, movable, painless, and covered with normal skin. Five years later it had grown as big as a goose's egg, and was then treated by twenty injections of some unknown substance, but without any good effect. When admitted into hospital the tumour was as big as an

adult head, the skin covering it was normal, except for some small veins. The growth was found to be under the great pectoral muscle, and when removed weighed 1,600 kg., and proved a typical lipoma.

## OBSTETRICS AND GYNAECOLOGY.

#### 232. Rectal Examination in Labour.

J. H. VAN BLOMMESTEIN (*Nederl. Tijdschr. v. Geneesk.*, January 20th, 1923, p. 259) quotes the following statistics from Catherine van Tassenbroek's work on aseptic midwifery in Holland. In the Amsterdam Obstetric Clinic the percentage of deaths from puerperal infection for the decennium 1891-1900 was 1.6. In the city of Amsterdam the mortality from puerperal infection for the year 1895 was 2.2 per cent., and for 1900 1.8 per cent. In twelve smaller towns it was 1.3 per cent. in 1895 and 1.8 per cent. in 1900. In New York 1 in every 250 puerperal women (or 0.4 per cent.) dies from infection (Polak). The mortality, therefore, is not much lower in clinics than in private houses in the town or country, such favourable circumstances as good feeding and careful nursing being probably outweighed to a great extent by the repeated examinations required for teaching purposes. Bukva, in Chrobak's Clinic at Vienna, found that the mortality from puerperal infection among 2,155 women who had not been examined was *nil* as compared with a mortality of 0.07 per cent. among 8,631 women examined in the clinic only, and a mortality of 0.43 per cent. among 1,843 examined outside the clinic. For many years van Blommestein has employed rectal examination during labour, as it enabled him to determine the following points: (1) The stage of labour; (2) the state of the membranes, whether ruptured or not; (3) the position of the presenting part in relation to the pelvis; (4) the nature of the presenting part; (5) prolapse of the cord; (6) prolapse of a limb; (7) placenta praevia. In addition to the advantage of avoiding contact with the internal sexual organs, this method permits of numerous examinations without any danger to the patient. According to Heimann a temperature of 100.4° F. was found in 7.3 per cent. of women who had had no examination, in 6.8 per cent. after rectal examination only, and in 20.6 per cent. after vaginal examination. Van Blommestein thinks it desirable that medical students and midwives should be taught that in many labours external examination alone is sufficient; that when this does not yield adequate information rectal examination should be employed; and, lastly, if that is not sufficient, a vaginal examination should be carried out, especially if there is any prospect of an operation.

#### 243. Vulvo-vaginitis in Children.

ACCORDING to I. F. STEIN (*Surg., Gynecol., and Obstet.*, January, 1923, p. 43), different observers have reported from 63 to 80 per cent. of cases of vulvo-vaginitis in children as being of gonorrhoeal origin. Stein, among 49 cases coming to a children's clinic, records that 23 showed the presence of the gonococcus in smears taken from the vulvo-vaginal region. Cultures proved positive in only 50 per cent. of cases in which the smear showed gonococci, and are therefore of little diagnostic significance. Vulvo vaginitis, although purulent, is non-gonorrhoeal in a large number of instances. Indirect infection, as by common sleeping quarters, towels, linen, or baths, is responsible for the majority of cases, and is favoured by imperfect personal cleanliness. The epidemic vulvo-vaginitis of children's institutions is usually gonorrhoeal. Especially in the chronic forms, treatment must be carried on for some weeks, and recurrences are to be expected in many instances. Stein suggests as the criterion of cure the disappearance of clinical evidence of the infection, negative findings in three smears taken at weekly intervals after suspension of treatment, and an observation period equal to the duration of the treatment. Wacho and Mazer obtained 40 per cent. of cures in three months by daily instillation into the vagina of 1 per cent. Dakin's oil from a medicine dropper, the child being placed in the Trendelenburg position. Gellhorn recommends daily vaginal injections of 1 per cent. silver nitrate in an ointment of equal parts of lanolin and white vaseline. Daily hot baths (42-44° C.) have been of use in some cases, but are not without danger in children. Using Gellhorn's method, with the substitution of mercurochrome for silver nitrate, Stein found that gonorrhoeal cases could be cured in an average of ten weeks, suspicious cases in six weeks, and non-gonorrhoeal cases in five weeks. In two of the gonorrhoeal cases recurrence was noted after an attack of contagious disease. Stein believes that a daily tub bath is an aid to local treatment, and in mild non-gonorrhoeal cases is all that is required for cure.



244. **Fibroma of the Ovary.**

M. R. HOON (*Surg., Gyn., and Obstet.*, February, 1923, p. 24) analyses 55 cases of ovarian fibroma, not associated with other morbid conditions, coming to operation and afterwards to microscopic examination during ten years' work at the Mayo Clinic. Of the 55 cases, 26 had not reached and 26 had passed the menopause, 7 had not reached the thirtieth year. In general, menstruation appeared to be little influenced, and in four patients only was it increased. Of the 55 patients 9 were single and 30 had borne children. Subjective symptoms were comparatively few; in the absence of torsion of the pedicle pain was dragging rather than severe, and in very small or very large tumours was usually absent. Objectively the tumour, although occasionally fixed by adhesions, was as a rule movable. Ascites was present in 14 cases (25 per cent.); 2 patients had in addition bilateral hydrothorax, which disappeared after operation. In the absence of demonstrable metastasis, ovarian tumour associated with serous effusions is therefore not necessarily due to malignant disease. In only 2 cases were both ovaries the site of fibroma. The diameter of the tumours varied from 0.5 to 30 cm.; the surface was usually nodular and irregular, and the consistency varied according as the tumour was or was not complicated by calcareous degeneration on the one hand or myxomatous change on the other. According to Hoon, treatment must be surgical; operation should be advised as soon as the diagnosis of ovarian tumour is made, for malignant degeneration may occur, or torsion of the pedicle may lead to gangrene and peritonitis. Inquiry into the after-history of the patients of the series showed that good prognosis is justified and that normal pregnancy may occur when the adnexa of one side only have been removed.

245. **Icterus Neonatorum.**

G. LINZENMEIER and LILIENTHAL (*Zentralbl. f. Gynäk.*, November 25th, 1922, p. 1873) record observations which support the view that icterus neonatorum is a physiological condition of hepatogenous nature. Accepting Vidal's view that haemoclastic leucopenia following ingestion of protein in the fasting state is a sign of hepatic inadequacy, they made blood counts in 30 infants before and after suckling. Those showing leucocytosis were invariably non-icteric; those showing jaundice gave leucopenia; and in infants with post-prandial leucopenia it was possible accurately to predict the onset of jaundice within two or three days *post partum*. These observations confirm the views of Hirsch and of Yllpö, who demonstrated in the newborn a bilirubinaemia which they regarded as due to persistence of an increased permeability for bilirubin characteristic of the foetal liver. The same observers noted parallelism between the intensity of the bilirubinaemia and that of icterus in the newborn.

## PATHOLOGY.

246. **Neurotropic Ectodermosis: Studies on the Vaccine Virus.**

C. LEVADITI and S. NICOLAU (*Ann. de l'Inst. Pasteur*, January, 1923, p. 1) occupy a complete number of the *Annales* with a description of the properties of the vaccine virus. Of these properties only a brief summary can be given here. In the first place a neuro-vaccine was prepared from the common dermo-vaccine by passing it through the brains of rabbits; after two hundred passages its virulence had become practically fixed, so that it killed the animal within four to five days in the majority of cases. Comparison of this neuro-vaccine with the original dermo-vaccine showed that there were certain differences between them; the former had a greater elective affinity for nervous tissue and a slighter affinity for the skin; it was more susceptible to the action of heat and of ox bile, and its action on certain animals had become less or, as in the case of the fowl, had disappeared altogether. In man it gave rise to a good vaccinal eruption on the skin, simulating closely in its extent and evolution that caused by the usual vaccine. Inoculation experiments performed on rabbits showed that the neuro-vaccine had a special affinity for the tissues derived from the embryonic ectoderm, such as the skin, cornea, central nervous system, and testicle, while it failed to affect those organs which were of mesoblastic origin. Inoculation into these ectodermal tissues was followed by generalization of the virus throughout the body, followed by its subsequent localization in those organs which possessed a special affinity for it. With the exception of the reproductive glands, however, it was necessary before this localization occurred for the organ in question to be irritated, so as to put its cells into a state of regenerative proliferation. Thus, the hair of the

skin could be plucked out, or the cornea scarified, or the brain irritated aseptically. Once this localization had occurred, the organ in question acquired an immunity to further inoculation—direct or indirect—with the virus. Experiments were made to show that this immunity was essentially of a local nature; the humoral element, which could be substantiated on some occasions, appeared to be of an entirely subsidiary nature. In course of time, however, the refractory state of the organ gradually wears off, and it seems probable that the loss of this immunity runs *pari passu* with the reproduction of the cells. The faster the cells of the tissue reproduce, the quicker does the organ regain its susceptibility. As the cells of various tissues reproduce at different rates, it is plain that the degree of immunity evinced by each of these tissues must be different. It is suggested that the general immunity of the organism can be decomposed into a number of partial local immunities. This very interesting hypothesis is supported by work done on the association existing between the vaccine virus and the ultra-virus of contagious avian epithelioma. When the latter is inoculated on to an ectodermal tissue having either a natural or an acquired immunity towards the vaccine virus, it causes so much proliferation of the cells that these gradually lose their immunity and become susceptible to the vaccinal germ. This destruction by one virus of the resistance to another virus may possibly explain the frequent association noticed between herpes zoster and chicken-pox.

247. **Retroperitoneal Cysts.**

CAUCCI (*Arch. Ital. di Chirurg.*, December, 1922, p. 481) classifies these cysts as (1) epithelial, (2) lymphatic, (3) pseudo-cysts, and (4) parasitic. In Class I are included dermoids, Wolffian cysts derived from the embryonic uro-genital apparatus, cysts derived from accessory suprarenals, and endodermic cysts. The author gives details as to these various types. The lymphatic group may contain serous or chylous fluid, and may be simple or neoplastic. Many hypotheses have been put forward to explain their origin, but not one is wholly satisfactory. They are perhaps more often found in the mesentery than in the retroperitoneal space. Pseudo-cysts include perirenal haematomata, collections of urine, inflammatory cysts, and cystic degeneration of neoplasms. Echinococcus cysts are rare in the retroperitoneal space. The author discusses the anatomical relations and symptoms of these cysts, and points out that the key to diagnosis is given by the relations of the cyst to the intestine, and radiology gives help in this respect. The course of these cysts is usually slow and unnoticed for some years; pseudo-cysts (haematomata) differ in their sudden onset. As regards treatment, puncture followed by antiparasitic injections is generally useless, and may be dangerous; laparotomy and complete or partial incision give the best results.

248. **The Mechanism of Variations in the Leucocyte Count.**

PIERRE MAURIAC and M. MOUREAU (*Journ. de Méd. de Bordeaux et de la Région du Sud-Ouest*, January 25th, 1923, p. 39) state that little progress in the knowledge of the phenomena of leucopenia and leucocytosis has been made since the discoveries of Nicati and Tarchanoff in 1875. More recent observers agree that fluctuations in the leucocyte count are the result of an unequal and variable division at the centre or at the periphery, and that the passage of leucocytes driven from the peripheral circulation towards the viscera by a form of chemiotaxis produced leucopenia; on the contrary, leucocytosis marked the return of the migratory cells towards the periphery. Mironesco's experiments confirm this view: simultaneously blood was withdrawn from the ear and from the median basilic vein; a marked difference in the leucocyte count was found. Certain contradictory results led Mironesco to conclude that the leucocytosis observed clinically was no actual index of the total number of leucocytes existing in the mass of the circulating blood. Other authors consider that leucopenia may be due to dilution of the mass of the blood and leucocytosis to its concentration. Thus, the vasodilatation resulting from anaphylactic shock drains the viscera in order to refill the dilated vessels and to restore the blood pressure; as plasma is poured out the dilution reduces the proportion of cells. The authors discuss at length the arguments supporting the theory of leucolysis, and they give charts showing leucocyte destruction due to anaphylactic shock, disappearing before a rapidly increasing leucocytosis. In one experiment they quote Abrami's observation in malaria, that the onset of a rigor, which is a good example of shock, is not accompanied by an increase of leucocyte destruction, but rather by a decrease. The authors conclude that neither of the foregoing theories covers the whole ground, and that the question is more complex.







consist in a marked and progressive diminution in size of the tonsils, and a change in their colour from bright red to a pale pink, while the surface, which was previously granular, becomes smooth. The functional symptoms also diminish in intensity; the respiration improves, snoring in sleep ceases, phonation becomes more distinct, pain in swallowing disappears, and the general health improves. In Nogier's cases this improvement was maintained for several years. The advantages of x-ray treatment over other methods, according to the author, are that it is simple and painless and does not expose the patient to the risks of haemorrhage or infection. F. H. WILLIAMS (*Paris méd.*, February 3rd, 1923, p. 110) states that the rationale of radium treatment consists in the fact that the lymphoid tissue of which the tonsils are composed is particularly susceptible to the action of radium, and that diseased tonsillar tissue is even less resistant than the same tissue in the normal state. Radium, however, cannot be expected to have any action on fibrous tissue or suppuration. Williams has treated 101 cases, aged from 5 to 60 years, which he classifies as follows: enlarged tonsils without inflammation, 44 cases; tonsillitis (2 acute, 31 chronic), 33 cases; enlarged tonsils with various complications, such as rheumatism, cardiac disease, and nephritis, 14 cases. In all but three of the cases of simple enlargement, and in all but two of the tonsillitis cases, the tonsils were considerably reduced in size as the result of treatment. The use of radium is not without danger, and should only be carried out by an expert. Radium is stated to be more suitable than x rays for enlarged tonsils because it is easier to determine the exact dose, and because the radiations are applied to the tonsils by the mouth and are almost entirely absorbed by the tonsils themselves, whereas x rays, which are applied externally, are in great part absorbed by the intervening tissue, especially the parotid.

#### 259. Involvement of the Auditory Nerve in Early Syphilis.

M. BAB (*Deut. med. Woch.*, February 16th, 1923, p. 218) has carried out investigations with a view to checking the claims of Alexander, Kobrak, and others, according to whom the auditory nerve is often implicated before the appearance of secondary signs of syphilis. The author examined 26 cases of primary syphilis in which the diagnosis was confirmed by microscopic examination. On the same day on which this examination was made the patients were sent to a specialist in aural diseases for him to say whether they had symptoms of ear disease or not. On the same day or on the following day abortive treatment with neo-salvarsan was instituted. The report of the aural specialist showed that in about 75 per cent. the auditory nerve was already involved, and this was as often the case when the Wassermann reaction was negative as when it was positive. In most cases with signs of disease of the auditory nerve there were no subjective symptoms, but the signs were so characteristic that they may possibly prove of considerable value in the clinical diagnosis of doubtful cases of syphilis—for example, cases of mixed infection in which it is impossible to demonstrate the *Spirochaeta pallida*. In 70 per cent. the abortive treatment of these 26 cases was successful; six to eighteen months later there was no clinical or serological evidence of syphilis. In those cases in which there were no signs of involvement of the auditory nerve when the abortive treatment was instituted, it was invariably successful. It would seem that the injury to the auditory nerves caused by syphilis takes long to repair, and it may be demonstrable after the patient appears to have recovered in other respects from syphilis.

#### 250. The Value of Perirenal Inflation.

M. CHEVASSU (*Bull. et Mém. Chir. de Paris*, February 6th, 1923, p. 189) gives the results of over a year's experience of perirenal inflation. The technique of the operation is simple, but the results are often unsatisfactory, as there are a number of spaces round the kidney which may become injected instead of the perirenal tissue. These include the peritoneum, pleura, or mediastinum, which may rarely be injected, or more commonly the muscular planes, of the psoas muscle in particular; where this muscle is thick the point of the needle may be arrested in its sheath and the gas be injected among the muscle fibres, or sometimes it may result in the injection entering the central ligament of the diaphragm and thence passing to the chest or downwards into the abdomen. The author's procedure differs from that of Carelli in that he makes the injection at the point where the kidney approaches nearest to the skin; this point lies at the upper point of the line which divides the muscles of the back from those of the abdomen over the apex of Petit's triangle. He employs the trocar used to produce artificial pneumothorax; even so it is impossible to be sure the injection will proceed satisfactorily, and it may

merely enter in the pararenal layer. When successful the kidney can be shown surrounded by the gas and separated from neighbouring structures. When the injection does not spread equally around the kidney it may be due to perinephritis or to the gas collecting in pockets, and this leads to mistakes in diagnosis. The author concludes that at present no technique so far designed will give constant results. The image obtained by this method is often difficult of interpretation and no better than an ordinary radiogram; it may sometimes be used with advantage in cases of tumours of the loin where the diagnosis is obscure and other methods have been tried without success.

#### 261. Cystography in Prostatism.

PIRONDINI (*Riv. Osped.*, January 15th, 1923, p. 1) directs attention to the diagnostic value of cystography in prostatic cases. The bladder is filled with a 2 to 5 per cent. solution of potassium iodide or 5 to 15 per cent. solution of sodium bromide and the x-ray tube directed strictly vertically. Three points are to be noted: (1) the generic form of the vesical shadow; (2) the small irregularities of the margin of the shadow; (3) the lower edge of the shadow is above the pubic symphysis line. Of these three facts the third is the most important. Whenever this lower line is above the pubic line it is safe to say that prostatic adenoma exists. The cause of the elevation is the raising of the floor of the bladder. Some prostatic adenomata of periurethral localization do not raise the base of the bladder, and in such cases this clear interstice is not present, and other means of diagnosis may be necessary—for example, cystoscopy. Cystography is particularly useful when the passing of an endoscope is difficult or dangerous, and when there is great vesical irritability or severe haematuria. Several cystograms are given, which illustrate the author's statements.

### OBSTETRICS AND GYNAECOLOGY.

#### 262. Treatment of Ruptured Ectopic Pregnancy.

E. M. HAWKS (*Surg., Gyn., and Obstet.*, February, 1923, p. 232) discusses the question of whether immediate or delayed operation should be employed in cases of collapse following a ruptured ectopic pregnancy. He presents the clinical evidence afforded by 824 cases of ectopic pregnancy, of which 187 were in various degrees of collapse; three of the latter cases, through errors in diagnosis, did not receive palliative treatment, and of the remaining 184, 113 were operated on immediately, and 71 were treated expectantly. He suggests that there would be no question as to the time of operation if all the cases improved under palliative measures, but, unfortunately, a considerable percentage of these cases die when left to themselves, or when treated expectantly. This last statement has been denied by other authorities, but the author supports his opinion by statistics. The mortality in 133 consecutive cases of collapse due to this condition operated upon immediately in three hospitals was 8.8 per cent., while the mortality in 71 consecutive cases of collapse in two institutions, treated expectantly and in which operation was deferred, was 17 per cent.; in a more recent series of 21 consecutive cases of collapse in one institution, operated upon immediately, there was one death. The author suggests that the vital thing needed by such cases collapsed from haemorrhage is the addition intravenously of a warm circulating medium such as saline, gum glucose solution, or blood. Fluids cannot be given, however, unless operation is planned to follow soon or is done coincidentally. Infusion and transfusion give the immediate operation a great advantage. A small amount of fluid will often revive almost immediately a patient in *extremis* and make an operation possible. If an immediate operation has not been planned, fluids must not be added to the circulation and the slower method of the patient taking up her own serum must be relied upon. The type of case that dies in the wards within an hour or so would seem to have a better chance if the patient were infused and operated upon immediately, and transfused later, if necessary.

#### 263. Skin Diseases at the Menopause and their Treatment.

BAUER (*Zentralbl. f. Gynäk.*, February 3rd, 1923, p. 188) states that the two commonest skin troubles occurring at the menopause are pruritus and eczema. Pruritus, which may affect the labia, the genital crural clefts, the mons veneris, or may become diffuse, is especially distressing as it causes intense itching day and night and nearly drives the patient mad. Eczema is found on the external genital organs, the insides of the thighs, the elbows, neck, and face. The local and dietetic treatment which used to be given in such cases should, in the author's opinion, be omitted, as it is now



recognized that disturbances of the endocrine system are responsible, it having been shown by Luthlen that owing to these disturbances the skin is specially susceptible to inflammation at this time, and he has succeeded in reducing this susceptibility by reducing the permeability of the capillaries by colloidal therapy and blood-letting. With this treatment combined with organotherapy he has achieved good results. The author has had the opportunity to treat numerous women, either at the menopause or just before it, suffering from widespread pruritus and eczema on all parts of the body, and he has always improved and generally cured the condition by giving an ovarian extract 1 c.cm. subcutaneously every second day. If the treatment is begun in the early stages the disease is cured very rapidly, and even in old-standing cases not more than sixteen injections are usually required. He records two interesting cases in which the treatment, which he regards as quite harmless, was apparently successful.

#### 264. Treatment of Uterine Myomata.

J. RÉCAMIER (*La Gynécologie*, December, 1922, p. 714) surveys the treatment of uterine myomata during the last fifty years, and discusses the present-day indications for surgical, x-ray, and radium treatment. Radium or x-ray therapy in expert hands is without danger and usually efficacious in cases of uncomplicated myoma, but has the drawbacks that (1) the curative action is obtained as the result, and at the price, of a sterilization of the ovaries; (2) not all myomata can be diagnosed in the unopened abdomen, and to irradiate a supposed myoma, which is in reality an ovarian cystoma or an inflammatory adnexal condition, may cause grave and even fatal complications. Surgical treatment, which permits of exact diagnosis and of carefully planned conservative measures with regard to the genital functions, is nevertheless fraught with a mortality of approximately 6 per cent. (hysterectomy) or 8 per cent. (myomectomy). In assigning the various classes of myomata to radiological or to operative treatment, Récamier lays down the following general rules: Radiotherapy is called for, provided the diagnosis be not doubtful, in small or medium-sized tumours, in the diffusely fibromatous bleeding uteri of the menopause, and in patients whose general condition of health contraindicates surgical operation. Myomata unsuitable for radiotherapeutic measures are those which are large, high and subperitoneal, low and intraligamentary, degenerated, suppurating, submucous, and enucleable per vaginam; also those requiring intervention during pregnancy. According to the author, about one-third of myomata require operation; two-thirds may be left to x-ray or radium treatment. He believes that subtotal hysterectomy (the mucosa of the cervical stump being excised) is the operation of choice in the majority of women over 40 years of age having subperitoneal or interstitial myomata. Myomectomy is most suitable for women who are not yet 35, having myomata which are few and subserous, and possessing healthy adnexa; even in a young woman, however, it is better to do subtotal hysterectomy than to leave a "loque utérine" after multiple myomectomy.

### PATHOLOGY.

#### 265. The Blood Count in Erythema Nodosum.

W. HOYER (*Acta Medica Scandinavica*, February 22nd, 1923, p. 587) has examined the blood in twenty cases of erythema nodosum, and has found little change in the erythrocytes apart from a slight reduction in their number in about two-thirds of his cases. The anaemia was, as a rule, proportional to the severity of the disease. In most cases the total number of the leucocytes was above normal at the time of the eruption, and as this faded the number of the leucocytes returned to normal. Early in the disease there were neutrophilia, eosinophilia, monocytosis, and lymphocytosis. As the eruption faded, numerous neutrophils with rod-shaped nuclei appeared and persisted for a considerable time. Discussing this blood picture, the author points out that it does not tally with that of acute rheumatism. It is more like that of anaphylaxis, and erythema nodosum may be an anaphylactic phenomenon provoked by certain protein poisons, for one of which the tubercle bacillus may be responsible. Indeed, the late changes observed in the leucocytes after an attack of erythema nodosum resembled those seen after a primary infection with tuberculosis. In all but two of the author's cases v. Pirquet's reaction was positive, and in most it was violent. Yet there was a family history of tuberculosis in only three cases, and none of the twenty showed the habitus phthisicus. Some of the patients were nurses who had come as probationers to the hospital from the country and had nursed tuberculous persons during their first year of service.

#### 266. Skin Cancer following Exposure to Radium.

W. J. MACNEIL and G. W. WILKIS (*Journ. Amer. Med. Assoc.*, February 17th, 1923, p. 466) report an interesting case of skin cancer following exposure to radium which occurred in a medical practitioner aged 46. This patient worked with x rays in his practice from 1905 to 1917, but not since; he was fully cognizant of the danger of x-ray burns and precautions for self-protection were carefully employed. From 1912 to June, 1920, however, he handled radium without any precautions for self-protection; he used it in small amounts up to 1915, but in quite large amounts from 1915 to 1920, 200 to 365 mg. in individual tubes being taken between the right thumb and forefinger almost every day. Various changes, which might be ascribed to the exposure to radium, began to be observed late in 1918, and since early in 1920 the skin changes required constant care. In September, 1922, a fissure on the ball of the right thumb underwent a peculiar and extremely painful alteration in character, and did not improve under various treatments. The central portion of the lesion was excised and on microscopical examination was found to be a disintegrating squamous-celled carcinoma, extending beyond the limits of the specimen examined. Immediate amputation of the thumb was advised, and this was carried out on the following day. The condition was then found, on further examination, to be a squamous-celled carcinoma of the distal phalanx of the right thumb, extending to the base of the phalanx; there were hyperkeratosis and parakeratosis of the cutaneous epithelium. The authors admit that the earlier work of the patient with x rays throws some little doubt on the causal relation of the radium. On the evidence, however, they are strongly inclined to the opinion that radium may, when exposure has been sufficient, give rise to changes in the skin predisposing to development of malignant new growth, and that the radium had precisely this effect in the case reported.

#### 267. Destruction of Diphtheria Bacilli by the Pneumobacillus.

LESBRE (*C. R. Soc. de Biologie*, January, 1923, No. 3, p. 227) has succeeded in eradicating the diphtheria bacillus from the throats of carriers by inoculating their throats with the pneumobacillus. It has been known for some time that certain harmless organisms play an important part in inhibiting the growth of the Klebs-Loeffler bacillus in the throat and the existence of an antagonism has been established between the pneumobacillus and the diphtheria germ. Lesbre inoculated living pneumobacilli on to the tonsils of four diphtheria carriers and found that in each case the number of diphtheria bacilli diminished rapidly and they disappeared completely in seven to twelve days. The same treatment was then applied to a convalescent case suffering from pharyngitis, with the result that the diphtheria bacillus could not be found after seven days. An early case of diphtheria was also treated successfully. All the recipients of these inoculations were examined again after a period of two months and were found to be free from infection: they had not suffered from any symptoms as the result of the implantation with pneumobacilli. Such a method of treatment may therefore be of value in destroying diphtheria bacilli in the throat and diminishing the period of isolation of carriers.

#### 268. Can Tuberculosis Give a Positive Wassermann Reaction?

H. BOAS and C. WITH (*Hospitalstidende*, January 31st, 1923, p. 69) review the extensive literature according to which tuberculosis, notably of the skin, frequently is responsible for a positive Wassermann reaction. Their review shows that with one possible exception these publications do not bear scrutiny. Their own observations show that the chance of a tuberculous person (without clinical evidence of syphilis) giving a positive Wassermann reaction is only 0.1 per cent. (thrice in 2,308 cases). At the Finsen Institute in Copenhagen it has been the practice since 1910 to test every patient with Wassermann's reaction, and in addition to the material obtained at this institute the authors have added some cases from other hospitals. Altogether 1,174 cases of tuberculosis of the skin, or of cutaneous diseases which might have a tuberculous origin, were examined by Wassermann's reaction and only in 3 was it positive, although there was no evidence of syphilis. In 758 cases of surgical tuberculosis and in 376 cases of pulmonary tuberculosis the reaction was tested; it was not once positive in the latter class, and among the cases of surgical tuberculosis there were only 17 with a positive Wassermann reaction, and in all these 17 cases syphilis was found to coexist with tuberculosis. It is therefore a myth that this disease can *per se* give rise to a positive Wassermann reaction.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

269.

### The Biological Test of Paternity.

LATTES (*Rif. Med.*, February 19th, 1923, p. 169) discusses recent views on heredity in relation to paternity. Mere resemblance of child to parent, whether gauged by ordinary observers or by artists, is not a safe guide from the medico-legal point of view. We are getting a little nearer a test when we study the question in the light of Mendelian laws. The dominance or recessivity of certain characteristics, corresponding to the Mendelian hypotheses, should be borne in mind. Sex linkage—as, for instance, in the case of haemophilia—may come in as a disturbing factor. The shape of the skull, of the hands, the disposition of the venous arches, the whorls of the finger-tips, and the distribution of pigmentation have all been used as tests. As regards the colour of the iris, blue is said to be recessive to grey, and grey to brown. Brown or black hair is dominant in regard to red or blond, and the section of the hair is also a factor—for example, smooth round hairs are recessive in regard to oval sectional hair. Again, a good deal of work has been done in relation to blood characteristics, especially as regards the red corpuscles, details of which are given, but so far the author would not be prepared to judge a case of disputed filiation solely on the blood findings. The upshot of the discussion is to suggest that by a proper use of Mendelian doctrines in relation to heredity we possess a clue which might help, if not certainly settle, cases of disputed paternity.

270.

### The Etiology of Erythema Nodosum.

A. WIBORG (*Norsk Mag. f. Lægevidenskaben*, February, 1923, p. 135) has observed an epidemic of erythema nodosum in a country district in Norway, and has come to the conclusion that the disease is of rheumatic rather than tuberculous origin. Between November, 1921, and August, 1922, he saw as many as 30 definite cases, 18 of which occurred in December. In each of the other months there occurred only 4 cases or fewer. The epidemic was practically confined to a district where only 816 persons lived; here 26 of the 30 cases occurred. The age of 26 of the patients was between 8 and 15—most of them were girls; the remaining 4 patients were women between the ages of 16 and 25. Only in two homes were there as many as two cases in each, yet in many families where a single case occurred there were several children. Most of the patients suffered from protracted anaemia after the illness, and 3 developed fatal tuberculous meningitis. The 8 cases of pleurisy occurring in conjunction with the erythema terminated in recovery. In the same period there were 19 other cases of pleurisy, all with effusion, and 14 cases of acute rheumatism. There were also numerous cases of muscular rheumatism. In support of his view that erythema nodosum is a rheumatic disease, the author remarks that in many of his cases the erythema nodosum was associated with erythema multiforme and pains in the joints; most of the cases reacted promptly to salicyl. Another point in favour of his view was the great frequency with which many cases of undoubted rheumatic disease occurred in the same period, and it is conceivable that the very wet Norwegian summer of 1921, with almost incessant rain from May till Christmas, favoured the development of rheumatic diseases.

271.

### Orthostatic Albuminuria.

J. W. RUSSELL (*Quart. Journ. of Med.*, January, 1923, p. 73) reports a study of orthostatic albuminuria by means of graphic records. He describes a method for the rapid estimation of albuminuria of small degree, and gives charts indicating the amount of albumin in the urine, at different times of the day, in cases of apparent orthostatic albuminuria. He compares the results with those obtained in certain mild cases of nephritis. In the cases of mild nephritis studied during and immediately after a subacute attack, the reactions of the albuminuria to the upright position are identical with those of the orthostatic group. He is inclined to think that many of the cases diagnosed as orthostatic albuminuria are not really "functional" in nature, but have a "renal pathology." The author concludes that there appears to be a group of mild kidney lesions which reveal themselves chiefly by the inability of the kidney to bear, without leakage of albumin, the circulatory disturbance brought about by the upright position; and he believes that the orthostatic albuminurias belong to the same group, though at its mildest extremity. In none of the cases examined has the

"bed urine" been always completely free from albumin. There is a close association between the quantity of urine secreted and the amount of albumin contained. Generally the two curves are inverse in direction. When the urine is persistently and abnormally scanty, the two curves cease to show any relation to one another. In the more obviously nephritic cases, the albumin response to the upright position is not immediate, except during a subacute exacerbation. In the more definitely orthostatic cases standing at once and invariably gives rise to albuminuria, except during a period of diuresis.

### 272. Posture in the Treatment of Bronchial Diseases.

H. SCHAEFER (*Klinische Wochenschrift*, February 5th, 1923, p. 252) records his experience of the sloping posture in the treatment of bronchial diseases. The patient is placed in a posture suitable for the draining away of bronchial secretion by gravitation. After part of the bronchial secretion which has accumulated during the night has been expectorated by coughing in the morning, the patient rests flat on the bed for two hours, so that the rest of the bronchial secretion can flow more easily into the large bronchi. After a few days the foot of the bed is raised 30 cm., and the patient rests on his healthy side. Not only is the foot of the bed raised, but the bed is tilted obliquely. The gluteal region is raised by a wedge-shaped cushion, and finally the head and shoulders are placed on a chair close by the bed; thus an oblique hanging posture is obtained. The treatment is at first for half an hour daily, and then the time is rapidly increased to two hours daily. Patients with cardiac disease or high blood pressure are obviously unsuitable for this treatment. Of 8 cases of bronchiectasis treated by this method, 5 recovered and 1 improved considerably. By this treatment the sputum was definitely diminished, and the general condition improved. The treatment by posture does not cure bronchiectasis, but it often causes distinct improvement. In a case of abscess in the lower part of the right lung, and in another case of fetid bronchitis, recovery followed the postural treatment. Apparently the treatment is chiefly of service in bronchiectasis or abscess, but only when the lower part of the lung is affected; in diffuse bronchitis it is useless.

273.

### Malarial Splenomegaly.

O. CIGNOZZI (*Il Policlinico*, Sez. Chir., February 15th, 1923, p. 57) records his observations on enlargement of the spleen in malaria and the complications arising therefrom, based on the study of several hundred cases during twelve years' surgical experience at the Grosseto Hospital. He maintains that the treatment of all enlarged malarial spleens should be medical as long as they are situated in their normal position. Operation, however, is required in the following complications:—(1) Violent lesions: (a) spontaneous rupture, (b) rupture of spleen from abdominal contusions, (c) rupture of spleen from penetrating wounds of the abdomen and thorax. (2) Acute inflammatory processes: (a) Splenic abscesses, (b) perisplenic and subphrenic abscesses. (3) Parasitic cysts, especially echinococci. (4) Ectopia of a chronically enlarged malarial spleen. (5) Ectopia of a chronically enlarged spleen due to latent malaria. (6) Splenic infarction and blood cysts in an ectopic malarial spleen. (7) Necrosis of an ectopic spleen with acute torsion of the pedicle. (8) Ectopic spleen with subacute or chronic torsion of the pedicle. In 15 out of 17 cases which presented the complications described Cignozzi performed splenectomy, with only one death. The results of the operation were as follows: (1) Improvement in the general condition, due partly to removal of a mechanical interference with the gastro-intestinal functions and partly to removal of a large quantity of toxic material. (2) Improvement not only in the number of the red corpuscles and haemoglobin value but also in the white cell count, the typical leucopenia being gradually replaced by a normal formula. (3) Resistance to various infections, especially septic infections, was diminished. (4) Relapses, though liable to occur, were more likely to develop a long time after splenectomy than directly after the operation.

### 274. Hospital Epidemic of Pemphigus Traced to a Laundrymaid.

H. SCHULTHEISS (*Schweiz. med. Woch.*, February 15th, 1923, p. 171) gives an account of an outbreak of pemphigus among infants in a maternity hospital in Basle. The outbreak, which included 21 cases, began with two which occurred simultaneously in different wards, served by different members of



infantile death, from enteritis and pneumonia on the fifth day. The other children were absolutely normal except for a slight increased sleepiness for the first two days. The authors attribute the success of the rectal ether to the gradual, regular, and constant absorption, to the fact that no alkaloids were used and that the effect can be stopped at once by washing out the rectum, and to the ease with which the technique can be learnt. The disadvantages are the impossibility of a regular dosage to be followed in all cases, owing to the non-retention of the whole dose and also to the differing susceptibility to the drug in different women. It is also not suitable for administration in a private house. It compares very favourably with the statistics of hyoscine-morphine narcosis taken from the statistics of eight different authorities, a table comparing the two being appended:

	Hyoscine-morphine (1,076 cases).	Rectal ether (100 cases).
Full amnesia ...	81.2%	88%
Partial amnesia ...	16.3%	8%
Failures ...	2.5%	4%
Children healthy ...	70.0%	84%
Children apnoeic, oligopnoeic, or asphyxiated ...	27.5%	16%
Children, total mortality ...	3.0%	2%
Frequency of forceps ...	9.2%	3%

#### 284. Treatment of Early Malignant Disease of the Genital Tract.

ACCORDING to R. T. FRANK (*Amer. Journ. of Surg.*, February, 1923), the extreme malignancy of carcinoma of the vulva affords an urgent indication for prophylactic removal of irritating, especially pigmented warts, and the excision of intractable kraurotic or leucoplakic areas. Even the smallest cancer in this region requires complete vulvectomy with excision of the inguinal and possibly of the iliac glands; vulvar cancer, however, seldom reaches the surgeon in an operable stage and is rarely susceptible of permanent cure. Carcinoma of the vagina takes, as a rule, a still more rapid course, and the author has found hysterectomy and colpectomy to be fraught with such high mortality and tendency to recurrence that he prefers to substitute radium treatment. Early carcinoma of the cervix uteri not infrequently escapes medical recognition, and, on the other hand, innocent eversion, erosions, and even chancres have been mistaken for cancer and have caused removal of the normal uterus. In every case therefore, whether only "suspicious" or practically certain, it is imperative to secure microscopic examination of an excised fragment by an experienced pathologist. For a small tumour or ulcer localized on one lip Frank advocates a radical so-called Wertheim operation without systematic extirpation of unenlarged pelvic glands; for the more frequently encountered "border-line" case, in which the pericervical tissues are probably or certainly affected to a slight extent, he prefers preliminary radium treatment, followed eight to ten days later by complete hysterectomy (not the Wertheim technique).

#### 285. Partial Symphysectomy for Pelvic Contraction.

ACCORDING to P. CASTAGNA (*Rivista d'Ostetricia e Ginecologia Pratica*, January, 1923), partial symphysectomy as described by Costa constitutes the most valuable means of treatment of contraction of the pelvic inlet with the true conjugate measurement reduced below 75 mm. It is followed by a permanent enlargement of the pelvis, as has been shown by radioscopic and other examinations of patients made after an interval of some months after operation. The operation, which does not present great technical difficulty and is accompanied by little haemorrhage, consists in shaving off from the upper and posterior portion of the symphysis pubis a crescentic area 2 cm. broad, 1 cm. deep, and 1 cm. thick, including bone, periosteum, and ligamentous attachments; the part excised is roughly that lying between the two pubic spines. Two cases are related by the author in which the operation performed during labour was followed by issue of a living healthy child; the true conjugate measurements were respectively 78 and 80 mm., and in both cases previous labours had been protracted and resulted in stillbirth after application of forceps.

### PATHOLOGY.

#### 286. Rupture of the Aorta.

W. M. DE VRIES (*Nederl. Tijdschr. v. Geneesk.*, December 16th, 1922, p. 2713), who records 24 cases which occurred among about 6,500 autopsies, classifies the varieties of rupture of the aorta into traumatic and spontaneous. In the traumatic form, of which he relates four examples, the rupture is often localized in the region of the ligamentum Botalli and just above the valves. Longitudinal ruptures are less frequent

than transverse. In spontaneous rupture, of which de Vries reports 20 cases, two forms may occur: (a) A form in which local diseases of the aorta may give rise to rupture by causing weakness of the vascular wall; and (b) a form in which the rupture occurs with little or no change in the aorta. Sometimes the aorta possesses only two valves or there is a stenosis of the aortic isthmus. In this form a more or less violent bodily effort may be the exciting cause of the rupture, or there may be cardiac hypertrophy or chronic nephritis. Weakening of the aortic wall is most frequently caused by aortic aneurysm, of which 8 cases occurred in this series, other causes being purulent infection of the aortic wall—caused by pyogenic emboli in one of the vasa vasorum of the aorta (aortitis mycetica), tuberculosis of an adjacent lymphatic gland, or a caseous abscess involving the aorta, ulcerative endaortitis complicating ulcerative endocarditis, and carcinoma of the oesophagus. Five examples of the last named cause occurred among 136 cases of carcinoma of the oesophagus, but none of the other three causes were represented in the present series.

#### 287. Rapid Test for Albumin and other Urinary Proteins.

A TEST has been devised by W. G. EXTON (*Journ. Amer. Med. Assoc.*, February 24th, 1923, p. 529) for both qualitative and quantitative estimation of albumin in urine, with a reagent consisting of a 5 per cent. solution of sulphosalicylic acid and 20 per cent. sodium sulphate. The test is reported to be so trustworthy that confirmation by other tests is rarely if ever necessary. The reagent is highly acid, approximately equivalent to one-tenth normal hydrochloric acid, and so thoroughly loaded with salt that, when added to an equal volume of urine, a mixture is obtained that is quite uniform in specific gravity, hydrogen ion concentration, and salt content, irrespective of the physico-chemical constants peculiar to the particular urine tested. A litre of the reagent is made by dissolving 200 grams of sodium sulphate (crystals) in from 700 to 800 c.cm. of distilled water. After cooling down to about 35° C., 50 grams of sulphosalicylic acid are dissolved by stirring and without further heating, and enough water is then added to make 1 litre. The reagent is not sensitive to light, and keeps indefinitely. The test is performed by mixing equal parts of urine and reagent, and warming. Even the warmth of a match suffices. Boiling does not spoil the test, but is unnecessary. Albumin-free urines so treated give a perfectly clear, transparent mixture; albuminous urines are rendered cloudy, the degree of turbidity being directly proportionate to the concentration of albumin.

#### 288. Vitamin B and the Sexual Glands.

THOUGH several workers have noted the fact that deprivation of vitamin B leads to degeneration or atrophy of the germinal tissue of the sexual glands, their experiments have often been open to criticism on the ground that the basal dietaries employed have been insufficient to avoid a certain element of starvation—and it is known how sensitive these glands are to inanition. To avoid this objection H. GOTTA (*C. R. Soc. de Biologie*, February 10th, 1923, p. 373) adopted Simonnet's vitamin B free diet—one which, besides containing several varied constituents, includes a quantity of meat residue—and gave it in such amount as to exclude any possibility of starvation. Working with pigeons, he divided them into three groups. To the first group of 9 he gave the basal dietary; to the second group of 7 the basal dietary with the daily addition per bird of 2.5 grams of fresh beer yeast to ensure an ample supply of vitamin B; while the third group, acting as controls, were allowed a full diet of maize. In eighteen to thirty days after the commencement of the experiment the pigeons of the first group showed symptoms of polyneuritis; those of the second group appeared perfectly healthy. All three groups were killed. At autopsy it was found that those birds which had been deprived of the B constituent had lost considerably in weight, while the size of their testicles was only about one-tenth that of the controls. Those of the second group, which had received the B factor, had actually gained slightly in weight, but their testicles, when compared with those of the controls, were seen to be diminished in size by about one-half. Histological study of the sexual glands of the first group showed a marked retrogression of the germinal tissue; the canaliculi were narrow, lined by only one or two layers of cells, and showed no spermatozooids. These facts can be explained on three hypotheses: (1) that the yeast supplied sufficient of the B factor to avoid the symptoms of polyneuritis, but not sufficient to prevent the sexual atrophy—in which case the testicle may be taken as a delicate reacting agent to the presence or absence of vitamin B; (2) that in the basal diet employed there was some necessary, but unknown, factor missing; or (3) that the meat residue had a deleterious effect on the testicle.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

### 789. Tuberculosis of the Lymphatic System.

SIR R. PHILIP (*Edin. Med. Journ.*, March, 1923, p. 85) emphasizes the importance of the lymphatic system in the early spread of tuberculosis. Following invasion, whether by local soro or not, a secondary incubation occurs, as shown by the enlargement of the lymphatic glands in the vicinity, with extension to others more distant. It is suggested that in children the lymphatic system should be periodically reviewed, and in cases of delicate health all those groups of glands readily accessible should be carefully investigated by detailed palpation. Following inoculation of the tonsillar region, in addition to the obviously enlarged glands at the angle of the jaw, multiple enlargement of lymph nodes may progressively extend in fan-like fashion into the submaxillary and supraclavicular regions, the affected glands becoming infiltrated and indurated; when gross enlargement of glands occurs a thoroughgoing search should be made for obvious infiltration extending to adjacent glands, and frequently over wide areas to other groups. Prolonged tuberculin treatment at this early lymphatic stage has a marked effect alike on the obvious glandular enlargements, on those groups less obviously affected in other areas, and on the general intoxication. Under such continued use of tuberculin, either subcutaneously or percutaneously (inunction giving excellent results), the gross enlargement becomes sensibly reduced as it resolves into discrete glands which eventually become smaller, fibrous, and possibly calcified, while the glands at a distance are influenced, and the relief of intoxication is evidenced by improved appearance, gain in weight, and recovery of muscular tone. Operative treatment should be limited to emergencies, such as removal of deformity or the evacuation of a softened gland, and such treatment should avoid extensive incision, and must never be regarded as in any way radical.

### 290. Silicosis and Tuberculosis.

C. L. SUTHERLAND and W. C. RIVERS (*Tubercle*, March, 1923, p. 255) publish details concerning the relation of silicosis to tuberculosis in the West Riding of Yorkshire. In 1858 the first ganister brickworks in the country were opened at Oughtibridge. The mineral in question, when the quality is good, contains 87 to 96 per cent. of silica. Dust is disengaged in all the processes, the brick ceasing to be dangerous only after baking. The relative danger of the different processes is indicated by the following numbers, which represent percentage frequencies of silicosis or silicosis plus tuberculosis: Setters, 13.95; miners, 13.33; breakermen, 9.21; quarrymen, 2.43; labourers in sheds, 2.21. Taking the industry collectively, it was found that 64 of the 1,254 employees examined (about 5 per cent.) suffered from silicosis or tuberculosis. By the deduction of the 128 employees engaged in the least dangerous part of the work, the incidence of silicosis or tuberculosis was raised to 8.3 per cent. Even this ratio was too low, for about a third of the persons examined were birds of passage. It was found that in established disease the skiagram gives much more detailed, precise, and extensive evidence than do the ordinary physical signs.

### 291. Treatment of Pulmonary Oedema following Thoracentesis.

S. H. LINDBLOM (*Hygiea*, January 31st, 1923, p. 36) raises the question: What is the best treatment for severe pulmonary oedema, provoked by the too sudden removal of a large quantity of pleural effusion? He suggests that the best course may be for the physician to retrace his steps and to compress the lung again by introducing gas into the pleural cavity. He insists, however, that the best treatment of all is prophylactic, and that, particularly when there are signs of cardio-vascular disease, the physician should be very careful not to remove much pleural fluid at a time. He should also restore the intrapleural pressure to its original height, which is probably in excess of the atmospheric pressure. The case from which he deduces these principles was that of a man, aged 22, who had suffered from a pericardial effusion at an earlier date. The author withdrew nearly 2 litres from his right pleural cavity. Soon afterwards he began to cough and choke, bringing up several litres of frothy, rose-coloured sputum. Death seemed imminent, and it was as a desperate resort that the author plunged a needle into the chest, inducing a pneumothorax under a positive pressure by blocking

the needle whenever the patient coughed, and thus preventing escape of air from the chest. Camphor and morphine were injected subcutaneously. The patient's recovery from the most alarming symptoms was prompt, but convalescence was delayed by a subfebrile temperature which lasted for months.

### 292. Active Immunization against Diphtheria.

C. DE LANGE and J. C. SCHIPPERS (*Nederl. Tijdschr. v. Geneesk.*, January 13th, 1923, p. 145), inspired by the good results obtained by Park, Zingher, and other American observers in the active immunization of children against diphtheria, performed Schick's reaction on 90 children in the Emma Children's Hospital at Amsterdam as a preliminary measure, and obtained a positive result in 51 cases, or 55.6 per cent., and a negative result in 39 cases. Like Park, Zingher, and Serota, the Dutch physicians found that there was a tendency for all the children of one family to give a similar reaction, whether positive or negative; 32 of the 51 positive cases were immunized by the injection of toxin-antitoxin. In 24 of the 32 cases a Schick reaction was performed again at the end of six months: the remaining 8 could not be traced. The results were as follows: 6 were still decidedly positive, 6 were feebly positive, and 12 were negative. No bad effects were observed as the result of the Schick reaction. The local and general effects of injection of toxin-antitoxin in infants were very slight; in older children there was occasionally a rise of temperature and slight constitutional disturbance, which disappeared the next day. The injection sometimes produced a slightly tender swelling of the axillary glands, which soon subsided. The authors conclude that it is improbable that active immunization against diphtheria will be carried out in Holland on so large a scale as in America, but they are firmly convinced that the method will be of great value in holiday colonies, orphanages, and other institutions, and will serve to render bacillus carriers a negligible quantity.

### 293. Treatment of Herpes Zoster.

POIROT-DELPECH (*Bull. Soc. de Thér.*, January 10th, 1923, p. 25) has recently treated 8 cases of intercostal or abdominal herpes zoster by the following method, which was advocated by Deboue: 5 grams of picric acid were dissolved in 50 grams each of absolute alcohol and sulphuric ether, and the solution was applied every two days to the lesions, which were allowed to dry and covered with cotton-wool. Internal treatment consisted in administration of 1 or 2 grams of antipyrin according to the severity of the pain. As a rule the pain diminished after the first application of the solution, and the vesicles began to dry up. In six moderate cases a cure was obtained in three to six days, and in two severe cases in nine and twelve days respectively. It was never necessary to use more than five applications. As soon as the vesicles had desiccated and the pain had disappeared an inert powder such as talc or bismuth subnitrate was substituted for the picric acid solution. No relapses occurred. It is important to keep the solution far away from a flame, and not to throw the soiled dressings into the fire.

### 294. Treatment of Anthrax.

J. R. DE SILOS (*Arch. de méd., cir. y esp.*, February 10th, 1923, p. 275) states that, though salvarsan is undoubtedly an excellent drug for the treatment of anthrax, especially the bacteriaemic forms owing to its bactericidal action, other methods should not be neglected, especially the cautery. In the course of 1922 he treated more than half a dozen cases of malignant pustule with success, although he was unable to obtain any salvarsan. All were treated with the thermo-cautery and some with specific serum as well. As the serum was always used at the same time as the cautery, it was difficult to determine exactly how far it was responsible for the good result. De Silos accepts the view that if no specific serum is available any other serum may be used, including normal horse serum. Protein therapy in the form of commercial preparations, or even milk, may also be tried.

### 295. Etiology of Cirrhosis of the Liver.

PROFESSOR KLIENEBERGER (*Zentralbl. f. inn. Medizin*, February 24th, 1923, p. 123) considers that the severe infective diseases of the intestine, particularly enteric and dysentery, play a more important part in the causation of liver cirrhosis than has hitherto been recognized. Cirrhotic liver is strikingly prevalent in Macedonia, Asia Minor, and India—regions where typhoid fever and dysentery are very common



diseases. In Macedonia Krause has found that cases of cirrhotic liver almost always give a history of diarrhoeal disease. In these regions, on the other hand, the commonly assigned causes of liver cirrhosis—namely, alcoholism, syphilis, etc.—are not particularly in evidence, although malaria is common, and may be a factor. Moreover, jaundice is common during convalescence from enteric and paratyphoid; and the bacilli of enteric and dysentery are known to remain for long periods in the gall bladder in many cases. The author has noted many cases of enteric in which the liver was slightly enlarged. In a fatal case of liver cirrhosis in a young man, *post-mortem* examination revealed a healed ulcer in the ascending colon and marked pigmentation of the mucous membrane of the colon—evidence of a previous attack of enteric fever.

#### 296. The Function of the Spleen.

M. H. KAHN (*Amer. Journ. Med. Sci.*, February, 1923, p. 214) reviews the literature relating to the functional activity of the spleen, pointing out that, since the spleen has no external and no known internal secretion, its action cannot be studied directly. Although essentially a lymphatic structure and part of the lymphatic system, its functions are also related to the blood and blood-forming organs and to the liver, to immunity and infection, to the metabolism of iron, and to special blood diseases. Studies of the white blood cell content of the venous blood of the spleen prove that the organ is concerned in blood formation, while one of its normal functions is the capacity for selecting those red blood cells which are to undergo destruction and those which are to continue in circulation. In iron metabolism it acts as a storehouse for the iron liberated from the decomposition of the blood tissues, while the liver is in the main the storehouse of the iron ingested. The spleen exerts a stimulating influence on blood-producing organs, since anaemia due to bleeding or haemolytic poisons recovers much more slowly in splenectomized than in normal dogs. Its exact rôle in digestion is not known, though there is evidence of a pepsinogenic function, and it appears to possess a cholesterolinogenic function. That the spleen produces an internal secretion has been surmised, but is not proved, though, while it probably produces certain enzymes important to its function, such function is shared by other lymphoid structures which continue the function after splenectomy. The general metabolic processes appear to be unaffected by its removal, its function becoming fully compensated for within five or six weeks. In physical diagnosis palpation gives the only definite information as to the size of the organ, though its outline can be fairly well determined by *x* rays; splenic puncture is dangerous, and even in localized infections is to be condemned as a diagnostic method.

## SURGERY.

#### 297. Chronic Empyema.

AS C. EGGERS (*Annals of Surgery*, February, 1923, p. 142) points out, there is probably no suppurative inflammation of any part of the body, except that of bone, which leads to chronicity as often as inflammation of the pleura, the reason being that, in addition to infection, mechanical factors are present, such as negative air pressure, a rigid thoracic wall, and the development of an open pneumothorax. In acute empyema, drainage at the most dependent point usually leads to a cure without any difficulty; certain cases, however, have a tendency from the beginning to become chronic. Some patients may go for months with an accumulation of pus in the pleural cavity unrecognized, and this leads to chronic invalidism; such cases are really avoidable; they should be treated by incision and drainage. There is a class of case which does not heal in the usual time—that is, within one to three months—whilst a number of patients appear to heal well, but this is followed by spontaneous opening of the old empyema wound. The usual causes for these conditions may be found in epithelialization of the drainage canal, or healing may be prevented by the presence of infected granulations along the canal. Osteomyelitis of a rib is sometimes found, and, a sequestrum being formed, keeps up the discharge, or chronic infection of the resected ends of the rib cartilages keeps up the discharge. Treatment of the conditions by curettage of the tract often leads to a cure; when this fails more radical methods may be necessary. Often the drainage opening is found to be contracted or placed at a too high level; in such cases fresh drainage must be established. Many cases which refused to heal rapidly improved when adequate drainage was provided and regular Carrel-Dakin treatment started. In chronic empyema Carrel-Dakin treatment is of

real value; the author records a number of cases where this was adopted with extremely satisfactory results. When cultures from the wound became negative healing rapidly followed. In cases which showed no tendency to heal more radical treatment had to be adopted.

#### 298.

#### Surgery of the Bile Ducts.

GOSSETT (*Bull. et Mém. Soc. Chir. de Paris*, January 30th, 1923, p. 118), in discussing accidental wounds of the bile ducts when carrying out cholecystectomy, advises that the gall bladder should be removed from behind forwards. When removing the gall bladder it is always advisable, before dividing the cystic duct, to identify the cystic duct itself, the hepatic duct, and the common bile duct. If this is done wounds of the common duct will be avoided. The author advises that the cystic duct should be divided first and the gall bladder then separated from neck to fundus. In an earlier case before he adopted this technique, where he wounded the bile ducts, it was necessary to make an end-to-end anastomosis between the hepatic and the common bile duct; the result of this has been completely satisfactory, however. In removing the gall bladder from behind forwards it is easier to find the proper plane of separation from the liver, and this reduces the amount of oozing. After dividing, between two pairs of forceps, the cystic duct near its junction with the common duct, the arteries can be put on the stretch and identified as they reach the gall bladder along the peritoneal fold. They can then be easily tied and perfect haemostasis secured with a single ligature. If the bile ducts are thus carefully isolated and identified complete safety is assured even in cases where an abnormality of the ducts is present. It is also possible to conserve the peritoneum and at the end of the operation place a drain under the sutured edges of the peritoneum. Savariaud advises that accidents may be avoided by slitting up the gall bladder and cystic duct until one reaches the junction of the duct with the common bile duct. If the cystic duct is dilated owing to the presence of a calculus damage to the hepatic or bile duct is avoided by this procedure.

#### 299.

#### Non-parasitic Cysts of the Liver.

O. MARGARUCCI (*Il Policlinico*, Sez. Chir., December 15th, 1922, p. 649, and January 15th, 1923, p. 16) has collected 50 cases of non-parasitic cysts of the liver on which an operation was performed, including two of his own in women aged 58 and 67, as well as six others in which the condition was not found until the autopsy. He adopts Thöle's classification of non-parasitic cysts of the liver into (a) blood and lymph cysts; (b) neoplastic cysts (cysto-adenoma). Blood cysts arise (1) as the result of trauma; (2) from softening of morbid tissue (sarcoma, carcinoma, adenoma, and haemangioma). Lymph cysts originating in dilatation of pre-existing lymphatic vessels contain a transparent yellowish fluid, rich in albumin and chlorides, without bile or mucus, and are invested with epithelium. Neoplastic cysts form the great majority of non-parasitic cysts, and possess the greatest clinical interest. All modern investigations lend support to the view that the so-called cystic degeneration of the liver (plurilocular or polycystic cysto-adenoma) or the solitary epithelial cyst of the liver (unilocular adeno-cystoma) should be regarded as a genuine new growth (cysto-adenoma) derived from proliferation of the epithelium of the bile ducts. Any part of the liver may be the site of formation for the cyst, but the sites of predilection are the inferior surface and the margins. The right lobe is more often affected than the left. The contents of the cysts may be transparent, thin, viscid, or pultaceous, or contain bile, blood, or pus. The diagnosis is based on the history, the long course, and the subjective symptoms (local pain and colic), but chiefly on the results of physical examination, performed if necessary under an anaesthetic. In the great majority of cases the diagnosis is not made until the operation. The prognosis is generally favourable. Blood and lymph cysts are not progressive. As regards the prognosis of neoplastic cysts, multiple cysts, especially when they are associated with similar processes in the kidneys or other organs, have a progressive tendency, and sooner or later prove fatal; whereas the prognosis of solitary cysts is favourable, as their progress is usually slow, and a complete cure can be effected by operation. The following methods of treatment have been employed: (1) evacuant puncture, single or repeated; (2) incision of the cyst wall and evacuation of its contents after laparotomy; (3) total excision of the cyst either by enucleation from the hepatic tissue or by simultaneous removal of the portion of liver substance in which the cyst is embedded. The last method should always be employed in preference to the others when there are no contraindications.



### 300. Inflammatory Tumour of Intestine Associated with *Ascaris lumbricoides*.

K. ANDRASSY and K. HIMMELREICHER (*Zentralbl. f. Chir.*, February 24th, 1923, p. 302) describe three cases of inflammatory ileo-caecal tumour which have recently come under their observation. *Ascarides* were present in the intestine in each case. (1) A male, aged 29; had suffered from vomiting and colicky pains for seven weeks. He had been treated for round worms shortly before admission to hospital. A smooth, slightly movable tumour about the size of a child's head was felt below the umbilicus. At operation, the caecum and lower third of the ascending colon were found to be enormously enlarged, the wall being thick, soft, and oedematous, the surface reddish-yellow and covered with flakes of lymph, with some recent adhesions. The nature of the tumour was not recognized, and resection of caecum and ascending colon was performed, with end-to-side anastomosis. Histological examination showed inflammatory infiltration, especially around the vessels, the cells being chiefly leucocytes with many eosinophiles. A superficial ulcer was present on the mucous aspect of the caecum, about the size of half a crown. The patient made a good recovery. (2) A male, aged 22; severe pain in the right side of the abdomen for thirty-six hours; tenderness and slight rigidity in the right iliac fossa. Appendicitis was diagnosed, but at operation an ileo-caecal tumour the size of a fist was found, with recent adhesions; the caecal wall was stiff, thick, and brawny, and yellowish-red on the surface. Numerous round-worms were felt in the small intestine. The tumour was not removed, and treatment was subsequently directed to the worms. The tumour disappeared completely within a month, and the patient had had no further trouble a year later. (3) A male, aged 22; severe pains in abdomen and vomiting; tenderness at ileo-caecal region. At operation an ileo-caecal tumour was found the size of a fist, displaced upwards and lying under the stomach and transverse colon. The caecum was thickened, yellowish-red, with recent adhesions, and the last few inches of the ileum were intussuscepted into it. The intussusception was reduced and the caecum infolded with a few serous stitches to prevent recurrence; the abdomen was then closed. *Ol. chenopodii* was administered, and in due course seven round worms were passed. The tumour disappeared within a few weeks. In no case did the tumour present the naked-eye appearances characteristic of tuberculosis, actinomycosis, syphilis, or new growth. The authors conclude that the condition was secondary to lesions of the mucous membrane caused by *Ascaris lumbricoides*, that parasite being present in each case.

### 301. Pyelography.

E. PAPIX (*Journ. de Méd. et de Chir.*, December 10th, 1922, p. 848) says that in pyelography substances opaque to x rays are more generally useful than substances transparent to x rays. Collargol in 5 per cent. solution was originally employed, but this was of insufficient strength and the author used a 20 per cent. solution. Iodide of silver has been used, and bismuth subnitrate and bismuth bicarbonate. During the last two years he has used sodium bromide with success. The use of translucent gases such as oxygen or air is useful in cases of renal calculus, and shows up the shadow well. In practising pyelography a small opaque ureteral bougie is passed, whilst two bougies may be used in each ureter at the same time. The injection may be made with a syringe or simply by atmospheric pressure. The latter method is the best, and a pressure of 50 c.cm. of water gives an excellent filling of the ureter and pelvis. The procedure is not more painful than simple catheterization of the ureter when properly performed. In cases of gall stones and appendicitis pyelography allows one to eliminate such conditions as hydronephrosis and other renal conditions. In cases of mobile kidney pyelography is essential to establish the indications for operation; in pyelitis and pyonephrosis it enables a diagnosis to be made of an infected hydronephrosis or a true pyonephrosis. In cystic kidney and in other cysts of the kidney it is indispensable for making a correct diagnosis. In renal calculus the author considers pyelography of great value and an important addition to exploration of the kidney. The paper, which is illustrated with numerous radiograms, emphasizes the great value of this method of diagnosis.

### 302. Intracardiac Injection of Adrenaline in Acute Heart Failure.

E. BAUMANN (*Schweiz. med. Woch.*, February 22nd, 1923, p. 198) has achieved two dramatic successes with intracardiac injections of adrenaline several minutes after the heart had stopped beating. The first patient was an infant, aged 6 months, who was given chloroform for a hernia operation. During the operation the heart beat and respira-

tion ceased (the so-called "white heart-death") and artificial respiration failed. Four minutes after heart beat and respiration had ceased an intracardiac injection of 0.75 c.cm. of a 1 in 1,000 solution of adrenaline was given, and seven seconds later a single heart beat occurred, being followed in two and a half seconds by another, the skin flushing a bright scarlet, and the patient ultimately recovering completely. The second patient was a child, aged 2½ years, whose heart beat and respiration stopped after an attack of coughing (whooping-cough). The intracardiac injection (1 c.cm. of a 1 in 1,000 solution) was given three and a quarter minutes after the heart beat and respiration had stopped. Complete recovery followed after the same bright red flush had appeared as in the previous case.

## OBSTETRICS AND GYNAECOLOGY.

### 303. Interstitial Pregnancy.

ACCORDING to E. VALLI (*Annali di Ostetricia e Ginecologia*, January, 1923, p. 56), the interstitial portion of the Fallopian tube, which in normal conditions has a length of 1 cm. and a lumen 1 mm. in diameter, is the site of the gestation sac in 1 to 2 per cent. of cases of tubal pregnancy. Etiological factors to which importance has been ascribed are congenital or post-inflammatory diverticula of this portion of the tube, nodular salpingitis, and tubal polypi. In about one half of the recorded cases, as in one reported by the author, the local findings have been without etiological significance. Decidual formation in the tube is lacking, according to most authors; but in interstitial as in other forms of ectopic pregnancy there is well marked decidual transformation of the endometrium, which may be expelled as a cast. The sign regarded by Simon and Ruge as indicative of interstitial gestation—namely, a special asymmetrical enlargement of the uterus due to a sessile hemispherical protuberance directed upwards and backwards from one of the angles—is not invariably present and probably disappears after the fourth month. It is probably incorrect to regard the disposition of the round ligament, with respect to the swelling at the angle of the uterus, as constituting a constant or characteristic sign of interstitial pregnancy. There is no recent and well authenticated case of persistence of interstitial pregnancy to term, but in several instances rupture has been followed by persistence for some months of secondary abdominal pregnancy. Rupture, as compared with abortion, is a more frequent sequel of interstitial pregnancy, and takes place usually on the posterior surface of the sac. Diagnosis is comparatively easy when there is acute and profuse intraperitoneal haemorrhage; but cases in which limited haemorrhage after rupture forms a pelvic haematocele are easily confused with inflammatory adnexal disease, or with myoma, situated in the uterus near the tubal attachment. Treatment, which is always operative, should be as conservative as possible; if the pregnancy has not passed the first months, excision of a wedge from the fundal and angular regions of the uterus may be practicable, and has in some instances been followed eventually by normal pregnancy with healthy issue at term.

### 304. Premature Birth Statistics and Congenital Syphilis.

FROM statistics taken from the Dresden Maternity Clinic for the years 1914-22, E. KEHRER (*Zentralbl. f. Gynäk.*, February 10th, 1923, p. 226) finds that there were 1,541 premature births. The Wassermann reaction of the mother was taken in 71.3 per cent. of the cases and was only found to be positive in 11.5 per cent. This figure is considerably less than the figures quoted by other authors—for example, Ruge states that 83 per cent. of premature births are due to syphilis, Seitz 91.6 per cent., Heynemann 60 per cent. Of the premature children, 74 per cent. left the clinic healthy, and 6 per cent. died; in these cases the mother had a positive Wassermann in only 17 per cent. In 21 per cent. of the stillbirths the mothers gave a positive Wassermann reaction, and 20 per cent. of the premature children who died in the clinic were also syphilitic. In the 125 premature deliveries where the mothers showed a positive reaction, 37 per cent. of the infants left the clinic healthy, 15 per cent. were macerated, 33.5 per cent. stillborn, and 14.5 per cent. died shortly after birth. It was also found that the syphilitic premature children were more liable to die shortly after birth than the non-syphilitic—namely, 14.5 to 6 per cent. Among the macerated foetuses expelled during the period investigated 41.3 per cent. were syphilitic, which again is a much lower percentage than is generally estimated, Seitz putting the percentage at 80. On the strength of his statistics the author considers that syphilis does not play a great part as a cause of premature delivery, at any rate not the important rôle that has usually been attributed to it. On the other hand, he regards the prognosis for the child of a syphilitic mother to be bad, as intrauterine death is likely to



occur, and if born alive the child is more liable to die during the first few days of life than are the children of a healthy mother.

### 305. Induction of Abortion.

J. A. VAN DONGEN (*Nederl. Tijdschr. v. Geneesk.*, February 10th, 1923, p. 538), who recently dealt with the subject of criminal abortion (see EPITOME, February 24th, 1923, No. 175), now discusses the legitimate indications for the interruption of pregnancy. As a general rule abortion is only indicated when a sick woman becomes pregnant or a pregnant woman falls sick and the risk to life can only be removed by interruption of pregnancy. Simple as this formula appears, the decision in individual cases is usually difficult. It is hard to draw up a list of indications for abortion, as in some diseases in which it is hardly ever required circumstances may arise which call for the interruption of pregnancy. Hyperemesis gravidarum is regarded by most writers as so serious a condition that induction of abortion is the only remedy. Van Dongen, on the other hand, maintains that almost all cases of pernicious vomiting in pregnancy can be cured by medical treatment—such as diet, drugs, suggestion, rest, change of environment, and in severe cases rectal or hypodermic injections—and he has personally never had to induce abortion for this reason. In pulmonary tuberculosis interruption of pregnancy is justified only in rapidly progressive cases in the first half of pregnancy. In latent tuberculosis abortion is not indicated. In renal disease abortion is indicated only in the presence of albuminuric retinitis or threatening anaemia or cardiac failure. Van Dongen has seen several women with chronic nephritis and severe albuminuria go to term and be delivered of a normal child after treatment by special diet and rest. In only one case of pyelitis gravidarum was he compelled to induce abortion. Patients with heart affections, both myocarditis and valvular disease, generally stand pregnancy and delivery well, but abortion may be indicated when failure of compensation takes place and cannot be remedied in any other way. A severe degree of acute hydramnios may also be an indication for induction of abortion. As regards the method to be employed, in the first half of pregnancy the cervix should be dilated with a laminaria tent and the uterus emptied with or without an anaesthetic, preferably without one in cases of severe heart and lung disease. In the second half of pregnancy abortion should be induced by puncture of the membranes, with or without insertion of a laminaria tent. If the placenta does not come away by itself, Crèdè's method of external expression should be tried.

## PATHOLOGY.

### 306. Achondroplasia.

E. A. D. CLARKE and E. C. KOENIG (*Bull. Buffalo General Hospital*, January, 1923, p. 5) report a case of labour in an achondroplastic dwarf with delivery by Caesarean section of an achondroplastic child, and illustrate their paper with interesting photographs and radiographs of mother and child. The mother was born in America of Polish parents, who were apparently of normal size, and her three brothers and two sisters were alive and of normal structure. Obscure as the cause of achondroplasia still is, its pathology is now fairly well understood. Kaufmann found that the cause of the shortness of the extremities lay in a defective growth of the cartilage and premature cessation of endochondral ossification. The diaphyses remain short, but often become sclerotic as a result of relatively increased periosteal bone formation. In accordance with this conception of the deformity, which amounts to a nutritional disturbance of the cartilage, Kaufmann chose the name "chondrodystrophy" in preference to "achondroplasia," which infers an absence of cartilage formation. Dandy has pointed out that the enlargement of the head in chondrodystrophy is not merely relative to the size of the body but absolute, and that this enlargement is due presumably to hydrocephalus, which tends to cease spontaneously.

### 307. Etiology of Paralysis of the Recurrent Laryngeal Nerve.

V. GUTTMANN (*Arch. Intern. de Laryngol., d'Otol. et de Rhinol.*, January, 1923, p. 13) says that paralysis of this nerve is usually a sign of some grave disease, and it is important to be able to identify the latter. Such conditions as aneurysm of the aorta or right subclavian artery, mediastinal, peritracheal, and peribronchial glands are well known. The author cites a number of cases in which the paralysis was said to be caused by hypertrophy of the left auricle, but shows that the

pulmonary artery always intervenes, and considers that the paralysis was probably caused by glands. Kahler has, however, shown that the left bronchus may be displaced by the enlarged auricle and press on the nerve. The central nervous system may be at fault as in bulbar paralysis, amyotrophic lateral sclerosis, and other lesions of the mid and hind brain. Removal of the cerebral hemispheres in animals does not cause paralysis so long as the quadrigeminal bodies are left. The nerve itself may be affected by lead or arsenic or any of the exanthemata and often by influenza. Goitre, cervical adenitis, and, more important, carcinoma of the oesophagus, may cause paralysis by pressure or infiltration. A certain number of cases of gout have been complicated by affection of the crico-arytenoid joint and consequent immobility of the cord. Such cases simulate recurrent nerve paralysis.

### 308. The Nature of Local Immunity.

It has been suggested that the acquired local immunity of certain tissues results not from the presence of antibodies, but from some special property of the cells—a cellular immunity, in fact. To discover whether this is the case, R. TURRÓ and P. DOMINGO (*C. R. Soc. de Biologie*, February 17th, 1923, p. 410) injected 6 guinea-pigs intratracheally with a killed emulsion of typhoid bacilli containing about 8,000 million organisms. While controls injected with simple saline showed a light hyperaemia, disappearing in six hours, the experimental animals developed severe congestion of the bronchial mucosa, together with bronchopneumonic foci in the lungs. Examination of the bronchial exudate showed that the bacilli underwent a process of degeneration and agglutination between the first and second days, which disappeared completely shortly afterwards. By extracting the bronchial mucosa with acetone, drying the extract *in vacuo*, and suspending the powder in saline, a fluid was obtained which had marked bacteriolytic and agglutinating properties. Similarly with an extract of the lung tissue. Titration of the agglutinin content of these two extracts revealed a titre of about 1 in 1,000 for the former on the sixth day, and 1 in 400 for the latter on the seventh day. At this time the agglutinin titre of the serum was only 1 in 10; this, however, began to rise subsequently, and reached a maximum of 1 in 2,500 on the fifteenth day. Another set of guinea-pigs was treated in the same way, but received a second dose of bacilli on the ninth day. The resulting congestion of the broncho-pulmonary tissues was less marked after the second injection, and the extracts obtained six days later showed a bacteriolytic activity twice as great as that of the extracts made after the first injection. In another four days the titre declined in the tissue extracts, while it increased progressively in the serum. From these facts the authors conclude that local immunity is due not to phagocytosis, but to the action of ferments—agglutinins and bacteriolytins—which are produced locally in the cells of the tissues affected.

### 309. Effect of Antiseptics on the Bacterial Flora of the Upper Air Passages.

A. L. BLOOMFIELD (*Johns Hopkins Hosp. Bull.*, February, 1923, p. 65) has studied the effects on the normal bacterial flora of the upper air passages of the antiseptics commonly employed in rhinological practice, and found that, though it is possible in some cases to modify the bacterial flora by intensive treatment, no essential or permanent alteration can be produced. This failure is partly due to the fact that the organisms found in the mouth have established a vital alliance with the mucous membrane of the host, involving a close relationship both functionally and anatomically, for such organisms grow, not only on the mucous membrane, but in the superficial layers as well—probably in crevices between the epithelial cells and in the orifices of the small mucous glands. Under other conditions organisms may become established in a focus of diseased tissue, such as tonsil, adenoid, or sinus, in a somewhat analogous fashion. The bacteria are very firmly lodged in the tissues, and therefore chemicals applied to the mucous surfaces cannot effect sterilization without destroying the superficial layers of epithelium at the same time. Even when drugs were used which caused a distinct red colour in the treated membrane after twenty-four hours the flora remained essentially unaffected. In attempting to reconcile these findings with the clinical impressions of experienced laryngologists, to the effect that the application of antiseptics is of value in the treatment of acute and chronic inflammations of the nose and throat, two considerations must be kept in mind. In the first place, it is possible that inflammatory processes due to some unknown type of virus may be affected by antiseptics in a manner different from those due to known bacteria; or, on the other hand, it may be that a beneficial effect indirectly follows irritation, hyperaemia, or ischaemia produced by the drug.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

### 310. Infection of Convalescent Blood in Pertussis.

In view of the beneficial results claimed by some workers who have treated cases of whooping-cough with injections of the blood of patients convalescing from the disease, M. LESSÉ and ALLO PETOT (*Bull. et Mém. Soc. Méd. des Hôpitaux de Paris*, March 8th, 1923, p. 323) considered it worth while to report their own findings on the subject. Children were chosen who had suffered from pertussis for at least a month, who experienced not more than one or two spasms of cough a day, who showed no clinical evidence of syphilis, and who had a negative Wassermann reaction. From these blood was taken by venous puncture and injected in 10 to 20 c.cm. doses intramuscularly every day or every other day into patients with the fully developed disease. No beneficial effect whatever was noticed on the cough, even after ten or twelve injections; though the general health of the children seemed to improve considerably, as shown by increase in weight and by the general appearance. With patients suffering from bronchopneumonia the injections, on the contrary, were given with excellent result. Three children showing disseminated foci of bronchopneumonia, with dyspnoea, cyanosis, and high fever, rapidly improved after three injections of 10 c.cm. of convalescent blood; the lung disease cleared up, leaving the pertussis to continue its normal course. The blood of normal children, injected under similar conditions, proved valueless.

311. H. MERY and LUCIEN GIRARD (*Bull. et Mém. Soc. Méd. des Hôpitaux de Paris*, February 22nd, 1923, p. 243) refer to the progress of specific human serotherapy in the treatment of the exanthemata—rubeola, scarlatina, small-pox, and poliomyelitis. The authors have injected the blood of a patient, convalescent from whooping-cough, into a child dangerously ill from the same disease. The results were remarkable. A female infant, aged 8 weeks, contracted pertussis from her mother, who had had a paroxysmal cough three or four times a day for three weeks. At first the child's illness ran a mild course—it persisted for nearly two months without signs of bronchopneumonia; the temperature oscillated between 39° and 40° C., and she became emaciated, with frequent paroxysmal cough. The authors took 20 c.cm. of the mother's blood, diluted it with 1 c.cm. of a 10 per cent. sodium citrate solution, and injected 5 c.cm. of this citrated blood subcutaneously into the child's thigh. At night the temperature fell to 36.6° C., and the child was slightly collapsed; there was no local reaction; she slept through the night with no cough. Next day the temperature was normal and the attacks of cough were reduced to ten. On the following day an injection of 10 c.cm. of the citrated blood (which had been kept in an ice-chest) was well borne. Four days later there was no fever and the attacks of cough were reduced to one or two per diem. The child gained weight and was definitely cured. The authors consider that this case shows that the facts observed in the serotherapy of rubeola and scarlatina may apply equally to whooping-cough.

### 312. Prophylactic Injections in Measles.

DEBRE and RAVINA (*Bull. Soc. Méd.*, Paris, February 15th, 1923, p. 226) give their experiences in the use of a serum taken from measles convalescents, as a prophylactic. The serum is tested by the Wassermann reaction before use. From 2½ to 3 c.cm. of the serum are injected intramuscularly. Children who have been exposed to measles but showed no signs themselves were vaccinated with the serum, and weakly children who were in danger of being exposed were also vaccinated, and attention was paid to certain crèches. The vaccination was particularly successful in preventing outbreaks of measles in the hospital. If a child suffering from measles was admitted by mistake, all the other children were immediately vaccinated, and by this means the authors say they have been able to escape outbreaks of measles. It does not appear that the immunity secured by this vaccination lasts long. In some cases after vaccination a modified benign form of measles occurred, characterized by very slight catarrhal symptoms, no Koplik spots, slight fever, and moderate rash. To bring about this modified measles the authors recommend injecting infected children (that is, children incubating for measles) about the seventh to the tenth day of the incubation period.

### 313. Control of Cerebro-spinal Meningitis.

F. WIRING (*Ugeskrift for Læger*, March 8th, 1923, p. 161) gives an account of how he limited to a certain district in Greenland an epidemic of cerebro-spinal meningitis. It began in the autumn of 1920, when a whaler reached Greenland and disregarded the port regulations, allowing sailors to go ashore on August 28th to 30th. The epidemic began as a comparatively mild disease, but after successive passages through susceptible persons it became more and more violent. A cordon was drawn around the infected area, and effective isolation was maintained for ten months in spite of threats and riots. The quarantine regulations were suspended in August, 1921, the last case having occurred on June 19th. The disease did not spread farther, and it would thus appear that if effective isolation of an infected area is maintained long enough the disease dies out for want of suitable susceptible material. In 51 cases (89 per cent. of the total) the onset of the disease was sudden; in the remainder it was insidious. The two most effective remedies proved to be hexamethylenetetramine (4 to 5 grams daily for adults) and lumbar puncture. This was repeated at intervals of one to three days, and whenever convulsions or headache became severe. Its action was remarkably prompt, and it almost invariably gave relief.

### 314. Infection of Dysentery and Tuberculosis in Mental Hospitals.

B. H. SHAW (*Journ. of Mental Science*, January, 1923, p. 24) discusses the paving of yards and treatment of floors in mental hospitals in relation to the incidence of asylum dysentery and tuberculosis. An epidemic of dysentery was traced to a bed-ridden patient of tidy habits, from whom Flexner's bacillus must have been carried by flies. Further infection appeared to have been spread by the dust in the rooms or yards used by uncleanly patients. Experiments showed that dysentery bacilli can remain alive for a long time in dust if not exposed to direct sunlight. Shaw therefore recommends that all parts of the exercise yards which are not exposed to direct sunlight, as under north walls, should be concreted, and special attention should be paid to the cleansing of the floors of rooms. He found that fewer cases of diarrhoea and dysentery had occurred in wards the floors of which were scrubbed with carbolic soap three times a week than in those with polished floors. The high mortality from tuberculosis in asylums he considers to be also chiefly due to dust contamination. Experiments showed that the dust in the air of a ward fifteen minutes after sweeping, either with or without damp sawdust and tea-leaves, contained far more micro-organisms than after the use of a vacuum cleaner. He therefore recommends the general adoption in asylums of a central exhaust system of vacuum cleaning; if this is impossible the floors should be polished or swept only after the patients have left the rooms. He insists on rigid attention to every detail of ward hygiene.

### 315. Treatment of Amoebic Dysentery.

A. W. SELLARDS and L. LEIVA (*Philippine Journ. of Science*, January, 1923, p. 1), from experimental amoebic dysentery produced in cats with a moderately virulent strain of *Entamoeba histolytica*, found treatment successful with emetine and with quinine, but papaverine was inefficacious. Large doses of quinine were necessary, but, unlike emetine, repetitions could be tolerated for several days. Investigations with plants belonging to the family Simarubaceae, popular with the natives in the tropics as remedies against dysentery, showed that *Castela nicholsoni* possesses a toxic principle well borne by patients in therapeutic doses. In five cases prompt relief of symptoms with disappearance of the amoebae followed its administration, and, after several months, re-examination in four of the cases showed one relapse, two remaining well, but with cysts of *Entamoeba histolytica* in the stool of one; the fourth had no symptoms and the stool was negative microscopically on two examinations. *Castela nicholsoni* compares very favourably with emetine both in its immediate and final therapeutic effects, and its administration, being by mouth, is simple, but neither it nor emetine as used at present is an ideal agent for the eradication of *Entamoeba histolytica* infections in man. In the absence of standardization of dosage concentrated extracts of the plant were used in which the fatal dose for rabbits had been previously estimated as a guide for commencing administration in man.



316. *Impetigo Contagiosa.*

F. C. KNOWLES and H. G. MUNSON (*Arch. Derm. and Syph.*, March, 1923, p. 376) call attention to the seriousness of institutional epidemics of bullous impetigo contagiosa—in infants. Recorded outbreaks in institutions having the care of infants show the rapidity of their spread, with a mortality rate as high as 50 per cent. In one outbreak bleb formations occurred on the bodies of three babies less than a week old, and within twenty-four to forty-eight hours nine other babies, three nurses, and two nursing mothers became affected; the nurses on the fingers, ears, and face, and the mothers on the nipples and buttocks. The adults' lesions were mild and yielded to treatment, but in the babies the constitutional symptoms were severe, although not fatal; other epidemics are recorded with a mortality rate of from 30 to 50 per cent. within ten days. The lesions are usually located on the face and trunk and may be extensive; when developing on the lips with extension to the mucous membrane, death may result from inability to take nourishment, while in other cases the fatal issue appears to be due to toxic absorption from the large areas involved. While the streptococcus is the causative organism in the commoner types, the *Staphylococcus pyogenes aureus* is responsible for the bullous type, pure cultures being obtained from unruptured blebs, and probably the different types of lesions are caused by different strains or varieties of cocci. Immediate isolation of all cases is essential, with the exercise of special care by nurses and attendants to avoid further spread.

317. *The Prognostic Value of the Wassermann Reaction in Syphilis of the Aorta.*

T. E. HESS THAYSEN (*Acta medica Scandinavica*, February 22nd, 1923, p. 543) has investigated 60 cases of aortic disease with a view to finding answers to the questions: (1) Do cases with a consistently positive Wassermann reaction fare worse than those with a consistently negative Wassermann reaction? (2) Does the conversion of a positive to a negative Wassermann reaction improve the prognosis? Of the 49 patients with a positive Wassermann reaction 19 showed no symptoms, the disease being detected in the course of routine examinations. Of the 11 patients with a negative Wassermann reaction 3 showed no symptoms. As far as these figures are concerned, there would seem to be little relation between the behaviour of the Wassermann reaction and the frequency with which the aortic disease gave rise to symptoms. A comparison of the fate of the Wassermann positive and negative patients has led the author to conclude that this reaction is of practically no prognostic value. Even when a positive was converted to a negative reaction by specific treatment the prognosis did not seem to be improved.

## SURGERY.

318. *Neuro-Otological Examination of Cases of Brain Tumour.*

D. E. S. WISHART (*Journ. of Laryngol. and Otol.*, March, 1923, p. 109) has made an elaborate investigation of eleven cases of brain tumour from an otological standpoint. The results of the tests have all been verified at operation, autopsy, or both. The cochlea was tested in the ordinary way, using a fork of 128 d.v. and the investigator's ear as a control. The vestibular organ was tested after Bárány's method. Spontaneous nystagmus, past-pointing, co-ordination, and falling were noted. Caloric tests were performed with water at 68° F. with each ear 30 degrees forward and 60 degrees backward for the vertical and horizontal canals respectively. Rotation tests were performed on those patients who were in a condition to undergo them. In either case particular attention was paid to nystagmus and past-pointing. Careful ophthalmic, neurological, and x-ray examinations were carried out and exploratory puncture of the lateral ventricle was resorted to, in some cases followed by pneumo-ventriculography. Very full notes are given of eight of the cases, and by careful reasoning a very accurate estimate was arrived at in all of the cases except those in which the tumour was located in the frontal lobe. There were five cases of subtentorial intracerebellar tumour. In these the cochlear portion of the eighth nerve was not affected, but in each case there was some interruption of the vestibulo-cerebellar-oculomotor tract leading from either the horizontal or vertical series of canals of both sides, but not from both the vertical and horizontal series, thus showing that the lesion was not one affecting the end organ. In one case impulses from all canals of both sides were blocked—this was a case of tumour of the pons and medulla. There were three cases of subtentorial extracerebellar tumour, in which both cochlear and vestibular nerves, and to a varying extent other

cerebral nerves of one side, were affected, but the nerves of the opposite side escaped. These were all cases of tumour of the cerebello-pontine angle. The three cases of tumour of the frontal lobe gave no vestibular or cochlear abnormalities and could only be diagnosed as "tumour, not subtentorial." It is important to note that none of these cases was complicated by old-standing middle-ear disease, which makes the otological investigation of such cases a matter of much greater difficulty.

319. *Cysts of the External Semilunar Cartilage of the Knee.*

D. B. PHEMISTER (*Journ. Amer. Med. Assoc.*, March 3rd, 1923, p. 593) reports what are apparently the first two cases of this condition to be recorded in the United States. Cyst formation in the external semilunar cartilage is evidently a somewhat rare condition. It was first described in 1904 by A. Ebner (*Münch. med. Woch.*, vol. 51, 1904, p. 1737), and of 12 cases described subsequently 8 were also in Germany and 4 were recorded in England by R. Ollerenshaw (*Brit. Journ. Surg.*, April, 1921, p. 409). The pathological findings in these cases are identical with those of colloidal cystic swellings which develop in various connective tissues, especially on the back of the wrist, and are commonly called ganglions. Trauma seems to have played a part in some cases, but it is of less importance than in ganglions of other locations, particularly those about the wrist. The pathological change is essentially a degenerative one, and most of the phenomena of inflammation are absent, which is strongly against a bacterial cause of the disease. The cysts seem to attain their maximum size within a few weeks, after which they remain stationary and continue to produce pain and a variable amount of interference with motion in the joint until they are removed. There is no recorded instance of spontaneous disappearance, either of the symptoms or of the swelling. The treatment consists in operative removal of both the cyst and the external semilunar cartilage. In four instances the cyst alone was removed, and in two of these cases symptoms returned shortly afterwards, necessitating a second operation. Excision of both cyst and cartilage has resulted in a complete cure in all cases in which it has been practised.

320. *Hernia of the Bladder in Children.*

OLIVA (*Arch. Ital. di Chirurg.*, January, 1923, p. 534) records two cases of this rather rare condition operated upon, and reports briefly the sixteen cases he has been able to find in medical literature. One of his two cases was a boy aged 8 years, and the other a girl aged 10; both of these were crural herniae, which is a rarer situation than in the inguinal site—11 per cent. against 89 per cent. Males are more affected than females (94.5 per cent.), and mostly on the right side (89 per cent.). These herniae are paraperitoneal or extra-peritoneal, never intraperitoneal. They may be due to a congenital weakness of the hernial rings or to the position of the bladder, or they may be acquired as a sequel of inflammatory adhesions. The symptoms are indefinite and all the cases have been diagnosed during operation and not clinically. Points suggesting vesical hernia are the presence of a pre-vesical lipoma, the reddish-grey colour of the suspected body, the direction of the peduncle towards the middle line and pubes, the increase in size when fluid is introduced into the bladder, and the existence of vermicular contractions. Strangulation and calculi are the only complications hitherto recorded. Treatment consists in reduction of the herniated bladder, resection of the sac and prevesical lipoma.

321. *Treatment of Anaemia in Children by Blood Transfusion.*

H. OPITZ (*Klinische Wochenschrift*, February 26th, 1923, p. 400) draws attention to the value of blood transfusion in hastening recovery from the anaemia of alimentary origin in children. Such anaemia under usual treatment often persists for weeks or months, and renders the child specially liable to infectious diseases during this period. To limit this anaemic period as much as possible, blood transfusion has been employed in Stolte's clinic. In the child the blood-forming organs have a greater work to perform than in the adult. These organs have not only to keep the blood condition up to the normal level, but they have also to increase the volume of blood along with the growth of the child. Hence deficiency in blood formation is very liable to occur. Relief is possible either by diminishing the degeneration of blood elements, or by the addition of red corpuscles from another individual to neutralize the defect. The first method is often impossible owing to our ignorance of the exact pathology; but transfusion of citrated blood has been carried out in 22 cases (70 transfusions) in Stolte's clinic, with surprisingly good results. There can be no doubt, according to the author, that the red corpuscles of the transfused blood remain active. The haemoglobin and red corpuscles of the



patient's blood increase immediately; slight remissions occur, but if the blood condition is once raised to the normal level this is maintained. Severe cases only of anaemia were treated by transfusion (cases in which the red corpuscles were under one million). By transfusion the blood condition was rapidly brought to the normal level. Longer than three weeks was never required to do this, often only eight to ten days, once only five days. The transfusion not only appears to check the anaemia but to lead to a real recovery.

### 322. The Incision for Gall-stone Operations.

H. SIMON (*Zentralbl. f. Chir.*, March 3rd, 1923, p. 345) uses the middle-line incision for operations on the gall bladder and biliary passages, in preference to the more usual lateral incisions, in which the rectus muscle is split, divided, or retracted. He has used it in his last twenty cases where cholecystectomy was required, and always with success. There is a considerable saving of time as compared with the use of muscle-splitting incisions, particularly in closing the abdominal wall; and as the biliary passages lie practically in the middle line a median approach gives, if anything, better access to these than a lateral. If it is found that the gall bladder is somewhat difficult to get at, the middle line incision can be supplemented by a transverse incision at any time; but the author has always managed to avoid this, preferring to lengthen the incision downwards below the umbilicus in such cases.

### 323. The Frequency and Diagnosis of Paraneuritic Abscess.

F. FRANKE (*Deut. med. Woch.*, February 16th, 1923, p. 214) comments on the fact that paraneuritic abscess is very common and yet is seldom thought of when it occurs. In none of the 5 cases recently seen by the author had the correct diagnosis been made by the patient's medical attendant. This state of affairs is the more deplorable as recovery depends largely on early operative treatment. With regard to the frequency of this disease, one surgeon alone has recorded 26 cases, another has seen 20 within a few years, and a third 12 within three years. The disease is usually secondary to some trifling septic focus, such as a boil or a whitlow, or even a slighter condition; but as the primary focus has often healed before the paraneuritic abscess is diagnosed, the former is frequently overlooked. In most cases the onset or the disease is sudden, with fever, rigors, and severe pain. There may be no local signs, and the symptoms may be those of obscure septicaemia or typhoid fever. Little help is given by examination of the urine, which may be practically normal. There are two important helps to diagnosis: the one is exploratory puncture, repeated frequently if necessary; the other is watching the movements of the diaphragm on the screen. A further point is always to bear in mind the possibility of this condition. In the past it has unfortunately been discussed almost exclusively in the special surgical publications.

### 324. Optic Neuritis of Dental Origin.

H. VILLARD (*Bull. Soc. des Sci. Méd. et Biol. de Montpellier*, January, 1923, p. 126) observes that the connexion between dental and ophthalmic pathology has been closely studied of late, and some ophthalmic surgeons think that dental disease is the cause of a large number of eye diseases—for example, iritis, retinal haemorrhages, optic neuritis, and even of detachment of the retina and glaucoma. Villard describes the case of a woman, aged 34, whose general health was very good, but who complained of rapid deterioration of vision in the right eye; examination showed a typical retrobulbar neuritis. The left fundus was normal. Villard could find no probable cause for the neuritis, except the unhealthy state of the teeth, especially in the right upper jaw. The patient was sent to a dentist, who extracted all the septic or suspected teeth and roots. In two days the vision became almost normal, and in three weeks the right visual acuity was greater than that of the left eye. Villard concludes that in certain exceptional cases dental infection is the direct cause of retrobulbar neuritis, and that extraction of the diseased teeth produces a rapid improvement and ultimate cure of the optic neuritis. Carrère, commenting on this case, related that of a woman, aged 50, whose visual acuity (left) was seriously impaired, with a central scotoma for white and colours. No cause for the acute retrobulbar neuritis could be found, except that the patient wore a denture over a number of very carious roots, and before this optic neuritis occurred the patient had had dental neuralgia, and had had the most severely infected roots extracted. This did not relieve the pain nor improve the vision. However, in eight days there was marked improvement, and ultimately the vision in the left eye was completely restored. Carrère considers that no other explanation of these cases is possible than that they are of dental origin.

## OBSTETRICS AND GYNAECOLOGY.

### 325. Ovarian Transplantation.

M. J. G. DE LA SERRANA and F. H. GARCIA (*Clin. y Lab.*, March, 1923, p. 225), who report three illustrative cases, suggest that the ovary may be transplanted in the same patient (auto-transplantation), from another woman (homo-transplantation), or from an animal (hetero-transplantation). Auto-transplantation has, they state, been successful in more than 80 per cent. of Blair Bell's cases. The site in which the graft is made varies with different operators. Manclaitz selects the vesico-uterine peritoneal fold; Pankow the broad ligament; Schickele, Morris, and others the subcutaneous cellular tissue; Tuffier, Scheurer, Brayne, and others the abdominal rectus. Some surgeons, such as Pankow, Sauvé, Scheurer, Tuffier and Vignes, Zahner and Rouville, use the whole ovary but Unterberger prefers fragments only, provided their size be not less than one-third of the whole gland. When the corpus luteum is transplanted, a monthly enlargement of the graft occurs in 20 per cent., when the medullary portion is transplanted enlargement occurs in 33 per cent., and in transplantation of the cortical portion in 70 per cent. In the authors' first cases auto-transplantation of portions of each ovary was performed into the rectus abdominis and subcutaneous tissue in a woman aged 24, for scanty and painful menstruation. Amenorrhoea without other signs of castration lasted until five months after the operation, when menstruation reappeared. In the second case subcutaneous injection of two fragments of ovary removed from a patient with chronic adnexitis was made into a woman suffering from amenorrhoea and severe ovarian pain. The operation was so far successful in that the pain disappeared, although menstruation did not return. In the third case, in which a portion of an ovary was transplanted from a woman with a fibroid uterus into a girl aged 15 suffering from amenorrhoea, the menses were re-established and considerable improvement in the psychical condition occurred.

### 326. Carcinoma of the Cervical Stump.

L. DAVIS (*Boston Med. and Surg. Journ.*, March 8th, 1923, p. 304) investigates the evidence against the routine operation of supravaginal hysterectomy for fibroid tumours on account of the alleged subsequent inflammatory changes and liability to carcinoma arising in the cervical stump. Of 123 cases of cancer of the cervix eight (6.5 per cent.) occurred in the stump after supravaginal hysterectomy for fibroids at periods varying from five to twenty-four years in three cases, two years in three cases, and less than one year in two cases after operation, and the previous reports of the prevalence of its incidence after such operation are confirmed by the experience at the Massachusetts General Hospital during the last five years. Such incidence may be regarded as from 2 to 3 per cent. or more, in accordance with the accuracy with which coexistent carcinoma was detected at the operation and the length of time the cases were kept under observation. Theoretically total removal of the uterus is the ideal operation provided it can be performed without raising the mortality rate above the level of the incidence of the disease itself, but such routine complete hysterectomy in the hands of the average surgeon would probably result in a rate above that level. Every case should be previously carefully investigated, the cervix inspected, and the uterine cavity curetted, and any suspicious tissue examined under the microscope, a total hysterectomy being undertaken if cancer is present. If, however, there is no evidence of cancer, a supravaginal hysterectomy may be performed unless the clinical appearance of the cervix is suspicious. Every case of incomplete hysterectomy should be carefully watched and any early recurrence in the stump treated either by radical abdominal excision, or by radium, which offers the best chance in the great majority of cases.

### 327. Acute Inversion of the Uterus.

G. ALBANO (*Annali di Ostetricia e Ginecologia*, February 28th, 1923, p. 94) finds that in the three obstetric clinics in Rome 7 cases of acute puerperal inversion of the uterus have been recorded among 51,000 labours during the past fourteen years. Five patients were primiparae, and all were aged less than 30. In three cases the inversion was complete, and two of these patients died shortly after reposition had been accomplished. In four cases persistent adherence of the placenta was noted, and in two instances traction on the umbilical cord had been made. The author is inclined to regard the ultimate cause of uterine atony and inversion as lying in a hypofunction of the sympathetico-tonic endocrine glands. He quotes Mansfeld as having found marked hypoplasia of the suprarenal medulla of both sides at autopsy in a primipara aged 21, dead after uterine inversion, and describes



stigmata of hypopituitarism found in one of the cases related by himself. In the correction of the inversion pressure on the angular zones of the uterus is sometimes found to be more effective than on the central region of the fundus. H. KÜSTNER (*Arch. f. Gynäk.*, March 17th, 1923, p. 203) describes two cases of partial uterine inversion occurring in primiparae aged respectively 21 and 41. In both a portion of placenta was firmly adherent to the posterior uterine wall; in one reposition was accomplished without an anaesthetic, but in the other chloroform was given and it was not found possible to detach the placenta until the inversion had been corrected.

### 328. Symptomatology of Intraperitoneal Bleeding.

SCHMID (*Zentralbl. f. Gynäk.*, February 10th, 1923, p. 234) draws attention to an important sign of intraperitoneal bleeding, which was first noted by Hofstatter in 1909, and later by Cullen in 1919, who definitely recognized it as a sign of a ruptured extrauterine gestation. The sign alluded to is a bluish-green discoloration round the umbilicus, which is associated with an umbilical hernia. The author quotes a case in which the clinical signs were very doubtful, but which was diagnosed as a ruptured extrauterine gestation chiefly on account of an umbilical hernia the size of a cherry, which had a blue-green glimmer, there being no history of sudden rupture, but on operation the diagnosis was substantiated. He gives the sign the name of "haematomphalos," and concludes by saying that if one looks for it it is present in many cases of intraperitoneal haemorrhage, and if it is found it is certain that internal bleeding has occurred.

### 329. Twin Pregnancy in the Fallopian Tube.

L. B. AREY (*Surg., Gyn., and Obstet.*, March, 1923, p. 407) publishes abstracts of the essential anatomical facts from all the cases of tubal twin pregnancy hitherto recorded, forty in number. The commonest plural pregnancy of this sort involves one tube and the uterus. Two new specimens of unilateral tubal twins aged about six weeks are described by the author. In the first the embryos were enveloped in a single amnion, and arising from a common yolk sac two stalks entered the respective umbilical cords—a conclusive demonstration of the origin of homologous human twins from the same ovum. In the other pair of twins, each of which possessed its own amnion, it was proved by examination of serial sections of the umbilical cord that one embryo possessed no yolk sac. The conclusion is drawn that the yolk sac is a vestige unessential to growth or to vascular differentiation. Arey points out that single-ovum twins arise at a later stage than is commonly supposed; the invariable existence of a common chorion proves that this takes place at a date subsequent to the differentiation into an inner cell mass and an outer shell of trophoctoderm.

## PATHOLOGY.

### 330. The Development of Tar Cancer.

P. MENETRIER, A. PEYRON, and J. SURMONT (*Bull. du Cancer*, January, 1923, p. 10) record experimental work on the ears of rabbits and skin of mice relating to the stages observed in the development of tar cancer. Their observations point to the existence of true pre-cancerous stages and negative the importance of the part played by inflammatory reaction in the artificial production of cancer. First there is a rapid falling out of the hair, atrophy of the sebaceous glands, thickening of the epidermis, and increase of the inter-papillary prolongations analogous to that seen in buccal leucoplakia. Development then proceeds in two different directions—hyperplasia of the follicular type and of the simple papillomatous type. A section of the ear of a rabbit five weeks after the first application of tar shows a loss of the characteristic elements in the hair follicle, the sebaceous cells appearing to be completely surrounded by a thickened and proliferation layer. Alongside the follicle are noted thin elongated and often broken papillary buds. Cornification in the centre of the papillary prolongations is normal. In the case of an early papilloma the differentiation between gland and follicles has disappeared. The epithelial covering is somewhat thickened, the proliferating layer has a faintly wavy outline, and the melanoplastic zone shows a regular hypertrophy. The papilloma, at first flat, later shows a tendency to the formation of papilliform vegetations and of a great number of chromatophores, which invade even the true skin. There is no notable inflammatory reaction in the connective tissue of the skin. In the transitional stages, when malignancy is developing, the appearances vary according as the origin is follicular or papillary. In the first case the basal membrane ceases to be distinct, and buds are thrown out from the proliferating

layer into the connective tissue—a point of importance which is against the theory of inflammatory origin. Only beneath an ulcerated surface is there a superficial infiltration of polymorph and lymphocyte cells. In the case of papillary formations there is the same penetration of the basal layer into the connective tissue. At this stage the chromatophores disappear, while the formation of cornified "balls" continues. On the periphery and at the extremity of these papillary prolongations is observed a curious network giving an appearance of continuity between the epithelial and connective tissue elements. In fully developed malignant tissues the neoplasm is clearly defined on the two sides from healthy tissues; below, there is an irregular penetration. Malignant nodules develop at points distant from the seat of irritation in positions connected with the latter only by vascular communications. In conclusion, the authors point out that these stages correspond to those observed in human cancers and go far to prove the existence of a pre-cancerous state.

### 331. The Tuberculosis Mortality in Relation to Influenza Epidemics.

How does influenza affect the progress of the disease in patients suffering from pulmonary tuberculosis? To answer this question G. ICHOK (*Rev. d'Hygiène*, February, 1923, p. 123) prefers to trust to statistical rather than to clinical evidence. Studying the figures furnished in regard to the city of Paris, he finds that between 1900 and 1920 there were seven epidemics of influenza, the shortest lasting seven weeks and the longest—that of 1918-19—thirty-one weeks. The actual number of weekly deaths from influenza and from pulmonary tuberculosis are worked out for the three-monthly period preceding the epidemic and for the epidemic itself. In every case it is seen that the tuberculosis mortality rises considerably during the prevalence of the influenzal outbreak. Taking the mean of the weekly deaths during the epidemic and comparing it with the mean of the weekly deaths for the three-monthly period prior to the epidemic, it is found that there is an increase varying from 12.2 in 1900 to 45.7 in 1907. No relation could be established between the tuberculosis mortality and the length of the epidemic. If the number of deaths from pulmonary tuberculosis be followed for the three-monthly period after the outbreak, it is noticed that there is generally a definite fall, but in two cases—those of the 1905 and 1911 epidemics—a slight rise is observable. In the subsequent three months there is a still greater fall in the mortality from phthisis, so marked as to render it lower than that seen in the three months preceding the epidemic. Since, then, there is a very distinct rise in the tuberculous mortality accompanying the influenzal outbreak, remaining elevated for some time subsequent to the outbreak, and finally dropping to a level lower than that which prevailed beforehand, the author concludes that the curve of pulmonary tuberculosis mortality is influenced by epidemics of influenza.

### 332. Tuberculosis of the Suprarenals.

F. SCHWARZ (*Zeit. f. Tuberk.*, December, 1922, p. 169, and January, 1923, p. 271) carried out the following investigations on tuberculosis of the suprarenals: (1) A naked-eye and microscopical examination of the suprarenals in 20 cases of tuberculosis; (2) a study of 65 cases of tuberculosis of the suprarenals which had been found among 19,061 autopsies performed in the German Pathological Institute at Prague during the last eighteen years (January 1st, 1904, to May 30th, 1922). Fourteen of the 20 cases were children aged from 3 months to 6 years, and 6 were adults aged from 18 to 64; 17 of the 20 cases were examples of general military tuberculosis, among whom 14, or 83 per cent., showed military tuberculosis in the suprarenals. A microscopical examination was made in each case; in only one was it possible to detect tubercles in the suprarenals with the naked eye. In 3 of the 20 cases—2 being chronic pulmonary tuberculosis in adults and 1 acute pulmonary and intestinal tuberculosis in an infant—no tubercles were found in the suprarenals. In both series of cases the right suprarenal was more frequently affected than the left. Military tubercles were found both in the cortex and medulla without any special predilection being shown for either site. Military tuberculosis in the suprarenals showed two forms, one of which was characterized by uniform caseation, while the other represented the type of giant-cell tubercles. Transitional forms were also found. As a general rule the older the individual the more abundant were the giant cells. Tubercle bacilli were present in large quantities in the caseous foci. The changes in the suprarenals always corresponded histologically to similar changes in the other organs, such as the spleen, liver, kidneys, and lungs. Chronic tuberculosis of the suprarenals, which was less frequently found than military tubercles, was always haematogenous and secondary to a primary aerogenous tuberculosis.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

### 333. Ether Injections for Whooping-cough.

P. G. BERGUA (*Clin. y Lab.*, March, 1923, p. 233) suggests that since Audrain introduced the treatment of pertussis by injections of ether in 1914, and still more since the method was rendered popular by the articles of Cheinisse, Weil, and Dufour, the prospects of the successful management of pertussis have become much brighter. In the initial stage a single injection may be sufficient to cut short the disease. As a rule, however, the patients do not come under treatment until the paroxysmal stage, when a series of injections (as a rule four to five, and never more than ten) is required. The best results are obtained in children who are free from coryza, adenoiditis, or chronic bronchitis. Pure ether should be used, and the injections should be given intramuscularly and always in the same region, as subsequent injections are rendered less painful thereby. In children under 10 months of age Bergua used a dose of 1 c.cm. daily, and in older children 2 c.cm. He obtained the best results by combining ether injections with vaccine treatment.

### 334. Treatment of Epidemic Encephalitis.

P. CARNOT and BLAMONTIER (*Paris méd.*, February 24th, 1923, p. 177) record two cases of severe epidemic encephalitis, in a girl aged 19 and a boy aged 16 respectively, treated by intravenous injections of large doses of sodium salicylate. In the first case, in which 4.5 grams of the drug were given daily for six days, there was almost complete cure for about a week, with cessation of the choreic movements and return of intelligence. A relapse, however, took place during which intravenous injections were impossible, owing to obliteration of the veins, and proved fatal, like three other cases of untreated acute choreiform encephalitis observed by the authors. In the second case, in which the disease was of the lethargic type, the symptoms rapidly subsided after injection of 50 grams of sodium salicylate in the course of a week, and recovery took place.

### 335. Chorea, Rheumatic Fever, and Heart Disease.

G. F. STRONG (*Canadian Med. Assoc. Journ.*, February, 1923, p. 92), from a study of 100 consecutive cases of chorea and 190 cases of acute rheumatic fever, undertaken to determine the incidence of cardiac disease in uncomplicated chorea, and to ascertain what influence the added occurrence of rheumatic fever and other factors has upon the frequency of cardiac implication, found that there was a history of previous acute rheumatic fever in 20 per cent. of the chorea patients, while the incidence of organic heart disease in chorea was 45 per cent., and in rheumatic fever 38 per cent. Recurrences of chorea increased the likelihood of cardiac invasion, and the incidence of such complications was greatest (70 per cent.) when chorea and acute rheumatic fever had occurred in the same patient. The occurrence of heart disease following chorea was apparently not affected by tonsillitis, and, although endocarditis could develop in an afebrile course of the disease, a concurrent fever slightly increased the tendency. Of the valves, the aortic was much more rarely, and the mitral more frequently, attacked in chorea than in rheumatic cases, while pericarditis, conduction defects, and auricular fibrillation were less common in chorea than in acute rheumatic fever.

### 336. A Frontal Reflex Indicative of a Cerebral Lesion.

I. HOLMGREN (*Acta medica Scandinavica*, February 22nd, 1923, p. 616) describes a reflex which he discovered more or less by accident early in 1916, when a man, aged 38, was admitted to hospital suffering from a recent attack of hemiplegia due to a cerebral haemorrhage. Tracing one finger rather firmly on the non-hemiplegic side of the forehead, the author saw both eyebrows rise and the forehead wrinkle on both sides. He could not elicit this reflex by pressure on the other side of the forehead, and he has never seen it in persons not suffering from a cerebral lesion. It is, indeed, comparatively rare in association with a cerebral lesion, and since January, 1916, the author has observed it in only 29 cases. In as many as 23 there were signs of cerebral haemorrhage; embolism, or thrombosis with hemiplegia. The reflex is evidently of some prognostic importance, for among the cases of cerebral haemorrhage the mortality was 58 per cent. when the reflex was demonstrable and only 32 per cent. when it was not so. In cases which came to necropsy, the

lenticular nucleus was found to be almost always affected, but there were a few cases in which the cerebral lesion was practically confined to the cortex. There were also two cases of frontal reflex associated with encephalitis. The reflex persists till death, and can be elicited whether the patient is comatose or conscious. In attempting to elicit the reflex, the degree of pressure exerted by the tracing thumb or metal instrument should be carefully graduated, for very light pressure excites no reflex, and pressure causing pain produces simply the expression anyone may show in response to a painful impulse.

### 337. Diabetic Oedema.

W. FALTA (*Wien. Arch. f. inn. Med.*, January, 1923, p. 581) records a number of observations respecting the oedema which occasionally occurs in severe diabetes mellitus, independently of kidney disease. This oedema is especially liable to occur when sodium bicarbonate is taken in large doses, but is checked by giving potassium bicarbonate or even potassium chloride. When large doses of alkalis are given in diabetes on account of acidosis a mixture of sodium bicarbonate and potassium bicarbonate is advisable in order to avoid the occurrence of oedema. When oedema has occurred under the influence of sodium bicarbonate in large doses it has been attributed to retention of chlorides. But the author records a series of careful observations on an interesting case in which, on a diet containing much salt, large doses of sodium bicarbonate were followed by great oedema, which disappeared when the sodium bicarbonate was replaced by potassium bicarbonate. On a diet containing very little salt (so-called salt-free) the administration of large quantities of sodium chloride produced marked oedema, but this disappeared when the sodium chloride was replaced by potassium chloride; also on this same salt-free diet large doses of sodium bicarbonate caused marked oedema, which disappeared when the sodium bicarbonate was replaced by potassium bicarbonate. The relation of oedema to acidosis is discussed. Oedema can occur unassociated with acidosis.

### 338. Endolumbar Injections of Sodium Bromide for the Pain and Spasticity of Tabes.

H. LIPPMANN (*Deut. med. Woch.*, February 23rd, 1923, p. 245) came to give therapeutic injections of sodium bromide by lumbar puncture in cases of tabes after he had given diagnostic injections of this drug. It throws an x-ray shadow, and he injected it into the spinal canal to ascertain the level at which a tumour of the cord might exist, obstructing the upward passage of the injected fluid. His experience with these diagnostic injections suggested they might be of therapeutic value, and he has given altogether forty such injections. Some of them were not quite harmless, but the reaction usually passed off in a day or two. The symptoms would appear to be due to acute transitory meningitis of chemical origin. Among 5 cases of tabes there were 2 in which marked improvement was observed, as shown by relief of pain and spasticity. Some improvement was observed in a third case. The author injects 10 c.cm. of a 1 or 1.6 per cent. solution after 10 c.cm. of the cerebro-spinal fluid have been withdrawn. The injections are repeated every fourteenth day, and altogether two or three injections are given to each case. It is not clear how the bromide acts; it is soon reabsorbed, and its prolonged beneficial action can therefore hardly depend on its retention in the spinal canal.

### 339. The Motor Nuclei of the Vagus.

G. MARINESCO and S. DRAGANESCU (*Ann. de Méd.*, 1923, xiii, p. 1) describe a case of thrombosis of the right vertebral artery, with resultant areas of softening in the right half of the medulla. There was paralysis of the right vocal cord and the right half of the soft palate, loss of the oculo-cardiac reflex on the right side, and hemiparesis affecting the left arm and leg. Examination of the medulla showed softening in the region of the right nucleus ambiguus, but the dorsal vagal nucleus was intact. From this and other evidence they conclude: (1) That the soft palate is innervated from the nucleus ambiguus by the ninth and tenth cranial nerves, and not by the seventh, as has been suggested. (2) That the recurrent laryngeal nerve arises in scattered large cells in the inferior part of the nucleus ambiguus. (3) The vagal branches to the heart appear to arise partly in the nucleus ambiguus and partly in the dorsal motor nucleus, but the evidence regarding this is very indefinite.



## 350. The Diagnosis of Cardio-vascular Syphilis.

W. D. REID (*Boston Med. and Surg. Journ.*, February 15th, 1923, p. 189), from an examination of clinical and post-mortem records of 100 consecutive deaths, found syphilis as the cause of cardiac disease in 11.5 per cent., and therefore urges that cardio-vascular syphilis should be given a place among the various diagnoses to be considered in any patient suffering from heart disease; and since every syphilitic is a case of potential cardio-vascular syphilis this cause should be borne in mind in every heart case of obscure origin. Seeing that a diagnosis of syphilis of the heart and aorta cannot be made on any single point alone, each case requires careful investigation, with, if necessary, x rays, Wassermann test, or even observations upon a short course of antisyphilitic therapy. While the condition may be symptomless, shortness of breath, substernal pain with angina-like radiation, are common, and among physical signs cardiac enlargement downward and to the left, an abnormal supra-cardiac dullness, a systolic murmur over the aortic area, and the aortic second sound duller than in arterio-sclerosis are the most frequent. A positive Wassermann reaction is of value in diagnosis, but a negative report does not invalidate the diagnosis of cardio-vascular syphilis, in the presence of other and sufficient data, and though x-ray findings are often of great value they cannot be relied upon to detect early cases. In doubtful cases the therapeutic test is of distinct value and should be used frequently. The chief conditions to be differentiated are non-specific aortitis, arterio-sclerosis, hypertensive heart disease, rheumatic heart disease, pulmonary tuberculosis, mediastinal tumours, and tabes dorsalis.

## SURGERY.

## 341. Treatment of Tuberculous Laryngitis by Finsen Light.

N. R. BLEGVAD of Copenhagen (*Rev. de Laryngol., d'Otol. et de Rhinol.*, February 28th, 1923, p. 139) gives a short summary of the previous ideas on tubercle of the larynx and the pessimism with which it was regarded. Tuberculosis of the larynx is much more fatal than tuberculosis restricted to the lungs. The author has treated more than two hundred cases of tuberculous laryngitis by means of light baths (Finsen). The light bath consists of exposing the patient completely undressed to the rays of three powerful arc lamps, with special thin carbons and a current of 25 ampères, the light of which is so intense as to cause pigmentation of the skin. The sun's light is more satisfactory, but climatic conditions make its use impracticable. The baths of light alone are able effectively to reduce the swelling, ulceration, and distress of the larynx in many cases. Much better results are, however, obtained if such local treatment as galvanopuncture of swellings of the ventricular bands and interarytenoid region, curettage of ulcers, application of lactic acid, and even amputation of the epiglottis, is resorted to concurrently. Absolute silence is an integral part of the treatment, the patients being merely allowed to whisper. This, the author admits, requires a very large degree of self-discipline. This light treatment rapidly eases the pain of tuberculous laryngitis. The pain caused by ulcers of the larynx, especially on swallowing or speaking, is very readily relieved. Usually the laryngeal and pulmonary conditions improve together, but occasionally it is found that the laryngeal condition improves but the pulmonary condition remains stationary or gets worse. The reverse may also be the case, and then more active local treatment is required. Of 178 cases 49 were completely cured and 22 almost completely cured, and only 33 cases did not show any improvement.

## 342. Ethylene as an Anaesthetic.

THE toxicity of ethylene for flowering plants suggested to A. B. LUCKHARDT and J. B. CARTER (*Journ. Amer. Med. Assoc.*, March 17th, 1923, p. 765) a series of experiments on animals and on man. From the animal experiments it appears that all the animals used (mice, rats, rabbits, guinea-pigs, and kittens) could be anaesthetized with a 90 per cent. ethylene mixture in half the time necessary to anaesthetize the same animals with the same percentage of nitrous oxide. Twelve subjects were anaesthetized, more or less deeply. One of the authors was anaesthetized six times in three days in three weeks; the other (J. B. C.) seven times on three days in three weeks. In neither instance did sugar or albumin appear in the urine as a result of the experiences, nor were there any other evil after-effects except a slight nausea and loss of appetite, both of very temporary nature. It seems evident, then, that deep surgical anaesthesia can be rapidly induced by ethylene without any sense of asphyxia, but, on the contrary, with a sense of well-being

and comfort. Analgesia, it appears, comes on easily long before complete surgical anaesthesia is established. At a time when there is complete muscular flaccidity the pulse rate is slightly decreased, if changed at all; respirations are slow but regular, and the countenance normal in colour for the individual, or slightly paler. No cyanosis was observed. No subject showed any sign even suggestive of asphyxia. The induction of anaesthesia was in no way unpleasant except possibly for the first few inhalations of the concentrated gas, which induced reflex swallowing. A period of excitement characterized by laughing or forced movement preceded the anaesthesia in some; in others such signs were absent during induction, but appeared during recovery from the anaesthesia. Recovery was always rapid on withdrawal of the gas mixture. Slight weakness and a sense of fatigue were always experienced if the person arose from the couch almost immediately on waking up. Vomiting occurred in one case early during recovery. In some cases there was slight transient epigastric distress. In others a slight nausea persisted for several hours after the administration of the gas. In none was nausea so pronounced or so prolonged as to interfere with the ingestion of the next meal. The possible advantages, according to the authors, of ethylene over nitrous oxide, if used for human anaesthesia, are: (1) Anaesthesia may be maintained (a) in the absence of all signs of asphyxia, (b) in the absence of effects on blood pressure, (c) in the absence of dyspnoea, (d) with complete muscular relaxation. (2) It may be used in obstetrics, a state of complete analgesia being possible at a concentration of 80 per cent. ethylene. (3) There is rapid recovery after long-continued administration, without evidence of after-effects. These advantages would make possible its use in many persons and conditions in which nitrous oxide is contraindicated.

## 343. Pharyngeal Aneurysm of the Internal Carotid.

G. PORTMANN and P. DUPOUY (*Arch. Méd. Belges*, February, 1923, p. 97) refer to the comparative frequency of errors of diagnosis in this disease. The sac has been incised by many eminent surgeons who had diagnosed either peritonsillar abscess or adeno-sarcoma. The authors describe a recent case—a farm labourer, aged 68, who had complained of vertigo and right retro-auricular pain. An examination of the fauces showed a smooth rounded pulsating swelling behind the left posterior pillar. The swelling was painless and expansile. The Wassermann reaction was negative. The authors discuss the pathology and etiology of aneurysms of the internal carotid, and their differential diagnosis from those of the vertebral, external carotid, ascending pharyngeal, and inferior palatine arteries. They state that prognosis is always grave; the swelling tends to increase and to compress neighbouring structures, it seldom undergoes spontaneous cure. It may burst beneath the skin of the neck or into the pharynx. Surgical treatment is usually necessary; according to Delbet ligature of the internal carotid (only practicable when the aneurysm does not extend as low as the bifurcation of the common carotid) is more dangerous than ligature of the common carotid—6 fatal results out of 7 cases. The authors state that ligature of the common carotid, though easier to perform, is more likely to produce cerebral ischaemia. They describe Liébault's proposed operation to suture the sac, and compression of the aneurysm by an aluminium band which may be regulated or flattened to compress the sac in hope of inducing thrombosis without cerebral ischaemia. They describe the classical medical treatment of aneurysm—rest, non-stimulating diet, and iodides (especially in syphilitic cases). They describe subcutaneous injection (in thigh or abdominal wall) of a 2 per cent. gelatin solution with 1 per cent. sodium chloride; they refer to the danger of tetanus if any but freshly sterilized solutions are used. The injections should be repeated at intervals of ten to fifteen days. Dujardin-Beaumetz has applied galvanic currents to the surface over the tumour.

## 344. Treatment of Varicose Ulcer.

J. MONTPELLIER, A. LACROIX, and P. BOUTIN (*Bull. Soc. Française de Dermatol. et de Syph.*, No. I, 1923, p. 53) consider that the danger of injecting thrombus-producing substances into veins has been exaggerated, and is purely theoretical. Many substances may be used for the purpose, but they prefer a 1 or 2 per cent. solution of mercuric iodide: it is always available, its escharotic action is trivial, and as there is a history of syphilis in many cases of "varicose ulcer" mercuric iodide may serve a double purpose. The authors have found it quite reliable; to render its chemical action on the tissues more certain they place a finger on the vein a few centimetres above the puncture and maintain pressure during the injection, which is performed slowly. The results are very satisfactory—disappearance of subjective symptoms, more or less painful,



healing of very chronic ulcers, cure of varicose dermatitis. The authors consider it an absolutely safe procedure—the risk being no greater than that entailed by complete phlebectomy. They give the results of examination of varices removed at periods varying from twenty-four hours to three months after injection. At the end of fifteen days the organization of the clot is still incomplete; in it relatively large spaces filled with blood still remain, lined with endothelium. The external coat is always deeply congested, and the muscular coat almost entirely sclerosed. At the end of three months the vein, greatly reduced in size, is converted into a fibrous cord in which a few concentric muscular fibres are recognizable. All the experiments were made on comparatively narrow veins in the forearm, and the examination was made at the point of puncture—that is, at the point of maximum damage. Obviously the phenomena of proliferating and obliterating endophlebitis would be less pronounced at a greater distance from that point. The authors state that there is less reaction in a varix than in a normal vein in which an experimental injection has been made.

### 345. Electro-coagulation in the Treatment of Lupus of the Nose and Throat.

A. VIBEDE (*Hospitaltidende*, February 14th, 1923, p. 140) gives an account of the results obtained at the Pinsen Institute in Copenhagen by the treatment of lupus of the nose and throat by electro-coagulation. This treatment is based on the observation that the high-frequency alternating current is much better tolerated by the body under certain conditions than is the constant current. One pole of the apparatus consists of a wet padded plate of lead, secured to the patient's arm; the other pole is connected with a small electrode of only a few square millimetres' surface, which is applied to the part to be treated. The electrode is kept applied to the tissues for a few seconds until the structures in its neighbourhood assume a white colour indicative of coagulation. However skilfully this treatment is applied it is very painful, and local anaesthesia is useless, for the nerves in the neighbourhood are subject to electrical and thermal irritation over an area much wider than the parts undergoing treatment. Thus there may be pain in the teeth when the nose is being treated. But as the duration of the application is very short, most patients can dispense with a general anaesthetic. Others need slight ether or ethyl chloride anaesthesia. In the period November, 1919, to August, 1921, there were 283 patients thus treated. A large proportion consisted of patients whose disease had proved refractory to every other form of treatment. Of the 283, as many as 90 discontinued treatment prematurely or could not subsequently be found. Of the remaining 193, as many as 160 were apparently cured, while 27 were improved and 6 were unaffected by the treatment. The only method with which this treatment can be compared is Reyn's electrolysis, and the author concludes that electro-coagulation is probably the more effective. It requires less time and fewer applications, and does not necessitate the administration of large doses of iodine. Compared with operative treatment, electro-coagulation has the merits of being a bloodless procedure, of not spreading infection, and of being feasible in cases in which the situation of the disease renders an operation difficult. The disadvantages of electro-coagulation are the cost of the apparatus, the need of special knowledge of the technique, the difficulty experienced in limiting the depth to which the effects extend, and the pain, which is unrelieved by the use of local anaesthetics.

### 346. Pyelotomy for Large Renal Calculi.

M. MARION (*Bull. et Mém. Soc. de Chir. de Paris*, February 20th, 1923, p. 250) alludes to the difficulties met with when carrying out nephrectomy for large renal calculi. In incising the renal parenchyma the stone may slip away if it is not fixed, whilst when lifting it out with the finger or forceps it frequently may break. Small fragments may be difficult to discover, and if left behind serve as the nucleus for new stone formation. Again, the sutures used in closing the opening in the kidney are a source of trouble; they provide a focus of infection in the renal substance, and may give rise to abscesses. Whilst in nephrotomy it is customary to place a drain in the kidney, this may cause serious haemorrhage on its removal; if no tube is employed, clots may block the ureter. To avoid these complications he describes a technique adopted by Pappa. After delivering the kidney a large opening is made in the renal pelvis; the index finger is then introduced into the pelvis and the stone pushed toward the periphery of the kidney; the stone thus being fixed, an incision is made over it and removal is simple. Pappa employs a special haemostatic suture which encircles the kidney without damaging it. The author, however, finds this mode of suturing is not always successful. With regard to drainage, a tube is placed in the renal pelvis; this is removed after three days and there is no urinary leakage.

The wound in the renal substance can then be completely closed. The writer emphasizes the value and advantages of this mode of approach for large calculi in the kidney and the avoidance of unpleasant complications by its use.

### 347. Radiography in Optic Atrophy.

R. E. WRIGHT and T. W. BARNARD (*Brit. Journ. Ophthalmol.*, March, 1923, p. 123) consider that an x-ray examination should be made in all those cases of optic atrophy in which the cause is at all doubtful, since many cases of pituitary disease, or of disease of the fossa eventually involving the hypophysis, show optic atrophy as the only obvious sign, and without x-ray evidence it is impossible in such cases to arrive at a correct diagnosis. Notes of five cases are given, in two of which the clinical evidence was typical, whilst in the other three the optic atrophy so overshadowed all other symptoms that without radiography the cause might easily have remained undiagnosed. It is the ophthalmologist who, in the majority of cases of hypophyseal implication, is first consulted, and the high percentage of such cases which show but slight glandular symptoms renders it all the more impossible to be certain of the cause without the evidence afforded by radiography.

## OBSTETRICS AND GYNAECOLOGY.

### 348. Inguinal Hernia of the Uterus.

F. S. LATTERI (*Arch. Ital. di Chir.*, February, 1923, p. 39) states that the first case of hernia of the female genitals was recorded by Soranus of Ephesus (97 A.D.), who found the ovary and Fallopian tube in a hernia of the labium majus. Similar cases were not recorded again until the eighteenth century, when examples were described by Verdier, Haller, Percival Pott, Camper, and others. All these cases, however, referred to hernia of the ovary with or without the Fallopian tube. The first instance of inguinal hernia of the uterus was reported in Pol's *Silesian Journal* in 1612, in a letter sent by Doering of Breslau to Fabricius di Hildanus. Latteri has collected 78 cases of hernia of the uterus from the literature, including a personal case, and classifies them as follows: (1) Complete hernia of the uterus (25 cases); (2) partial hernia (16 cases); (3) hernia of the gravid uterus (11 cases); (4) hernia of uterus masculinus (26 cases). Inguinal hernia of the uterus is always due to a congenital error of development. In order that the uterus should form part of an inguinal hernia it is necessary that there should be a close relation between a defect in the development of Nuck's canal and a developmental error in the genito-inguinal ligaments. Inguinal hernia of the uterus is in most cases irreducible, and is most frequently found on the left side. Pain and increase in size of the hernial swelling during the menstrual period, elongation and narrowing of the vagina, with deviation of it to the affected side, transmission to the hernial contents of movements of the vaginal canal on the cervix constitute the principal diagnostic symptoms. The pathognomonic features of inguinal hernia of the gravid uterus are rapid increase in size of the hernia and the existence of foetal movements, foetal heart sounds, and the placental souffle within the hernial swelling. The only treatment for inguinal hernia of the uterus is operation, which is necessitated by the possibility of strangulation on pregnancy. Latteri's case occurred in a woman aged 36, who had been married fifteen years, had never been pregnant, and had never menstruated. About five years previously a small swelling had appeared in the left groin, and had increased in size, especially in the last two years, after lifting a heavy weight. On operation a small uterus was found in the hernial sac, without any sign of a cervical cavity. The right adnexa were completely absent, and the left ovary and tube were atrophic.

### 349. Spontaneous Rupture of the Uterus during Pregnancy.

H. F. KANE (*Amer. Journ. of Obst. and Gyn.*, February, 1923, p. 158) records a case of this condition, and owing to its comparative rarity (only 34 cases having been recorded) goes somewhat fully into the etiology, pathology, and clinical features. None of the recorded cases were correctly diagnosed, but the symptoms were always such that laparotomy was clearly indicated. The author considers that the chief predisposing cause is multiparity, which gives rise to hyaline degeneration of the uterine walls, and this is aggravated in many cases by intrauterine manipulations at previous labours. In nearly every case there was a previous history of abortions, stillbirths, malpresentations, curettage for retained products of conception, or a manually removed placenta, and though it is thought by some that the scar tissue following such curettage, etc., is the cause of the weakness, the author believes that the damage to the myometrium is due to a mild infection, and substantiates this



claim by quoting cases, in which rupture followed, when at a previous labour an intrauterine douche had been given or a version performed, followed by a continued rise of temperature. When rupture occurs in a primipara infantilism of the uterus is found in practically every case, there being an extreme thinness of the uterine muscle. The pathological findings consist of hyaline degeneration in multiparae, and of round-celled infiltration and extreme friability of the uterine wall in the cases who had had previous interference; exceptional infiltration of decidual cells was noted in several cases associated with the above. Most cases had extensive internal bleeding which called for immediate operation, and the treatment usually performed was supravaginal hysterectomy, which, according to the pathological findings, seems to be the proper procedure, but stitching of the rent and packing the uterus have also been employed. The after-results have not been satisfactory, the maternal mortality being well over 50 per cent. whatever the treatment administered.

### 350. Pyometra and Cervical Carcinoma.

ACCORDING to R. ALAMANNI (*Rivista di Ostetricia e Ginecologia Pratica*, January, 1923, p. 9), from 3 to 10 per cent. of cases of carcinoma of the cervix uteri have been reported to be complicated by pyometra, the occurrence of which is favoured by multiparity, the post-menopausal state, and senility. Sometimes intermittent discharge of pus, as a rule following painful uterine contractions, renders the diagnosis of pyometra comparatively simple; but in many cases the pyometra is closed, evacuations of pus do not occur, and the clinical course, so far as the pyometra is concerned, is asymptomatic. Three such cases are related by the author: in the first, total hysterectomy was performed on a 7-para, aged 55, for cervical cancer of a uterus of which the body showed enlargement, regarded before and at operation as due to myoma; in the second, the pyometra was first revealed after insertion of Hegar's dilators in the cervix as a preliminary to diagnostic curetting, which showed early carcinoma of the endocervical mucosa; in the third, symptoms of early cervical cancer had manifested themselves for a few months only in a 5-para aged 73. In these cases, as is commonly found, pyrexia was absent. Palpation of a uterus which is the site of pyometra does not usually reveal fluctuation; and although the uterus in rare cases has become so distended as to form a tumour palpable above the umbilicus, it usually remains within the pelvic cavity.

### 351. Carcinoma of the Body of the Uterus.

A. E. MAHLE (*Surg., Gynecol., and Obstet.*, March, 1923, p. 385) has compared the clinical and pathological findings in a series of 186 cases of carcinoma of the body of the uterus coming to operation at the Rochester clinic. He finds that the degree of malignancy is inversely proportional to the degree of differentiation of the neoplastic cells as shown microscopically. The average duration of life after operation is greatest when the tumour shows macroscopically a papillary or polypoid shape, and microscopically the greatest differentiation in cells, while the most malignant carcinomata form diffuse or flat growths showing microscopically neither morphological differentiation nor alignment of the cells. Lymphocytic reaction is more marked in connexion with the more malignant tumours. Although 31 per cent. of cases in this series were associated with fibromyoma this connexion appears to have little etiological significance. A pathological basis for the belief that carcinoma of the body is less malignant than that of the cervix is afforded by the observation that a high degree of cellular differentiation is less common in the latter condition. Clinically it was found that in this series diagnosis was possible in 40 per cent. of cases before curetting or hysterectomy.

## PATHOLOGY.

### 352. Indican in the Blood in Kidney Disease.

G. BAAR (*Wien. Arch. f. inn. Med.*, Bd. v, Heft 2 u. 3, January, 1923, p. 353) records the results of the quantitative estimation of the indican in the blood (according to Jolles's method) in 126 analyses. In 55 cases the patients were suffering from kidney disease, in 41 from other affections. Excess of indican in the blood (indicanæmia) is due to retention of indican in the blood through defective excretion by the kidneys. Of the various nitrogenous products, indican is the one which is excreted with greatest difficulty by diseased kidneys, and consequently early accumulates in the blood. In chronic nephritis the indican in the blood is increased before the residual nitrogen as the disease advances. In cases of high blood pressure and granular kidney the indican blood test always gives us an indication

of the gravity of the kidney lesion. In congestion of the kidney, associated with cardiac failure, an increase of the indican in the blood points to a persisting permanent kidney lesion. In pernicious anaemia the indican both in the blood and in the urine is increased.

### 353. The Pathogenesis of Tumours and the Campaign against Cancer.

L. BARD (*Ann. de Méd.*, February, 1923, p. 93) indicates the therapeutic bearings of the theory of cancer pathogenesis which he advanced in 1885. His argument was based on two fundamental conceptions: (1) That any variety of body tissue, at any stage of its growth, can give rise to a cancer, which varies in type according to the tissue from which it springs; each tumour springs from a single focus of one or more young cells of the same age. (2) Cancer cells have not acquired new powers, but on the contrary have lost a fundamental property of normal cells—that of being governed by the bodily influences which regulate cell growth. The cancerous process is thus one of anarchy; the cells, by their malformation, are freed from the laws of the body and become destructive and parasitic. The laws governing the origin of a cancer and the formation of metastases are quite different. Primary tumours become more common with advancing age, whereas metastases form more rapidly with the tumours of young subjects. In this respect inoculated tumours in mice behave like metastases, and become established more often in young mice than in old. Inoculated tumours which grow for a time and then disappear confer on the animal immunity against any further inoculation of the same tumour; and an unsuccessful inoculation with a large piece of tumour may confer a similar immunity. There is thus some formation of anticancerous substances in the animal body, and in support of this Bard states that in the human subject, as in mice, metastases grow more rapidly after the primary tumour has been removed. All attempts to treat cancer on these lines, however, have so far failed. The specificity of the different forms of cancer is shown by the fact that lactation arrests the growth of inoculated mammary carcinomata, but has no influence on tumours of other nature. Similarly Regaud has found that the dosage in radiotherapy of cancer must be varied according to the nature of the tumour. The treatment of cancer thus presents, according to Bard, a different problem for each form of cancer, and the discovery of a royal road to the cure of all forms is improbable.

### 354. Transmission of the Virus of Disseminated Sclerosis to Animals.

W. JENSEN and G. E. SCHRÖDER (*Hospitalstidende*, February 14th, 1923, p. 133) have attempted to transmit to animals the virus of disseminated sclerosis from seven cases of this disease. They used 9 rabbits and 25 guinea-pigs, the injections being intraperitoneal and intracerebral as well as into the anterior chamber of the eye. Only in one case did they succeed. The patient was a man, aged 20, with typical disseminated sclerosis. The necropsy showed no spirochaetes nor other germs in the brain, but in the cord there were found spirochaetes, most of which were pointed at both ends. Cerebrospinal fluid, taken from this patient during life, was injected into 3 rabbits and 3 guinea-pigs by the intracerebral route. One of the guinea-pigs developed paralysis of the hind legs, and examination of its cerebrum and spinal medulla showed leptomeningitis and round-cell infiltration, as well as degenerative changes which could not be traced to incidental infection. Spirochaetes could not, however, be found in the central nervous system of this guinea-pig.

### 355. The Nature of Rickettsia Bodies.

F. M. NICHOLSON (*Journ. of Exper. Med.*, February, 1923, p. 221) has made a cytological study of the nature of Rickettsia in Rocky Mountain spotted fever with a view to determining whether or not they are true micro-organisms or constitute products of degenerated cells, as maintained by some. He found that the Rickettsia bodies found in this disease could be easily differentiated from mitochondria, phagocytosed blood pigment, nuclear debris, and all other known cellular constituents. Although lodged within the cytoplasm of endothelial cells, they were not observed to establish any definite relations with the nucleus or other cellular components. In contiguous cells which sustained the same degree of injury, as evidenced by nuclear changes, their numbers varied. Diplo-bacillary forms were most abundant in the early stages of the reaction and single bacillary forms towards its termination. Wofbach's account of the distribution of specific lesions with accompanying organisms in the tissues of guinea-pigs was confirmed and extended.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

### 356. Albuminuria and other Sequels to Severe Exertion.

J. K. HALD (*Tidsskrift for Den Norske Lægeforening*, April 1st, 1923, p. 365) examined the 50 competitors in a 30-kilometre ski race for albuminuria by Heller's test. The pulse was also counted, and the heart auscultated; no adventitious heart sounds were heard, and the pulse ranged from 69 to 120. Albuminuria was found in 4 competitors, 2 of whom insisted on taking part in the race, although advised not to do so. One of them suffered no ill effects, but the other came in late and in a very bad condition. Forty-six competitors were examined at the end of the race, and two were so weak that they had to be carried. Both had a pale grey complexion at the end of the race, for which neither had trained adequately. Both had lain down a few kilometres from home and had drunk ice water, and when they had resumed the race they could hardly stir. Brandy revived them, and they were completely restored after about twenty minutes. The average pulse rate of 39 men at the end of the race was 116, the extremes being 50 and 144. Among these 39 there were 9 without albumin, 9 with a trace, and 21 with more than a trace of albumin. These cases of albuminuria were equally distributed among the men who made good and bad times; there were, however, 3 competitors who made very bad times, and all had albuminuria, which in one case was as great as 0.15 per cent. It has been agreed by the medical authorities supervising ski races in Norway that a competitor with albuminuria before a race must be prevented from taking part in it.

### 3. 7. Congenital Syphilis.

E. A. MORGAN and M. A. COX (*Canadian Med. Assoc. Journ.*, March, 1923, p. 171), from a study of 100 cases of hereditary syphilis, found that the great majority (nearly two-thirds) did not come under supervision until late manifestations had developed, only one-fifth presenting early signs of sufficient severity to seek advice. In diagnosis, the authors declare, too much stress is generally laid upon unimportant and rare manifestations, whereas snuffling during early infancy is by far the most frequent early symptom, and this, together with an enlarged spleen, is pathognomonic. A "frog-like" or "fishy" appearance of the eyes, simulating a mild exophthalmos, is a sign, hitherto unrecorded, so uniformly present in the early stage as to be of considerable value. Two successive negative Wassermann reactions in a patient over 3 months old, and who has not previously received specific treatment, may be regarded as definitely excluding congenital syphilis. The routine treatment consisted in weekly intravenous injections of an arsenical compound for a period of six weeks followed by a six weeks' course of mercury, the routine being repeated if the Wassermann test still remained positive; and as the result of three years' work it is concluded that every case of early congenital syphilis can be permanently cured. The authors conclude that while interstitial keratitis is but little improved by specific therapy, cerebro-spinal syphilis can, if detected early, be greatly improved and sometimes cured, while in later cases the process may be arrested. The average time required to obtain a persistently negative Wassermann reaction is eleven months in the latent cases, and sixteen and a half months in the tertiary. Successful treatment depends upon the persistency and regularity of the treatments combined with the maintenance of general health and nutrition.

### 358. Anaphylactic Purpura.

HANNS and WEISS (*Revue de Médecine*, An. 40, No. 2, p. 104), discussing the question whether there is such a thing as anaphylactic purpura, refer to the many different views on the origin and kinds of purpura; for example, clinically there are purpura simplex, purpura haemorrhagica, purpura urticae, purpura rheumatica, Henoch's purpura, and Werlhof's disease. Glanzmann divided purpuras into two groups—(1) anaphylactic, and (2) Werlhof's disease, characterized by the presence in the first group of infectious symptoms, while the intensity of the cutaneous or mucous haemorrhages, anomalies in coagulation and the number of blood plates are confined to Werlhof's disease. The conception of purpura as an anaphylactic phenomenon is based partly on its appearance after serum injections and partly on the analogy between the symptoms of purpura and those of serum disease, especially as regards gastro-intestinal

symptoms and Henoch's purpura. According to some writers, toxic phenomena are in many cases really anaphylactic manifestations; the coagulability of the blood is normal. The authors are not prepared to accept Glanzmann's theories in their totality, and suggest that one way to test them would be to produce serum anaphylaxis in an old purpuric patient, and see if a fresh outbreak of purpura developed subsequently; they describe a case in which, after serum injections in a purpuric subject, a typical outbreak of urticaria took place but no purpura. They do not deny that an anaphylactic type of purpura may occur as an isolated clinical entity, but are not prepared to accept a whole group of purpuras and treat them as anaphylactic.

### 359. Intravenous Injection of Urotropine for Retention of Urine in Nervous Diseases.

H. GUNDERT (*Klinische Wochenschrift*, March 19th, 1923, p. 571) was induced, by the successful results obtained by Vogt in the treatment of post-operative retention of urine by intravenous injection of urotropine, to try this treatment in similar conditions occurring in various nervous and mental diseases. He has employed Schering's preparation—"40 per cent. urotropine solution, sterile in ampullae"—and has injected 5 to 10 c.cm. (once or several times) in cases of retention of urine. The patients were suffering from general paralysis, tabes, multiple sclerosis, katatonia, etc. In a great number of the cases treated regular normal micturition followed one or two injections. In other cases, after a longer or shorter interval, further injections were required. In some cases after an initial intravenous injection, when micturition was once excited, it was possible to maintain the regular normal action of the bladder by giving daily 2 to 3 grams of urotropine by the mouth. In some cases of general paralysis the intravenous injections failed, or only produced irregular results. No bad effects were noted from the injections. The urotropine or its derivatives are excreted into the bladder after injection and cause a sensory irritation of the bladder mucous membrane, and bring about micturition. The author considers a trial of this treatment should be made before the catheter is used in these nervous and mental diseases.

### 360. The Action of Pituitary Extract.

M. PERRIN, A. HANNS, and M. STEFANOVITCH (*Paris méd.*, March 10th, 1923, p. 229), as the result of their observations on the effect of the extract of the posterior lobe of the hypophysis on coagulation of the blood, the blood pressure, and the pulse, came to the following conclusions: (1) Its action in accelerating clotting was most constant, being present in different degrees in 8 out of 10 cases. It did not appear to last much longer than two hours. It was not proportional to the dose of the extract injected. (2) Its action on the blood pressure was much less constant. In 4 cases it was nil, in 4 it was slight (a fall of 1½ to 2 cm. Hg.), and in four considerable (a fall of 3 to 4 cm. Hg.). In no instance was a rise of blood pressure observed. The fall of blood pressure bore no relation to the quantity of extract injected, as in one case a considerable fall was produced with only 1 c.cm., and in two cases where 2 c.cm. were given only a slight fall of blood pressure resulted. (3) The action of pituitary extract on the pulse was also very variable. In 5 cases it was nil, in 3 cases slight (a slowing of 12 to 14 beats a minute), in one case considerable (the pulse changing from 80 to 40 beats a minute—possibly heart-block), and in one case there was acceleration of the pulse. The irregularity of the action of pituitary extract appeared to be due either to the difference in activity of the ampoules, or to the different degrees of reaction of the organs or systems affected by the extract as a result of past disease or congenital predisposition.

### 361. Kala-azar.

B. SANJIVA RAO (*Madras Med. Journ.*, January and March, 1923), from an experience of over 50 cases of kala-azar, concludes that, while the bed-bug is suspected as being the vector of the disease, the evidence is not conclusive, and the incubation period is variable, but usually not more than a few months. Clinically the most constant features are irregular pyrexia, splenic and hepatic enlargement, emaciation, freedom of the gastro-intestinal system from symptoms, and liability to pigmentation, cancrum oris, and dysentery. In diagnosis, cases of "enteric fever" without alimentary or nervous symptoms and giving no serum reaction are suspicious, while in cases suggestive of pulmonary tuberculosis the possibility of kala-azar must be borne in mind. Progressive enlargement of the spleen, though occasionally



absent, is characteristic of the disease, but the aim in diagnosis should be the demonstration of the parasite in the body fluids. Peripheral blood taken after the injection of 1 c.cm. of 1 in 1,000 adrenaline solution increases the chances of finding the parasite. When other methods of diagnosis have failed splenic puncture should be resorted to in all cases presenting no contraindications, and if performed under proper precautions it is a safe procedure. Treatment consists in intravenous injections twice a week of 2 c.cm. of a 1 or 2 per cent. solution of potassium or sodium antimony tartrate in normal saline in gradually increasing doses until about 2 grams of the salt have been given.

### 362. The X-ray Treatment of Toxic Goitre.

J. H. MEANS and G. W. HOLMES (*Arch. Intern. Med.*, March, 1923, p. 303) record the results of their careful researches undertaken (in 58 cases) in order to determine if the x-ray treatment of toxic goitre (exophthalmic goitre and toxic adenoma) did any good or harm. Their results are recorded in detail, and the authors conclude that the x-rays probably have a beneficial effect in toxic goitres. About two-thirds of the patients with exophthalmic goitre so treated show either recovery or improvement coincident with the treatment. The remaining third neither improve nor grow worse. If good results are not obtained in exophthalmic goitre by x-ray treatment in a few months surgical treatment should be employed. Prolonged x-ray treatment in patients showing no response is undesirable. In toxic adenoma (adenoma with hyperthyroidism) there seems to be a similar improvement under x-ray treatment, but this treatment was used only for patients who refused operation. In toxic adenoma surgical treatment removes the actual cause of the disease, the adenoma. The indication for surgical treatment would therefore seem more definite than in exophthalmic goitre.

## SURGERY.

### 363. Plastic Surgery of the Face by Tubular Grafts.

(H. LENORMANT (*Bull. et Mém. Soc. de Paris*, March, 1923, p. 372) describes the method of plastic surgery on the face by tubular grafts, which he has adopted with extremely satisfactory results. The technique depends on taking a skin graft from the scalp, which is brought down and includes the temporal artery in its base. By suturing the edges of the graft together a tubular flap is obtained, and this can be utilized at considerable distances and made of large size. Further, the tubular graft is ensured of a sufficient blood supply to maintain its nutrition. The use of the tubular graft enormously enlarges the opportunities for plastic surgery of the face; the graft can be taken not only from the scalp but from the cervical or dorsal region. The scalp graft, however, has the double advantage of possessing an extremely rich blood supply, and furnishes a graft which can be used to replace the moustache or beard. The graft is prepared after estimating the size and the distance which separates it from the area to be covered. The two borders of the pedicle are enfolded and sutured together, the resulting exposed surface being covered with a vaseline dressing. The skin graft thus receives its blood supply at first along the tubular pedicle. After two or three weeks the transplanted skin is divided from its pedicle, which is unrolled and returned to its original position. No skin is lost by this method, and the elasticity of the skin enables the raw surface which is left to be filled in. The grafted portion has now obtained an adequate blood supply by its own new vascular connexions. It then remains, by patient and repeated care and treatment, to obtain a good aesthetic result. Further, it may be necessary to depilate the skin, when this is obtained from the scalp, by electrolysis or x-ray applications. Photographs are shown to illustrate this method applied to cases of epithelioma of the face, lips, and nose, with excellent aesthetic results; while by allowing the removal of large areas of skin in cases of cancer it increases the chance of permanent cure.

### 364. The Death Rate of Operations on the Thyroid Gland.

At the Mayo Clinic, during the year 1922, there were nineteen deaths following 1,983 operations on 1,355 patients for diseases of the thyroid gland, giving an operative mortality rate of 0.96 per cent. CHARLES H. MAYO and WALTER M. BOOTHBY (*Journ. Amer. Med. Assoc.*, March 31st, 1923, p. 891) state that such percentages, which are the common method of presenting statistics on goitre, not only fail to reveal the real truth, but conceal facts which, when brought out by a more detailed study, prove to be of great value. Statistics on surgery for goitre should be carefully and accurately analysed, and the results presented for each disease on the basis of the number of cases. An accurate basal metabolic rate is an index of the intensity of the disease in both

exophthalmic goitre and adenomatous goitre with hyperthyroidism, and therefore, in conjunction with other factors, is of help in selecting the best time and type of surgical procedure. The basal metabolism is of even more importance as an aid in the establishment of a correct differential diagnosis of the various thyroid diseases, and as a result of its use many unnecessary and sometimes harmful operations are avoided. In this report all patients who died while under immediate observation in Rochester after surgical intervention on the thyroid gland during their present visit are classified as having died from surgical procedures, regardless of the cause of death. The surgical mortality by case, according to Plummer's classification of thyroid diseases, is: Adenomatous goitre without hyperthyroidism, 0.15 per cent.; adenomatous goitre with hyperthyroidism, 3.48 per cent.; and exophthalmic goitre, 1.99 per cent. The mortality rate for thyroidectomy in exophthalmic goitre is 0.96 per cent. The surgical mortality represents the combined work of eight surgeons.

### 365. Carcinoma of the Tongue.

E. S. JUDD and G. B. NEW (*Surg., Gyn., and Obstet.*, February, 1923, p. 163) point out that in spite of its early detection the treatment of carcinoma of the tongue has been unsatisfactory because the importance of the diagnosis and treatment of precancerous conditions has not been appreciated. Any apparently insignificant lesion should be completely removed and its exact character determined. Leucoplakia is an example of a benign lesion becoming malignant. Every case is curable if treated early; if left, malignant changes may occur. Small ulcers, cracks, or papillomata may have been present for years and then become malignant. In nine cases out of ten cancer of the tongue occurs in men; the use of tobacco is undoubtedly a factor. The diagnosis must be made microscopically. A high percentage of recurrences follows operation, largely because many patients are operated on at an advanced stage of the disease. The most favourable situation is at the tip, though only a few occur here. Treatment is satisfactory if the lesion is on the dorsum and does not encroach on the floor of the mouth; lesions at the root of the tongue are unfavourable for treatment. The average age is 45 to 60 years. The growth is nearly always squamous-celled epithelioma. Seventy per cent. of recurrences take place in the glands and not in the operation scar. Operable cases of cancer of the tongue should not be treated with radium; many operable cases are made inoperable by radium. Precancerous conditions should not be treated with radium. Radium applications should be used after operation over or into the tongue and side of the neck. Of 303 cases which attended the Mayo Clinic from 1910 to 1922, 185 were inoperable; of the operable cases 30 per cent. are free from disease after more than three years; 24 per cent. after more than five years; and 7 per cent. after more than eight years. Most of the cases were operated on in two stages, the first stage being removal of the glands; when these were affected the glands of the opposite side were also removed. At a later date a wide removal of the lesion on the tongue is carried out. Cautionary excision is preferred. The Kocher operation was done in 6 cases with good results at the time, but they eventually died from recurrence.

### Traumatic Hernia.

366.

R. J. GRAVES (*Boston Med. and Surg. Journ.*, March 29th, 1923, p. 454) summarizes the problem of the causation of hernia, particularly from the standpoint of the employer. He says that the rapid increase in the amount of payments on account of hernia cases has been one of the chief sources of expense to industry in general on account of personal injuries to employees. The majority of authorities on the subject, he says, consider that hernia, especially oblique hernia, is seldom, if ever, due to a single shock or blow, but is a matter of slow development over a considerable period of time. This, however, is not admitted by a large number of medical practitioners, compensation boards, and laymen. In the author's opinion true traumatic hernia is a very rare condition; hernia is practically always due to pressure of a preformed sac or open pouch of peritoneum, to which is often added the presence of structural weakness in the neighbourhood of the hernial orifices. He lays down the following conditions for demonstration by a claimant in order to obtain compensation for hernia: It must appear suddenly; it must be accompanied by pain and tenderness; it must immediately follow some adequate accident; there must be proof that the hernia did not exist prior to the accident. The medical and surgical section of the American Railway Association has investigated the subject of traumatic hernia, and has adopted the position outlined above. Its report has been presented to and adopted by numerous American and Canadian medical societies.



## 367. Renal Tuberculosis.

FERRIA (*Rif. Med.*, March 19th, 1923, p. 281) discusses his experience of 126 cases of renal tuberculosis. These were 47 per cent. of the total number (269 cases) treated recently in the urological department, rather a high percentage. In 106 the disease was unilateral, and of these 89 were nephrectomized. The commonest type of lesion was ulcero cavcosous. In the rare instances where cure takes place some form of exclusion can be noticed. As shown by cystoscopy the bladder, especially at the ureteral orifices, is affected in 80 per cent. of the cases, and bladder symptoms are far more prominent than renal. The urine is usually acid, containing pus and blood; sometimes haematuria is an early symptom. Tubercle bacilli were found in 84 per cent. The ureter, especially in the pelvic portion, can often be felt thickened and enlarged. Medical treatment may, the author considers, cure some cases, but valuable time may be lost in the attempt. Surgical treatment depends mainly on whether the complaint is one-sided and on the state of the other kidney. Of the 89 nephrectomies, 6 died as a result of the operation, and 6 in the first six months after. Tubercle of the other kidney occurring later was only noted twice. Death is more often due to tuberculosis of other organs, such as the lungs or meninges; this was noted in 7 cases.

## 368. Radium in Cancer of the Prostate.

J. ORAISON (*Journ. d'Urologie*, December, 1922, p. 496) finds that in cases of malignant disease limited to the prostate itself surgical treatment may be carried out with satisfactory results; if the disease involves surrounding structures it is of little use. Until recently all cases of advanced carcinoma were condemned to severe suffering and death. Cancer of the prostate usually starts with indefinite symptoms which do not send the patient to the surgeon for examination. It is only later that dysuria, retention, haemorrhage, and cystitis draw attention to a condition which has by now passed the limits of operability. The author has treated six cases with radium, and finds that locally there is a great improvement in the dysuria and pain with diminution in the size of the prostate. The general state of the patient, however, shows progressive cachexia, but in some cases the condition appears to be arrested for a time. He considers that radium improves the condition so far as local symptoms are concerned, but it does not affect the general cachectic state of the patient. These results are superior to those obtained by simple cystostomy. The radium may be introduced either through the bladder, the perineum, or the rectum; the urethral route is not advised. The best access is obtained through the bladder; the tubes can then be placed into the growth under direct vision.

## 369. Amaurotic Family Idiocy.

MARTIN COHEN (*Arch. of Ophthalmol.*, March, 1923, p. 140) reports a case which presents all the features of amaurotic family idiocy, but which is of non-Jewish parentage. In the year 1881 Warren Tay first described the condition of amaurotic family idiocy from the ophthalmological aspect. At a later period Sachs, unaware of Tay's earlier work, gave the designation "amaurotic family idiocy" to the symptom complex the eye findings of which had been previously described by Tay. In consequence the condition is sometimes spoken of as Tay-Sachs disease. The outstanding features of this symptom complex are: (1) the familial factor; (2) the age of onset of symptoms—third to six months; (3) the Jewish parentage; (4) the progressive mental impairment; (5) the striking eye signs—the cherry-red spot at the macula. There is a somewhat similar condition, which, however, occurs at a later age period and in which the Jewish parentage is not a feature; this other condition has been called the juvenile type of amaurotic family idiocy, and it is held by some that the two conditions cannot be sharply differentiated. Very few cases have been reported of the infantile type in which the Jewish parentage could not be substantiated, and in consequence this case is of unusual interest.

## 370. Surgical Treatment of Angina Pectoris.

W. B. COFFEY and P. K. BROWN (*Arch. Intern. Med.*, vol. 31, No. 2, February 15th, 1923, p. 200) point out that F. Franck long ago suggested resection of the cervical thoracic sympathetic for the relief of angina pectoris, but did not perform the operation. In 1920 Jonnesco reported the cure of a case of angina by resection of the left cervical sympathetic system under local anaesthesia. Coffey and Brown now record five cases of angina pectoris, two of them presumably due to syphilitic aortitis, in which sympathetomy was done (cutting of the direct connexions between the heart and the superior cervical ganglion). In one case the superior cervical sympathetic ganglion was removed; in the other cases merely the main trunk below the ganglion and cardiac

branches were severed. Death occurred in one of the cases six hours after the operation. Marked improvement was noted in the other four cases. Space limits do not permit an account of the details of the operation, nor a criticism of the cases and the results of the operation, but the authors consider that the relief obtained was sufficient to warrant further trial of this or similar operative procedures.

## OBSTETRICS AND GYNAECOLOGY.

## 371. Treatment of Abortion.

B. J. KOUWER (*Nederl. Tijdschr. v. Geneesk.*, March 10th, 1923, p. 970) records his experience of 1,938 cases treated at the Utrecht Obstetrical Clinic from 1911 to 1921. Twenty cases ended fatally, so that the mortality was 1.03 per cent. In 14 cases, however, the clinic was not responsible, death being due to criminal manoeuvres, so that the mortality was only 0.31 per cent. In cases of abortion without fever the mortality was 0.07 per cent., and in febrile cases 0.77 per cent.; 1,592 women were treated in their homes and 346 in the hospital. In the treatment of the former group the following procedure was adopted. The woman was ordered to remain in bed for at least seven days after the haemorrhage had ceased. If it recurred on the sixth day confinement to bed was enforced for about seven days. No drugs were given except opium on a few occasions. The woman was visited daily and the temperature taken at each visit. If the haemorrhage continued and was considerable in amount, without the cervix being fully dilated, the vagina was cleaned out with some antiseptic such as hydrogen peroxide or lysol, and plugged with vioform gauze, the accessible part of the cervical canal being treated in the same way. Vigorous uterine contractions often resulted, and within twenty-four hours the complete ovum was found in the plug. The uterine cavity was then explored with the finger and any portions of the decidua remaining were removed. Before treatment of any kind the patient's temperature was taken. This was necessary in the first place to exclude the possibility of infection, and secondly to protect the practitioner himself owing to the frequency of criminal abortion. If the temperature was found to be raised at the first visit the friends were informed. When the temperature was below 99.4° a careful bimanual examination was made. If the cervix was dilated the uterus was emptied after previous cleansing of the external genitals. When the temperature was above 99.4°, if nothing was found to indicate spread of infection to neighbouring parts, such as peritonitis, salpingitis, parametritis, or thrombo-phlebitis, the same procedure was carried out. An almost identical routine was followed in the treatment of patients in the clinic.

## 372. The Prophylactic Treatment of Eclampsia.

STROGANOFF (*Journ. Obstet. and Gyn. of the British Empire*, 1923, No. 1, p. 1) gives a full account of his improved method of treatment, which has been so successful as to reduce the maternal mortality of eclampsia to 1.7 per cent. and the foetal to 12.5 per cent. in 230 cases, whereas the maternal mortality in the cases collected for the Congress of Obstetrics and Gynaecology in this country was about 25 per cent. The author's fundamental idea for his method of treatment is that the fits play a predominant part in the results of the disease, and every fit brings the patient nearer death; therefore a method of treatment which diminishes the number of fits seems to be the ideal; this can be done by causing a diminution of toxins in the blood and preventing their action on the nervous system. The treatment advised is as follows: (1) Removal of all sources of irritation by keeping the patient in a darkened room which is also quiet, and by carrying out any catheterization, etc., under chloroform. (2) Treatment of fits: (a) Morphine hydrochloride 0.015 gram injected under chloroform. (b) One hour later 2 grams chloral hydrate in 200 c.cm. saline per rectum given under chloroform. (c) Three hours after beginning 0.015 gram of morphine subcutaneously under chloroform. (d) Seven hours after beginning 2 grams chloral hydrate as above. (e) In thirteen hours 1.5 grams chloral hydrate without chloroform if there have been no fits nor prodromata for twelve hours. (f) In twenty-one hours 1.5 grams chloral hydrate without chloroform if no fits or prodromata for twelve hours. (g) If the patient has been free from fits for twenty-four hours and is undelivered chloral hydrate is given every eight hours. (h) No enema is given unless the rectum is loaded. (i) It is advisable if the patient is seriously ill not to allow her to remain lying always on the same side, but to turn her frequently so as to minimize the risk of hypostatic pneumonia. (j) Chloroform should be given after the delivery of the placenta, as that seems to be a



likely time for fits to recur. (3) Hastening delivery. The author formerly recommended such action in many cases, but now, as a result of the usual stoppage of fits by his treatment, he rarely finds such treatment necessary. (4) Improving the condition of the vital processes. This is done by giving salines per rectum, or if conscious milk by the mouth, the amount averaging a litre a day. Digitalin is given if the pulse rate is above 110, and diaphoresis is induced if possible by hot bottles, especially to the loins and feet. The author is very much opposed to subcutaneous salines, as he considers they increase the strain put upon the kidneys, many bad results being obtained by such a method of administration. (5) Venesection. This is employed if fits recur three times despite other treatment, and the patient cannot be delivered during the next two to four hours, 400 c.cm. of blood being withdrawn. It is also advised when a patient has had numerous fits before admission. (6) Narcotics. As soon as the prodromata of a fit occur, such as increased headache, restlessness, high blood pressure, chloral hydrate and chloroform are given. The author is against giving large doses of morphine, and quotes references to cases in which unfavourable results have followed. By his method not more than 0.04 gram per diem is given. (7) Oxygen is given at the end of a fit to remove asphyxia. Professor Stroganoff has demonstrated this method of treatment in many clinics in Europe outside Russia with unvarying success, and the usual result has been for the clinic to follow his method for the future. He has offered to come to this country, and hopes to be given an opportunity to demonstrate his methods on cases of eclampsia occurring here.

### 373. The Course of Syphilitic Infection in Pregnant Women.

J. E. MOORE (*Johns Hopkins Hosp. Bull.*, March, 1923, p. 89). from a series of 200 cases of pregnant women with positive Wassermann reactions and of non-pregnant mothers with syphilitic children, comes to the following conclusions regarding the course of syphilis in pregnancy. (1) In many cases the usual manifestations of syphilis are milder in nature—in fact, in some cases no symptoms occur at all, though syphilis was contracted at impregnation. In a few cases the normal time between the primary lesion and the early secondaries is lengthened, but in such cases tertiary phenomena are apt to occur early, and are often grave in nature. These findings contradict the usual textbook teaching, which states that primary and secondary syphilis are exaggerated by pregnancy. (2) Among the multiparae only 5.3 per cent. of their children were definitely known to be free from syphilis, 41 per cent. having abortions or stillbirths. (3) The Wassermann reaction is often anomalous during pregnancy, and may be positive during pregnancy but negative after, which has been shown by Williams and Meuten; but the opposite phenomena may occur, and it has even been known to vacillate during pregnancy, being one day negative and the next day positive. (4) The protection against the early lesions of syphilis afforded by pregnancy may persist for a long time, and even for a lifetime, spontaneous cure seeming to be the ultimate result in a few cases. (5) Multiparae seem to be singularly free from remote grave complications of syphilis. (6) If late syphilis develops, the viscera and cardio-vascular apparatus, especially the latter, are most prone to be involved.

## PATHOLOGY.

### 374. An Attempt to Isolate Bacteriophages of Unequal Activity.

A. GRATIA and L. DE KRUIF (*C. R. Soc. de Biologie*, March 10th, 1923, p. 629) made a series of dilutions of the *coli* lytic principle, each of which was ten times more dilute than the preceding one. Placing 5 c.cm. of each dilution in a series of tubes, they added one drop of a young culture of *B. coli* to each. After incubation it was seen that lysis was only visible up to the eighth tube. The first and the eighth tubes were now heated to 58° C. Two principles were thus obtained, of which the former was very powerful and the latter very weak. What is the nature of this difference? A drop of the strong principle deposited on a tube of agar freshly sown with *B. coli* causes a complete zone of clarification, while a drop of the weak principle is insufficient to prevent an abundant growth of organisms. Does the difference between these two principles depend on the fact that one consists of a virulent strain of bacteriophage and the other of a weakly virulent strain, both of which were present in the primary principle from which they were derived? To test this 10 c.cm. of agar containing 1 c.cm. of a broth culture of *B. coli* were poured

into a Petri dish, and on the surface 0.1 c.cm. of a dilution of 10<sup>-1</sup> or 10<sup>-5</sup> of the original principle was spread by means of a spatula. After twelve hours' incubation little circular spots of clarification were visible. Of these 30 were picked off into tubes of broth, incubated overnight, and heated the following day to 58° C. On testing the 30 samples of principle thus obtained it was found that 23 were feeble ones, while 7 were strong ones. Now if these were pure strains it would be expected that however much they might be diluted each would give rise to a principle of the same degree of strength. But such is not the case. Dilute the strong principle down to 10<sup>-8</sup> and it gives rise to a feeble principle, just as was found in the original case. The hypothesis of pure virulent and pure weakly virulent strains must be abandoned. Further work showed that the strength of a given principle depends on the number of organisms into which it is inoculated; if it be mixed with a large number of organisms only a feeble principle is regenerated; if, however, a relatively large amount of principle be mixed with a relatively small number of organisms a strong principle is regenerated.

### 375. The Arrest of Albumoses and Peptones by the Liver.

IN view of the conflicting functions assigned by various authors to the liver—particularly in regard to its action in breaking down albumoses and peptones—H. DELAUNAY and J. DESQUEYROUX (*C. R. Soc. de Biologie*, March 17th, 1923, p. 710) have made some careful experiments on dogs in an endeavour to throw more light on the subject. The general technique consisted in starving them for twenty-four hours, anaesthetizing them with chloral, injecting known quantities of peptone, collecting the urine by catheters introduced just above the vesical entrance, and examining the urine for albumoses. This was done by precipitating the albumins with metaphosphoric acid, neutralizing the filtrate with sodium hydrate, and testing it with Tanret's reagent in such a way as to obtain quantitative information as to the amount of albumose present. It was found that injection of peptone into either the mesenteric or the splenic veins was followed by a marked albumosuria, which came on during the actual introduction and persisted for some considerable time afterwards. Similarly with injection of peptone into the saphenous vein. In fact there appears to be no difference whether it be introduced into the portal or the general circulation so far as the resulting albumosuria is concerned. But when the peptone was injected—even in large quantities—into an isolated loop of the jejunum no albumose was detected in the urine, although it could be shown that the peptone had been almost completely absorbed. From these experiments it appears that the small intestine is the only organ essential to the arrest and transformation of albumoses and peptones resulting from digestion. The liver does not seem to have any greater power than other organs to fix these substances.

### 376. Changes in the Islands of Langerhans in Diabetes Mellitus.

M. J. CONROY (*Journ. of Metabolic Research*, September, 1922, p. 367) reports the results of a study of quantitative and qualitative changes in the islands of Langerhans. A thorough study was made of all parts of the pancreas in 12 cases of diabetes and 12 controls of similar age, and a less thorough study of 95 routine autopsies of non-diabetics. Both quantitative and qualitative differences were found in the diabetic and non-diabetic groups. In the diabetic group an enumeration of the islands in sections from serial blocks of tissue through the entire organ showed a marked reduction in the amount of insular tissue. The average number of islands per cross-section was 73.6, as compared with 183.6 in the controls. In only one non-diabetic case was the count as low as the highest figure in the diabetic group. Every case of diabetes showed more or less qualitative changes in the islands, chiefly hyalinization and fibrosis, the latter lesion being quite widespread in some cases. Hyalinization of the islands was seen in only two cases of the non-diabetic group, and in these it was not so pronounced as in the majority of the diabetic cases. Definite hydropic degeneration of the islands was observed in only one of the diabetic cases and in none of the controls, but it is possible that the tissue in most cases was not fixed sufficiently early after death for a satisfactory study of this lesion. Changes involving the acinar tissue, particularly interacinar and interlobular fibrosis, were seen in both series, but were more marked in the diabetic cases. From this study the author concludes that both quantitative and qualitative changes are operative in leading to a functional insufficiency of the insular tissue as manifested by clinical diabetes.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## MEDICINE.

### 377. Aseptic Purulent Meningitis.

LISBONNE, LEENHARDT, and Mlle SENTIS (*Bull. de la Soc. des Sci. Méd. et Biol. de Montpellier*, etc., November, 1922, p. 28) observe that since Vidal's description numerous cases of aseptic purulent meningitis have been published. All recent authors attribute it to an intense meningeal congestion. This may be due to localized septic lesions of the meninges or of neighbouring structures—otitis media, sinus phlebitis, cerebral abscess. Jumentié and Mlle Sentis have described aseptic purulent meningitis following chronic inflammation of cranio-cerebral wounds. The syndrome is frequently produced by toxic irritation; intrameningeal injection of an anaesthetic, or of animal or human serum; alcoholism, or antityphoid vaccine intoxication; syphilis or uraemia. A few cases are of uncertain origin. The authors' patient was a boy, aged 9, who on July 14th, 1922, was exposed to the sun for several hours on a very hot day. He complained of violent headache and vomiting. There was no history of digestive disturbance. In the night he was feverish and had convulsions. Next day a lumbar puncture yielded, under marked pressure, a green turbid fluid containing an enormous number of cells, chiefly polynuclears, which stained well and showed no changes. No micro-organisms were found directly or after cultures. There was considerable albuminuria with marked decrease of urea and of chlorides; no oedema. On admission, two days later, all the symptoms of acute cerebro-spinal meningitis were present—severe headache, rigidity of the spine and limbs, constipation. He vomited once just after admission. The temperature was normal. The next day he passed a large quantity of urine: sp. gr. 1011, trace of albumin. The cerebro-spinal fluid was clear, with excess of polynuclears. Eight days after the onset there was green diarrhoea with abdominal tympanites; the temperature rose to 104° F.; bilious vomiting. The cerebro-spinal fluid was once more under high pressure, and meningeal symptoms intense. Two days later the temperature was normal, and in seven days the cerebro-spinal fluid was normal. The urine was free from albumin, and convalescence was uninterrupted. Forty days after the onset he was discharged in perfect health; all cultures were sterile. Three injections of antimeningococcal serum were given during the illness, but appeared to have no effect on its progress. The authors state that although retention of urea and of chlorides has been considered to be due to a uraemic factor in these cases, Jumentié and Mlle Sentis have observed it in aseptic meningitis due to local infection. This patient had no sign of uraemia. Blayac has reported three cases of retention of urea and of chlorides in cerebro-spinal meningitis. The authors conclude that this form of meningitis often produces an acute and transient uraemia, which is not connected with that of chronic nephritis. Dopfer has recorded nine similar cases due to heat-stroke. A full bibliography completes the article.

### 378. Electrical Methods in the Diagnosis and Prognosis of Paralysis due to Nerve Lesions.

G. BOURGUIGNON (*Journ. de Radiol. et d'Electrol.*, vi, p. 565) has devised an apparatus whereby the chronaxie (the duration of passage of a constant current, of abrupt start, with which to stimulate any particular muscle) of nerves and muscles may be measured indirectly by means of condensers. He claims that this method is much more rapid than the direct measurement with currents of known duration. He has in this way measured the chronaxie of all the skeletal muscles, and finds that: (1) The proximal muscles of the limbs have the shortest chronaxie, the extensors of the fingers and the plantar flexors of the foot and toes having the longest chronaxie. (2) Muscles which act against gravity in the erect position of the body have a shorter chronaxie than those which act with gravity. (3) Synergic muscles—those acting together to produce a movement, as, for example, extensor carpi radialis and flexor longus digitorum—have the same chronaxie. (4) The chronaxie of a muscle and of its nerve must be closely related. If the chronaxie of the muscle becomes unduly long, even if the nerve is intact, the muscle is paralysed. (5) When a muscle is paralysed by a lesion of its nerve its chronaxie lengthens gradually; as the nerve regenerates the chronaxie shortens until it returns to normal. (6) In the absence of an apparatus for measuring chronaxie, muscles should be tested with the galvanic current only. The exact duration and strength of each induction shock being unknown, the faradic current gives very uncertain results. (7) Examinations for polar inversion should be discarded. On

"making" a current the negative pole alone stimulates; on "breaking" the current, the positive pole alone. The appearance of polar inversion therefore depends on whether the stimulating pole is in relation to nerve or muscle. (8) The "reaction of degeneration" is present when (a) there is no contraction of the muscle on stimulating its nerve by a strong current (at least 15 milliamperes), and (b) when similar contractions result from stimulating the motor point and from longitudinal stimulation of the muscle.

### 379. Acute Tuberculous Meningitis following Traumatism.

VEDAL, G. GIRAUD, and SIMÉON (*Bull. de la Soc. des Sci. Méd. et Biol. de Montpellier*, etc., January, 1923, p. 130) refer to the frequent latency of cerebral lesions in adult tuberculosis until the occurrence of an accident, often a very violent one. Occasionally, particularly in pulmonary tuberculosis, sudden coma, which may be preceded by convulsions, ushers in the acute meningitis. These patients are in a state of unstable equilibrium; an accident or an operation—for example, curetting of osteo-articular tuberculous foci—may set free bacilli which, traversing the general circulation, attack the meninges. Blows or falls on the head have been the determining factor in many cases. Gullain has observed meningeal symptoms following simple lumbar puncture and abstraction of cerebro-spinal fluid in cases of Pott's disease. The authors' case was that of a tramway employee, aged 23, who fell from the platform of a car as the result of a collision. The fall was not severe, nor was the head directly implicated. The patient, however, immediately lost consciousness and never regained it. He had complained of lassitude and persistent frontal headaches for some weeks; he had also had a slight cough, but had lost no time from work. Next day the symptoms of tuberculous meningitis were obvious. Stiffness of the neck and Kernig's sign were present. The patient neither spoke nor groaned; he could not be aroused. The lungs showed signs of advanced bilateral tuberculosis; there were no signs of external injury. The cerebro-spinal fluid showed marked lymphocytosis with negative Wassermann reaction. The patient died four days after the accident. The autopsy confirmed the diagnosis; in addition to the meningeal and pulmonary lesions, a tuberculoma as large as a haricot bean was found beneath the pia mater of the anterior end of the right frontal lobe; it was surrounded by a deep zone of congestion and may have been the point at which the meningeal invasion commenced.

### 380. Treatment of Syphilis of the Newborn.

R. DUPÉRIÉ and R. ENCONTRE (*Gaz. Hebdom. des Sci. Méd. de Bordeaux*, March 11th, 1923, p. 110) have treated fifteen babies suffering from congenital syphilis in the following manner. Mercury was first given both by inunction and by the mouth for two to four days. They then gave a series of ten to twenty subcutaneous injections of sulpharsenol, in doses rising from 5 to 15 mg. per kilogram of body weight, at intervals of three to four days. After this series the mercurial treatment is continued for one to one and a half months; then another series of ten injections of sulpharsenol; then one and a half months of mercury, and so on for at least two years, four or five series of injections being given each year. The subcutaneous injection of sulpharsenol in concentrations lower than 0.06 gram per cubic centimetre of distilled water seemed to be completely painless, and did not usually cause any induration of the tissues. All the fifteen babies treated in this way were at the time of writing alive and in good health. The authors insist on the importance of breast-feeding for syphilitic babies, as the lesions of the liver and kidneys make it almost impossible for them to digest cow's milk and eliminate the drugs used in treatment at the same time; whereas the mother's milk, if she is herself undergoing treatment, acts as an antisyphilitic remedy. Under this treatment the infants at once began to put on weight, and lesions of the skin and mucous membranes rapidly disappeared. Bony lesions were more slowly resolved. Dentition was, however, affected in most cases. In some of their cases slight rickets appeared between the tenth and twelfth months, but yielded rapidly to special treatment. Enlargement of the spleen and lymphatic glands did not usually disappear till the end of the first year of treatment. The liver usually remained enlarged. Affection of the nervous system was often manifested by slight hydrocephalus, mental backwardness, and slowness in walking. The Wassermann reaction of the blood became either feeble or completely negative at the end of two years; but the authors do not consider themselves justified in saying that any infant



was completely cured, and advise continuation of mercurial treatment in all cases, with further courses of sulpharsenol on the appearance of any new manifestation of syphilis.

### 381. The Treatment of Peliosis Rheumatica.

E. RAUTENBERG (*Deut. med. Woch.*, January 26th, 1923, p. 112) has since 1915 been practising a treatment which he invariably found successful in the 23 cases admitted to his hospital. The treatment consists of injecting into the spinal canal by lumbar puncture 4 c.cm. of normal saline solution containing 0.02 gram of novocain. While under ordinary antirheumatic treatment and rest in bed the bright red or violet spots of peliosis rheumatica take at least a week or two to disappear, they vanish in a few hours after an injection of novocain, and never take more than a day or two to disappear. This rapid disappearance of the spots suggests that they are not formed by actual extravasation of blood, but by stagnation of blood within temporarily dilated vessels of the skin. This hypothesis has been confirmed by examination under the microscope of sections of the skin, which showed only dilatation of the blood vessels, oedema, and infiltration with leucocytes, but no extravasation of blood. The author's explanation of the success of his treatment is that the primary site of the lesion in peliosis rheumatica is not the skin but the central nervous system, probably the lower section of the cord or the cauda equina. According to this view, the spinal injection of novocain acts by blocking morbid impulses which pass from the central nervous system to the periphery, and by giving the peripheral structures time and opportunity to recover. The author has applied this treatment to other forms of skin disease, such as erythema nodosum, but with little success. It would therefore seem that peliosis rheumatica occupies a peculiar position with regard to its etiology, which appears to be analogous to that of herpes zoster. Other symptoms, such as pain in the muscles, responded as promptly to the injections as did the rash.

## SURGERY.

### 382. Treatment of Fractures of the Upper End of the Humerus.

L. RITTER (*Zentralbl. f. Chir.*, February 23rd, p. 245) describes the method of treating these fractures, as employed at the Augusta and Bürger Hospitals at Cologne. The method follows closely that recommended first by Bardenheuer. Where there is much displacement, ethyl chloride anaesthesia is used, in getting the best reposition possible. Impacted fractures are not disimpacted unless the position of the fragments is bad. A strip of adhesive plaster 6 c.cm. broad is applied, beginning on the flexor aspect, over the upper part of the biceps. This passes down over elbow and wrist (these regions being well padded with wool), and over the extended fingers, leaving a short loop to take a stirrup; the plaster is then applied along the extensor aspect of hand, forearm, and arm, up to the posterior axillary fold. Circular turns of plaster are then applied round forearm and arm, and a moist bandage over all. The arm is abducted to an angle of about 125 degrees, and a weight of 10 to 12 pounds attached to the stirrup, the cord passing over a pulley attached high up to a neighbouring bed. The elbow is kept slightly flexed, to an angle of about 135 degrees, a sandbag being placed over the region of the elbow-joint, to preserve the angle. (Full extension of the elbow is very liable to lead to stiffness, especially in the aged.) In cases where treatment in bed is contraindicated, plaster is applied to the sides of the upper arm, with a loop under the elbow for extension, using a square piece of lead as the weight. From the second week, passive movements of the shoulder are practised; from the third week active movements also. The distal joints are moved daily, from the first day. The average length of time during which the extension is kept up is three weeks. In describing a large number of cases, the author distinguishes between fractures of the surgical neck and trans tuberculous fractures at a slightly higher level. Of the first group, 17 patients got complete restoration of function; 13 almost complete; 6 a fair and sufficient result; and 3 were unsatisfactory. Only a small number showed an ideal result by  $\alpha$  rays. Of transtuberculous fractures, the result was excellent in 4, good in 9, fair in 6, and bad in 2. The average age of the second group was 63.5 years. A description and comparison is given of various methods of treatment employed by other workers.

### 383. Pericardiotomy in Diagnosis and Treatment.

J. B. ROBERTS (*Arch. of Surgery*, January, 1923, p. 101) says that diagnosis may be established in obscure conditions occasionally, and permanent relief given to the patient, with only a negligible risk, by a digital exploration of the heart sac. The differential diagnosis between effusion, empyema, or bleeding into the pericardium and hypertrophy or dilatation of the heart may be obscure; the outlook for the patient may be gloomy. In such circumstances the surgeon is driven to exploration of the

interior of the pericardium. Pericardiotomy is not an operation requiring an unusual amount of surgical skill; it should be performed on the left side of the breast bone, both in instituting diagnosis or treatment. A large hypodermic needle may be used to establish the presence or absence of fluid in the heart sac when pericardiotomy is being considered. The author believes that pericardial pus may be evacuated and the cavity drained and sterilized by frequent irrigation with phenol, as may be done in pleural suppuration; he does not advise resection of ribs. Diagnostic pericardiotomy should be employed in the interval between the fourth and fifth ribs, or, if room, between the fifth and sixth ribs. An elliptical flap with the convexity downwards should be turned so as to expose the fourth interspace. The pericardium is opened and its interior explored with the finger. If the pleura is damaged no great harm is done unless pus is present. To expose the heart for a wound an osteoplastic flap should be turned up by dividing the fourth and fifth cartilages. The author reports a case of a child where the diagnosis of pericardial effusion was made. Diagnostic pericardiotomy showed the condition to be due to cardiac hypertrophy. Recovery followed the operation.

## OPHTHALMOLOGY.

### 384. Radiotherapy in Ophthalmology.

ROLLET (*Journ. de m d. de Lyon*, March 20th, 1923, p. 151) states that improvements in technique have done away with the injurious effects of  $\alpha$  rays upon the eye, and that experiments made on rabbits by Malot and himself in 1914, subsequently confirmed by Terrien in 1919, have shown that numerous radiations did not produce any ocular lesions. During the last ten years Malot and his collaborators at Lyons have carried out 2,050 ocular irradiations proving the invulnerability of the eye of the adult patient and of the radiologist, provided a certain technique (small doses with appropriate filtration) is followed. The method was employed in four diseases—namely, tuberculosis, cancer, inherited syphilis, and trachoma—with the following results: (1) Incipient tuberculosis of the anterior segment of the eye may be cured by  $\alpha$  rays. Three illustrative cases of tuberculosis of the iris cured by Rollet with this method are reported. Tuberculosis of the lacrimal sac was always treated surgically by extirpation of the sac, and irradiations were never employed. (2) In early cancer of the lower lid excision is the best treatment, but when the lesions are extensive  $\alpha$  rays should be substituted, though they do not always produce an aesthetic scar. Radiotherapy is also indicated in cases of recurrence. Palpebral lymphoma is very amenable to  $\alpha$  rays and may subside as the result of this treatment. Extirpation is the best mode of dealing with encapsulated cancer of the orbit (sarcoma or endothelioma). Recurrences, which often take place as late as eleven or twelve years afterwards, should be treated by  $\alpha$  rays. In cancer of the eye such as choroidal melanoma or retinal glioma no improvement can be expected from  $\alpha$ -ray treatment. Epithelioma of the sclero-corneal limbus can be cured by excision followed by radiotherapy. (3) Rollet has treated about 20 cases of interstitial keratitis with  $\alpha$  rays. The efficacy of the treatment on the inflammatory signs was shown by disappearance of photophobia, lacrymation, blepharospasm, and pain. It is important in such cases that general treatment should be combined with radiotherapy. (4) In trachoma the conjunctival granulations may disappear under  $\alpha$ -ray treatment but often recur. The applications are painless and are specially indicated in patients who are afraid of operation and the use of copper sulphate. Radiotherapy is chiefly suitable for recent cases, as in old-standing cases with marked sclerosis little improvement can be obtained.

### 385. Ocular Tuberculosis.

A. L. WHITEHEAD (*British Journ. of Ophthalmol.*, December, 1922, p. 529) observes that ocular tuberculosis is comparatively rare in pulmonary tuberculosis and in serious cases of surgical tuberculosis, though ocular lesions are often followed by other manifestations in after years. The author quotes recent (1921) German statistics—92 "scrofulous" eye cases followed up for ten to thirty years showed pulmonary changes in 13.9 per cent. and active tuberculosis in 13 per cent.—and differentiates acute severe infections leading to more or less complete destruction of the globe, and the more chronic forms. In the former, giant cells and tubercle bacilli are found frequently; in the latter they are seldom found and inoculation tests usually fail. *Tuberculous choroiditis*: In acute infantile tuberculosis miliary tubercles of the choroid are frequently found as well as in nearly all fatal cases of tuberculous meningitis. Whitehead has not seen them in patients over 30. He has seen two cases of vitreous haemorrhages preceding general tuberculosis; in one a typical nodular iritis supervened and cleared up under treatment. Several observers have reported favourably on tuberculin in recurrent retinal haemorrhages. *Tuberculous iritis* frequently appears in



young and apparently robust adults, usually females, with no other symptoms, but a definite family history is generally obtained. Tuberculin, in proper doses, usually proves valuable. The author has had a case of chronic dacryocystitis occurring in a girl who has been under treatment for various manifestations of tuberculosis during a period of five years. The patient looks "the picture of health." *Tuberculous conjunctivitis*, in the author's experience, is usually mild; "cockcomb excrescences" are rare; he is not convinced that all cases of phlyctenular conjunctivitis in children are of tuberculous origin, but considers that the type found in young adults—small, closely set phlyctenules near the corneo-scleral junction, seldom ulcerating and very resistant to ordinary treatment—are definitely tuberculous. The von Pirquet reaction is frequently positive, and in all cases, either evidence of other tuberculous lesions or a clear family history can be obtained. Tuberculin treatment in these cases gives immediate and striking results. The author gives full details of the doses which he employs. He regards all these minor lesions as due to toxic infection from foci elsewhere—for example, infected tonsils and adenoids; hence the necessity of careful search for such focus, followed by appropriate treatment. Whitehead quotes Stewart's observations—in autopsies on 100 soldiers of good physique, dying from wounds: evidence of old tuberculosis was found in 54, and in 32 per cent. definite glandular infection. Whitehead strongly recommends excision of a strip of conjunctiva all around the corneo-scleral margin with careful scarification of the larger vessels invading the cornea. *Tuberculous keratitis* is rare, but in some cases simulates that of congenital syphilis; the corneal surface is, however, more irregular, though ulceration is rare; the vascular invasion is much more superficial and the opaque patches less regularly distributed. Peritomy is valuable in tuberculous pannus, but useless in syphilitic keratitis. Possibility of mixed infection must be remembered. *Tuberculous scleritis and episcleritis*, often with invasion of the iris and cornea, may be due to direct infection. Whitehead concludes that ocular tuberculosis is much more frequent than is usually taught.

### 388. Correction of Certain Forms of Squint.

JOSEPH L. MCCOOL (*Amer. Journ. Ophthalmol.*, February, 1923, p. 107) has studied eleven cases of spasm of the inferior oblique, of which seven cases were secondary to a palsy of the opposite superior rectus. Of the remaining four cases he was unable to determine which muscle or muscles were primarily responsible for the spasm. Three of these cases were associated with convergent squint. It is noteworthy how often a long-standing convergent squint is complicated by a pronounced upward tilt of the squinting eye. Cases in which graduated tenotomy of the inferior oblique can be adopted with success may be classified as follows: (1) paresis of the superior rectus with spasm of the opposite inferior oblique; (2) paresis of the superior rectus with spasm of the opposite inferior oblique and also spasm of the inferior rectus of the paretic eye; (3) paresis of the superior oblique with spasm of the inferior oblique of the same eye. In arriving at the diagnosis of spasm of the inferior oblique, the possibility of too high an insertion of the internal rectus must be kept in mind. If the upshoot of the eye is present in convergence as well as when the eye is rotated laterally a misplaced internal rectus should be suspected, but when the upshoot of the eye is not noticed in convergence then spasm of the inferior oblique is probably present. With regard to the technique of the operation of tenotomy of the inferior oblique, McCool favours a graduated tenotomy by a series of cross cuts rather than a complete division of the tendon. This, he holds, will weaken the action of the muscle sufficiently, whereas in complete tenotomy, owing to the lack of check ligaments to this muscle, there is danger of the result being overdone.

### 387. Therapeutic Use of Weak Atropine Solution in Asthenopia.

W. E. GAMBLE (*Arch. of Ophthalmol.*, March, 1923, p. 160) draws attention to the well known fact that extreme discomfort may be caused by the instillation of eserine drops into the eye. This discomfort is caused by the spasm of the sphincter iridis and ciliary muscle which is induced by the eserine. He points out that an increasing number of people are unable to tolerate the accommodative spasm which is induced by prolonged close work. As always, rest would appear to be the treatment for this condition, and he suggests that this rest can be most satisfactorily obtained by the use of high dilutions of atropine. The dilution of atropine which is to be used must be sufficiently high so that the pupil is not unduly dilated and so that close work is not interfered with. The method which he employs is to use a solution of atropine of a strength of 1/200 of a grain of atropine sulphate to an ounce of water, and to instil a drop of this solution into the eyes on Saturday afternoons. This procedure, he says, will not interfere with the doing of close work during the ensuing week, and will afford much relief. He reports several cases in support of his suggestion.

## OBSTETRICS AND GYNAECOLOGY.

### 388. Radium and Surgery in the Treatment of Non-malignant Uterine Haemorrhage.

E. A. WEISS (*Amer. Journ. of Obstet. and Gyn.*, February, 1923, p. 128) has used radium in a series of 100 cases of uterine bleeding, 83 of which were fibromyomata. From the author's experience the opinion is expressed that radium should only be used in fibroids when bleeding is the only symptom and the tumour is not larger than a three months' pregnancy; also one should be sure that there is no degeneration occurring in the tumour and no inflammation of the adnexa, as radium causes fresh exacerbations in the latter cases. This occurred in two of his series and operation was required. The author recommends radium as the ideal treatment when the patient is severely anaemic and would not stand the strain of operation, as the bleeding is stopped, the patient's general condition improves, and operation can be done at a later date, if necessary, with the patient's general condition vastly improved. Radium is not recommended for patients under 35, as the menopause is usually produced, and thus myomectomy is a better method of treatment whenever possible. The author strongly recommends radium in small doses (25 mg. for eight hours) for cases of severe uterine bleeding in adolescents and young women, which resists all other treatment. In such cases amenorrhoea is only temporary, and Clark, Stacey, and others have reported several cases of pregnancy following thereafter. Radium is also strongly recommended for severe menopausal bleedings, after cancer has been excluded by curettage and gross pelvic lesions and cardiovascular disease eliminated (50 mg. of radium for twenty-four hours produced a complete cessation of bleeding in each such case); the author asserts that for climacteric bleedings classified as hyperplasia, fibrosis, chronic metritis, etc., no surgeon should resort to hysterectomy to obtain a cure if radium is available: 40 cases were relieved at once without bleeding returning and 35 menstruated once. Leucorrhoea was prevalent for two to five months, and was best treated by sodium bicarbonate douches. The chief distressing symptom was nausea and vomiting, which occurred in many cases when the radium was *in situ*; to this condition the author has applied the name of "radium sickness." The menopausal symptoms were more acute than normal, but were relieved by ovarian residue or corpus luteum.

389. S. E. TRACY (*Amer. Journ. of Obstet. and Gyn.*, February, 1923, p. 135) discusses the treatment of fibromyomata with radium, and concludes that very few cases are really available for such treatment, as 30 per cent. of fibroids are degenerating and in another 40 per cent. of cases there is some abdomino-pelvic pathological condition associated with the fibroid (for example, salpingitis); thus 70 per cent. have complications, which are quoted to contraindicate radium therapy. These are the figures for all fibroid tumours, but if one considers fibroids in women over 40, which are the radiologist's ideal, complications are further increased, and only 16 to 18 per cent. are found to be uncomplicated; the diagnosis of such is extremely difficult, if not impossible in many cases. Pain always contraindicates radiotherapy, as it is not relieved by such treatment (Miller). The author advocates radium in the treatment of (1) simple uncomplicated small or medium-sized tumours causing bleeding at the menopause; (2) when bleeding occurs after myomectomy; (3) when the patient's general health is so impaired that an operation would be attended with undue risk; (4) climacteric bleeding due to chronic fibrosis. He asserts that if the mortality for all cases of fibroids operated on is 2 per cent., the mortality for uncomplicated cases such as are suitable for radium would be practically nil, and the complications which may occur after radium, due to the impossibility of determining some pathological condition, is eliminated.

### 390. The Operative Treatment of Sterility.

E. GRAFF (*Arch. f. Gyn.*, December, 1922, p. 368) draws attention to the fact that though great strides have been made in operative gynaecology during the last thirty years, little progress has been made in the operative treatment for sterility. The operations performed are (1) those for dilating the cervix, which have been indifferently successful; (2) those for replacement of a displaced uterus; and (3) salpingostomy, which up to now has only been done in special cases. The author points out that many cases of sterility are caused by impermeability of the tubes, and this is especially the case when any signs of inflammation of the uterus or adnexa can be found by bimanual examination, this being found to be so in 72 per cent. of his cases. He therefore urges that before any operation is performed the tubes should be inflated by Dr. Rubin's apparatus for the induction of transuterine pneumoperitoneum to find if they are permeable or not. If permeable, then a dilatation or



replacement-operation can be done, but if not, such operations are useless and salpingostomy seems to be the only rational procedure. It is too early to give the results of this operation for sterility, but it is by no means a certain cure; still it gives the woman a chance of becoming pregnant, which the other operations do not if the tubes are impermeable.

### 391. The Treatment of Essential Uterine Haemorrhage.

A. THEILHABER (*Arch. f. Gyn.*, December, 1922, p. 282) thinks that x-ray treatment for uterine haemorrhage has been a decided advance, but in some cases, especially in the haemorrhage occurring in young women, most medical practitioners are chary of x rays as they are apt to produce an artificial menopause. Thus it is necessary to have another means at one's disposal for the treatment of such cases, and as the author states that such haemorrhage is due to venous stasis, a treatment which will cause an acute inflammation of the endometrium ought to be curative by inducing an increased arterial supply which will remove any venous stasis. For such a treatment the author applies cauterization by diathermy, a sound with a small metal head of about 1/3 cm. in diameter being used. The current is applied for twenty to thirty seconds, and eight to ten points may be cauterized. By this treatment the author has had fair success, over half of his cases being cured with one application. He also recommends the same treatment for very chronic and resistant gonorrhoeal endometritis without tubal involvement, and has had over 60 per cent. successes, but his numbers are too small yet to draw any conclusions. He states that the treatment is practically painless and can be done for out-patients without any untoward after-effects.

## PATHOLOGY.

### 392. Gastric Carcinoma of the Intestinal Type.

F. RAMOND, JANET, and M. LEVY (*Bull. et Mém. Soc. Méd. des Hôp. de Paris*, February 29th (sic), 1923, p. 294) show that carcinoma of the stomach may assume the appearances of carcinoma of the intestine. This type of cancer is common, and is perhaps more often found than true gastric carcinoma. There may be found in the gastric mucosa small areas of intestinal mucous membrane. These islets have been examined by the writers in sixty specimens obtained from operations and *post mortem* and show all the characteristics of the intestinal epithelium. The contrast between these areas and the rest of the gastric mucosa is most striking, especially when stained with mucicarmine. These islands of cells appear to be the starting point of many cases of gastric carcinoma. The authors report the case of a patient who died after perforation of a gastric ulcer. Examination of the stomach showed that in the non-ulcerated portion the epithelium was of the gastric type, practically normal; as the ulcer was reached the mucosa underwent a change, with a gradual disappearance of cells of the gastric type and showing the appearances of intestinal mucous membrane covering the whole thickness of the mucosa, with glands of Lieberkühn. The appearances suggested that it was a piece of ileum when examined under the microscope. At the site of the ulcer malignant cancer cells could be detected in the superficial layers of the epithelium. This fact is of importance, as other writers have maintained that cancerous changes always start in the deeper layers and never on the surface. These observations show that cancer or ulcer of the stomach may develop in areas of the mucosa having the appearances of intestinal mucous membrane. Whether these areas are congenital or of acquired origin is of importance. If congenital it is difficult to see how cancer or ulcer may be prevented; if acquired it may perhaps be possible to prevent the metaplasia taking place and the complications which arise.

### 393. Specific Haemagglutinins and Serum Disease.

A. DALLA VOLTA (*Arch. di patol. e clin. med.*, March, 1923, p. 21), who records six cases illustrating the production of specific haemagglutinins in man following the administration of heterogeneous serum, comes to the following conclusions: (1) Parenteral injection of normal or immune horse serum in man gives rise to the formation of hetero-agglutinins as well as specific precipitins. (2) Side by side with specific agglutination of a high degree there is a group reaction for red cells of kindred species. (3) The quantity of horse-serum to be injected is always considerable and should be given within a brief space of time (seventy-two hours). (4) Haemagglutination appears after a latent period of six days and becomes most pronounced on the twelfth day. (5) The phenomenon is still present and is equally intense at the end of four months. (6) Its appearance coincides with the manifestations of the serum disease, of which it represents a characteristic serological reaction. (7) The intensity of the phenomenon proceeds *pari passu* with the severity and

intensity of the cutaneous manifestations (urticaria) of the serum disease. (8) The phenomenon may be a means of diagnosing a serum rash from urticaria due to other causes.

### 394. The Complement Fixation Reaction in Tuberculosis in the Dog.

J. VERGE (*C. R. Soc. de Biologie*, March 3rd, 1923, p. 562) has confirmed in the dog what has already been observed several times in cattle—namely, that subcutaneous injection of tuberculin into a healthy animal gives rise to no antibody production, while the same injection into an animal which is suffering from tuberculosis stimulates the formation of specific antibodies. Using the complement fixation reaction as a measurement of the antibody content of the serum, he injected 0.5 to 1.5 c.cm. of a 1 in 10 dilution of tuberculin into healthy dogs, and found that the serums of these animals, examined from four to thirty-three days after the injection, failed to show any evidence of the presence of specific antibody. Working, however, with four definitely tuberculous dogs, each of which gave a positive fixation reaction, he observed that the injection of tuberculin invariably gave rise to an increase in the amount of antibody present. The titre rose to a maximum ten to fifteen days subsequent to the injection, and then fell slowly. In one dog, the titre of whose serum before the injection was 5 units, a rise was observed up to 30 units on the eleventh day; this titre remained constant till the fifteenth day, after which it dropped rapidly to 6.6 units on the nineteenth day; the animal died twelve days later. This rapid decline before death has already been noted by Besredka.

### 395. Otosclerosis and Rickets.

A. B. KAUFFMANN, FRANCIS CREEK, and O. T. SCHULTZ (*Journ. Amer. Med. Assoc.*, March 10th, 1923, p. 681) have found, in young rats which have been maintained on a diet low in fat-soluble vitamin A and in calcium, that there occur abnormalities of the osseous capsule of the internal ear identical with those changes in the long bones which are characteristic of experimental rickets. These alterations, since they occur in structures concerned in the function of hearing, may result in an impairment of hearing. The analogies between the changes in the temporal bones in experimental rickets and the lesions which have been described in otosclerosis suggest, in the author's opinion, that the latter condition may be a late result of rickets or a manifestation of a dietary deficiency still existent during adult life.

### 396. The Genesis of Ovarian Tuberculosis.

E. WERTHEIMER (*Arch. f. Gynäk.*, March 17th, 1923, p. 136) examined serial sections of both ovaries in 18 patients whose primary tuberculous infection appeared to be pulmonary and who were found at autopsy to have generalized haematogenous infection as shown by the presence of miliary tubercles in certain viscera. The patients ranged in age from 1 to 53 years. Ovarian tuberculosis was found in 7; 3 showed tuberculous peritonitis and tuberculous disease of the Fallopian tubes, so that the ovary had been infected by direct extension, but in 4 patients one or both ovaries showed the presence of miliary tubercles without presenting macroscopic evidence of infection, and in the absence of local peritoneal or of tubal or uterine tuberculosis. Haematogenous ovarian infection was noticeably less common in these cases than that of spleen, liver, adrenals, or the cerebral meninges.

### 397. Excess of Albumin in the Cerebro-spinal Fluid in Syphilis

M. BROCH (*Paris méd.*, March 3rd, 1923, p. 221) remarks that excess of albumin in the cerebro-spinal fluid is not infrequently the only manifestation of syphilis, as was pointed out by Ravaut many years ago. The condition, however, is met with in many other diseases besides syphilis, such as compression of the spinal cord by tumours, Pott's disease, etc., as well as in intracranial compression by tumours, in commotion and in meningeal haemorrhage, as a residue of meningo-encephalitis due to different causes, in chronic affections such as disseminated sclerosis, dementia praecox, melancholia, epilepsy, some cases of myxoedema, and certain forms of neuralgia, such as intercostal neuralgia, lumbago, and sciatica. All these causes, therefore, must be excluded before syphilis can be regarded as responsible for excess of albumin in the cerebro-spinal fluid. If clinical symptoms are present, the excess of cerebro-spinal albumin may be merely the residue of an extinct lesion, but there is nothing to prove that the virulence of the disease is extinct, and such cases require careful watching. If there is an absence of nervous symptoms and the syphilis is of recent date intensive treatment should be instituted. On the other hand, when the syphilis is of old standing the prognosis of monosymptomatic excess of albumin in the cerebro-spinal fluid is less serious and intensive treatment is not required.



## Medicine.

### 299. Active Immunization against Diphtheria in Adults.

P. H. KRAMER (*Nederl. Tijdschr. v. Geneesk.*, April 7th, 1923, p. 1406) records the results of Schick testing and injection with toxin-antitoxin of the nursing staff at the Rotterdam Municipal Hospital before taking up duty in the diphtheria pavilion. Of 114 persons (113 women and 1 man), all above the age of 20, 47 (all women) who gave a positive Schick reaction received toxin-antitoxin. Of the remaining 67, 55 gave a completely negative reaction, and 12 a pseudo-reaction. Among 10 persons who had formerly had diphtheria the reaction was negative in 7 and positive in 3. Of the 114 nurses 90 remained sufficiently long in the diphtheria pavilion to justify conclusions: 38, or 42 per cent., were injected with toxin-antitoxin, and 52, or 58 per cent., who gave a negative Schick reaction, were not injected; 12 diphtheria bacillus carriers were found—6, or 16 per cent., among the immunized, and 6, or 11 per cent., among those with a negative Schick reaction. Three cases, 2 of whom had not been injected on the strength of a negative Schick reaction, developed a follicular tonsillitis which was cured without serum treatment. Two sisters who had given a negative Schick reaction contracted severe attacks of diphtheria, complicated in one case by paralysis of the palate. None of those injected with toxin-antitoxin developed diphtheria. Under these conditions Kramer has decided not to perform Schick reactions any more, but to treat all cases likely to be exposed to diphtheria infection with toxin-antitoxin without Schick testing, as is also done at the Wilhelmina Hospital, Amsterdam.

### 300. Herpes Zoster Generalisatus.

M. B. PAROUNAGIAN and H. GOODMAN (*Arch. Derm. and Syph.*, April, 1923, p. 439) review the literature of herpes zoster generalisatus, and record a case of that form of herpes zoster with the associated well distributed varicella-like eruption of vesicles. The patient, a man aged 64, looked fatigued and older than his years, and presented a typical herpetic eruption on the right abdomen with, in addition to the well marked zona, numerous vesicles and small papules scattered on the trunk, back, sides, axillae, thighs, shoulders, and arms. Mostly occurring in elderly not very robust persons, such cases appear to be a definite clinical group quite distinct from any fortuitous association of herpes zoster and varicella, though many of the cases in the literature were originally reported as being a combination of the two diseases, the authors unwittingly describing herpes zoster generalisatus. Cases of associated herpes zoster and generalized vesicular eruption are of four classes: (1) herpes zoster in one patient followed by varicella in others; (2) herpes zoster generalisatus—that is, herpes zoster followed by varicella-like eruptions in the same patient and without any occurrence of varicella in others exposed; (3) herpes zoster followed by varicella in the same patient and in others exposed; (4) varicella in one patient followed by herpes zoster in others exposed. Etiologically it is assumed that when the herpetic eruption is accompanied by much local disturbance of sensation the inflammation, by extending along sensory roots into the grey substance of the posterior horns, becomes apparent cutaneously in the discrete widespread eruption of herpes zoster generalisatus.

### 300. Hereditary Tylosis.

J. D. ROLLESTON (*Brit. Journ. Child. Dis.*, January-March, 1923, p. 16) records a case of hereditary tylosis, otherwise known as keratoderma palmaris et plantaris hereditaria, keratoma palmare et plantare, congenital ichthyosis, and acrokeratoderma, and remarks that, though the condition is well known to dermatologists, it has received little attention in pediatric literature. His patient, a girl aged 2 years, showed a symmetrical thickening of the epidermis of the palms and soles, the thickening ending abruptly at the border of the palmar and plantar surfaces and being separated from the normal skin by a narrow pinkish halo. The keratosis was more marked on the palms than on the soles. The condition had first been noted a few months after birth, and had gradually become more pronounced. Exfoliation of the palms and soles occasionally took place. The nails were not affected, and there were no skin lesions elsewhere. Like most of the cases on record, the family to which the child belonged consisted of very poor and ill educated persons, so that the pedigree obtained was incomplete. The disease, however, was said to have been present on the father's side for five generations. The mother

was not affected. Rolleston has collected eight other examples from the literature of the disease, occurring in five generations, including those reported by Date (*BRITISH MEDICAL JOURNAL*, 1887, ii, 718), Vaughan Pendred (*Ibid.*, 1893, ii, 1132), and Jacob and Fulton (*Ibid.*, 1905, ii, 125). Tylosis is usually congenital or appears within a few months of birth, as in the present case. Much less frequently it is acquired. Histologically it consists in a hypertrophy of the stratum corneum of the epidermis similar to that found in an ordinary callosity. Treatment is usually ineffective. Although the thickened epidermis can be made to exfoliate by such substances as salicylic acid, resorcin, pumice stone, starch poultice, and strong solutions of sodium bicarbonate, it invariably re-forms, and the condition becomes as bad as before. Tylosis possesses an epidemiological interest in that it has been endemic for about 150 years in the island of Meleda off the coast of Dalmatia, where it was first mistaken for leprosy.

### 401. Intravenous and Intragluteal Injections of Quinine in Pneumonia.

M. JONAS (*Deut. med. Woch.*, March 23rd, 1923, p. 360) has given intravenous and intragluteal injections of quinine bihydrochloride in 197 cases of croupous pneumonia treated in hospital. The dosage of a 25 per cent. aqueous solution for an adult was 2 c.cm., or 0.5 gram of quinine. One or two intravenous injections were followed by two intragluteal injections, and, in protracted cases, by a third intragluteal injection. Although considerably more than 2,000 such injections were given, they never provoked ocular symptoms, and only once did deafness of several hours' duration occur. When this treatment was instituted as early as the first or second day of the disease, it was often aborted. But after the third to the fifth day, the institution of this treatment seldom cut the disease short or brought the temperature down rapidly. It also failed to prevent extension of the inflammation in such comparatively late cases from one lobe to another. On the other hand, the injections had a remarkable effect on the general condition, and on such symptoms as dyspnoea, cyanosis, and partial loss of consciousness. In the period before he began this treatment—that is, 1911 to 1916—the author treated annually 40 to 60 cases of croupous pneumonia in his hospital. His mortality in these years ranged from 29 to 41 per cent. During 1921 and 1922, when he treated 53 cases with injections of quinine, the mortality was only 9 to 10 per cent. He adds one practical hint: while an intravenous injection is being given, great care should be taken to avoid introducing any of the quinine into the subcutaneous tissues, where it may cause necrosis.

### 402. Pituitrin in the Treatment of Herpes Zoster.

S. N. VENDEL (*Ugeskrift for Læger*, March 29th, 1923, p. 222) has treated 18 cases of herpes zoster since 1915. Every second case was given the usual local and symptomatic treatment, while the remaining 9 cases were given subcutaneous injections of 1 c.cm. or less of pituitrin. The difference in the results of treatment in the two classes was very striking. In the first class the disease ran its characteristic and painful course. In the second class the injection of pituitrin was followed in a few hours by almost complete disappearance of the pain, and in a few days by the disappearance of the eruption. By the second or third day the patient felt a little more sensitive to heat and cold than usual, but he felt otherwise well. In all these cases the origin of the herpes was spontaneous, and in none were there signs of gross changes in the central nervous system to which the herpes might be traced. The author did not venture to give pituitrin when the herpes was complicated by pregnancy, high blood pressure, or advanced age, and as the injections were apt to cause slight malaise, he took the precaution to keep the patients lying down for fifteen to twenty minutes after an injection. He does not state how he came to think of giving pituitrin in such cases, and he does not discuss its rationale, but he urges his colleagues to investigate further a procedure which may prove an advance on the rather negative and symptomatic treatment hitherto recommended for herpes zoster.

### 403. Is Neo-salvarsan an Anthelmintic?

K. K. LUNDGAARD (*Hospitaltidende*, March 7th, 1923, p. 180) raises this question in connexion with a man, aged 67, who was admitted to hospital for a cataract operation. Glaucoma, irido-cyclitis, and obscure abdominal symptoms supervened, and, chronic appendicitis being suspected, he was transferred to a surgical ward, where this diagnosis was negatived. As the irido-cyclitis did not subside, enucleation was proposed, but was refused by the patient. On January 5th, 1923, there were



definite signs of sympathetic ophthalmia. Accordingly intravenous injections of neo-salvarsan were given on January 5th, 6th, 8th, 12th, and 18th, the dosage on these five occasions being respectively 30, 30, 45, 60, and 90 cg. On January 30th a large ball of much decomposed *Taenia mediocanellata*, looking like a ball of yellow wool, was discharged per rectum. Decomposition had progressed so far that it could not be ascertained whether the head of the worm had come away or not. During the following days small fragments of much decomposed segments escaped. Considering that salvarsan is partly excreted by the intestines, it is possible that it may prove a useful anthelmintic, and if this is the case it may supersede certain anthelmintics the exhibition of which is tedious and disagreeable. Whether the risks of salvarsan treatment of intestinal parasites outweighs its advantages is an open question.

#### 404. Pruritus Ani.

F. C. KNOWLES and E. F. CORROW (*Arch. Derm. and Syph.*, April, 1923, p. 505) investigated the treatment of pruritus ani with bacterial injections in eighteen cases, working upon the lines previously adopted by Winfield and Murray with similar favourable results. Cultures made from six of these patients showed the presence of the colon bacillus and *Streptococcus faecalis*, and in several instances in which the opsonic index was determined it was found to be constantly below normal. In one case the effect of a stock colon bacillus vaccine, irrespective of the culture obtained locally, was apparent cure after three injections; five of the six patients who were thoroughly treated with *S. faecalis* vaccine were cured after receiving twelve to twenty injections each, two requiring a second series, after two to four months' intervals respectively, to clear up a tendency to relapse. Small doses (less than 100 million) of killed organisms are useless, benefit only resulting where the number of bacteria was increased from 175 to 1,000 million. Injections of *S. faecalis* vaccine offer the best means of cure, and should be given at weekly intervals, and continued over a considerable period. Before treatment by vaccine is considered all pathological conditions must be excluded, and injections of *S. faecalis* vaccine are given to raise the opsonic index, which, according to the authors, is always below normal in this type of case.

### Surgery.

#### 405. Operation in Two Stages for Carcinoma of the Stomach.

H. ZIEGLER (*Zentralbl. f. Chir.*, April 7th, 1923, p. 562) has made a practice during the last year of operating in two stages for gastric carcinoma, in all cases where the disease is at all advanced or the patient cachectic or reduced in strength. At the first operation posterior retro-colic gastro-enterostomy is performed; some weeks later the resection is made. After the first operation the patient usually puts on weight, and in a few weeks is much more fit to undergo the operation of resection than originally. The primary mortality is apparently reduced; moreover, cases which at first sight appear to be inoperable may often be subjected to operation if done in two stages. The author refers to the fact that most German surgeons perform suprapubic prostatectomy in two stages, in cases where the patient's strength is reduced by defective excretion and more particularly by superadded infection, and considers that the reduction in mortality associated with this method may also be attained in operations for gastric carcinoma if the same principle is applied.

#### 406. Deep X-ray Treatment.

H. FLECKER (*Med. Journ. Australia*, February 24th, 1923, p. 201) records several cases of malignant and other diseases treated by deep x-ray radiation, illustrating the great scope and possibilities of such treatment. The large proportion of success was due, he says, to cases being treated early without waiting for other measures to be tried first, and the best results are obtained by team work between the clinician, physicist, pathologist, and radiologist. Although only seven months had elapsed since commencing treatment the clinical results were so good as to warrant the belief that some of the cures were permanent. Remarkable results were obtained by even a single intensive dose in sarcoma of the humerus, lymphoma of the pharynx, glioma of the cerebellum, oesophageal and mammary carcinoma, metastatic growths in bones, rodent ulcer, lupus and tuberculous dactylitis, and cervical adenitis, and the advantage of the greater penetration compared with that of smaller outfits was demonstrated in many by the rapid improvement following deep radiation. In uterine, gall-bladder, and colon disease, where cure was impossible, relief of pain and of other symptoms followed. The treatment, suggests the author, should be adopted as early as possible, and not as a last resort; it should be used in conjunction with surgical and other measures, the best results being obtained with dosage both before and after operation.

#### 407. Obstruction at Duodeno-Jejunal Junction as a Cause of Duodenal Ulcer.

E. P. SLOAN (*Journ. Amer. Med. Assoc.*, April 7th, 1923, p. 977) says that since 1911 he has demonstrated fifty-two times at operation that duodenal ulcer and partial obstruction at or near the duodeno-jejunal flexure were present at the same time, and that surgical relief of the partial obstruction permitted the duodenal contents immediately to pass freely down into the jejunum. This makes, with the two cases reported in the present paper, 54 cases. In 14 a definite jejuno-mesocolic band was present. In 10, veils or light adhesions, seemingly of inflammatory origin, definitely kinking the jejunum near its origin, were found. In 9, the obstruction was due to the irregular shape of the opening through the mesocolon or to the ligament of Treitz; in 6 of them ptosis of the duodenum was present to such an extent that a very acute angle was formed at its terminal portion. In 15 cases the obstruction was due to more than one of these causes. These 54 cases of duodenal ulcer in which gastro-enterostomy was not done were selected from a series of 264 consecutive cases of duodenal ulcer. In the other 210 cases gastro-enterostomy was performed.

#### 408. The Results of Operative Treatment of Graves's Disease.

O. HILDEBRAND (*Deut. med. Woch.*, March 16th, 1923, p. 338) has performed partial resection of the thyroid in Graves's disease in a great number of cases, and has had 24 deaths among 666 operations—that is, a mortality of 3.6 per cent. He has traced 234 of his patients, and has found that 125, or 54 per cent., were cured. By "cure" he means disappearance of tachycardia, tremor, diarrhoea, nervous restlessness, and exophthalmos, and recovery of general good health and gain of weight. Further, this result had been maintained for several years. In 79 cases, or 34.3 per cent., marked improvement was effected, and in 25, or 10 per cent., there was some improvement. Thus altogether in 87 per cent. operative treatment was beneficial. But in many cases these benefits were not obtained until the patient had undergone several operations. With regard to the operative deaths, the author points out that he has lost patients both under general ether anaesthesia and under local adrenaline-novocain anaesthesia, and he deplors the fact that there is no sure means of diagnosing a persistent thymus and status thymico-lymphaticus before operation. Only the general appearance of the patient may be suspicious, and when a persistent thymus is suspected, he suggests that it is well to treat it by the x rays before attempting an operation.

#### 409. Intracapsular Cataract Extraction.

W. ZENTMAYER (*Amer. Journ. Ophthalmol.*, March, 1923, p. 202) presents an analysis of the results of ten cases of cataract operated upon by Professor Ignacio Barraquer with the erisiphake. Zentmayer had previously observed a series of cataract cases operated upon by Colonel Smith by his intracapsular method, and consequently is able to make a rough estimate of the merits of the two methods compared with each other and with the usual extracapsular method. He first describes Barraquer's method in full and points out that ten cases are too few from which to draw fair conclusions, though an interesting commentary can be made. In these ten cases a first-class result was obtained in 70 per cent. of the cases. Zentmayer, in his comments, points out that a method should be judged by its results in the hands of the average operator, and not by the results of its most skilful interpreter. In unskilful hands the Smith operation appears to be the safer, as loss of vitreous is the one serious danger, whereas in the Barraquer operation there is the additional danger of serious injury to the iris and the possibility of loss of the entire contents of the globe. In skilled hands, judging from the available statistics, the Barraquer method, however, appears the safer. In conclusion Zentmayer draws attention to the excellent results which are daily obtained by the more usual extracapsular method, the safe technique of which is so much more easily acquired.

#### 410. The Treatment of Irreducible Acquired or Congenital Hip Dislocations.

ADOLF LORENZ of Vienna (*New York Med. Journ. and Med. Record*, February 7th, 1923, p. 130) describes his method of "bifurcation" of the upper end of the femur in order to produce stability in such conditions as (1) pseudarthrosis colli after non-union of fractures of the femoral neck, (2) loss of femoral head following tuberculous disease or osteomyelitis, (3) old-standing dislocations, congenital or pathological. The operation is, briefly, an oblique osteotomy of the femoral shaft made with its upper limit at the level at which the shaft faces the acetabulum. The pointed upper end of the distal fragment is then made to engage the acetabulum or, in cases where the femoral head is still filling the acetabulum, the groove below the lower lip of the acetabulum. The limb is then abducted



to 35 degrees. The cut edge of the proximal fragment then lies against the outer aspect of the shaft, and, after fixation in a long plaster-of-Paris bandage for twelve weeks, union results with a Y-shaped ("bifurcated") upper end to the femur. After union has occurred massage and exercises of the pelvi-trochanteric group of muscles is commenced and a range of movement is gradually developed at the new articulation. The upper pointed end of the shaft becomes to some extent rounded off and in certain cases a range of flexion of 90 degrees has been attained. Stability takes the place of instability and the pain is relieved. Lorenz has performed the operation in a large number of cases, and, whilst counselling care in the selection of suitable cases, particularly advises the operation as expedient in those patients who suffer severe pain or who are unable to walk on the unstable limb.

## Obstetrics and Gynaecology.

### 411. Importance of Digital Exploration of the Uterus.

G. DEUCHEN (*Schweiz. med. Woch.*, March 15th, 1923, p. 277) raises this question: Is it sufficient to curette and examine with the microscope the lining of the uterus, or should this invaluable method be supplemented by digital exploration of the uterus? He notes that such digital exploration in non-puerperal cases is the exception rather than the rule. To ascertain whether this omission is justifiable or not, he has studied the records for the past eighteen months of the University Gynaecological Hospital in Zürich. There were 120 consecutive unselected cases in which exploratory curetting and digital exploration had been performed. All the patients had been sent to hospital on account of menorrhagia or metrorrhagia. Most were married women of pre-climacteric age or in the menopause; the youngest patient was aged 18, the oldest 62. In as many as 18 cases the evidence of exploratory curetting alone was negative or inconclusive, and among these cases there were 2 of malignant disease, 7 of submucous myoma, and 6 of uterine polypus. There was also one case of pregnancy, one of incomplete abortion, and one of malformation of the uterus. The author considers these figures an indictment of the policy of trusting simply to a pathologist's report on scrapings from the uterus. In none of the 120 cases did the combination of curetting with digital exploration prove fatal. But there was one case in which parametritis ensued. A small tear of the wall of the cervix occurred once, and the cervix was once partially perforated. There were also 2 cases in which the procedure gave rise to violent pain. In 13 cases it was found necessary to give a general anaesthetic; in the remainder anodyne drugs were sufficient. The author concludes that the advantages of dilating the non-puerperal uterus sufficiently to allow digital exploration of its interior definitely outweigh the disadvantages in the class of case under discussion.

### 412. Primary Sarcoma of the Fallopian Tube.

A. GRISI (*Annali di Ostetricia e Ginecologia*, February 28th, 1923, p. 121) states that sarcoma of the Fallopian tube, an extremely rare tumour, may originate in the connective tissue of the mucosa or in that separating the bundles of the muscular wall, and may occasionally attain enormous bulk. It is usually unilateral and may affect any region of the oviduct; the permeability of the tube is not affected, and the ostium abdominale in the absence of antecedent inflammatory disease is not occluded. Pain is a constant symptom, but menstruation is not necessarily affected. In a case recorded by Grisi the patient was a nullipara aged 51, who twelve months after the menopause suffered from severe and continuous abdominal pain, accompanied after six months by metrorrhagia. The pre-operative diagnosis was ovarian carcinoma; the abdomen contained a little free fluid, and the Fallopian tube affected showed soft sarcomatous masses protruding at the abdominal ostium. Within, the growth produced sessile vegetations beneath the mucous membrane; microscopically it was found to be a mixed-celled sarcoma in which spindle cells predominated.

### 413. Ectopic Pregnancy at Term, with Living Child.

A diagnosis of pregnancy of about eight months with impending eclampsia having been made in a case, an immediate Caesarean operation was performed by B. J. O'NEILL and W. W. CRAWFORD (*Journ. Amer. Med. Assoc.*, March 31st, 1923, p. 913). The abdomen was opened by a right rectus incision, and a dark, bluish, smooth mass, resembling an ovarian cyst, was revealed. On palpation, foetal parts were felt, separated from the hands by a thin membrane, which ruptured almost at once, with a gush of water. The baby was lifted out in the usual way, the head offering considerable resistance, and was revived with no more difficulty than is usual in a Caesarean

section. The left tube was about 6 inches long, and the expanded sibilated extremity was directly continuous with the cavity formed by the membranes. The placenta was thin and widespread, being planted on the posterior surface of the left broad ligament and on the sigmoid and the intervening pelvic wall, beside being adherent to both the large and the small intestine. The placenta thus formed the left and upper side of the sac. The left ovary was not identified. Actively bleeding vessels entered through adhesions from the large and small intestines, and some very large vessels entered the placenta from the broad ligament. The baby, a boy, weighing 6 lb. 3 oz., had hair and well developed nails, indicating birth at practically complete term. The skull was somewhat deformed from resting on the sacrum, and there was a moderate calcaneo-valgus of the right foot, a marked talipes equino-varus of the left foot, and a partial dislocation of the left hip, with indication of some bony pathological process in the left knee. The recovery of both mother and child was uneventful.

### 414. The Surgical Significance of Menstrual Changes in the Breasts.

A. ROSENBERG (*Zentralbl. f. Chir.*, March 31st, 1923, p. 510) has found certain histological changes in the mammary glands associated with the menstrual periods. In the pre-menstrual phase numerous lobules are found, with solid processes ending in small single-layered alveoli—a condition hitherto supposed to be found only during the early months of pregnancy. After the onset of menstruation retrogression takes place, with increase of fat deposit, and continues after menstruation has ceased, till at the mid-period only a few large and medium-sized ducts are found, and the smallest ducts and alveoli have entirely disappeared, reappearing at the next premenstrual period. The premenstrual hypertrophy may be mistaken for a pathological condition. A case is described where a breast, removed on account of pain and tenderness, and diagnosed as fibroma, was examined microscopically by the author, and showed only premenstrual changes. Inquiry elicited the fact that menstruation was due, and took place, four days after operation. The author considers that operations for innocent tumours of the breast should take place at the mid-period, as there is then less danger of injuring healthy gland parenchyma.

### 415. The Phloridizin Test of Early Pregnancy.

L. TARP (*Ugeskrift for Læger*, April 5th, 1923, p. 238) has carried out the phloridizin test in 142 women, most of whom were not pregnant. The solution he used contained 0.03 gram of phloridizin, 27.5 grams of distilled water, 3 grams of concentrated alcohol, and 0.015 gram of novocain. Immediately after the intramuscular injection of 2 c.cm. of this solution, given on an empty stomach, the patient drank 200 c.cm. of water and another 200 c.cm. half an hour later. Samples of urine passed half an hour, one hour, and an hour and a half after the injection were examined for sugar. Of the 108 non-pregnant women only 5 developed glycosuria. Of 8 pregnant women, 5 developed glycosuria, the pregnancy in all 5 cases being of three months' duration or less. Of the 3 pregnant women failing to develop glycosuria, 2 were in the fifth month of pregnancy—that is, in a stage too late for the test to be of much value. All the 12 women who had recently aborted completely failed to develop glycosuria; but of the 8 who had aborted, but who had not yet submitted to complete evacuation of the uterus, 2 showed glycosuria. Six women, who were suckling their infants, were also tested, and 2 of them developed glycosuria. As the author's figures show, the test is fairly reliable, but does not afford absolutely irrefutable evidence either way.

### 416. Pernicious Anaemia During and After Pregnancy.

E. RUMPF (*Deut. med. Woch.*, April 6th, 1923, p. 438) calculates that only 72 cases have been recorded in which pregnancy or the puerperium was complicated by anaemia deserving the adjective pernicious. These records show that the prognosis is considerably better for this class of case than for true pernicious anaemia unassociated with gestation. But even in the former class the mortality is about 58 per cent. Transfusion of blood, with or without the interruption of pregnancy, is probably better treatment than other remedies such as arsenic, and the author records in detail a case showing how promptly effective transfusion of blood may be. The patient was a married woman, aged 29, who, six hours after delivery showed the following blood condition: haemoglobin 14 per cent., erythrocytes 980,000, and leucocytes 7,400. Anisocytosis, megalocytosis, and slight polychromasia and poikilocytosis were observed. There were 67 per cent. polynuclear leucocytes, 30 per cent. lymphocytes, 2 per cent. monocytes, and 1 per cent. eosinophils. The good effect of blood transfusion was the more dramatic as the patient was moribund at the time. Forty days later the haemoglobin was 62 per cent., and the erythrocytes numbered 4,185,000.



## Pathology.

### 417. Chemical Variations in the Blood following the Radiation of Tumours.

M. LOEPER and J. TONNET (*Bull. de l'Assoc. française pour l'Étude du Cancer*, February, 1923, p. 103) have studied the effect on the chemical constituents of the blood of repeated exposures of cancerous tumours to  $\alpha$  rays. Following the fifth or sixth application of doses varying from 5 to 10 units H. to tumours of the stomach, breast, or mediastinum, for example, there is found (1) an increase in the total albumin of the serum by 4 to 12 per cent.; this increase is largely dependent on the rise in the quantity of globulin; (2) an increase in the amino-acid content of the serum, often rising from 0.06 to 0.11 per cent., or even to 0.18 per cent.; (3) an increase in the total lipoids of the serum, largely affecting the non-cholesterine portion; (4) a rise in the sugar titre of the serum to as much as 2 to 3 per cent.—a rise due largely to an increase in the protein sugar, not to that of the free sugar. What is the cause of these modifications? Do they result from the breaking down of the leucocytes, as Nurnberger believes? The authors think not. To elucidate this point they submitted a cancer of the pleura to several exposures of  $\alpha$  rays. Before the fifth exposure and immediately after it a puncture was performed, and the two specimen fluids thus obtained were carefully analysed, both from a chemical and a cytological aspect. It was found that after the exposure there was a notable increase in the globulin and in the amino-acid titre of the fluid. Now the lymphocytes of the fluid had scarcely altered in numbers, while the cancer cells, on the other hand, had not only diminished in numbers, but the ones that were left showed evident signs of degeneration and cytolysis. From this they conclude that the effect of repeated doses of  $\alpha$  rays is to disintegrate the cells of cancerous tumours, and liberate quantities of globulins, amino-acids, sugar, and lipoids, which then pass into the blood stream and give rise to the changes observed.

### 418. Modification of the Properties of Streptococci.

INTERESTING results have been obtained by M. BROCC-ROUSSEU, FORGEOT, and A. URBAIN (*Ann. de l'Inst. Pasteur*, March, 1923, p. 322) on the modification of a streptococcus obtained from nasal discharges in horses. A serum prepared against this type of streptococcus, when titrated by the method of Calmette and Massol, was found to contain 1,500 units of antibodies. Various strains of the organism were then passed through animals, including mice, rats, rabbits, and guinea-pigs, the organism cultured after each passage, and its ability to fix complement measured. It was found that after each passage this power diminished, till after a number, varying from four to nine passages, it disappeared altogether. The longer the organism was resident in the animal—that is, the longer it took to kill it—the fewer were the number of passages required to effect the modification. A similar change was effected *in vitro* by growing the organism in bouillon containing 20 per cent. of the blood of the animal in question. In this case, however, from ten to eighteen culture passages were required before all complement-fixing power was lost. Accompanying this change an alteration in the morphological aspect of the organism was noticed: whereas previously it grew in long chains, it now grew in the form of diplococci or in very short chains, and frequently showed evidence of a capsule.

### 419. Physiological Youth in Bacteria.

ARE the young of a unicellular organism, like the young of higher organisms, more sensitive to the influence of environment than the more mature cells of the same species? J. M. SHERMAN and W. R. ARBUS (*Journ. of Bact.*, March, 1923, p. 127) report experiments which indicate that physiological differences exist between young and mature bacterial cells and that the newly formed cells pass through a period of physiological youth. Tests with *B. coli* showed that cells taken from a culture of this organism during its period of rapid growth were sensitive to certain mild exposures which caused no mortality among the cells of an older culture, instances of which were obtained by brief exposure to cold and to 2 per cent. solutions of sodium chloride. Experiments conducted upon the effect of heating to relatively low temperatures showed that young bacterial cells were more rapidly destroyed than are the older ones; the same was true of the action of phenol. That there actually exists a difference in the physico-chemical condition of bacterial cells of different ages is indicated by differences in their agglutinability, as was revealed by acid agglutination tests. Since the young of bacteria, like the young of higher forms of life, are more susceptible to the hazards of their environment, it is not improbable that in the struggle for existence among these organisms there occurs an "infant mortality" among the young cells. Young and old cells may differ also in their abilities to stimulate antibody production.

420.

### Genesis of Blood Platelets.

S. P. BEDSON (*Journ. of Path. and Bact.*, April, 1923, p. 145), in order to study the morphology of platelets in experimental purpura, injected guinea-pigs with sublethal doses of anti-platelet serum. On the second day after inoculation, when the platelet count was still very low, the platelets no longer presented the characteristic morphology of the mature platelet, but appeared as small circular discs, more regular in outline, devoid of granules and showing definite basophile staining. These forms persisted until the fourth day, when they were gradually replaced by platelets more normal in appearance. From the second to the fourth day after inoculation nucleated precursors of platelets were seen, cells smaller in size than red corpuscles, oval or circular in shape, and of definite outline; other forms were seen which possessed what appeared to be a chromatin rest. In studying the morphology of the platelet in the embryo and very young animal Bedson noticed that already in the guinea-pig embryo of four to five weeks the majority of the platelets in the circulation were mature. He concludes that the mammalian platelet does not take its origin from any of the elements of the blood, such as the red cells, leucocytes, or plasma proteins, and he advances the hypothesis that the platelet is the homologue of the thrombocyte of avian blood, the nucleus being lost, however, before the cell reaches maturity, and that it appears in the circulation in the non-nucleated form, just as in the case of the red corpuscles.

### 421. Alterations in the Coagulation Time of the Blood following Proteinotherapy.

IT is usual in patients suffering from haemorrhagic syndromes to find that after treatment by calcium chloride, peptone, or non-specific serum the coagulation time of the blood is accelerated. On the other hand a reverse effect is sometimes noticed, and it is a case of this kind that R. BÉNAUD (*Bull. et Mém. Soc. Méd. des Hôpitaux*, March 15th, 1923, p. 369) reports here. The patient, a man aged 25, had suffered since infancy from gingival haemorrhages, epistaxis, purpura, and ecchymoses, and had received short courses of treatment by both auto- and hetero-serotherapy. When he first came under the observation of the author, in 1916, his coagulation time, as measured by Hayem's method, was thirteen minutes. The effect of four injections of his own serum, varying from 4 to 18 c.cm. at a time, was to increase this time to thirty-seven minutes. The patient's general condition, however, was very greatly improved. Within a month the coagulation time had returned very nearly to the figure at the commencement of treatment, and, as the patient himself no longer felt so well, resort was made to another series of injections. Studied closely during the period directly following the injections, the coagulation time was found to diminish considerably within half an hour, then to increase to a maximum after two and a half hours, after which a second diminution occurred, which in its turn was succeeded by a fresh retardation. A month later an injection of 20 c.cm. of anti-diphtheritic serum was given. This determined a very marked general disturbance—urticaria, insomnia, adenopathy, and arthralgia—lasting for a week. The patient, however, seemed to receive considerable benefit from this treatment—a benefit which persisted for about two years, when the author lost sight of him. When last tested the coagulation time still remained very low. From these observations the author concludes that there is no necessary correlation between the general condition of the patient and his coagulation time, and that auto-serotherapy appears to be less dangerous than hetero-serotherapy.

422.

### The Internal Secretion of the Pancreas.

J. WOHLGEMUTH and T. KOGA (*Klinische Wochenschrift*, February 26th, 1923, p. 386) refer to the published works of the former on the diastatic ferments of the serum, lymph, liver, spleen, muscle, etc., an investigation which was interrupted by the war. The authors describe their experiments on dogs, in which they succeeded in obtaining an activator (hormone) from the blood plasma of the pancreas, which is constant in action, soluble in alcohol, but insoluble in ether, petroleum ether, and benzol. It only activates "animal" diastase, but is inert in the presence of any vegetable diastase—for example, malt, yeast, or taka-diastase; this substance therefore furnishes a reliable distinctive test for the origin of diastase. Although the authors' experiments did not furnish entirely uniform results, generally they found that the blood of the pancreaticoduodenal vein contained a substantially larger amount of the activator than the portal or peripheral blood. The quantity of this substance varies from time to time, but in a fasting animal it is secreted in larger quantity. The authors state that all body cells contain these activators, but in smaller amount. Hunger also increases the production of liver diastase, and the hormone then produced stimulates glycogen secretion; this has been proved by the experiments of de Meyer. On transfusing the liver of a depancreatized dog with blood containing pancreatic extract, glycogen was immediately formed in larger quantity.



# 

### 

#### 

E. SIGNORELLI (*Arch. di pat. e clin. med.*, March, 1923, p. 89), who records a case in a boy aged 16, states that diabetes insipidus is a comparatively rare sequel of epidemic encephalitis, contrary to what might have been expected from experimental and clinical data, which tend to localize the centres of diuresis in the areas principally affected by the virus of epidemic encephalitis. In the present case diabetes insipidus, which developed about six weeks after the onset of encephalitis, was associated with other disturbances of vegetative life, such as acrocyanosis, dermatographism, bradycardia and tachycardia with arrhythmia. The fact that these disturbances were not accompanied by symptoms characteristic of lesions of one or more endocrine glands is a proof of the importance of the mesencephalon as a regulator of vegetative life. The diuresis in the present case was relatively refractory to injections of pituitrin. Signorelli maintains that three factors must be considered in the regulation of diuresis. The first factor is a special hormone in the pars intermedia of the hypophysis, which both in man and animals exercises an inhibitory action on the kidney as regards diuresis, this effect being particularly marked in cases of diabetes insipidus. The second factor is the influence on diuresis of special centres at the base of the third ventricle. The stimulation of these centres gives rise to polyuria and diminution of the concentration of the urine. The third factor is the nervous system of the kidneys, as is shown by physiological and clinical experience.

#### 

L. SPENGLER (*Schweiz. med. Woch.*, March 22nd, 1923, p. 309) has treated 42 cases of spontaneous tuberculous pneumothorax in the past thirty years, and in as many as 16, or 38 per cent., the patient recovered from the pneumothorax. In 10 of these cases the patient also recovered from the pulmonary tuberculosis; at least it was permanently arrested. With regard to the fatalities, there were only 4 cases in which death occurred within two to seven days. But there were as many as 15 cases in which death occurred from two weeks to two years after the accident. With regard to treatment, the most important measures are those which favour closure of the tear in the lung. A pleural effusion may be beneficial in this connexion because it yields fibrin, which plugs the tear. It may therefore be advisable, when the pneumothorax is dry, to introduce some pleural irritant, such as a 30 per cent. solution of grape sugar in saline solution, with a view to exciting a pleural effusion.

#### 

L. E. VIKO, H. M. MARVIN, and P. D. WHITE (*Arch. Intern. Med.*, March, 1923, p. 345) record the results of careful clinical observations on quinidine sulphate in cardiac affections. In 75 cases of non-paroxysmal auricular fibrillation, or auricular flutter, the normal rhythm was restored by quinidine in approximately two-thirds of the cases, and still remained normal in approximately one-third. Cases with fibrillation of short duration (under six months) are more likely to be restored to the normal condition and more likely to remain normal. Such cases give the best clinical results. Cases with and without objective congestive failure (oedema, enlarged liver, pulmonary oedema, etc.) were restored to the normal rhythm by quinidine; but the former relapse very much more frequently. In cases presenting objective congestive failure or tachycardia digitalis should be given before the quinidine treatment is commenced. Most cases responding to quinidine do so with small dosage, but many of the most satisfactory cases required large doses. Embolism and sudden death (possibly also due to embolism) occurring under quinidine treatment are probably most likely to occur in cases with fibrillation of long duration and in cases with objective congestive failure. The clinical results appear to justify the use of the drug in cases with fibrillation of short duration and with little or no congestive failure. In such cases bad results are probably no more common than under other methods of treatment. At present quinidine should probably not be used in a routine way in other types of cases—its use should be confined to hospitals where careful observation is possible.

#### 

BELIEVING in the essentially dermatological origin of eczema, J. R. GERSTLEY (*Journ. Amer. Med. Assoc.*, April 21st, 1923, p. 1141) has attempted to bring the skin of the predisposed fair-haired, blue-eyed children to the best possible state of nutrition. If the skin of an infant is maintained in good nutrition from the time of birth, and at the same time protected from irritants, eczemas, says the author, rarely appear. He believes that the active dietetic treatment, from the standpoint of the pediatrician, is that which most rapidly brings the child to the best possible state of nutrition. No one particular diet helps; no one diet harms. The main consideration of the pediatrician is to place the welfare of the whole body above that of an individual organ. If he steadfastly adheres to this principle, local symptoms gradually disappear in proportion to improvement in the general condition. Indications for restriction of diet are said to be only two. In an overfed baby with an oozing eczema reduction of food intake is of value. In an infant whose eczema has become secondarily infected, reduction of diet, by depleting the tissues of fluid, dries the cheeks and leaves a field less fertile for bacterial growth. In these cases there is said to be no particular reason for reducing one element of food, and restriction of quantity is all that is necessary.

#### 

A. CARNIOL (*Bull. et Mém. Soc. Méd. des Hôpitaux de Bucarest*, January 31st, 1923, p. 1) has during the last year observed the variations of local temperature in a series of cases of hemiplegia. One patient, aged 45, syphilitic, had aortitis with hypertension and a left hemiplegia (since 1916). Prior to an injection of 1.5 mg. of atropine sulphate the temperature of the right leg was 88.4° and that of the left (paralysed) leg was 85°. During six hours after injection of atropine the temperature of the right leg was approximately stationary, but that of the left leg rose to 96.8° four and a half hours after the injection; then it began to fall slowly. This experiment has been repeated many times on this patient with uniform results, but in recent hemiplegia the results are not so striking, neither are they so definite in infantile hemiplegia. In another case of left hemiplegia in a patient aged 50 the author found a similar result, but on comparing the temperatures of both thighs, legs, and feet he found that the temperature of the left leg rose 2° while that of the right (normal) foot fell 4°. Carniol has experimented with other alkaloids and also with calcium chloride and adrenaline with little, if any, result. He has also found that hypodermic injection of atropine yields less definite results than intravenous injection. He concludes that these remarkable differences in the healthy and paralysed limbs are due to vasomotor disturbance.

#### 

G. REDLIN (*Dent. med. Woch.*, March 30th, 1923, p. 415) has investigated the subsequent fate of children treated in hospital for pylorospasm. In the past decade 29 such cases were treated in the University Children's Hospital in Greifswald. Ten of them could not be traced. Of the remaining 19, only 4 were found to have died, death in 3 of these cases being connected with the pylorospasm. As many as 10 of the 19 children were the offspring of brain workers, and in 10 cases there was a family history of disease of the nervous system. As many as 6 of the 19 were first-born children, and 17 of the 19 children were boys. In as great a proportion as 84 per cent. the children had been breast-fed. More than half the number were found to be taller than normal, and only those children who were under the age of 5 were well developed physically. The older children were tall, lanky, and prematurely developed. The author concludes that the prognosis for children who have recovered from pylorospasm is good, and though they are, as a rule, predisposed to nervous symptoms, their susceptibility to other diseases is hardly in excess of the average.

#### 

S. ROHLER (*Ugeskrift for Læger*, March 23th, 1923, p. 217) examined the lungs of 1,048 of the 1,053 inhabitants of a district in North Greenland, and found signs of pulmonary disease in 142, or 13.4 per cent. of the total population. A characteristic feature of pulmonary tuberculosis in Greenland is the benign and chronic course of the disease, which,



on the other hand, frequently gives rise to haemoptyses. The author investigated 178 cases of haemoptysis, 147 of which occurred while the patient was at rest—that is, asleep or sitting quietly and doing nothing. Only in 31 cases did the haemoptysis occur while the patients were straining—for example, rowing or cutting up seals. These figures support the teachings of Bang, according to whom movements of the body play little part in provoking haemoptysis, for, did they play an appreciable part in the genesis of haemoptyses, they would not be so uniformly distributed as they are over the twenty-four hours. Although the author found haemoptyses to be very frequent, they seldom caused much discomfort, and in 82 per cent. the patients did not stay in bed for as long as twenty-four hours after the haemoptysis. Not once did the author find a case of acute progressive caseous tuberculosis, and only in 4 cases were there signs of cavities. Of twenty sputum examinations only two were positive. It would therefore seem that in most cases pulmonary tuberculosis usually runs a sputum-negative course; and in this connexion it is noteworthy that the author found only one case of laryngeal tuberculosis and no case with signs indicative of intestinal tuberculosis.

## Surgery.

### 430. Radiotherapy in Gastric Disease.

I. SOLOMON (*Bull. Soc. de Thér.*, March 14th, 1923, p. 77) states that more than twenty years ago a French physician named Despeignes first treated a gastric tumour by x rays and obtained some improvement. It is only within the last few years that radiotherapy has been applied to other gastric affections than new growths. In treatment of gastric cancer by x rays two methods have been employed. The first is transcutaneous radiotherapy, the results from which have been only palliative. The supposed cures have occurred only in cases in which the diagnosis of new growth was incorrect. In 205 cases of gastric cancer published by Werner in 1915 most of the patients had been treated by the transcutaneous method and injections of enzytol (choline borate). In a certain number of these cases there was temporary improvement, shown by increase of weight and disappearance of pain, but there was no permanent cure. Solomon himself treated three cases of gastric carcinoma by the transcutaneous method. One patient was almost cachectic, and radiotherapy had only an analgesic effect, while in the other two after a period of apparent cure, shown by considerable increase of weight and disappearance of pain, the growth pursued its inexorable course. The second method is radiotherapy after exteriorization of the stomach. In 48 cases treated by Werner according to this method considerable temporary improvement was obtained with very rapid absorption of the growth. In one patient who died of pneumonia histological examination showed that all the cancer cells had disappeared. Solomon is of opinion that the failure to produce a permanent cure is due not so much to the fault of radiotherapy as to absence of an early diagnosis, which is essential for a permanent success. In gastric affections, apart from new growth, irradiation of the gastric area has been employed with success in hyperchlorhydria, gastric ulcer, and disturbances following gastro-entero-anastomosis. In two cases of gastric ulcer and two of gastro-entero-anastomosis treated by Solomon good results were obtained from radiotherapy.

### 431. "Migration" Peritonitis.

N. MÜLLER (*Deut. med. Woch.*, March 16th, 1923, p. 351) discusses the mechanism of what he calls "Durchwanderungs-peritonitis." By this he means the peritonitis which, on laparotomy or necropsy, is found to be unassociated with any macroscopic lesion. Little is known of the frequency of this form of peritonitis, and, though several cases have recently been published, it is ignored in some textbooks. The author suggests that this form of peritonitis may account for some at least of the cases in which, at operation or after death, old adhesions are found in the abdominal cavity. He records two cases, in one of which the patient came to operation thirty-one hours after the onset of stormy symptoms—violent abdominal pain, vomiting, diarrhoea, a temperature of 33° C., and a pulse of 116. The laparotomy revealed much distended and hyperaemic coils of gut lightly plastered in places with a fibrino-purulent membrane. The appendix, which was removed, was macroscopically and microscopically normal. A pure culture of streptococci was grown from the fibrino-purulent effusion. Uneventful recovery followed. In the second case death occurred forty hours after the onset of stormy symptoms of peritonitis. The necropsy showed no macroscopic lesion through which germs could have entered the peritoneal cavity. The author recommends surgeons to bear in mind the possibility of a simple "migration" peritonitis when they are baffled by finding no macroscopic lesion.

### 432. A Macular Perception in Advanced Cataract.

G. YOUNG (*British Journ. of Ophthalmol.*, April, 1923, p. 167) describes a method for determining the macular perception in cases of cataract. An excellent operative result has often been obtained in a case of senile cataract, but the end-result is disappointing because of small localized changes at the macula. Such cases, prior to operation, have good perception and projection of light, and in fact it is not possible to determine beforehand the condition of the actual macula itself. The method which Young has devised consists in first of all accurately centring a spectacle frame upon the patient's face and then putting a black disc in the frame in front of the eye to be observed. This black disc has a pinhole perforation in it so placed as to be exactly in front of the centre of the eye. The room is darkened and bright light is placed immediately in front of the patient. The patient is then requested to look for a spot of light, which is said to look like a little moon. If he sees this another disc is placed in the frame. This disc is perforated by two pinholes, one at each end of a diameter of an exactly central circle of 1.5 mm. radius. The patient should see two "moons" overlapping each other. The disc can be rotated so as to alter the position of the "moons"—vertical, horizontal, or oblique. Finally, a disc, with three pinhole perforations placed within the same central circle, is put into the frame, when three slightly overlapping "moons" should be seen. Young states that if the test is negative a sound macula is not excluded, but that if it is positive it is certain that the macula is normal in function.

### 433. Myeloma of the Vertebrae.

R. S. OSGOOD (*Boston Med. and Surg. Journ.*, March 22nd, 1923, p. 380) draws attention to the mistakes made in diagnosing this condition. Though the course of the disease may not be altered, unnecessary treatment may be avoided and a correct prognosis given. Its termination is always fatal and no treatment is known to control it, yet many years may elapse between the onset and its fatal termination. Myeloma seems to arise from the supporting tissue of the blood vessels and not from the blood-forming cells themselves; these adventitial cells are closely allied to endothelium. Radiograms in myeloma show circumscribed areas of diminished density, often seen in the skull. In the spine it may be difficult to identify the individual tumours, whilst in the long bones frequent fractures make definite diagnosis impossible. Specimens show a thinned cortex and the dark red tissue of the tumour mass somewhat vascular and containing trabeculae. Multiple tumours are commonly found; they are probably primary and do not represent metastases. Albumosuria and the presence of the so-called Bence-Jones protein in the urine, looked upon as a classical sign of the disease, cannot be demonstrated in a considerable number of cases of typical myeloma, probably in about half. The cause of the albumosuria remains obscure. The disease resembles a nutritional disorder, grouping itself with osteomalacia, osteitis fibrosa, and rickets. Three cases are reported where spinal symptoms predominated; in other cases pain was a dominant symptom. Mental symptoms may be present early or late, whilst the blood findings are negative. Radium and high voltage x rays are worthy of a trial in treatment. Spinal symptoms may be lessened by recumbency and immobilization. In spontaneous fractures, if fixed, the bones may unite. Numerous radiograms of the condition are shown.

### 434. The Treatment of Nocturnal Enuresis by Thermopenetration.

I. V. BUBEN (*Zentralbl. f. Gynäk.*, April 14th, 1923, p. 608) lays stress on the scanty knowledge of the causation of nocturnal enuresis, and also on the very diverse methods of treatment which have been tried with varying success. The cause of this distressing complaint has been attributed to too deep sleep, inflammation of the bladder, internal secretory disturbances, congenital changes in the spinal cord, and congenital syphilis—to mention only a few of the more important theories. The treatment employed has been varied—drugs such as belladonna, strychnine, urotropine, etc., having been recommended, bladder irrigation with gradual increase of the bladder capacity, dietetic treatment, and psychotherapy having also their advocates. Lately electricity has played an important part, as also has the treatment by hot and cold baths, both of these increasing the tone of the bladder and stimulating the nervous system. The author, having seen the improvement obtained by thermopenetration in the cases of women with incontinence of urine due to weakness of the internal sphincter of the bladder, decided to try this treatment in cases of enuresis. In all he has treated twelve cases, most of whom have improved greatly, and though the number is too small to derive conclusions therefrom, he thinks the results are good enough to warrant further investigation. Thermo-



penetration can be applied in two ways—extravesical and intravesical. The former is done to begin with, and consists of placing an electrode in the vagina and a lead plate the size of the palm of the hand over the symphysis, the current when applied passing through the bladder. In many cases this was sufficient to bring about a cure. If the intravesical method is employed the bladder is filled with normal saline by means of an insulated metal catheter fitted with a stopcock; when full the stopcock is closed and the current is passed between the electrode and the plate over the symphysis; by this means intensive heat is given to the bladder wall in its whole extent, and thus deep trophic nerve endings and deep tissues are acted upon and not only the superficial tissues, which is the case with external electrical methods and the hot and cold bath therapy. The treatment was performed three times a week, and was continued from one to two months.

#### 435. Congenital Dislocation of the Shoulder.

D. M. GREIG (*Edinburgh Med. Journ.*, April, 1923, p. 157) says that in approaching the consideration of congenital dislocation of the humerus at the shoulder it is necessary to define what is meant by congenital dislocation. It might be held to include a dislocation present at birth due to injuries inflicted during parturition and paralytic dislocations occurring later from puerile affections during birth. True congenital dislocation is of very great rarity. Smith of Dublin in 1839 first brought this condition forward in practical form. The author has collected twelve cases of true primary dislocation of the shoulder. As to the mechanism whereby this is produced it is difficult to dogmatize. It is said that experimental dislocation has never been produced in the dead foetus after death, and this suggests that direct internal trauma in the last months of pregnancy could not produce dislocation unless through fracture of the glenoid. There is no evidence of amniotic bands causing it, nor has hydramnios or oligo-amnios been reported. Could it have been brought about, asks the author, by muscular action? In the true cases there was no muscular paralysis and they reacted normally to stimuli. Perhaps an unequal development or a temporary spasm of one set might conduce to the condition by drawing the bones from their normal relationship. Again, direct compression of the foetus by the uterus might produce the condition. The attachments of the pectoralis major or teres major might serve as a point d'appui, so that pressure on the elbow might lever the head out of the glenoid. Muscular action and uterine pressure together seem to give, in the author's opinion, a possible explanation of the affection.

#### 436. Eosinophilia in Prostate Affections.

MARIO NEGRO (*Journ. d'Urologie*, February, 1923, p. 99) has made a series of investigations to show the relationship between the presence or absence of eosinophilia and simple hypertrophy or carcinoma of the prostate. This work follows upon that previously undertaken by Professor Leguen. Negro takes as his basis the *formule leucocytaire* adopted by French haematologists, who regard the normal percentage of eosinophils as varying from 0.5 to 2 per cent., and the author arrives at the following conclusions: After excluding all other causes which may give rise to a modification of the eosinophil count, such as parasitic diseases, shocks, and industrial poisonings—as, for example, in celluloid workers—in simple hypertrophy of the prostate he finds an increase of eosinophils in 75 per cent. of cases, whereas the neutrophil polymorph leucocytes always remain normal in number. In carcinoma of the prostate, however, he finds a diminished eosinophil count in 45 per cent. of cases, while the neutrophil polymorph count is always increased. This research shows that a blood count, together with the routine investigations for arriving at the differential diagnosis between carcinoma and simple hypertrophy of the prostate, may be of value in doubtful cases. When an increased eosinophil count is accompanied by an increased neutrophil polymorph count the author considers that one's suspicions should be aroused, for this finding, in view of the above conclusions, may well indicate that one is dealing with a case of carcinoma. The author gives numerous examples in support of his views.

#### 437. Prolonged Survival after Gastrectomy for Carcinoma.

G. LION (*Paris méd.*, April 7th, 1923, p. 319) records the results of gastrectomy in 41 cases of gastric carcinoma between the years 1903 and 1919. Sixteen died immediately after the operation—a mortality of 39 per cent. Of the 25 survivors 6 died in the course of the first year, 6 lived for less than two years, 1 lived to the second year, and 1 lived for two years and a few months; 11, of whom 5 were still alive, survived for more than four years. The proof of the cancerous nature of the disease in these 11 patients was

furnished in 7 cases by naked-eye and microscopical examination, in 2 by naked-eye examination confirmed later by local or remote recurrence, and in 2 by naked-eye examination only. In contrast with these 41 cases of gastrectomy with a mortality of 39 per cent. Lion had had a series of 49 cases of gastro-entrostomy performed during the same period with a mortality of 20.4 per cent. Gastro-entrostomy, however, is a purely palliative operation, and though in most cases it is followed by a considerable improvement the duration of survival is always very limited, being six months on the average, and hardly ever exceeding eighteen months to two years. After gastrectomy, on the other hand, the return to normal is much more complete than after gastro-entrostomy. Although Lion has seen only one case of gastrectomy in which survival was sufficiently long to justify its being regarded as a complete recovery—the patient was operated on in 1898, and was still in good health—several cases of survival from twelve to fifteen years have been recorded.

## Obstetrics and Gynaecology.

#### 438. Hydatid Cysts in the Pelvis.

N. BLASCO (*Ann. de la Soc. Gin. Españ.*, 1923, p. 6, in *Arch. de med., cir. y esp.*, March 10th, 1923), in a report of an illustrative case at a recent meeting of the Spanish Gynaecological Society, states that the frequency of hydatid disease differs considerably in different countries. While some gynaecologists of considerable experience have not seen a single case, others have observed a fairly large number. Thus Freund in twenty-five years saw 18 examples and Schanta in thirteen years 9; Frauta collected 36 cases of difficult labour due to hydatid disease, and Fargas in his work stated that he had operated on 6 cases. In Spain cases of this kind are rarely seen. Blasco's patient was a woman aged 25, in the third month of pregnancy, who had given birth to a dead foetus by breech presentation seven months previously. On examination the pelvis was found to be filled by a cystic mass pushing forward the uterus, the fundus of which could be felt in the hypogastric region. An ovarian cyst was diagnosed and laparotomy was performed, when the cyst was found to be independent of the adnexa and situated between the rectum and right iliac vessels entirely covered by the posterior parietal peritoneum. On removal the tumour proved to be of the size of a foetal head. Complete recovery took place, and the patient subsequently gave birth to a child by normal labour. In the subsequent discussion Luque reported a case of pelvic hydatid cyst simulating extrauterine pregnancy. An exploratory puncture was made through Douglas's pouch and clear fluid obtained. The diagnosis of hydatid cyst was confirmed by laparotomy.

#### 439. The Place of Pubiotomy in Obstetrics.

ACCORDING TO A. H. BILL (*Amer. Journ. of Obstet. and Gynecol.*, March, 1923, p. 258), pubiotomy, an operation which is little employed in America, is to be regarded as a competitor, not of Caesarean section, but of craniotomy of the living child. Its advantage is seen in cases in which, by reason of manifest or probable infection, a Caesarean operation is contraindicated or at least appears dangerous; since there is no communication between the pubiotomy wound and an infected genital tract, pubiotomy is no more objectionable than craniotomy. An important application of pubiotomy is its prophylactic use in delivery of the after-coming head in cases of moderately contracted pelvis; in such cases the accoucheur is not at an early stage able to assess the relation of the proportions of the foetal head and pelvis by pressing the one into the other, and the saw may, therefore, be passed around the pubic bone before delivery, to be used only if the course of events proves it necessary. Similarly the saw may be used prophylactically in cases in which it is judged best to deliver by podalic version rather than by forceps. In the author's experience the subsequent union of the divided pubes is invariably firm, but usually fibrous.

#### 440. Congenital Septa of the Vagina.

CARTSO (*Il Morgagni*, April 5th, 1923, p. 155) reports six cases of congenital septa of the vagina. In the first case haematocolpos was present. In the second an incomplete transverse septum caused sterility, and was relieved by dilating with Hegar's dilators. In the third case there was a septum of the hymen. When pregnancy occurs the septum becomes softer, vascularized, and hypertrophies, and, according to its density, interferes more or less with labour. In most cases it becomes necessary to incise the septum to accomplish delivery. Owing to the risk of haemorrhage it is better, says the author, not to incise these septa during pregnancy.



#### 441. Turpentine Injections for Inflammation of the Uterine Appendages.

P. MORVILLE (*Ugeskrift for Læger*, April 5th, 1923, p. 235) has collected the literature of this treatment and has found that the opinions thereon differ widely. He has carried it out in a hospital in Copenhagen in thirty-three cases of inflammation of the uterine appendages, the disease in most cases being gonorrhoeal. There were, however, five cases in which the disease had followed abortion. The turpentine was administered by intramuscular injection, the dosage being 0.5 c.cm. of a solution containing ethereal oil of turpentine in olive oil in the proportion of 2 to 8. A little éucupin was added to this solution. As it often gave rise to violent reactions, and its effects were remarkably inconstant, the author concluded that impurities in ordinary oil of turpentine must be responsible, and he therefore abandoned it in favour of a proprietary preparation sold in Berlin as "terpichin," which contains specially purified oil of turpentine in olive oil to which a little quinine and anaesthesin have been added. The reaction to this preparation was almost negligible, and there was no fever nor leucocytosis. But with neither preparation was the author much impressed, and in not one of the thirty-three cases could he convince himself that this treatment was responsible for any improvement the patient might have made. Only about half the number were symptom-free after six to seven weeks' treatment, which in nine cases had to be supplemented by operative treatment.

### Pathology.

#### 442. Non-protein Blood Nitrogen in Pregnancy and Eclampsia.

K. HELLMUTH (*Arch. f. Gynäk.*, March 17th, 1923, p. 18) found that the non-protein nitrogen in the blood of women in the ninth month of pregnancy varied from 21 to 28 mg. per cent.—figures which are somewhat small compared with those of healthy non-pregnant subjects. At this time the urea nitrogen forms a reduced proportion of the total non-protein nitrogen—about 30 per cent. as compared with 50 per cent. in the absence of pregnancy; by the second week after labour the normal has been regained. The uric acid in the blood attains somewhat high values during labour. Creatin and creatinin appear to be present in normal amounts during late pregnancy and labour. From examination of the blood of 18 patients with pregnancy nephropathy and 9 with eclampsia Hellmuth finds that in those presenting comparatively slight signs of renal affection (slight albuminuria and oedema in the absence of increased blood pressure, headache, or urinary casts), the total non-protein blood nitrogen and its partition are normal for pregnant subjects; in more severe pre-eclamptic conditions, however, as well as in eclampsia, although the total nitrogen shows little increase, the urea fraction is abnormally large, both absolutely and also with respect to its relation to total non-protein nitrogen. During eclamptic convulsions an increase of the uric acid was constantly observed, and it frequently attained thrice the normal values. These findings, for which a pathological rather than a diagnostic significance is claimed, confirm the clinical finding that benefit ensues from reduction of protein intake in threatened pre-eclamptic conditions. It is said that estimation of the blood uric acid affords the most sensitive indication of *restitutio ad integrum* in the after-history of patients who have suffered from pregnancy nephropathy and who, according to grosser clinical signs, appear to be cured.

#### 443. Homologues of Adrenaline.

C. E. DE M. SAJOUS (*New York Med. Journ. and Med. Record*, March 21st, 1923, p. 325) considers vitamin C as vegetable and animal tyrosin and tyrosinase, jointly the homologues of adrenaline tests and food values. Deficiency of adrenaline underlies the genesis of scorbutus as a deficiency disease, the fundamental function inhibited by vitamin deficiency being tissue oxidation. Scurvy and infantile scurvy are due to an inadequate power to take up oxygen from the air owing to deficiency in the blood of the adrenal secretory product, this adrenia being attributable to deficiency of the food constituent tyrosin and its oxidizing enzyme tyrosinase, which as adrenaline and its adrenoxidase endow the haemoglobin with the power to take up oxygen and carry on tissue oxidation. The vitamin C of foods subserves the needs of metabolism and prophylaxis, and in disease sustains the efficiency of the defensive processes, and during convalescence not only promotes tissue oxidation but is the fundamental factor in all processes of repair. The effect of heat on foods shows that, while tyrosinase stands 100° C., tyrosin is destroyed by cooking above 67° C., thereby impairing its reactive activity in proportion to the protection afforded by its external covering and the rapidity of the cooking. Tests on various

foods showed that cooking in water above 67° C. tends to destroy their tyrosin if the fluid can penetrate the tissues of the food, and in these circumstances the vitamin C ceases to become a source of adrenaline even if tyrosinase, which withstands 100° C., remains undestroyed. Scurvy results because tyrosin is lacking, thus accounting for the fact that foods autoclaved at high temperatures cause scurvy in animals, which were saved by the same but unheated foods.

#### 444. The Effects on Lymphatic Glands of Exposure to Radium.

J. C. MOTTRAM (*Amer. Journ. Med. Sci.*, April, 1923, p. 469) records observations made on the iliac lymphatic glands of the rat after the exposure of the whole animal to radium. Prolonged exposure results not only in a great destruction of lymphocytes, but also in an actual inhibition of their production. That phagocytosis of lymphocytes by follicle cells occurs is undoubted, but it is not altogether certain that follicle cells are converted into plasmoidocytes (cells of plasma cell character), though appearances point to that conclusion. Briefly, the changes noted are as follows: Lymphocytes enter the gland by afferent lymphatics and are devoured by endothelial cells, which gradually change into follicle cells. A process of cell division now takes place and the follicle cells are converted into plasmoidocytes or myelocytes. The plasmoidocytes are found to divide into lymphocytes, and these leave the gland by efferent lymphatics or possibly blood vessels. The author points out that observers at the Rockefeller Institute, noting the increase of mitosis following exposure to x-rays, have taken it as evidence of a stimulation of the formation of lymphocytes, whereas he is of opinion that it is due to an accumulation of degenerated lymphocytes as a result of the changes summarized above. The whole has an important bearing on the problem of lymphocytes and cancer immunity.

#### 445. Natural Immunity.

R. W. MENDELSON (*Philippine Journ. of Science*, February, 1923, p. 115) has been impressed by the natural immunity to infection and the resistance to disease manifested by the Siamese. During the last epidemic of cholera in Bangkok, the east side of which city is supplied with pure water, while the west receives impure water, the morbidity and absolute mortality rates were significantly lower on the east side as compared with the west side, yet the case mortality was higher on the east side than on the west. This is explained by the argument that the people on the east side, having for the past few years used a perfectly pure water, had lost a certain acquired immunity previously gained as the result of constantly using an infected water supply, while the inhabitants of the west bank of the river still retained their immunity. Typhoid fever is rare amongst the lower class Siamese in spite of insanitary conditions of life; this is probably due to a racial immunity, acquired as the result of using for many generations an infected water and food supply. Specific immunity to typhoid infection could be demonstrated in 15.5 per cent. of the people. The conditions in Siam are ideal for the propagation of plague, which, though endemic in the country, rarely increases to epidemic proportions. Although serum reactions fail to demonstrate specific immune bodies in the blood towards plague, it is probable that the natives are protected by a slowly acquired immunity. The author notes that the nervous system of orientals is much more resistant to the effects of germ infection than is the nervous system of occidentals; syphilis of the nervous system is rare in Siam, although primary and secondary syphilis are rampant; and cerebral malaria is only infrequently met with, though large numbers of Siamese harbour malaria parasites in their blood.

#### 446. Antibodies to Filter-passing Virus of Influenza.

SPECIFIC antibodies against *Bacterium pneumosintes* have been proved by OLITSKY and GATES to exist in the serum of experimentally infected rabbits, and they now record (*Journ. Exper. Med.*, March, 1923, p. 303) observations on the agglutination of this filter-passing virus by human serum. No agglutinins or precipitins for *Bacterium pneumosintes* were found in the serum of normal persons, but agglutinins were demonstrated in the serum of seventeen persons among nineteen who were examined from ten days to five months after recovery from epidemic influenza. The serum of ten persons who had influenza, followed in three cases by pneumonia, two and a half to three and a half years before, proved negative. In one instance the appearance of specific agglutinins against *Bacterium pneumosintes* was found to be coincident with an attack of uncomplicated influenza. In twelve of fifteen instances in which agglutinins were found precipitins against *Bacterium pneumosintes* were demonstrated also. These antibodies may exist in the blood at least five months after recovery from the disease.



# 

### 

#### 

J. HENDERSON (*Glasgow Med. Journ.*, April, 1923, p. 209), in considering the treatment of high blood pressure, points out that in many cases some degree of high pressure may be compensatory, its existence, without associated symptoms, not calling for attempts at reduction, the aim rather being to prevent further rise. In this direction much may be done by regulation of the diet, bowels, and exercise, and restriction in food intake, especially fluids; no meat, seasoned foods, alcohol, strong tea, or coffee should be allowed. Purgation by drugs which remove large quantities of fluid—for example, calomel, julep, and elaterium, with morning salines—is important. Suitable exercise is essential, but all mental and physical overexertion must be avoided, and when there is evidence of cardiac distress complete rest in bed may be needed for a time. Venesection may be of use as a temporary measure in a crisis, and carefully regulated hot baths are of value in increasing elimination by the skin and lungs. Vaso-dilators should not be employed too early; amyl nitrite and nitroglycerine produce a sudden temporary lowering effect, while sodium nitrite in 3-grain, or even 5-grain, doses several times a day gives the best sustained effect and may be beneficially combined with a diuretic or diaphoretic. The best results from potassium iodide are obtained when it is given in small doses over long periods with occasional intervals of rest; digitalis is not contraindicated in the presence of threatened heart failure. It is claimed that high frequency currents have a sustained action in lowering pressure without undue cardiac depression, but the author's experience of an extensive trial did not support this, although the patients often feel temporary benefit. The importance of prophylaxis is pointed out, and it is suggested that people over the age of 40 would do well to be overhauled occasionally from this point of view.

#### 

F. GRAESER (*Deut. med. Woch.*, April 27th, 1923, p. 551) has given intramuscular injections of 1 to 2 c.cm. of ether every other day to 21 children suffering from whooping-cough, and he has used as controls 12 children suffering from whooping-cough who were treated by other drugs, such as bromides and antipyrin. The age of the patients treated with ether was from 2 months to 3 years; in 3 cases complete recovery was effected, and in 14 other cases the injections of ether were followed by the cessation of vomiting and other symptoms and by improvement in the condition of the lungs. The attacks of coughing also became fewer and slighter. A comparison of these cases with the controls was definitely in favour of the treatment with ether, but the author does not recommend it in slight cases uncomplicated by vomiting or other alarming conditions. Indeed, this treatment seems to be more effective in reducing the complications of whooping-cough than in mitigating the cough itself, though it does so in a certain number of cases. Great care should be taken to inject the ether deeply into the gluteal muscles, for if it is deposited in the subcutaneous tissues it is likely to provoke necrosis. When he began this treatment the author experienced this accident in 4 cases, but it did not greatly hurt the child or detract from the benefits of the injection. It took, however, some time for these lesions to heal, and they left deep scars. Apparently it does not matter at what stage in the disease treatment with injections of ether is instituted.

#### 

M. W. SCHELTEMA (*Nederl. Tijdschr. v. Geneesk.*, March 24th, 1923, p. 1225) remarks that erythema infectiosum, or the "fifth disease," is attracting at present more attention, and with perhaps more justification, than the "fourth disease" of Duker-Filatow, as is shown by articles in recent works on children's diseases and general medicine. The incubation period ranges from seven to fourteen days. In 6 cases observed by Scheltema it was ten days. The disease occurs mainly in children, but cases have been recorded in adults and infants. Prodromal signs are usually absent. Ochsenius, however, mentions conjunctivitis, and Weber describes constitutional disturbances such as lassitude, vomiting, and headache. The most important and almost invariably the only sign of the disease is the eruption, which presents the following peculiarities: (1) It is remarkably changeable

and polymorphous, so that Pospischill has suggested the designation "erythema variabile." (2) Some regions and forms are specially typical. In some areas, such as the neck and loins, it is discrete, while in others, such as the cheeks and arms, it is thickly set and circinate. The principal region attacked is the face, which is sometimes exclusively affected. Erythema suddenly appears on the cheeks, where the eruption is somewhat irritating and resembles urticaria. The swollen skin is sharply marked off from the pale areas round the ears, mouth, and chin. On the forehead the lesions are more discrete. The other parts chiefly affected are the extensor surfaces of the upper arms and forearms, the shoulders, loins, calves, and front of the knees. On the extensor surfaces of the arms the lesions rapidly coalesce in a large bluish-red patch, and near the elbows assume a circinate appearance. The back of the feet are rarely attacked, and the back of the hands and soles never. (3) The eruption may be visible one moment and gone the next. Rubbing, striking, or warming the parts makes the rash more distinct. The rise of temperature in most cases is only slight, but Scheitema has seen a case with a temperature of 103° F., and Weber one with a temperature of 104° to 105.8°. Constitutional disturbance is not pronounced, coryza is absent, sore throat is very slight, and there are no Koplik's spots or strawberry tongue. Sometimes there is slight bronchitis or conjunctivitis, especially of the lower lid. The submaxillary, cervical, and axillary glands are sometimes a little enlarged as well as the spleen, but considerable cervical adenitis, as in rubella, does not occur. The urine rarely contains albumin, and the diazo-reaction is negative. The blood shows leucopenia with a lymphocytosis of 35 to 37 per cent., and eosinophilia. Erythema infectiosum must be distinguished from scarlet fever, measles, rubella, erythema multiforme, erysipelas, serum disease, and drug eruptions.

#### 

M. LAUZE (*Bull. Soc. des Sci. Méd. et Biol. de Montpellier*, January, 1923, p. 120) refers to three previously recorded cases of poisoning by phenolphthalein, one of them, a girl aged 19, having died in coma. Lauze has recently seen two cases of purpura following the use of phenolphthalein. The first was a woman, aged 50, suffering from mitral stenosis, who was taking small doses of digitalin, with occasional doses of castor oil or sodium sulphate. Acting on a neighbour's advice she took phenolphthalein. Next day she had vertigo, abundant haemorrhagic stools, a purpuric eruption on the lower limbs, and increased cyanosis. These symptoms recurred on four different occasions, and ceased when the patient returned to saline aperients. The second case was a man, aged 60, who constantly experimented with new drugs; a chemist gave him 4 grains of hellebore, and an easily prepared laxative cocoa which contained 0.1 grain of phenolphthalein. After taking a cup of this cocoa at bedtime he had tenesmus, many blood-stained evacuations, followed by collapse. During the following days he had swelling of the lower limbs with typical purpuric patches. Lauze treated both patients by Sicard's "homohaemotherapy"—subcutaneous injection of human blood—and after three injections the purpuric rash faded. Lauze refers to the cases recorded (*Arch. Derm. and Syph.*, March, 1922) by Wise and Abramowitz of New York. Phenolphthalein is a very popular laxative in America, and these authors have observed cases (among susceptible patients) of eruptions of the skin and mucous membranes, very similar to those caused by antipyrin and arsenobenzol—a polymorphic erythema which, instead of fading without any trace, leaves pigment deposits of brownish-yellow colour in the affected regions.

#### 

G. PETGES (*Paris méd.*, March 17th, 1923, p. 256) states that more attention has been paid to the superficial reactions in the skin due to yeasts in foreign countries, and particularly in America, than in France, where there is too great a tendency to deny yeasts any pathogenic action and to regard them merely as saprophytes. As long ago as 1908 Whitfield described an intertrigo due to yeasts, and subsequently Blanchard, Heubner, Boeck, Ibrahim, and Kaufmann-Wolff described various forms of erythema (papulo-vesicular, papulo-pustular, and papulo-squamous) as due to saccharomyces. More recently cases of eczematoid epidermomycosis due to parasaccharomyces have been published by Castelfani in Ceylon, Chalmeis and Christopherson in America, Berchardsen



**Embolectomy in Circulatory Disturbances.** (Surg., Gyn., and Obstet., March, 1927.)

454. **Embolectomy in Circulatory Disturbances.** E. KEY (*Surg., Gyn., and Obstet.*, March, 1923, p. 309) says that in suitable cases the removal of an embolus by means of arteriotomy is a most satisfactory operation. This has been made possible through the development of the technique in operations on the vessels of the body. The symptoms of an embolus may set in slowly or suddenly, and serious disturbance to the circulation may occur and gangrene of the limb caused. The degree of circulatory disturbance depends on whether the vessel is completely blocked, on the collateral circulation, and on the action of the heart. When the vessel is completely blocked the diagnosis is seldom difficult; localization depends on the fact that the embolus generally lodges where an artery bifurcates and is usually central to the boundary of the circulatory disturbance, and by observing the pulse one can generally succeed in localizing it. In performing embolectomy proper technique is of vital importance; the slightest mistake might cause thrombosing of the sutures, by which the good result of the operation might be lost. Carrel's technique, using fine needles and fine silk sterilized in vaseline, is employed. A solution of sodium citrate, which prevents the blood coagulating, is used during the operation. The artery is exposed above and below the site of the embolus and then incised; the embolus is removed, clamps are placed on the vessel, and the opening in the vessel wall is closed. The prognosis depends on the time of operation: the sooner this is done the better is the outlook. Fifty per cent have been collected by the author from this series. The operation appears to be fully successful. Efforts have been made within twenty-four hours.

[illegible]

THE principle of "notching" has been employed by J. J. MOORHEAD of "Long Bones." *Journ. Amer. Med. Assoc.*, April 28th, 1925, p. 1207 in a series of cases of fractures, and success by this procedure has been very gratifying. The time to operate,

**Surgery.**

...secretly, by a march 24th Goltra.

**Surgery.**

**Treatment of Exophthalmic Goitre.**

P. PAJZS (*Zentralbl. f. Chir.*, March 24th, 1923, p. 472) has treated 15 cases of Graves's disease with success, during the last eight years, by a method of which the rationale is to destroy the secreting tissue of the goitre by means of alcohol injections. First, a single injection of 1 to 2 c.cm. is made deeply into the parenchyma on one side; a marked general reaction usually follows, and diarrhoea is common. These phenomena are pronounced, the tachycardia is increased, thyrotoxin set free by the local effect of the alcohol. The injections are carefully continued, first on alternate days, then daily; one to two injections are made on both sides; later, two to three injections are made on the posterior side, as long as improvement continues. If general or local reaction is marked the injections are stopped for a day or two. A fine platinum needle is used; the large vessels of the neck, the recurrent nerves, and the posterior capsule are to be avoided—the last in order not to injure the parathyroids. There is some pain locally at the injection, and sometimes pain for a few minutes at the back of the neck. After a week the goitre begins, says the author, to diminish in size, and after three to four weeks the general

**Surgery.**

**Treatment of Exophthalmic Goitre.**

P. PAJZS (*Zentralbl. f. Chir.*, March 24th, 1923, p. 472) has treated 15 cases of Graves's disease with success, during the last eight years, by a method of which the rationale is to destroy the secreting tissue of the goitre by means of alcohol injections. First, a single injection of 1 to 2 c.cm. is made deeply into the parenchyma on one side; a marked general reaction usually follows, and diarrhoea is common. These phenomena are pronounced, the tachycardia is increased, thyrotoxin set free by the local effect of the alcohol. The injections are carefully continued, first on alternate days, then daily; one to two injections are made on both sides; later, two to three injections are made on the posterior side, as long as improvement continues. If general or local reaction is marked the injections are stopped for a day or two. A fine platinum needle is used; the large vessels of the neck, the recurrent nerves, and the posterior capsule are to be avoided—the last in order not to injure the parathyroids. There is some pain locally at the injection, and sometimes pain for a few minutes at the back of the neck. After a week the goitre begins, says the author, to diminish in size, and after three to four weeks the general



says the author, is within the first thirty-six hours, if possible, the earlier the better, if there are none of the usual operative contraindications. The fragments are notched by a rongeur, chisel, saw, or "bone notcher." The advantages claimed for this method are: (a) More accurate coaptation means firmer, earlier union in more exact alignment. (b) With the assurance that definite coaptation has been obtained, there is less danger of the interposition of soft or hard parts which would prevent or impede union. (c) Primary neural or vascular damage is more readily discovered and corrected; secondary neural or vascular damage from pressure or callus inclusion is very unlikely. The disadvantages given are: (a) Fractures are put into the operative class with the attendant risks. (b) The method is needlessly severe and dangerous, since good results have heretofore been obtained by simpler methods. (c) It is inapplicable for general use. (d) It produces shortening; this, however, is usually slight and of no importance. The method is stated to be particularly adapted to recently displaced or old malunited fractures of the shaft of the radius, ulna, tibia, and humerus, in the order named.

#### 457. Treatment of Laryngeal Tuberculosis by Paralyzing the Recurrent Laryngeal Nerve.

LEICHSENBRING (*Klinische Wochenschrift*, March 12th, 1923, p. 498) considers that the first principle in the treatment of tuberculosis of joints, of the lungs, and of the larynx is rest for the affected organ. Rest for the affected lung can be secured by artificial pneumothorax, and for the affected joint by a plaster-of-Paris bandage. In laryngeal tuberculosis rest for the larynx is more difficult to secure. Often strict silence cannot be obtained and an irritable cough cannot be checked. To secure rest for the larynx the author has paralysed the recurrent laryngeal nerve on one side by contusion or division. Only cases of unilateral laryngeal tuberculosis are treated by this operation, and only the nerve on the side of the disease is paralysed. Nine cases of the operation are recorded. The rest secured for the tuberculous larynx had a very favourable effect on the laryngeal disease, and no bad results followed. The recurrent laryngeal nerve was exposed in the neck on one side, under local anaesthesia, at the level of the cricoid cartilage. In some cases the nerve was paralysed by pinching it with artery forceps, but it was found that the functions returned in about two months, which was too short a period of rest. Hence the author now paralyzes the nerve by dividing it; then five or six months elapse before the function returns. The operation is suitable for cases in which the disease is chiefly unilateral and the changes not too extensive. The author allows that it is difficult to say how much of the improvement is due to the operation and how much to improved general resistance of the body; but he is convinced that in some of his cases the laryngeal condition improved in spite of the lung condition, and that further trial of the treatment is justified.

#### 458. Cancer of the Breast.

L. TIXIER (*Lyon Chirurgial*, November-December, 1922, p. 673) has investigated the results of the surgical treatment of cancer of the breast from the years 1902 to 1914. He operated upon 211 cases in this period; of these, 57 cases were living six years after operation; 68 died within two years. Three factors are of importance in considering the prognosis of cancer of the breast: (1) Age of the patient. Under 50 years of age only 30 per cent. of cases lived more than six years; between 50 and 55 years of age 43 per cent. of cases survived more than six years. (2) The presence of ulceration at the time of operation. This is a feature of great gravity; out of 14 patients where the growth had ulcerated through the skin 11 died during the first two years. (3) The date of operation after the appearance of the tumour; this is, of course, open to mistakes on the part of the patient. Where the growth had been discovered for less than a year 23 cases out of 70 were alive after six years. The author points out that patients who come to the surgeon within the first year are often affected with a rapidly growing cancer, and the presence of pain draws their attention to it. These are operated upon relatively early owing to the malignancy of the tumour; in view of this the percentage of recoveries may be low. At the operation he removes a large area of skin, and the pectoral muscles and overlying fascia. A careful dissection is made of the fatty tissue in the apex of the axilla, and stress is laid on the removal of a gland lying under the clavicle on the axillary vein. He has used radium in a number of cases both before and after operation. In cases of recurrence he has seen no cures following radium. It is, he says, impossible to make a prognosis from microscopic examination of the tumour after removal.

## Obstetrics and Gynaecology.

459.

#### The Use of the Vaginal Pessary.

THE two most important indications for the use of the vaginal pessary, according to E. NOVAK (*Journ. Amer. Med. Assoc.*, May 5th, 1923, p. 1294), are prolapse and retrodisplacement of the uterus, but only in certain cases and under certain conditions. Retroversions offer a far more hopeful field than the backward flexions. With the latter the fundus is apt to be large and heavy, so that it falls backward over the posterior arm of the pessary. Puerperal retrodisplacements furnish, according to the author, one of the most frequent and most important indications for the employment of the pessary. In a large proportion of the cases, he says, the wearing of the pessary for a short time, usually only a few weeks, is all that is necessary, and there is no tendency to a recurrence of the retrodisplacement. Retrodisplacement or prolapse with pregnancy is also a most important indication for the use of the pessary. In case of prolapse in old women the indication is particularly strong when there is extensive ulceration of the everted and thickened mucosa covering the cervix or vagina, so that the danger of malignancy becomes a real one. The type of pessary best suited for complete prolapse is some form of ring pessary made of hard rubber. A rather large ring is usually necessary, although the size must of course be adapted to the individual case. In many cases in which, on purely physical grounds, operation is indicated clearly enough, but in which the patient simply cannot or will not submit to radical measures, the pessary may be worn as a temporary measure until the necessary operative procedure can be carried out. As a test to determine the pathological importance of retrodisplacements the pessary is often an aid. There are three chief contraindications to the employment of pessaries in the treatment of retrodisplacements: (1) the inability to replace the uterus to at least approximately its normal position before inserting the pessary; (2) the existence of a marked degree of perineal relaxation; and (3) the existence of chronic pelvic inflammatory disease.

460.

#### Treatment of Placenta Praevia.

ACCORDING to H. GÄNSSLE (*Arch. f. Gynäk.*, March 17th, 1923, p. 120), it is the standpoint of the Universitäts Frauenklinik at Tübingen to regard Caesarean section as the ideal method of treatment of placenta praevia provided (1) the child be living and viable, (2) there are no signs of manifest infection at the time of admission. Within these limits, and with the exclusion of cases of lateral placenta praevia (with slight bleeding, good uterine contractions, and vertex or breech presentation), for which rupture of the membranes is carried out, all cases—even those which have been examined or have had a vaginal tampon inserted before admission—come to Caesarean operation, the intraperitoneal cervical incision being preferred during the last eight years. Vaginal delivery has been attended with 8.6 per cent. maternal and 54.3 per cent. foetal mortality; for an equal number of Caesarean sections the mortalities—maternal and foetal—were each 6.4 per cent. If the foetus be dead the treatment carried out depends entirely on the acuteness and severity of the haemorrhage; in cases of placenta praevia causing bleeding at a time when viability of the infant is doubtful mild cases are treated expectantly, and more severe haemorrhage as a rule by vaginal delivery, which is accompanied by less risk of damage of the lower uterine segment than is the case towards term. Even with a non-viable foetus dangerous haemorrhage, complete absence of cervical dilatation, and primiparity are conditions which may impel to Caesarean section.

461.

#### Treatment of Fibroids.

L. F. DRIESSEN (*Nederl. Tijdschr. v. Geneesk.*, April 28th, 1923, p. 1760) states that the principles of treatment in fibroids which give rise to serious symptoms are as follows: Operation is required (1) for large fibroids extending above the umbilicus; (2) pedunculated submucous or subserous fibroids; (3) in women under the age of 40; (4) in cases of doubtful diagnosis, especially if malignancy is suspected; (5) in pregnancy. Radiotherapy, on the other hand, is indicated in the following cases: (1) intramural fibroids in women before the climacterium; (2) all cases in which a surgical operation is dangerous owing to visceral disease, diabetes, etc. Prior to 1914 Driessen operated on 111 cases of fibroids, in 19 by supravaginal amputation, and in 92 by total extirpation, with 9 deaths, which were due in 3 cases to cardiac degeneration, in 2 to pneumonia, in 3 to haemorrhage during or after the operation, and in 1 to peritonitis following pyosalpinx. Since 1914, the year in which he commenced radiotherapy, he has treated or seen in consultation



314 cases. In 177 of these, or 56.4 per cent., radiotherapy was employed; in 66, or 21 per cent., an operation was performed; 21, or 6.6 per cent., were curetted only; and 50, or 16 per cent., were treated with ergot only. Fourteen cases which were treated at first by radiotherapy subsequently underwent operation; 2 of these were fatal, but the operation in each case was carried out against Driessen's advice. Since he has adopted radiotherapy Driessen has not had a single death among his patients.

#### 452. Pelvic Varicocele.

G. COTTE and D. JEZDITCH (*Gynéc. et Obstét.*, 1923, vii, 3, p. 205) summarize the clinical features which have been claimed to be characteristic of varix in the venous plexuses of the infundibulo-pelvic and broad ligaments; multiparæ of about 30 to 35 are usually affected, and complain of pain in the loins and lower part of the belly, aggravated by the erect posture, by expulsive efforts, of defæcation, and by sexual excitement; in addition, according to Castaño, congestion of the vulvo-vaginal region leads to increased sexual appetite, but at the same time to dyspareunia. From an analysis of their cases the authors conclude that this characteristic symptomatology is present in a minority of cases only; the sole certain sign by which pelvic varicocele is susceptible of diagnosis consists in palpation of the varix in a vaginal fornix and the observation that its size is augmented when the patient stands up—a finding that is rare, possibly because it is not often sought. In two cases in which the clinical features pointed to pelvic varicocele the authors found at operation fibrocystic ovarian disease. They conclude that the syndrome described by Castaño and others is due to varied forms of pelvic congestion, of which varicocele is an occasional cause. With regard to treatment, by operation, Cotte and Jezditch prefer to make the venous resection in the region of the infundibuliform rather than the broad ligament and to combine it with ligamentary fixation of the uterus, which, if not displaced, shows a pathological degree of motility. In many cases treatment, more or less radical, of coincident morbid adnexal conditions constitutes an important part of the operation, and calls for the exercise of considerable judgement.

### Pathology.

#### 453. The Blood in Malaria.

CH. GARIN and AFFRE (*Lyon Médical*, April, 1923, p. 327) record observations on the blood in a series of cases of malaria. Dealing first with the red corpuscles, they find that these are the first elements to react to the infection. They note poikilocytosis and anisocytosis (inequality of diameter between different corpuscles), the latter particularly in prolonged attacks and in cases of severe anaemia. Specially large corpuscles appear beside very small ones, indicating active regeneration. Haemoglobin was practically normal, although this observation is not in agreement with the views of other investigators. A constant diminution in the number of red cells was found, but it was extremely variable in degree. It yielded rapidly to treatment, particularly at high altitudes, where, in some cases, the normal was exceeded, but the numbers fell again by about a million per cubic millimetre on return to lower levels. In individuals who had spent prolonged periods in malarial regions both the red cell count and the haemoglobin index were found to be below normal, even after two years' residence in a European climate and despite the absence of parasites in the blood. Reviewing the work of different observers, the authors are of opinion that the globular resistance of the red cells is increased in malaria, especially between the attacks. They regard this as a defensive effort against the parasite. Among abnormal forms basophil granular types were found to be frequent (said by Plehn to be diagnostic) and filamentous modifications were never absent, and were more numerous after an attack. On the other hand, nucleated red cells were extremely rare. In regard to the white cells, the authors dispute the generally accepted presence of a leucopenia. On the average, in some thousands of cases, an increase of 800 leucocytes per cubic millimetre accompanied the attack, and often there was even a hyperleucocytosis, though this was relatively small and of short duration. In a comprehensive series of differential counts there was a constant increase of mononuclear cells, more marked in the interval between attacks; there was also a very slight increase in eosinophils, whilst the onset of an attack coincided with an increase of neutrophil polymorphs amounting to almost 1,000 per cubic millimetre—about five times the increase observable in mononuclear white cells. This was detectable in the hours preceding an attack, and fell again during the course of the latter, and the authors consider it as of equal diagnostic value for preventive treatment as the actual presence of the parasite in the blood. Other forms observed were myeloid (7 per cent.), especially

granular myelocytes, rarely myeloblasts. The presence of melanotic leucocytes is described as being rare in primary malaria, but frequent in chronic cases. It is probable, suggest the authors, that malarial blood contains substances antagonistic to the haemolytic action of the parasite—a possible form of immunity. The suggestion is put forward that a study of the reactions of deviation of complement might prove of value from a diagnostic point of view, although so far investigation has been fruitless. In conclusion, the authors note the marked discrepancy in results obtained by the Wassermann reaction as seen in malaria.

#### 464. Influence of Sodium Salicylate upon Arthritis.

H. F. SWIFT and R. H. BOOTS (*Journ. Exper. Med.*, April, 1923, p. 553) record a series of experiments conducted on rabbits with a view to demonstrating the influence of sodium salicylate on an experimentally produced streptococcal infection. The work is of interest in view of the generally accepted theory that rheumatic fever is an infection, although its exact nature is not precisely known. The rabbits were inoculated intravenously with non-haemolytic streptococci and sodium salicylate was administered by a stomach tube; control animals, to whom no salicylate was given, were similarly inoculated. Though it was found that almost as many inflamed joints developed in each case, the rabbits which received salicylate presented a much greater proportion of mildly inflamed joints than did the controls. The evidence indicated, therefore, that salicylates modified the inflammatory reaction in a favourable manner, and the observers suggest two possibilities as to the mode of action. The first is that the drug, though of necessarily weak antibacterial strength, is sufficiently strong to reinforce the normal antibactericidal agencies of the body and cause a more rapid destruction of bacteria in the affected joints. The second possibility is that salicylate, by direct action on the tissues, lowers their power of reaction to the organisms. Certainly, animals to which salicylate had been administered developed fewer immune bodies than the controls. The authors do not consider themselves justified in claiming that there is any conclusive evidence that a non-haemolytic streptococcus is the specific causal agent in rheumatic fever. The acute arthritis developed experimentally was never inhibited nor cured, as in patients suffering from that disease to whom salicylates have been administered; it was of much greater severity and was frequently associated with purulent inflammation of the muscles in the neighbourhood of the affected joints.

#### 465. Glycaemia in Cancer of the Intestinal Tract.

LE NOIR, M. DE FOSSEY, and C. RICHEL (*Bull. et Mém. Soc. Méd. des Hôpitaux de Paris*, May 3rd, 1923, p. 609) measured the fasting glycaemia and the glycaemia provoked by ingestion of 50 grams of glucose on a group of 31 cases of cancer of the intestinal tract—stomach, rectum, and oesophagus. In 5 early cases the fasting glycaemia was normal. In 26 more advanced ones it was normal in 15. As regards the hyperglycaemia provoked by the administration of glucose, the curve obtained was normal in 4 out of the 5 early cases and in 12 out of the 26 more advanced cases. It appears that in early cases there is no disturbance of the sugar in the blood. Later, about half of the cases show hyperglycaemia—either fasting or induced. In the final stages of the disease the hyperglycaemia tends to disappear and the curve becomes normal again. From a diagnostic point of view, then, the study of glycaemia is of no value. From a prognostic standpoint a positive glycaemia indicates that the disease is moderately advanced, while, if the glycaemia be within normal limits, it is probable that the cancer is still in the early stages and should be amenable to surgical interference.

#### 466. Giant-celled Tumour of Achilles Tendon.

R. OLLERENSHAW (*Brit. Journ. of Surgery*, April, 1923, p. 465) reports the case of a patient with bilateral tumours situated over the tendo Achillis. The skin over the tumours was a little darker than normal and in the skin of the right arm there was a patch of xanthelasma. The tumours were removed, and, on microscopical examination, showed, among the tendon fibres, areas where giant cells were present in considerable numbers. Similar tumours arising from tendon sheaths have been described as sarcomata, myeloxanthoma, and by other names. The presence of plaques of xanthelasma in other parts of the body suggested the probability of a xanthic constituent in these tumours, each of which arose from the tendon itself, as there is no tendon sheath in this situation. It appeared from sections that there was a lipid material present in spaces seen in the tumours around which the giant cells were grouped, and that these giant cells were engaged in the removal of this abnormal material. The tumours were probably benign in origin, and there has been no recurrence after three years. A second patch of xanthelasma has, however, appeared on the left arm.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### 467. Treatment of Convulsions in Childhood.

O. BOSSERT (*Klinische Wochenschrift*, April 16th, 1923, p. 749) records his experience of the treatment of convulsions in children. He recommends first a dose of castor oil. All sources of external irritation should be avoided, and a sedative given; the author specially recommends chloral hydrate (for a child of 4 to 6 months of age he recommends 0.5 gram of chloral hydrate, with mucilage and water up to 25 c.cm., given as an enema). After a quarter of an hour the child usually falls asleep, but if not, then the enema may be repeated in an hour. Magnesium and calcium salts are believed to diminish nervous irritability, and a subcutaneous or intramuscular injection of pure magnesium sulphate dissolved in recently distilled and sterilized water often causes a permanent improvement as regards the convulsions. This injection may be given once daily for several days. In place of magnesium sulphate injections, calcium salts may be given by the mouth. Human breast milk feeding tends to prevent convulsions, and therefore should be advised in the case of children under the age of 6 months. In the whey of animal milk salts are present, the author believes, which tend to cause convulsions. Many children are so sensitive to their influence that even small quantities of animal milk cause convulsions. Hence animal milk should be excluded from the diet at first. But in young children a milk-free diet can only be continued for a few days, hence medical treatment is necessary, so that animal milk may be soon added to the diet. In children over 6 months old a mixed diet may be given. Phosphorated cod-liver oil is of service. In true epilepsy the mixed bromides are recommended. Salt in the diet should be restricted. If bromides fail, a combination of luminal and bromides is suggested. In certain minor forms of epilepsy caffeine has been found useful.

### 468. Treatment of Leprosy.

P. N. ORTIZ (*Bol. de Asoc. med. de Puerto Rico*, March, 1923, p. 27) says that in his experience ethylic ethers are superior to other drugs hitherto employed in the treatment of leprosy. The products at present on the market include the following: crude chaulmoogra oil, soda morrhuate and gynocardate in 3 per cent. strength (Rogers) for intravenous use, antileprol (the commercial name for the original ethylic ethers, which is sold in capsules of 1 gram each for use internally), ethylic ethers and fatty acids with 2 and 2½ per cent. of iodine respectively, and chaulmestrol, the name given to ethylic ethers prepared without iodine. Intramuscular injection, although it gives good results, especially in young and otherwise healthy patients, has the disadvantage of being a slow and painful method, and absorption takes place with difficulty in patients who are in an advanced stage of the disease. The form which responds least to treatment is the purely nervous variety of leprosy. Forty cases were treated by Ortiz in accordance with the method recommended by J. T. McDonald of Hawaii, a maximum dose of 5 grams a week in adults and 3 grams in children being used. In 7 cases the treatment had to be abandoned owing to intolerance; 9 showed considerable improvement, 11 slight improvement, and 11 (8 of whom were of the nervous type) remained *in statu quo*. Ortiz points out that the leprosy bacillus is slow in disappearing from the system, and that only a prolonged treatment is able to destroy it. Some persons who are free from any lesion and are apparently cured may harbour the germ. A nasal discharge, which is found to be repeatedly negative on bacteriological examination, does not exclude the possibility of highly active latent foci.

### 469. Can Salvarsan Create a Positive Wassermann Reaction in the Non-syphilitic?

H. BOAS and A. KISSMEYER (*Ugeskrift for Læger*, March 29th, 1923, p. 221) have investigated the claim made in 1920 by Strickler and others that in certain non-syphilitic persons the injection of arsphenamin may provoke a positive Wassermann reaction. The authors point out that while an injection of salvarsan may sometimes activate the Wassermann reaction in the subjects of syphilis, the provocation of a positive Wassermann reaction in the non-syphilitic by salvarsan is quite another matter, which requires critical investigation before it can be accepted as a dogma. They have come to the conclusion that there is no foundation for this teaching.

They selected 50 non-syphilitic patients, and gave old salvarsan to 7, neo-salvarsan to 6, silver-salvarsan to 26, and neo-silver-salvarsan to 11. The disease from which these patients were suffering was gonorrhoea in 39 cases; the remaining 11 cases were represented by a mixed assortment of skin diseases. From one to five injections of salvarsan were given, and the Wassermann test was carried out once a week. It was invariably negative, whether it was carried out before, during, or after salvarsan treatment.

### 470. Dementia Praecox.

W. S. DAWSON (*Journ. Mental Science*, April, 1923, p. 182) studied in fifty cases the disorders of dementia praecox from the standpoints of (1) general development, skeletal growth, degeneration stigmata, and atavistic signs; (2) myxoedematous changes; (3) sluggish circulation and cyanosis; (4) pulse rate, blood pressure, and oculo-cardiac reflex; (5) dysgenitalism; (6) growth and distribution of hair; (7) obesity; (8) Goetsch's reaction; (9) the pilocarpine test; and (10) the thyroid function test. There was no marked departure from the normal in physical development, and the presence of stigmata and atavistic signs was infrequent; such bodily changes as might be due to hypofunction of the gonads were uncommon; and though gross signs of thyroid disorder were rare, minor signs of hypothyroidism and hyperthyroidism were observed. In all cases reacting strongly to pilocarpine the pulse was reduced in frequency, no case showing an increase. Definite sympathetic hyperexcitability was demonstrated by the Goetsch reaction in one case only, although eighteen others gave a moderate reaction, which was, however, within normal limits. Disorders of the vegetative nervous system appear to be responsible for the chief manifestations of dementia praecox, and the high proportion of vagotonics, many of whom showed evidence of adrenal inadequacy, suggest that the vagotonia is relative rather than absolute, being due to sympathetic adrenal hypofunction. An excess of choline resulting from breakdown of lipoids may also set up vagotonic symptoms. Of the 50 cases 27 were katatonics, 14 simple dementia praecox, 7 paranoid, and 2 were hebephrenics.

### 471. Prophylaxis of Mumps.

A. CHALLAMEL (*Bull. Soc. de Thér.*, April 11th, 1923, p. 97), as the result of his experience, maintains that the duration of the incubation period in mumps is usually twenty days and that the period during which the patient is contagious is very short, being sometimes only a few hours preceding the outbreak of the first symptoms, but usually including the first few days of the disease. He therefore recommends that persons exposed to infection should continue their normal mode of life for nineteen days after the first exposure, but should be isolated for twenty-four hours from the nineteenth to the twentieth day. He considers that this isolation of contacts will be the only effective method of prophylaxis until mumps carriers can be detected by bacteriological examination.

### 472. Is Salicylic Acid a Specific in Rheumatism?

R. EHRSTRÖM and J. WAHLBERG (*Finska Läkarsällskapets Handlingar*, January-February, 1923, p. 15), while admitting the heresy implied by this question, point out that since salicylic acid was introduced in 1876 by Kolbe in the treatment of articular rheumatism, this drug has steadily maintained its reputation for being a specific remedy. But if it were truly a specific, it should appreciably reduce the incidence of rheumatic endocarditis in the cases in which it is given. But does it? To answer this question Wahlberg has searched the records of his hospital from 1842 to the end of 1920. In this period 51,811 patients were treated, and 1,072 of them suffered from heart disease of presumably rheumatic origin. Cases of heart disease due to arterio-sclerosis or syphilis were eliminated, as were also all patients over the age of 40, even when their heart disease was associated with a history of polyarthritis. Cases of renal disease were also eliminated, and thus the 1,072 cases of heart disease must, in the overwhelming majority of cases, have been of rheumatic origin. The frequency of these cases varied considerably from year to year; they represented only 0.3 per cent. of all the cases treated in 1853, and 6 per cent. of all the cases treated in 1911. Between these extremes the incidence of rheumatic heart disease varied considerably. But when the pre-salicylic acid era was compared with the post-salicylic era, it was obvious that the frequency of heart disease associated with polyarthritis had certainly



not diminished with the introduction of salicylic acid treatment of polyarthritis. The authors conclude that the heart disease in such cases is the primary lesion, and the attacks of polyarthritis are mere incidents—short-lived exacerbations of a chronic disease which may have begun many years before the first appearance of arthritis. Salicylic acid has a beneficial, symptomatic effect on these articular exacerbations, just as it has on arthritis of non-rheumatic origin and on the pleurisy of tuberculous origin. But it probably does not touch the root of the rheumatic disease.

#### 473. Trypaflavine in the Treatment of Encephalitis Lethargica.

BUSS (*Deut. med. Woch.*, April 13th, 1923, p. 476) has been giving trypaflavine for the past two years in cases of lethargic encephalitis. His first patient was a servant girl, who suffered from severe headache, cervical rigidity, loss of consciousness, and paralysis of certain muscles of the eyes. On the second day of the disease 5 c.cm. of a 0.5 per cent. solution of trypaflavine were injected intravenously, and this treatment was continued daily for ten days. On the seventh day the patient recovered consciousness. She took, however, seven weeks to recover completely, and lost all the hair of the scalp. Five weeks after discharge she was found to be perfectly well. Since then the author has treated all his cases of epidemic encephalitis with intravenous injections of trypaflavine, repeating the injections daily, and giving first 5 and later 10 grams of a 0.5 per cent. solution for a period of six to eight days. The results in all his nine cases of severe and very severe encephalitis were excellent. Only in one case did this treatment fail, and when a necropsy was performed, the case proved to be one of meningitis with suppuration, and not one of encephalitis. The earlier this treatment is instituted the better the immediate and ultimate results appear to be. But in one case, in which the treatment was not instituted till the sixth day in hospital, rapid recovery was effected after the trypaflavine treatment was instituted, although till then the patient had made no progress. She was discharged as cured three weeks after admission.

#### 474. Fat Diet in the Treatment of Diabetes Mellitus.

L. H. NEWBURGH and P. L. MARSH (*Arch. Intern. Med.*, April, 1923, p. 455) draw attention to the very apparent evils associated with the severe under-nutrition treatment frequently employed, in conjunction with other measures, in cases of diabetes mellitus. They have attempted (as others have done) to construct a diet which would control the diabetic state, and also avoid these evils, by deriving the major portion of the calories of the diet from fat. In the first place they endeavoured to demonstrate that the use of such a large quantity of fat was safe; 190 cases were treated, but for various reasons the results could only be based on 176 of these cases. The diet given contained a large amount of fat, and only a small amount of protein and carbohydrates. It was a diet of 900 calories, derived chiefly from fat. The conclusions which the authors draw from these observations are: (1) That such a diet checked the glycosuria and kept the urine free from sugar; (2) that it was not attended by acidosis; (3) that it maintained the nitrogen balance; (4) that it did not cause a hyperlipidaemia; (5) that it supplied sufficient energy to avoid the evils of fasting and under-nutrition, and permitted an amount of activity compatible with earning a livelihood; (6) that within the limits of their observations it was not attended by downward progress in uncomplicated cases.

#### 475. Klippel-Feil's Syndrome.

VASILESCU and ST. NICULESCU (*Bull. et Mém. Soc. Méd. des Hôpitaux de Bucarest*, January 31st, 1923, p. 13) record a case of this rather rare condition. A soldier, aged 21, was admitted to hospital in September, 1922, suffering from pleurisy. He had had polyarticular rheumatism and malaria, but no other serious illnesses. Apart from the pleurisy he was a healthy, well developed man, with apparently no neck, his chin resting on his manubrium. Head movements were very limited, lateral rotation did not exceed 45 degrees, but movement was not painful and there were no trophic changes. There was no family history of deformity. The Wassermann reaction was negative. A skiagram showed that the bodies of the second to the fifth cervical vertebrae were compressed from above downwards and formed a solid mass; no intervertebral cartilages could be seen except those between the first and second and the fifth and sixth vertebrae. There was no spina bifida. It is stated that this deformity is more common in males than in females (10 to 3). The etiology of Klippel-Feil's syndrome—"neckless men" (Dubrueil-Chambard)—is unknown. Klippel and Feil ascribe it to arrest of development or some injury during foetal life or early infancy. It approximates to the "numerical atrophy" due to spina bifida, which is often found at the level of the segment involved.

## Surgery.

476.

#### Treatment of Flail Ankle.

A. STEINDLER (*Journ. of Bone and Joint Surgery*, April, 1923, p. 284) points out that flail ankle is one of the many difficult problems confronting the orthopaedic surgeon in his treatment of paralysis, and various methods of stabilization of this joint have been advocated and practised in many clinics. Davis performs a subastragaloid section, with backward displacement, by which means a complete fixation of the astragalo-calcaneal joint is accomplished. Hoke, in addition to fixation of the latter joint, also arthrodeses the astragalo-scapoid articulation. Soule advocates fixation of the astragalo-scapoid joint only. The complete fixation of both ankle and subastragaloid joints is carried out chiefly by Whitman's operation of astragalectomy with backward displacement, which usually results in a fibrous fixation of tibia to os calcis. The operation devised by Sir Robert Jones, and known as his "two stage" operation, also aims at fixation of both ankle and subastragaloid joints. It is evident, therefore, that Steindler is not putting forth any fresh idea in advocating panastragaloid arthrodesis, but is simply demonstrating another operative method of stabilizing both ankle and subastragaloid joints. The operation is carried out through a curved incision passing behind and below the outer malleolus. After division of the peroneal tendons and calcaneo-fibular ligament the joint is opened and the foot forcibly adducted, so that the upper surface of the astragalus and the tibio-fibular mortise are exposed to view. The articular cartilage is completely removed from the joint surfaces, and by upward retraction of the astragalus from the inferior joints also. The astragalo-scapoid joint is also dealt with in a similar manner. The cut ends of the peronei are united, the wound closed in layers, and a tissue drain left in for twenty-four hours. Plaster-of-Paris fixation is carried out with the foot in normal alignment and with 20 degrees of plantar flexion. The foot which is suitable for such a method is clearly a complete "dangle" foot associated with no deformity and with moderate knee flexors. The resulting fusion, with rare exceptions, is completely bony, as is well shown by radiograms. A firm and painless gait is the usual end-result.

#### 477. Treatment of the Ill Effects of Lumbar Puncture.

H. C. JACOBÆUS and K. FRUMERIE (*Acta Med. Scand.*, April 10th, 1923, p. 102) suggest that the ill effects of lumbar puncture—headache, vomiting, nausea, and giddiness—are probably due to continuous leakage of the cerebro-spinal fluid through the puncture in the lumbar region, and they record two cases to show how dramatically successful the intraspinal injection of saline solution may prove. This idea came to both authors simultaneously and independently, and they believe that it is of great value in counteracting the often distressing sequels to lumbar puncture. In their first case the patient was almost moribund as the result of spinal decompression from leakage of cerebro-spinal fluid. Two days after the first puncture the operation was repeated, and hardly a drop of cerebro-spinal fluid could be obtained. After the injection of 16 c.cm. of saline solution the pressure, which had been only about 1 cm., rose to 6 cm., and the pulse rate, which had been about 50 to 60, rose to 80. By the time 90 c.cm. of saline solution had been introduced the pressure was 25 cm., and the pulse rate 120; it fell to 96, and the pressure to 18 cm., when about 2 c.cm. of saline solution were withdrawn. The patient rallied even during this injection, and her recovery was so rapid that next day she was as well as ever. The authors supplemented this treatment by raising the foot of the patient's bed, and they suggest that this simple manoeuvre explains why the leakage did not proceed after the second lumbar puncture. Their second case was equally successful.

478.

#### Intussusception.

ALGLAVE (*Bull. et Mém. Soc. de Chir. de Paris*, March 20th, 1923, p. 450) draws attention to certain points which he has noted in connexion with intussusception—first, with regard to the etiology of the condition; secondly, respecting the cause of the early irreducibility met with in certain cases. In the ileo-caecal type it is generally asserted that the free mobility of the gut is necessary for this variety of intussusception to take place, and the fact of this mobility being more marked in the child than the adult is why ileo-caecal intussusception is more often seen in children. He considers that these conditions are not necessary for the production of the ileo-caecal variety, and that it may be found when the ileum and caecum are firmly fixed to the posterior abdominal wall. He records the case of a male, aged 40, where, although the gut was firmly fixed, an ileo-caecal intussusception was found and the ileum was twisted in



a spiral fashion, rendering reduction impossible. He considers that suturing the gut to the posterior abdominal wall will not prevent a recurrence of the condition. Further, he finds that the mobility of the caecum is not more marked in the young child than in the adult. The causation of the early irreducibility of an enteric intussusception he has found to be due to the plecting up of the invaginated bowel, which he likens to an accordion. In one case of the enteric variety where this was marked, at a post-mortem examination the intussusception appeared to measure only 9 or 10 cm., but when it was drawn out it was found to measure 35 cm. The plects may be particularly close round the neck of the intussusception, showing the force with which the condition is induced. Where cases of this nature are met with it may be necessary to carry out a resection of the intussusception immediately.

#### 379. Colostomy in Intussusception.

A. GOTTESLEBEN (*Zentralbl. f. Chir.*, March 17th, 1923, p. 438) describes a method of operation which was employed successfully in the case of a child, aged 16 months, suffering from intussusception, the operation taking place at least thirty-four hours after onset. Reduction was effected without difficulty, after which a Witzel's oblique fistula was made, the tube being passed through a small incision in the anterior longitudinal band of the caecum, and introduced sufficiently far to allow the inner extremity to be guided through the ileo-caecal valve into the ileum. The child was very ill for two days; vomiting was treated by gastric lavage; the lower ileum was irrigated through the tube. On the third day the intestines had recovered their motility, and thereafter the general condition improved rapidly. The tube was removed ten days after operation and the fistula closed spontaneously a fortnight later. The author considers that the establishment of such a fistula reduces the danger of paralytic ileus following the operation, and also that recurrence is prevented by the subsequent adhesions; he advises that the method be adopted not only after successful reduction of an intussusception, for these reasons, but that it be employed also as a palliative measure where reduction cannot be effected, and the general condition of the patient is too poor to allow of resection.

#### 380. Myositis Ossificans.

D. LEWIS (*Journ. Amer. Med. Assoc.*, May 5th, 1923, p. 1281) has observed two cases in which bone developed in incisions of the abdominal wall. In one case a posterior gastro-enterostomy had been performed for duodenal ulcer. The post-operative course was uncomplicated. The patient left the hospital thirteen days after the operation much relieved, the pain and distress following the taking of food having completely disappeared. Three weeks after the operation he noticed some tenderness in the scar, so marked that he could not wear a belt without considerable distress. Seven weeks after the operation a definite mass, measuring a fingerbreadth or more in width, could be felt along the entire length of the scar. This mass was of the consistency of bone, and the x-rays cast a definite shadow. This mass was not removed. The patient was lost sight of, and the final outcome cannot be stated; the mass was, however, decreasing in size. In the second case myositis ossificans developed in the muscles of the lower abdomen following a suprapubic prostatectomy. In four cases the myositis ossificans followed injuries about the elbow, developing most frequently after posterior dislocations. The differential diagnosis is discussed at length. In the etiology of myositis ossificans different factors play a part. No one theory will explain all cases. Myositis ossificans developing in the abdominal wall in clean incised wounds, where there is no possibility of any injury to periosteum or bone, is apparently due to the metaplasia of connective tissue, fascia and muscle in contact with acid secretions becoming converted into bone. It is striking how many cases of myositis ossificans in the abdominal wall have followed operations on the stomach, either a gastro-enterostomy or resection. Myositis ossificans developing after dislocations is apparently due to periosteal stripping and displacement. The ossifying myositis occurring in fractures associated with considerable movement of the fragments, such as the pathological fractures occurring in tabes, demonstrate better than any other lesion the part played by periosteal stripping and displacement in myositis ossificans.

#### 381. Apoplexy following Nitrous Oxide Anaesthesia.

E. CHABROL (*Bull. Soc. de Thé.*, February 14th, 1923, p. 52) records the case of a woman, aged 50, who developed symptoms of cerebro-meningeal haemorrhage after an operation for epithelioma of the breast, in which nitrous oxide was the anaesthetic used. The operation was a difficult one, owing to the presence of numerous metastases, and the patient was kept under the anaesthetic for an hour and a quarter. About

three hours after the operation she came round from the anaesthetic, but almost immediately afterwards sank into a deep sleep. The following day spastic left hemiplegia developed, and, in spite of bleeding and leeching, death took place thirty-two hours after the anaesthetic. Apart from Paget's disease of the nipple, which had preceded the epithelioma of the breast for several years, the patient had always enjoyed good health. A week before the operation the heart, blood pressure, and urine were found to be normal and the Wassermann reaction was negative. A few hours after the anaesthetic 100 c.cm. of urine were obtained and found to contain a trace of albumin. Examination of the blood serum a few hours before death showed 1.15 grams of urea per litre. Commenting on the case, Chabrol remarked that Chevassu and Rathery, at the Congress of Urology at Strasbourg in October, 1921, had emphasized the danger of nitrous oxide anaesthesia in patients with hypertension. In the administration of this anaesthetic the probable duration of the operation and the age of the patient should be taken into consideration. In operations of short duration laughing gas deserved the reputation it enjoyed in dental practice, but in operations likely to last an hour or more cases of this kind should serve as a warning. The age of the patient was of importance and was a more valuable guide than the best blood-pressure apparatus, inasmuch as it indicated the possibility of localized vascular sclerosis, which, as in the present case, was not always revealed by the peripheral blood pressure.

## Obstetrics and Gynaecology.

#### 392. Symptoms of Intracranial Haemorrhage in the Newborn.

ACCORDING TO J. RHENTER and H. EPARVIER (*Journ. de Méd. de Lyon*, April 5th, 1923, p. 209), intracranial haemorrhage is more frequent than is commonly supposed among living newborn children; in addition to the large effusions of blood, characterized clinically by the classic signs of convulsions, general or localized, and of paralysis of a limb or limbs, smaller haemorrhages reveal themselves by less striking signs, but can be diagnosed with certainty if blood be found in the cerebro-spinal fluid after lumbar puncture. Seven cases of the latter category are recorded; in two labour was completed spontaneously, and in two the infants appeared at birth to be healthy and vigorous. The symptoms which aroused suspicion of meningeal haemorrhage and led to lumbar puncture being done appeared within forty-eight hours in all but one child; three had slight convulsive movements, confined in one to the eyelids; two showed rigidity of the neck; one increased tension at the anterior fontanelles; one cyanosis and dyspnoea; one showed bradycardia; four cried almost continuously. Of the seven cases two were fatal, including one of spontaneous delivery in a normal pelvis; in both lumbar puncture gave almost pure blood. In nearly all cases lumbar puncture is the most valuable therapeutic as well as diagnostic procedure; puncture of the fontanelle has been recommended, but trephining should be reserved for cases of grave haemorrhage with signs permitting of precise localization. The paper records one autopsy only at which two tears were found in the tentorium cerebelli; the after-history of the surviving infants is not known.

#### 393. Correction of Deformity in Flat Pelvis.

G. FOSSATI (*Annali di Ostetricia e Ginecologia*, March 31st, 1923, p. 141) writes favourably of the Costa operation of partial symphysectomy and of Rotter's excision of a portion of the sacral promontory. Both procedures have as their object a permanent shortening of the antero-posterior diameter of the inlet in flattened pelvis; and in two cases recorded in the present paper Fossati combined the two operations, as suggested by Giglio. The true conjugate measurements were respectively 7.5 and 7.6 cm. Transperitoneal Caesarean section having been accomplished, thicknesses of the sacral promontory amounting respectively to 1 and 1.3 cm. were excised, and after closure of the peritoneum a crescentic section of tissue was cut off the postero-superior aspect of the pubic symphysis. The combined operation, in common with the components, is applicable only in cases in which the pelvis is flat, and in which this deformity is the sole cause of dystocia. By combining the two excisions of bone a larger total amount can, it is claimed, be added to the diameter of the pelvic inlet (without risk of weakening the pelvic girdle) than is the case with either operation singly. No difficulty in walking followed in either patient. The Rotter and Costa operations have each been restricted to pelvis of 7.5 cm. true conjugate; it is suggested that the combined operation may be carried out in cases of more marked flattening.



**484. The Etiological Significance of Pregnancies and Labours in Cancer.**

S. PÉLLER (*Arch. f. Gynäk.*, March 17th, 1923, p. 59) quotes British, Italian, and other statistics of mortality as showing that there is no direct relation between fertility and incidence of cancer of the genital organs. From analysis of the last ten years' records of the Universitäts Frauenklinik at Vienna he concludes that the incidence of carcinoma is not favoured by the occurrence of numerous abortions or pregnancies; the essential etiological factor is the rate of their occurrence—a small interval between repeated gestations favours and a longer interval is against the occurrence of cancer of the genital tract. The earlier incidence of cancer among those who have aborted is to be ascribed not to the abortions but to the more rapid succession of conceptions and pregnancies among this class.

**485. Death from Obstetrical Shock.**

J. JIMÉNEZ (*La méd. Ibera*, May 12th, 1923, p. 412), who records an illustrative case, states that obstetrical shock, like surgical and traumatic shock, may be due to various causes. Sometimes it is produced by a uterine reflex originating in the cervix as the result of pressure by the foetal head, the mechanism being similar to that which takes place on introduction of a sound or laminaria tent into the cervix. This cause—uterine reflex—is most likely to be found in women of a neurotic temperament, especially if there are pre-existent lesions in the cervix. Another important cause of obstetrical shock is the toxic factor, which comes into play in cases of difficult labour, when an operation or some other form of traumatism has taken place with death of the foetus and infection of the ovum. In the present case, which occurred in a multipara aged 30, neither of these causes was at work, but death was probably due to sudden decompression of the abdomen similar to that which occurs on rapid evacuation of ascites or a distended bladder. The circumstances present in this case were a large uterine cavity with a big foetus and placenta, and a considerable quantity of amniotic fluid, combined with atony of the abdominal wall. The result was that there was a rapid flow of blood to the abdominal cavity and a bulbo-cerebral ischaemia, which was the cause of the fatal shock.

## Pathology.

**486. Eosinophilic Cells.**

A. J. HINKLEMAN (*New York Med. Journ. and Med. Record*, April 18th, 1923, p. 465) investigated the clinical significance of the eosinophilic cells of the blood by studying the numerical relationship of the white cells. While normally such cells are never present in the same sense that lymphocytes and polymorphonuclear leucocytes are, they are always in evidence either during disease or unusual activity of certain tissues, or during direct action upon the blood-making organs of certain toxins chemotactic for this particular cell. In inflammatory processes those tissues which have direct and open connexion with the circulation, and in which infection threatens life (eosinophilic negative tissues—for example, the appendix, peritoneum, pleura), do not liberate positive chemotactic elements to stimulate the blood-making organs to an increased eosinophile production, and the existing eosinophiles, being attracted to the inflamed area, tend to become taken out of the circulation. Those tissues in which the route to the circulation is less direct and open, and in which inflammations are more passive and only indirectly threaten life (eosinophilic positive tissues—for example, the skin, muscles, kidneys), liberate positive chemotactic elements which stimulate the blood-making organs to an increased production of eosinophiles, so that the usual eosinophile count may remain normal or may be increased.

**487. The Pathology of the Angio-neuroses.**

C. KREIBICH (*Klin. Woch.*, February 29th, 1923, p. 337) discusses the pathology of various angio-neurotic phenomena—a subject in which interest has recently been stimulated by the results of the Leriche-Brüning operation of periarterial sympathectomy. Cassirer concluded, on clinical grounds, that the vasomotor-trophic neuroses were irritative, and not paralytic, phenomena, and were of the nature of reflexes. He assumed a trophic influence on the endothelial and connective tissue cells, communicated through vasomotor, not special trophic nerve fibres. The present author thinks that the assumption of trophic influence may be found to be unnecessary. Cell death may be brought about by vasomotor anaemia, due to the vessel wall being so influenced through vasomotor nerve fibres that it is unable to withstand tissue or exudate pressure. Such a vasomotor anaemia differs from an external pressure anaemia, which never causes necrosis

in so short a time. Vasomotor anaemia, however, does not always lead to necrosis—as, for example, in urticaria porcellanea. Necrosis ensues when the vessel wall is suffering from something of the nature of nervous shock or collapse. Slight irritation leads to hyperaemia; stronger, to wheal formation; still stronger, to vessel collapse and tissue death. The same is true of vaso-constriction; spasm leads to various degrees of blanching, and if sufficiently intense, as in severe frost-bite or Raynaud's disease, to gangrene, with inflammation in the neighbourhood. We have therefore to keep in mind a quantitative-motor influence on the vessel wall. Certain phenomena, however, such as the herpes zoster of old people, in which slight anaemia and marked necrosis are observed, are difficult to explain on a quantitative-motor basis. It is possible that further light will come from physico-chemical investigations. It has already been shown that the difference between a wheal and inflammation is that in the latter there is a colloidal change in the endothelial cells; in a wheal there is dilatation, followed by return to the normal—the vessel wall is not damaged, as it is in inflammation. The author finds that the fluid of a wheal is blood plasma; but some observers deny that plasma passage can occur through endothelium by nerve influence without any colloidal alteration in the cells. The Leriche-Brüning operation consists in removing the adventitious coat of the brachial or femoral artery over a length of 8 cm. This part immediately contracts, and peripheral hyperaemia follows. Possibly the vaso-constrictor fibres lie deeper than the dilators. Anglo-spastic conditions have been relieved, possibly by interference with a reflex arc; whether the afferent or efferent track has been interrupted is difficult to say. (Numerous cases are mentioned illustrating the apparent independence of vasomotor manifestations from the site of the disturbance causing them—for example, cutis anserina over one side of the body after a limited burn, etc.). The author has no doubt that the operation works through the nervous system, and argues that the disturbances relieved by it must have been caused through the nervous system. It is possible that the operation may be of use in cases of psoriasis, etc., not curable by other means.

**488. The Rate of Sedimentation of the Erythrocytes in Tuberculosis in Children.**

ELISABETH DEHOFF (*Deut. med. Woch.*, May 4th, 1923, p. 578) has studied the rate of sedimentation of the erythrocytes in the blood in a considerable number of cases and has come to the conclusion that this test is of such enormous clinical importance that those who have tried it can hardly dispense with it. It is of value both in diagnosis and prognosis, and it is a useful guide to specific treatment—more so, in her opinion, than any other guide to the selection and control of cases undergoing specific treatment. The test enables the physician to follow the processes of repair and to distinguish active tuberculosis from certain other diseases. The rate of sedimentation of the erythrocytes is practically normal in simple acute and chronic bronchitis and also in bronchiectasis, provided it is not associated with tuberculosis or pneumonia. The catarrhal phenomena of the exudative diathesis also appear to have no effect on the rate of sedimentation. When this is very rapid even the most cautious specific treatment is contraindicated, and when, in the course of specific treatment, the rate of sedimentation is found to approach the normal, it may be assumed that this treatment is beneficial. For an account of the technique of this reaction the author refers to several papers, among which is Westergren's in *Brun's Beiträge*, 1921, No. 46, page 2.

**489. Does Normal Urine contain Leucocytes?**

E. PFLAUMER (*Zentralbl. f. Chir.*, April 14th, 1923, p. 585) draws attention to the fact that this question does not appear to have been definitely answered. Many textbooks of physiology avoid it altogether. Numerous works dealing with clinical methods speak of occasional leucocytes in normal urine. The author, who has practised microscopy of urine day by day for many years, states as his definite opinion that normal urine contains no leucocytes. This applies to both sexes, provided that in the case of the female the specimen is obtained by catheter. It is not denied that the urine of an apparently healthy individual may contain a few leucocytes, originating from some slight catarrh of any of the numerous glands which communicate with the urinary passages, or possibly of the bladder itself. Such a catarrh may be of no practical significance and may give rise to no symptoms; the leucocytes in the urine, however, are not to be looked upon as a normal constituent. If urine obtained directly from the renal pelvis by ureteral catheterization contains any leucocytes whatever, the kidney is not intact. The author recommends dry stained films for identifying leucocytes when scanty, as in wet preparations they may be confused with small epithelial cells.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### 492. Cutaneous Lesions due to Tar.

M. J. HUBENY (*Urol. and Cut. Rev.*, April, 1923, p. 210) says that the importance of the industries in the United States connected with the refining and manufacture of coal tar, tar oil, and their numerous products, including creosote, paraffin, vaseline, and gasoline, justifies attention being drawn to the deleterious results liable to follow the constant handling of these substances. The lesions produced on the skin vary considerably. As a rule, the more serious lesions, which are usually situated on the face and forearms, do not develop until after long exposure. Tar warts may exist for a number of years before cancer occurs, but occasionally a carcinoma develops suddenly from a papilloma of only a few months' duration. According to Schamberg and Thibierge, the forearms of those who have been working for a long time with tar products show dark brown discoloured patches with many scattered papillomata or keratomatous projections, grey, yellow, or basaltic in appearance, and resting on a slightly raised base, red in colour and covered with small pustules. There may be erythematous patches without obvious infiltration or squamous pustules. The lesions usually stop below at the wrists and do not extend above the elbows. The face and scrotum may show small keratomatous and verruciform tumours similar to those of the forearms, and extensive comedones due to plugging of the follicular and sebaceous glands. The skin all over the body may show the characters of corneal ichthyosis of moderate intensity. In four of Hubeny's cases the cubital and axillary glands presented a hard, discrete, and painless enlargement. Satisfactory results were obtained by the application of x rays to the skin lesions and enlarged glands.

### 491. Rat-bite Fever.

PELLEGRINI (*Rif. Med.*, April 16th, 1923, p. 363) has collected 29 cases (6 from his own observation) of rat-bite fever, or sodoku, occurring in Italy. In one case the bite was due to a squirrel and in another to a cat; the others were due to rats (*Mus decumanus*). There was no difference in the symptoms in the case of the squirrel and the cat bites. The cause of the fever is the *Spirochaeta morsus muris*. The commonest site of the bite is the hand, especially the fingers of the right hand. Usually the onset of the disease is sudden, without any apparent cause; trauma may precipitate the outburst of the fever. Disinfection or cauterization of the bite at the time does not seem to have any influence on the development of the disease. The usual period of incubation is about fourteen to sixteen days, in severe cases rather shorter. Locally, after apparent healing of the bite, swelling, redness, and itching come on, with all the signs of phlegmonous inflammation; shivering, fever, headache, and signs of general infection then appear. Cutaneous erythema is an important symptom. The fever is intermittent in type and lasts for ten to thirty days or longer (sometimes for months). Exophthalmos, nephritis, jaundice, cardiac and pulmonary symptoms, and purpura have been recorded as complications. The prognosis as regards life is good, but in prolonged cases the disease puts a severe strain on the constitution. Since the introduction of neo-salvarsan good results have followed. Of the author's cases one was fatal—that of a little child who had been bitten several times.

### 492. Typhoid Spondylitis.

J. SABRAZÈS (*Arch. de méd., cir. y esp.*, April 21st, 1923, p. 97) states that this condition was first described by Gibney of New York in 1899. The history and bibliography will be found in the Paris theses of Bonhoure (1912), Chéron and Guyard (1921), and the Bordeaux thesis of Farinaud (1922). Typhoid spine was regarded by Gibney, Quincke, Fichtner, and Painter as the result of periostitis and osteitis, while Osler held it to be a neurosis. Statistics show that it occurs approximately in one out of every 1,800 cases of typhoid fever. It is exceptional before the age of 10 and after 40, the ages of predilection being between 15 and 35. It is most frequent in the male sex (in 8 out of 10 cases, Bonhoure). All forms of typhoid may be followed by this sequel. Spondylo-typhoid, in which the phenomenon appears at the beginning of the disease, is very rare. The upper lumbar, lower dorsal, lumbosacral, and cervical regions are involved in that order of frequency. Severe, moderate, mild, and abortive attacks may be encountered. The abortive attacks

resemble sciatica or neuralgia in some other region. Typhoid spine is usually manifested by pyrexia of an intermittent type and severe dorso-lumbar pain. There is a hyperleucocytosis of moderate degree. Cultures of the blood and cerebro-spinal fluid are negative, but Widal's reaction is positive. In some cases the cerebro-spinal fluid is under hypertension. There is no marked cytological reaction, and excess of albumin is inconstant in the cerebro-spinal fluid. The course of typhoid spondylitis is slow. It may last for months and even years, the average duration being two to three months. It is rarely fatal. The morbid process takes place in the intervertebral discs; the periosteum and ligaments of the affected vertebrae become invested with an inflammatory plastic exudate, which is liable to become organized and undergo calcification and ossification. The vertebral spines and articulations are also affected. In a small number of cases suppuration takes place. The condition must be distinguished from Pott's disease, in which the lesions do not usually affect several vertebrae at once, while there is a rarefaction of bone not present in typhoid spondylitis. The vertebral manifestations of syphilis are differentiated by the cytological, chemical, and biological changes in the cerebro-spinal fluid. In rhizomelic spondylitis the intervertebral discs are unaffected. In traumatic spondylitis the history is distinctive. As regards treatment, good results have been obtained by vaccine therapy (Weil, Dufour, Debray and Guyard, Sicard and Robineau, Vincent and Muratet), auto-vaccines being employed when possible. Subsequently massage, Swedish exercises, and tonics are indicated.

### 493. Quinidine in Heart Disease.

M. ARJEFF (*Deut. med. Woch.*, May 4th, 1923, p. 576) has given quinidine in 43 cases of heart disease, and in 25 normal rhythm was restored. In 63.7 per cent. of the patients between the ages of 25 and 40 this result was achieved, whereas among patients between the ages of 41 and 70 normal rhythm was restored in only 56.7 per cent. Among the 25 cases in which the normal rhythm was restored there were 13 with signs of valvular disease and 10 in which arterio-sclerosis was the most prominent morbid condition. Among the 18 cases in which the drug failed to restore normal rhythm there were 8 of valvular disease of the heart and 9 of arterio-sclerosis. These figures suggest that neither the age of the patient nor the nature of the heart disease greatly affects the action of quinidine. The dosage adopted by the author was 0.2 gram on the morning of the first day, two doses of 0.2 gram on the second day, two doses of 0.4 gram during the next few days, and finally three doses of 0.4 gram every day. The author continues the exhibition of quinidine even when it provokes tinnitus and headache, and appears to have done so with impunity.

### 494. Neuroses Following Encephalitis Lethargica.

J. HÄGELSTAM (*Finska Läkarsällskapets Handlingar*, January-February, 1923, p. 70) has been struck by the frequency and variety of the neuroses following epidemic encephalitis, 90 cases of which were treated in his hospital in Helsingfors. One of his patients was a clergyman, aged 35, who, a year and a half after an apparently uneventful recovery from an attack of encephalitis, began to find his voice failing him. Sometimes, but not always, he could make his voice heard from the pulpit, and his only symptoms were excessive salivation and a feeling of tiredness in the jaws. The case was suggestive of an abortive form of myasthenia gravis, and the author is inclined to think that in the future many a case now regarded as an isolated neurosis may be linked up with some previous organic lesion. In five of his cases the vegetative nervous system was involved, as shown by excessive perspiration, salivation, and seborrhoea. One of his patients was a boy, aged 10, who showed a remarkable succession of neuroses which began a fortnight after he had apparently recovered from a typical attack of encephalitis. First there was an excessive discharge of mucus from the throat. This was banished by tonsillectomy. He then had attacks of sneezing, unaccompanied by any discharge from the nose. After several weeks this phenomenon gave place to a curious laryngeal cough, which lasted throughout the summer, and then gave place to attacks reminiscent of asthma. They were accompanied by salivation and attacks of shivering, with groaning and crying, and complaints of great tiredness. During two months of disciplinary treatment in hospital these attacks gradually became less and almost ceased, but a relapse occurred on his return home.



**495. The Action of Normal Serum on Diphtheritic Infection.**

H. L. RATNÖFF (*Klinische Wochenschrift*, March 5th, 1923, p. 440), in view of Bingel's contention that normal serum is as effective as antitoxin in the treatment of diphtheria, carried out investigations on guinea-pigs to determine whether the specific antitoxic action of immune serum was strengthened by simultaneous administration of normal serum—in other words, whether the dose of antitoxin which by itself was not sufficient could save the experimental animal when normal serum was injected at the same time. The normal serum of horses and guinea-pigs was employed. It was found that neither had any protective action. The experiments furnished no proof that any other constituents of the serum than the antitoxin were responsible for its curative effects. Although these experiments are not necessarily applicable to human pathology, they indicate that clinical results should be subjected to a more stringent criticism. More conclusive proofs of the equal value of normal and immune serum in the treatment of diphtheria are required than are at present available.

**Surgery.****496. The Early Diagnosis of Renal Tuberculosis.**

A. HÜBNER (*Deut. med. Woch.*, May 4th, 1923, p. 574) bases the following views on an experience of 58 cases of renal tuberculosis coming to operation and 109 cases examined under polyclinic conditions. The value of demonstrating the tubercle bacillus by direct microscopic examination or by animal inoculation is, he believes, much overrated. The kidneys may transmit tubercle bacilli from some distant focus without there being tuberculous disease of the kidneys, and, on the other hand, even in definite cases of renal tuberculosis animal inoculation may prove negative. Catheterization of the ureters is often superfluous, but palpation of the thickened ureters through the abdominal wall, rectum, or vagina may yield important information at an early stage—at a stage when the bladder is not yet involved. It is, however, secondary disease of the bladder which the author considers most helpful in detecting early disease of the kidneys, for the tuberculosis soon spreads from kidney to bladder, giving rise to pyuria and other conditions. While he is no enthusiast with regard to catheterization of the ureters, he puts cystoscopy at the forefront of diagnostic methods, and in the overwhelming majority of his cases he has been able by cystoscopy to diagnose renal tuberculosis without the aid of the microscope.

**497. Prostatectomy.**

H. H. YOUNG (*Surg., Gynec., and Obstet.*, May, 1923, p. 589) states that in reducing the mortality of prostatectomy most has been accomplished by careful pre-operative treatment. Preliminary urethral or suprapubic drainage, together with forced fluids by the mouth, subcutaneously, or by intravenous injection, he considers to be essential in cases with evidence of renal impairment. He determines the renal function at intervals during treatment by using phenolsulphonephthalein, which is eliminated more rapidly and in greater quantity by a healthy than by a diseased kidney. In 551 cases of prostatic hypertrophy in which he used the phthalein test, first on admission to hospital and again before operation, renal function improved in 99 per cent. of the cases so much after the pre-operative treatment that the drug was being excreted at the time of operation to the extent of 20 per cent. or more. With a very low phthalein excretion on admission, he estimates the blood urea as an additional test, and finds that the blood urea drops almost to normal (0.3 gram to 0.5 gram per litre) and the phthalein excretion rises considerably in most cases during the treatment. Renal impairment is most common and most pronounced in patients never catheterized who have a large amount of residual urine, whereas it is less marked in cases with large amounts intermittently catheterized. While marked renal impairment is not often found with residual urine of less than 400 c.cm., the author finds it occasionally with small residuals of 100 c.cm. or less, and thinks this is probably due to frequent and prolonged urination, during which the ureters are closed and pelvic distension occurs. The onset of infection may greatly accelerate the renal impairment; severe cystitis, especially if associated with vesical calculus, increases vesical spasm and consequent back pressure. The lower the phthalein test at operation the greater is the mortality, and the author continues the above treatment, if possible, until the phthalein test is 30 to 40 per cent. Cases with a mild pre-operative cystitis are less subject to post-operative fever and toxæmia than the previously sterile cases; but whether or not this is the case the danger from a virulent organism—especially a coccus

infection—issuing that, besides cleansing the external genitalia, he irrigates the anterior urethra, before any instrumentation, with a 1 per cent. solution of merxyl, which is non-irritating and acts in the presence of albumin, pus, and urine. The author considers that almost every case can be brought into condition for perineal prostatectomy without a first stage suprapubic drainage. After a detailed description of the technique of his perineal operation, which he believes allows of more complete removal and better control of hæmorrhage than the suprapubic operation, the author lays stress on the importance of the administration of fluid by the mouth, subcutaneously, and in grave cases intravenously, in the after-treatment of all cases. In very feeble cases blood transfusion is stated to be invaluable. As regards post-operative incontinence of urine, the author considers that this is the result of using the median perineal incision passing through the external sphincter and triangular ligament, instead of an inverted U-shaped perineal incision which allows of the bulb, transverse perineal muscles, triangular ligament, and external sphincter being seen in turn, carefully avoided, and the urethra opened far back near the apex of the prostate, well behind all sphincteric fibres. He discusses post-operative complications in detail, and advises removal of drainage tubes and gauze from the perineal wound in twenty-four to thirty-six hours after operation; four or five days later the penile urethra is irrigated in order to open up the membranous portion, and if normal urination has not been re-established within three weeks an instrument is passed as far as the membranous urethra, no attempt being made to enter the bladder. Closure of the fistula, in the author's experience, usually occurs spontaneously within three weeks of operation.

**498. The Differential Diagnosis of Gall Stones and Gastro-Intestinal Disease.**

E. MEULENGRACHT (*Ugeskrift for Læger*, May 10th, 1923, p. 325) has questioned 128 patients who had been operated on for gall stones in the period 1913 to 1922, as to the date when their gall stones were first diagnosed. Only in 31 cases had they been diagnosed early in the disease, and in as many as 63 cases the original diagnosis had been some gastro-intestinal disease. In most of these 63 cases the duration of this mistake was a matter of several years. The most common mistake was the diagnosis of "gastric catarrh." The questions addressed to these ex-patients elicited the facts that in none had dyspepsia occurred by itself, without a history of biliary colic; that in 75 cases there had been dyspepsia in the intervals between the attacks of pain; and that 53 patients had felt perfectly well during these intervals. The most common symptom was a sense of distension, discomfort, and pressure immediately after meals.

**499. Bone-graft Fixation of Vertebrae in Spinal Caries.**

R. STRÄTER (*Deut. Zeit. f. Chir.*, March 5th, 1923, p. 313) has found in his experience that this operation, first introduced by Albee and by Henle, is a useful adjunct in the treatment of spinal caries, and is an improvement on the older methods of fixation by apparatus. He uses a graft from the patient's tibia, including periosteum and endosteum. If necessary the graft may be bent, for better apposition, as the fracture unites by bone. Some experimenters have found that grafts implanted in the spines of dogs show a tendency to undergo segmentation, corresponding to the level of the intervertebral discs, and the author has noticed this in radiograms of some of his cases; in course of time, however, he finds the clear zones disappear. He makes this an indication for keeping the patient in the dorsal recumbent position for two to three months; and for further six to nine months a plaster corset is worn. He does not agree with Albee that the operation has any influence in diminishing deformity which is already present. On the contrary, he finds that if there is marked deformity, it tends to increase after the operation, in course of time. It is frequently noticed that patients who, up to the time of operation, complained of pain on the slightest movement, experience complete relief of this symptom soon after operation. The general treatment by fresh air, sunlight, etc., must be continued; it is sometimes difficult to impress this upon the patient. Of 33 cases treated by the operation in question 18 are looked upon by the author as cured, the patients being quite well, and more than a year having elapsed since operation. Four cases operated upon within the last twelve months are improved. Two cases are in a serious condition; seven have died (one of influenza). In one case paraplegia ensued after operation, but cleared up within fourteen days. The author considers that these figures alone establish the superiority of operative fixation over methods of fixation by external apparatus. It is also to be noted that the operative method is much cheaper, financially, than long continued fixation by apparatus, particularly in the case of growing patients. In no case did any permanent harm result from operation.



## 500. Treatment of Gonorrhoea.

G. H. WOOD (*Journ. R.A.M.C.*, May, 1923, p. 367) advocates intravenous injections of acriflavine in the treatment of gonorrhoea, not so much as a method of treatment in itself as an aid to existing methods, in that it rapidly relieves the discomfort of a profuse, acute urethritis, and has a remarkable effect in clearing up an intractable case when other methods have failed. A freshly prepared sterile solution of acriflavine, 1 in 1,000 in normal saline, slightly above blood heat, is used, and is introduced into a vein at the rate of about 50 c.cm. a minute. The first injection of 250 c.cm. is given as early as possible, and after this 300 c.cm. are given at intervals of about five days. The author finds that more than three or four injections are rarely necessary, and that as a rule there is no reaction following the injection. The patient's face often assumes a slight yellowish colour towards the end of the injection, but this soon passes off. Twenty-four cases are quoted, which were discharged from hospital apparently cured after the usual tests had been carried out. Of these, twelve were acute cases placed under treatment within a few days of infection; they had an average period in hospital of thirty-four days.

## Obstetrics and Gynaecology.

## 501. Cancer of the Cervix Complicating Pregnancy.

SCHWEITZER (*Zentralbl. f. Gynäk.*, April 28th, 1923, p. 657) states from his own statistics that cancer of the cervix only occurs in 0.05 per cent. of pregnancies, the reason of this being that cancer usually occurs at a later age; the average age, however, of his cases was 35½ years, which is, of course, very early for cancer to develop. It would seem that many pregnancies following one another in quick succession have something to do with the development of cancer at a subsequent pregnancy. The symptoms are similar to those of cervical cancer in the non-pregnant, but the bleedings often occur at what would have been a menstrual period, and are taken for such, although usually they are smaller in amount. Loss of weight during pregnancy is considered a valuable additional symptom. Early carcinoma has, in the author's opinion, no effect upon pregnancy, but advanced carcinoma may give rise to abortion (von Franke states in 30 to 40 per cent. of cases) due to the action of the bacteria arising from the cancer on the foetal membranes and endometrium. At labour carcinoma, if supravaginal or circular around the cervix, often causes dystocia by inhibiting dilatation, and if operation is not performed rupture of the uterus results, although in some cases the cervix ruptures and allows the child to be born. Infection due to streptococci causing septicaemia is the great danger in the puerperium. Regarding the effects of pregnancy on cancer opinion differs greatly, but the author considers that, although the growth increases more rapidly, the malignancy is not increased; the trauma of birth, however, causes a greater growth during the puerperium, when the prognosis—which is always grave—is much worse than during pregnancy. The author recommends the radical operation for operable cases, especially during the first half of pregnancy, when operation seems to give the best results, but in the second half, when the results are not so good, he inclines to radiotherapy for the child's sake, although if the case were definitely operable he would advise operative methods. Spontaneous birth has occurred in several cases through cervices treated by radiotherapy. The author finds that 82 per cent. of his cases were operable and 43 per cent. were absolutely cured, no recurrence being noted for over nine years in each case. All the cured cases were treated during the first half of pregnancy. In inoperable cases palliative treatment is advised, combined with Caesarean section and supravaginal hysterectomy at term to prevent puerperal septicaemia.

## 502. Disturbances of Menstruation in Acquired Tuberculosis.

M. STANTCH (*Rev. Méd. de l'Est*, April 1st, 1923, p. 233) suggests that acute tuberculosis acts as an atypical septicaemia in arresting menstruation by inhibition of the ovarian stimulus. In pneumonia, general peritonitis, and similar conditions the menstrual function is first deranged. There are, however, cases in which the bacillary septicaemia, instead of producing a sudden amenorrhoea, induces an overactivity of the ovary. Menstruation commences with flooding, an excessive flow lasting for days or weeks; the lessened coagulability of the blood is an important factor. The gravity of the patient's general condition accounts for the occurrence of epistaxis, haemoptysis, gastro-intestinal haemorrhages, vomiting, diarrhoea, sweatings, etc. The septicaemic state may produce these symptoms, but menstrual disturbances play an important part. In acute pulmonary tuberculosis the intoxication stimulates the

ovarian function and excessive or prolonged menstruation reacts unfavourably on the pulmonary infection. This vicious circle lasts for two or three months, but the resulting exhaustion induces amenorrhoea before the fatal termination. In these cases the pulmonary physical signs become more marked during the menstrual periods, and vicarious haemorrhages are not uncommon. In the fibrotic type of chronic pulmonary tuberculosis normal menstruation is usual, as the slight degree of toxæmia causes no systemic disturbance. In progressive pulmonary lesions, on the contrary, menstruation may be deficient or irregular, and during the periods pulmonary symptoms are definitely aggravated, and demand absolute rest and careful observation and hygienic measures. In the period of advanced ulceration and cavitation severe toxic absorption produces amenorrhoea. Stanitch compares the condition of patients who carefully observe hygienic and dietetic directions with that of patients who insist on following their ordinary occupations, and concludes with the statement that in chronic surgical tuberculous cases menstruation appears late (from the age of 16 to 20); it is regular, scanty, and of short duration. Menstruation rarely aggravates the tuberculous lesions in these cases.

## 503. Analgesia during Labour.

G. ROSSIER (*Le Scalpel*, April 28th, 1923, p. 460), at the Lausanne maternity hospital, has endeavoured to diminish the pains of childbirth by administering pastilles containing 0.0032 gram of heroin, 0.0018 gram of dial (diallyl barbituric acid), and 0.5 gram of chlorotone. The first is given shortly after dilatation of the os has commenced, and four or five are given in all, about thirty drops of chloroform being given by inhalation during the passage of the head through the vulva. Failures numbered 12 out of 60—about the same proportion as is given in German reports of scopolamine-morphine injections; but no untoward effects on the infant were noted. In 45 cases equally satisfactory results were found to attend the administration of pastilles containing 0.015 gram of dionine (ethyl-morphine hydrochloride), 0.0078 gram of dial, and 0.5 gram of chlorotone.

## Pathology.

## 504. Culture of the Seminal Fluid in Chronic Gonorrhoea.

THE cure of gonorrhoea is very difficult to control; even after the disappearance of all symptoms and the cessation of the morning urethral discharge infection may still be present, as is shown by its transmission during coitus. According to C. MASSIAS (*Gaz. Heb. des Sci. Méd. de Bordeaux*, April 29th, 1923, p. 198), the gonococcus in these cases lodges, not in the urethra or in the neighbouring glandular structures, but in the seminal passages. This is shown by the fact that positive cultures can be obtained from the semen even in the absence of all clinical infection of the prostate, seminal vessels, bladder, and epididymis. The cultures must be taken with the greatest precautions as to asepsis, and the fluid inoculated as soon as possible after emission on to ascitic agar. Having isolated the organism, the author proceeds to the preparation of an autogenous vaccine. If the gonococcus be obtained in pure culture, a vaccine is made of a strength of 1,000 to 2,000 million organisms per cubic centimetre. In the case, however, of a mixed infection a polyvalent vaccine is prepared containing 5,000 to 6,000 million organisms. The first dose should be a quarter of the maximum; the second dose, given four to six days later, should be half of the maximum; the third dose three-quarters of the maximum; and the fourth dose, consisting of a full cubic centimetre, should be repeated five or six times. The results obtained appear to be best in the case of gonococcal or staphylococcal infections.

## 505. The Blood Picture during an Attack of Tertian Malaria.

M. WOENS DROEGT and C. VAN DAM (*Nederl. Tijdschr. v. Geneesk.*, 1923, i, p. 2002), of Amsterdam, examined the blood of four patients suffering from tertian malaria to determine the changes in the number and relation between the different varieties of leucocytes during and immediately after the paroxysm. An enumeration of the parasites was also made to determine their relation to the course of the fever and the leucocyte picture. The following method was employed: The leucocytes were examined at first every hour and then every half-hour for a few hours before the expected attack, and a large number of film preparations were made of the blood of each patient and the varieties of parasites and leucocytes studied. The results were as follows: In tertian malaria, as seen in Holland, there is a leucopenia before and during the onset of the typical paroxysm. The leucopenia begins some hours before the febrile attack and is most pronounced during



the rise of temperature. After the fever has subsided the leucocyte count returns to normal. The falling line of the leucocyte curve coincides with the division of the malarial parasites. An hour before the beginning of the fever young parasites have, as a rule, penetrated the chromocytes. The division is complete before the fever has reached its acme. There is a constant relation between the male and the much more numerous female gametes. The duration of the division of tertian parasites is probably between six and eight hours. According to Schilling's leucocyte formula it occurs simultaneously with the diminution in the number of leucocytes per cubic millimetre. There is thus at the beginning of the febrile attack a displacement to the left. Towards the end of the febrile attack the displacement to the left diminishes and a monocytosis occurs.

#### 506. A Bacteriolytic Principle (not Bacteriophage) in the Intestine of Cholera Patients.

WHILE attempting to isolate a bacteriophage virulent for the cholera vibrio, F. D'HERELLE (*C. R. Soc. de Biologie*, March 24th, 1923, p. 723) succeeded in demonstrating the presence in the stools of patients suffering from cholera of a bacteriolytic principle which appeared to be quite distinct from the bacteriophage. It was found in the faeces from three to four days after the commencement of the illness, and persisted till death. To demonstrate it, 2 c.cm. of the liquid or semi-liquid dejections were emulsified in 20 c.cm. of bouillon, incubated for twelve hours at 37° C., and filtered first through kieselguhr, and then through a candle. In the non-diluted filtrate an agar culture of cholera vibrios was rubbed up in an amount sufficient to give an emulsion of about 100 million per cubic centimetre. After incubation for twelve to eighteen hours at 37° C. the organisms were found to be dissolved, and the fluid was quite limpid. There are about this principle certain properties which distinguish it from the bacteriophage. For instance, the degree of lysis which occurs is in proportion to the quantity of filtrate employed. With the pure filtrate 100 million vibrios are dissolved in twelve to eighteen hours. The filtrate diluted by one-half is only capable of dissolving 20 to 25 million organisms, while if it be diluted 1 in 10 it ceases to have any lytic action whatever. Again, there is no regeneration of the principle in culture. The filtrate of the lysed vibrios is absolutely inactive. Nor in an agar culture are there the characteristic plaques of the bacteriophage. The author concludes that this principle is of the nature of a diastatic ferment, and is produced by the body in response to the stimulation of the proteins of the cholera vibrio.

## Radiology and Electrology.

#### 507. X-Ray Diagnosis of Duodenal Ulcer.

A. AKERLUND (*Acta Radiologica*, vol. ii, Fasc. 1, p. 14) recommends, with regard to the technique for the examination of the duodenum, an intimate co-operation between fluoroscopy and roentgenography; he describes a few simple arrangements for the exact adjustment of small plates and for the taking of small serial pictures of the duodenum in different positions of the body. The pictures are adjusted under fluoroscopic control in the most suitable directions of projection. The author especially recommends examination in the upright position. The changes in the form of the bulb constitute the central point in the direct x-ray diagnosis of the duodenal ulcer. The author distinguishes four kinds of ulcer deformities in the bulb—namely, (1) niche, (2) defect, (3) retraction, and (4) diverticulum. According to the author the bulbar niche is by no means rare; out of the material of about 100 positive cases of duodenal ulcer, collected during the course of two years at a hospital, he observed the niche symptom in the bulb in rather more than 60 per cent. The bulbar niche is most often localized to the lesser curvature side, which is retracted. As a rule a local, circular, and often spastic constriction (defect) occurs in the niche plane from the greater curvature side. The bulbar deformity arising here, which may be called a miniature picture of the ulcer deformity of the stomach, constitutes, in the author's opinion, the most typical ulcer deformity in the bulb, and has been confirmed by him in more than 50 per cent. of his cases. As to the cause of the "paradoxical" four hours' retention by uncomplicated duodenal ulcers with initial hypermotility, and probably also the origin of the typical hunger pains, the author ascribes a certain importance to the spastic, circular, bulbar constriction in the ulcer plane, which usually appears more marked during the later stages of digestion. The spastic shortening (retraction) of the longitudinal muscles—particularly strongly developed in the medial bulbar region—which may result in a pyloric insufficiency directly observable in the x-ray picture, offers a mechanical explanation of the initial hypermotility.

1042 D

#### 508. X-Ray Treatment in Erythraemia (Polycythaemia).

M. KAUFMANN (*Klinische Wochenschrift*, April 16th, 1923, p. 770) records a case showing the good effects of x-ray treatment in erythraemia (polycythaemia). The patient was a female, aged 33, who from childhood had had a red complexion, which had gradually become more intense until the colour of the face was "copper red." She complained of headache, vertigo, and burning in the eyes. The red corpuscles were 8 million per cubic millimetre. The liver and spleen were enlarged, and the heart was dilated to the right. After x-ray treatment of twenty-seven regions of the limbs and trunk, on five occasions during four months, great improvement followed. Her complexion became paler, and the red corpuscles diminished to 6 million per cubic millimetre. The improvement continued, and a year and six months later she appeared quite healthy; the liver, spleen, and heart were normal, and the red corpuscles numbered only 5 million per cubic millimetre.

#### 509. Radiotherapy for Carcinoma of the Cervix.

W. S. FLATAU (*Zentralbl. f. Gynäk.*, May 12th, 1923, p. 737) emphatically recommends radiotherapy for cancer of the cervix, and gives statistics from his own clinic at Nürnberg of 310 cases, which he has treated during the last ten years. Of these 310 cases 24 per cent. are still alive, the remainder having died or been lost sight of. The author states that the number of cures is noteworthy, for in the early days the apparatus and dosage were defective. He then subdivides his 310 cases: 101 cases were operable—his definition of operability being that the disease was confined to the cervix, no thickening nor glands were felt in the parametrium, and the uterus was mobile; the other 209 cases not conforming to these conditions were counted as inoperable. Among the operable cases 50 per cent., and among the inoperable 9.5 per cent., are still alive; of the latter the condition even when rapidly advancing was improved in most cases, and the 9.5 per cent. cured could not have been cured by any operative procedure. During the last three years (1920-22) the author has treated 68 cases with what he calls his standard method of treatment, which consists of 50 mg. of radium placed in the cervical canal for forty-eight hours and 50 mg. placed against the growth in the vagina for twenty-four hours, with which is combined, either before or after, cross-raying of the pelvis from back to front and side to side. Of these cases 80 per cent. of the 22 operable cases and 22 per cent. of the 46 inoperable cases are still alive and well. This, says the author, compares very favourably with other statistics, both operative and radiotherapeutic, in which recurrence during the first year amounts often to nearly 90 per cent. Radiotherapy is now, in the author's opinion, practically a safe method of treatment, no immediate mortality occurring, and with the improved technique now adopted fistulae rarely, if ever, occur, and skin disturbances and burns, especially if only one application is required, are hardly ever seen. He concludes by saying that radiotherapy for cancer of the cervix can achieve successes which operation could never attain.

#### 510. Treatment of Vascular Naevi with Radium.

R. H. RULISON and S. MCLEAN (*Amer. Journ. Dis. Children*, May, 1923, p. 359) discuss the radium treatment of vascular naevi, especially the type of raised capillary cavernous haemangiomas. Tubes of 25 and 50 mg. without filtration, other than the silver capsule containing the glass tube of radium, were used, the dosage being regulated by varying the distance between the tube and the skin from one-eighth to half an inch. An interval of at least three weeks separated each application, the number of which averaged fifteen, with an average dosage of 40 milligram hours. The younger the patient the better and quicker are the results. Flat naevi are more refractory than the raised, the port-wine mark being especially obstinate, but the treatment gives results in early infancy which cannot be obtained by any other methods in dealing with raised vascular naevi on the face. Among its disadvantages are the expense, lengthiness and possibility of ulcer formation and tardy healing following over-treatment, or of a resulting telangiectasia and atrophic skin with later keratosis and epithelioma. The advantages, however, outweigh the disadvantages, in the painlessness and the fact that, by carefully watching the gradual changes after each treatment, the lesion can be made to disappear without damage to the overlying skin. Ulcerations and haemorrhagic areas heal rapidly without scarring, or, when this is unavoidable, the scar is smooth and comparatively inconspicuous. It is the fact that radium exerts a definite, specific, selective action on the abnormal endothelial cells lining the blood vessels unattainable by any other form of treatment which affords the greatest reason for its use in these cases. All angiomas, however, do not respond equally to radium therapy, and treatment by carbon dioxide snow, electrolysis, or surgery gives good results in some forms.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### 511. Tumour of the Upper Cervical Cord.

I. ABRAHAMSON and M. GROSSMAN (*Journ. Nerv. and Mental Dis.*, April, 1923, p. 342) give notes of eight cases of tumour of the upper cervical cord. Diagnostic spinal puncture in such cases is dangerous, since death may immediately follow withdrawal of the fluid, or acute swelling or haemorrhage may occur in the tumour, causing tetraplegia. The initial sign of a cervical cord tumour may be sphincter, sensory, motor, or respiratory disturbance. Urination and defaecation are at first delayed, interrupted, and difficult; retention and incontinence follow, and the sexual mechanism may be affected. A sphincter lesion with cervical root pains, with or without motor signs, suggests a cervical cord tumour. Besides sensory and motor consequences, respiratory disturbances, from diaphragmatic paresis, may occur early or late when the tumour affects the phrenic nerve origin in the second and third cervical roots, and among disturbances of the uncontrolled autonomic system caused by pressure may be bradycardia from vagal irritation, and Stokes-Adams syndrome culminating in convulsive seizures. Irritation of the cilio-spinal arc may dilate the pupil, widen the palpebral fissure, and cause exophthalmos on the same side as the tumour, followed later by paralysis, as manifested by miosis and enophthalmos, and irritation of the vasomotor and secretory nerves of the face may produce heat, redness, hyperhidrosis, paralysis-cold, cyanosis, and anhidrosis. Tumours in the uppermost segments lying within the foramen magnum may extend their pressure into the cranial cavity and cause papilloedema, while pressure on the posterior aspect of the cord may cause marked astereognosis, vibratory sense disturbance, and ataxia, especially in the upper extremities. No single sign is essentially diagnostic, deduction being made from suggestive signs to corroborative, interpreting in terms of tumour qualities the pressure exerted by a foreign body in an inextensible canal on contents of varying mobility and fixation.

### 512. The Auricular Sign in Meningitis.

B. MENDEL (*Klinische Wochenschrift*, April 23rd, 1923, p. 782) attaches great importance to hyperaesthesia of the area supplied by Arnold's nerve, as a symptom of meningitis, from a diagnostic point of view. It is known that a continuous painful impression will set up a state of increased irritability in the spinal segment concerned. This culminates eventually in an overflow of irritability ("irradiation") from the cells of the spinal ganglia into other nerve channels, which also are brought into a state of morbid irritability. This latter may become evident of itself; or it may become manifest on the application of some slight stimulus which would normally cause no reaction. The meningeal branch of the vagus arises from the jugular ganglion of the vagus, and the auricular branch arises from the same ganglion, and is distributed to the posterior wall of the external auditory meatus. The jugular ganglion and the ganglion nodosum correspond to posterior spinal ganglia, and it would be expected therefore that prolonged meningeal irritation would irradiate to the auricular branch and set up hyperaesthesia at the back of the ear. In practice this is found to be the case. Slight tapping or pressure with the finger on the posterior aspect of the external auditory meatus produces facial spasm, and sometimes cries, indicative of pain, in patients suffering from meningitis. The sign appears early, when other symptoms, such as stiff neck and Kernig's sign, are absent or indefinite. Five cases of meningitis (two tuberculous, two epidemic, and one pneumococcal) all gave the sign. A large number of patients with dental and accessory sinus disease, with earache, did not give it in any instance. The author considers that it affords an extremely simple means of giving an early opinion as to the presence or absence of meningitis.

### 513. Typhoid Fever in Large Towns.

A. LOIR and H. LEGAGNEUX (*Paris méd.*, April 14th, 1923, p. 359) remark that twenty years ago about 300 persons died annually at Havre from typhoid fever, but since then not more than twenty deaths a year have been due to this cause. This great fall in typhoid mortality is due to supervision of the drinking water. At the present time other factors than drinking water are more frequently the cause of typhoid fever in large towns—namely, milk, mussels, oysters, radishes, and flies. In 1913 an epidemic at Havre was due to milk

supplied by a farmer who had a mild attack of typhoid; it was found that the linen through which the milk was strained was washed with the same brush as that used for the patient's body linen. From 1910 to 1921 cases of typhoid were always more numerous at Havre during the months in which most oysters were eaten (October to December). Salads and vegetables eaten raw, such as radishes, may give rise to epidemics as the result of manuring, especially as the typhoid bacillus keeps alive for a long period in damp soil. The likelihood of an epidemic being due to a carrier should always be considered when the cases notified are agglomerated within a small area in which the inhabitants are likely to have the same provider, especially in the case of sweets, creams, and ices. During the epidemic of typhoid at Havre in 1921 the authors were impressed by the much larger number of cases occurring among women and children who had not been inoculated, as compared with those among men aged from 25 to 40, most of whom had been inoculated in the army. Of the 45 male cases 37 were under 20, and of the remainder only one, who had an attack of paratyphoid B fever, had been inoculated.

### 514. Intravenous Therapy of Rheumatoid Arthritis.

H. LAURIE (*Med. Journ. Australia*, March 24th, 1923, p. 303) records his experience in 56 cases of non-suppurative infective arthritis treated by intravenous injections of *B. coli communis* stock vaccine. With an initial dose of not more than 25 million, increasing up to a maximum of 1,200 million, intravenously, the typical reaction consists in a sharp rigor half an hour to one hour after injection, with a return to normal every twenty-four hours. Contrasted with treatment by subcutaneous injections of autogenous vaccines the intravenous injection of *B. coli* vaccine gives better results, pain being relieved much more rapidly and the stay in hospital shortened, being usually only a few days, with detention for one night for those who return for subsequent weekly injections. In the acute cases recovery is rapid, and relief from all disability follows injections varying in number from one to seven. Of eleven subacute cases eight cleared up entirely, the other three becoming free from pain, but with some remaining stiffness and limitation of movement. Of the chronic cases all were improved as far as pain, stiffness, and range of movement were concerned, but the bony changes and deformities were uninfluenced, and in very chronic cases with fibrous ankylosis and bony deformities there was improvement in all but one. Little or no result followed the treatment in uncomplicated osteo-arthritis, but gonorrhoeal cases were very amenable, the improvement being much more rapid than when treated by gonococcal vaccine subcutaneously.

### 515. The Abortive Treatment of Syphilis.

C. TATAME (*Ann. de Derm. et de Syph.*, April, 1923, p. 243) discusses the abortive treatment of syphilis, and emphasizes that the disease is a general, not a local, infection, and that the virus is found in the blood even before the local reaction manifests itself. The chancre is to be regarded as a local manifestation of a general reaction. It is during the primary period (from the time of the initial infection to the appearance of a positive Wassermann reaction) that successful cure is pre-eminently possible. During this period the organism is still free and not yet fixed to cellular elements, and is therefore the more easily destroyed. While recognizing the wide diversity of opinion existing in connexion with the pathology and therapeutics of syphilis, he is nevertheless convinced that abortive treatment is possible if the disease be attacked early in the primary phase, and that cure is also possible even later when a positive Wassermann reaction has developed. He considers a factor of great importance bearing on the prognosis of "abortive" cure to be the extent to which the inguinal glands are affected—where the involvement is slight the outlook is favourable. That some of his cases later contracted a second infection of the disease he regards as convincing proof of successful cure, other indications being a negative serum reaction and the absence of signs of disease in the patient's wife and children. In 24 cases of primary syphilis with a negative serum reaction he had 100 per cent. of cures, and out of 50 cases where the reaction was positive he was successful in 60 per cent. He is convinced of the importance of excision or destruction of the chancre itself by the thermocautery, by which means the removal of a dangerous nest of the organisms is effected. His practice in abortive treatment is to use neo-salvarsan in doses of 0.45 gram, rising progressively to 0.9 gram by a series



of injections at five-day intervals, with a total of 4 to 6 grams, alternating with eight injections of mercury salicylate. In conclusion, he summarizes the following points as being absolutely necessary if an abortive cure by a single treatment is to be successful: early diagnosis, the institution of treatment at the soonest possible moment, the selection of cases with a negative serum reaction, excision of the chancre, and examination of the cerebro-spinal fluid as well as the blood. Cases should, in his opinion, be kept under observation for a period of three years.

#### 516. Prophylaxis of Tuberculosis in the Newborn.

R. DEBRÉ (*Gynéc. et Obstét.*, 1923, vii, 3, p. 199) remarks that the child of a tuberculous mother is usually healthy at birth, and that the hereditary dystrophy which has been described in such infants is almost invariably due to an early overlooked post-natal infection. The occasional presence of tubercle bacilli in the milk of tuberculous mothers is of little importance, but the possibility of the infants' inhaling or ingesting particles containing virulent bacilli coughed or spat up by the mother is fraught with much danger. Five cases are related in which an infant succumbed to tuberculosis from one to five months after birth in spite of having been totally separated from the mother after her discharge from the lying-in home. Debré advocates absolute separation of the tuberculous mother from her infant; in conjunction with L. Bernard and Couvelaire arrangements have been made in certain Paris pre-natal clinics for the preparation of tuberculous pregnant women for this drastic step, and some infants are ultimately "boarded out" in families other than their own.

#### 517. Desensitization by Repeated Cuti-inoculations.

P. VALLERY-RADOT (*Bull. et Mém. Soc. Méd. des Hôpitaux de Paris*, March 29th, 1923, p. 460) reports the case of a dentist who was in the habit of developing a severe attack of asthma whenever he was exposed to the emanations of horses. Experimentally it was found that the application of horsehair to the skin determined not only a local reaction, but also general disturbances of the nature of a haemoclastic crisis, and sometimes an asthmatical attack. An attempt to desensitize him was made by practising cuti-inoculations almost daily over a period of two months with horsehair, sterilized by heat at 212° F. on three occasions. The result was quite successful and the crises disappeared completely. Four months later, however, the anaphylactic state returned, and the asthmatic crises reappeared. A few months after this new sensitization the patient suffered from an attack of eczema. The effect of this trouble was to desensitize him again—this time permanently. Other cases are mentioned in which the repeated introduction of protein poisons by the cutaneous route was successful in desensitizing patients suffering from anaphylaxis.

## Surgery.

#### 518. Radical Operations on the Stomach.

W. J. MAYO (*Surg., Gyn., and Obstet.*, April, 1923, p. 447) says that radical operations for cancer of the stomach have attracted the attention of surgeons for forty years, and for the last ten years have been resorted to with increasing frequency in cases of benign lesions of the stomach. Gastro-enterostomy, he says, will cure 90 per cent. of duodenal ulcers, but it will fail in some cases, and in these a partial gastrectomy is the operation of choice. The field for gastrectomy is much wider in gastric ulcers. The mortality for this operation for ulcer of the stomach should not be more than approximately 4 per cent. The lesser curvature is the most important portion of the stomach, and is the key to the lock which interferes with the liberation of the stomach. The success of removal depends on early ligation of the gastric artery as close as necessary to the coeliac axis. The author favours the restoration of the lumen by anastomosing the end of the duodenum to the narrowed end of the stomach after the Billroth I method. If it cannot be done, one of the other methods must be employed. Where total gastrectomy is performed he finds that the anastomosis of the jejunum to the oesophagus is best effected by Moynihan's technique, beginning the union posteriorly by peritoneal-muscular sutures as the stomach is gradually cut free from the oesophagus. Complete gastrectomy has given only one five-year cure, and after the complete operation patients present a peculiar type of anaemia, showing that the stomach has some immediate relation to the health of the red blood cell. The Billroth II method, when done in two stages—a gastro-enterostomy being the primary operation—is without a rival, and has an established position in gastric

surgery. The tendency of the stomach to drop to the left after the Billroth I operation has been overcome by suturing the stomach to the suspensory ligament of the liver. Proper mobilization of the lesser curvature is, in the author's opinion, the most important single step in radical operation of the stomach.

519.

#### The Treatment of Coxa Plana.

H. WALDENSTRÖM (*Acta Chirurgica Scandinavica*, April 11th, 1923, p. 577), who claims to have described the Legg-Calvé-Perthes hip-disease in the same year (1909) as Legg, has carefully followed 40 cases, in 20 of which the disease had ceased to be active. Ten of these 20 patients had passed the age of 20 and the author was thus able to form a fairly definite opinion with regard to prognosis and the effects of treatment. He has come to the conclusion that there is no inflammatory element in the disease, and that the term "osteochondritis" is therefore misleading. As early as 1909 he held that no intervention should be attempted, anticipating that the prognosis was as good without as with treatment. This opinion he still holds, but he modifies it so far as to interdict gymnastics and jumping on one leg, as well as taking long walks during the first three to five years of the disease. When, however, pain and contractures are troublesome, it may be necessary to prescribe extension with rest in bed for four to six weeks, and in some cases this treatment may have to be repeated. Of the 40 patients 35 were boys and only 5 were girls. The disease was bilateral in 5 cases.

520.

#### Intracardiac Injection of Adrenaline in Acute Cardiac Failure.

J. EXALTO (*Nederl. Tijdschr. v. Geneesk.*, March 17th, 1923, p. 1098), who reports a successful case, states that he has found nine other examples on record of recovery after intracardiac injection of adrenaline for acute cardiac failure during anaesthesia, published respectively by Volkmann, Zuntz, von Tappeiner, Henschen (two cases), Frenzel, Guthmann (two cases), and Blieding. The anaesthetics used were chloroform, ether, or a combination of the two. Six minutes was the longest and two minutes the shortest interval between the stoppage of the heart's action and the injection. As a general rule, therefore, one should not wait longer than four or five minutes before employing the method. The dangers of intracardiac injection are stated to be as follows: (1) Wounding the internal mammary artery. This can be avoided by inserting the needle two fingerbreadths to the left of the sternum. (2) Wounding the pleura. Esch reports the case of a patient who lived seven hours after injection of adrenaline, but died of pneumothorax due to the injection. (3) Injury to the coronary vessels. Erkes reports a case where death occurred immediately after the injection, owing to haemopericardium probably due to this cause. (4) Injury to important nerve centres in the heart muscle. It is better to inject the adrenaline directly into the ventricle than into the pericardium or heart muscle. Aspiration of blood with the syringe as well as the sudden cessation of resistance or perforation of the heart muscle shows that the ventricular cavity has been reached. The largest dose in successful cases in adults has been 2 c.cm. of the 1 in 1,000 solution of adrenaline. In infants successful results have been obtained with 0.2 mg. The interval between injection and the resumption of cardiac activity has varied between a few seconds and three minutes. In Exalto's case the heart started beating again almost immediately after the injection, and spontaneous respiration quickly followed, whereas in other cases respiration was slower in starting and sometimes had to be aided artificially. Exalto's case was in an infant aged six months, on whom he operated for an extensive naevus on the arm with Paquelin's cautery under anaesthesia with ethyl chloride and ether. At the end of the operation the pulse suddenly became imperceptible and the child stopped breathing. As artificial respiration and indirect cardiac massage for four minutes had no effect, 0.7 c.cm. of the 1 in 1,000 solution of adrenaline was injected and the child immediately recovered.

521.

#### Post-traumatic Cutaneous Epithelioma.

P. HICKEL and CH. OBERLING (*Bull. Soc. Française de Derm. et de Syph.*, March, 1923, p. 15) observe that many cases of malignant tumour following injury have been reported; most frequently they are sarcomata, much more rarely epitheliomata. Such tumours usually develop at a late period, sometimes many years after the receipt of the injury. It is well known that cancer may arise in old scars or burns and in tissues irritated by chronic inflammation. The development of cancer as the direct effect of a single injury has been rarely observed, but this question has come to the front on account of many soldiers attributing the development of cancer to an old wound received in the war. An official report on the direct connexion between a single



injury and cancer was definitely adverse to this view. The authors therefore think the two following cases, where the connexion seemed evident, of interest: (1) A man, aged 45, injured his hand with a piece of wood, a splinter penetrating the dorsal aspect of the base of the right thumb; the skin had previously been quite healthy; the wound bled slightly and healed spontaneously. In fifteen days a small tumour (the size of a pea) was found at the site of the wound; it was cauterized, but rapidly increased in volume, and in six or seven weeks it measured 3 cm. by 2.5 cm., and 1 cm. in thickness; it was excised, and the patient has had no recurrence. Histological examination showed that it was a typical epithelioma. (2) A young man, aged 22, received a slight burn on the lower lip in 1919, which healed, leaving only a small scar. In 1921 a small fissure appeared in the scar, painful only when touched by an acid. On admission to hospital there was a tumour as large as a haricot bean, with soft base and no evidence of infection of lymph nodes. A section showed a typical epitheliomatous structure in the centre of the tumour. The authors consider that the connexion between a single trivial injury and the development of epithelioma is clear in each case, and they think that the more rapid evolution of the tumour in the first case was probably due to its occurrence in a middle-aged man.

#### 522. Injuries of the Semilunar Cartilages.

GUIXIN (*Arch. Méd. Belges*, March, 1923, p. 238) discusses the mode of production of lesions of the semilunar cartilages of the knee-joint. He regards the cartilages not as moving to and fro during movements of the joint, but as fixed on the head of the tibia. The anterior horn of the internal cartilage is only held by a small and weak ligament to the anterior part of the head of the tibia; the posterior horn is more securely fixed. The external cartilage is well fixed in position. Both cartilages are securely attached to the capsule of the joint, which also gives them their blood supply; the coronary ligament fixes the cartilages firmly to the head of the tibia. Injuries of the cartilages are often produced by a sudden movement of extension whereby the vasti pull upon the capsule; this may produce a false luxation, or separation of the cartilage from the capsule. In these cases no lesion of the cartilage is found at operation, but careful suture of the capsule produces a cure. When true luxation occurs the cartilage becomes pinched between the femur and the tibia and leads to locking of the joint, or, if the attachments of the cartilage resist, the meniscus itself may be fractured. He also describes a condition of hypermobility of the cartilage due to frequent distension of the capsule with fluid. The chief symptoms of these injuries are pain and locking of the knee-joint, the knee being flexed on the thigh and all movement being impossible. The cartilage can sometimes be palpated between the ends of the bones. Surgical treatment may not be necessary in the early stages, except when the diagnosis of rupture of the cartilage is certain. In luxation, when the pain persists and there is repeated swelling of the joint and lockings, it will be advisable to operate. The operation is not absolutely devoid of risk. The best incision is a vertical or slightly curved one which gives ample room to explore the joint and does little damage. In cases of true dislocation the cartilage should be completely removed, or, if fractured, all the pieces must be excised. The capsule is closed, and the day following operation active and passive movements are instituted. Walking is not allowed for eight or ten days.

#### 523. The "Cuff" Method in Gastric Operations.

C. HÜRHAMMER (*Zentralbl. f. Chir.*, April 21st, 1923, p. 633) has applied with success this method, performed experimentally on animals by Goepel, to operations on the cardiac end of the stomach in the human subject. The method finds its field in cases where a hollow viscus with little or no serous covering is to be united to a portion which has such a covering; and the principle consists in preparing a cuff of the serous and muscular layers of the latter, the mucosa being divided some distance (3 to 4 cm.) from the level of section of the first-named layers. The sero-muscular cuff is then used to cover the union of the mucosa to the non-serous viscus. In this way the author has in one case succeeded in uniting the oesophagus to the duodenum after almost total resection of the stomach. The patient (a man of 70) lived three months. In a second case, with carcinoma of the lesser curvature near the cardiac orifice, the oesophagus was successfully implanted into the remaining prepyloric portion of the stomach. The patient was quite well a year after operation. If the pyloric end could not be approximated to the oesophagus, the alternative would be to implant the oesophagus into the jejunum (using a cuff of the latter to cover the union), followed by lateral or end-to-side anastomosis of the proximal end of the jejunum. The author considers that the method is a most valuable contribution to the technique of operations in such cases as those alluded to above.

## Obstetrics and Gynaecology.

524.

#### Sarcoma of the Uterus.

J. C. MASSON (*Amer. Journ. Obstet. and Gyn.*, April, 1923, p. 345), from a series of 50 cases of uterine sarcoma treated by him between 1906 and 1920, considers that sarcoma forms less than 1 per cent. of all uterine tumours and its frequency compared to carcinoma is 1 to 50. The author finds that the commonest variety of sarcoma is the spindle-celled type, which develops in a fibromyoma; this is less malignant than the sarcoma of the mucosa, which is not encapsulated, the most malignant type being the small round-celled sarcoma. The mucosal sarcoma occurs as a polypoid growth, and the author urges that all so-called polypoid endometritis should be examined very carefully microscopically as the diagnosis is difficult. The same difficulty is experienced in differentiating degenerating fibroids and polypi from sarcoma. Sarcoma of the uterus occurs usually between the ages of 40 and 50 and grows much more rapidly than carcinoma, but metastases occur much later—in fact, metastases are of rare occurrence except in the small round-celled type, when the lungs often become involved. The clinical features are not constant, and in the encapsulated slow-growing tumours are similar to those of fibroids and impossible to diagnose from them. Pain between and during the periods is a common symptom and is accompanied by cachexia, haemorrhages, and foul vaginal discharge. The uterus is enlarged and is observed to grow rapidly. As regards treatment the author favours the modified Wertheim hysterectomy in favourable cases, followed by deep x-ray therapy. For advanced cases radium is given in full doses with repeated doses of x-rays. Sarcoma seems to be more susceptible to radio-active substances than cancer, and in Germany that method of treatment is chiefly relied upon; but radium is not without its dangers, as the author has found a pelvic abscess follow its administration in two of his cases. If sarcoma is only discovered after a myomectomy has been performed the author believes that the patient should be subjected to a pan-hysterectomy, although in many cases the myomectomy will have cured the condition, if the tumour was still encapsulated. The author's immediate mortality in his operable cases was 4 per cent., and 76.59 per cent. were found to be well several years after operation. In the other 20 per cent. local recurrence was the chief cause of death.

#### 525. Pre-natal Antisymphilitic Treatment and Infant Mortality.

A. COUVELAIRE (*Bull. Soc. d'Obstét. et de Gyn. de Paris*, 1923, i, p. 34) publishes the following statistics from the Baudelocque Clinic. Cases of untreated maternal syphilis between 1919 and 1921 numbered 180. Of 37 cases of syphilis contracted during pregnancy a living infant was born in 22 per cent. only; the infant was living at birth in 36 per cent. of cases in which syphilitic infection occurred shortly before conception; 41 mothers with old-standing syphilis gave birth to 73 per cent. of living children. Subsequent observations showed that at the end of twelve months all the living infants of the first-named group of mothers had died, and one only of the infants of the second group was certainly found to be surviving. During the same period 125 pregnant women received antisymphilitic treatment; stillbirths amounted to 34 per cent. among those infected during pregnancy; 8 per cent. among those treated during pregnancy for syphilis contracted shortly before; none among those recently infected women whose treatment took place before and during pregnancy; and none among the adequately treated long-standing cases. In the treated cases infants surviving greatly outnumbered those deceased at the end of twelve months. Treatment consisted exclusively in injections of sulpharsenol, chosen partly on account of its efficacy and partly because injections by the physician are more certain of administration than medicaments taken at the discretion of the mother.

526.

#### Purpura during Gestation.

ACCORDING to G. C. MOSHER (*Surg., Gynec., and Obstet.*, April, 1923, p. 503), purpura haemorrhagica, although a rare complication of pregnancy—fewer than 40 cases having been reported in the literature—is one of grave import. The outcome is generally less serious if an early abortion occurs, but it is rare for a patient to go to term and recover. In half the cases the foetus perishes in utero or dies within a few days following birth. As in non-pregnant women, haemorrhagic purpura is characterized by haemorrhages from mucous membranes, petechiae and ecchymoses, and prolonged bleeding but normal coagulation time; the platelet count shows very striking reduction. Pregnant subjects are particularly prone to metrorrhagia, which, in common with other haemorrhages, do not usually occur until the sixth or



seventh month. No drug treatment is of avail; apparently the only remedy is to make a transfusion of blood, which may have to be repeated, so as to keep the platelet count over 110,000. A case is related by the author in which the patient recovered after repeated transfusions and the induction of abortion during the seventh month. This case is peculiar as the child—in contrast with the usual findings—manifested extensive subcutaneous ecchymoses during the ten hours which elapsed between its birth and death.

#### 527. Caesarean Section Statistics.

W. BENTHIN (*Deut. med. Woch.*, May 4th, 1923, p. 572) has analysed the 62 cases of Caesarean section performed by himself since 1898 and has found that there were only 5 immediate operative deaths among the mothers. The total mortality was, however, twice this figure—that is, 16 per cent. The post-operative morbidity was 14 per cent., and there were 4 cases of parametritis. Only one mother was lost on account of haemorrhage, which in this case was due to atony of the uterus. This atony did not culminate till after the operation, which could not therefore be held entirely responsible for the death. With regard to subsequent rupture of the uterus, this accident has become very rare since the opening in the uterus was carried further down, and, provided the wound heals by first intention, the chances of a subsequent rupture are small, but not yet quite negligible. The risk of post-operative adhesions is also small, as proved by the findings in repeated Caesarean sections on the same patient. The author refers to the eventful career of a patient on whom Caesarean section was first performed in 1910. In 1912 and again in 1917 she was successfully delivered by version and extraction. In 1913 labour was completed spontaneously, and in 1920 by perforation of the following head. In 1921 Caesarean section was performed for the second time, and the scar of the first operation was found to have held satisfactorily. Cases such as these—and the author refers to several—indicate that the risks of the operation scar giving trouble at subsequent confinements have been exaggerated. Among 14 cases of Caesarean section for eclampsia, there were only two fatalities among the mothers (fatal peritonitis and sepsis) and only four of the fifteen infants born to these fourteen mothers died. Three of these deaths had occurred before the operation. These figures are eloquent testimony to the effectiveness of Caesarean section in cases of eclampsia.

## Pathology.

#### 528. The Sero-diagnosis of Typhoid Infections by the Globulin Reaction.

STARTING from the known fact of the close relation which exists between the globulin and the antibody content of a serum, H. DIACONO (*C. R. Soc. Biologie*, April 14th, 1923, p. 869) wished to see whether it would be possible to develop a more sensitive test for the presence of agglutinins in the serum of an organism immunized to typhoid than the usual Widal reaction. The serum to be tested was diluted with 30 parts of distilled water, and submitted to a current of carbon dioxide for half an hour, in order to precipitate the globulins which it contained. It was then centrifuged, and the clot suspended in a volume of physiological salt solution corresponding to one-tenth of the original amount of serum. Altogether 18 serums were treated in this way—10 positive and 8 negative. Parallel tests were then put up against *B. typhosus* and *B. paratyphosus* A and B, using the serum for one series and the globulin suspension for the other. Reading after three hours at 37° C., the results showed that the titre of the globulin suspension was, on an average, about ten times as high as that of the original serum. Apart from showing the essential part played by the globulins in the mechanism of agglutination, this serves to demonstrate the greater sensitivity of the globulin reaction. The author proposes to employ this reaction in the early diagnosis of cases of typhoid fever, hoping that the presence of agglutinins in the serum may be demonstrated at an earlier date than is at present possible.

#### 529. The Etiology of Epidemic Encephalitis.

A. SCHNABEL (*Klinische Wochenschrift*, March 5th, 1923, p. 429) discusses the relationship between herpes febrilis and epidemic encephalitis. Doerr and the author succeeded in isolating from the cerebro-spinal fluid of an encephalitis patient a virus which was closely allied to or identical with the virus of herpes, and therefore maintained the identity of the herpes and encephalitis virus. Levaditi and Harvier by local infection of a rabbit's eye with portions of the brain

of a rabbit which had had encephalitis produced a kerato-conjunctivitis similar to that which Salmann, Blanc and Caminopetros, and Doerr and Schnabel had produced with the brain of a rabbit infected with herpes. Doerr and Voelting showed that rabbits whose corneas had been infected with herpes developed constitutional disturbance, spasms, and paralyses which usually ended fatally. It is of epidemiological interest that patients with herpes febrilis as well as healthy persons who had recently had herpes showed the virus of herpes in their saliva, just as the virus of epidemic encephalitis had been found in the saliva by Loewe, Hirschfeld and Strauss, Netter, and others. Subsequently it was found that rabbits who had had a herpetic affection of the eye did not react either to a corneal or subdural application of a virulent encephalitic brain, and conversely encephalitic keratitis protected against corneal or subdural inoculation of herpes. The hypothesis of the identity of the virus of herpes febrilis and epidemic encephalitis was thus confirmed. The fact that herpes febrilis in the ordinary form of vesicles on the skin is not often seen in epidemic encephalitis cannot be regarded as an objection to the hypothesis of the identity of the two viruses, as it is probable that the herpetic eruption may develop on the mucous membranes, especially in the nasopharynx. F. STERN (*Ibid.*, p. 433), who agrees with Schnabel as to the relation between the virus of epidemic encephalitis and herpes febrilis, thinks it possible that the virus of epidemic encephalitis is an ordinary saprophyte of the mouth and throat, and that it becomes activated and neurotropic under the influence of certain factors, especially influenza and possibly alcohol. The constitution of the patient is also of importance. Stern has found that physical infantilism is fairly frequent, and regards it as a sign of diminished resistance.

#### 530. The Distribution of the Bacteriophage in Different Media.

P. HAUDUROY (*C. R. Soc. de Biologie*, April 28th, 1923, p. 1084) records experiments he has made to determine to some extent the distribution of the bacteriophage. Search was made in water, earth, and the faeces of normal and of sick individuals. The technique of isolation was as follows: After an incubation of twelve to twenty-four hours in ordinary bouillon of the substance to be examined the culture was filtered on a Chamberland L3 candle, and 1 or 2 c.cm. of the filtrate added to a tube containing 8 c.cm. of sterile broth. This was inoculated with 2 drops of a bacterial emulsion, and left at room temperature for twenty-four hours. At the end of this time the controls were turbid, while the experimental tubes were either clear or turbid, depending on whether or not a lytic principle was present in the filtrate. In this work three organisms were used—namely, *B. dysenteriae* Shiga, *B. coli*, and *B. typhosus*, all of which were susceptible to lysis. In ten attempts the lytic principle was found eight times in earth, and three out of five times in water. Working with the stools of typhoid patients, the author tested the action of the filtrate on the infecting organism isolated from the patient by blood culture. In the case of nine patients he was able to demonstrate a correlation between the presence of the bacteriophage and the amelioration of the general condition. The lytic principle was never found when the patient's temperature was raised, and the author concludes that the bacteriophage probably plays a considerable part in the development of immunity.

#### 531. The Intrapulmonary Digestion of Fat.

IF an injection of a fatty emulsion be made into the veins of a dog a considerable proportion of the fat is arrested by the lungs, where it undergoes a process of digestion. H. ROGER, L. BINET, and J. VERNE (*C. R. Soc. de Biologie*, May 5th, 1923, p. 1140) have studied histologically pieces of lung tissue removed from dogs which had been submitted to an injection of olive oil. In portions taken out five minutes after the introduction of the fatty matter one finds that the fat is brought to a standstill in the ultimate ramifications of the pulmonary artery and in the alveolar capillaries. Examination of sections made from pieces of lung tissue removed at variable periods subsequently shows that this fat undergoes alterations; the globules are eaten away and come to assume a scalloped condition, while the staining reactions are modified so that osmic acid colours them grey rather than black, and Sudan yellow rather than red. Gradually the globules of fat get smaller and smaller, but, even when much reduced in size, they still remain adherent to the vascular endothelium and are not carried away by the blood current. This intravascular digestion seems to occur best in the most fully ventilated portions of the lung. In areas of consolidation the process is much slower; it seems to depend upon a phagocytic action of the endothelium instead of a ferment action as in the case of normal lung.



# EPITOME OF CURRENT MEDICAL LITERATURE.

## Medicine.

### 532. Treatment of Diabetes with Insulin.

SUCCESSFUL treatment of diabetes with insulin, says E. P. JOSLIN (*Journ. Amer. Med. Assoc.*, June 2nd, 1923, p. 1581), depends on the utilization of all those measures that have proved of the greatest value in the treatment of diabetes without insulin. These are as follows: adherence to a diet which will keep the urine sugar-free, avoidance of over-nutrition or extreme undernutrition, and a method of life compatible with the strength such a diet affords. A knowledge of the fundamental principles of the diet and of the values of a few foods is essential, otherwise the insulin will be squandered and the patient placed in jeopardy. Insulin, the author insists, does not cure diabetes; it does not allow a diabetic to eat anything he desires; but hitherto nothing has been discovered as valuable for the diabetic as insulin. Diabetes, however, though subdued, is not yet conquered. Intelligent patients, Joslin suggests, can be taught the use of the diet and insulin in a week, and in two weeks the average patient can become free of acid and sugar, and learn what is requisite either in hospital or, with a nurse trained in the care of diabetics, in his own home. Insulin can be discontinued in a small fraction of cases. Those patients may be able to omit it who receive it temporarily because of an exacerbation caused by complications, or whose diabetes is of recent onset, though perhaps the latter should receive it intermittently as a prophylactic against increasing severity. R. H. MAJOR (*Ibid.*, p. 1597) reports on the successful use of insulin in cases of severe juvenile diabetes, in the treatment of diabetic coma, and in lowering the blood sugar in cases of diabetes. The study of the urinary output has shown that usually a polyuria of from 3,500 to 5,500 c.cm. in twenty-four hours is present with an absence of glycosuria. Such large amounts of urine, however, were coincident with high values for blood sugar, although the ratio between the two was not constant. In only one patient was sodium bicarbonate used; it had no apparent effect on the acidosis. In two patients the author has seen symptoms of collapse accompanied by profuse sweating and a sense of great oppression and fear three hours after the injection of 15 units of insulin. One of these patients was given 20 grams of glucose by mouth and recovered promptly. The second patient recovered quite suddenly from his collapse without treatment. This attack occurred during the night, and the blood sugar the following morning at 8 o'clock was 50 mg. per 100 c.cm. Both patients had a hypoglycaemia when studied soon after these symptoms. This experience emphasizes that caution must be exercised in the use of insulin.

### 533. Oral Administration of Vaccine in Enteric and other Intestinal Infections.

J. H. HARVEY PIRIE and A. J. ORENSTEIN (*Med. Journ. of South Africa*, April, 1923, p. 224) discuss the subject of the administration of vaccine by the mouth in affections of, or diseases acquired through, the alimentary tract. They regard it as reasonably certain that protection against such diseases can be successfully obtained by this route. In support of this contention Besredka is quoted as holding the view that in typhoid fever and dysentery immunity is the peculiar property of the cells of the intestinal mucosa, and that any immune bodies found in the blood are accidental, not essential, and merely evidence that infection has occurred. Besredka also maintains that the value of subcutaneous protective inoculation is solely due to its action on the intestinal mucosa. Further, Nicolle and Conseil, working on volunteer subjects, are cited as having demonstrated the success of the oral administration of vaccine in experimentally produced bacillary dysentery and Malta fever. It is contended that like results could be obtained in typhoid, paratyphoid, and cholera. Attention is drawn to the absence of any appreciable agglutinin formation in the cases of these observers, who also found it impossible to infect native Tunisians with dysentery, probably owing to immunity acquired through the frequent drinking of infected water, and the authors advise imitating nature in this respect by administering frequent small doses of vaccine. As evidence of the value of oral vaccination the authors publish an account of an epidemic of enteric fever occurring among natives in a gold mine in which the method was tested. Seven strains of *B. typhosus* were employed in the preparation of the vaccine, which was administered in liquid form

on three successive days in doses of 40 million in conjunction with 3-grain keratin-coated ox-bile pills. Although the treatment was commenced a little later than half-way through the epidemic, which might possibly have already commenced to decline, nevertheless the course of events subsequent to its inception was such that the authors feel justified in presuming its efficiency. Twenty cases were admitted to hospital after vaccination had been initiated; of these, 16 had been vaccinated and 4 not. Among the 16 vaccinated the mortality was 5; among the unvaccinated it was 3. It is thought probable that the former were in the stage of incubation when vaccinated, as the fatal cases among them died on the second, fourth, sixth, twelfth, and eighteenth days after admission. It should also be noted that of 3,600 natives in the camp 1,500 received two doses only of vaccine.

### 534. Suffocation of Infants by Bed Straps.

J. FOG (*Ugeskrift for Læger*, May 3rd, 1923, p. 305) notes that within the last few years two fatalities have occurred in infants who were suffocated by the straps with which they were kept in bed. The age of both infants was a year and nine months. The straps or reins generally used by mothers in Denmark consist of a loose belt with two limbs, one running over each shoulder. Connected to the belt is another strap which is secured to the side of the bed. Provided these straps are made of inelastic material, and the bands passing from one side of the belt to the other over the shoulders are as short as possible, there is little chance of a fatal accident. Considering how common the use of these straps is, the chances of their causing fatal suffocation may be regarded as negligible. In one of the cases referred to the mother found her infant lying on his stomach in bed with his feet dangling over its side. His face was buried in the pillow, and his throat was resting on the tightly drawn strap connecting the belt with the side of the bed which was nearest the wall. The necropsy showed two narrow transverse furrows running across the neck. There were no other signs of injury, and neither the thyroid nor the cricoid cartilage had been fractured. There were no haemorrhages, and no foreign bodies could be found in the mouth, throat, or respiratory tract.

### 535. A Vaccine for Typhus Fever.

P. MODINOS (*Paris méd.*, May 12th, 1923, p. 425) states that typhus fever has long been endemic in Egypt, where during the last fifteen years there have been 148,150 cases, with 42,594 deaths. During the period 1916-20 there were 94,057 cases, with 25,232 deaths, or a mortality of 27 per cent. He has recently treated 12 cases at the European Hospital at Alexandria with a vaccine derived from cultures of *Proteus X 19* which contained 3,000 million organisms per cubic centimetre. The first dose consisted of one-tenth of a cubic centimetre, and the dose was increased by one-tenth of a centimetre daily until half a gram was reached. No reaction followed the injection, which was made subcutaneously in the subclavicular region or on the outer surface of the arm. Although the temperature did not fall until after the third or fourth injection the patient's general condition improved immediately after the first. Not only did no deaths occur, but the duration of the disease was shortened and no complications ensued.

### 536. Bromodermia and Iododermia.

F. PARKES WEBER (*Brit. Journ. Derm. and Syph.*, May, 1923, p. 169) calls attention to the mycotic type of bromodermia and iododermia, and a facial, pharyngeal, and intraoral oedema and swelling of the salivary and thyroid glands in iodide idiosyncrasy. It is pointed out that such idiosyncrasy may cause a mycotic iododermia, developing in a non-syphilitic patient under treatment with iodides, to be mistaken for a syphilitic condition, with the consequent further pushing of the drug and grave results. Chronic nephritis, alcoholism, cachexia, and senility may partly account for such idiosyncrasy. The eruption sometimes becomes worse after the drug has been stopped, thus confusing diagnosis with mycosis fungoides or sarcoma. Bromism in breast-fed infants whose mothers are taking bromide sometimes manifests itself by a severe "nodose" form of eruption. Facial, especially orbital, oedema following iodides may occur even after small doses, and is often accompanied by sublingual oedema with occasionally swelling of the salivary glands simulating mumps. Thyroid enlargement, and even acute swelling and symptoms suggestive of Graves's disease, are recorded as following iodide administration, or the outward application of iodine.



## Surgery.

## 537. Gastric Surgery.

CHARRIER and CHARBOUND (*Journ. de Méd. de Bordeaux*, May 10th, 1923, p. 303) emphasize the good results that may be obtained by gastrectomy in cases of gastric ulcer and gastric carcinoma. In thirteen cases of gastrectomy for malignant growths which they record there were three deaths. They urge that gastrectomy should be more often performed for these conditions, as it is not such a severe operation as many believe it to be. A gastro-enterostomy is often done, they suggest, not because it will cure the condition but because it is regarded as a less serious operation. In carcinoma of the stomach gastrectomy is the only operation which can hold out any prospect of cure for the patient; deep therapy up to the present has not been able to take the place of operation. The best results follow the more extensive operations on the stomach; though the mortality after gastrectomy is higher than that following gastro-enterostomy the results appear to justify the increased risk. The authors record cases of malignancy operated upon up to two years previously showing good results without evidence of recurrence. Further, these cases take on a new lease of life, with increased hope, after the radical operation has been performed. In cases of ulceration the pyloric ulcer is best treated by gastro-enterostomy with or without pyloric exclusion, and operations such as pylorotomy are unnecessary. An ulcer on the lesser curvature may be treated by local excision or the cauter, combined with a gastro-enterostomy. Where there is an old callous ulcer, adherent to surrounding organs and liable to undergo malignant change, gastrectomy is the best operation. If every case of ulcer or carcinoma were regarded individually the general results, the authors assert, would show an undoubted improvement.

## 538. Treatment of Scleroderma by Periarterial Sympathectomy.

W. HORN (*Zentralbl. f. Chir.*, May 26th, 1923, p. 831) reports a case of scleroderma treated successfully by the operation of periarterial sympathectomy. The patient was a female, aged 23. Three years ago she noticed a circumscribed patch of hardness in the skin of the left forearm; within a year this spread over the whole of the left arm. Six months ago the same condition appeared at the right forearm. Various methods of treatment had been tried without avail. The skin of the left forearm and upper arm was bluish-red; the normal furrows and fine markings were absent; the skin was of board-like hardness to the touch, without elasticity, and could not be raised in folds. The changes were most marked along the ulnar border and on the back of the hand. Sensation was normal. The right forearm showed the same appearances in lesser degree. On January 24th, 1923, the brachial artery was exposed at its upper part; this was done with some difficulty, the connective tissues round the vessels being thickened and firm. The adventitious coat was removed for a distance of 8 to 10 cm.; the artery was observed to contract during this process. Healing was uneventful. The left pulse was not palpable till three hours after operation. The arm was warmer to palpation than before operation. Two weeks later the skin began to lose its hardness, and slowly regained its elasticity, so that it could be raised in folds. The upper arm became normal; improvement continued more slowly in the forearm and hand; there is still a narrow strip along the ulna where the skin is thickened, and this has remained stationary for some time. The author suggests that some sympathetic fibres to the forearm run in the adventitia of anastomotic vessels which leave the main artery above the seat of operation. He intends to operate next upon the right brachial artery of the same patient, with a view to restoring the skin of the right forearm to its normal condition.

## 539. Differential Diagnosis of Purulent Labyrinthitis and Cerebellar Abscess.

RIMINI (*Arch. Internat. de Laryngol., Otol. et Rhinol.*, February, 1923, p. 129) notes the difficulty in differentiating between these two conditions, and relates a case illustrating this. A woman, aged 36, was admitted to hospital with a history of a discharging left ear since childhood and much pain in the ear for the past month, with attacks of pyrexia and rigors lasting about two days. On examination there was a large polypus in the meatus, a marked loss of hearing on the affected side, some vertigo and symptoms of a fistula into the horizontal canal. After extraction of the polypus the patient became completely deaf on the left side and a radical mastoid operation was performed. The temperature rose and there was vomiting and nystagmus to the right. After a few days the temperature gradually subsided and the vomiting ceased, but the patient suffered from very bad headaches. Nearly

three weeks after the operation the pulse rate dropped to 70, 60, and finally to 50, while the temperature also fell below normal. On this a diagnosis of cerebellar abscess was made, but the patient died suddenly before operation. Autopsy revealed an abscess in the left lobe of the cerebellum. The author discusses the various symptoms separately: (1) The slowing of the pulse is symptomatic of intracranial pressure, and therefore indicates cerebellar abscess; rising pressure affects the vagus nucleus and later the respiratory centre. (2) Headache is usually present in cases of abscess, but may accompany any form of otitic lesion; if localized in the occipital region and exaggerated by percussion it points to abscess. (3) Vomiting, vertigo, and nystagmus are common to both conditions, but in purulent labyrinthitis are accompanied by complete cochlear deafness. These three symptoms tend to disappear as the inflammatory processes destroy the labyrinthine end-organ, but in cases of abscess tend to increase as the pus accumulates. In the case of nystagmus there are three further points of note: (a) Nystagmus to the affected side points to either lesion if persisting after vestibulotomy to abscess. (b) Rotatory nystagmus to the affected side with an apparently inexcitable labyrinth indicates cerebellar lesion. (c) Nystagmus towards the healthy side indicates either lesion. If vestibulotomy reverses or augments the nystagmus cerebellar lesion is diagnosed, but if the nystagmus is reduced the lesion is in the labyrinth. Bárány's caloric and rotatory tests, especially the past-pointing ones, are used to estimate the state of the labyrinth. Lumbar puncture shows an increase of tension and of leucocyte content in most cases of abscess, but not often in labyrinthitis. The author considers progressive slowing of the pulse the surest sign of cerebellar abscess.

## 540.

## Dislocation of the Cuboid.

CH. DUJARIER (*Bull. et Mém. Soc. Chir. de Paris*, May 8th, 1923, p. 650) records a case of this very rare type of injury. A mechanic had his foot caught in the spokes of a wheel, and on admission to hospital there was an irregularity on the dorsum of the foot and a marked projection on the outer border of the foot in front of the external malleolus. On the plantar aspect of the foot no deformity was present but a depression corresponding to the projection on the dorsum. Movements at the ankle-joint were complete and painless, but absent at the mid-tarsal joint. Radiograms showed a dislocation of the cuboid bone. Reduction was carried out without difficulty, and the patient started to walk on the tenth day. The mechanism of the injury appears to depend on flexion and adduction of the mid-tarsal joint, a separation of the calcaneo-cuboid joint being produced, with stretching of the ligaments. Diagnosis is easy immediately following the injury, but later, owing to the oedema, is possible only by x-ray examination.

## 541.

## Hydatid Cysts of the Erector Spinae Muscles.

C. LASSEIRE and P. LANEX (*Journ. de Méd. de Bordeaux et de la Région de la Sud-Ouest*, March 25th, 1923, p. 188) have collected records of 26 cases of this disease and have seen 3 other cases in less than two years. Although hydatid cysts may occur in the muscles of any region they show a predilection for the spinal muscles. They are at first spheroidal and may remain unilocular, but more frequently they become multilocular, and following lines of least resistance penetrate between the muscles. Some French authors consider that traumatism may determine the localization of the echinococcus embryo, others regard the subsequent discovery of a cyst as a coincidence. The authors describe the formation of the outer wall of fibrous tissue. As the cyst grows it tends to penetrate more deeply, and Cruveilhier states that in this respect it resembles an aneurysm. "The growth of the cyst is irregular; its prolongations embrace the bony surfaces, laying bare the vertebral laminae and irritating the pleura, when it is situated in the dorsal region." Thus it may produce absorption of large bony surfaces, and in two cases the autopsy revealed hydatids in the spinal canal, pressure on the cord having produced paraplegia. In one of Lasserre's cases a preliminary diagnosis of spinal caries had been made, but aspiration of the swelling yielded debris of hydatid membrane. The cyst was incised and an immense number of daughter cysts, varying in size from that of a pea to that of a pullet's egg, escaped. The cyst wall was sutured to the skin and the cavity washed out with ether and drained. Three months after operation daughter cysts occasionally escaped through a sinus, but seven months after operation cicatrization was complete. The authors find that usually patients have no symptoms prior to the discovery of the tumour; exceptionally they experience vague pain and discomfort. The majority of authors state that the "hydatid thrill" is rare, and as a diagnostic sign is therefore uncertain, but when present it is associated with "a drum-like resonance elicited on auscultatory percussion" (Barnett).



## Ophthalmology.

### 542. Retrobulbar Optic Neuritis due to Latent Posterior Sinusitis.

L. VAN DEN WILDEMBURG (*Le Scalpel*, May 26th, 1923, p. 561) has observed three cases of the above condition recently. He considers that delay in such cases is liable to be followed by loss of vision in one eye or even both, and that exploratory operation by the median nasal route in doubtful cases will do no harm. The optic nerve is in close proximity to the sphenoidal and posterior ethmoidal cells. Frequently (30 per cent.) a single sphenoidal cell is in relation with both optic nerves. A retrobulbar neuritis, in the absence of other assignable cause, should lead one to suspect sinusitis. After ten days of neuritis, optic atrophy may set in. The author approaches the sphenoidal sinus by submucous resection of the nasal septum, thus mobilizing the latter. Both sphenoidal sinuses are explored, by removing the septum between the two. As much of the anterior wall as possible is removed, especially at its lower part, to ensure good drainage. The cases in question were as follows: (1) A male, aged 48, who was subject to colds, had had periorbital and right frontal headache for five months. He complained of sudden diminution of vision, so that he could not read. The nasal septum was deviated to the right; radiograms were negative. Exploratory puncture of the sphenoidal sinus was negative. It was decided to resect the nasal septum in order to cure the nasal obstruction, and in the course of this operation the sphenoidal sinus was opened, by removing the anterior wall. The lining membrane was thick and bluish, appearing almost cystic; this was curetted away. The frontal sinus also was explored; it contained no secretion, but the lining was thickened. After operation the headaches disappeared, and right vision improved from 6/24 to 6/12, after which it remained stationary. (2) A medical student complained of periorbital headaches and of practically total blindness of the left eye. Exploration of the sphenoidal sinus was negative. The maxillary sinus was then explored through the canine fossa, and through that the posterior ethmoidal cells were examined and found to be the seat of chronic inflammation. Left vision improved until the patient could count fingers more than a metre away. The headaches were cured. (3) A male, aged 27, complained of loss of visual acuity in the right eye after severe cold in the head. Right vision, 6/36; papilla swollen. Eventually, other treatments failing, the sphenoidal sinus was opened. No abnormality could be detected. Vision, however, improved to 6/18 within two months, and then remained stationary. The author considers that the free ventilation of the sphenoidal cells may have had something to do with the improvement. All other explorations in this case were negative.

### 543. Fundamental Considerations in the Correction of Squint.

A. WHITMIRE (*Arch. of Ophthalmol.*, May, 1923, p. 242) reviews the various theories with regard to squint and its treatment. He comes to two conclusions: (1) Anomalies of this character should be first corrected by refraction if possible. This will be sufficient in many cases in which the deviation is of the periodic variety. When the subject of the squint is hypermetropic full correction should be given. (2) Operation is the last resort, and the relief it affords is in most instances simply cosmetic. He is, however, very insistent on the advantages accruing from early operation. He holds that the subject derives so much benefit, both physically and mentally, from the correction of the deformity that operation should not be delayed after it is found that correcting glasses are not going to produce a cure. The operation he favours is resection and advancement of one muscle, with tenotomy of the opposing muscle. He considers that it is an unsound procedure to advance a muscle without at the same time tenotomizing its antagonist. Further, he lays great stress upon the importance of inserting an anchor stitch, the ends of which he attaches by means of strapping to the nose or temple in order to support the resected muscle.

### 544. Quinine Amblyopia.

J. N. EVANS (*Amer. Journ. of Ophthalmol.*, April, 1923, p. 271) describes a case of quinine amblyopia which presented certain unusual features. The patient, a man, in a state of intoxication swallowed a dose of approximately 100 grains of quinine sulphate. To ordinary doses of the drug he had no idiosyncrasy, as he was in the habit of taking doses of 6 grains three times a day. On waking his vision was reduced to perception of light, but he had no nausea, vomiting, diarrhoea, ringing in the ears, nor deafness. When seen some four days later the pupils were slightly dilated

and reacted sluggishly to light, the vision of each eye was 6/9, the visual fields did not extend outwards beyond 20 degrees. In general he felt well, with the exception of a feeling of coldness in the hands and feet. Ophthalmoscopically there was slight uniform pallor of both discs and the arteries were somewhat narrowed; on one small artery there was a plaque, distal to which the calibre of the vessel narrowed markedly, and scattered in places throughout the central fundus there were many small roundish spots of a creamy colour, the edges of which were blurred. As the case progressed more plaques formed on the arteries and recurring crops of spots made their appearance, the old spots fading away and their place being taken by new ones. The arteries gradually became more and more narrowed, and this narrowing seemed to be associated with the previous plaque formation. Evans concludes by saying that it is possible that the plaques and peculiar spots may have no relation to the quinine poisoning, though the rapid absorption of such a large quantity of the drug may have made visible pathological changes typical of this intoxication which are not usually visible.

### 545. Tumour of the Optic Nerve.

HUMPHREY NEAME (*Brit. Journ. of Ophthalmol.*, May, 1923, p. 209) describes two cases of this condition, and he concludes from his pathological examination that one case was an example of gliomatosis of the optic nerve and the other of endothelioma having its origin in the endothelium of the arachnoid sheath of the nerve. A very full account of the pathological examination of the two tumours is given and microphotographs are shown in the paper. With regard to the differential diagnosis, he states that in endothelioma (1) the age is greater; (2) exophthalmos more often precedes visual disturbance; (3) limitation of movement is more frequently present; (4) circulatory obstruction in lids and conjunctiva is more frequent; (5) pain is present; (6) intraocular extension is more frequent. In the case of the endothelioma the tumour was removed by dividing the external canthus, and after incising the conjunctiva the external rectus muscle was divided between sutures and the eyeball drawn outwards. In this manner the tumour was able to be removed without the necessity of bone resection.

## Obstetrics and Gynaecology.

### 546. Clinical Features of Tubal Pregnancy.

C. LENORMANT and G. HARTMANN-KEPPEL (*Gynéc. et Obstét.*, 1923, vii, 4, p. 273) record a series of 51 cases of tubal pregnancy, of which 8 came to operation with haemato salpinx in the absence of intraperitoneal haemorrhage, 24 with clinical signs and anatomical evidence of free peritoneal bleeding, 4 with partially and 13 with completely encysted intraperitoneal haemorrhage. These four conditions, in the order named, are regarded as successive stages in the clinical course of haemorrhage due to tubal pregnancy. Haemato-salpinx due to tubal gestation was in the majority of instances diagnosed prior to the occurrence of rupture or abortion, as salpingitis; a history of retardation of the menses was only elicited exceptionally. Among the 26 cases of free intraperitoneal haemorrhage two instances of tubal abortion are recorded, and in the author's former series of cases there were 13 ruptures and only 1 abortion. Seven patients only reported amenorrhoea, and one had suffered, prior to the rupture of the tube, from metrorrhagia. The two patients with tubal abortion were operated on comparatively late—four and six days respectively after the onset of abdominal pain; the effused blood was moderate in amount and not even partially encysted. There were 3 deaths in the series, of 26 cases; the operation preferred was unilateral salpingectomy without drainage. The 13 cases of encysted peritoneal haemorrhage (pelvic haematocoele) included 3 only in which there was a history of amenorrhoea, and 4 had more or less abundant metrorrhagia; a correct preoperative diagnosis was made in 7 cases. In 2 of the 13 cases in this series, and in no fewer than 5 in a former series of 11, the haematocoele was infected and suppurating. All the cases of encysted effusion were treated by abdominal operation without mortality.

547. L. BRADY (*Bull. of Johns Hopkins Hosp.*, May, 1923, p. 152) describes 50 cases of ectopic pregnancy operated on during five years. Six patients were pregnant for the first time; in 7 only could previous pelvic infection be excluded. Fewer than half of the series gave a history of a missed menstrual period, and three-quarters had had irregular menstrual bleeding. Pyrexia was present in 25, and in 6



instances exceeded 100.5°; in none of the cases of unruptured tubal gestation, however, was the temperature greater than normal. Secretion of the breasts was present in 8 cases, and in two primiparous women was of genuine diagnostic assistance. Abdominal examination showed shifting dullness in 4 patients; bluish discoloration of the umbilicus, as described by Cullen, was not noted. Blood crepitus was made out after pelvic examination in 5 patients. In 72 per cent. of cases a correct preoperative diagnosis was attained. There were 9 instances of unruptured tubal pregnancy, as compared with 20 each of tubal rupture and abortion; one case of pregnancy occupying the cornu and right half of the uterus is included in the series, and this patient, whose abdomen was closed without further operative procedure, was delivered normally at term.

#### 518. Pregnancy and Heart Disease.

D. GRANT CAMPBELL (*Canadian Med. Assoc. Journ.*, April, 1923, p. 244) records the experience of the Montreal Maternity Hospital with regard to 159 patients suffering from heart disease admitted between 1905 and 1921. He concludes that in (1) mitral stenosis, (2) auricular fibrillation, and (3) myocarditis in the absence of endocarditis and pericarditis, pregnancy is a grave complication; the two last conditions contraindicate marriage and pregnancy, and, in his opinion, if pregnancy occurs, they call for immediate induction of abortion without awaiting the onset of decompensation. Mitral regurgitation, aortic regurgitation, aortic stenosis, and congenital lesions, on the other hand, are comparatively little affected by pregnancy and do not justify the physician in forbidding marriage. Patients with mitral stenosis, without evidence of myocarditis or history of previous heart failure, may bear one or two children, but they should be carefully watched, and each pregnancy causes considerable and lasting damage to the heart. Signs and symptoms of impending cardiac failure are found in breathlessness, palpitation, precordial pain, and râles at the bases of the lungs; intervention is then called for, and as a rule induction of labour or a vaginal Caesarean operation is preferable to abdominal section. If all goes well up to the time of labour the first stage is borne well, but the second places considerable strain on the heart and it is usually wise to terminate labour under general anaesthesia by application of forceps or otherwise. In patients with purely myocardial lesions it is the pregnancy rather than labour which exercises a prejudicial effect: 14 out of 28 in this group had rapid and easy labours, yet 7 died as a direct result of pregnancy and others succumbed within a short time.

#### 549. Benign Tumours of the Female External Genitalia.

GIRONCOLI (*Arch. Ital. di Chirurg.*, April, 1923, p. 177) has collected from the literature 75 cases of benign tumours of the external genital organs of women. These tumours of the vulva are usually fibromata, or more rarely lipomata, with gradations in between; they very rarely become sarcomatous. In size they vary from a cherry to an adult head. Etiologically, heredity and traumata seem to play a recognizable part; usually they originate in the connective tissue; in some cases they appear to start from the round ligament. It is hardly possible to differentiate the fibromatous from the lipomatous type except by microscopic examination. Prognosis is good unless ulceration and subsequent pyaemia set in, or more rarely in the case of sarcomatous degeneration. Removal is the only treatment. The author gives a bibliography of 100 references.

## Pathology.

#### 550. Histopathology of the Intestine in Cholera.

E. W. GOODPASTURE (*Philippine Journ. of Science*, April, 1923, p. 413) gives the results of a series of twenty-five *post-mortem* examinations of cases of cholera. He points out that the nature of the intoxicating substance is still doubtful, and that it has yet to be determined whether the intestinal lesions are due to direct action by poisonous material or are part of a general toxæmia. It was evident that the vibrios of the disease are capable of invading the intestinal tissue locally and producing an inflammatory reaction with polymorphonuclear leucocyte exudate. The one constant feature was a subepithelial oedema in the small intestine, and the author considers that this may have been due rather to splanchnic congestion accompanying general intoxication than to direct action of toxic material within the lumen. Minute *ante-mortem* necrosis and ulceration occurred in at least two of the cases, and was recognizable as such by the acute inflammatory appearance of the ulcers. Since the

organism can invade tissues and produce inflammatory exudate and ulceration an acute ulcerative enteritis might be expected as the typical lesion, but this is the exception. Desquamation of epithelium is apparently a *post-mortem* effect, due to the action of bacteria or enzymes of intestinal fluid on an epithelial layer displaced by oedema during life. In some cases, however, this does occur before death, as evidenced by the finding of casts in the stools. The author emphasizes that, although in certain instances the organisms may directly produce acute ulceration, they are not always a cause of it, and that such appearances are to be regarded as a complication and not part of the typical pathology of cholera. The evidence he adduced indicated that the vibrios were almost entirely confined to the lumen of the gut, and that such toxic substances as they produced were absorbed early through an intact mucosa.

#### 551. Malignant Tumour and Syphilitic Infection.

W. H. BROWN and LOUISE PEARCE (*Journ. Exper. Med.*, May, 1923, p. 601) describe the development of a malignant tumour in the scar of a scrotal chancre in the rabbit appearing about four years after inoculation with syphilis. The specific infection pursued a mild but chronic course with periods of relapse, and eventually there developed locally in the skin lesions which showed active and atypical epithelial cell proliferation such as is common to chronic inflammatory processes. At about the same time there occurred extensive degenerative changes in the skin accompanied by an atypical growth of hair follicles and producing diffuse and nodular induration and thickening. In course of time a growth appeared in the scrotum which recurred after removal, and spread locally and to internal organs by metastasis. The authors offer no explanation of the origin of the neoplasm, but they point out that the change took place gradually and with periods of relative inactivity before the growth became established and acquired malignant characteristics. They note that this feature is not peculiar to tumours, but is common to conditions which pursue a relapsing course and occurs typically in syphilitic infections. The conditions producing the changes, therefore, were not necessarily confined to the growth itself and were not purely local in character. *Post-mortem* appearances included leucoplakia of the tongue and buccal mucous membrane, chronic inflammatory lesions of the oesophagus with atypical epithelial cell proliferation, and a nodular growth in the testis which differed from that in the scrotum; there was also widespread deterioration of organs and tissues, much of which had occurred previous to the development of the tumour. The growth, therefore, arose in an organism with well marked organic impairment, and the authors consider there was sufficient evidence for assuming that the factor of greatest causal importance was constitutional rather than local. In further experimental work it was found possible to transplant a spontaneous malignant growth in a syphilitic rabbit by the intratesticular route where the subcutaneous and intracuticular method failed. Antispecific treatment was undertaken with a view to eliminating syphilitic infection, and the transplanted tumour was found to be highly malignant in the first and second generations.

#### 552. Types of Organism in Tuberculous Children.

J. K. GORDON and E. W. BROWN (*Amer. Journ. Dis. Children*, March, 1923, p. 234) have carried out a series of investigations at the Children's Hospital, Boston, U.S.A., to determine the types of organism in tuberculous children. Their cases consisted of 30 tuberculous patients ranging in age from 4 months to 11 years, all of whom resided in the Boston district. The bovine organism was identified in 10 instances, or 33 per cent. Twenty-three of the total number of patients were under 5 years of age. In 6 of these, or 25 per cent., the organism was of the bovine type. The remaining 7 patients were between the ages of 5 and 16 years, and among these there were 4 instances of bovine infection, or 57 per cent. There was thus a greater actual incidence of bovine infection in children under 5 years of age, although the number of bovine cases in patients between 5 and 12 was relatively greater. In infants under 1 year the bovine organism was found in only one instance. Twenty-two of the total number of cases were known to be fatal. In 12 a necropsy was obtained. In all the cases in which the origin of infection was in the alimentary tract the organism was bovine in type, whereas the human bacillus was recovered from all the cases in which the point of origin was found *post-mortem* in the respiratory tract. In 7 cases a history of exposure to tuberculous infection in the family or elsewhere was obtained; 6 of these were infected with the human and one with the bovine organism. The only conclusions to be drawn from these figures, according to the authors, who are carrying out further investigations, is that the percentage of bovine tuberculosis in the Boston district is unnecessarily high.



